

October 1962

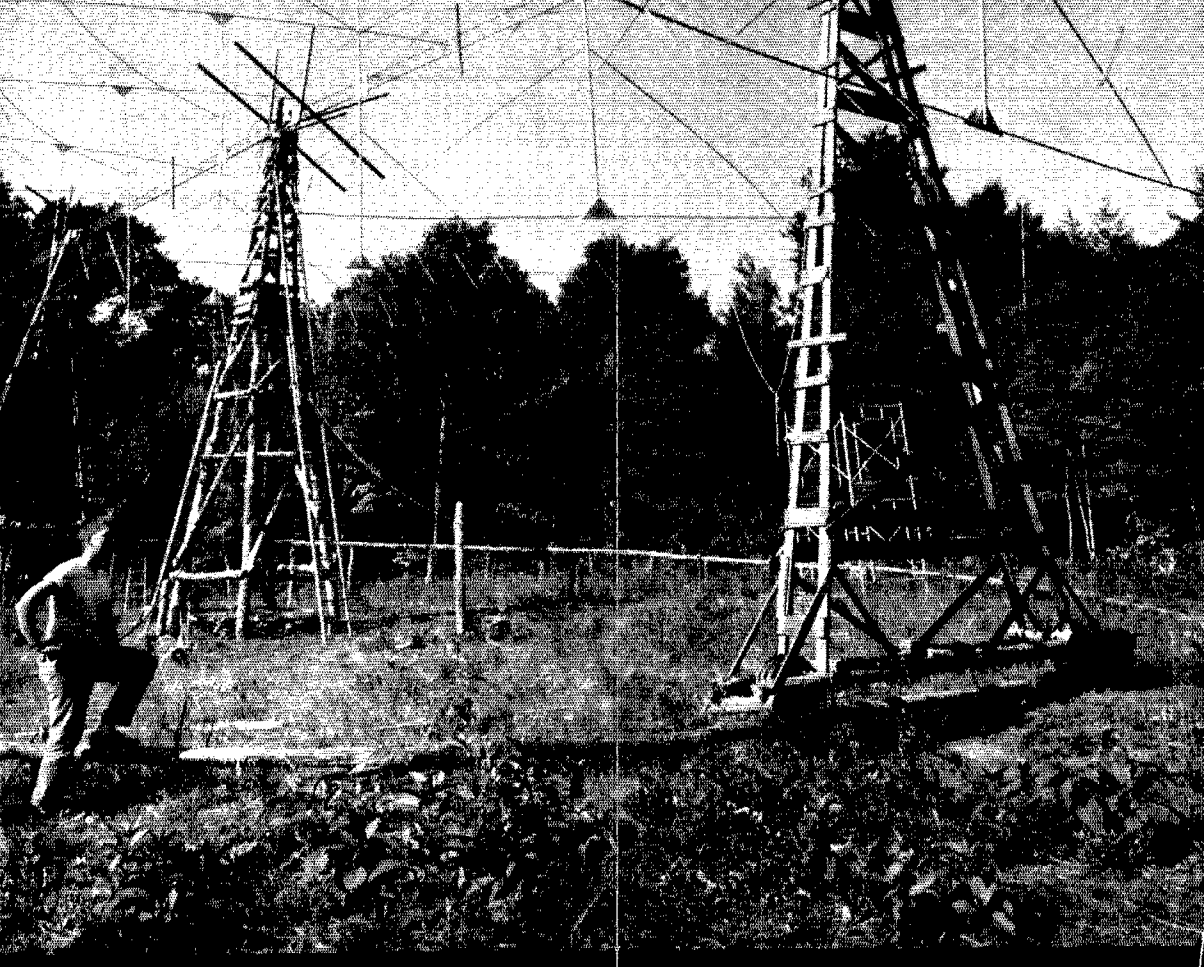
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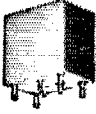
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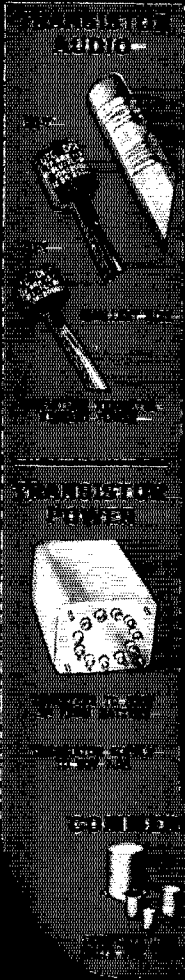
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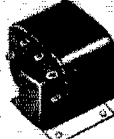
Military, Industrial



PLATE TO 6 KV CT



REACTORS TO 1.25A

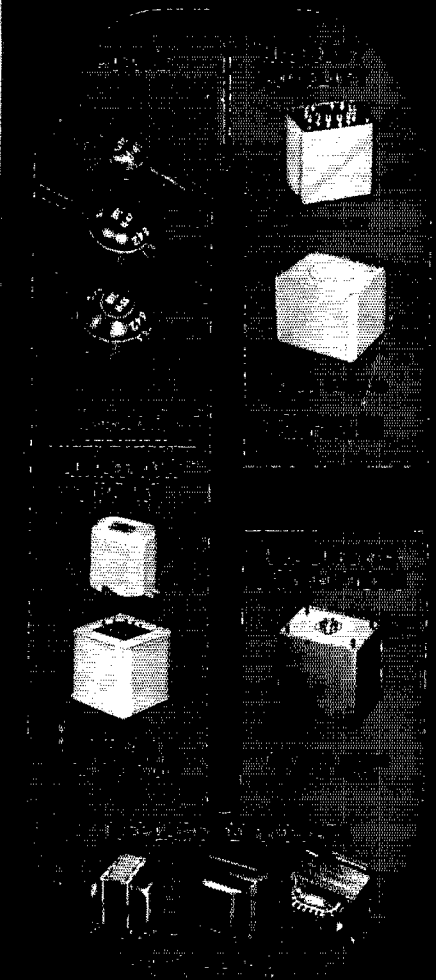


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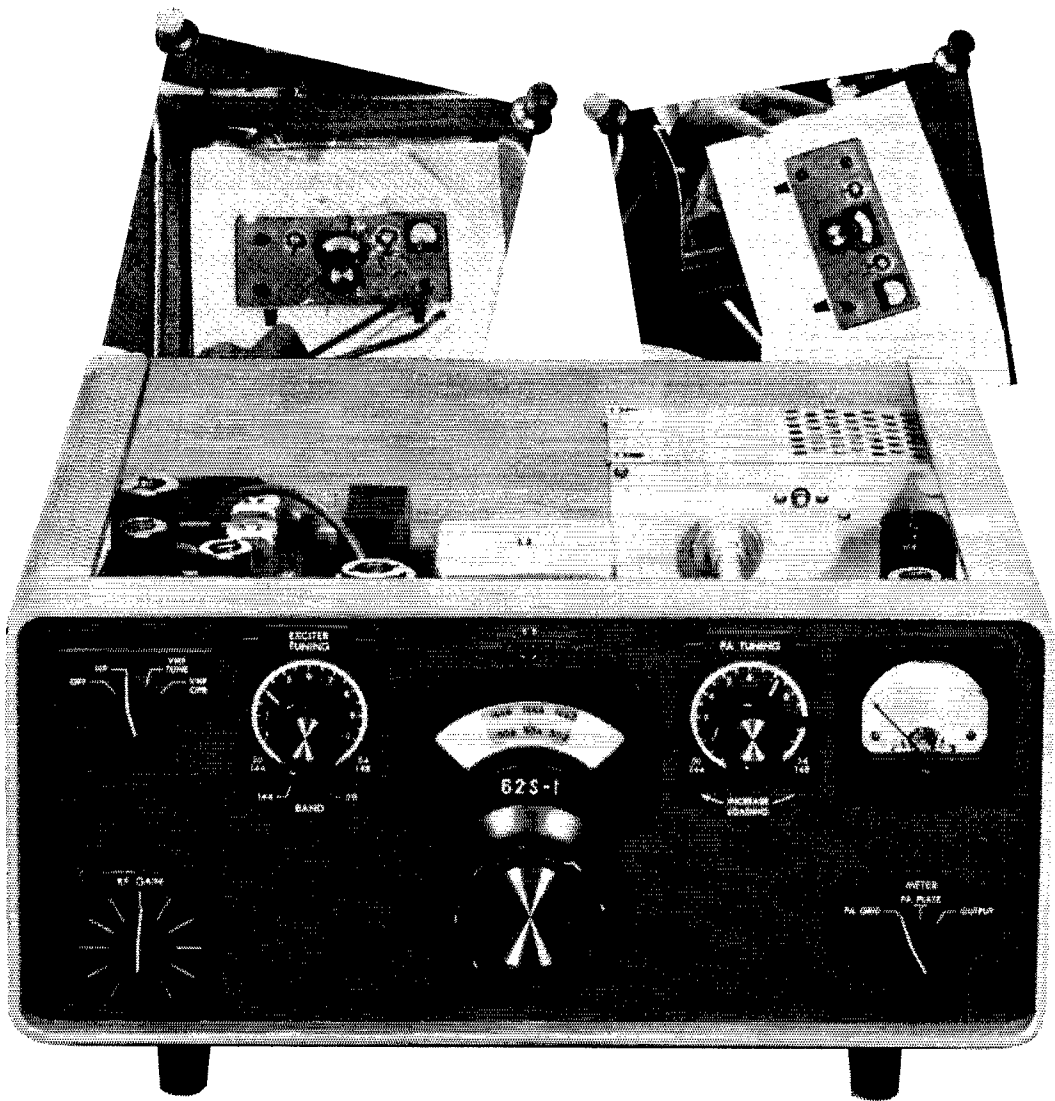
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Subscription rate in United States and Possessions, \$5.00 per year, postpaid; \$5.25 in the Dominion of Canada, \$6.00 in all other countries. Single copies, 50 cents. Foreign remittances should be by international postal or express money order or bank draft negotiable in the U. S. and for an equivalent amount in U. S. funds.

Second-class postage paid at Hartford, Conn. and at additional mailing offices.

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INDEXED BY

Applied Science and Technology Index
Library of Congress Catalog
Card No.: 21-9421

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3-1000Z	B SSB	3000	.240 .670 ⁽³⁾	—	0	65	—	.30	1360	7.5 21.3
4CX250B ⁽¹⁾	AB1/SSB	2000	.1/.25 ⁽³⁾	350	-55 ⁽⁵⁾	0	0/.005 ⁽³⁾	0	300	6.0 2.5
	C/CW	2000	.25	250	-90	2.9	.019	.026	390	
	C/AM	1500	.20	250	-100	1.7	.02	.014	235	
4CX300A	AB1/SSB	2500 ⁽⁶⁾	.1/.25 ⁽³⁾	350	-55 ⁽⁵⁾	0	0/.004	0	400	6.0 2.5
	C/CW	2500 ⁽⁶⁾	.25	250	-90	2.8	.016	.025	500	
	C/AM	1500	.20	250	-100	1.7	.02	.014	235	
4CX1000A	AB1/SSB	3000	.25/.90 ⁽³⁾	325	-60 ⁽⁵⁾	0	-.002/.035	0	1680	6.0 10.5
4-65A	AB1/SSB	3000	.015/.065 ⁽³⁾	360	-85 ⁽⁵⁾	0	0/.006	0	130	6.0 3.5
	C/CW	3000	.112	250	-105	1.6	.022	.009	270	
	C/AM	2500	.102	250	-150	3.1	.026	.013	210	
4-125A	AB1/SSB	3000	.03/.105 ⁽³⁾	510	-95 ⁽⁵⁾	0	0/.006	0	200	5.0 6.5
	B/SSB ⁽⁴⁾	3000	.02/.115 ⁽³⁾	0	0	16	0/.03	0/.055	240	
	C/CW	3000	.167	350	-150	2.5	.03	.009	375	
	C/AM	2500	.152	350	-210	3.3	.03	.009	300	
4-250A	AB1/SSB	3000	.055/.21	600	-110 ⁽⁵⁾	0	0/.012	0	400	5.0 14.5
	C/CW	3000	.345	500	-180	2.6	.06	.01	800	
	C/AM	3000	.225	400	-310	3.2	.03	.009	510	
4-400A	AB1/SSB	3000	.09/.30 ⁽³⁾	810	-140 ⁽⁵⁾	0	0/.018	0	500	5.0 14.5
	B/SSB ⁽²⁾⁽⁴⁾	3000	.07/.30 ⁽³⁾	0	0	40	0/.055	0/.10	520	
	C/CW	3000	.35	500	-220	6.1	.046	.019	800	
	C/AM	3000	.275	500	-220	3.5	.026	.012	630	
4-1000A	AB1/SSB	4000	.17/.48 ⁽³⁾	1000	-130 ⁽⁵⁾	0	0/.04	0	1130	7.5 21.0
	B/SSB ⁽⁴⁾	4000	.12/.67 ⁽³⁾	0	0	105	0/.08	0/.15	1870	
	C/CW	4000	.70	500	-150	12	.137	.039	2100	
	C/AM	4000	.60	500	-200	11	.132	.033	1910	
3CX100A5	C/CW ⁽⁷⁾	800	.08	—	-20	6	—	.03	27	6.3
2C39A	C/AM ⁽⁷⁾	600	.065	—	-16	5	—	.035	16	1.0

(1) Ratings also apply to 4X250B.

(2) Ratings apply to 4-250A within plate dissipation limitation.

(3) Zero signal and maximum signal dc current.

(4) Grid and screen grounded, cathode driven.

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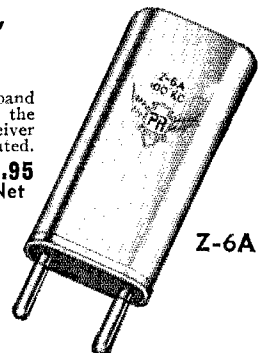
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10.7 Mc. FM, IF,

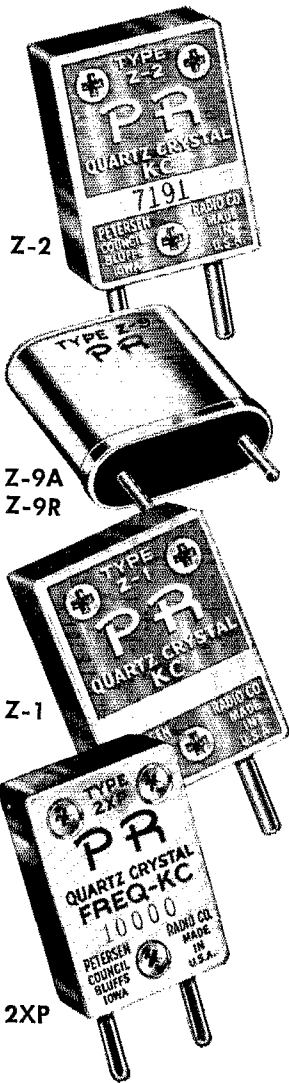
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Z-2

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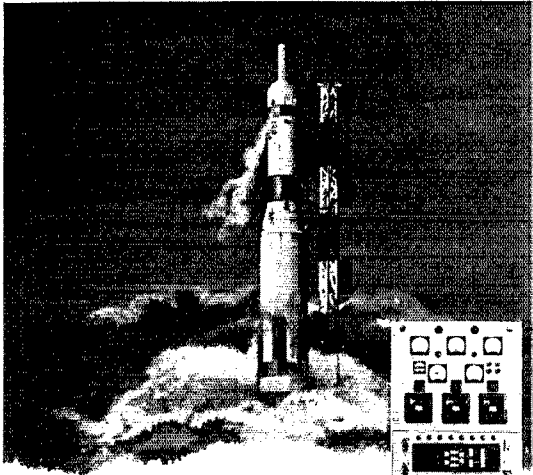
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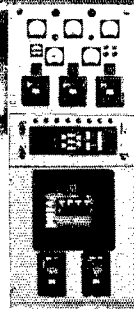
INTERRUPTIONS

WITH TMC's

NO-BREAK POWER SYSTEMS

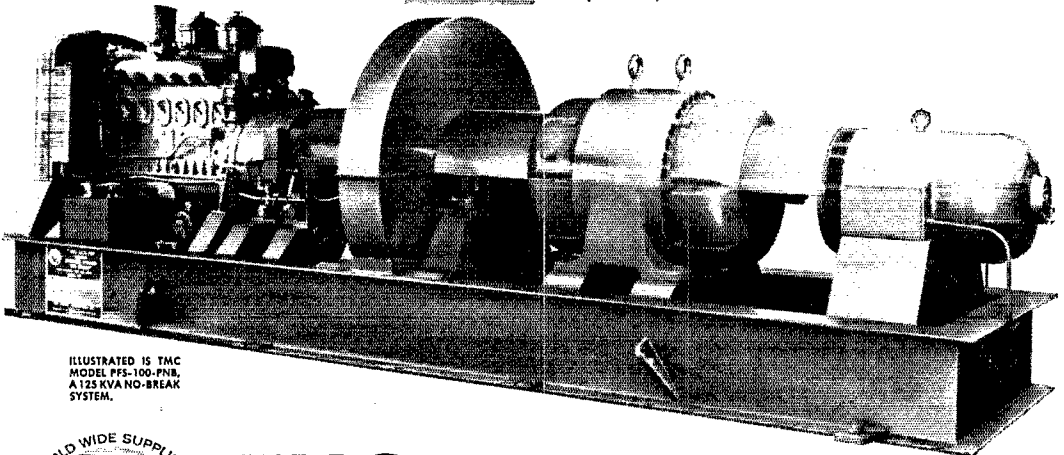


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- Complete isolation between commercial power and load
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MAMARONECK, NEW YORK

THE AMERICAN RADIO RELAY LEAGUE, INC.,

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

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

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

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

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



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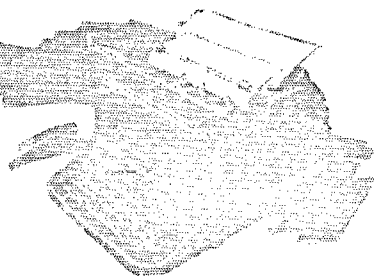
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"It Seems to Us..."



GOLDEN ANNIVERSARY OF LICENSING

THE early development of wireless progressed unfettered by any form of regulation; initially, there was no U. S. law. Anyone who could acquire sufficient knowledge and gear to set up a station was "on the air." There was no examination and no license. There were no assigned calls; as an amateur, you picked your own, often your initials. You picked your wavelength (or more often, the equipment you had chose it for you). If this happened to be close to a wave in use by a government or commercial station — and with the extremely broad signals of that day this occurred more often than not — he simply had to shut down until you decided to QRT! With no law, everyone had equal rights to the ether.

A series of Congressional hearings on interference and other wireless problems commenced in 1910. Many government and commercial interests wanted to abolish, or at least restrict, activities of amateur stations. Amateur radio was unorganized, but several prominent amateurs appeared before the committees to argue the right of the individual citizen to have access to wireless experimentation. During 1912, no less than thirteen bills were introduced to regulate radio; at least one had for its objective the exclusive government ownership and operation of radio facilities.

Finally, on August 13, 1912, the 62nd U. S. Congress adopted Public Law 264 — more commonly known as the Radio Act of 1912 — the first general domestic regulation of radio communication, and providing for federal licensing. Amateurs appraised the law with mixed feelings — rejoicing that their volunteer representatives had shown sufficient strength in the hearings to prevent total exclusion from wireless activity, but considerably dismayed at their banishment to the "useless" short waves.

— . . . —

On October 13, 1962, at the Hotel Statler in New York City, in conjunction with the Hudson Division Convention, a Golden Anni-

versary Banquet will be held to commemorate the 50-year mark in amateur licensing, and to honor those of today's amateurs who were first licensed in 1912. In response to announcements in *QST* and other publications, more than 50 amateurs have furnished proof of their early license status — either through submission of original documents, or citation of listing in the June, 1913, call book.¹ A special plaque will be awarded to each of these old timers by the sponsoring societies: ARRL, Armed Forces Communications & Electronics Association, Hudson Amateur Radio Council, Institute of Radio Engineers, Quarter Century Wireless Association, Radio Club of America, and Single Sideband Amateur Radio Association. Government and military communications dignitaries will attend to add tribute to the efforts of these pioneering amateurs.

Spark coils, coherers and decoherers, transformer "coffins," cage antennas, induction coils, pump-handle keys, wet-cell batteries — these were some of the marks of the early amateur station. But the most important was the amateur himself — his driving interest in the science of wireless, and his ingenuity in making the whole conglomeration work. Handicapped by lack of published information and the scarcity of wireless components, he somehow forged his way to success, and in doing so first exemplified the traditional amateur experimental spirit. The anniversary celebration is a means of tribute to all amateurs whose pioneer efforts in our early days laid the solid foundations for the later growth and development of the amateur radio service.

QST

¹Lack of uniformity and thoroughness in the early administration of the 1912 law presented problems for the commemoration committee. Certainly many more than 50 or so of today's amateurs were actively transmitting in 1912, but a large portion simply had not gone to the trouble of obtaining a license. The committee has felt that it could not be arbiter of numerous claims of 1912 activity unless they were supported by documentary evidence.

COMING A.R.R.L. CONVENTIONS

October 13 — Hudson Division, New York, N. Y.
October 19-20 — Ontario Province, Toronto.
October 27-28 — Oklahoma State, Oklahoma City, Oklahoma.
January 19-20, 1963 — Southeastern Division, Miami, Florida.
March 15-17, 1963 — Michigan State, Saginaw, Michigan.

HUDSON DIVISION CONVENTION

New York City — October 13

The Hudson Division Convention will be held on Saturday, October 13, in the Statler-Hilton Hotel in New York City. Activities will commence at 9:30 A.M., and will include seminars and discussion sessions on virtually every phase of amateur radio. Among the activities to be subject of special sessions will be s.s.b., v.h.f.-u.h.f., traffic nets and traffic-handling, antenna theory and design, administration of FCC examinations by personnel of the New York District Engineer's Office, new equipment developments and special sessions for the YL and XYL. As part of the convention, an initiation will take place in the Royal Order of the Wouff Hong.

During the day, exhibitions of new equipment and developments will take place under the sponsorship of leading manufacturers and distributors of amateur and other electronic equipment in the newly-decorated and air-conditioned exhibit room of the hotel.

In the evening, a banquet is being held to honor holders of 1912 licenses. The major speaker will be Herbert Hoover jr., W6ZH, newly elected president of the American Radio Relay League. For more information, see page 9, this issue.

Tickets for both the day-time sessions and the banquet are available through distributors of amateur equipment in the New York area, or by mail from the Hudson Amateur Radio Council, P.O. Box 36, Huntington, Long Island, N. Y. Admission is \$11.00 in advance or \$12.00 at the door for the full day and evening, including

banquet. Tickets will be available at the door at \$2.00 for the day's activities only.

ONTARIO PROVINCE CONVENTION

Toronto, Ontario, Canada — October 19-20

The Radio Society of Ontario, Inc., is host to the Ontario Province Convention, Friday and Saturday, October 19-20, at the King Edward Sheraton Hotel in Toronto.

A full slate of technical subjects and speakers has been arranged along with transmitter hunts, tours, luncheons, and other functions.

League officials expected in attendance will be Noel Eaton, VE3CJ, division director; John Huntoon, W1LVQ, League secretary; and Art Meen, VE3RX, the new associate counsel for Canada.

Registration including the dinner, is \$5.00 per person before October 12, and \$6.00 thereafter.

Requests for additional information, or pre-registration should be sent to W. F. Chant, VE3CO, 38 Grenview N., Toronto, Ontario, Canada.

Talk-in frequencies will be 3.770 and 144.14 Mc.

OKLAHOMA STATE CONVENTION

Kingston — October 27-28

The third annual Oklahoma State ARRL Convention will be held at Lake Texoma Lodge, near Kingston, on Saturday and Sunday, October 27 and 28.

There will be transmitter hunts on land and water, group meetings, and various exhibits on Saturday. On Sunday, there will be group meetings, an ARRL business meeting, and "TELSTAR Communications" by S. W. Bell Tel. Co. Adjournment will be at noon.

Various types of recreation are available; there is to be a dance open to the public on Saturday night. Individuals planning to attend must make their own reservations; cottages with cooking facilities are available.

Registration begins at 8:00 A.M. Saturday; pre-registration is \$3.00, unlicensed guests under 16 will be admitted free of charge. For further information write to the Oklahoma State Amateur Radio Convention, P.O. Box 7169, Oklahoma City 12, Okla. Pre-registration ends midnight, October 15.



California — The Greater Bay Area Hamfest will be held October 7, at the Hilton Inn at the San Francisco International Airport. Facilities include pools, play area, and parking for over 600 cars. Activities include hidden transmitter hunts on 75 and 6 meters, mobile judging, swap tables, equipment displays, and a tour of United Air Lines for the XYLs. Registration fee of \$6.50 includes a full-course dinner. Pre-registrations must be postmarked by midnight, September 30. Send money to Greater Bay Area Hamfest, P.O. Box 113, Hayward, Calif.

Connecticut — The annual Tri-City Radio Club hamfest will be held on Saturday, October 20, at the Crocker House, State Street, New London. Registration and dinner, \$5.50. Attendance by reservation only, limited to 250. Contact General Chairman Robert Chapman, W1QV,

c/o Crocker House, New London, Conn.

Indiana — The Hoosier Hills Ham Club will hold a hamfest at Spring Mill State Park on Sunday, October 14. The park is on highway 60 east of Mitehe. Swap shop. Contact the Hoosier Hills Ham Club, Inc., P. O. Box 481, Bedford, Indiana, for further info.

Ohio — The Cleveland Amateurradio Convention is sponsoring the Mid-America Radio Convention on October 12 and 13, at the Sheraton-Cleveland Hotel. Registration begins at 1900 on the 12th, and the convention will wind up with the grand banquet at 1900 on the 13th. S.s.b. dinner at 1900 on the 12th, and a YL luncheon and fashion show at noon on the 13th. Technical forums, DX meeting, Q.C.W.A. meeting, ARRL forum, and various entertainment. C.

(Continued on page 172)

The perfectionist's dissatisfaction with conventional v.f.o. control is often expressed by the requests that we receive for information on heterodyne exciters. The synthesizer system described here carries the heterodyne-exciter idea one step further by crystal-controlling all frequency-generating circuits.

The Ultimate Exciter

Continuous Coverage with Crystal Control

BY CLIFFORD A. HARVEY,* WIRF

A YEAR or two ago I built a frequency synthesizer that has occasioned interesting comment whenever I have described it on the air, so I thought a short article about it might make a few minutes of interesting reading. Basically, a frequency synthesizer can be defined as a device that makes new frequencies out of old ones, by combination. Frequency combination, or mixing, has been in use since the first days of the superheterodyne receiver, and more recently has been popular in transmitters, since s.s.b. techniques have made it necessary to obtain high frequencies from low ones by some means other than multiplying.

Free-running oscillators are in common use today, particularly in amateur operation, as a means of frequency determination and, in recent years, developments in tubes, insulating materials and circuitry have tremendously improved their frequency stability. However, all free-running oscillators are still subject to various forms of instability — short-term because of initial heating of the circuit components; medium-

term instability as a result of atmospheric changes in humidity, temperature and pressure; and long-term instability caused by aging of components. There is nothing quite like a crystal-controlled oscillator for stability. Almost everyone who runs a self-excited v.f.o. has a crystal-controlled standard at 100 kc. or so for reference, so that adjustments can be made to the v.f.o. to correct for the various instabilities outlined above.

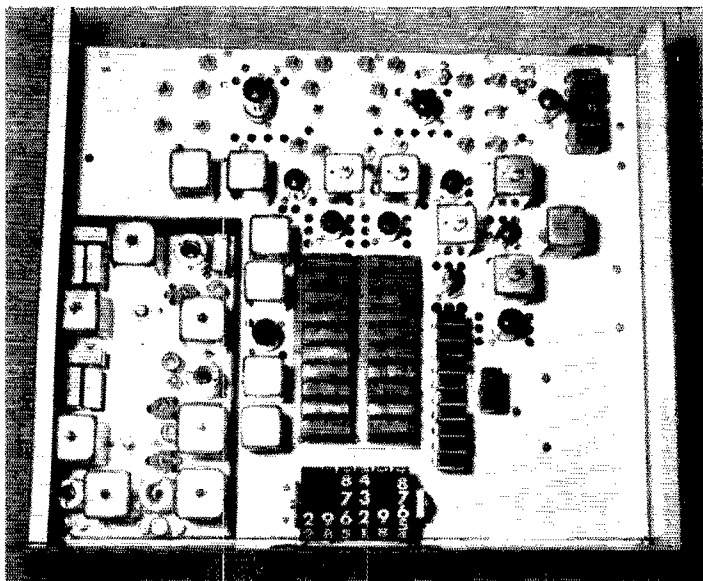
The obvious conclusion is: how nice it would be to have a crystal-controlled exciter capable of operation on any desired frequency in any of the amateur bands. This can be done if we start with several crystal-controlled oscillators and beat them together to come out with amateur frequencies. As a special added attraction, drums can be linked to the various crystal-switch shafts to give direct digital readout of the output frequency!

Basic Principle

Frequency synthesizers first appeared commercially about 10 years or so ago. They usually

* Box 88, Sturbridge, Mass.

Plan view of the frequency synthesizer.



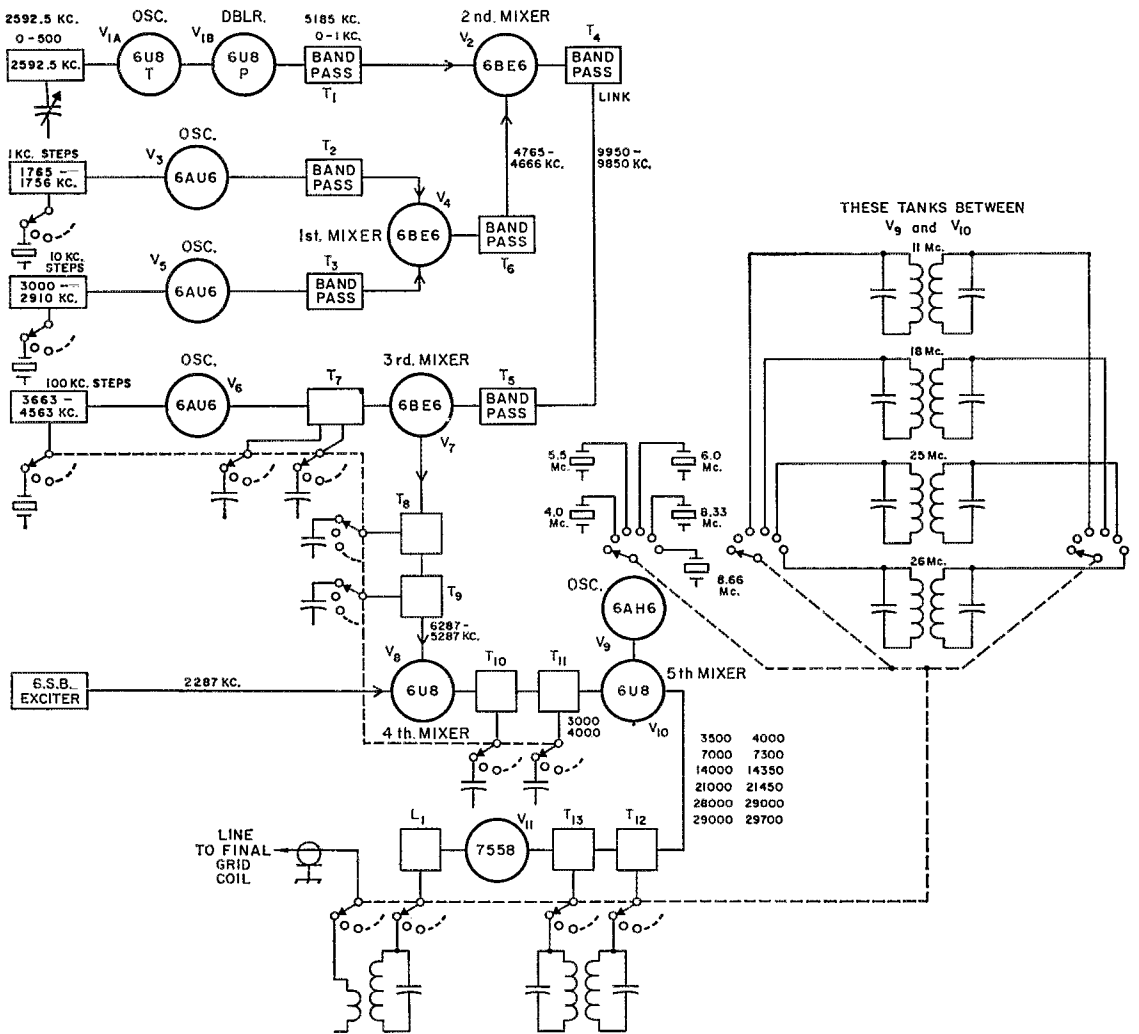


Fig. 1—Block diagram of W1RF's continuous-coverage crystal-controlled exciter.

take the form of a single very-stable low-frequency crystal oscillator, temperature-controlled and stabilized to very close limits, whose frequency is multiplied, divided, and the products combined, to result in stable output frequencies throughout any band of frequencies of interest. This type of synthesizer has one inherent deficiency that is totally intolerable to a member of the s.s.b. fraternity—the inability to divide integral kilocycles. If everyone operated on an integral kilocycle this would be all right. However, we don't operate that way and, since zero-beating the other fellow's carrier often makes the difference today between a QSO or no QSO, one of the crystal oscillators must be "rubbered" over a 1-kc. range. The exciter to be described has such a feature; it is possible to "dial up" the desired frequency by turning the crystal-selecting knobs, and finally to "zero in" on the other

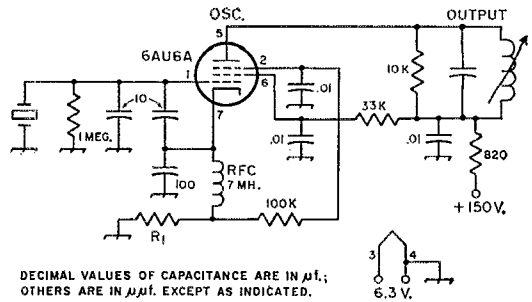
fellow by adjusting a knob driving a variable capacitor tuning over a 1000-cycle range.

Circuit System

I should say right here that this is not a construction article. The unit is not a device that can be built on the kitchen table in a few nights with hand tools. The fact that this exciter has 43 crystals, 15 tubes and some 54 tuned circuits, in addition to the power supply, will be sufficient to dampen a lot of enthusiasm for the idea. However, there has been evidence of general interest in reading about it, and I am sure there are still a few hams who like to design and construct who may get a few ideas from what follows.

This synthesizer can best be understood by referring to the block diagram, Fig. 1. This shows the various oscillators involved and their frequencies, and indicates how their outputs are

Fig. 2—Basic circuit used in all oscillators except the variable 1-kc. interpolator. Resistances are in ohms and resistors are ½ watt. Capacitors of less than 0.01 $\mu\text{f.}$ are mica or stable ceramic; others are disk ceramic. R_1 is 3900 ohms for 1.7 and 2.9 Mc., and 1000 ohms for 3.6 Mc. Output circuit is tuned to desired frequency by adjustment of the inductor slug.



combined. Fig. 2 shows the basic crystal-oscillator circuit that is used for all oscillators except the one in the s.s.b. exciter, and the one whose frequency is varied. The circuit of the latter is shown in Fig. 3. The sideband exciter is the one designed by W6TEU and is described in *QST* for June, 1958¹ and in the ARRL s.s.b. manual. With the particular surplus filter crystals I used, the s.s.b. output frequency turns out to be 2287 kc.

With reference to Fig. 1, V_3 is a crystal-controlled oscillator to which any one of ten crystals, spaced at intervals of 1 kc. in the range 1756 through 1765 kc., can be connected. V_5 is a similar oscillator to which a second group of ten crystals with spacings of 10 kc. in the range 2910 through 3000 kc. can be connected. The outputs of these two oscillators are mixed in the first mixer, V_4 , in the plate circuit of which is T_6 . This is a double-tuned overcoupled transformer passing a band of frequencies, the lowest of which is 1756 plus 2910, or 4666 kc., and the highest of which is 1765 plus 3000, or 4765 kc.

The triode half of V_1 (V_{1A}) is connected as in Fig. 3, and is crystal-controlled on 2592.5 kc. with C_1 at minimum capacitance. With C_1 at or near maximum, the frequency is reduced to 2592.0 kc. This frequency is doubled in the pentode half of V_1 (V_{1B}) so that varying C_1 over somewhat less than its full range results in a frequency change of from 5185 to 5184 kc. A double-tuned transformer, T_1 , in the plate of V_{1B} attenuates all frequencies outside this range. The second mixer, V_2 , mixes this frequency with the output from T_6 .

In the plate of V_2 is a single circuit, T_4 , tuned to accept any frequency between 9850 (5184 plus 4666) and 9950 (5185 plus 4765). In my chassis, T_4 is link-coupled to the single coil of T_5 for convenience only; these could just as well have been one double-tuned transformer.

V_6 is another crystal oscillator, and to this is connected the third series of ten crystals, this time with 100-kc. separation, from 3663 through 4563 kc. The reason for the odd frequencies will be apparent in a moment.

T_7 is another overcoupled double-tuned trans-

former but, because this pass band must be 900 kc. wide, trimming capacitors are switched in on both primary and secondary by switch wafers on the same switch shaft that selects the desired crystal. The outputs of T_7 and T_5 are now mixed in V_7 , and T_8 in its plate circuit passes again a band of frequencies, the lowest of which is 5287 (9850 minus 4563), and the highest 6287 (9950 minus 3663). Note that the difference frequencies are used here.

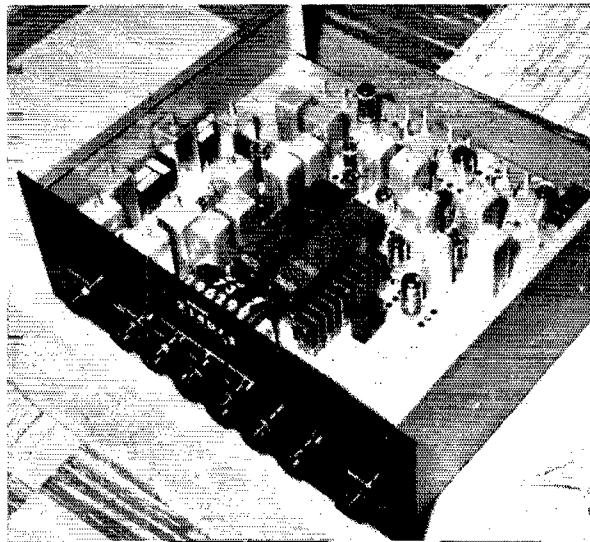
Because the band is 1000-kc. wide at this point, T_8 and T_9 are also overcoupled and trimmed every 100 kc. by two other wafers on the 100-kc.-crystal switch shaft. Again, in my chassis, T_8 and T_9 are physically-separate single coils in two shield cans for convenience and to shorten the distance to the switch wafers. They are top-coupled by a small capacitance, and they could have been one double-tuned transformer.

The time has now arrived to come out with the final desired frequency band. This is done by mixing, in V_8 , any frequency in the band of 5287–6287 kc. with the s.s.b. output of 2287 kc. and — presto! — we have 3000 through 4000 kc.

The circuits of T_{10} and T_{11} are again individual tank circuits, overcoupled by a small top-coupling capacitance, and trimmed every 100 kc. by capacitors on two more switch wafers on the 100-kc. switch shaft. As indicated in the block diagram, this switch assembly has seven wafers including the crystal wafer.

Fig. 4 shows a sketch of the typical arrangement used for T_1 , T_3 , T_6 and T_7 .

From here on, standard s.s.b. mixing techniques apply and, indeed, I was guided by Bigler's diagram in the above-mentioned article. The



Drum dials operated by the crystal switches give a direct reading of frequency in the panel opening.

¹ Bigler, "A Sideband Package," *QST*, June, 1958.

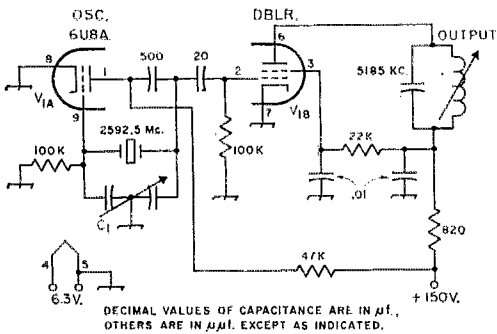


Fig. 3—Circuit of the interpolator which is variable over a 1-ke. range. The pentode section of the 6U8 is used as a doubler. Resistances are in ohms, and resistors are 1/2 watt. Fixed capacitors of less than 0.01 μ f. are mica or stable ceramic; others are disk ceramic. C₁ is a dual variable capacitor of approximately 30 μ mfd. per section. The output-circuit components are selected to tune to the indicated frequency.

frequency in the 3000-4000-ke. range is always added to a new crystal frequency: the fundamental of 4.0 Mc. for the 7.0-Mc. band, the second harmonic of 5.5 Mc. for the 14.0-Mc. band, and the third harmonics of 6.0, 8.33 and 8.66 Mc. for the 21-, 28- and 29-Mc. bands, respectively. Another front panel knob, labeled "1000," selects these latter crystals, the multiplying tank, when required, and the proper plate tanks for the mixer, V₁₆, and the grid and plate of the linear amplifier, V₁₁, as well as the output lead. There are seven wafers on this shaft also. T₁₂ and T₁₃ are individually-tuned coils, two per band, over-coupled and loaded where necessary to achieve reasonably even output throughout the various bands. L₁ (one per band) is coupled over a 10-foot length of RG-58/U to a similar coil (also one per band) in the main transmitter, the two being again broad-banded.

Undesired Responses

One of the problems associated with any frequency-mixing scheme is the generation of unwanted frequencies. Because of the many oscillators and mixers in this exciter, I have used double-tuned circuits to couple from one section to another to avoid trouble. That is the main

reason for the multiplicity of the LC combinations indicated on the block diagram.

Although B3 crystals sounds like an expensive proposition, they are surplus for the most part, ground and etched to the final frequencies by methods adequately described in QST articles. I tried to hold each individual crystal to within 50 cycles of its desired frequency in its own oscillator and, with care, this was not too difficult to do. As a standard I used a 100-ke. bar zeroed on WWV, driving a 10-ke. multivibrator, with an audio oscillator to interpolate between the 10-ke. harmonics.

Obviously, there is a wide variety of frequencies that could be used to produce the 3000- to 4000-ke. range; it is important to choose ones whose harmonics will not result in spurious beats. No trouble has been experienced in this connection, although I did have to eliminate stray coupling between the 100-ke. crystals and T₁₀ and T₁₁ to avoid spurious frequencies caused by the 100-ke. series directly.

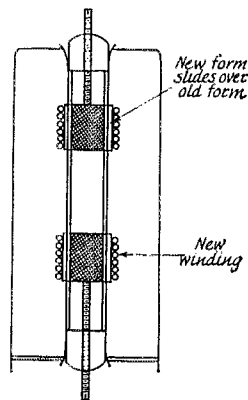
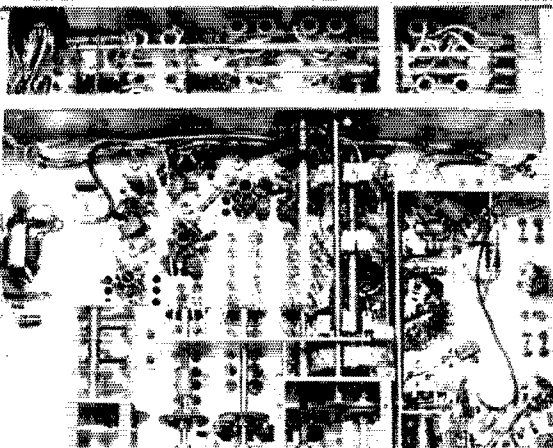


Fig. 4—Method of using old i. f. transformers for band-pass couplers.

With five knobs to select tenths, units, tens, hundreds and thousands of kilocycles, it was easy to arrange drums actuated by these knobs through dial cord for direct reading of the output frequency. This feature alone is most useful, since the reading can be relied upon over a long period of time. With each crystal accurate initially to 50 cycles, if all crystals used for a specific frequency happened to be off in the same direction, the output frequency could be as much as 300 or so cycles off the indicated frequency, so the last digit is not accurate, and is used mainly to "zero in" on another station. The other digits are accurate, however, and it is interesting to tune the receiver to some ham-band harmonic of the 10-ke. multivibrator, identify it, set the

(Continued on page 158)



Bottom view of the continuously variable crystal-controlled exciter.

Announcing 1962 ARRL Simulated Emergency Test

October 6-7, 1962

THERE have been some changes made. Both the American National Red Cross and the Office of Civil Defense are in the throes of vital reorganization. In fact, the throes have been so violent that we had a most difficult time locating our erstwhile contacts in Red Cross Telecommunications and OCD-RACES. Here, in brief, is what we found out.

The American National Red Cross Office of Telecommunications has vacated its offices in Richmond and moved to Washington, D. C., and is now called the Office of Communications and Reporting. Allen Richter, W4PHL, is no longer with ANRC, and our contact now is another old friend, Bob Myers, K4HAG, who is the Amateur Radio Coordinator for Disaster Communications, American National Red Cross, National Headquarters, Office of Communications and Reporting, Washington 6, D. C. There has been a cut-back in Red Cross's private wire communications system, the whole thing now being taken over by A T & T and Western Union. Contrary to what we had been led to expect, this means more, not less, dependence on amateur radio. In this year's SET, the only station representing ANRC will be W4PAY, on the National Calling and Emergency Frequencies, and that's about it. Other stations previously active in the SET are now nearly inactive, and although they still exist, they may or may not obtain enough assistance from local amateurs to be active. We are going to have to depend largely on regular amateur routing all the way from Red Cross chapters to Washington.

Civil Defense is in somewhat the same situation. OCD Operational Headquarters has been moved to Washington, D. C. The Warning & Communications Division is still under A. P. Miller, with a reduced staff, and at the time of this writing there is no one coordinating RACES at federal level, although they are attempting to obtain someone to take on this responsibility. Leo, W8KA, who centralized RACES at Battle Creek, is now with another government agency and no longer connected with OCD, although he is still in contact until someone can be obtained. Meanwhile, regional OCD offices, themselves in a state of reorganizational flux, are bearing heavier responsibility for approval and implementation of RACES plans.

But, back to the SET. Despite the upheavals in Red Cross and federal c.d. circles, the SET will go on as usual. The above dates are optional, but we like to have as many AREC groups active as possible on the designated week end (it makes for a better public demonstration that way). Your individual participation, whether or not you are active or signed up in an AREC group, can take one or more of several different forms.

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

(1) Contact your local EC, if any, and offer your services in the SET. He will probably welcome your services, and maybe sign you up in the AREC. At the very least, he will be jogged to do something.

(2) Take part in all planning activities, whether or not they are a little inconvenient. Emergencies don't always lend time for specific planning, and this SET may be no exception; but some emergencies are predictable and can receive the benefit of at least limited planning.

(3) During the test, follow your EC's instructions. Don't foul up the procedure by being independent. Most ECs hold critiques after the SET, during which you will have ample opportunity to voice your viewpoints.

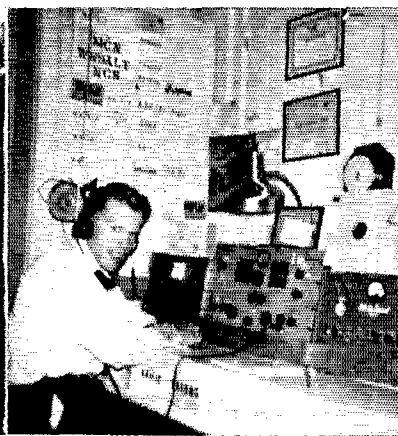
(4) Some ECs need a little push, but *all* of them need support. Talk things up at your club meetings and in local v.h.f. ragchews, and see that your EC has every reason to put on a good SET as a part of the national picture.

(5) Some of you will find yourselves in an area which is not particularly well organized AREC-wise. This need not deter you from participating. Monitor the National Calling and Emergency Frequencies (see box) from time to time, or on a regular schedule, to be ready to assist in the handling of any Red Cross, civil defense or ARRL traffic that might be flying around. Report into your local or section net, too, to offer your services.

This year there will be fewer Red Cross and c.d. stations available to take care of their own traffic, and the Red Cross collecting stations probably will not be active, except for W4PAY. Therefore, more traffic hounds will be required across the country to relay the traffic on the NCE Frequencies. More reliance will be placed on the individual amateur and amateur net than for many years. You can help us to meet this challenge by camping on the NCEFs at every opportunity and relaying traffic whenever you can. Don't forget, the NCEFs are for *calling and making contact only!* Once contact is made, move to another frequency to conduct your business so the NCEF will be free for other calls.

Circle the dates October 6 & 7 on your calendar and make your plans to be with us. This is more important than the sweepstakes, the World Series, or your favorite football game. — W1NJAL.

Strays



A famous moment in history recreated. K2ZSA held an antenna-raising party, furnishing the usual inducement plus clams and a barbecue. In the photo above left are WA2LEC, W2GKX, WB2ACN, and WA2FEK. The mast eventually reached the vertical, and was crowned with a 220-Mc. collinear . . . Above center, W1OGK (on the ladder) and K1TGR, "above and beyond the call of duty," repair the beams at K1EEG on a rainy day in June . . . At the right is WN9ALT, who tells us he is one of the great great grandsons of Samuel F. B. Morse. He says that his Novice ticket expired in August but that he will be back as a General just as soon as he licks that code problem!



Above left is W3GEG, a former ARRL Atlantic Division director, who has just returned from several years of special radio engineering work overseas. Clyde is not in the best of health, but operates as much as his strength will permit. He'd like to hear from old friends. Clyde Heck, W3GEG, 75 Edgewood Rd., Greenville, Pa. . . . Here's an all-ham family. L. to r.—VE3CEC, VE3CFN, VE3CKH, and VE3FEB. This reproduction doesn't do justice to the sparkle in their eyes! . . . K6DIB's daughter knitted these for him several years ago, and they're still going strong. Bet K6DIB keeps his feet up on the desk all day long when he's wearing these!



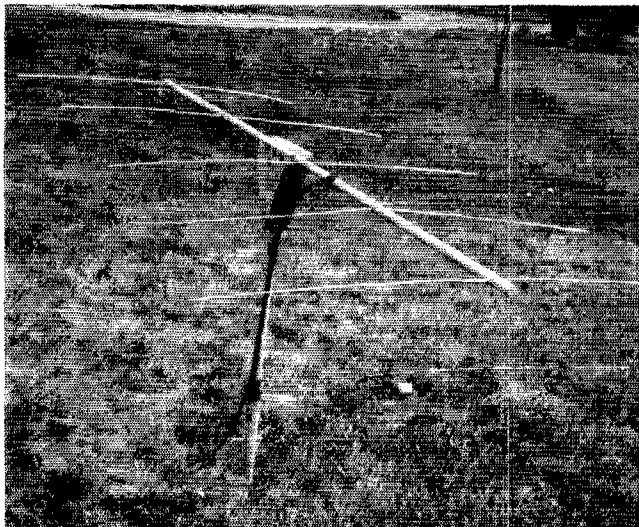
Recently these League and Navy officials got together in Washington to exchange ideas and viewpoints. L. to r.: LCDR Charles Winnette, USNR, recently designated Head, Naval Reserve and Amateur Radio Branch, Office of Naval Communications; John Huntoon, W1LVQ, General Manager, ARRL; Robert M. Booth, jr., W3PS, General Counsel, ARRL; Herbert Hoover, jr., W6ZH, President, ARRL; and Captain L. S. Schulz, USN, Deputy Director, Naval Communications. Since this meeting, Capt. Schulz has become a rear admiral and Deputy Director of the National Security Agency.

• *Beginner and Novice*

A Five-Element

Two-Meter Beam for \$1.50

~~\$1.50~~
\$1.49



This photograph shows the completed beam. Note the construction of the gusset plates that tie the complete assembly together.

An Easy-To-Build Antenna for the Newcomer

BY LEWIS G. McCOY* W1ICP

YES, the title of the article is correct. Here is a five-element beam that can be built for about \$1.50, using readily available materials. However, to be perfectly honest, the cost is slightly greater when you add a feed line and a supporting mast. In addition to being inexpensive, the antenna is portable in the sense that it is easy to dismantle for use for mountain-top excursions for portable work.

The beam consists of a reflector, driven element, and three directors. This will provide 8 to 10 decibels gain over a dipole — a considerable increase in radiated signal strength at a very low cost. For the benefit of the Novice or Technician who is new to ham radio, let's explain antenna gain before describing the construction of the antenna.

Antenna Gain and the Decibel

Contrary to what many amateurs think, an antenna cannot act as an amplifier. In other words, if you feed a certain amount of power into an antenna you cannot expect to get more power out of the antenna than goes in. However,

* Technical Assistant, QST.

it is possible to construct an antenna so that a large portion of the energy is concentrated in one direction.

When we refer to antenna gain, it is customary to state the gain in decibels, abbreviated "db." The decibel is a unit for measuring power ratios and Fig. 1 is a chart showing the relation between

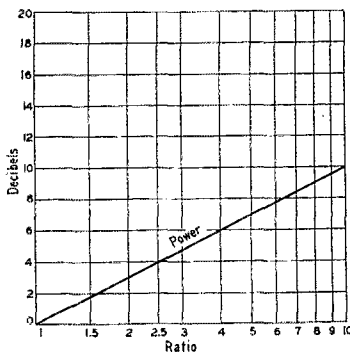


Fig. 1—Chart showing the relationship between decibels and power.

(A)

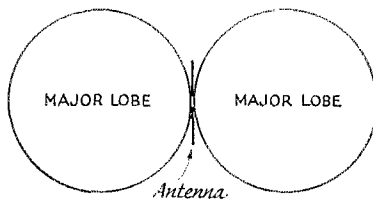
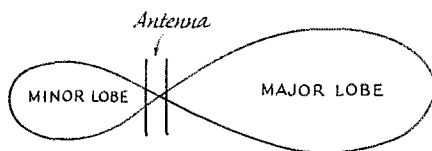


Fig. 2—At A, the pattern showing the major radiation lobes for a dipole antenna. At B, the effect of adding a parasitic element to the dipole is shown. These patterns are not true radiation patterns for such antennas but are shown to give the reader a general idea of the radiation characteristics.

(B)



power and decibels. For example, if you have a gain of 3 db., this translates to a power ratio of 2, or twice the power. A gain of 10 db. means a power ratio of 10.

It is customary to base gain figures on a comparison with a reference antenna. A half-wave dipole is used in ham radio as the reference antenna. In addition, it must always be assumed that the gain figures are based on the reference dipole being in the same location and height as the antenna being discussed.

As we said before, getting gain from an antenna simply means that we change the antenna physically so that there is more radiation in certain directions than in others. Let's assume we have a dipole on 2 meters. The general pattern for such an antenna is shown in Fig. 2A. Note that there are two major lobes broadside to the antenna axis and very little radiation from the ends of the antenna. Such an antenna could be called bidirectional because it radiates equally well in two directions. Now suppose we place another wire, slightly longer than the dipole, in the same plane as the antenna but spaced a certain distance from the dipole. This second, longer wire we'll call a "reflector." If we feed power to the dipole (we'll call this the "driven element"), the reflector will obtain power or be excited by the driven element. By using the proper spacing between the two elements we can cause the reflector to reduce the radiation in one direction but add to it in the other. Our antenna pattern would then look something like Fig. 2B. All we've done is shape the pattern by adding the reflector.

If we rotate this antenna we can beam the signal in whatever direction we choose. This gives us a stronger signal in the chosen direction and, just as important, the received signals will be stronger with the beam and we'll hear more.

The gain can be increased even more by putting additional elements in front of the driven element. These are called "directors." In the beam described here three directors are used.

Another important consideration in using a beam antenna is that it will provide a certain amount of signal rejection off the back of the antenna. The "front-to-back ratio" depends on

the spacing of the elements, particularly on the reflector spacing. A beam such as the one described in this article will provide more than 20 db. front-to-back ratio. This is particularly useful in rejecting unwanted signals when receiving. It is suggested that the newcomer interested in more information on beam antennas study the chapters on the subject in the ARRL *Antenna Book*.¹

Making the Beam

Fig. 3 shows a sketch of the beam. The boom consists of two 36-inch lengths of $\frac{3}{4}$ -inch diameter wooden dowel rod, available at any lumberyard for 25 cents a length. Two wooden gusset plates are used to join the two rods together, making a total boom length of 72 inches. A third piece of dowel is used for the mast base.

The beam elements are made from aluminum "picket wire." This is $\frac{1}{8}$ -inch-diameter hardened wire, available from hardware or garden-supply stores, and it comes in 25-foot lengths for 75 cents. This particular type of aluminum wire is quite strong, and while it is easy to bend it will hold its shape under most conditions.

The first step in construction is to make the elements. The wire should be cut to the dimensions shown in Fig. 3. A little time and patience with the elements will result in perfectly straight wires. Placing the wire between two flat boards and rolling the top board back and forth several

¹ The ARRL *Antenna Book*, ninth edition.

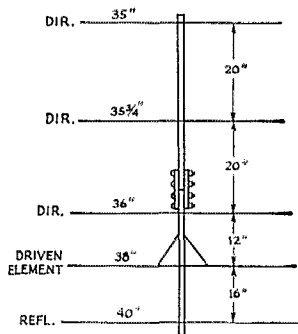


Fig. 3—Dimension details for the five-element beam.

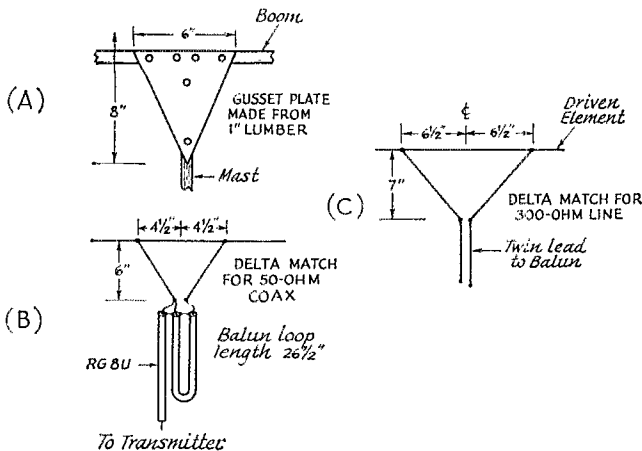


Fig. 4—Details for making the gusset plates are shown at A. B shows the delta and balun dimensions for coax feed. At C, the delta dimensions for 300-ohm feed are shown.

times will take most of the curl out, resulting in a straight element.

When the elements are completed, you are ready to mount them in the boom. All the holes for the elements are made with a $\frac{1}{8}$ -inch-diameter drill. Drill the reflector hole first and slide the element into the hole. In order to drill the other holes so that all the elements remain in line, you'll need a guide. The simplest method is to place the dowel on a table with the element extending over the end of the table. Place the dowel between two boards and line up the element so that it is straight up and down. Clamp or hold the dowel in this position and drill the remaining holes. Follow the same procedure with the other dowel rod.

The two boom rods and the mast section are secured by the gusset plates. Six $\frac{1}{4}$ -inch-diameter bolts, $2\frac{1}{2}$ inches long, are used to tie the assembly together. This is shown in Fig. 4 at A.

Feeding the Beam

The cheapest method of feeding the beam is with 300-ohm u.h.f. Twin-Lead. However, some hams prefer coaxial line and we'll show both methods. One important point, though: if you plan on having a long run of feed line, say over 50 feet, coax should not be used. The losses in coax are considerably higher than with Twin-Lead. In any event, if you choose coax, use the heavier RG-8/U or RG-11/U rather than the RG-58 or RG-59. The losses are considerably less with the larger types.

In both types of feed we use a delta match on the driven element. The delta matching system consists of fanning out the feeders where they are attached to the driven element. Fig. 4C shows the delta dimensions for 300-ohm feed. The wires for the delta can actually be the wires in the 300-ohm line. All you need do is skin back the wires of the Twin-Lead from the polyethylene insulation for a distance of 12 inches. Tape the Twin-Lead to the boom 7 inches from the driven element and then fan out the wires so that each wire can be attached to the element $6\frac{1}{2}$ inches each side of center. Metal clips can be made up

using a nut and screw to hold the delta wires to the element. Trim off any excess wire so that the delta wires are straight.

One more item, a balun, is required to complete the feed system. Nearly all transmitters these days use coax output, and the simplest method of getting from unbalanced to balanced is with a balun. A balun of the type described here permits you to go from balanced to unbalanced feed systems and also provides a 4-to-1 impedance ratio. If made from a length of RG-59/U (73 ohms), it will provide a step-up which is close enough to 300 ohms (Twin-Lead impedance) for our purpose.

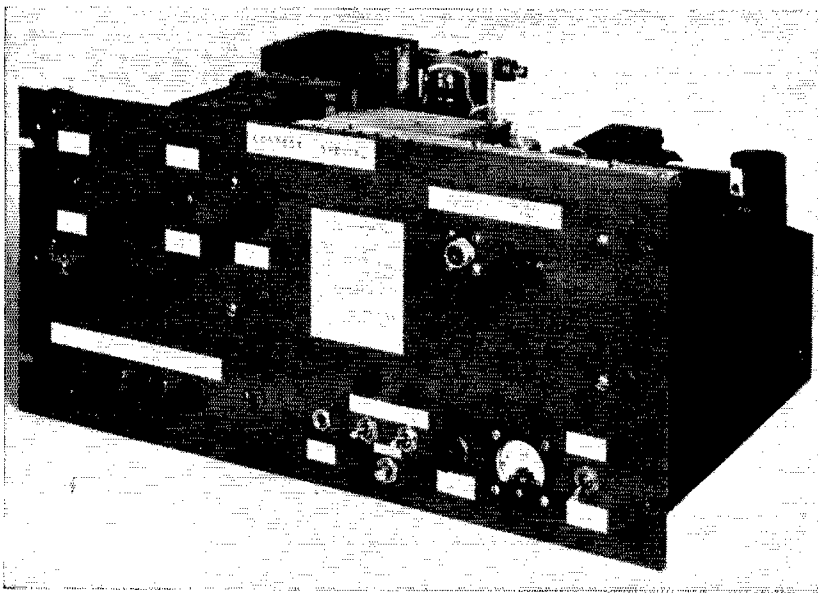
In the event only a short run of feed line is needed to feed the beam, you may want to use coax. In this case the balun would be mounted at the boom immediately at the end of the delta. Fig. 4B shows the delta and balun dimensions for RG-8/U (52-ohm line). The balun dimensions for either the 52-ohm or 73-ohm line are the same. If the balun is to be used at the boom, or for that matter anywhere outside the shack, the ends of the coax should be taped to prevent moisture from getting into the coax.

The wooden mast section can be mounted inside one-inch diameter water pipe or in $\frac{3}{4}$ -inch diameter electrician's thin-wall conduit. If you are in the bucks, you can install a TV rotator; if not, it can be turned by the "armstrong" method. A study of the radio catalogs will show there is a large variety of TV mounting hardware that can be used to install the beam.

For portable use it is just a matter of sliding the elements out of the boom, removing the two outside bolts in the gusset plate, and folding the boom together. This makes a compact package for transporting the beam. QST

**SWITCH
TO SAFETY!**





Front view of the Contest Special 144-Mc. transmitter. All control functions are clearly marked, to assist operators not thoroughly familiar with the equipment.

The V.H.F. Contest Special

We like to think that many readers scan QST articles for ideas that can be applied to the solution to their particular problems, and that a constructional article need not necessarily describe equipment that will be widely duplicated in precise fashion. This is such an idea presentation. Even if you never expect to haul a complete 120-watt 2-meter station out to a mountain top for a week end of v.h.f. contest operating, we think you'll find this design worth studying. The transmitter described has been a principal factor in the success of one of the West's outstanding v.h.f. contest stations.

A 120-Watt 144-Mc. Transmitter, Complete in One Package

BY H. M. MEYER, JR.,* W6GGV

THE grand art of v.h.f. mountain-topping has come a long way from the days of the superregenerative receiver and the modulated oscillator. It is not unusual now for a group of 10 to 20 v.h.f. enthusiasts to assemble a ton or so of gear, plus a 5- to 10-kw. generator, and head for the hills at V.H.F. Party time. Equipment and operating techniques have become quite sophisticated, and a good deal of advance planning is required by any group contemplating a successful expedition.

The Contest Special is a 2-meter transmitter designed and built especially for this work. It has been used on several v.h.f. contest expeditions, and has performed well. It is a complete unit on one chassis, requiring only a power source and antenna to be ready for use. The intent of this article is not to give complete construction

*2435 Parker Court, Mt. View, Calif.

details, but rather to point out those elements that were considered in the design decisions that yielded the finished product.

A great deal of thought went into the basic design, to fit the following requirements, arrived at after participating in several contest expeditions, both alone and with large groups. The transmitter should be in the medium-power class, not greater than 200 watts, operating with good efficiency. If you go to all the trouble of packing yourself and gear to some remote hill, take along something that can be heard over the expected din. Its signal should be well modulated. If you have lots of carrier and the other fellow can't hear what you say, you might better operate c.w. The transmitter should be rugged and reliable: well capable of taking the beating of transport over rough mountain roads, without requiring extensive repairs and adjustment before it can be

put into operation. The package should be one unit, to minimize work at setup time. One man should be able to haul it around. This implies a weight maximum of about 60 to 80 pounds.

The following operating conveniences were deemed desirable: (1) A.m. or c.w. at the flick of a switch. (2) Monitoring of the a.c. line voltage. (3) Spotting switch. (4) Crystal switch. (5) Coaxial antenna relay. (6) Monitoring and control of output power. (7) Single central metering circuit. (8) Reasonable r.f. shielding. (9) Front-panel access to all major controls.

The transmitter is shown in block-diagram form in Fig. 1. Exact duplication is not considered likely, as each builder will think of changes to suit his particular needs. This is not a simple project that can be completed in a few hours; however, the satisfaction derived from the results has been more than worth the considerable time required to complete the unit.

The entire transmitter, with power supplies, modulator and all operating accessories other than microphone, key and antenna, is built on a 13 × 17 × 3-inch chassis, with an 8¾-inch rack panel. Some surplus items were used in the construction, but in each case adequate room was left for replacement by standard commercially available items, in the event of component failure. Minor modifications were made as a result of two expeditions, and I'm sure that others will be made in the future.

R.F. Section

The r.f. portion of the transmitter occupies only the front 3½ inches of the chassis. The low-level portion is mostly below the chassis. The tubes, crystals and 6146 plate circuit are visible at the left side of the top view, as seen from the front. The amplifier occupies the right two-

thirds of the r.f. section, and is enclosed in a shield. The shield in the bottom view encloses the low-level circuitry and the final-amplifier grid circuit. The complete r.f. schematic is given in Fig. 2.

The frequency control section is a bit unusual, in that two crystal oscillators are employed. Originally it was intended to use only FT-243 surplus-type crystals, in the 8-Mc. range. After the transmitter was completed in this form, a separate crystal oscillator and buffer for use with precision crystals in an oven was added for band-edge c.w. work. The 6BH6 oscillator and 6J6 buffer so used can be seen mounted on the back wall of the r.f. shield, in the bottom view. This circuit minimizes crystal current, and reflects the necessary capacitance for accurate determination of the crystal frequency. The crystal oven circuit provides an operating convenience as a by-product: an accurate reference point for calibration of the receiver.

The normal crystal oscillator, a 6CL6, also functions as a tripler to 24 Mc., driving a 5763 tripler to 72 Mc. This drives a 6146 doubler, which drives the final 5894 amplifier. Drive levels to the final amplifier and doubler are controlled by varying the screen voltage on the 6146 and 5763, respectively. Power input to the final amplifier is also controlled by a screen potentiometer.

A keying relay breaks the screen voltage to both the 6146 and 5894 for c.w. operation. When the contacts open the screen is allowed to go negative, as the screen potentiometers are returned to minus 12 volts d.c. Several schemes were tried using an a.c. keying relay, but it was finally decided to use a d.c. relay and incorporate a small bridge-rectifier circuit to provide the relay voltage. The oscillator and 5763 run continuously in the c.w. transmitting position, but with the driver

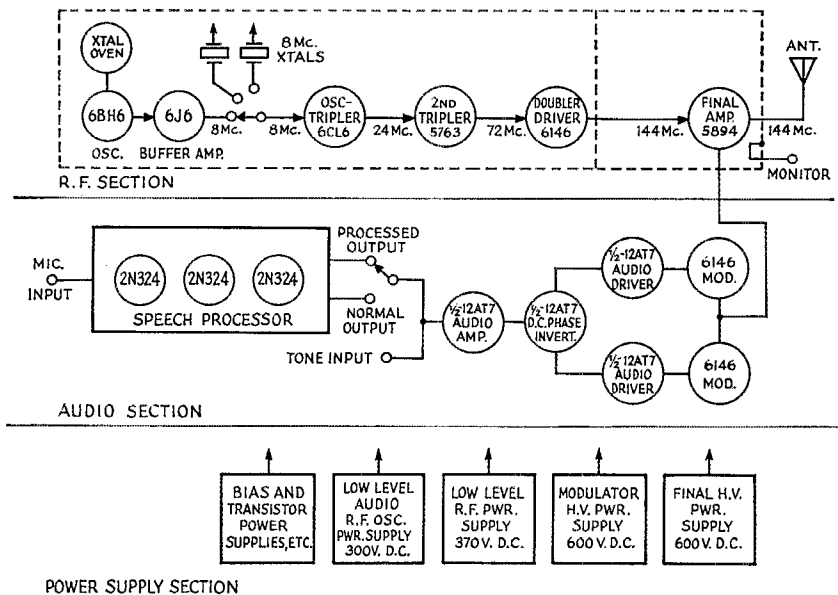


Fig. 1—Block diagram of the 144-Mc. Contest Special. Dashed lines indicate shielding of the r.f. portion of the transmitter.

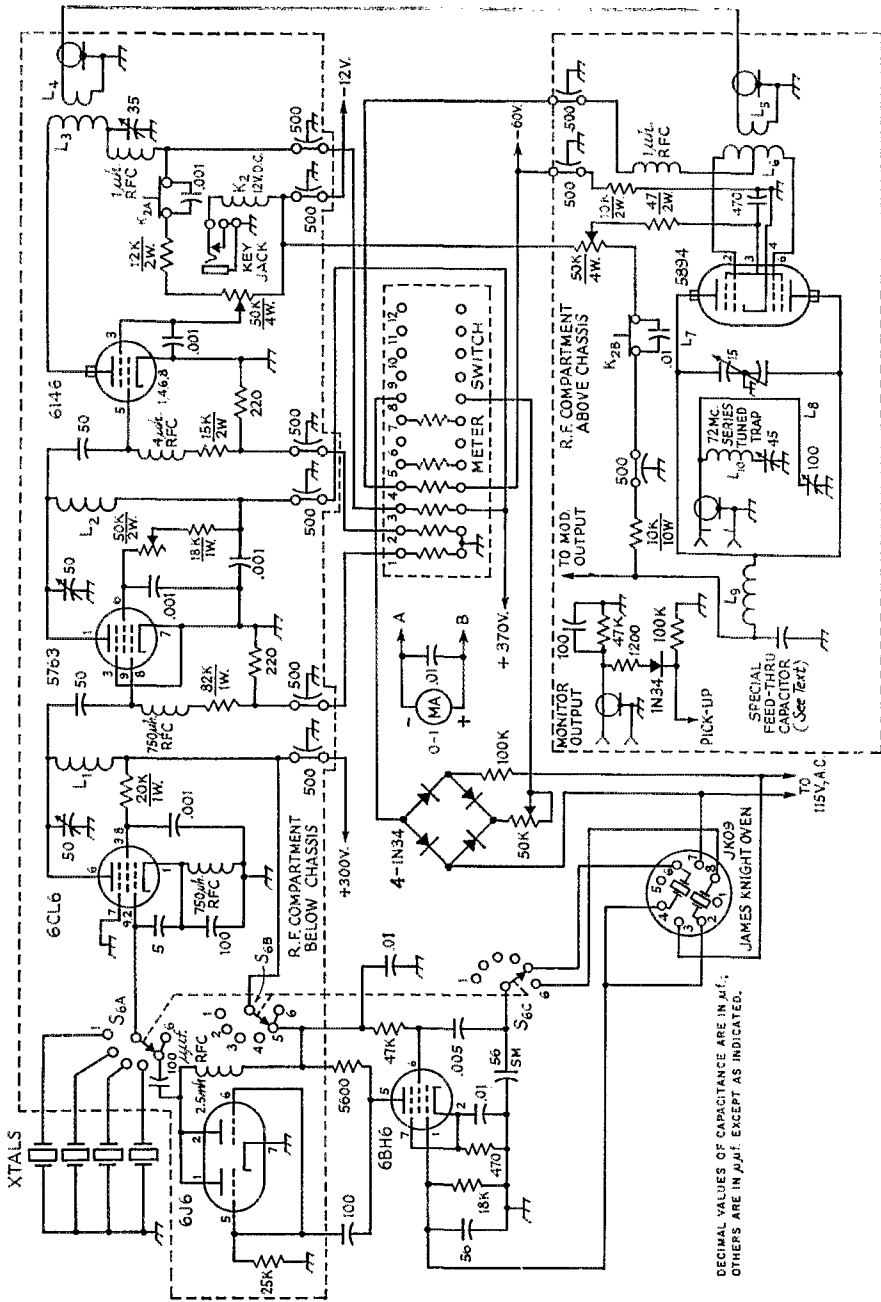
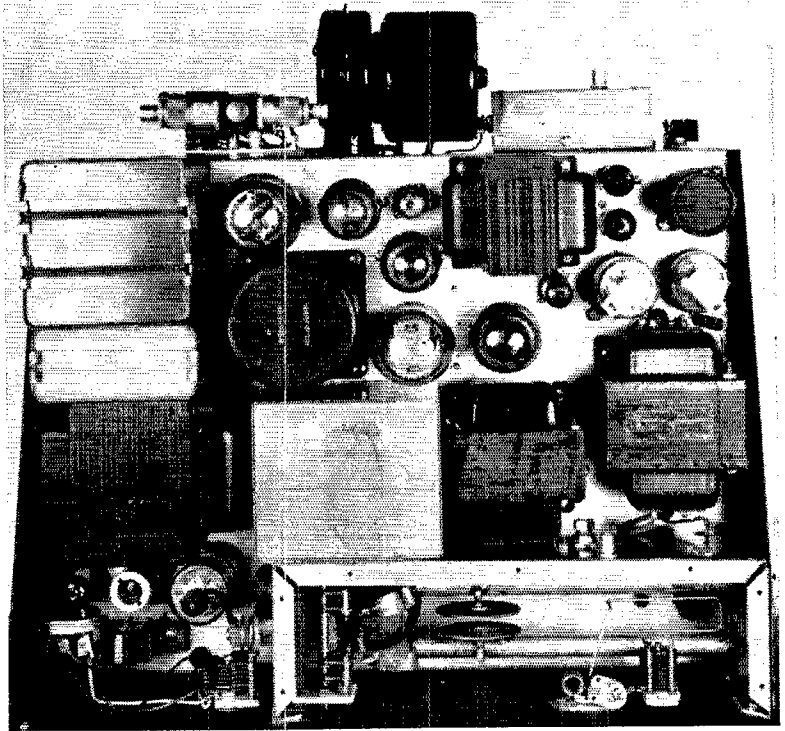


Fig. 2.—Schematic diagram of the r.f. portion of the Contest Special. Insofar as possible, parts information has been included in the drawing. Resistors are $\frac{1}{2}$ watt unless specified. SM indicates silver mica.

- L₁—8 turns No. 20, $\frac{3}{4}$ -inch diam., $\frac{1}{2}$ -inch long.
- L₂—3 turns No. 18, $\frac{1}{2}$ -inch diam., $\frac{3}{8}$ -inch long.
- L₃—2 $\frac{1}{2}$ turns No. 12, $\frac{3}{8}$ -inch diam., spaced $\frac{1}{4}$ inch.
- L₄—1 turn, inner conductor of RG-58/U around end of L₃ away from plate.
- L₅—1 turn, inner conductor of RG-58/U around L₄ at center.
- L₆—3 turns No. 12, $\frac{1}{2}$ -inch diam., $\frac{1}{2}$ -inch long.
- L₇—Silver-plated copper or brass tubing, $\frac{1}{2}$ -inch diam., 7 inches long, spaced 2 inches center to center. Connecting strips of flexible silver-plated stock $\frac{1}{2}$ inch wide and 2 $\frac{1}{2}$ inches long, are used from line to capacitor stators.
- L₈—Loop of No. 12 wire coupled to L₇. See top view.
- L₉—4 turns No. 18, $\frac{3}{8}$ -inch diam. Series trap—6 turns No. 18, $\frac{1}{2}$ -inch diam., spaced wire diam., tuned with 7–4.5- μ mf. ceramic trimmer.

DECIMAL VALUES OF CAPACITANCE ARE IN μ f.; OTHERS ARE IN μ mfd. EXCEPT AS INDICATED.

Top view of the 2-meter transmitter. The r.f. portion occupies only the forward 3½ inches of the chassis. The modulator is at the right, power supplies at the left. The small shield on the rear wall houses the transistor speech-processing unit.

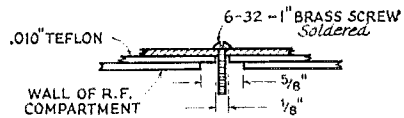
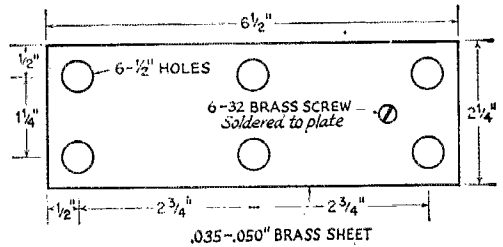


and final both keyed, no difficulty with excessive backwave has been encountered. Leaving the first stages running virtually eliminates keying chirp.

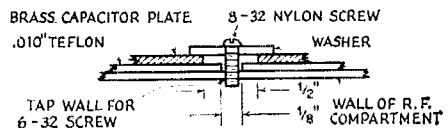
The 6146 plate circuit uses an old v.h.f. dodge often employed when the designer is faced with high tube output capacitance. The plate coil, L_3 , outwardly appears to be series-tuned, but it is essentially a single-ended circuit tuned by two capacitors in series, one of them (the tube output capacitance) being fixed. This is an effective way to increase the inductance of the tank and provide more efficient transfer of energy to the succeeding stage or load. The 5894 grid circuit is resonated by the tube input capacitance at the desired frequency by adjusting the turn spacing of L_6 . No difficulty with drive has been experienced up to 1.17 Mc., though it does fall off at the high end.

The final tank was salvaged from a surplus radar tuning unit. The tuning capacitor is an old Cardwell split-stator type intended for v.h.f. service, with rather large spacing and low tuning range. Its capacitance was not quite enough to resonate the plate circuit at 144 Mc., so disk capacitors from the radar unit were added. These could be omitted if a split-stator capacitor of 15 to 20 $\mu\mu\text{f}$. per section is used. Plate spacing should be 0.07 inch or more.

The output coupling loop, L_3 , is visible in the top view. Its dimensions are not critical, but it should be of such length that it resonates with approximately 25- $\mu\mu\text{f}$. tuning capacitance, if the transmitter is to work into a 50-ohm load. The end rotor plate of the series capacitor may be



FEED THROUGH DETAIL



MOUNTING DETAIL

Fig. 3—Information on the special bypass capacitor for the final amplifier plate circuit. Dimensions given provide about 625 $\mu\mu\text{f}$.

bent so that it shorts out the capacitor at maximum setting, for use where the reactance presented by the load is very low. A 72-Mc. series trap is connected from the coaxial output fitting to ground. This was installed to clear up a very slight pattern noticed on the home TV receiver on Channel 4.

Modulated high voltage is fed into the tank compartment via a homemade feed-through capacitor mounted on the rear wall of the r.f. compartment shield. Details of this capacitor are shown in Fig. 3. It is extremely important that the high-voltage line be at r.f. ground potential at this point, particularly when the stage is modulated. Great difficulty with r.f. feedback was experienced when using conventional bypasses, and commercially available feed-through designs are marginal for the voltage requirements.

Instability problems in the final circuit were

eliminated by paying particular attention to mechanical symmetry, and by using a final tube socket that did not have built-in screen bypassing. For some reason, the 5894 did not like to operate as a straight-through amplifier in a socket with the built-in capacitors, a fault that caused the author three weeks of grief before it was discovered!

A monitor circuit was constructed as an integral part of the final and proved very useful in adjustment of the modulation level, as well as providing a convenient means of monitoring performance.

Modulator

The modulator section occupies the right rear portion of the chassis, as viewed from the front, top. A small box on the rear wall of the chassis houses the transistor speech processor unit. Orig-

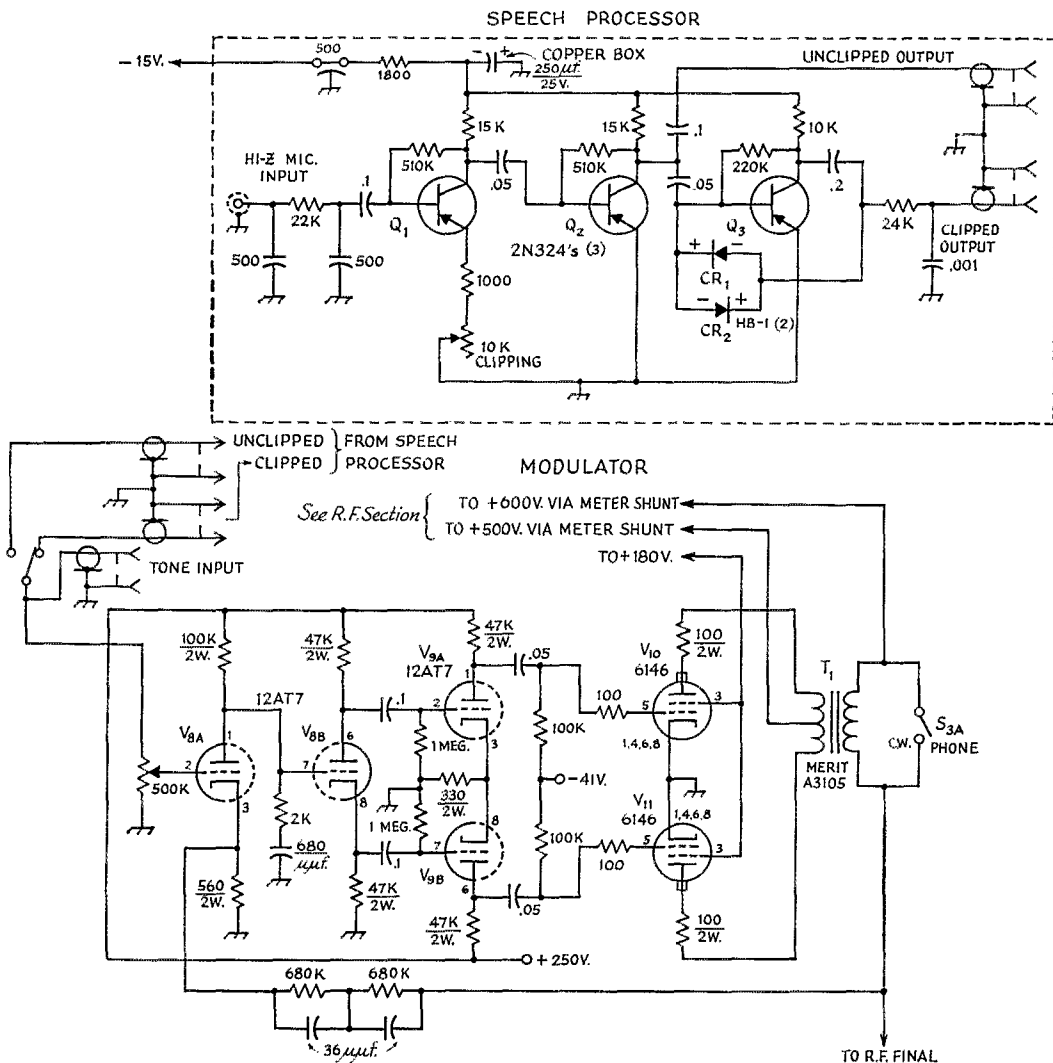
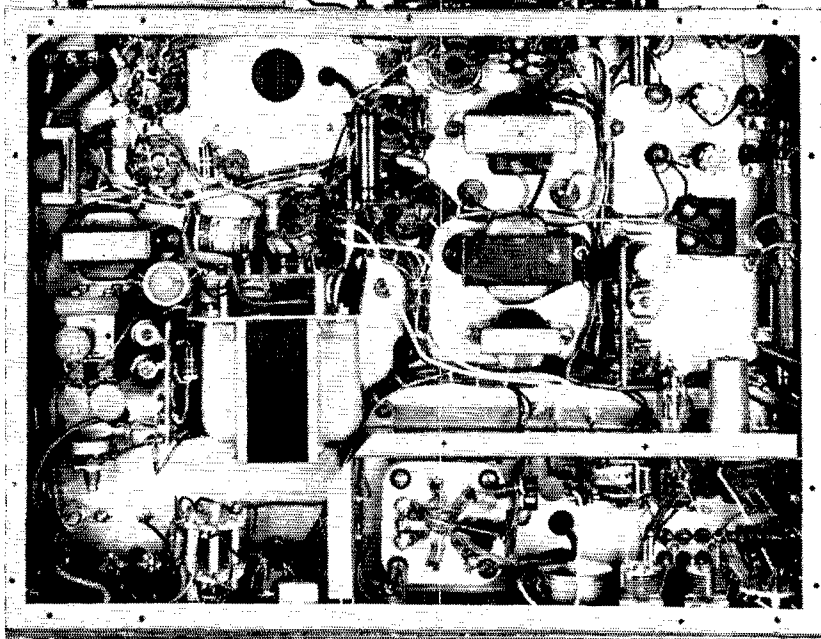


Fig. 4—Schematic diagram of the modulator and speech processor units. Capacitor values are in $\mu\text{f.}$ unless marked, resistors $\frac{1}{2}$ watt unless specified.



Looking into the bottom of the transmitter, the low-level stages and amplifier grid circuit are seen at the front right. The modulator circuits are at the left, and power-supply components at the right.

inally, this was mounted under the chassis, but the temperature rise with the bottom plate attached degraded the transistors' performance to such an extent that the unit had to be moved outside. No damage was done to the transistors, and the original ones are still in use, even though the temperature was high enough to cause complete malfunction. No difficulty has been experienced with the unit mounted as shown, even with the equipment operating in full sun, with the temperature over 90 degrees.

The processor limits the speech range to approximately 500 to 3500 cycles. It also clips the sine waves, making them more nearly rounded-top square waves. The heart of the clipping and shaping circuit is the HB-1 silicon diodes. These are inexpensive, and it is strongly recommended that no substitutions be made if good performance is desired. Clipping level is controlled by changing the gain of the first preamplifier, and clipping up to 20 db. may be inserted in the system. For maximum benefit from the speech-processing feature, a noise-cancelling microphone should be used, though a conventional microphone will work satisfactorily. An essential point to be made here: Do not expect the audio to sound like a broadcast station, or you will be greatly disappointed. The basic purpose is to be heard and understood, not to sound like a hi-fi

set! For normal local operation, the unclipped output can be used to drive the amplifier for more pleasant-sounding audio. The processor increases the average power of the audio in the sidebands, and gives the transmitted signal the desired punch.

The speech amplifier and modulator are fairly straightforward, except that great care was taken to provide good low- and high-frequency characteristics. Since the processor produces essentially a square wave with rounded tops, the amplifier requires more bandwidth. It is important that the feedback line be shielded to prevent stray pickup, and that the feedback network itself be soldered directly to the cathode of the 12AT7 first amplifier, V_{8A} .

If you want lots of audio, don't skimp on the separate power supply for the 6146 modulators, or the VR tubes that keep the screen voltage constant. If the high voltage on the modulators is increased to 600, increase the bias to minus 45 volts. It was originally planned to run the modulator this way, but a suitable transformer was not readily available. The output filter capacitors on the final high-voltage supply should be as large as possible, for good audio. Two Pyranol units were paralleled, to bring the output capacitance to 15 μ f. Either the Merit A-3105 modulation transformer or the equivalent Stancor unit can be used

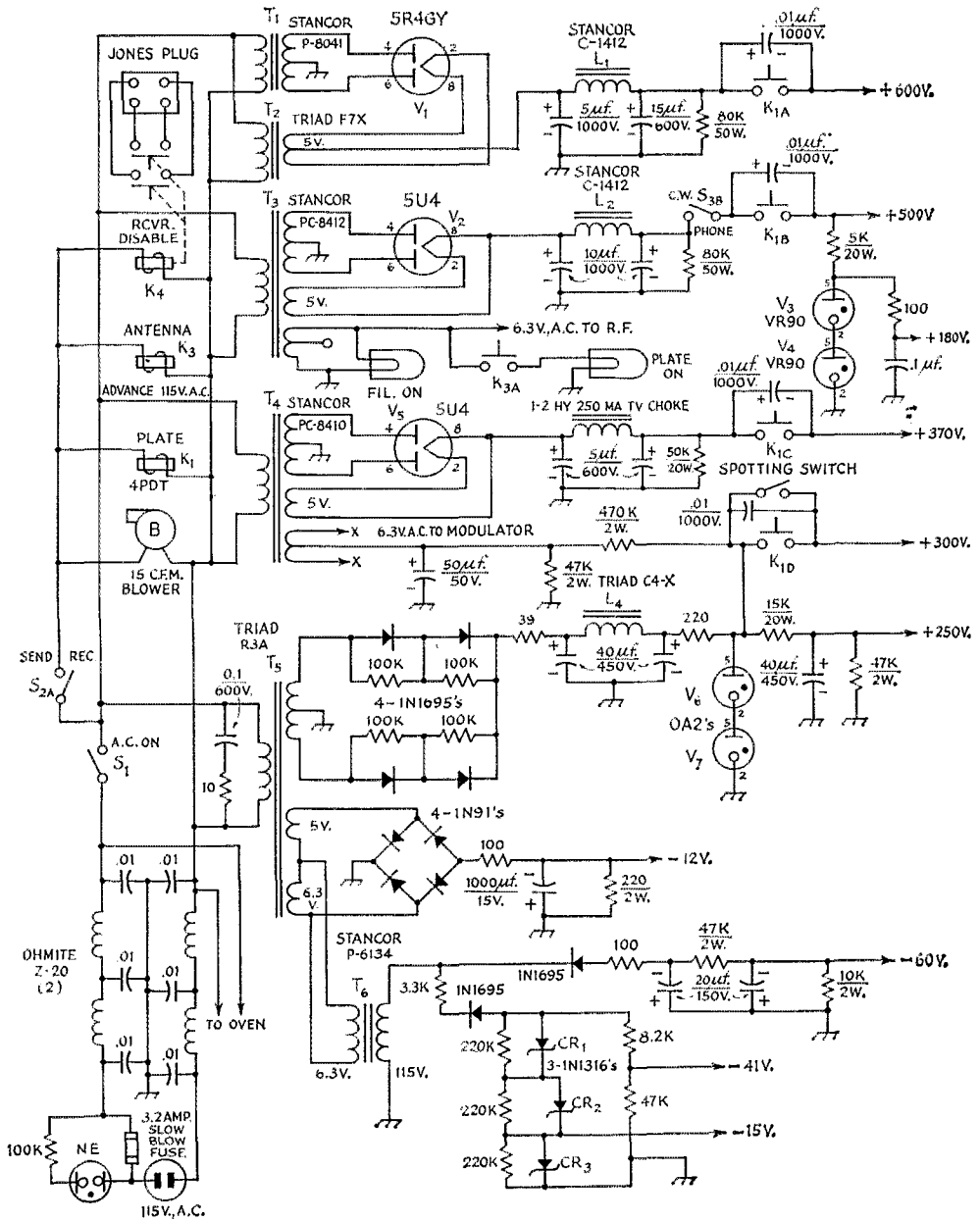


Fig. 5—Complete power-supply diagram for the 144-Mc. transmitter. Capacitors with polarity marked are electrolytic; values in $\mu\text{f.}$ throughout. Resistors $\frac{1}{2}$ watt unless specified.

with the specified feedback network. Different networks may be required with other transformers.

This modulator system delivers more effective audio than many other arrangements tried, and it is well worth the extra cost and effort. Credit for most of the audio design work belongs to Bud Rorden of Stanford Research Institute, and Don Cone, K6SKU.

Power Supplies

The power supplies make extensive use of diodes, for space and weight economy. Zener diodes used to regulate the bias for the modulator and the voltage for the speech processor could be eliminated by regulating the bias-supply voltage with a VR tube. One rectifier tube was eliminated by using four 1N1695 diodes in the 250-volt supply. The diode-protection circuit in the primary of this

supply limits transient peaks to a safe value. Do not try to do without it. The 100,000-ohm resistors in parallel with the diodes are another safety measure, to equalize the voltage across each diode.

The high voltage for all circuits is switched by relay contacts that are inserted following the filter sections, rather than in the center taps of the transformers. This was done to reduce hot switching transients and increase reliability. Since this is a contest unit, the transmit-receive switching service will be heavy and any reasonable technique should be used that will lessen the possibility of break-downs. Generous use of small relays was made primarily as a convenience in switching auxiliary equipment and control circuits. Specific details are left to the particular needs of the constructor.

Testing and Use

Detailed adjustment procedures are not de-

scribed, since an exact duplication of the entire setup is not anticipated. Testing and adjustment are straightforward, and should not cause the experienced v.h.f. man any great trouble. Ease of putting the equipment into use can be enhanced greatly by systematic pretesting small blocks of circuitry during the construction process. Nothing can be more frustrating than turning on the main switch controlling several circuits, and finding that nothing works. If the component parts have not been checked out in advance, you will not have the faintest idea of where to look for trouble.

But when you have built equipment of this kind, gotten it working properly, and then used it in the heat of a v.h.f. contest, we think you will feel that it was all worth the effort. It will help you to carve yourself a niche in the band at a spot of your own choosing, and other contestants will find it expedient to give you elbow room.

QST

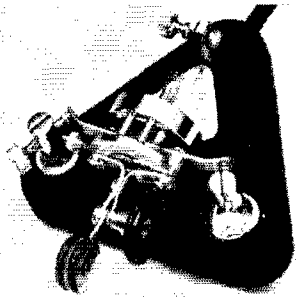
• New Apparatus

New Key Mechanism for Electronic Keyers

THE key shown in the accompanying photograph is of unusual design, based on using pivots rather than conventional bearings for precise and frictionless movement. The heart of the mechanism is a metal ring, as shown in the sketch, held against three pivot points by the tension of a coil spring. Although not shown in the sketch, the contact arm and operating arm are also mounted on the ring. Pressure in one direction on the paddle causes the assembly to rock on one pair of pivots, such as A and C, along their axis, YZ, while the ring moves away from the third pivot, B. Pressure in the opposite direction causes the ring to pivot on B and C along axis WX, with the ring moving away from A. In the actual construction, the ring is supported entirely by the pivots, which fit into the usual cup bearings.

The movable contacts are at the ends of a cross arm mounted on the ring. The fixed contacts are on screws which thread into split mounting posts. An Allen-head screw is used for tightening each post against its contact screw — a much more positive way of locking the contact than the knurled stop nut that has been traditional for generations in key construction.

The "weight" of the action can be adjusted by changing the tension of the coil spring shown in the sketch. The end of the spring is fastened to a fine steel wire which can be wound up on an adjusting screw to vary the tension. There is also a "ratio" adjustment, by means of which the spring loading can be made lighter on the dash side than on the dot side, and vice versa. The principle is simple — turning the thumbscrew shown in the sketch moves the hook on the spring back and forth along the cross rod to vary the point



at which the spring force is applied, thus throwing it to one side or the other of center.

Another useful feature is the height adjustment on the paddle arm. The paddle can be swung up or down by loosening the screw holding the side knob, which can be used for operating the device as a simple hand key.

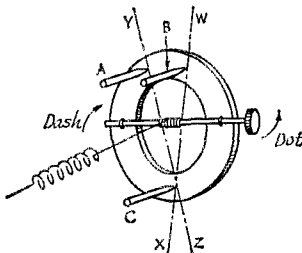
The PYO key is constructed on a heavy cast-iron base with rubber feet. The operating mechanism is finished in contrasting bright and satin chrome, and gives an impression of precise attention to detail in construction and finish. The contacts are of "fine" silver. The key is made by J. A. Mills, W8PYO, 8165 Inwood Ave., Dayton 15, Ohio.

— E. L. C.

Strays

FAM Nets, a directory of fixed-frequency, wide-band, f.m. nets may be obtained by sending an s.a.s.c. to T. A. McKee, K1AZD, 1306 Grove Rd. Most of these nets are using modified surplus taxi and police gear and the frequencies 52.525 and 146.94 Mc.

K1AZD parked his car briefly in Skowhegan while vacationing in Maine and returned to it to find the local fire department at the scene. The crisis was over, however, as WV2VHH, also vacationing in Maine, had happened by and, spotting smoke pouring from the car, had disconnected the storage battery (the difficulty lay in a short in K1AZD's mobile rig).



Some Thoughts on Power Supplies

Some interesting and unusual variations in conventional half-wave, voltage-doubling and bridge rectifier-filter circuits result in more efficient operation and better voltage regulation.

To most amateurs, an a.c. power supply is a technical trifle. Having decided on a particular output voltage and current, we build the supply almost without additional thought. Not much is needed; most of our supplies are based on a few conventional designs that nearly always give satisfactory results. But it sometimes pays to think about suiting the power supply to its job. Grammer,¹ for example, managed to cut costs (but not performance) by taking advantage of the fact that power-transformer losses are distributed one way in amateur practice and another way in the continuous service for which the transformer is usually rated. Feeding both high-voltage and low-voltage rectifiers from a single transformer winding^{1,2} is another scheme that deserves more use. The idea of this article is to bring several additional circuit innovations to the attention of amateurs who build their own equipment.

Shunt-Regulated Supplies

Shunt voltage regulation is often used in small power supplies for receivers or low-power transmitter stages. One of the oldest methods is shown in Fig. 1. The output of a conventional rectifier is fed through a dropping resistor R_D to a regulator tube VR in parallel with the load. (A semi-

*517 23rd St. N.W., Washington 7, D. C.

¹ Grammer, "More Effective Utilization of the Small Power Transformer," *QST*, November, 1952.

² McCoy, "Plate Modulation for the TV-Set/Surplus Transmitter," *QST*, July, 1961.

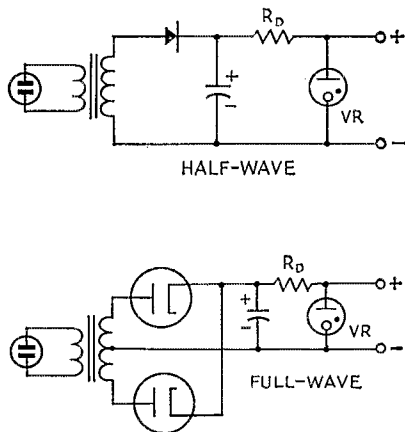


Fig. 1—Conventional power-supply circuits using VR-tube regulation.

Beneficial Uses of Reactance

BY G. FRANKLIN MONTGOMERY,*W3FQB

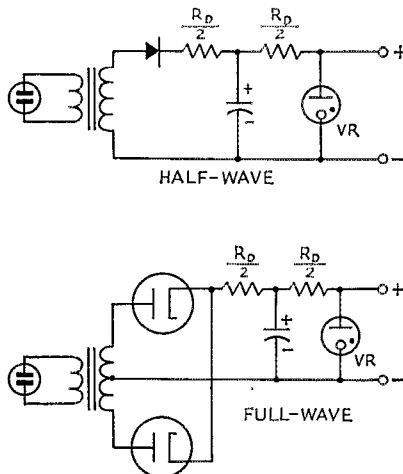


Fig. 2—Dividing the VR-tube dropping resistor into two sections as shown improves filtering, reduces peak rectifier current, and provides a certain amount of overload protection for the rectifiers.

conductor breakdown diode, or Zener diode, can replace the VR tube. A vacuum-tube shunt regulator is also possible.) Part of the rectified current is passed by the gas-filled regulator and, as long as the gas is continuously ionized, the load voltage is nearly constant and independent of changes in line voltage or load current. The average output voltage of the rectifier must be greater, of course, than the regulator voltage. Calculating a suitable resistance for R_D follows a procedure given in the ARRL *Handbook*.

A small but worthwhile improvement can be made immediately in these circuits. Resistor R_D is split into two equal parts, as shown in Fig. 2. For a given output current, both the peak rectifier current and the output ripple voltage are less than before. If the capacitor should short-circuit, the first of the two resistors may go up in smoke, but there is now a good chance that the rectifier will survive—a chance that is minimal in the circuits of Fig. 1.

In all of these circuits, resistor R_D is an irksome necessity. Essentially, we start with a power supply whose load-voltage regulation is reasonably good, ruin the regulation with a series resistor, and then restore it by adding the shunt regulator. The resistor is a source of inefficiency and unwanted heat. There ought to be another way.

Promoting Efficiency

One other way is shown in Fig. 3. This circuit is a conventional half-wave shunt rectifier, with an important difference. Suppose the input capacitance C is made intentionally small. The alternating current passed by C is determined by its capacitance, by the transformer voltage (and frequency), and by the resistance of the load. Consequently, we can specify C so that the rectified current available for the shunt regulator and load is limited to any value we choose. No power is dissipated in C . Neglecting the small losses in the resistances of the transformer, rectifier, and choke, the only power absorbed from the line is the power delivered to the load, the regulator, and R_D . Resistance R_D now needs to be only large enough to suppress relaxation oscillations of the VR tube.³ If C is chosen to limit the current to a value safe for the rectifier, we can short-circuit the output terminals indefinitely without damage to either the power-supply components or the line fuses. Try that on your present equipment!

The inductance L of the filter choke is assumed to be very large. An inductance of 10 henrys or greater is satisfactory for most applications; in any case, an inductance small enough to resonate with capacitance C at the line frequency should be avoided.

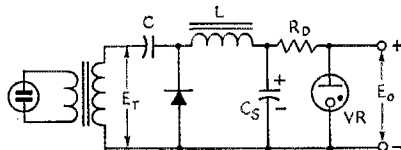


Fig. 3—Shunt rectifier circuit. By proper selection of a value for C , the output terminals may be shorted without damage to components.

The circuit of Fig. 4 is a useful variation; it is a conventional voltage doubler except that once again the input capacitance C is intentionally limited. In this case, the filter capacitance C_S must be as large as possible, because it assumes the full burden of smoothing the ripple in the rectifier output. A second choke-capacitor filter section can be added to relax the requirement on C_S . With C chosen to safely limit the rectifier currents, the output of this supply can also be short-circuited without damage.

The circuits of Figs. 3 and 4 use half-wave rectifiers exclusively. (A voltage doubler, however its circuit may be drawn, is fundamentally two half-wave rectifiers with their d.c. loads connected in series.) An especially attractive full-wave circuit is shown in Fig. 5, in which capacitor C limits the current to the bridge rectifier. Full-wave rectification allows the output ripple to be smoothed more easily. In addition, this circuit can be designed so that its short-circuit output

³ Tube types 0A3, 0C3, etc., display a negative incremental resistance at currents below approximately 10 milliamperes. An R_D of 500 to 1000 ohms is usually sufficient to maintain a net positive resistance in shunt with the filter capacitor C_S . The same resistor also limits the surge current through VR when the tube first ignites.

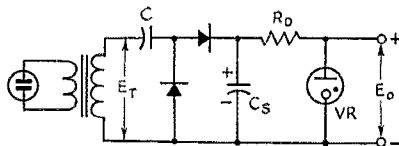


Fig. 4—Capacitor limiting applied to a voltage-doubler circuit.

current is only moderately greater than the maximum current at full load voltage. Inductance L in Fig. 5 is assumed to be greater than the *critical inductance* discussed in the power-supply chapter of the ARRL Handbook.

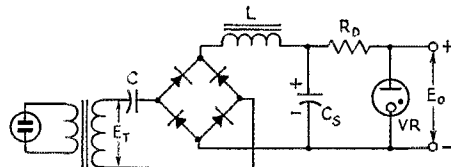


Fig. 5—Capacitor limiting applied to a bridge rectifier circuit.

Designing for Shunt Regulation

It is easy to determine the input capacitance C for these circuits. With the regulator removed, the output voltage varies with output current in the manner shown by the dashed curves⁴ in Fig. 6. When the regulator is added, the load voltage and load current behave as shown by the solid lines in the figure. We could establish the regulated load voltage at any point on the dashed curves, but it is particularly convenient to choose, as a guide, the point specified by the formulas that follow. This point represents the maximum output power of the supply for a given value of C . Choosing it ensures that for any load current greater than the specified load current, the power absorbed by the load will be less than the power delivered just before the voltage regulation fails.

The transformer voltage E_T and the input capacitance C that determine this maximum-power condition are given in Table I for each of the three rectifier circuits, assuming a line frequency of 60 c.p.s. The first step is to choose the regulated load voltage E_0 and the maximum load current I_0 that will be drawn at E_0 . Knowing E_0 , we can then calculate from the table what E_T should be. And knowing E_0 and I_0 allows us to calculate C .

Example: I want a v.h.f.-converter power supply to deliver a maximum of 30 ma. at 105 volts. I plan to use the voltage-doubler circuit of Fig. 4 with a 105-volt VR tube (0C3). Then $E_0 = 105$, $I_0 = 30$. From the second line of the table, the required r.m.s. transformer voltage is

$$E_T = (0.7)(105) = 74 \text{ volts,}$$

and the input capacitance is

$$C = (16)(30)/(105) = 4.6 \text{ } \mu\text{f.}$$

These values would be nearly optimum, but the

⁴ Montgomery, "Current-Limited Rectifiers," *Proceedings of the IRE*, February, 1962. Quantitative curves are given that permit any desired variation in design.

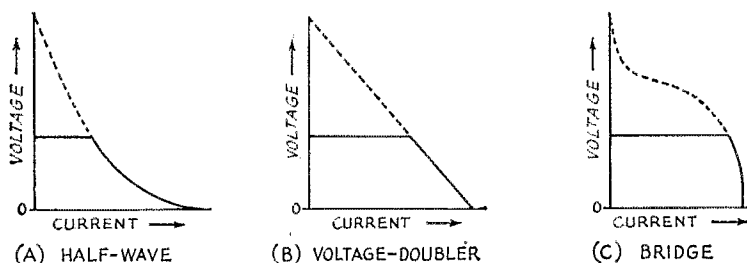


Fig. 6—Typical output-voltage curves for three types of rectifier circuit with capacitor limiting. Dashed lines indicate how the voltage soars at small load currents in the absence of a regulator. The solid lines indicate the performance with VR-tube regulation. The abrupt drop at the high-current ends of the curves indicates that the regulating capability of the VR tube has been exceeded.

closest transformer I have is one with a 125-volt secondary. Now, it is not necessary to adhere slavishly to the formulas. If the product of transformer voltage and input capacitance is maintained constant, the short-circuit load current does not change. A 3- μ f. capacitor will therefore be more suitable with the 125-volt transformer than would the 4.6 μ f. calculated for the lower voltage.

The complete diagram of the supply is shown in Fig. 7; its load characteristic is shown in Fig. 8. The jump in output voltage above the 30-ma. point is caused by deionization of the VR tube. With the 1000-ohm series resistor, however, this jump is smooth and retraceable, and no VR-tube oscillation occurs.

voltage for the voltage doubler), as it does in a conventional supply. Note that in Fig. 7, the VR-tube jumper is used to disconnect the rectifier input when the tube is removed, preventing the output voltage from rising above its regulated value.

Unregulated Supplies

We turn now to unregulated supplies, in which we rely on the basic design of the rectifier and filter to maintain the load voltage reasonably constant. These are frequently — but not always — high-power supplies, such as the plate supply for a transmitter final amplifier, and we tend to avoid d.c. regulators because of the high power that the regulator itself would have to dissipate.

Half-Wave Supplies

A small supply is sometimes needed for fixed bias in a transmitter or for auxiliary equipment. When neither regulation nor smoothing has to be especially good, the half-wave circuit of Fig. 9 can be tried. If the regulation of this circuit proves insufficient, as it might when the supply is used to supply bias for a modulated amplifier, then one of the shunt-regulated circuits can be substituted for it.

For low-voltage, relatively high-current supplies, an easier way to better regulation is the circuit of Fig. 10, which allows us to use an input choke in the filter.⁵ In combination with the bleeder resistance R_B , the choke provides smoothing and regulation that are much better than those obtainable with the ordinary half-wave rectifier. It is important to note that simply adding an input choke to the conventional half-wave rectifier of Fig. 9 is of almost no use; the choke degrades the regulation in this case, and while the peak rectifier current is limited, the output ripple is not basically reduced.

From one point of view, Fig. 10 is not a half-wave circuit but a full-wave rectifier in which the load is returned to one end of the transformer winding rather than to its center tap. As far as the transformer is concerned, however, the circuit operation is half-wave, because the transformer

⁵ The shunt diode provides a path for inductor current when the series diode is not conducting, thereby maintaining an uninterrupted flow of current to the filter if L is sufficiently large. See Montgomery, "Improving Rectifier Circuits," *Electronics*, April 7, 1961.

TABLE I

(For 60 c.p.s. source frequency)

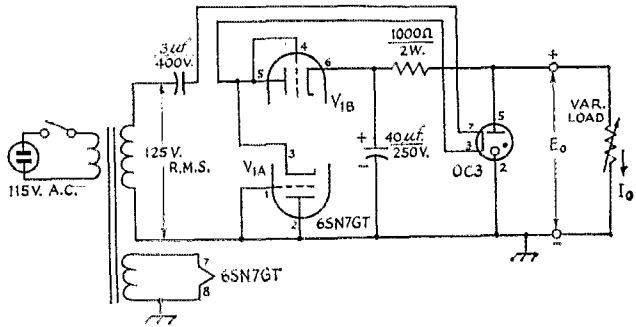
Circuit	E_T (volts r.m.s.)	C (μ f.)
Half-wave (Fig. 3)	$1.6 E_0$ (volts)	$\frac{3.9 I_0}{E_0}$ (ma.)
Voltage-doubler (Fig. 4)	$0.7 E_0$ (volts)	$\frac{16 I_0}{E_0}$ (volts)
Bridge (Fig. 5)	$1.6 E_0$ (volts)	$\frac{2.7 I_0}{E_0}$ (ma.)

The Capacitors

The input capacitor for all of these circuits must be nonpolarized. The bridge rectifier, and the half-wave rectifiers when delivering large currents, operate in such a way that the input capacitor is charged positively during one part of the a.c. cycle and negatively during the rest. Consequently, a polarized electrolytic will not do. The capacitance required is usually a few microfarads or less, and paper capacitors are convenient. The voltage rating should comfortably exceed the peak transformer voltage, 1.4 E_T .

The filter capacitors, C_s , can be any type, and their working-voltage rating need be only slightly greater than the regulated load voltage E_0 , provided the supply is never operated with the regulator removed. Without the regulator or load, it is characteristic of these circuits for the output voltage to rise to the peak voltage of the transformer secondary (twice the peak secondary

Fig. 7—A complete circuit using limiting capacitor. Design procedure is discussed in the text. Performance curve is shown in Fig. 8.



delivers current only when its secondary voltage has the polarity shown. With a sufficiently large L (and neglecting the direct voltage drops in the choke and rectifiers), the output voltage is 0.45 times the r.m.s. secondary voltage.

A disadvantage of Fig. 10 is the large inductance required for L . For optimum regulation with any choke-input filter, L must be greater than the *critical inductance*, which is discussed in the *Handbook* for the conventional full-wave rectifier. In the circuit of Fig. 10, with a power-line frequency of 60 c.p.s., the critical inductance is

$$L_{CRIT.} = \frac{R_B}{218} \text{ henrys,}$$

where R_B is in ohms. Power supplies using this circuit require either a lower value of bleeder resistance or a larger inductance than is normal for conventional full-wave supplies.

Voltage-Multiplying Supplies

Now we come to a scheme that ought to start some soldering irons heating. Is it possible to build a satisfactory high-voltage transmitter supply with an inexpensive transformer? (Given a junk-box TV transformer, for instance, can we obtain a d.c. output at 1200 volts with good regulation?)

The conventional way of generating a high voltage from a low-voltage transformer is to use a voltage-doubling circuit, and one is shown in Fig. 11. The usual voltage doubler has several disadvantages; the peak rectifier current is very large compared with the output current, rectifier

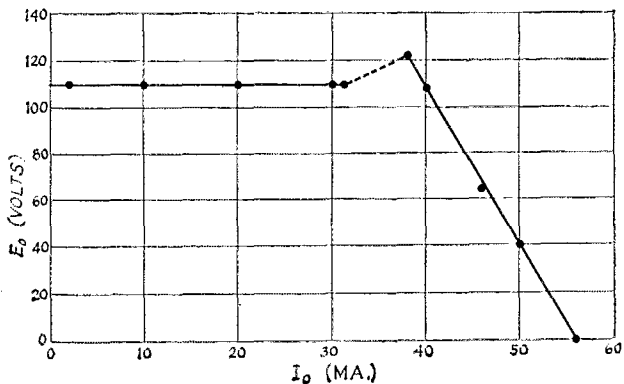
heating is severe, the voltage regulation is poor, and reducing the peak rectifier current degrades the regulation. If the circuit could be arranged to use a choke-input filter, the peak current could be reduced and the voltage regulation improved; but simply adding chokes in series with the rectifiers is of no help for the same reasons that apply in the case of the conventional half-wave rectifier.

There is a way out if we are willing to use a special filter choke.⁵ In Fig. 12, the circuit of Fig. 11 has been modified by adding a choke with two equal windings. The windings in this particular arrangement are connected in series, so that a single winding with a center tap can be used instead. The input current to the filter, as in the usual full-wave rectifier supply, is passed first by one rectifier, then by the other, but only one of the inductor windings conducts at a time. Since the two windings have a common core, the magnetic field of the choke behaves as it would if the current were carried continuously by a single winding. The result is a "voltage doubler" that retains the usual advantages of choke-input operation; improved filtering and regulation, and nearly constant rectifier current during each half-cycle.

Assuming negligible direct voltage drops in the choke and rectifiers, the output voltage is 1.8 times the r.m.s. voltage of the transformer. The advantage of this result is shown by the following:

Example: I have a surplus TV power transformer whose secondary is rated at 800 volts, center-tapped, at 200 ma. What can I expect from it, using the circuit of Fig. 12?

Fig. 8—Voltage-regulation curve of the supply diagrammed in Fig. 7. The regulator tube loses control at a load current slightly above 30 ma.



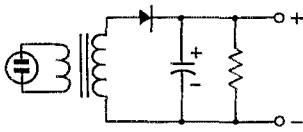


Fig. 9—Conventional unregulated half-wave circuit.

First, the output voltage is

$$E_o = 1.8 E_T = (1.8)(800) = 1440 \text{ volts}$$

or perhaps 1400 volts, allowing for the drop in the choke and rectifiers. Second, the maximum permissible current must be based on transformer heating. The usual TV power transformer is rated for continuous duty with a capacitor-input filter following a full-wave center-tap rectifier. Grammer¹ found that the transformer winding losses are reduced considerably when the transformer is loaded intermittently, as in amateur use, and when the filter includes an input choke. These savings apply to the voltage-multiplier supply, with some modification. The secondary current in Fig. 12 is twice the output direct current, and it is delivered by the whole secondary rather than one-half the secondary as in the case of the center-tap rectifier. This fact increases both the primary and secondary winding losses, although not in the same proportion. On the other hand, Grammer's measurements show a reduction in secondary loss by a factor of 0.5, and in primary loss by a factor of 0.7, by changing from capacitor input to choke input. If an average duty factor of 0.5 is also assumed, the net result for the voltage multiplier is a direct output current equal to one-half the rated current for the same total winding loss. Therefore we can safely draw

$$I_o = 0.5 I_{\text{RATED}} = (0.5)(200) = 100 \text{ ma.}$$

at 1400 volts.

This result is conservative. Grammer pointed out that the total transformer loss is reduced still further if we refrain from using all of the filament or heater windings included in the typical small power transformer. For reasons that seem economical to the power company if to no one else, the line voltage has been creeping up on us over the years. Many will find older transformers still on hand that are designed for 110-volt operation. When one of these is plugged into the modern 117-volt (or better) line, it should come as no surprise to find it running appreciably hotter than it used to, even with no load, because of the greater core loss at the higher voltage. The increase in secondary voltage may not be needed. If not, then it is worthwhile to use one or more of the idle filament windings

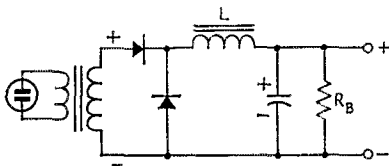


Fig. 10—The addition of the shunt diode to a conventional half-wave circuit permits advantage to be taken of the voltage-regulating properties of a choke-input filter.

to reduce the line voltage applied to the original primary. (A single 6.3-volt winding connected in series with the old primary, with the proper

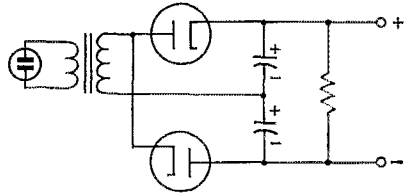


Fig. 11—A conventional voltage-doubler circuit.

polarity, makes a good combination for 117 volts.)

Rectifiers and Chokes

For a given output current, each rectifier of a voltage-multiplier supply must pass twice the current required of the rectifiers in a full-wave center-tap or bridge-rectifier supply. For the same output voltage, however, the rectifier peak-inverse voltage is only one half that of a full-wave center-tap supply; it is equal to the peak-inverse voltage of the rectifiers in a full-wave bridge, which requires, of course, four rectifiers rather than two. Rectifiers tend to become expensive as the peak-inverse rating increases, and consequently the voltage-multiplier circuit may often be the least costly choice for a supply developing more than one kilovolt.

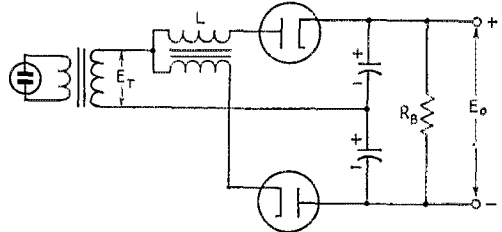


Fig. 12—The advantages of choke input in reference to improved regulation and reduced rectifier current may be obtained in a voltage-doubler circuit by the use of a center-tapped choke as described in the text.

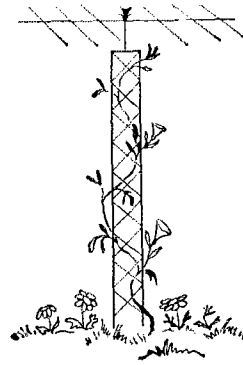
A practical drawback is the present scarcity of suitable chokes. This is a new idea, and manufacturers have not yet come forward with a line of tapped or two-winding filter inductors. For the time being, about the only recourse is to modify an existing choke for the purpose or to order a special choke from the manufacturer. Modification is not too difficult a job for unsealed chokes, but it means disassembling the core, removing half of the coil to make the tap, winding it back on, and reassembling the core.

For optimum regulation, the inductance of the choke must exceed the critical inductance for a given bleeder current, as in any choke-input filter. A bleeder resistor must be used if the load is to be intermittent or variable, as it is for c.w. or modulated linear amplifiers.

(Continued on page 158)

The Towering Problem

BY JAY KAY KLEIN,* WA2LII



PROBLEMS of all degrees of complexity beset the amateur, but none is so towering as a backyard monster to which everyone but the next-door cat objects. The amateur that would slink home after dark if his car were out of style by more than three years blithely proceeds to guy up a 1922-style metal lattice behind a 1962-style fancy ranch with cantilevered plywood deck.

Of course, there's no one to stop him — except the XYL, three or four short-circuited neighbors, and maybe the police department under direct orders from the zoning commissioner. Heck, if even the little woman signs the "no-no-no!" petition, you're a blown-fuse, buddy.

In an era that has seen four-square tin lizzies transformed into smooth-flowing metal sculptures, communications equipment has generally kept its no-nonsense, designed-for-utility look. Sure, some receivers these days are products of industrial designers' drawing boards and may, with only minor XYL misgivings, be placed on loving display in the living room. Most gear, of course, still is relegated by the dust-mop set to the Siberia of cellar or attic.

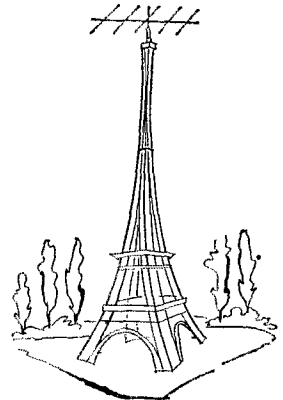
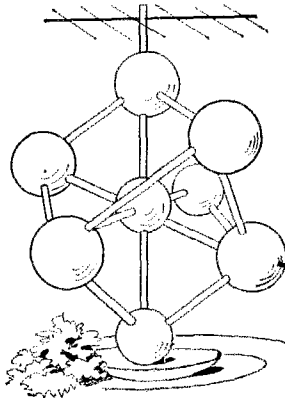
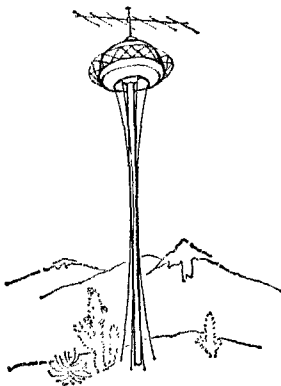
Unfortunately, antenna towers have to be kept on public display at all times. They just don't

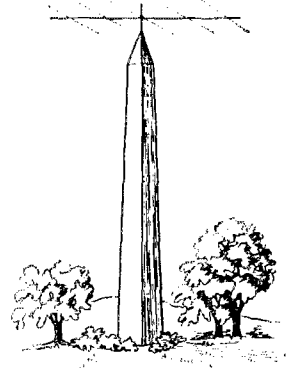
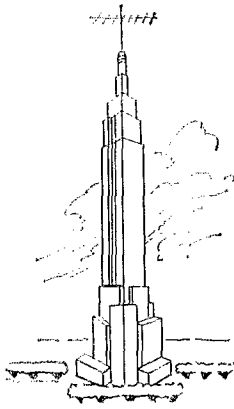
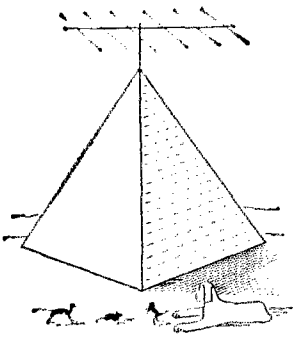
work worth a darn down in the basement. To hams, these structures are a sight for sore eyes. To the uninitiated, these are merely public eyesores. It's hard to realize your little darling is a personal affront to your wife, your neighbors, and sometimes even to the men in blue with brass buttons. That this is so far too often is shown by the many dismaying reports in *QST* of zoning-attempts and neighborhood grievance committees. It's almost enough to drive one to the citizens band, where you can wreck everyone's TV reception without fear of losing your ticket.

Attempts at suppression of your right to construct as large and ugly a tower as you can afford generally fail, but they do cause individual amateurs much agony and expense (even more agonizing). But let's face it, on a statistical basis, amateurs don't exist: with just about 1/10th of one per cent of the population in ham radio, a random sample of 1000 people could easily fail to include a single ham! All of which suggests — maybe you don't have to join 'em, but at least you don't have to step on their toes.

When the XYL says "no tower!" or threatens to plant morning glories at its base, you know something has to be done, especially if she outweighs you. What to do? Well, if you look at the situation just illogically enough, there really seems to be little need for towers to remain

* 219 Sabine St., Syracuse 4, New York.
All drawings by WA2LII's XYL, D. E. Klein.





barren utilitarian structures. Modern industrial design techniques should enable manufacturers and kit-builders to come up with towers that differ as markedly from box girders as cars do from Conestoga wagons. Aesthetically pleasing structures can combine strength with grace, and utility with beauty. Even a simple chrome-plating job would help a tower brighten up the average neighborhood.

Tower design articles have frequently appeared in *QST*, dealing with such technical information as wind-loading and sheer stresses. But articles on design for beauty have long been missing. Nor have manufacturers dropped head-first into the breach—these big shots of the communications world have not created a big boom in tower design, but have merely popped into the field with pivoted poles and guyed girders. And so we find a complete lack of towers acceptable to modern suburbs and style-conscious XYL's.

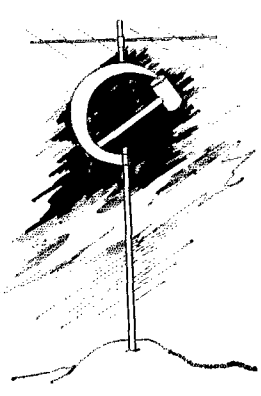
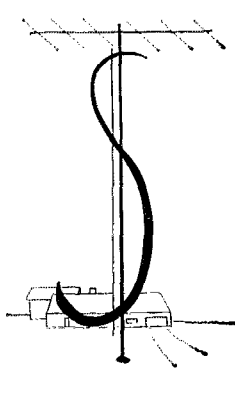
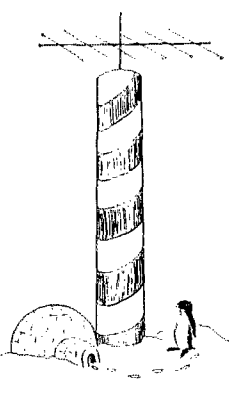
That is why I will present here a few modest proposals intended to arouse interest in securing towers with the curves you love to look at. Sketches are by my wife, done with the pious hope that all XYL's everywhere will ultimately benefit, especially her. These designs are merely offered as examples of what could be done, with a little imagination. Attempts to transform these sketches into working blueprints could only result

in having your locality declared a disaster area.

Perhaps the most serious type of design presented here is based on the tower structure of the Seattle World's Fair. Few stylish suburbs could resist the erection of a tower design so well publicized in the mass media and so elegantly narrow-waisted. Revolving restaurant is optional, of course, depending on the exact degree of s.w.r. desired. Last year's model, the Brussels World's Fair Atomium, may still prove popular in some areas. The Pylon of the 1939 New York World's Fair is hopelessly outdated, except for very old-fashioned communities, and hence is not illustrated here.

Everlastingly appealing is the Eiffel Tower style, and the design is perennially popular both in Europe and in North America. Around Montreal, the style is, *naturellement*, very much *de rigueur*. Not so popular in North Africa, this style would yield ground to that old standby, the non-metallic pyramid. Obviously, this design is mentioned in order to leave no stone unturned; major drawback is land requirement—seventeen acres for the Gizeh model. Guying is not required.

New Yorkers will be intrigued by a tower modeled after the Empire State Building. It is particularly adapted to a large-city environment. If built full scale, the tower may be used to moor dirigibles. Members of the Senate set, on the other hand, along with thousands of Con-



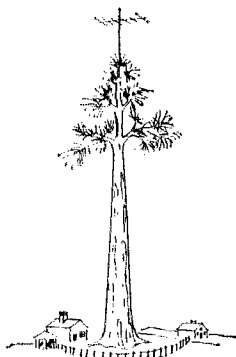
gressmen, may prefer a tower based on the Washington Monument. This design looks best surrounded by acres of grass and tourists.

The Light House design is particularly appropriate for rare-call DXers. A collapsible model could also be made available for transport on DXpeditions. At this point, sheer utility has given way entirely to the aesthetics of the situation. Completely practical, though, is the South Pole design for permanent erection in Little America. Frozen-stiff hams could make real use of this red-and-white symbol of amateur radio contact with the outside world.

For the most exclusive suburbs of capitalistic America, the Dollar Sign tower is designed to harmonize with neighborhood aspirations. With a silver-plated tower of this design, election to the country club will come as a matter of course. The particularly wealthy ham could construct the tower of sterling silver and use it as a giant money clip as well as a beam holder-upper. At the other side of the world, possession of a Red Star tower will ensure invitation to the finest parties and forestall awkward questions about political reliability.

Hams of rural inclination will welcome the last suggested style of tower, which will harmonize with the most countrified atmosphere. Non-metallic, unguyed, and inexpensive, a Giant Redwood tower may be grown directly from seed. Simply plant and water well for fifteen hundred years.

Although some of these designs may not be as practical as one would wish, it is hoped that they



have given rise to serious thoughts about the towering problem in the backyard. To ensure domestic tranquility, strictly utilitarian towers should give way to designs in harmony with other neighborhood structures. Just as good design in transmitters is an aid in avoiding interference with neighborhood television viewing, good design in towers is an aid in avoiding interference with neighborhood sight seeing.

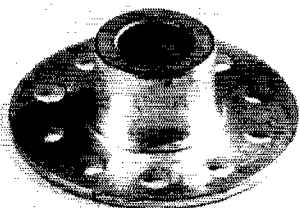
In an attempt to work out solutions to the problem, I have kept my nose to the grindstone, eye on the ball, and ear to the ground. Mostly I have got a sore nose, bloodshot eyes, and dirt in my ear. It was also difficult to work in that position. The towering problem still awaits final solution, but it is now out in the open where radio amateurs everywhere can dodge the issue.

QST

• New Apparatus

Multiconnection Ground Studs

GROUND loops, feedback and hum are always a problem to the constructor and can usually be lessened by the use of a good common chassis ground. The JAN Ground Studs, shown in the photograph, are designed to provide a convenient means for making a positive equipotential chassis



ground. Because of their construction, they can be stacked vertically and, if necessary, the individual wires can be removed without disturbing adjacent terminations — something that is certainly difficult to do when using a single common ground lug!

The studs are available in several sizes, shown in the following table:

Type	P/N 1001	P/M 5008	P/N 7004
Diameter of disk (in.)	.75	.75	.50
Height (in.)	.312	.250	.280
No. of terminal holes	12	10	8

All types are made of half-hard brass, electro-tin plated. Prices range from 29 cents each for P/N 1001, 33 cents each for P/N 5008 and 21 cents each for P/N 7004. The studs are available direct from Jan Engineering, 2018 Pico Blvd., Santa Monica, California. There is no minimum order.

— E. L. C.

Strays

K10ZJ and K1J0Z had worked each other but had never met until, by pure chance, they happened to be photographing the Texas marker on the Texas-Oklahoma state line at the same time.

WA0BYO, a printer by trade and so he should know, says that proof of the high quality of QST lies in the fragrance of copies 15 years old, in comparison with the odor from other magazines. The high quality of QST paper makes the difference.

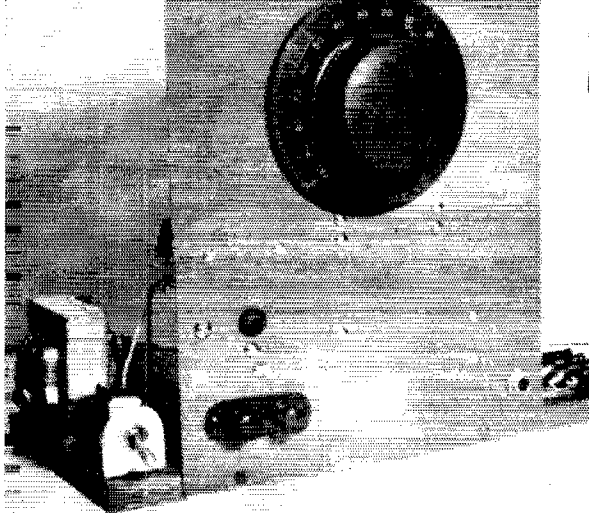
In order to feed the output into an audio amplifier I added a transformer I happened to have.

Running the signal into the audio amplifier turned out to be a surprising experience. Somehow I couldn't get any "gain" out of the amplifier. In due course I figured that the 15 kc. from the oscillating detector must be the culprit, and so it was. There was a 1.5-volt v.l.f. signal present across the output of the transformer! This signal would not bother a pair of earphones but did it ever plug up an amplifier! Some sort of low-pass audio filter is a must if one intends to use the signals to feed a speaker. Such a filter is shown on the diagram. It is the one suggested for modulators in the ARRL *Handbook* (see Fig. 9-12, p. 268, 1962 edition).

Another thing. Tie the antenna terminal to the longest, highest piece of wire you can locate and by all means connect the ground side to a water pipe or equivalent. At 15 kc. the leakage back to the line through the power supply isn't a good "ground." Finally, reverse the leads to L_2 if the receiver doesn't oscillate.

I brought the receiver into my lab at the company and showed it to several hams of the present generation, most of whom are s.s.b. enthusiasts. They gazed upon my museum piece with awesome wonder! Here was a receiver operating at 15 kc. Why, that's *audio* frequency! Gad, look at the size of those coils! And the "bandsread" with that .001- μ f. capacitor!

Photographs of the antedeluvian device and a circuit for it accompany this article. In building it, there's one big hitch. Where in this day and age does one get the honeycomb coils? All I can



W3QY's NAA receiver seen from the front. You've heard of "breadboard." This is it. At these frequencies you can put the parts just about anywhere you want to, without worrying about the losses.

say is that the original ones were made by Coto-Coil Co. and I believe the company is still in existence.² The receiver is terrific for code practice and it will run along for hours with a beat note as steady as a rock. And aside from that, it will give you the unforgettable experience of hearing NAA!

QST

² The Coto-Coil Company is still very much in existence, at 65 Pavilion Ave., Providence 5, R. I. WIBES of Coto-Coil tells us that if there is enough demand for the coils mentioned in this article, they will be made available. If you're interested, write directly to WIBES at the above address. — Editor.

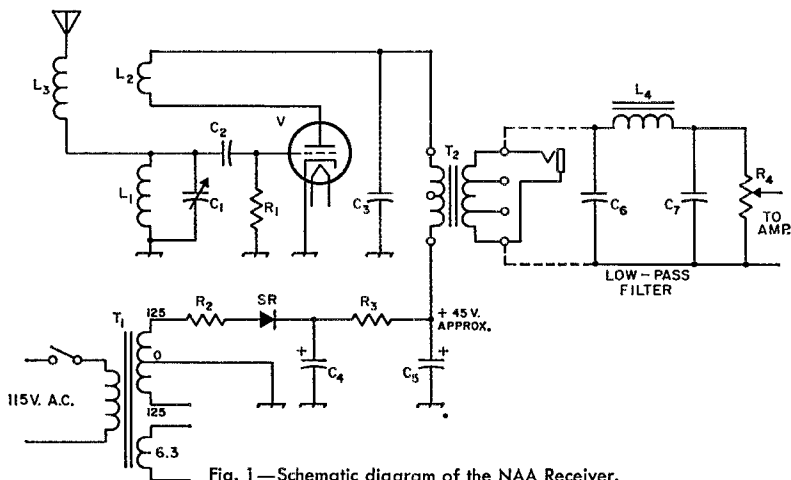


Fig. 1—Schematic diagram of the NAA Receiver.

C_1 —.001- μ f. variable.

C_2 —100- μ f. mica.

C_3 —1- μ f. paper.

$C_{4,5}$ —30- μ f., 150-v.v.d.c., electrolytic.

C_6 —470- μ f. mica.

C_7 —330- μ f. mica.

L_1 —1500-turn honeycomb coil (see text).

L_2 —600-turn honeycomb coil (see text).

L_3 —200-turn honeycomb coil (see text).

L_4 —20 hy. choke (Stancor C-1515).

R_1 —2 megohm, 1/2 watt.

R_2 —10 ohms, 1 watt. (Included with silicon-diode rectifier listed below.)

R_3 —250K, 2 watts.

R_4 —500K.

SR—Silicon-diode rectifier (Sarkes-Tarzian M150).

T_1 —Power transformer, 250 c.t., 25 ma., 6.3 v., 1.0 a. (Stancor PS-8416).

T_2 —Output transformer, (the author used a Stancor A-4752.)

V—Any receiving triode with 6.3-v. heater.

By combining the features of the phasing and filter types of carrier and sideband suppression, VK2AC finds that more complete suppression is obtainable in practice with less critical adjustment of either section.

Phasing/Filter S.S.B. Generator

Dual System for Better Sideband Suppression

BY DR. LEO H. McMAHON,* VK2AC

SINCE the introduction of amateur s.s.b. in its present-day form, late in 1947, the two systems of sideband generation — filter and phasing — have been subjected to much experimentation and practical testing. As to a preference between the two methods, the trend toward the filter system, in one form or another, by manufacturers of amateur equipment may be taken as a guide. This also follows a long-established practice in commercial communications systems. For the home constructor, however, both systems present problems. In the case of the filter system, the main ones are cost, positioning of the basic frequency in respect to the filter response, and sideband switching. With the phasing system, they are in the adjustment of the phasing controls (particularly in r.f. phasing), limitation of the suppression obtainable in practice, and wide frequency response unless special steps are taken to minimize it.

It was considered that if the two systems were combined, each in a simple form, the end result would be an improvement, even if each system was not adjusted to a highly accurate degree. The chance to put this into practice came with the availability of a "Sideband Package"¹ built in its originally described form, but in which the

sideband generator was not considered satisfactory. This generator was simply replaced by a new one consisting of a low-frequency phasing-type generator, followed by a single half-lattice filter. The end results from this generator have been excellent as to both carrier and sideband suppression.

Audio Phasing Circuit

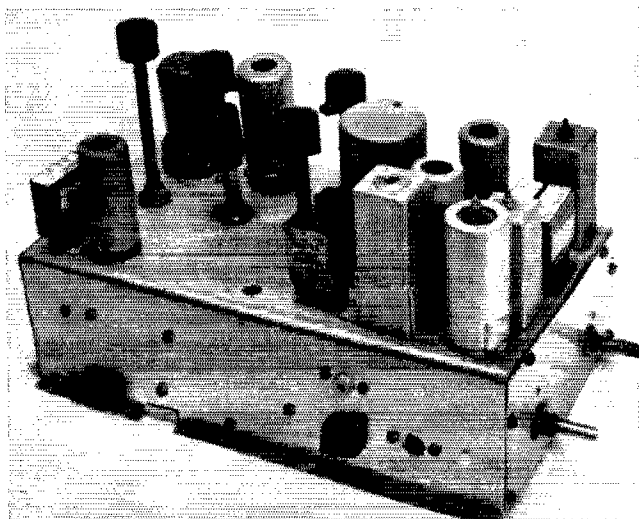
The phasing system used (see Fig. 1) is essentially the one described by W2EWL,² but scaled down to approximately 440 kc. This frequency was chosen chiefly because suitable crystals were on hand. The exact frequency can be a matter of choice. The audio output at T_{301} in the original "Package" circuit was found to be sufficient with a little to spare.

There is one minor modification in the input resistor of the B & W audio phase-shift network used in the W2EWL circuit. The division of audio voltage input to the network must be in the ratio of 7:2. This ratio is determined by the position of the moving arm of the 500-ohm input potentiometer. However, it is possible to get this ratio in respect to either end of the potentiometer. This may cause confusion which can be avoided by using a fixed 500-ohm resistor as part of the network, so that the higher voltage is always applied

* 22 Pitt St., Randwick, Sydney, N.S.W., Australia.

¹ Bigler, "A Sideband Package," *QST*, June, 1958.

² Vitale, "Cheap and Easy S.S.B.," *QST*, March, 1956.



VK2AC's sideband generator is constructed to fit in the space occupied by the original generator in the W6TEU exciter. To the left are Y_1 and V_1 , the audio ratio and balance controls, the plug-in p.s.n., and the 12AT7. Near the center are R_1 and R_2 , the s.b. selector crystals (disregard the frequency marking on the foremost holder), and a round shield can containing L_1L_2 . In the adjacent line are L_3L_4 , the 12AU7, and the 6AG5. C_2 (hidden) is mounted between the two tubes. At the right-hand end of the chassis are the 6BU8, T_2 , the filter crystals, and T_1 .

Balanced Modulator

The balanced modulator is a 440-kc. version of W2EWL's, using semi-conductors instead of the vacuum diodes. To maintain the same LC ratio in the output circuit requires an increase in capacitance of about 20 times that used at 9 Mc., or a value of 0.02 $\mu\text{f.}$ for each of the two capacitors, the resultant of the two in series making a capacitance of 0.01 $\mu\text{f.}$ across the coil. (As a convenient way of arriving at the size of coil needed to resonate at 440 kc., a coil was found that would resonate at 440 kc. with 1/100 of the capacitance, or 100 $\mu\text{mf.}$) A crude attempt was made to match the 0.02- $\mu\text{f.}$ capacitors by connecting them across an audio oscillator and measuring the voltage drop across individual capacitors until a pair with essentially the same drop was found.

Wire-wound controls were used at R_1 and R_2 because they were found to be more reliable and positive in their action than carbon units.

Crystal Filter

The output of the balanced modulator feeds a conventional Class A amplifier stage (see Fig. 2) which is followed by a single half-lattice filter. It is possible to overdrive the 6AG5, so the input coupling should be adjusted to avoid this.

The use of a single half-lattice filter in this combination gives all the results required. Surplus crystals were used and, since it is a difficult job for most amateurs to alter the frequency, a

different approach was used in selecting the basic frequency in respect to the filter curve. A study of the surplus-crystal frequencies available, shown in the following table,⁴ will reveal recurring frequency differences of 1389, 463, 926, 463 and 1389 cycles when two-digit and three-digit channel numbers are interposed.

Channel No.	Fundamental Freq. (kc.)	Difference Cycles
317	440.277	
38	440.740	463
318	441.666	926
39	442.592	926
319	443.055	463
40	444.444	1389
320	444.444	0
321	446.296	1389
41	445.833	463
322	447.224	926
42	448.148	926
323	448.611	463

By experimenting it was found that a frequency separation of 1389 cycles between the two filter-network crystals was sufficient. This represents the difference between Channels 320 and 319. Then, depending on the type of microphone in use and the general pitch of the operator's voice, the carrier frequency chosen was 463 or 1389 cycles below the lower-frequency filter crystal. The carrier crystal frequency in Fig. 1 is shown as 441.666 kc.

⁴ Mason, "Surplus Crystals," *CQ*, January, 1957.

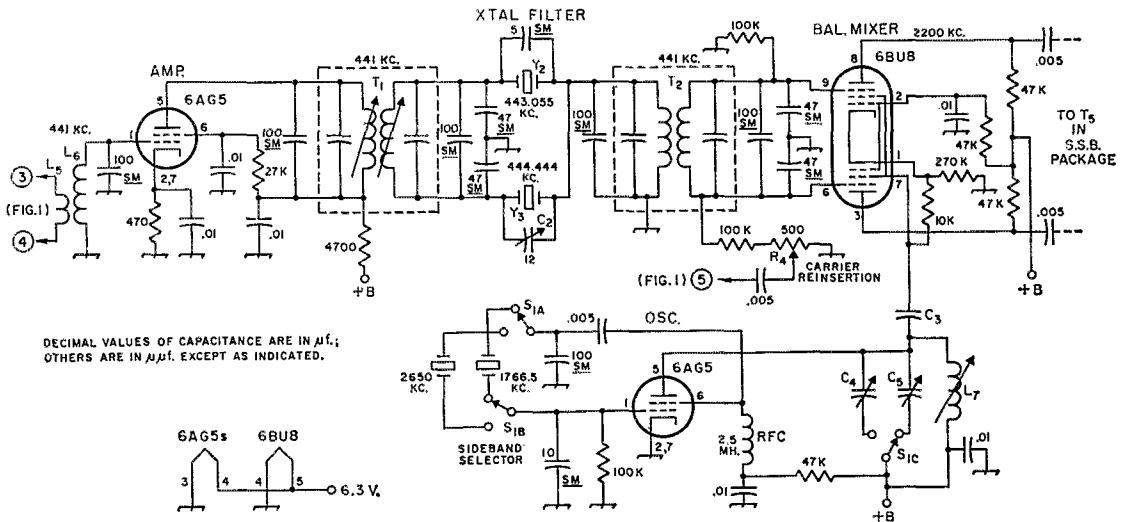


Fig. 2—Crystal sideband filter, balanced-mixer and sideband-selector circuits. This section fits between the balanced modulator of Fig. 1 and the 2250-kc. mixer of the "Sideband Package" circuit. The sideband selector replaces the original system in the "Package."

Resistances are in ohms, and fixed resistors are 1/2 watt unless indicated otherwise. SM indicates silver-mica capacitor. Other fixed capacitors not listed below are disk ceramic.

- C_3 —3.5-12- $\mu\text{mf.}$ trimmer (Centralab 827-B).
- C_3 —"Gimmick" (see text).
- C_4 —65-340- $\mu\text{mf.}$ trimmer (Elmenco 303).
- C_5 —100-500- $\mu\text{mf.}$ trimmer (Elmenco 304).
- L_5 —5 turns over ground end of L_6 .
- L_6 —Same as L_3 (Fig. 1).

- L_7 —20- $\mu\text{h.}$ iron-slug coil (Miller 4407).
- R_4 —Wire-wound control.
- S_1 —3-pole 2-position rotary switch.
- T_1, T_2 —455-kc. i.f. transformer.
- Y_2 —Channel 319 (surplus).
- Y_3 —Channel 320 (surplus).

This procedure is so simple, and gives such good results, that it is advisable to purchase a few odd crystals with which to experiment. The aid of other amateurs should be enlisted and their opinions sought and studied to decide which carrier frequency is the most satisfactory from an audio point of view in each particular case. This may not seem to be a very scientific approach to the problem, but it represents by far the most satisfactory method from the practical angle.

A variable phasing capacitor (C_2) is necessary for adjusting the filter to optimum. To provide a range of adjustment, a small fixed capacitance in the vicinity of 2 to 5 $\mu\text{f.}$ is placed across the lower-frequency crystal, and a small variable capacitor of about 3 to 12 $\mu\text{f.}$ or so across the other.

The transformers used in the filter are of the ordinary type, padded to approximately 440 kc. and provided with a capacitive center tap.

Balanced Mixer

The balanced mixer stage (Fig. 2) uses a 6BU8, which has worked very well and gives a conversion gain of about five. Balancing controls were tried in the experimental model but were not found necessary. C_3 was made by twisting together two pieces of insulated wire.

Sideband Selection

Sideband selection is accomplished by shifting the frequency of the oscillator feeding the balanced mixer. The system of selection used in the original "Package" was ingenious, but it may give rise to a possible source of trouble. In the frequency-multiplying stages any generation of a fifth harmonic might be applied to later stages and appear as carrier. It is not possible to balance out this fifth harmonic and so the practical carrier suppression may not be satisfactory. Some fifth-harmonic energy is always generated in the multiplying stages and can feed into the output stage by devious routes.⁵ With the cheapness and availability of crystals ground to a desired frequency, the method shown in Fig. 2 is an easy way to avoid this possible difficulty. The two crystal frequencies should be spaced twice the carrier frequency. Crystals ground to specified frequencies may be obtained reasonably from several firms advertising in *QST*.

Construction

Physically, the unit was constructed to replace the original generator in the "Package." However, a $5 \times 9\frac{1}{2} \times 3$ -inch chassis was used to allow mounting of some of the components underneath. The first things mounted were the carrier-insertion potentiometer and the sideband switch to fit in exactly the places occupied by these controls in the original unit. From then on, parts were mounted with an attempt to keep r.f. sections as well spaced and isolated as possible to

avoid unintentional coupling. The audio transformers were mounted underneath on opposite sides of the chassis. The diodes were mounted between the balancing potentiometers and the 0.02- $\mu\text{f.}$ capacitors, as well spaced as possible and at right angles.

The balanced-modulator coil, L_1 , was mounted above the chassis and covered with a shield, while the Class A input coil, L_6 , was mounted underneath.

Adjustment

In the adjustment of any s.s.b. transmitter, the use of a v.t.v.m. with an r.f. probe is almost mandatory. The first step in the adjustment is to see that the two crystal oscillators are operating properly. In the low-frequency oscillator, the input to the arm of each balance potentiometer is about 2 volts peak to peak. This is not a very large value, but it is quite sufficient for the purpose.

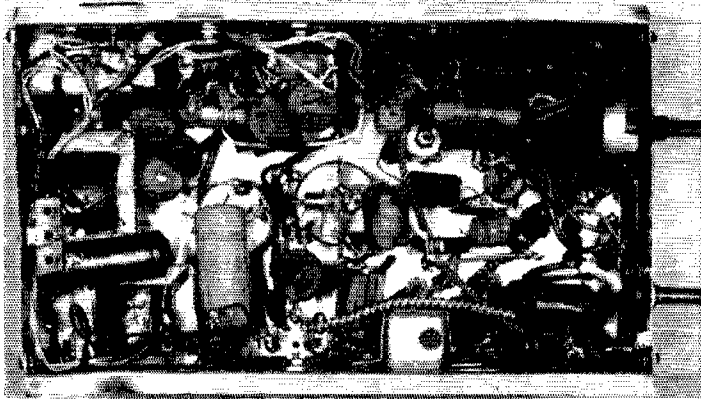
The next step is to peak all of the tuned circuits. To do this, the crystals are removed from the filter, and one of them put in the oscillator. A spare FT-243 crystal, or a capacitor of about 10 $\mu\text{f.}$, is inserted in one of the filter sockets to provide a small amount of capacitive coupling across the filter.

Set the phasing capacitor, C_2 , to minimum, and unbalance the modulator by running one of the balancing potentiometers to one end. With the output stage of the exciter feeding a dummy load, and with some sort of output indicator, such as a v.t.v.m., connected across the load, (or a receiver tuned to some output frequency of the transmitter, as described in the s.s.b. chapter of the *ARRL Handbook*), all tuned circuits are peaked.

Next, adjust the injection from the crystal oscillator to give maximum gain in the conversion stage. With S_1 set to the low-frequency crystal, set C_5 near maximum capacitance and adjust L_7 for maximum injection. Then adjust C_3 for optimum injection. Now turn S_1 to the high-frequency crystal and adjust C_4 for the same injection. If the same injection cannot be obtained, it may be necessary to repeat the process with C_5 set to a lower or higher value. Optimum injection is a matter of only a few volts. Since this oscillator feeds into a high-impedance load, it is easy to overdrive the mixer. As a matter of fact, care must be used constantly to avoid overdriving at any point in the system. Overdriving is a most common fault in many s.s.b. transmitters. It is always better to underdrive than overdrive, so always set the levels a little on the conservative side.

The next step is to see that the circuitry associated with the filter is functioning properly. To do this, remove the FT-243 crystal (or capacitor), and leave the two filter sockets empty. Now vary the phasing capacitor to see if the signal fed through to the output passes through a minimum. It is necessary to find this minimum so that in the final adjustment the capacitor can be set correctly for the most symmetrical response. The

⁵ This was not definitely confirmed by the author, nor has this difficulty been reported by anyone who has built the "Package." Adequate shielding of the multiplier stages is important, of course. — Editor.



Bottom view of the filter/phasing s.b. generator. The audio output transformers are mounted at right angles to the left. L_2L_1 is mounted against the lower side of the chassis. The balanced-modulator diodes are at the center. Shafts extending to the right are R_2 (above) and R_1 (below).

null point represents the point at which the circuit is neutralized. This point will be very close to the final correct position. Whatever signal that passes through after the null has been obtained is fed around the filter through stray paths. With the combination of phasing and filtering, a small amount of stray signal is of no importance.

The balanced modulator should now be checked for carrier feed-around. This subject is seldom given sufficient consideration. To make this check, replace the $10\text{-}\mu\text{f.}$ capacitor in one of the filter sockets and then disconnect the two r.f. leads from the balancing potentiometers of the modulator. Put the 441.666-kc. crystal in the oscillator and then listen on a receiver to one of the transmitter output frequencies. Any signal heard is a result of leak-around and must be minimized.

Shielded wiring should be used in all power circuits. Remember that a capacitance that makes a good bypass at 9 Mc. may not be sufficient at 440 kc. The voltage picked up at the cathode of the 441.666-kc. oscillator should be the minimum required to give full carrier reinsertion, since it was found that there was quite a large amount of leak-around directly from the oscillator to the 6BU8 stage. The voltage required at injection grids of the 6BU8 is only on the order of 300 millivolts, peak to peak.

It was found necessary to shield the balanced modulator output coil. After all other steps had been taken to minimize the leak-around, it was found that there was still slight leakage between the oscillator and mixer tubes, although they were many inches apart. Shielding of both tubes is necessary. Time spent in getting rid of this leak-around will give you a much better signal.

Now the r.f. leads to the balancing controls can be replaced and the carrier-balance controls adjusted for maximum suppression. The greater part of the carrier suppression takes place in the balanced modulator with a little additional help from the filter. (The main contribution of the filter is in eliminating the unwanted sideband.) Even without the filter, the residual carrier should be well down in the hum or noise. The stability of carrier suppression of this high degree is quite good, but not absolute.

The next step is to set the sideband-suppression controls. This is done first for the phasing system, with crystals removed from the filter and the $10\text{-}\mu\text{f.}$ capacitor substituted as described earlier. By far the easiest and fastest way to set the ratio and audio balance controls is to feed in a single tone of about 1000 cycles and adjust for minimum response on the unwanted sideband, using a receiver of sufficient selectivity; otherwise, you will have to make use of an oscilloscope pattern. When the audio phasing controls have been set, replace the filter crystals and set the filter phasing capacitor, C_2 , for maximum sideband suppression. It is in this step that you will need some sensitive detecting device; since the degree of sideband suppression will test the capabilities of any receiver. It gets to a point where it is hard to decide which to believe — the receiver or the generator.

An important point to watch in these adjustments for sideband suppression is to be sure that the same sideband is suppressed in both the phasing system and in the filter. If it becomes evident that opposite sidebands are being suppressed in the two sections, this can be corrected by reversing one set of audio output leads, or the r.f. input leads to the balanced modulator. The setting of the filter phasing capacitor for maximum suppression should come very close to the previous setting made for balance in the crystal filter. Once the suppression controls have been set, the tuned circuits can be repeaked. In all of these adjustments, it is very essential to be sure that no stage is overloaded, since this may lead to false indications.

In many phasing-type transmitters, even when the carrier-suppression controls are set to the optimum points, there is still a lot of residual signal. This is caused by the generation of low-frequency sidebands by the ripple frequencies of the high-voltage supply. Even when the last audio tube is removed, where parallel feed is used there still remains a circuit through which these low frequencies can circulate and so introduce sidebands at the ripple frequency in the output. Since the phasing system cannot suppress these low-frequency sidebands, it is essential

(Continued on page 160)

Ham Bird-Watchers Award

BY PAUL C. AMIS,* W7RGL

THE current rash of awards and certificates has indicated one definite lack in hamdom's sleuthing. To fill this need, it is recommended that the following new award be thoughtfully considered.

The Ham Bands Bird-Watchers Award

This award will be issued to those radio amateurs who can show proof of observing the following bird types found in or near the radio amateur frequency bands:

1. Gravel-Throated Splatterer
2. Forty-Meter Grouch
3. Ginklet-Eyed Click-Watcher
4. Great American Regret
5. Wooley-Headed DX-Suatcher (found perched precariously on band edges)
6. Yellow-Bellied V.F.O. Swisher
7. Early-Morning Cuckoo
8. Loud-Mouthed Warbler
9. Tail-Ending Grinch
10. Sideband Garbler (whose call is "Ah-h-h Umm-m Err-r")
11. Midnight Band Thrasher
12. Ruffled Spouse

* Route 1, Box 438 Poughsboro, Washington.

13. Whooping Chirper
14. Long-Winded Coot
15. Flea-Powered Pushover (found at fringes of DX pile-ups plaintively piping "CQ DX")
16. Double-Breasted Peewee
17. Drifting Clicker
18. Locked-Key Clobberer
19. Fuzzy-Minded Bandsatcher (locale: found calling "CQ DX" during SS Contests)

To those astute followers of the ionosphere who can claim sighting of all of the species on at least three different bands, the award should be a suitably-framed ARRL Official Observer application.

There may be a number of bird types which have, by oversight, myopia, or QRM, been left off the above list. The author apologizes for such neglect, but, as a practicing radio amateur, it must be recognized that with the passage of years, he tends to become a Diehard¹. QST

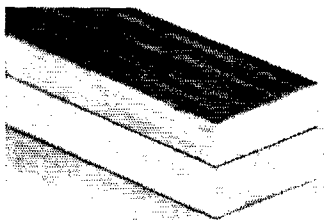
¹ A DIEHARD is a ham who worships the very ground his head is stuck in.

• New Apparatus

Wooden Radials for Cubical Quad Antennas

THE use of wooden radials in the construction of quad antennas is a feature presented by the Steel & Engine Products, Ltd., Liverpool, Nova Scotia, Canada.

The radials are made of three laminates of straight grain selected white ash (see cross section of a radial in the photograph). The grain in all three laminates runs lengthwise and the laminates are all treated with wood preservative on top of which is sprayed a coat of epoxy enamel. A fourth laminate is added to the radials between the spider and the 10-meter portion of the antenna, for greater strength.



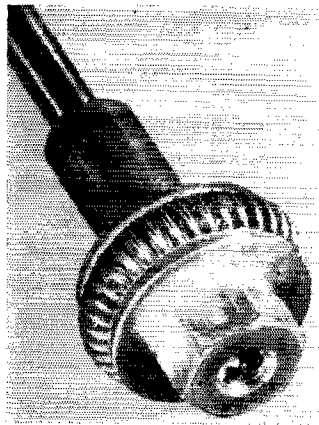
Each finished radial weighs about 5½ pounds, and measures 1¼ inches square at the spider end and 1 inch square at the other end.

Aluminum spiders, "T" mast couplings, a boom, etc., are also available for building a complete cubical quad antenna.

— E. L. C.

Mobile Antenna Band-Changing Contactor

SLIDING contacts have been used inside loading coils for years, but some made poor r.f. connections to the coil and sometimes "hung up" on the coil turns.



The Band-Spanner mobile antenna uses a new circular contactor that cannot get caught or twisted out of shape and is completely free to rotate. The special contact, shown in the photograph, is affixed to the lower end of a whip and is made from a spirally-shaped copper conductor. This assembly can be pushed up or down, plunger style, inside a fiberglass column which contains the antenna loading coil. The movable contact makes connection to the bare turns at any desired part of the loading coil. The top whip is calibrated at the factory so that it can be raised or lowered quickly to the proper setting for any band from 75 through 10 meters. For fitting into the garage or carport, the whip can be telescoped down so that the over-all length of the antenna is only 63 inches (Model A-61) or 60 inches (Model A-62). The antenna is manufactured by Webster Mfg. Co., 317 Roebling Road, South San Francisco, California.

— E. L. C.



Bouquets to the strong South American effort by YV5AGD on both c.w. and phone. With 435,150 c.w. and 252,180 phone points, Antonio was 2nd highest DX scorer in both contests, a total of 2868 contest QSOs! With such an improvement over his 1961 score, this station should be tough to beat in the 1963 ARRL DX Contest.

Scores Climb Despite Conditions

Official Results — 1962 ARRL International DX Competition

TWENTY meters was open to Central Asia via the short skip path over the North Pole at 1430 GMT, 17 March. The boys were working such juicy ones as AC5CP, VQ8BM, and VU2AJ. Those who had worked them were frantically searching for additional rare multipliers during the short opening. And there one was . . . a weak watery signal with a slow halting fist calling a long long CQ . . . *dah dit dah dit dah dah dit dah*. You could feel the receivers stopping on the frequency, beams zeroing in, and hear a few of the boys swishing in and peaking their finals. Oh boy, was it a JT1 or AC3? There, he's finally signing . . . *de de KN1 — KN1 —*. Don't ask me, I don't know."

Sounds like an Alfred Hitchcock thriller, but W9IHN depicts this episode from the 1962 ARRL DX Contest of last February and March. What is a DX Contest anyway? Ask any entrant and he probably isn't sure himself. Said K1PIA, mystified at his own participation: "Hadn't planned to enter, but once started, I couldn't stop." Is it the competition? Is it a chance to get new countries for DXCC? Is it a chance to demonstrate your ability to entice DX with operating skill during a given span of time?

The ARRL DX Contest is fair game for *everyone*, both the casual and serious DXer. The long hours might be tough on the OTs out for score, but it provides the peanut whistles a better chance to sneak the rare ones while the kilowatts are napping. Gives everyone a better chance, too, should there be a band washout. The DX Contest is popular too for the DXer who can't "live" by his rig sleeping with a mike in his mouth and a key clutched in his paw, in order to make the DXCC Honor Roll. The c.w. contest is traditionally a jewel, with the phone contest a pot of fun, too. Why not make it a sideband contest is a question sometimes asked. Well, what is the phone contest now? Why put blinders on the contestant? If he can come up with a winning score on sideband, a.m., n.b.f.m., or tin cans hitched together by a wet string, or a combination of all, what dif-

ference does it make? It's a voice contest. You pick the way you want to talk, not ARRL.

The ARRL International DX Competition, with this its 28th running, is deeply rooted in the history of amateur wireless. F8ZF reminds us: "People don't seem to realize the ARRL DX Contest is the continuation of the First Transatlantic Tests. I was too young for these, but the DX Test is the occasion for meeting old friends and making new ones." Yep, the 1962 DX Contest was the latest in a long line of challenges to the DX Contester. Let's examine just what transpired in the February-March 1962 fracas.

C.W. Highlights

It's no secret the m.u.f. has been dropping like a balloon leaking hydrogen, but it's also obvious from this year's scores that the DX hounds have been compensating for it with more use of 40 and 80 meters. Actually, conditions were really pretty fair both c.w. week ends,



with 15-meter openings giving the boys a needed boost. Unfortunately, most of the DX crowd had long given up on 10-meters as a "Silent Key," and thereby missed some good opportunities. W6GQK bemoaned the fact with: "Band conditions were good considering the fairly low sunspot numbers. Ten meters was open during the day, but not much use was made of the opening." Newcomer K1NOL commented: "The only c.w. contact made in two years in amateur radio on 28 Mc. was during the ARRL DX Contest." WA2IZS detected a faint pulse: "Ten meters still has some life in it yet." The 10-meter ship may have a considerable starboard list, fellas, but let's not give up the ship until it's sunk!

Scores took a considerable upturn this year. Last year only 27 W/VEs topped 200,000 points compared to 59 this year, while 30 non-W/VEs broke 100,000 to 41 this year. W3MVB ponders an explanation: "Band conditions are going down with the sunspots, but my score has doubled each year for the past three years. What's the reason? Experience and improved operating practices? According to my graph, watch out next year." Conditions to the Indian Ocean and Asia were in the doldrums with our good friend Milt, VQ8BM, noting: "Band conditions were very poor compared to last year, openings being of much shorter duration. Next year I expect to be back in the U.K. under my former call, G3GVQ. Have really enjoyed the DX Contests." VU2MD reported poor conditions with only short band openings to W/VE. When they were coming through though, a host of callers were on frequency, with WA6KMF noting ZK1AR's command to the tailending flock of brethren: "I'm going to work K9VRU or bust." Meanwhile, luck was with K7CTI who "was pleased to snag VS4RS in Sarawak one-half hour before the contest was over."

Rigs ranged all the way from complete kilowatt 8-Lines for each band to mobile rigs like K3JOY/1: "Yes, I know it is probably the lowest submitted score, but I'm proud of it. It may interest you to note that K3JOY/Mobile in Mass. worked UA3HR, my first real DX from the car. Maybe I get the booby prize for the lowest submitted score, but by golly, I was in there trying!" W6ERS philosophizes on power: "I have worked these contests with everything from a 5-watt 6AQ5 crystal oscillator to the present 800 watts. Having now discovered how much easier it is to work them with 800 than with 5 or even 500 watts, I must reluctantly conclude that Lord Acton's celebrated dictum has an application not dreamed of by him: 'Power corrupts, and absolute power corrupts absolutely.'"

Power rates operating ability as well, with W5BUK nominating HC1AGI, with a kilowatt of operating skill, for the "Most ubiquitous," that is being everywhere with the mostest most of the time. HC1AGI was just that for the world's top score with Don McClenon, W3EIS/HC1DC operator, keying 826,677 points to become the first winner of the brand new and top DX trophy

NUMBER OF COUNTRIES WORKED BY BANDS

LISTED ARE COUNTRY TOTALS MORE THAN

20 ON	3.5 Mc.
50 ON	7 Mc.
75 ON	14 Mc.
60 ON	21 Mc.
15 ON	28 Mc.

(Lower Totals Not Listed)

CALL	3.5 Mc.	7 Mc.	14 Mc.	21 Mc.	28 Mc.	CALL	3.5 Mc.	7 Mc.	14 Mc.	21 Mc.	28 Mc.
W1BIH	20		85	77	19	W4DOS	34	68	81	77	20
K1DIR	23					W4DXI	20			61	
W1JYH	21	53	96	66		W4HUE		52		65	24
K1MLI			96			W4JAT			77	61	
K1MOD				63		W4JFE			86		
W1NJL	28					W4KFC	42	72	94	80	24
W1QMM	20					W4KXV*	31	69	102	86	19
W1WY				68		K4LPW				68	15
W2AYJ	22	76	75	62		W4OPM			75		
K2DCA		52	83	75	21	W4RQR	25	59	77	77	23
K2DGT	36	70	76	71	21	W4SHJ	21				
W2EQS	23					K4TML	31	63	76	76	18
W2ESO			78	61		W4YWX		51		81	
K2FC			77			K4ZKI			76	69	15
W2FXN			84			W5BRR				70	
K2GUN	23		79	64		W5CKY				75	19
W2HMJ			79			W5WZQ		69		60	15
WA2IZS*					17	W6CYI					16
W2WZ			82	65		K6EVR*	26	86	94	75	15
W3ALB	22	58	89	75		W6HJT					17
W3AFM			76			W6HOC					19
W3BYX*		51	77			W6IBD			82		16
W3ECR	37	75	84	80		W6KQ					16
W3EIV	26	62		67	18	W6LDD					15
W3EQA		56				W6PQW		58			
W3GHM*				60		W6RW*	27	80	98	70	20
W3GQF*		53	75		17	W6TZD					18
W3GRF	37	73	90	79	15	W6WB					19
W3IYE			76			KH6IJ			85		
W3KFQ*		66	76	63		W7PGS			75		
W3KT				63		W8FGX		70	81	78	20
W3MFJ			76	60		W8JIN		71			
W3MSK*	37	87	118	96	25	W8ZJM	20			69	
W3MSR					15	W9GIL				60	
W3MVB		80		64	21	W9IRH			81		
W3MWC*		67				W9JGV				62	
W3QQL					15	W9NII				64	
W3SQX		60	79			W9RCM				65	
W3TMZ*	35	60	88	72		W9VSO				65	
W3WJD*		58		62		W9WNV	25	77			
W3ZAO	20	50		68		W0BMM		51		61	
W4AZK			77			W0BTD				73	
K4BAI				65		W0FDL			77		
*Multi-operator						W0AIH/VE3	23	65	81	67	



Top c.w. score from Africa was 5N2JKO with 1211 c.w. contacts, multiplier of 45, and 163,485 points, plus 50,826 points in the phone contest. Nice going, Mike, on earning two certificates.

DX Continental Champions

Single-Operator

C.W.		Phone
5N2JKO	163,485	Africa VQ2AT...53,880
KR6AR	201,131	Asia KA2MA...35,560
G4CP	261,300	Europe OE1RZ...126,559
KP4CC	328,866	No. America XE1CV...227,510
VK2GW	205,032	Oceania KW6DG...92,432
HC1AGI	826,677	So. America YV5AGD...252,180

in the world, the *Carl-Eric Rosen SM5BUG/9Q5 Memorial Award*, donated by Harry Nadley, W3INH. This trophy is to be presented annually by W3INH to the highest scoring single operator in the ARRL DX Competition as a memorial award to some famed DXer passed away. This year's trophy is in memory of SM5BUG/9Q5 who gave his life in United Nations' service in the Congo as radio operator aboard the aircraft of Dag Hammarskjold that crashed near Ndola, Northern Rhodesia.

U.S.A.-way, Vic Clark, W4KFC, earned top honors with 721,112 points. Here's the way the top W/VE single operator scores over 200K points (200,000 points, that is) stacked up: W4KFC 721K, W3ECR 656K, W3GRF 635K, K2DGT 564K, W4DQS 539K, W8FGX 472K, W3ALB 458K, K4TML 454K, W1RQR 447K, W0AIH/VE3 436K, W1BIH 419K, W3MVB 405K, K2DCA 391K, W1JYH 383K, W3EIV 380K, W2AYJ 375K, W2WZ 345K, K2GUN 299K, W3ZAO 298K, W4HUE 294K, W6IBD 293K, W5WZQ 283K, W4JAT 273K, W3SQX 267K, W5CKY 263K, W6HJT 261K, K1DIR

258K, W8ZJM 256K, K4ZKI 252K, W4AZK 251K, W4JFE 248K, W3IYE 241K, W4YWX 231K, W9WNV 229K, W3MFE 226K, WA2OJD 226K, W1PZ 224K, W2ESO 220K, W6LDD 219K, W6KG 218K, K4LPW 215K, W9RQM 212K, W2FXN 210K, W7PGS 206K, W0BMM 204K, W5BRR 200K, W3OCU 200K. Fantastic multi-operator station W3MSK did it again to break the magic one-million with 1,102,101 points, operators W3MSK, W3MCG, W3PZW, W3JTC, W3KDP, W4IYR, W3FYS, W6HOH, and K3MZY turning the trick. Following W3MSK were multiple operator stations: W4KXV 754K, W6RW 620K, K6EVR 586K, W3TMZ 480K, W3KFG 366K, W3WJD 346K.

The DX stations really put in a concerted effort this year. These top scorers all topping 100,000 points deserve special mention: HC1AGI 826K, YV5AGD 435K, PY4OD 332K, KP4CC 328K, YN1AA 307K, YV5ANT 269K, ZP9AY 266K, G4CP 264K, HK7ZT 244K, TI2CAH 223K, FP8BX 219K, HP1IE 210K, G63OQR 206K, VK2GW 205K, KW6DG 203K, KR6AR 201K, GW3JI 198K, JA1VX 196K, OK1ZL 193K, ON3DL 187K, OE1RZ 186K, ON4GL 186K, CE3AG 182K, G6BQ 177K, F9MS 170K, 5N2JKO 163K, P8VJ 162K, G2DC 158K, OE1AD 155K, G2QF 151K, CE3RY 147K, JA1CO 144K, ZK1AR 138K, JA1BWA 137K, OK1GT 126K, CT2AI 121K, PA6ADP 116K, PA0LOU 112K, E16ID 102K, VP2AB 100K, and multi-op DL4QF 120K.

The c.w. contest sure makes the DX bands hop. To conclude the c.w. highlights W3URIE observed: "The strangest thing was at the end of the contest at 2400 Sunday evening. At 2359 bedlam and DX galore. At 2400, a practically dead band." And thus it is until the ARRL C.W. DX Contest 1963.

C.W. Call-Area Leaders

Single-Operator

W1BIH	721,112	W9WNV	229,167
K2DGT	564,338	W0BMM	204,980
W3ECR	656,232	VE1EK	15,582
W4KFC	721,112	VE2BV	111,587
W5WZQ	283,716	W0AIH/VE3	436,590
W6IBD	293,262	VE1NO	91,800
K116J	116,520	VE5JV	116,1
W7PGS	206,853	VE6HG	20,670
K171DO	12,012	VO2NA	11,808
W8FGX	472,752		

1 W3MFW, opr.



Pausing from the sweltering heat of both the weather and the DX Contest, KR6AR tunes in another station. With a 32S-1 and KWS-1 transmitters, 1140 contacts were made during the contest for highest c.w. Asia score. Since December 1960, over 4000 QSOs have been made by KR6AR. February 1963 calls for the return trip to K9EHS.

QST for

Phone Highlights

The ARRL DX Phone Contest marches on! High scoring K2GXI sums it up with: "Scores continue to mount despite declining conditions." It's "lots of fun, work, misery, and cussin" according to W6OMR; what a ball! Sideband continues to predominate and grow, perhaps explaining the higher phone scores. Although some of the gung grumbled at waiting in line for s.s.b. exchanges, K6TIP/6 liked his first DX Contest adventure: "As you can see by the miniscule size of the score here, I'm doing this not in any hope of award or glory, but just to keep 'the other baboons on the course' honest, as Stirling Moss has said. Never having entered the DX Contest before this year, I have nothing with which to compare my achievements. Nevertheless, I feel compelled to remark how simple s.s.b. contacts are in the DX Contest, no calling up or down frequency; the only skill involved is timing the call properly. Just holler when nobody else is hollering and you got the answer."

The phone men also tripped up by not hollering enough on 10 meters. "Long openings on 28 Mc. to America. These were not exploited to the fullest advantage by the American stations, consequently comparatively low score on that band." — VQ2AT. "If more people had known 10 meters was open." — W8IBX. "Good to see 10 meters still kicking. Didn't think she would open up this year." — KW6DG.

W2HMJ "nominates CR6CA for special prize for outstanding job of still making QSOs after he had lost his voice," while W9GAI goes for snappy operating: "My nomination for excellent operating goes to VP5BP — even if I did wait almost an hour for him to call for W9s." KØIKL used her feminine voice to best advantage: "It's loads of fun to join 100 guys to call a rare one and to have the DX station say: 'QRX, fellows. Let's give the YL on frequency a chance.'" Ye gods, OMs, we haven't a chance against that weapon!

Score is the object, and these W/VE single operator top-notchers bested the phone fraternity with 100,000 points and over: W1ONK 351K, K2GXI 349K, K5MDX 255K, W4KFC 249K, W4BVV 242K, W9DUB 179K, K2IEG 174K, W2FXN 157K, W9NZM 121K, K8PUU 120K, W2WZ 117K, W3TLN 112K, K1RTB 108K, W3WJD 105K, W4JFE 104K. And multi-operators: W3MSK 384K, W1HKK 296K, W8NWO 222K, K6EVR 198K, W3GRF 163K, W8NGO 159K, W3KPFQ 132K.

Conditions weren't very good to Laos, but Clay, XW8AS, managed to contact a few anxious W/VE stations during the phone contest. Rig is a KWM-2 to a dipole, replaced since by a cubical quad.

NUMBER OF COUNTRIES WORKED BY BANDS

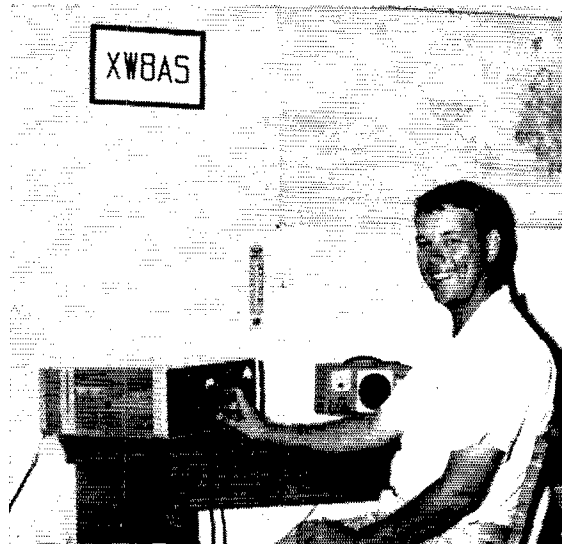
LISTED ARE COUNTRY TOTALS MORE THAN

5 ON	3.8 Mc.
20 ON	7.2 Mc.
50 ON	14.2 Mc.
50 ON	21.25 Mc.
25 ON	28.5 Mc.

(Lower Totals Not Listed)

CALL	3.8 Mc.	7.2 Mc.	14.2 Mc.	21.25 Mc.	28.5 Mc.	CALL	3.8 Mc.	7.2 Mc.	14.2 Mc.	21.25 Mc.	28.5 Mc.
K1RTB	6		52			W3TLN			56	50	
W1BIH	8		54			W3WJD			50	53	
W1HKK*	38	20	66			K4BUJ*	5				
W1NJL	28					W4BVV	16	37	61	62	
W1ONK	28		83	54	32	W4JFE	7		72		
K2DCA				52		W4KFC	14		72	63	35
K2DGT	13					W4LZW				56	
K2FC			58			W5AJY	7				
K2GXI	20	45	69	65	29	K5IKL					96
K2IEG	25		96			K5MDX	23	32	72		34
W2BQM	13					W5KC	9				
W2CYX		61				K6EVR*	5	22	58	50	26
W2FXN			73	50		K8PUU	8	20	54	54	20
W2GBC			60			W8BF				50	
W2OKJ	6		51			W8NGO*	5		62	53	
W2WZ			61	53		W8NWO*	10	32	63	57	25
W2ZX				26		K9ECE				51	
WA2JBG			52			W9DUB	9		51	62	35
W3ALB	14		57			W9JYJ	6	20	55		
W3AYD			67			W9NZM	11				34
W3GHD			61			W9YSQ				52	
W3GHM*			56			W9YT*	13			51	
W3GRF*	13		68			KØIKL			50		
W3JTC			85			WØBTD	5				26
W3KFO*	16		52			WØNFA			62		
W3KT			55	53		VE1BC	24				
W3MSK*	27	27	77	72	28	VE2UI	21		55		
W3PHL		55				VE3PV	8				

* Multioperator





ARRL Director Bob Denniston, W0NWX (of VP1JH fame) visits Canadian Director Noel Eaton (right), VE3CJ, at his Cayman Islands VP5BP QTH. Bob, christened "The Golden Fist," managed just a brief c.w. stint with the resultant pileup, with VE3CJ making a serious phone effort, good for nearly 1000 QSOs, 6th highest DX phone score. Understandably enough, Noel claims that a long wire automatically gains 15 db. when it's radiating "de VP5BP."

Disqualifications

The following are deemed ineligible for score listing or awards. In each case disqualification under contest rule 14 was in view of non-observance of FCC rules as reported by at least two accredited Official Observers, or by a single FCC citation. Such violations as out-of-band operation, phone splatter outside band edges, key clicks and spurious signals, etc. were the criteria for these disqualifications: *C.w.* — K2BML, W2MUM, WA2TGW, K4LIQ, W5MCO, WA6AYF, W6OMR; *Phone* — W7BTH, K7MLD/2.

Finis

The 1962 ARRL DX Contest surely was a lot of fun, and let's look forward eagerly to the 1963 contest. But let's remind ourselves not to let our eagerness get the better of us in our operating practices, by keeping in mind this DX Contesters' Code:

Don't be a DX hog.

X-ert your influence to promote clean operating techniques.

Courtesy is only a word until you practice it.

ObeY all regulations.

Never test without a dummy load.

Timely calls mark a good operator, so *listen* first.

Employ proper phone procedure.

Send code properly.

Try your best to set an example for others to follow.

— J. F. L.

Twenty-Eighth ARRL International DX Competition

Operator of the station first-listed in each section and country is winner for that area. . . . The multiplier used by each station in determining score is given with the score — in the case of U.S.-Canada this is the total of the countries worked on each frequency-band used; in the case of non-W/K/KH6/KL7/VE/VO entries it is the total of the U.S.-Canada districts worked on each band. . . . The total number of contacts is listed next. . . . The letters A, B, and C approximate the input to the final stage at each station; A indicates power up to and including 150 watts; B indicates over 150 watts, up to and including 500 watts; C indicates over 500 watts. . . . The total operating time to the nearest hour is given for each station and is the last figure following the score. . . . Examples of listings: W3ECR 656,232-296-740-BC-80, or final score 656,232; multiplier 296; 740 contacts; power over 500 watts; total operating time 80 hours. . . . Stations manned by more than one operator are grouped in order of score following single-operator listings in each section or country tabulation; calls of participants at multi-operator stations are listed in parentheses. . . . In sections or countries where three or more multiple-operator entries appear, the top-scoring station is being awarded a certificate.

DX phone scores climbed skyward with these top operators with over 50,000 points earning special mention: XE1CV 327K, YV5AGD 252K, HC1AGI 231K, HI8DGC 230K, KP4AWH 220K, VP5BP 203K, FS7RT 167K, VP5CH 141K, LUI1DAB 135K, OE1RZ 126K, PZ1AX 122K, CTIYE 119K, VP3HAG 105K, KW6DG 92K, YV5AKU 89K, KP4AVQ 82K, YV2CJ 62K, G3DO 61K, CO8JK 58K, HK4EB 55K, VQ2AT 53K, HR1MM 52K, F2MO 51K, 5N2JKO 50K, and multi-op CO8RA 141K, VP2GAA 58K.

The Clubs

Having lost three straight to the Frankford Radio Club and last year by a whisper, the Potomac Valley Radio Club could stomach the frustration no more. Dragging all their big guns to the front, the Washington-area crew bombarded all opposition with both barrels to smash the pursuers with 8,160,687 points. Outnumbered by the Frankford Club in entries, 60 to 48, the PVRC needed the really big scores to bag the cocobolo gavel, and outscore Frankford's 6,071,845. The Southern California DX Club maintained mastery over the Northern California DX Club for third place, while the Florida DX Club slipped into fifth with a thundering one-million-plus score. Watch that Florida gang in the future! Also topping one-million was the Order of Boiled Owls of New York who vastly improved their standing. A total of 27 clubs qualified for the listing, with many more ineligible for lack of three entries.

Certificates

Certificates are issued to each ARRL section leader on phone and c.w. and to each single-operator leading a country. A multiple-operator certificate is awarded to the highest scorer in ARRL section or country from which three such entries are received. Here's how many certificates are going out to happy recipients as a result of this year's fracas:

	<i>c.w.</i>	<i>phone</i>
Single-operator, W/VE	67	61
Multioperator, W/VE	3	0
Single-operator, DX	89	61
Multioperator, DX	1	0
Club	24	13

First time in the phone DX Contest yielded highest DX honors for XE1CV with 1214 QSOs, 90 multiplier, and 327,510 points. Carlos, who is secretary of the Mexican amateur society, LMRE, has participated in a couple of XE4, Revilla Gigedo, DX-peditions.



C.W. SCORES

ATLANTIC DIVISION

Eastern Pennsylvania

W3ECR¹ 656,232-296-740-BC-80
W3ALB... 458,577-251-6009-C-70
W3SQX... 267,729-203-427-C-77
W3OCU... 200,072-178-376-C-7
W3EQA... 192,418-178-363-C-46
W3KT... 191,646-163-378-C-7
W3CGS... 162,582-158-343-C-72
W3GHD... 76,720-112-211-C-7
W3ORU... 74,472-113-214-C-45
W3MQC... 63,504-112-183-C-7
W3FDH... 62,790-105-198-C-7
W3IMV... 61,380-91-220-B-24
K3AIG... 37,485-85-147-C-20
W3HNL... 26,532-67-133-C-34
W3BUR... 24,336-78-104-C-7
W3GRS... 22,311-67-111-A-15
W3CA... 20,493-69-99-A-15
W3YP... 15,132-52-97-B-43
W3WUH... 13,050-50-87-B-10
K3HTZ... 10,293-47-73-A-38
K3JHG²... 9,942-38-83-C-6
K3JCT... 7320-40-61-A-7
W3ADZ... 7056-42-56-C-8
K3JLI... 5313-33-55-A-14
K3HYT... 3780-28-46-B-15
K3JNP... 3441-31-37-A-20
W3NCW... 3360-28-40-A-11
K3RFB... 2464-22-38-B-20
W3URE... 1836-18-34-B-9
W3HHK... 1620-18-30-A-10
K3MNT... 720-12-20-B-7
W3SA... 630-14-15-A-4
W3LEZ... 330-10-11-B-5
K3LSX... 294-7-14-A-7
K3GNN... 264-8-11-B-2
K3OWE... 60-4-5-A-1
K3LWY... 3-1-1-A-1
W3KFQ (K3GJ, W3KFQ)
366,605-227-539-C-92
W3WJD (K3s JG NFA, W3WJD)
345,083-221-522-BC-96
W3MWC (W3s HHK MWC)
276,589-197-468-C-79
W3GHM (W3s GHM KDF NOH)
265,008-204-434-C-7

W3RYX (W3s BYX DAO)

198,390-170-389-B-92
W3DBX (W3s DBX ISE)
170,520-170-352-B-60
K3NUM (10 oprs.)
73,590-110-223-C-80
W3QMZ (K2JXX, W3QMZ)
56,145-95-197-C-54
W3DAO (W3s BYX DAO (SsY))
12,012-52-77-C-7

Md.-Del.-D. C.

W3GRF... 635,580-297-714-BC-80
W3MVB... 405,123-249-543-AC-91
W3EIV... 380,316-246-516-BC-80
W3EYE... 241,228-206-391-C-47
W3MFI... 226,793,179-423-C-75
W3KA... 145,992-153-318-B-47
W3QZ... 137,538-162-283-C-60
W3QQL... 102,340-140-245-B-40
W3MSB... 96,444-141-228-C-40
W3DHD... 76,200-127-200-C-35
W3AEL... 58,740-110-178-C-25
W3FPZ... 53,955-105-171-C-34
W3ADM... 41,724-76-189-C-32
W3EIV... 40,500-90-150-C-20
W3RNV... 37,230-85-146-C-35
W3WV... 35,094-72-169-C-67
W3WU... 18,900-60-100-B-7
W3BKE... 14,382-51-94-B-20
W3EPR... 8928-48-62-C-18
W3GAU... 5640-40-47-B-8
K3MZY... 3888-27-48-B-24
W4EXM/3... 1658-19-29-A-4
W3FMS... 918-17-18-C-4
W3MEU... 900-12-15-A-14
K3IOZ... 663-13-17-B-5
W3BVO... 95-3-7-B-4
W3MSK (9 oprs.)
1,102,101-367-1001-BC-96
W3TMZ (K3NZV, W3TMZ)
480,972-269-597-AC-85
W3GQF (8 oprs.)
277,134-221-418-BC-75
W3AYD (W3s AYD IPO)
52,734-94-187-C-25

Southern New Jersey

K2DCA... 391,980-235-556-C-67
W2FXN... 210,942-179-106-C-38
K2GHH... 138,165-151-305-C-75
W2GGL... 84,154-127-234-BC-47
W2HDW... 58,970-90-211-A-20
K2OEA... 48,450-95-170-A-28
W2AIEK... 42,504-88-161-C-52
K2CPR... 40,830-94-145-B-28
W2ABLV... 28,280-78-120-AB-12
W3DVF/2... 22,348-68-112-AC-7
W2QKJ... 18,480-56-110-B-30
W2SDB... 12,900-47-90-AB-20
W2PAU... 9828-52-63-C-10
K2BG... 8843-43-67-B-15
W2NSJ... 8052-44-61-B-14
W2FYS... 7020-36-65-B-15
W2DAJ... 4888-34-44-B-9
W2AHSF... 3321-27-41-A-5
W2BEL... 324-9-12-C-7
W2HJF... 297-9-11-A-5
K2SQM... 147-7-4-A-2
K2OXN... 135-5-9-C-2
K2HBV... 126-6-7-A-4
W2AIZS (W2QDY, W2AIZS)
216,546-187-385-B-85
W2AKWS (2 oprs.)
5130-30-57-B-24

W2AOIL... 108-6-6- --
W2AQMJ... 40-4-4-A- --
W2CXM (5 oprs.)
66,690-95-234-AC-78

Western Pennsylvania

W3ZAO... 298,368-244-444-C-60
W3LIV... 15,075-55-95-A-36
K3PZ... 7055-45-53-AC-23
W3KQD... 5952-31-64-A-15
W3UHN... 1254-19-22-A-7
W3VK... 468-12-13- --
K3NHZ... 429-11-13-A-5

CENTRAL DIVISION

Illinois

W9WNV... 229,467-223-343-C-48
W8NII... 124,122-151-274-B-58
W9IRH... 98,425-127-250-C-68
W9DWQ... 79,296-112-237-C-40
W9JGW... 39,830-70-142-AC-29
W9KWX... 27,588-76-121-B-15
W9WIO... 27,588-76-121-C-19
W9QYB... 20,808-68-102-C-10
W9WYB... 18,449-61-103-B-30
K9VY... 15,552-48-108-B-36
W9GMS... 12,600-50-84-B-32
K9LSN... 12,430-55-76-B-22
W9VWG... 5439-37-49-C-14
K9MBM... 3030-30-39-C-36
W9KHG... 2520-24-35-B-9
W9ZYD... 1932-23-28-C-6
K9ZGW... 1539-19-27-B-13
W9CLH... 736-12-21-C-2
W9QM... 396-11-12-C-7
K9KDI... 216-8-9-B-8
K9JSV... 147-7-7-A-6

Indiana

W9LEK... 10,062-43-78-B-21
K9LVK... 7920-44-60-A-30
K9IOO... 528-11-16-A-12
K9VRU (6 oprs.)
78,720-128-205-C-96

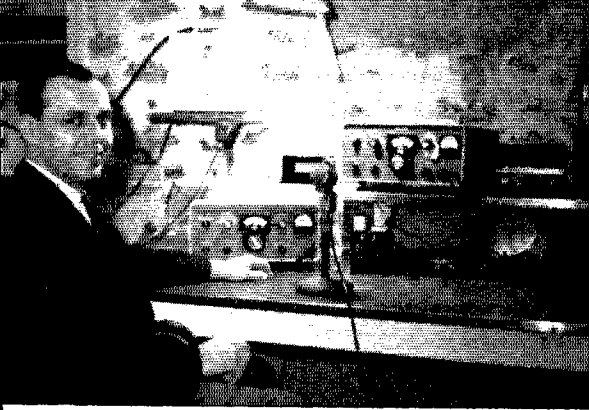
Western New York

W2DSB... 129,600-144-300-C-48
W2YRH... 109,500-125-292-C-60
W2BJH... 95,634-126-253-C-56
K2PTQC... 91,392-128-238-B-36
K2LWR... 84,688-101-296-B-56
K2INP... 38,250-85-150-C-30
W2DOD... 24,286-79-146-B-20
W2ALDC... 32,964-82-131-C-26
W2QQ... 19,392-64-101-B-12
W2LJX... 13,311-51-87-AC-50
W2FXA... 9594-41-78-B-5
W2PDB... 7560-36-70-C-10
K2DJD... 6435-39-55-A-7
K2KRI... 3219-29-37-B-31
W2KAT... 960-16-20-AB-10
W2WGI... 792-11-24-A-28

CLUB SCORES

Club	Score	C. W. Winner	Phone Winner
Potomac Valley Radio Club	8,160,687	W4KFC	W4KFC
Frankford Radio Club	6,071,845	W2FXN ¹	W2FXN
Southern California DX Club	2,803,046	W6IBD	W6KFC
Northern California DX Club	2,145,491	W6LDD	W6LSA
Florida DX Club	1,690,742	W4DQS	W4DQS
Order of Botted Owls of New York	1,323,639	W2AJT	K2JFC
Connecticut Wireless Assn.	891,804	W1BHH	W1BHH
Lake Success Radio Club (N.Y.)	847,689	K2DGT	K2DGT
Ohio Valley Amateur Radio Assn.	777,798	W8FGX	W8FGX
South Jersey Radio Assn.	657,346	K2DCA	K2DCA
Niagara Frontier DX Assn. (Mass.)	612,661	K2TQC	K2GXI
Southeastern DX Club (Ga.)	571,422	W4DXI	W4DXI
Milwaukee Radio Amateurs' Club	484,395	W9GIL	W9GIL
Waltham Amateur Radio Assn. (Mass.)	391,272	K1DIR	W1NJL
Nashua Mike and Key Club (N.H.)	321,007	K1RTB	W1RTB
Order of Botted Owls of Ohio	298,480	W1BX	W1BX
Virginia Century Club	230,397	W4OPM	K6OC
San Diego DX Club	160,281	W8YPT	W8YPT
Westpark Radiops (Ohio)	157,035	W7BTH	W7BTH
Willamette Valley DX Club (Ore.)	125,581	W9DWQ	W9DWQ
Chicago Suburban Radio Assn.	105,120		
The DX Club (Pa.)	85,614		
Columbus Amateur Radio Assn. (Ohio)	56,282		
Order of Botted Owls of New Mexico	33,490	W5CK	W5CK
Rochester DX Assn.	46,769		
North Penn Amateur Radio Club	39,243	W3BUR	W3BUR
Horseshoe Radio Club (Pa.)	25,896	W3LIV	W3LIV

¹ W3MFW, opr.



Neat shack layout and operator K2DCA, who earned three certificates for the 1962 ARRL DX Contest. Besides winning top c.w. honors in Southern New Jersey, Paul was tops in the South Jersey Radio Assn. on both phone and c.w. A nifty c.w. score of 391,980 was one of the higher U. S. A. scores.

Wisconsin
 W9ROM... 212,355-195-363-BC-49
 W9GHL... 164,673-171-321- C-1
 W9VZP... 152,079-163-311- C-80
 W9QYV... 89,700-130-236- B-29
 W9VSO... 79,688-114-233- C-26
 W9KXK... 53,268- 92-193- C-26
 W9IHN... 47,784- 88-181- C-26
 W9RKP... 38,250- 75-170- -20
 W9S8Z... 14,742- 54- 91- A-1
 W9RH... 13,674- 53- 86- C-23
 K9OPF... 8400- 40- 70- A-15
 K9YBC... 5217- 37- 47- B-15
 K9VQP... 1248- 16- 28- A-22
 K9YEL... 144- 6- 6- A-8
 W9YT (5 ops.)
 229,096-192-396- C-69

DAKOTA DIVISION

North Dakota
 W0SDN... 10,209- 41- 83- A-20

South Dakota
 W0BLZ... 20,790- 63-110- C- 8
 W0WUU... 1980- 22- 30- B-14

Minnesota
 W0MPW... 164,673-171-321- C-62
 K0BPO... 97,464-131-248-BC-65
 K0IKL... 75,924-111-228- B-58
 K0VTG... 20,274- 62-109- B-35
 W0IJJ... 918- 17- 18- A-15
 W0YIC (K08 LAX UXQ)
 2430- 27- 30- A-30

DELTA DIVISION

Arkansas
 W5GFT... 4896- 34- 48- B-22
 K5ALU... 1701- 21- 27- B-10

Louisiana
 W5KC... 118,281-161-307- C-61
 W5BUK... 94,164-133-236- C-63
 W5V8Q... 11,985- 51- 81- C-41

Mississippi
 W5CKY... 263,340-220-399- C-55

Tennessee
 K4LPW... 215,340-185-388- B-50
 W4HOS/A... 9567- 29- 41- B-14
 WA4BXX... 810- 15- 18- B-29

GREAT LAKES DIVISION

Michigan
 W8K8R... 79,530-110-241- C-44
 K8QJH... 77,520-120-216- C-50
 W8UCI... 62,109-103-201- B-49
 W8NCO... 36,960- 88-140- B-42
 W8EW... 25,740- 65-132-A-29
 W8SCU... 16,929- 57- 99- C-19
 W8YBH... 1344- 28- 43- C-19
 K8ERO... 2952- 21- 41- B-35
 W8MRS... 390- 10- 13- A- 7
 W8SPO... 126- 6- 7- A- 2

Ohio
 W8FGX... 472,752-268-588- C-60
 W8ZJM... 256,048-208-411-BC-54
 W8IBX... 112,036-148-255- B-42
 W8YPT... 91,872-132-232- B-38

W8ZCO... 81,252-122-222- C-32
 K8MTI... 69,741-123-189- B-1
 K8RMK... 56,351- 83-146- C-30
 W8JSU... 35,376- 67-176- C-18
 W8KC... 24,003- 63-127- B-27
 W8JN... 21,939- 71-103- C-12
 K8NMG... 17,226- 58- 99- B-1
 K8SWE... 15,552- 54- 96- B-30
 W8JAC... 14,811- 51- 97- C-14
 W8GMC... 13,869- 60- 77- A-20
 W8YAH... 12,705- 65- 77- B-35
 W8DWP... 12,699- 51- 83- C-20
 W8EBZ... 7866- 46- 59- C-19
 W8AJW... 6552- 39- 56- A-1
 K8IPS... 4800- 32- 50- A-12
 W8KMF... 3510- 30- 39- A- 6
 K8PYD... 1224- 17- 21- A- 9
 W8VZE... 912- 16- 19- B- 5
 K8PTM... 504- 12- 14- B- 5

HUDSON DIVISION

Eastern New York
 WA2OJD... 226,440-185-408-BC-64
 W2HO... 124,944-137-304- C-46
 WA2IGC... 31,290- 70-149- A-52
 W2NCL... 19,488- 58-112- C-14
 K2DFM... 27- 3- C- 1

N. Y. C.-L. I.
 K2DGT... 564,138-279-674-BC-92
 W2AYJ... 375,802-238-527- C-57
 W2WZ... 345,030-217-530- C-44
 W2ESO... 220,170-205-358- C-45
 W2IRV... 166,263-157-353- B-40
 WA2IJA... 138,606-150-308- C-31
 K2FC... 129,054-137-314- C-35
 W2SUC... 122,157-147-277- C-35
 W2KKZ... 106,173-141-251- C-29
 K2YOR... 78,120-120-217- C-40
 WA2KSD... 64,521-107-201- ABC-59

W2ZKQ... 62,832-112-187- C-25
 W2KIR... 60,822-109-186- B-30
 W2HML... 53,288- 79-224- C-1
 W2AZS... 40,716- 78-174- C-27
 K2ZYR... 30,150- 67-156- A-1
 W2ICR... 29,280- 61-160- B-28
 W2OBX... 24,075- 75-107- A-20
 K2RTH... 17,419- 41- 63- B-14
 W2NCG... 6012- 36- 57- A-16
 WA2ICP... 3969- 27- 49- B-13
 K2JOK... 3330- 30- 37- A- 6
 W2JKB... 2898- 23- 42- B-12
 W2EJZ... 2664- 24- 37- B-30
 WA2VNW... 154- 7- 8- A-14
 W2NHH... 126- 6- 7- A-11

Northern New Jersey

K2GDN... 299,475-225-449- C-74
 W2AIV... 47,085- 73-222- -1
 K2EAC... 43,239- 71-203- B-35
 W2HUG... 26,136- 72-21- A-25
 W2EQS... 15,876- 63- 84-A-C-1
 K2EEM... 15,582- 49-106-AC-13
 W2HNN... 14,025- 55- 87- B-15
 WA2GTX... 8460- 47- 60- B-18
 W2JKH... 5693- 33- 37- B-1
 WA2IDM... 3198- 26- 41- A- 8
 WA2OGC... 1620- 18- 30- B-10
 WA2DIJ... 858- 13- 22- A- 4
 K2QAR... 810- 15- 18- -1
 WA2MYB... 585- 13- 15- A- 4
 WA2BFF... 270- 9- 10- A- 4
 WA2KAZ... 270- 9- 10- A- 4
 WA2QRY... 240- 8- 10- A- 5

MIDWEST DIVISION

Iowa
 W0FDL... 123,669-151-273-BC-60
 K0QDL... 40,734- 73-186- A-1
 W0BSY... 1560- 20- 26- A- 8

Kansas
 W0DAE... 136,002-148-293- C-18
 K0YRQ... 33,948- 82-146- C-40

Missouri
 W0BMM... 204,980-185-336- C-04
 W0BTD... 148,920-170-292- A-60
 W0TCX... 58,092-103-188-BC-48
 W0GUV... 27,888- 83-112- C-41
 K0VSH... 1455- 33- 45- A-30
 K0VVUR... 243- 9- 9- -10

Nebraska
 K0MRS... 192- 8- 8- A- 4

NEW ENGLAND DIVISION

Connecticut
 W1BIH... 419,676-246-570- C-65
 W1IKB... 94,875-115-275- B-41
 K1MLI... 82,368- 96-286- C-48
 W1QY... 41,472- 96-144- C-20
 W1WY... 19,380- 68- 95- C-18
 W1AW... 10,800- 48- 75- C-1
 W1OJR... 10,350- 50- 69- B-11
 K1NHR... 6930- 35- 66- A-12
 W1OPB... 6405- 35- 61- A-30
 W1NTH... 4773- 37- 43- B-12
 W1BDI... 2940- 28- 35- B- 4
 K1GZJ... 945- 15- 21- -1
 K1MIT (KIMIT, W2FU)
 816- 16- 17- A-37

Maine
 W1GKJ... 35,256- 78-154- B-26
 W1TJQ (W1s TJQ VYE)
 8568- 42- 68- C-33

Eastern Massachusetts

K1DIR... 258,687-201-429-BC-73
 K1MOD... 157,440-164-320- B-1
 W1NJL... 88,011-127-231- B-1
 K1PNN... 14,912-116-244- B-32
 W1EHT... 64,971- 98-221- B-34
 W1NS... 42,745- 83-173-BC-18
 K1NOL... 33,696- 72-156- A-4
 W1BQL... 14,112- 56- 81- A-33
 K1MEM... 4368- 42- 68- B- 9
 W1PLJ... 3159- 27- 39- B-20
 W1RST... 1122- 17- 22-AC- 3
 K3JOY/1... 3- 1- 1- A- 5

Western Massachusetts

W1JYH... 383,328-242-530- C-1
 W1AEW... 55,752-101-184- B-39
 W1UUK... 22,818- 64-119- A-46
 K1SAW... 7182- 38- 63- B-1
 K1QFC... 612- 12- 17- C-1

New Hampshire
 W1FZ... 224,259-181-413- C-1
 K1RTP... 210,541-173-432- C-66
 K1PIA... 1860- 20- 31- A- 5
 K1QID... 126- 6- 7- B- 3

Rhode Island

K1LDK... 25,410- 70-121- B-18
 W1RFQ... 22,143- 61-121- A-17
 K1LPL... 15,561- 57- 91- A-15
 W1AWE... 8640- 40- 72- -14
 W1DDD (K1LZW, W1s AUA YRC)
 16,050- 50-107- C-25

Vermont
 W1QMM... 142,350-146-325- C-1

NORTHWESTERN DIVISION

Alaska
 KL7JDO... 12,012- 42- 96- B-44
 KL7DOT... 5800- 25- 78- A-13
 KL7DEM... 4446- 20- 55- A-22

Montana
 K7CTI... 4440- 26- 57- B- 6
 K7ABV... 1152- 16- 24- A- 8

Oregon
 W7BTH... 42,504- 88-162-BC- -
 W7GBW... 23,010- 65-118- B-47
 K7ADL... 18,816- 56-112- C-29
 W7AC... 10,656- 88- 74- C-10
 W7HKT... 7980- 35- 76- B-1
 W7DIR... 6528- 34- 64- C-21
 W7QY... 4577- 31- 49- C-1
 W7DIS... 4050- 30- 45- A-32
 W7GHB... 2880- 24- 40- B-12
 W7BNW... 2700- 25- 36- C-1
 W7PLI... 1932- 23- 28- A-10
 W7IYW... 1900- 25- 30- C-1
 K7JYE... 1260- 15- 28- A-22
 K7GIP... 92- 4- 8- A- 4

Washington
 W7PQE... 139,062-147-316- C-60
 W7ESN... 44,820- 83-180- C-28
 W7IEU... 35841- 46- 68- B-70
 W7MH... 9198- 42- 73- -16
 K7BVZ... 4950- 33- 50- B-26
 K7JCI... 344- 8- 15- A- 7
 K7QWC... 80- 5- 6- A- 6

PACIFIC DIVISION

Hawaii
 KH6LJ... 140,520-148-330- C-60
 W7UXP/KH6
 6048- 32- 63- A-16

Santa Clara Valley
 W6HOC... 176,836-186-317- C-55
 W6ATO... 115,020-142-270- C-80
 W6ISQ... 106,920-135-264- C-43
 W6ZMW... 91,080-132-230- C-55
 W6SC... 72,732-116-209- C-1
 W6WX... 72,207-113-213- C-51
 W6KEV... 63,282-106-199- C-38
 K6HOR... 55,872- 96-194-BC-10
 W6BWX... 57,873-101-191- C-69
 W6HRS... 51,798- 97-178- B-1
 K6IEC... 25,773- 71-123- C-38
 K6VVA... 25,185- 73-115- A-13
 K6UYZ... 16,161- 56- 98- C-50
 W6QDE... 16,380- 52-105- C-18
 K6JC... 12,096- 42- 96- B-12
 W6HVN... 9870- 47- 70- C-38
 W6FYM... 9798- 46- 71- C-38
 WA6DTA... 8190- 42- 65- C-1
 W6RFF... 6105- 35- 61-BC-14
 WA6NYK... 2448- 24- 34- B-16
 W6CLZ... 1568- 19- 28- B-11
 WA6TCF... 1170- 15- 26- B- 7
 WA6PMK... 1008- 14- 24-AC-1

East Bay
 W6LDD... 219,375-195-375- C-80
 W6EKK... 218,790-187-390- C-80
 W6PQV... 136,207- 81-119- C-1
 W6BBJ... 14,010- 52- 90- A-20
 W6FLT... 12,285- 45- 91- C-22
 W6PIL... 3375- 25- 45- C- 8

San Francisco
 W6WB... 128,643-137-313- C-38
 W6ERS... 92,890-129-210- C-80
 W6BYB... 78,490-120-218- C-55
 W6MSM... 55,539- 99-187- C-61

VQ2AT, who was really popular for s.s.b. two-ways, logs another contact with XYL Pat looking on. Art, who led Africa on phone, is still looking for Utah to complete his WAS.



W6GQK...29,216-86-152- C-30
 K6OHJ...37,818-84-152- C-25
 W6GPP...12,393-51-81- C-10
 W6WLV...1536-16-32- A-19

Sacramento Valley

W6ONZ...185,214-172-361- C-66
 W6GRX...121,836-142-286- C-62
 W6SLA...17,112-62-92- C-16
 W6BLV...8775-45-70- C-38

San Joaquin Valley

W6UJ...120,558-142-283- C-75
 W6KJS...92,748-131-236- C-2
 W6BYM...46,872-93-168- --
 W6UDR...14,226-91-162- C-17
 W6EPV...15,300-50-102- C-7
 W6BYH...8241-41-67-BC-7
 W6MYP...606-10-20- B-6

ROANOKE DIVISION

North Carolina

W4PL...135,450-150-301- C-31
 W4HJM...2392-29-31- A-30

South Carolina

K1CSB...21,810-65-112- A-35

Virginia

W4KFC...721,112-310-762-AC-76
 W4RQR...117,351-261-572-BC-55
 W4JAT...273,861-207-441- C-66
 K4ZRI...252,890-188-449-BC-66
 W4JFE...248,300-178-465- B-58
 W4OPML...120,600-134-300- C-30
 K4ORQ...103,296-128-269- C-66
 W4WB...83,979-129-217- C-41
 W4BVV...81,396-119-228- C-42
 K4SXT...64,581-104-207- C-39
 W4ZM...55,536-104-178- C-28
 W4VBX...47,100-100-158- C-20
 K4WY...20,340-60-113- B-15
 W4LRN...19,920-65-102- C-20
 W4GF...19,148-68-96- C-2
 W4SN...15,732-57-92- B-20
 W4AMP...11,016-51-72- A-50
 W4YR...9585-45-71- C-18
 W4LJL...5775-35-58- C-1
 K4ZVS...5508-36-51- A-11
 W4SHJ...2268-21-36- B-10
 W4DLA...588-14-14- B-6
 W4VYB...216-8-9- A-4
 W4KXY (4 ops.)
 754,116-312-806- C-96

West Virginia

W8UMR...25,125-75-113- A-13
 W8BKK...12-2-2- A-1

ROCKY MOUNTAIN DIVISION

Colorado

W6CDP...92,430-130-237- C-58
 W6DZH...13,801-98-149- C-28
 K6RLL...280-10-10- A-10

Utah

W7BAJ...13,728-52-88- A-28
 W7POU...6048-28-72- A-25
 K5UYF7...897-13-23- A-8
 W7EHX (W7E HX POU)
 60-3-4- A-1

New Mexico

W5CK...28,272-76-121- C-2
 K5STL...22,620-60-127- B-36
 K5MAT...12-2-3- A-2

Wyoming

W7PGS...206,853-191-363- C-59

SOUTHEASTERN DIVISION

Alabama

W3CHH/L...22,110-68-110- C-50
 W4SY...12,120-46-90-AB-29
 K4BQU...11,025-49-75- A-24
 K4ZY...9588-47-68- A-25
 K4KJD...3612-28-43- A-20
 W4DS...3348-31-36- --

Eastern Florida

W4DQS...539,280-280-642- C-80
 K4TML...154,314-264-575- C-54
 W4HUB...294,372-224-444- C-62
 W4AZK...251,856-198-424- C-58
 W4CHA...44,496-103-144- C-28
 W4LWV...35,126-91-132- C-25
 W4QV...25,764-76-113- C-14
 K4RQ...12,168-52-78- B-41
 W4AIPB...1134-14-27- A-10
 W4EEQ...681-12-19- C-8
 W4R JL...198-6-11- A-6

Western Florida

W4SHW...28,425-75-127- A-26

Georgia

W4YWX...231,075-195-395- C-2
 W4DXL...197,580-185-356-BC-79
 K4BAL...179,478-169-354-BC-2
 W4BFR...80,610-128-210- C-2
 K4PEA...76,164-114-177- A-2
 K4BYD...33,792-88-128- B-10
 W4HYW...3108-28-37- C-7
 W4BHC...360-10-12- B-3

SOUTHWESTERN DIVISION

Los Angeles

W6IBD...293,262-222-441- C-79
 W6CYL...195,144-178-306- C-76
 W6TZD...189,502-178-353- C-61
 W6FSJ...158,895-165-321- C-61
 W6ANN...76,320-120-212- C-2
 W6PBL...53,298-94-189-BC-48
 W6GIPY...33,966-74-153- A-15
 W6CVY...21,504-64-112- C-16
 W6OES...19,845-63-105- C-2
 W6VUZ...15,895-55-97- B-2
 W6NEX...12,903-51-85- B-29
 W6AEL...12,900-50-86-BC-15
 W6AKMP...8364-41-68- A-20
 W6AUM...6188-34-62-AC-30
 W6DQH...5790-38-50- C-34
 W6OEO...5100-31-50- B-21
 K6EGP...4312-28-52- A-23
 W6GPF...2898-23-42- A-15
 W6TLL...1836-17-36- A-23
 W6WNR...1248-16-26- A-12
 K6YYJ...726-11-22- B-1
 W6GDS...684-12-19- A-3
 W6IWE...459-9-17- A-3
 W6GEB...432-8-18- A-4
 W6AHGC...408-8-17-AB-50
 K6JBP...12-2-2- B-1
 K6MQ...3-1-1- --
 W6RW (4 ops.)
 620,712-296-699- C-90
 K6EVR (6 ops.)
 586,376-296-661- C-94
 W6NJU (K6s LKG YRA, W6NJU)
 104,930-132-270- C-70
 W6AJJ (4 ops.)
 63,180-108-195- C-90

WA6AYU (K6QPH, WA6AYU)

23,316-67-116- B-70

Arizona

W7ATV...17,628-98-182- C-36
 W7ENA...7869-43-61- A-18

San Diego

W6HJT...261,600-200-436- C-71
 K6EC...64,848-112-193- B-26
 W6CAE...63,338-109-195- C-20
 W6CHV...31,995-79-135- B-35
 W6PAY...1377-17-27- C-5
 K6CQC...261-8-11- B-2

Santa Barbara

W6AGO...118,110-165-254- C-53

WEST GULF DIVISION

Northern Texas

W5DWO...35,313-79-149- B-44
 W5OIG...15,372-61-81- C-19
 W5QF...3915-29-45- A-2
 W5IHW...1320-20-22- A-14

Oklahoma

W5EHY...7920-10-68- B-17
 K5CPS...1629-20-27- B-8

Southern Texas

W5WZQ...283,716-222-426- B-61
 W5BRH...200,200-182-367- C-47
 W5ARJ...42,717-87-165- B-2
 W5LJT...16,638-59-94- A-24
 W5VA...6015-31-65- C-26
 W5PM...2850-25-38- C-5
 W5ELN...430-10-15- A-12
 W5ACL...3-1-1- B-2
 K5BLH (4 ops.)
 13,965-49-95-BC-56

CANADIAN DIVISION

Maritime

VE1EK...15,582-49-106- A-15
 VO2NA...11,808-41-96- B-20
 VE1AEO...3393-29-39- B-22
 VO1AW...2484-18-46- A-7
 VE1AE...2337-19-41- A-2

Quebec

VE2BV...114,587-121-316- B-39
 VE2AYU...4224-32-44- B-28

Ontario

W6AIH/VE3

436,500-245-504-AC-66
 VE3ES...66,738-98-227- A-45
 VE3DHR...32,844-68-161- C-56
 VE3AGX...26,301-64-137- B-53
 VE3HJ...15,369-47-109- B-32
 VE3RIT...10,800-50-72- B-2
 VE3ON...6720-35-64- A-11
 VE3PR...1938-19-34- C-4
 VE3BPS...624-13-16- A-20
 VE3BWWY (VE3s HWY KWY)
 22,338-73-102- C-12

Manitoba

VE4XO...91,800-120-255- B-55
 VE4JB (VE4s JB MF)
 50,430-82-205- C-79

Saskatchewan

VE5JV...1464-31-48- C-11
 VE5PM...3192-23-38- B-29

Alberta

VE6HG...20,670-53-130- A-31

British Columbia

VE7FC (VE7s FC Q11)
 33,544-69-161- C-70

AFRICA

Mozambique

CR7IZ...18,675-25-249- A-12

Spanish Morocco

EA9AP...20,300-28-212- A-10

Libia

EL4A...71,496-36-662- A-21

Algeria

FA8RJ...93,900-50-626- A-2
 FA2GL...6180-20-103- A-2

Sudan

ST2AR...41,268-34-134- A-2

Kenya

VQ4HX...13,920-29-160- A-2

Mauritius

VQ8BM...3060-17-61- A-50

Southern Rhodesia

ZB2JS...47,814-39-410- A-33

(Continued on page 106)

W3OVU found operating "from the other side of the fence" as 9G1DT a real pleasure. Operating time was limited by the availability of the generator, but when power was there, 9G1DT with this simple operating equipment really made hay.



2-Meter Moonbounce

OUR COVER

Our cover this month is of as big a 2-meter beam as you are ever likely to see. We couldn't quite squeeze them all into the cover photo, but there are 480 elements quivering in the sunlight. The boom consists of 140 feet of aluminum TV tower, and suspended from it is a small fortune in aluminum rod and tubing.

The first successful effort to reflect signals from the moon used modified Signal Corps radar equipment operating near 110 Mc. The power was high, the receiver complicated, the antenna tremendous¹ — but the signal that came back was not of such quality as to encourage amateurs to think that they could duplicate the feat.

That didn't keep some from trying, and by 1953 W4AO and W3GKP had demonstrated that hams could do it.² Using all the power they could muster legally, and a tremendous stacked rhombic aimed at the rising moon, they got signals of a sort back to their own receiving gear. The reception consisted of a wailing indefinite sound that could be identified as a moon echo mainly by its time lag after the one-second transmitted pulses. Moonbounce on 144 Mc. was still quite a way from being a quick-and-easy approach to 2-meter WAS!

Since then a few more amateurs, using various very large 144-Mc. arrays, have succeeded in recording their own echoes from the moon, but actual two-way moonbounce communication over long paths was not accomplished until W1BU and W6HB turned the trick on 1296 Mc. in the summer of 1960.³ Here again, the signals were extremely weak, barely readable c.w. — but they

were identifiable signals from the other side of the continent.

The group in back of the W1BU effort had achieved some degree of success with their own echoes on 144 Mc., but apparently nobody else was in the mood to try while they were making their early efforts on that band, and finally they moved to the 1215-Mc. band where there seemed a better chance of success. Little was heard of 144-Mc. moonbounce projects thereafter for quite a spell.

144-Mc. Moonbounce Revived

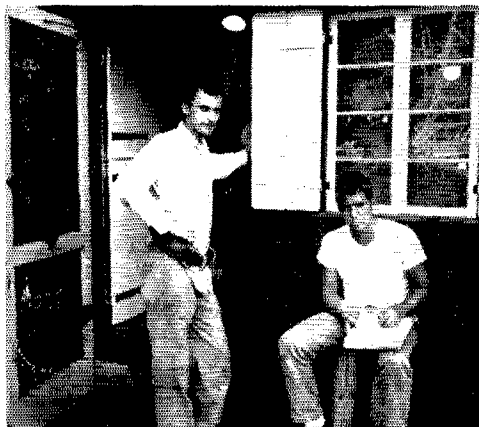
Not everyone had given up the idea, however. Least of all Ned Conklin, K1HMU, and Chip Brown, W1ZIG, of Farmington, Conn. Big-antenna men from way back, Ned and Chip were determined to pull the 144-Mc. moonbounce trick off. Hampered by the fact that they attend different colleges (Ned is at Yale, Chip at Worcester Tech) they have put in nearly every available minute of their free time for more than two years building antenna systems that make the average big 2-meter beam look like a TV antenna for urban use.

Their first successful antenna was pictured in November, 1951, *QST*, pages 87 and 89. Using 8 24-foot-boom plus-sign Yagis, arranged so that they could be rotated vertically and horizontally, Ned and Chip were on the air several nights at the end of the summer "vacation" of 1961, keeping skeds with W6DNG, Long Beach, Cal. While no complete exchange of information was made, signals were heard each way over this 2500-mile path. We've heard W6DNG's tapes and can vouch for the fact that K1HMU did put in an identifiable signal at Long Beach — the only known instance of 144-Mc. signals being transmitted to a distant point by the lunar route. But back-to-school time forced suspension of the tests before a complete two-way could be made.

480 Elements

Planning continued through the winter, and the first spring weather found W1ZIG and K1HMU hard at work on the antenna-to-end-all-antennas. This would have 16 30-foot Yagis in phase, with crossed elements fed so that they could be used for either right or left circular polarization. You see the results on this month's cover, all 480-elements worth!

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In front of the transmitter shack are W1ZIG and K1HMU. We were going to take a picture of the gear inside, but there was just no room for a camera!

Happenings of the Month

CANADA—HONDURAS/MEXICO

Canadian amateurs may now handle third-party traffic with Honduras and Mexico, under the terms of agreements recently signed with those two countries. With Costa Rica and Venezuela earlier on the list, plus the U. S., this brings to five the total of the countries with which such traffic is permissible. The customary restrictions apply — i.e., the messages must not be of sufficient importance to justify use of public communications services, and of course there must be no direct or indirect financial compensation.

GET APPLICATIONS FROM FCC DISTRICTS

With the transfer to Gettysburg, Pa., of a portion of the amateur license-processing unit, August *QST* announced that henceforth completed examinations by mail should go to the new address. As the item pointed out, however, requests for application blanks and test papers still should be directed to the FCC district office having jurisdiction. Prospective hams who misread the item found that Gettysburg does not carry a supply of forms and papers. Only the completed applications are to be addressed there.

RTTY IDENTIFICATION, PART II

The League has long been concerned with practical difficulties encountered by RTTY enthusiasts in meeting the requirement for dual identification — i.e., a second call-signing on c.w. telegraphy. An earlier request of FCC was denied because of complications our proposal would have caused in the monitoring activities of the Commission. A second proposal, aimed at easing the requirement in RTTY operations without burdening the Commission's monitoring responsibilities, has now been filed as follows:

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington 25, D. C.

In the Matter of

Amendment of Section 12.82 of the
Commission's Rules to Modify
Identification Requirements For
Amateur Radio Teletype Stations

PETITION FOR RULE MAKING

The American Radio Relay League, Incorporated, by its General Counsel, respectfully requests that Section 12.82 (a) (2) of the Commission's Rules and Regulations be amended so as to make it unnecessary for amateur radio teletype stations to transmit the call sign or signs of the station or stations being called or communicated with by telegraphy using the International Morse Code.

In support whereof, the following is respectfully submitted:

1. Section 12.82 (a) (1) of the Commission's Rules requires amateur radio stations to transmit the call sign or signs of the station or stations being called or communicated with at the beginning and end of each transmission or series of transmissions, at least once every ten minutes or as soon thereafter as possible during a series of

transmissions between stations having established communication, and at least once every ten minutes during any single transmission of more than ten minutes duration, Section 12.82 (a) (2) reads as follows:

"(2). The required identification shall be transmitted on the frequency or frequencies being employed at the time and, in accordance with the type of emission authorized thereon, shall be by either telegraphy using the International Morse Code, or telephony. In addition to the foregoing, when a method of communication other than telephony or telegraphy using the International Morse Code is being used or attempted, the prescribed identification shall also be transmitted by that method."

2. An amateur station conducting teletype transmissions now is required by Section 12.82 (a) (2) to transmit the call sign or signs of the station or stations being called or communicated with as well as its own call sign both by teletype and by telegraphy using the International Morse Code. The telegraphic identification requires the interruption of the teletype transmissions, either by hand or automatically. Because the station or stations being called or communicated with and their call signs usually vary with each series of transmissions, automatic means of transmitting the required telegraphic identification seldom may be used. The result is that the telegraphic identification usually must be made by hand, thereby nullifying many of the automatic aspects and benefits of teletype communications.

3. The League, by a petition for rule making filed on August 17, 1961 (RM-277), requested that Section 12.82 (a) (2) be amended to completely eliminate the requirement for telegraphic identification by amateur teletype stations. The Commission, by a memorandum opinion and order released February 26, 1962 (FCC 62-214; 22 RR 1573), denied the petition with the following explanation:

"4. The dual identification requirement is necessary for the Commission properly to perform its duties. Amateur stations are not assigned specific frequencies, and as a consequence, the interference resulting from the overlapping of signals makes identification difficult at best. Infraction notices are issued only upon positive identification. Without the dual identification requirement, positive identification would be very difficult for the monitoring stations, and practically impossible for the Commission's mobile units which are not equipped to receive radioteletype transmissions. It appears to the Commission that the advantage to the Amateur service as a whole in having proper and prompt enforcement of the Amateur Rules and Regulations outweighs any possible advantage to be gained from the relaxation of the present identification requirements."

4. It is respectfully submitted that the Commission's identification needs will be fully met by modifying the present dual identification requirement for teletype operation only to the extent of making it unnecessary for telegraphic transmission of the call sign or signs of the station or stations being called or communicated with by a station conducting teletype transmissions. The Commission's monitoring stations and mobile units, as well as the League's Official Observers, still will be able to identify the transmitting station by the telegraphic transmission of its own call sign. Should the Commission desire to learn the identity of the station or stations called or communicated with, it needs only ask the transmitting station to supply the desired information from the logs it is required to maintain.

5. The benefits from the requested amendment will be most substantial to the Amateur Radio Service. A simple automatic keyer may be used to transmit the required telegraphic identification of the transmitting station each ten minutes.¹ Further improvements and refinements in

(Continued on page 180)

¹ A suggestion has been received by the League that telegraphic identification of the transmitting station might be superimposed upon the carrier without interrupting the teletype transmissions. It is suggested that any notice of proposed rule making based upon this petition invite comments and suggestions on such a method of telegraphic identification.

• Recent Equipment —

Waters Q-Multiplier



DESIGNED specifically for the Collins 75S-1 receiver and Collins KWM-2, the Waters Q Multiplier/Notch Filter provides a sharp rejection notch that can be manually positioned in the receiver's i.f. pass band to suppress an interfering carrier.

Only one operating control is needed, it being labeled REJECTION TUNING. No on/off control is necessary since the Q multiplier can be made inoperative by adjusting the TUNING control to put the notch outside the normal pass band.

The Q multiplier is in semi-kit form, and the kit package includes everything from hook-up wire to a drilling template for the installation. It is a well-packaged and well-thought-out assembly and shouldn't present any installation problems even to the nontechnically-inclined ham. The kit consists mainly of a small aluminum flat-plate chassis, which includes a single tube and several components, the REJECTION TUNING control, which is a small variable capacitor, and miscellaneous leads. It should be pointed out that the tube chassis is already completely wired and that most of the wiring necessary to install the kit is devoted to power pick-up, and the like.

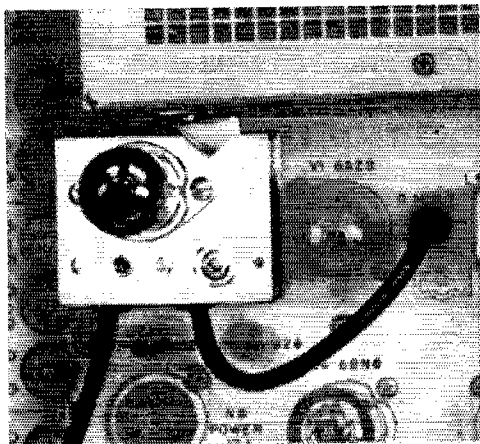
Three separate models are available for the two Collins units. The model 337-S1 is obviously for the 75S-1 receiver, and the 337-M2, for the KWM-2. However, when using the 337-M2 it is not possible to use the Collins PTO unit, an accessory for the KWM-2, because the external PTO shorting plug on the KWM-2 is removed

when installing this Q multiplier. So Waters has a third model, the 340-PT, which, when installed in the KWM-2, permits the use of the external PTO.

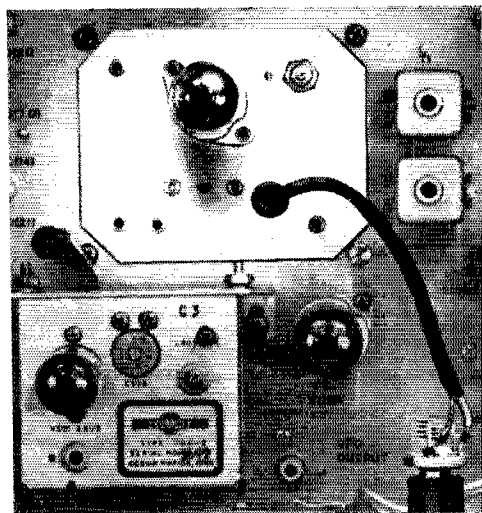
When installing the Q multiplier, it is necessary to drill a $\frac{3}{8}$ inch hole in the front panel of the KWM-2, but if the step-by-step instructions included in the kit are followed the finished installation will look "factory installed". An escutcheon plate is furnished and is placed, along with the REJECTION TUNING control, on the KWM-2 front panel. The plate matches the style and color of the original equipment.

In the case of the 75S-1 model, it isn't necessary to drill any holes. Waters has come up with a neat way to double up the a.f. and r.f. gain controls on the 75S-1 so that a hole is made available to mount the TUNING control. The original a.f. and r.f. gain controls are removed from the front panel and a dual concentric potentiometer, supplied with the kit, is mounted in the space formerly occupied by the r.f. gain control. The Q-multiplier control is mounted in the old a.f. gain control space.

To install any of the three models should not take more than about an hour. Only hand tools are necessary. When it comes to tuning up



In the KWM-2, the tube and chassis are attached to the front of the final amplifier cage.



The REJECTION TUNING control, a small variable capacitor mounts on the front panel of the 75S-1 receiver. The Q-multiplier chassis mounts in the space originally intended for the Collins Noise Blanker.

the combination, test equipment isn't necessary since the tuned circuit in the Q multiplier is set at the factory. One minor adjustment to the bridge-T potentiometer is necessary after installation but this is accomplished by using the receiver as a tune-up device.

Electrical specifications for all models include a center frequency of 455 kc., and a notch depth greater than 40 db. The notch tuning range is about plus and minus 2.5 kc.

— E. L. C.

Waters Q-Multiplier

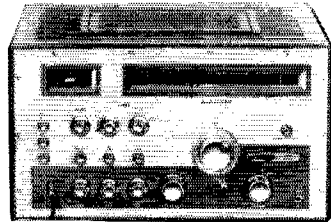
Height: About 3 inches
Width: About 3½ inches
Depth: About 3 inches
Power requirements: Supplied by the receiver
Price class: Model 337-S1, 337-M2, \$35.
Model 310-PT, \$15.
Manufacturer: Waters Manufacturing, Inc., Wayland, Massachusetts.

Heathkit "Marauder" HX-10 Transmitter

The Heathkit HX-10 is a complete c.w., a.m. (single sideband with carrier) f.s.k., and upper or lower sideband transmitter. Using two 6146 final amplifiers, it can run 180 watts input on c.w. and f.s.k., 180 watts p.e.p. input on s.s.b. and about 75 watts input on a.m. phone. It is a filter rig, using a 5-Mc. crystal lattice. Included are all of the modern "extras" which seem to have become standard items in s.s.b. transmitters. A choice between voice-operated send-receive control or push-to-talk operation is one of these. A sidetone circuit that provides an audio tone for monitoring c.w. transmission is another.

There are 21 tubes and 9 diodes in the HX-10. All of the necessary crystals for the various heterodyne oscillators are furnished for 80- through 10-meter operation. Although the transmitter has a v.f.o., crystal control can be used. Crystals are not furnished for this type of primary frequency control.

For a rundown of the technical aspects of the HX-10, take a look at the block diagram in Fig. 1. The r.f. portion of the transmitter starts off with the carrier oscillator, V_{2A} , which is crystal controlled and operates at a frequency of 4.99



Mc. A "crystal-puller" capacitor is provided in the circuit so that the oscillator frequency can be adjusted for the optimum point on the slope of the crystal filter, which appears later on in the circuit.

For s.s.b. operation, output from the carrier oscillator is fed into the diode balanced modulator, CR_1CR_2 . Here the 4.99-Mc. signal is mixed with audio arriving from the speech section of the transmitter. The 4.99-Mc. carrier is attenuated in the modulator. Over-all carrier suppression is rated at 50 db. below the transmitter's peak output. The double-sideband signal next feeds into the 5-Mc. lattice-type crystal filter, where the upper-sideband frequencies pass through. The unwanted lower-sideband frequencies are suppressed at a rated 55 db. below peak output.

For emissions requiring a carrier, the carrier oscillator signal goes directly to the sideband mixer, V_3 . The s.s.b. signal from the crystal filter

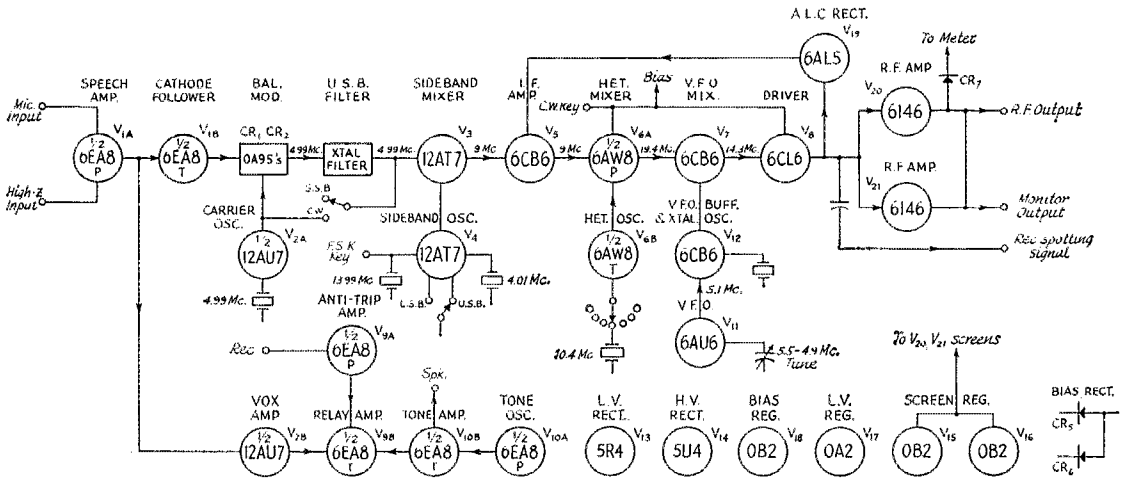
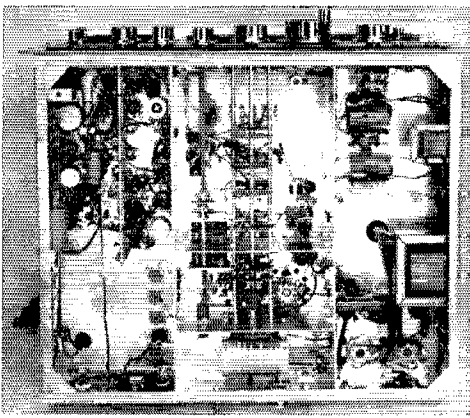


Fig. 1—Block diagram of the HX-10 transmitter.



This bottom view of the HX-10 shows that there is plenty of wiring room in the various compartments. The coil visible in the compartment at the bottom of the photograph is the final-amplifier plate-circuit coil.

(or the c.w. signal from the carrier oscillator) is combined with energy from the sideband oscillators, V_4 , in the sideband mixer. The sideband oscillators, V_4 , are at 4.01 Mc. and 13.99 Mc. Only one oscillator operates at any given time, depending upon the mode of emission. The proper oscillator is selected by the panel mode switch. Oscillator switching is accomplished by removing a blocking bias from the grids. The 13.99-Mc. lower-sideband oscillator is used in all modes except upper sideband, when the 4.01-Mc. section is used. The 9-Mc. output from the sideband mixer is quite removed from any ham-band. However, the HX-10 uses triple conversion to reach the operating frequency. After two more stages of heterodyning the signal appears at the desired operating frequency.

The upper or lower sideband 9-Mc. signal is amplified in V_5 , a 6CB6, and applied to the pentode section of the heterodyne mixer, V_{6A} . The triode section of this same tube, V_{6B} , operates as the heterodyne oscillator and, depending upon the band of operation, is crystal controlled on a specific frequency between 3.4 and 25.6 Mc. Output from this mixer is still not at the operating frequency and requires one more heterodyning step to reach it. As an example (also shown in Fig. 1), the heterodyne oscillator is at 10.4 Mc.

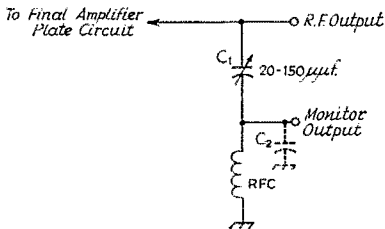


Fig. 2—A jack is provided on the HX-10 for oscilloscope monitoring. Capacitor C_1 is adjusted for the desired output voltage. C_2 is the capacitance of the connecting coax cable and is part of the voltage divider.

for an output frequency of 14.3 Mc. Output from the oscillator is mixed with the 9-Mc. signal from V_5 , giving 19.4 Mc., which is still 5.1 Mc. away from the output frequency. The heterodyne mixer is grid-block keyed when in the c.w. mode. On the 80-meter band, the mixer operates untuned as a straight through 9-Mc. amplifier with no signal coming from the heterodyne oscillator.

Probably the most important section of the transmitter from an operating standpoint is the v.f.o. Is it stable? What is the tuning rate? How does the tuning knob "feel"? These questions are usually among the first that are asked about a new transmitter. The HX-10's v.f.o. has certainly been designed for stable operation. There is a 6AU6 pentode in a series-tuned Colpitts circuit in which all of the frequency-determining components have received special attention to minimize the effects of temperature changes and mechanical vibration. For instance, the v.f.o. coil is tension wound on a ceramic form and coated with epoxy, and temperature-compensating capacitors are used in the tuned circuit. The main v.f.o. tuning capacitor has double bearings. Both plate and screen voltages are regulated and the heater voltage for the tube remains on at all times — even when the transmitter is turned off (but, of course, the a.c. line cord must be connected!). Mechanically, the v.f.o. enclosure is formed of 19-gauge cold-rolled steel. Rated overall stability of the transmitter is 100 cycles after warm-up.

The v.f.o. tunes from 4.9 to 5.5 Mc. The large spinner tuning knob is fitted with a heavy flywheel, and a gear ratio of 165 to 1 in the tuning mechanism provides a tuning ratio of about 10 kc per revolution. Spring loading of the gear mechanism minimizes backlash. The edge-lighted plastic slide rule dial has three calibrated scales, each covering 600 kc. All three scales are visible at once, and it's up to the operator to decide which scale to use. The seven band-switch positions on the front panel are marked so that each position ends in one or the other of the numbers 0.5, 0.9 or 0.1. These are the starting numbers on the three dial scales. You then use the scale that starts with the corresponding number. (Example: In the 13.9-Mc. position, the 0.9 scale would be used on the tuning dial). The switch ranges are 3.5 to 4.1 Mc., 6.9 to 7.5 Mc., 13.9 to 14.5 Mc., 20.9 to 21.5 Mc., 27.9 to 28.5 Mc., 28.5 to 29.1 Mc., and 29.1 to 29.7 Mc.

Also associated with the v.f.o. is the v.f.o. buffer/crystal oscillator, V_{12} . When v.f.o. operation is selected the stage operates as a buffer. However, it can also function as a crystal-controlled oscillator. This crystal oscillator feature allows for Novice operation (with the proper power reduction to 75 watts input) and for channel operation in MARS nets, etc. The buffer/crystal oscillator is located in the v.f.o. enclosure and also has its heater voltage on at all times. The necessary frequencies for crystal-controlled operation will be in the 4.9- to 5.5-Mc. region.

Output from the v.f.o. buffer/crystal oscillator is applied to the grid of the v.f.o. mixer, V_7 , along

with the signal from the heterodyne mixer, V_{6A} . The resulting signal is now at the operating signal frequency and, in our example shown in Fig. 1, the 19.4-Mc. signal mixed with the 5.1-Mc. v.f.o. signal gives a 14.3-Mc. signal at the plate of the v.f.o. mixer. The mixer plate is tuned by a panel DRIVER TUNE control which is ganged to several other capacitors that tune both the v.f.o. mixer and driver stages.

The operating frequency signal is amplified by a 6CL6 driver. This tube is grid-blocked keyed for c.w. and f.s.k. Two parallel connected 6146's operated class AB₁ are used for final amplifiers. Regulated screen voltage is applied. A pi network is used in the amplifier plate circuit and it is designed for 50-ohm loads, although it can be adjusted for other loads between 50 and 75 ohms, with not more than about a 2 to 1 s.w.r. A fan air-cools the final amplifier stage.

An output r.f. voltmeter circuit is included in the final amplifier as a relative output indicator for use in tuning up. It consists of a resistive voltage divider across the r.f. output, with a semiconductor diode rectifier. A panel meter reads the relative power output.

Provision is also made at the final amplifier for oscilloscope monitoring. Fig. 2 shows how a capacitive divider, C_1C_2 , is used to obtain r.f. voltage for application to the deflection plates of an oscilloscope. The voltage appears at the monitor output jack on the rear apron. The output voltage can be varied by adjusting capacitor C_1 . In Fig. 2, C_2 is the capacitance of the coax cable which connects the scope to the jack.

Also located at the rear of the chassis is a receiver spotting-signal jack. This is a coaxial line loosely coupled to the final amplifier grids. It provides a source of "spotting" signal for the station receiver.

Provisions for f.s.k. operation are made in the HX-10. The circuit in Fig. 3 shows how diodes CR_3 and CR_4 key a capacitor, C_1 , in the grid circuit of the 13.99-Mc. oscillator, V_4 . When the f.s.k. key is closed, bias is removed from the diodes and they no longer conduct. This effectively disconnects the capacitor and shifts the oscillator frequency 850 cycles for RTTY operation. Information on how to adjust C_1 is outlined in the instruction manual. The capacitor can be set for other frequency shifts, too.

Automatic level control is included in the HX-10 to insure against overdriving the r.f. amplifiers. The a.l.c. rectifier, V_{19} , rectifies the audio voltage peaks when the final amplifier starts to go into grid current. This is applied as bias to the i.f. amplifier, V_5 , and decreases its gain, ultimately reducing the driving voltage applied to the final amplifiers.

The speech and VOX circuits give the operator a choice of voice-operated break-in or push-to-talk operation. Included is an anti-trip circuit which, when connected to the station receiver, prevents audio from the receiver's speaker from triggering the transmitter's VOX circuits. Audio inputs to the speech section are designed for high impedance. As mentioned earlier, a tone oscillator

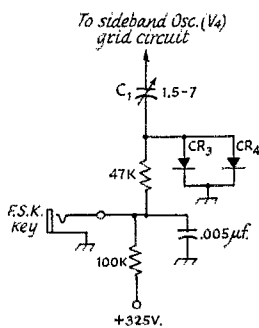


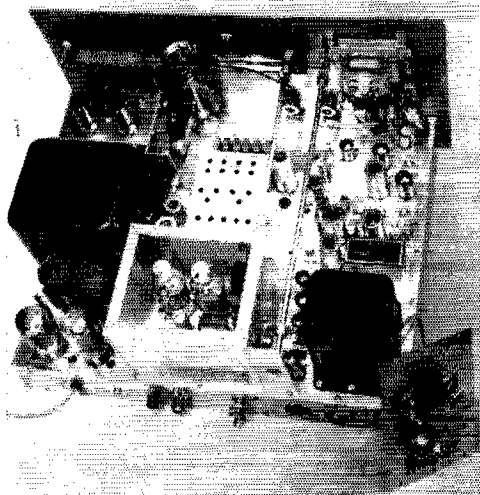
Fig. 3—When in the RTTY mode, diodes CR_3 and CR_4 switch capacitor C_1 in or out of the lower-sideband oscillator's grid circuit, giving an 850-cycle carrier shift.

and tone amplifier, V_{10A} V_{10B} , provide a side tone so that the operator may hear his keying during transmission. Also, the audio tone developed is used to key the VOX system which turns the transmitter on and off automatically with keying. The tone oscillator does not operate when in the f.s.k. mode. In this mode, manual switching between send and receive is necessary.

All the necessary power for the HX-10 is supplied by a built-in supply. A 5R4 high-voltage supply furnishes the final amplifier plate and screen power and a 5U4 rectifier is used in the low voltage supply for the remainder of the transmitter. The 5U4 also furnishes B-plus for the v.f.o. A semiconductor-rectifier supply furnishes bias for the final amplifiers. As shown in Fig. 1, there are four regulator tubes. Two are used for regulating the final-amplifier screens, one for the v.f.o. regulation and one for bias.

A look at the front panel of the HX-10 will show that just about every operating control is included. All of the VOX controls (delay, sensitivity) are on the front panel so that it is not necessary to lift the cabinet lid to make these adjustments. Also included on the front panel are the MODE switch (CW, AM, FSK, LSB, and USB), AUDIO GAIN, DRIVER TUNE, BAND SELECTOR (seven positions), V.F.O. TUNE, FREQUENCY CONTROL (VFO, XTAL), DRIVE LEVEL, SPOT LEVEL, METER SWITCH (GRID, PLATE, ALC, REL POWR, HV), FINAL LOAD, FINAL TUNE, KEY JACK, and MICROPHONE INPUT. Located on the rear apron of the transmitter are several controls and connectors and an accessory socket that provides for receiver muting, external amplifier cut-off bias, and 117 volts a.c. relay power.

The HX-10 shown in the photographs and described here was received fully wired, and for this reason no comments can be made as to assembly of the transmitter from a kit. However, the manufacturer estimates that it would take approximately 60 hours for assembling, testing and alignment. The owner's manual goes into great detail on alignment, operation and calibration. As with other Heathkits, several alternative alignment methods are given, depending upon the test equipment available to the kit builder. For in-



Top view of the HX-10 transmitter. The final amplifier cage cover has been removed to show the 10-blade cooling fan. Rear apron connectors and controls are from left to right: line cord, spotting signal jack, monitor level control, antenna connector (below), monitor jack (above), ground stud, accessory socket, switched 117 volt receptacle, high impedance audio input jack, and f.s.k. key jack.

stance, three methods are described for final-amplifier neutralization, one using a grid-dip meter, another using a v.t.v.m. with an r.f. probe, and a third using the meter in the transmitter, no external equipment being required. The usual step-by-step method along with pictorials are used for the actual kit construction.

The appearance of the transmitter should please even the most discriminating XYL. The cabinet is finished in two-tone "Heathkit green." Heath has changed the finish on the knobs from the dull die-cast zinc finish to a bright chrome-plate.

— E. L. C.

Heathkit HX-10 "Marauder" Transmitter

Height: 11½ inches.

Width: 19½ inches.

Depth: 16 inches.

Weight: 85 pounds.

Power requirements: 117 volts a.c., off — 1 watt, standby — 200 watts, c.w. key down — 100 watts.

Price class: \$335.

Manufacturer: Heath Company, Benton Harbor, Michigan.

Strays

ZE4JO ordered a Collins 75A-4 receiver and here is what happened before he got to use it. The receiver was shipped from the Los Angeles supplier and arrived at Mozambique safely. But a hurricane arrived the day it was being unloaded, and as a result the receiver lay at the bottom of the harbor for four days. After being hauled up, it lay in the wet crate another six weeks before ZE4JO was allowed to claim it. ZE4JO finally got the receiver home and washed it out with a high-pressure garden hose. Then he used a water-soluble oil all over the inside, and more washing. A week in the sunshine (with a 100-watt bulb taking over during the night) dried it out. Replacement of a few small parts, and now the receiver works FB. Quite a testimonial to Collins durability and ZE4JO persistence.

This reminds us of the salvage job the Navy did on the aircraft carrier *Constellation* after the million-dollar fire in Brooklyn. The electronic gear was salvaged by being immersed in a special solvent and then washed. This technique saved an untold amount of electronic gear which originally was thought to be a total loss because of damage by oil, soot, and water during the fire.

A ham directory containing info on 2069 amateurs living within a 50-mile radius of Kansas City has just been published by the Heart of America Radio Club, 417 East 13th St., Kansas City 6, Mo. This is a 72-pager, listing the hams

alphabetically by call, by name, and by location. In addition, it contains a listing of all the 2-letter call holders in the area, and the names and addresses of 35 amateur radio clubs.



Here's the emblem that W9JW uses on his QSLs to promote international friendship.

IMPORTANT NOTICE

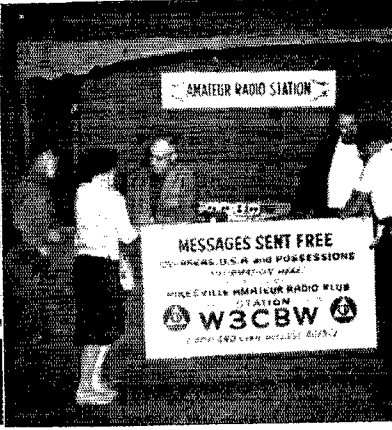
Change of Address

Important postal changes in handling second-class mail matter are now in effect. Please advise us *direct* of any change of address. Four weeks notice is required to effect change of address. When notifying, please give old as well as new address. Your promptness will help you, the postal service and us. Thanks.

Strays



The Chicago Veterans Administration Research Hospital will have one of the finest of ham stations as a result of \$10,000 bequest to its radio club from the Robert R. McCormick Charitable Trust, founded by the late editor and publisher of the *Chicago Tribune*. Above, left, the executive director of the Trust, Mr. Philip Hampson, presents the check to Dr. M. J. Schlusel, acting director of the Hospital, while club prexy K9TKW looks on . . . Above center, W6SAI and W6VKP, whose articles were deemed by ARRL's Board to be the best in the February and March issues of *QST*, admire their cover award plaques . . . Above right, W5URW (l.) receives a special Edison Award citation from SCM W5QEM for his emergency communications work during Hurricane Carla.



Above left, W6AXI operates the net control station during a special election in Modesto. This was a "get-out-the-vote" operation, with WA6GJA and K6ODA making the rounds of polling places, furnishing transportation for senior citizens and relaying election results . . . Above center is W4TQB, Col. John A. Frizen, who has been named Deputy Chief of Staff for Telecommunications of the Air Force Communications Service . . . At the Kernan Hospital Fair, sponsored by some 28 Lions Clubs in the Baltimore area, the Pikesville Amateur Radio Klub in conjunction with the Maryland State Civil Defense Agency supplied equipment and operators for an amateur station which acquainted thousands of persons with amateur radio. W3NO was in charge of the project, with much of the operating done by himself and W3ESM and W3LEO.

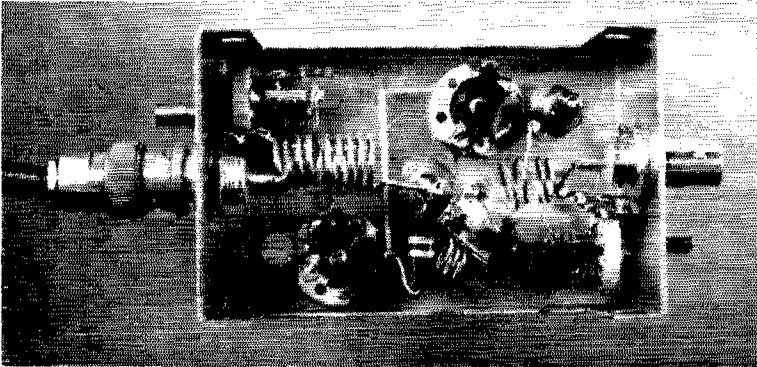
In June members of the Ouachita Valley Amateur Radio Club participated in a live TV show over Louisiana's educational TV station KLSE-TV, Channel 13 in Monroe. Among those taking part were (l. to r.) W5DBG, Mr. Gordon Canterbury (manager of the TV station), and K5TAN.



Frequency Multiplication with Power Varactors at U.H.F.

High-Efficiency Doubling or Tripling Without Vacuum Tubes or Power Supply

BY HENRY H. CROSS,* W1OOP



Doubler stage using the power varactor. Driven on 216 Mc., it is capable of several watts output on 432 Mc. It requires no power supply or modulator.

VARIABLE-CAPACITANCE diodes having Q at u.h.f. comparable to that of commercial air variable capacitors have been available for some time. The price of the low-power units was such that they were attractive only for parametric amplifiers, or where the small size, high efficiency, resistance to shock and vibration, or "all solid state" ruled tubes out of consideration.

Silicon power varactors having good heat dissipation and relatively high power capability have recently been produced by Microwave Associates. (The MA-4060A outwardly resembles a standard silicon rectifier, but internally it is quite different.) In many situations where conventionally constructed power tubes do not operate satisfactorily, the power varactor as a frequency multiplier may be considerably cheaper

*Microwave Associates, Inc., Burlington, Mass.

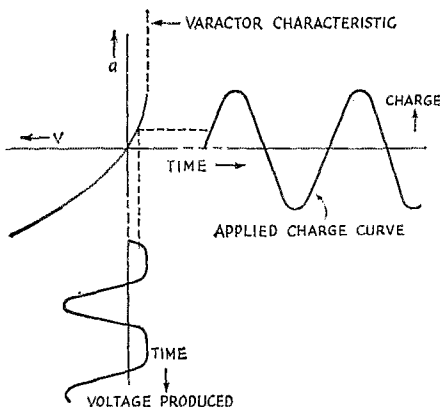


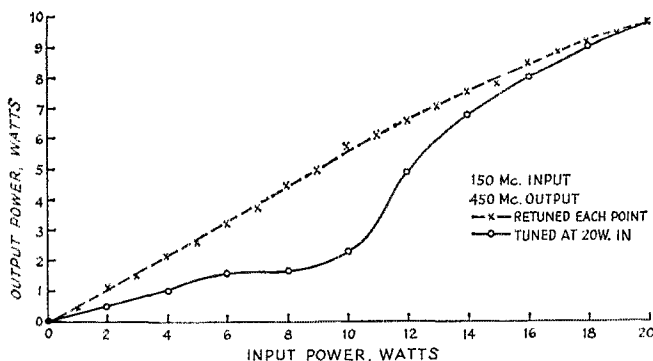
Fig. 1—D.c. voltage-capacitance characteristics and output voltage as a function of time, for sine-wave current input.

and simpler to build than a doubler or tripler using a disk-seal type of tube. The MA-4060A will give eight watts output at 450 Mc. when driven by a 6146 at 150 Mc. Used in the box described below, it converts a two-meter Communicator into a 432-Mc. transmitter, *without any auxiliary power needed*. The problem of reception at 432 must be solved by use of a separate converter or receiver.

The high- Q varactor can be thought of as a variable capacitor almost without losses, provided that the instantaneous voltage varies between plus one-half volt and the reverse breakdown point. The main problem in practice is that the varactor capacitance is a function of drive level, which is a function of tuning, which is a function of drive level . . . things sort of interact! On the other hand, because of the high level, power multipliers seem to be free of thermal drift problems. In our experience, no touching up is needed once you have them tuned up properly.

The d.c. voltage-capacitance characteristics and the output voltage as a function of time, for sine-wave current input, are shown in Fig. 1. Once the diode draws conduction current, the theory of operation gets more complicated, but the harmonic output does not cease, so the complications can be ignored for small currents. If the multiplier is retuned each time the drive level is changed, an input-output curve similar to the upper curve of Fig. 2 is observed. For one tuning condition, the lower curve of Fig. 2 applies, and this is the case where a.m. is applied to the input. The function is not perfectly linear, although it might be expected that a perfectly efficient multiplier would have perfect linearity. The detuning gets into the act. In any case, on-the-air tests show that the Gonset and its multiplier sounds very much like a Gonset and somewhat better

Fig. 2—Power output from a 450-Mc. tripler using a Type MA-4060A power varactor. The solid line shows the power available at various drive levels, when the tripler is tuned for maximum output with 20 watts drive. A uniform efficiency in excess of 50 per cent is possible (dashed line) if the system is retuned for each power level.



than several other 432-megacycle transmitters I have heard.

In the basic circuit, Fig. 3, the drive at frequency f is a sine wave of current, because the input circuit is series resonant, and thus will not permit current to flow around that loop at harmonic frequencies. The charge (current times time) applied to the diode will therefore also be a sine wave. Now the voltage across a linear capacitor would be charge divided by capacitance, but a silicon junction diode has a capacitance which decreases as the back voltage across the capacitor increases, so the voltage across the varactor diode becomes "peaky," somewhat as shown in the lower part of Fig. 1.

A peaked sine wave consists of the fundamental and one or more harmonics. If another series-resonant circuit is connected across the varactor terminals, and properly tuned, a harmonic current may be forced through the $n\ell$ loop at two or more times the drive frequency. (If harmonics higher than the second are desired, another resonant loop seems to improve the operation.)

The main advantage of a nonlinear-reactance frequency multiplier over a nonlinear-resistance multiplier (such as a 6AL5) lies in the fact that a reactance can be nonlinear without having to be lossy. The silicon-junction diodes used here are specially developed to have a low series resistance (2 ohms maximum at u.h.f. for the MA-4060A) and there is no theoretical objection to using one to build a doubler of 98 per cent efficiency. For a variable-resistance doubler, the calculated theoretical limit is 25 per cent, although a switch,

such as a p.n.p.n. diode or a class-C vacuum tube, can convert power with higher efficiency if its series resistance in the "on" condition is low enough.

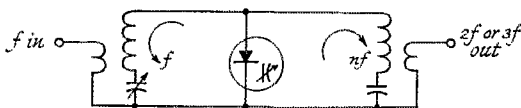


Fig. 3—Basic circuit of power varactor frequency multiplier.

Fig. 4 and the first photo show the doubler W1EHF made for me. This gave W1MHL/1 a Maine 432 contact last June, when driven by a 220-Mc. Gonset IV (tuned to 216 Mc.). The complications *do* help. The trap, L_5C_5 , is mostly to simplify tuning; without the trap, changing the output-tuning capacitor, C_3 , would also change the tuning of the 216-Mc. circuit. The double-tuned input and output help establish that the measured output power is on one frequency—the right one. When swapping from one transmitter to another, and with various antennas, only C_1 and C_4 need to be readjusted. The bias resistor should be fairly high, though not high enough to make the time constant of the bias network more than a few dozen microseconds.

The circuit of the tripler box used by W1EHF is shown in Fig. 5. There is an intermediate resonant loop on 288 Mc. and two traps, one on the input frequency and one to isolate the 288 from the output tuning. The "idler" at 288 gives improved output. The theory stipulates that such

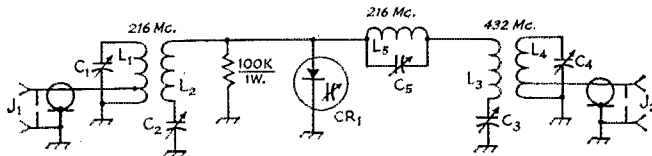


Fig. 4—Schematic diagram and parts information for the doubler from 216 to 432 Mc.

- C_1, C_2 —8.7- μmf . miniature variable (Hammarlund MAC-10).
- C_3, C_4 —5- μmf . miniature variable (Hammarlund MAC-5).
- C_5 —9- μmf . subminiature variable (Johnson 189-28).
- CR_1 —Power varactor (Microwave Associates MA-4060A).
- J_1, J_2 —BNC coaxial fitting.

- L_1 —4 turns No. 20, $\frac{3}{8}$ -inch dia., $\frac{3}{8}$ inch long. Tap at 1 turn.
- L_2 —5 turns No. 20, $\frac{3}{8}$ -inch dia., $\frac{3}{8}$ inch long.
- L_3 —2½ turns No. 20, $\frac{3}{8}$ -inch dia., $\frac{1}{4}$ inch long.
- L_4 —2 turns No. 20, $\frac{3}{8}$ -inch dia., $\frac{1}{4}$ inch long. Tap at 1 turn.
- L_5 —3 turns No. 22, $\frac{1}{4}$ -inch dia., $\frac{1}{4}$ inch long.

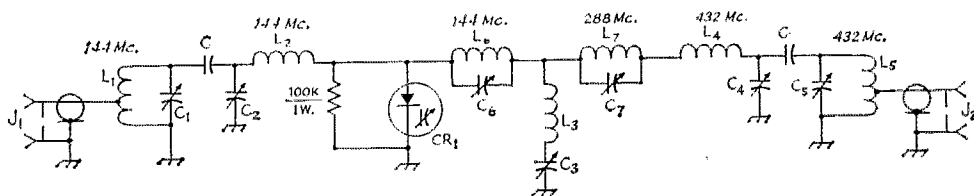


Fig. 5—Schematic diagram and parts information for the tripler from 144 to 432 Mc.

- C_1, C_2, C_3 —10- $\mu\text{mf.}$ miniature variable (Hammarlund MAC-10).
 C_4, C_5 —5- $\mu\text{mf.}$ miniature variable (Hammarlund MAC-5).
 C_6 —13- $\mu\text{mf.}$ subminiature variable (Johnson 189-6).
 C_7 —9- $\mu\text{mf.}$ subminiature variable (Johnson 189-4).
 C—Leads of No. 26 insulated wire, twisted together for 2 turns.
 CR₁—Power varactor (Microwave Associates MA-4060A).
 J₁, J₂—BNC coaxial fitting.

- L₁—9 turns No. 18, 3/8-inch dia., 1/2 inch long. Tap at 2 1/2 turns.
 L₂—7 turns No. 18, 3/8-inch dia., 1/2 inch long.
 L₃—4 turns No. 18, 1/4-inch dia., 3/16 inch long.
 L₄—2 turns No. 20, 1/4-inch dia., 1/8 inch long.
 L₅—3 turns No. 20, 1/4-inch dia., 1/4 inch long. Tap at 1 1/2 turns.
 L₆—4 turns No. 22, 1/4-inch dia., 5/16 inch long. Tune cold to 144 Mc.
 L₇—1 1/2 turns No. 22, 1/4-inch dia. Tune cold to 288 Mc.



The Microwave Associates MA-4060A Power Varactor, with stud mounting. Over-all height is only about one inch.

an idler is needed; you will find that tripling is not very satisfactory without it. Performance is shown in Fig. 2.

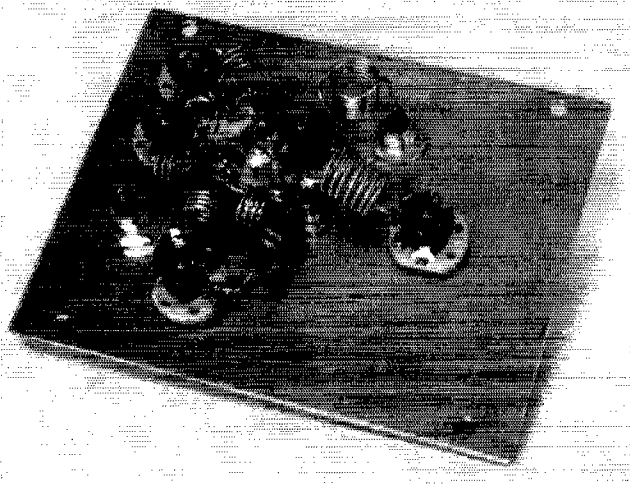
The traps can be made up and tuned with a grid dipper before wiring in place; they do not need readjusting in our multipliers. The best way to tune the rest of the circuit is with an

output meter of some sort, on a dummy load or your antenna. A directional coupler at the input is convenient for setting up the input network, but not essential for those who are used to juggling six variables. Final peaking up should be done while modulating (whistle loudly) to tune for best linearity. This is *not* the same as the tuning condition for most output on carrier.

If twenty watts input gives eight watts output on c.w., and no more than ten watts can be obtained with any amount of input, the a.m. rating must be eight watts peak, which corresponds to two watts carrier. As a driver for a 432 final or for f.m. we get eight watts. Thus, a.m. output is comparable to that obtainable from a 6039, while output with f.m. is about what a 5894 or 6252 will give you. You can get these power varactor diodes for just a bit more than the price of the latter tubes at most distributors, but you will *not* need heater or plate power, or a socket. We think the diode will last longer.

The small compact size of the power varactor lends itself to easy mounting and the varactor is more adaptable to lumped circuits at these frequencies than tubes are.

QST



Power varactor tripler, for 432-Mc. output with 144-Mc. drive.

A Statement From Project Oscar

As of April 20, 1962, the Project Oscar Association has been incorporated under the laws of California as Project Oscar, Inc., a nonprofit organization.

The Board of Directors of Project Oscar, Inc. at their regular meeting of August 23, 1962, unanimously voted that the American Radio Relay League be requested to print the following statement in a prominent position in the next issue of *QST* magazine:

1-Whereas Project Oscar, Inc. is a nonprofit organization of radio amateurs, and is nonmilitary and noncommercial in nature, the attention of *QST* readers and ARRL members is called to the fact that Project Oscar, Inc. does not endorse or sponsor products, nor does it condone the use of its name or the implication that the Project or the program endorses products or manufacturers. All requests for permission to use the Oscar name, satellites, or program for advertising purposes have been

declined, and Project Oscar, Inc. disclaims any endorsement, implied or otherwise, of any product or manufacturer.

2-The Board of Directors of Project Oscar, Inc. has been reconstituted and are now the following:

M. C. Towns, jr. K6LFFH, Chairman
H. R. McClain, K6SPK, Secretary
R. Esneault, W4JC/6, Treasurer
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H. Gabrielson, W6HEK
T. Lott, VE2AGF
H. Engwicht, W6HC*

* ARRL Coordinators, with Jean Gimelin, W6ZRJ, as alternate for Mr. Engwicht.

H. R. McCLAIN, K6SPK, *Secretary*
Project Oscar, Inc.

Strays

During a speech before the Twelfth National American Radio Relay League Convention in Portland, Oregon, on September 3, Rear Admiral Bernard F. Roeder, USN, Director, Naval Communications, announced plans to establish a Navy Military Affiliate Radio System (Navy MARS). The target date for the commencement of operations is Jan. 1, 1963. Complete details will be promulgated soon, but preliminary information may be obtained by writing to the Director, Navy MARS, Office of Naval Communications (Op-945N), The Pentagon, Washington 25, D. C.

Don't forget to look for Scouts on the air the week end of October 20 and 21. This will be the occasion of the 5th Jamboree-on-the-Air. Shortly before that week end the Boy Scouts World Bureau, 77 Metcalfe Street, Ottawa 4, Canada, may have available a list of calls and frequencies of scout stations taking part. You might drop them a line. As of the first of September we know only of VE3WSB, K2BFW, and VE7JAM.

The following equipment was stolen from K5HFL (Edwin Deady, 3621 Bryn Mawr, Dallas 25, Texas. Phone collect EMerson 1-6191): a Gonset G-66 receiver, serial no. 705; a Gonset 3-way power supply for the G-66, serial no. PO1097; a Gonset G-77 transmitter (r.f. section only) serial no. 612; and an Electro-Voice 600D mike. The receiver had been modified by the substitution of a 2-inch chrome tuning knob, while the transmitter had the 6146 final tube replaced by an RCA 6293.

W0CVU, well-known sidebander and an active ham for many years, has been awarded the first Empire DX Certificate (issued by the Radio Society of Great Britain) specifically endorsed for two-way sideband operation. FB!

If you've been a ham for 40 years or more, perhaps you'd be interested in joining the Old Old Timers Club. Write to Earl C. Williams, W2EG, 507 Wayside Rd., Neptune, N. J., for all the info.

At the ARRL National Convention in Portland, Oregon, over Labor Day week end, Lt. Gen. Francis Griswold, K3RBA, Commandant of the National War College, on behalf of the U. S. Air Force presented a plaque to Herbert Hoover, jr., W6ZH, ARRL president, "for his outstanding and untiring contributions to amateur radio communications." Gen. Griswold told the Convention that without amateur radio the Air Force would not have its present worldwide communications system.

They made it possible through their cooperation and demonstration.



Your hope of making a contact by reflection from Echo II depends not only on having a high-gain antenna but knowing just where to point it. The method described here is simple to use, and requires a minimum of orbital information — just two coordinates. Get ready — the balloon should be up this month!

To clear up a point of nomenclature, the project up to the time of successful launching is known as Echo A-12. Once it's up, the sphere becomes Echo II.

Position Prediction for the Echo II Satellite

BY PAUL H. KIRCHNER,* W2YBP

WHEN Echo II is launched this fall, several groups of amateurs will be attempting to communicate via the big balloon. These experiments will require a knowledge of where the satellite will be, and when. ARRL expects to receive regular schedules from NASA of the times and longitudes of the satellite's crossings of the 10th parallel, north latitude, and to transmit these over W1AW. A simple method of using these data to plot the satellite's ground track will be described. The scheme is similar to the acquisition prediction method for Oscar described

* 128 Christopher Circle, Ithaca, N. Y.

in an earlier article,¹ and a review of that article is suggested.

The first thing you need is a map of the U. S. (or of the continent where you live). Some types of projection are not suitable, but any map on which all the meridians are straight lines is OK. If any of the meridians are curved, don't use it. The parallels of latitude may be either straight or curved. It's handy to have expendable maps that you can mark up and discard, and these are available inexpensively (2¢ each, minimum order

¹ Walters, Wells, Hillesland, "Project Oscar Measurements and Tracking," *QST*, July, 1961.

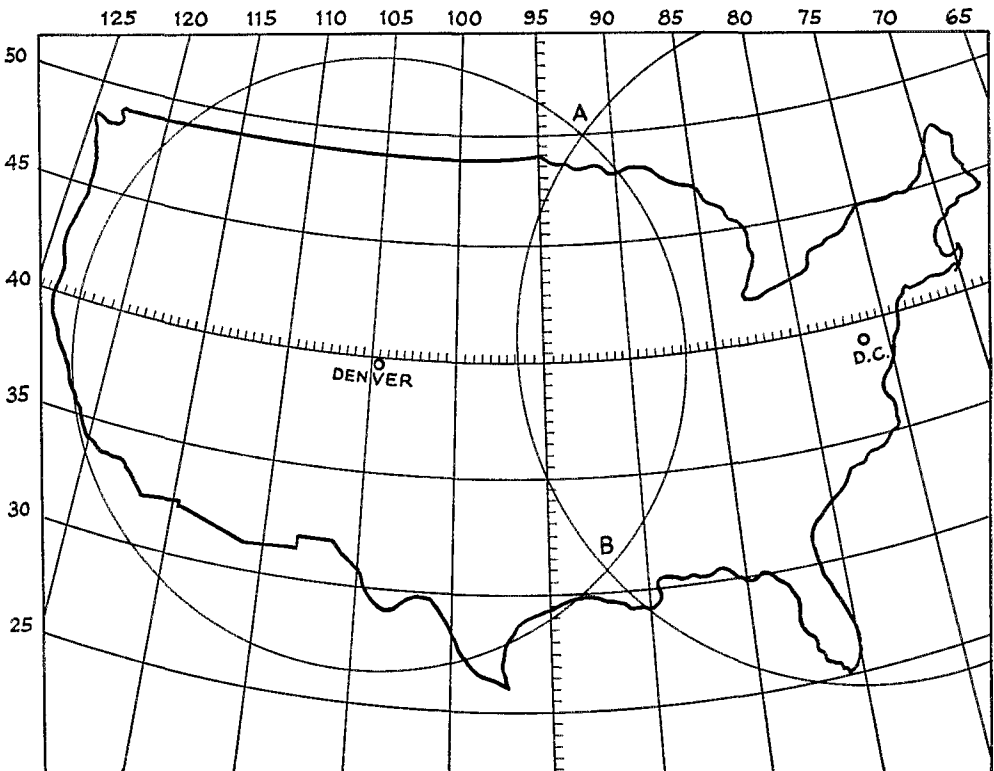


Fig. 1—Your map will look something like this after preparation. Half-degree intervals have been laid off along the 40th parallel and 95th meridian. The sample circles represent two stations having antennas with fixed beam elevation, one at Washington, D. C., and the other at Denver. The elevation angle at the Washington station is 25 degrees and that at the Denver station is 30 degrees. These two could hope to communicate via Echo II only when the satellite track passes close to one or the other of the two intersection points, A and B.

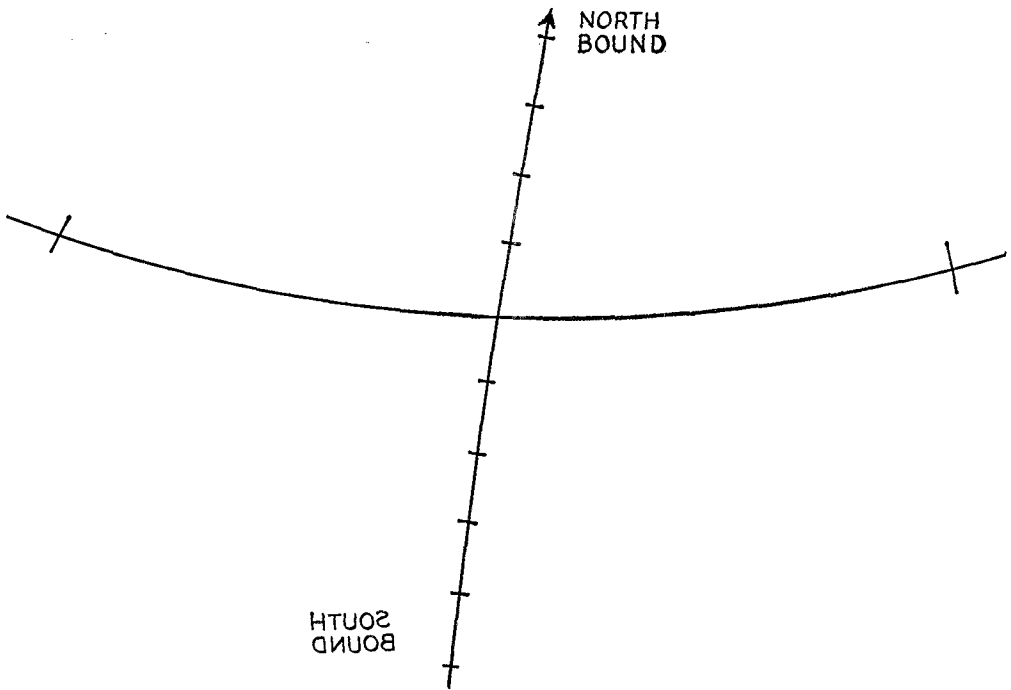


Fig. 2—Overlay for showing satellite track on the prepared map. This should be drawn on transparent material as described in the text. The short lines intersecting the 40th parallel line near the extreme ends indicate points of crossing on the preceding and following orbits.

\$2.00 plus postage) from the American Map Co., Inc., 11 West 46th St., New York, N. Y. For U. S. maps order Map No. 1555. Lacking a map, you can get along with just a latitude-longitude grid. In drawing up the grid use 5-degree divisions, and make the longitude spacing only three-fourths as big as the latitude spacing to minimize distortion in the middle latitudes.

Preparing the Map

Now, do the following:

- 1) If necessary, make small marks on the map along the 40th parallel to subdivide it into 1/2-degree increments.
- 2) Do the same along the 95th meridian (or the middle meridian on your map).
- 3) Mark your location on the map, and the locations of other stations you will schedule.

4) Around those v.h.f. stations which have antenna beams at fixed elevation angles only, draw a circle which represents the points where the center of the beam intersects the 750-mile altitude surface. The radius of the circle, in degrees scaled off along a meridian, is obtained from Table I.

The height of Echo II will be somewhere around 750 miles; between 600 and 900 miles these radii are close enough for antennas having gains of 21 db. or less.

The next thing you need is an overlay which, when properly superimposed on the map, will show the ground track of the satellite for each pass. Lay a sheet of plastic, vellum or other

Elevation Angle of Antenna Beam (degrees)	Radius of Circle (degrees)
15	20.7
20	17.8
25	15.4
30	13.3
35	11.5

transparent material over your map and tape both map and overlay in position on the desk or table. Trace the 40th parallel. Using the table below, plot five points on the overlay and connect them with a smooth line. This line, the satellite ground track, will be straight, or nearly straight, depending on your map projection.

North Latitude (degrees)	West Longitude (degrees)			
	<i>i</i> = 75	<i>i</i> = 80	<i>i</i> = 85	<i>i</i> = 90
30	98.4	96.9	95.6	94.2
35	96.8	96.0	94.4	94.6
40	95.0	95.0	95.0	95.0
45	92.9	93.7	94.6	95.4
50	90.2	92.2	94.0	95.7

Use the longitude column that corresponds to the satellite's orbit inclination (i). The expected inclination for Echo II is 82 degrees. If it turns out to be substantially different, this information will be included in the bulletins from WIAW. The table is for a middle meridian of 95 degrees, but outside the U. S. you can center it on some other meridian.

Make small marks along the track, going both ways from the 40th parallel, to represent 1 minute of satellite travel. For Echo II the spacing is 3.3 degrees between marks. Pick the 3.3 degrees off your middle meridian. Finally, write NORTHBOUND in a corner, then turn the overlay face down and write SOUTHBOUND in another corner.

Using the Map and Overlay

For each satellite pass of interest, line up the overlay on the map, with the 40th parallels superimposed, so that the track crosses the 40th parallel at the longitude given by the schedule. If it is a northbound pass, use the overlay face up; satellite motion is from south to north. For southbound passes, use it face down; motion is toward the south on these passes.

Here's how you figure out where to aim your antenna. We will assume you have already selected a pass which will occur between you and some other station, and that you have set up a schedule with him. The trick is for both stations to aim their antennas at the same point along the satellite's path, and wait for the satellite to go by. There are three cases to consider.

Case 1. *Both stations have tilttable antennas.* With the map and overlay taped to the table in the proper position, lay over them another sheet of vellum or plastic and draw a line between your station and the other station. Select the point where the satellite crosses this line. The azimuth can be read off using a protractor, and is the same as the azimuth from you to the other station. You might prepare a list of azimuths of other stations in advance.

To find elevation, first measure the distance on the map between you and the intersection point. Lay this distance off along the 95th meridian and read off the number of degrees. Call this

G . Let H be the satellite height in miles. Then use the following formula to find your elevation angle, E :

$$\tan E = \frac{(3960 + H) \cos G - 3960}{(3960 + H) \sin G}$$

If the height is between 600 and 900 miles and your antenna gain is 21 db. or less, you can use Table I instead of the formula.

Case 2. *One station has a tilttable antenna, one is fixed.* Instead of selecting the point as above, choose one of the two points where the satellite crosses the circle which you have drawn around the station with the fixed elevation angle. The point to choose is the one which is closest to the line between the two stations. Then both stations read off the azimuth to this point with a protractor, and the one with the tilttable array finds his elevation angle as in Case 1.

Case 3. *Neither station has a tilttable array.* Both stations have circles around them on the map, and the only satellite passes which are useful to this pair of stations are those which pass very close to one of the intersections of the two circles. Each station just reads off the azimuth to this point.

Now if your gear is ready and you understand these instructions, you are ready to go. Many other aspects of satellite-bounce DX have been discussed by Ray Soifer.² You'll notice we aren't attempting to actually follow the satellite with the antenna. This might be possible on those passes which are visible, if an assistant is handy. We can expect enough time error in the predictions, however, to make tracking from this information alone unsatisfactory. By aiming at a point where the satellite will pass and waiting, a time uncertainty of a minute or two won't bother us.

The satellite will take 90 seconds or more to pass through your antenna beam. QST

² Soifer, "Space Communication and the Amateur," QST, November, 1961.

Soifer, "The Mechanisms of Space Communication," QST, December, 1961.

Soifer, "The Feasibility of Amateur Space Communication," QST, January, 1962.

Soifer, "Amateur Participation in Echo A-12," QST, April, 1962.



October 1937

... Ross Hull and R. B. Bourne discussed radio control of model aircraft. George Grammer described a semi-universal 40-watt exciter with stage switching and plug-in coils. Vernon Chambers modernized the simple regenerative receiver. ... Other technical articles covered directional antennas for transmitting and receiving, negative-peak modulation control, a versatile emergency transmitter, and a variety of hints and kinks.

... Results of the 1937 DX Contest were published. High man in the states was W2UK (he's still setting records, now as KH6UK on v.h.f.).

... James Lamb and John Stadler described their visits with various European amateurs on their trip to Bucharest. QST

Strays

Volume III of the *Colorado Ham Directory*, published by the Denver Radio Club at \$1.00 per copy, is now available. This 72-page booklet lists Colorado radio amateurs alphabetically by call, name, and location; Denver hams by name; Colorado radio clubs; and various other items of interest. Send your dollar to the Denver Radio Club, P.O. Box 356, Denver 1, Colo.

WA2PXU claims what *must* be a "first." He bought a mobile home, and by pure chance the fellow who delivered it was W3ISA. In addition, and again by pure chance, WA2PXU worked W3ISA on six meters, both mobile. So WA2PXU claims he is the first ham ever to talk his home home.

Report on Project West Ford – Or What Happened to the Dipoles?

ON October 21, 1961, an Air Force Atlas-Agena B carried into orbit a dispenser package containing 75 pounds of fine copper dipole fibers embedded in naphthalene. The objective was to release the "dipoles" in such a way that they would form a thin, narrow orbital ring about the earth at an altitude of some 2000 miles. These would then serve as reflectors for an experiment in long-distance microwave communication to be conducted by the MIT Lincoln Laboratory, with the support of the Air Force. Because of the world-wide discussion triggered off among leading scientists when this project was proposed, it attracted more than an ordinary amount of attention, particularly among radio amateurs. "Whatever happened to those dipoles?" has been a popular question wherever hams gather, since the launching and subsequent long period of quiet on the newsfronts of the world. Here is the best guess as to the answer, taken from a status report on Project West Ford, issued by the Lincoln Laboratory March 1, and published in the URSI Information Bulletin, No. 130.

The cylindrical dispenser package was to be ejected from its container, once in orbit, in such a way that it would spin on its axis, like a projectile from a rifle barrel, at a rate of about 7 revolutions per second. The dispersal of the dipoles would depend on the way in which they were spun off the outer surface of the cylinder as the solid naphthalene binder gradually evaporated. Since the launching there has been no sign that any dipole fibers have dispersed, and it is believed that a mechanical malfunction at the time of ejection caused the package to be ejected without

the spin needed to release and disperse the fibers. Instead, they have remained clustered together in five or six small clumps, which have been tracked for several months by the u.h.f. radar at Millstone Hill in Westford, Mass.

The cause of the malfunction has been determined, and the above hypothesis has been checked out under controlled laboratory conditions simulating the space environment. The design of the experiment has been modified to prevent spin malfunction in any future test, and telemetering of various items of information regarding the operation of the package and its contents will be included in future experiments. There will also be more precise control over the ejection time and position in space, to insure that the life of the dipole belt will be of limited duration. These changes reduce the dipole load from 75 to 50 pounds, and the number of dipoles to be ejected from 350 million to less than 250 million.

Pending the launching of another package, considerable progress has been made with the equipment and techniques that are needed to use the dipole belt for communication. The equipment has been used for transcontinental data transmission by moon reflection, for example, and detailed measurements have been made of the reflecting qualities of the lunar surface. This work has been done in the X Band, at about 8000 Mc. Good-quality voice communication over this circuit, Westford, Mass. to Pleasanton, Cal., has also been achieved, and comparable results are anticipated with the orbiting dipoles.

— E. P. T.

Strays

Newfoundland liams recently toured some of the communications facilities at the U. S. Naval Station in Argentina. In the photo at the right (taken at the ham station on the base) Bob Lewis, a CJON-TV newscaster, is seated, while standing (l. to r.) are VO1AA, Robin Davis, VO1BU, and VO1FQ. Highlight of the trip was a close look at some of the gear used by the Airborne Early Warning Squadron.



Second World-Wide RTTY Sweepstakes

October 20-22

RTTY, INC. announces the Second World-Wide RTTY Sweepstakes to be held from 0200 GMT October 20, to 0200 GMT, October 22, 1962. Last year's first such RTTY event was a great success and so all RTTYers should be out in full force for this world-wide competition to determine ability in exchanging messages via two-way radio teleprinter.

Stations will exchange messages consisting of message number, check (RST), time in GMT, and name of state or foreign country.

Be sure to check carefully the log form, scoring sample, and complete SS rules which follow. Logs and score sheet must be received by RTTY, Inc., 372 West Warren Way, Arcadia, California, by December 1, 1962, to qualify.

Rules

1) This is a competition between all stations throughout the world to determine their ability to exchange messages via two-way radio teleprinter.

2) *Contest period:* 0200 GMT, Oct. 20, to 0200 GMT, Oct. 22, 1962.

3) *Bands:* This test will be conducted in the 3.5, 7.0, 14.0, 21.0, and 28.0 Mc. amateur bands.

4) Stations may not be contacted more than once on any one band. Additional contacts may be made with the same station if a different band is used. To encourage multi-band DX operation, the same country may be claimed more than once if contacted on different bands. The same state worked on more than one band may only be claimed once.

5) *Country status:* For the purpose of this contest, KH6, KL7, and VO will be considered separate countries, in addition to the ARRL Countries List.

6) Stations will exchange messages consisting of message number, check (RST), time in GMT, and state or foreign country.

7) *Points:* (a) All two-way RTTY contacts by North and South American countries (including KH6) will earn two (2) points. (b) All two-way RTTY contacts by countries other than in (a) above will receive ten (10) points. Partial contacts do not count. (c) All stations receive 200 points per country worked, not including their own.

8) *Scoring for all stations:* (a) Two-way exchange points times total states worked. (b) Total country points per band times number of continents worked. (c) Add item (a) and (b) above, for your FINAL SCORE.

9) Follow the sample score sheet and log form shown. Log the state only once, the first time contacted. Log the country the first time contacted on each band. To qualify, logs and score sheet should be received by RTTY, Inc., 372 West Warren Way, Arcadia, California, by December 1, 1962.

QST

LOG, SECOND WORLD-WIDE RTTY SWEEPSTAKES

Station log of W6TPJ (call) My state or country Calif. Date 20, Oct. 1962

NR Sent	RST Sent	Time Sent	Band	Station	NR Rcvd.	RST Rcvd.	Time Rcvd.	State or Country	Exchange Points
1	599	0205	14	W6CG	2	589	0204	CALIF.	2
2	569	0230	14	VK3KF	6	579	0231	AUSTRALIA	2
3	559	0247	14	W6NRM	?	?	?	—	0
4	599	0300	14	W2JAV	7	599	0259	NEW JERSEY	2
5	579	0514	7	VK3KF	22	569	0514	AUSTRALIA	2

CLAIMED SCORE: (a) Exchange points 8 × 2 States = 16

(b) Country points 400 × 2 Continents = 800
(2 × 200)

Add (a) and (b) = 816

FINAL SCORE

This log is correct and true to the best of my knowledge.

Signature _____



WN0BYO, in anticipation of becoming W0BYO, printed himself 1000 embossed QSL cards of the highest quality (he's a printer by trade). Only trouble was that FCC gave him the call WA0BYO.

Up in Vancouver, B. C., some unidentified

ham has designed and built a tiny receiver that is worn by the pitcher of a minor league team to receive instructions from the manager. (Say, what we really ought to have is a tiny transmitter that would let us listen in on the "conversations" between players and umpires during some of the rhubarbs!)

WASP Certificate

The Little Certificate with the Big Sticker

BY JOHN G. TROSTER*, W6ISQ

THE meeting will come to order. Get them guys in from the mobyles and let's get down to business about this new certificate. Who's got some ideas?"

"Charlie . . . ahhh, Mr. Chairman, how about a certificate for working all 50 states?"

"Nah, some outfit already has one like that."

"How about a Worked All Oceans? You know, MM."

"Nah."

"How about Worked All Islands?"

"There's millions of 'em!"

"Well, say work only about 5000, in all oceans, with so many volcanic and coral islands. Extra credit if the volcano blows . . ."

"Come on, you guys, cut it out. Let's get something everybody can get — even with two-meter mobylye. Now start thinking or we'll be here all summer."

"Charlie, ya got it — summer! Summer is vacations. Vacations is Parks. Parks, get it? Worked All Parks."

"Yeah, maybe ya got something there. How about Worked All National Parks? Not bad."

"Noooo, now wait a minute, Charlie. National Parks are no good. What does Rocky Mountain National Park have to do with a radio club in W6?"

"OK, so what about Worked All State Parks?"

"Charlie, ya got it! Worked All State Parks. W-A-S-P!"

"Yeah, that's it. WASP. Terrific, eh? We'll really stick 'em with this, eh? Get it? WASP — stick 'em?"

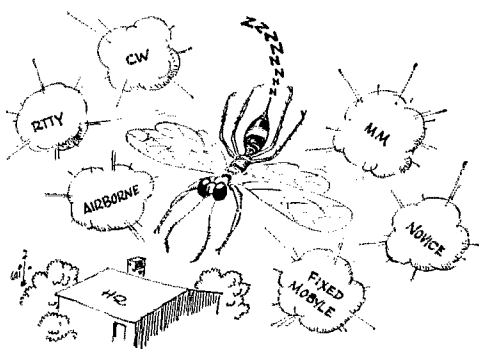
"OK, Charlie, but how about the most important thing? The certificate! That's all anybody wants. It's gotta be a real terrific certif — right?"

"Right. A certificate. We gotta make it big — big! We'll make it a wall mural — fill the whole wall. The greatest certificate ever. Pictures of State Parks, forests, trees, streams, scroll writing. Yeah, we'll dress it up! Lots of colored ribbons and seals. We'll have ribbons and stickers for everything! Yeah."

"Charlie, how about a picture of a big wasp right in the middle of the mural . . . errr, certificate — flyin' through the trees or something?"

"Yeah, that's good. And we'll have a different color ribbon and sticker for each mode, each band, all different powers, fixed mobylye, RTTY, MM, airborne, day or night, winter or summer, different age groups. Tremendous, I tell ya. This is gonna revolt — ah, revolutionize the entire certificate industry!"

"Hey, Charlie, you're lost. Where do ya get MM in the High Sierras?"



"Come on, fella, don't quibble. Think big. If Giglimo Martooni could invent the stuff, we can figure out how to . . ."

"What about that airborne in a State Park, Charlie?"

"You're out of order. Be quiet."

"Charlie, ya think we could get the Governor to sign the thing too?"

"Yeah, sure. We could even get him to be the custodian. I got important connections, ya know. Hey — maybe we could even get the Presid . . . naw, these are only State Parks. Maybe a Senator though."

"Pardon me, Charlie, old boy, but how many of the Park Rangers are hams? How is anybody ever going to work all the parks?"

"Mobylyes, fella, mobylyes. They go through now and then. Good Field Day . . ."

"But, Charlie, there are 144 State Parks?"

"Listen, fella, ya gotta think big. I tell you, friend, this will be the greatest award ever offered by anybody for anything, anywhere!"

"Hey, Charlie, ya know what we ought to give any guy who can qualify for any part of this WASP?"

"What?"

"Give the guy one of the State Parks — complete with a Ranger. And every new endorsement gets him another Ranger! Ten Rangers gets him a Rangerette."

"That's not funny, fella. Here I am thinking my head to the bone to make a good certif with lots of colored ribbons, lots of endorsements, big stickers and some of you guys . . ."

"Charlie, Mr. Chairman. I think we ought to have it so they have to work club members too."

"Ya mean the club members have to be in the Parks?"

"Nah, just work the members at their home QTH."

(Continued on page 162)

*45 Laurel Street, Atherton, California.



Hints and Kinks

For the Experimenter



FINGER KEYING

THE article, "A Novel Key for Use with Electronic Keyers," in *QST*, August 1962, is somewhat similar in principle to a key I have used for some time. Although my key is a little less sophisticated than W5HPB's key, it can be used for c.w. "finger keying."

My pair of finger keys is made from two strips of $1\frac{1}{2} \times 3$ -inch aluminum sheet cut from scrap (brass, steel, etc., may be substituted) and mounted about $\frac{1}{4}$ inch apart on a wooden base. A side view of the arrangement is shown in Fig. 1. The contacts should have very close clearance and require very little effort to close. A piece of plastic tape on top of each strip provides insulation and gives a softer "feel" to the finger. Since my index finger is the most agile, I operate the dots with it (via the electronic keyer) and the dashes with the adjacent middle finger.

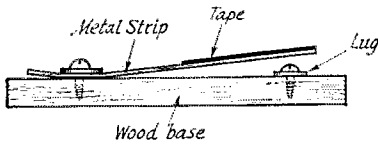


Fig. 1—W9UZS's finger key.

The scope of this type of key using multiple finger operation is not limited to electronic keyers; the keys may be operated without an electronic keyer assist. Perhaps a bank of four keys, mounted in a row and played like a piano with a rolling motion of the fingers, could be used. Or still another version—add a fifth key for the thumb and make all the dashes with the thumb. One's imagination and practice are the only limits to the combinations that can be worked out for the various letters and characters.

—W. W. Jöhler, W9UZS

CONVENIENT CHASSIS TIE-DOWN

MY transmitter is built on a 17-inch wide chassis which barely clears the 17 $\frac{3}{8}$ -inch opening in the cabinet. I wanted to install some kind of bracket on the rear of the chassis so that once the chassis was installed in the cabinet it

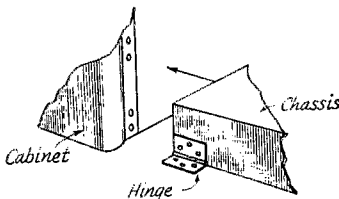


Fig. 2—WA4DQS's hint for chassis tie-down.

could be clamped down. Because of the clearance problem I could not mount the bracket on the chassis before installing it. If I waited until the chassis was in the cabinet I could not get the mounting hardware into the chassis to attach the bracket. The solution was to use a small hinge as shown in Fig. 2. It is attached to the chassis and folded up. When the chassis is in place inside the cabinet, the hinge is dropped down into place and bolted to the cabinet.

—Capt. William J. Starr, WA4DQS

THICK-WALL FEED-THROUGH

I HAVE been using coax feed lines for several years and have always used the 2-inch 83-1F coax feed-through connectors to bring the feed line through the house wall, window frame, etc. However, my present home, built around 1778, has extra thick walls that range from two to three feet in thickness and the window frames are over one-half foot in thickness! I devised the simple coax feed-through shown in the accompanying sketch in Fig. 3. It involves the use of two 83-1F connectors and a short length of coax with 83-

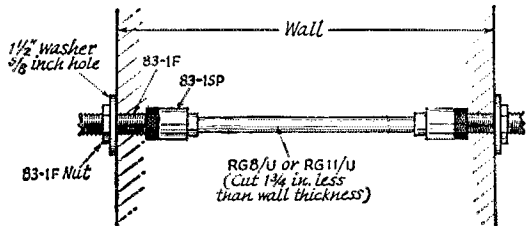


Fig. 3—W4JA's thick-wall feed-through.

1SP connectors attached to both ends. A hole, $\frac{3}{4}$ of an inch in diameter, is drilled through the wall or window frame. The assembly, less one washer and 83-1F nut, is pushed through the hole. When the nut and washer are attached and tightened, the job is completed.

—Gilbert L. Countyman, W4JA

UNUSUAL MOBILE LOG

AN unusual and useful mobile log for long trips is a common road map. I keep my mobile contacts logged on a road map at the location where the contact was made. This properly locates our position, which is required by regulations, and often provides conversational material for the contact. The information is transferred from the map to the regular mobile log at the end of each day.

—Leonard M. Normun, W6JLY

NEW LIFE FOR SLUGGISH AR22 ROTATORS

DURING low-temperature periods, my AR22 antenna rotator would begin to slow down, and when the temperature dropped below zero it would stop altogether. After some investigating I found the trouble was due to a faulty 100- μ f. capacitor in the control box. I removed the capacitor and replaced it with two equal electrolytic capacitors connected back to back, as shown in Fig. 4. (The original capacitor was nonpolarized.)

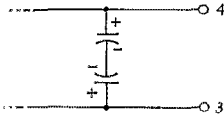


Fig. 4—Circuit showing connection of the electrolytic capacitors to the AR22 rotator.

I used two 400- μ f., 450-volt photoflash capacitors, but any good quality type with the proper rating would suffice. After replacing the capacitor, the rotator functioned perfectly at all temperatures.

— E. Kirchner, VE3CTP

MOBILE NOISE SUPPRESSION

COAXIAL capacitors for ignition spark coil primary filtering must be installed with the shortest leads possible. I found that the capacitors with threaded terminals have the same thread as the screws projecting from the spark coil. The capacitors may be threaded directly onto the coil terminals resulting in no leads at all! Of course, the capacitor's metal case must be grounded to the coil case. This can be done with copper straps soldered to the capacitor and coil cases.

— James W. Stuckey, W5ZJO

SURGE PROTECTION FOR DIODES

ONE way that I have found to protect semiconductor diodes from starting-current surges is to use a thermistor in series with the primary voltage. The circuit in Fig. 5 shows a typical application using a thermistor, RT_1 , in the transformer primary circuit. Of course, the d.c. resistance in the transformer winding gives

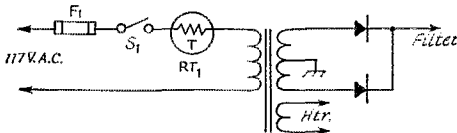


Fig. 5—W4ZXB uses a thermistor for surge protection. F_1 —Fuse of the proper rating. RT_1 —0.49-ohm thermistor (Workman FR .49).

some current limiting. Probably the best application of the thermistor along these lines would be in a "transformerless" power supply.

The thermistor I use has a cold resistance of 80 ohms which drops to about 0.5 ohm when hot.

It is a Workman type FR .49 (the number indicates the "hot resistance"), and is available from most radio and television parts distributors as a TV replacement

— James B. Goff, W4ZXB

AUTOMATIC GSB-101 and KWM-2 OPERATION

IF the changes shown in Fig. 6 are made to the Gonset GSB-101, it can be used with the Collins KWM-2 (or S-line) for either "barefoot" or amplifier operation.

The GSB-101's antenna relay, RLY_1 , comes from the factory wired as shown in Fig. 6A. Change the wiring to that shown in Fig. 6B. The modification requires the addition of two other relays, K_1 and K_2 . Relay K_1 is a 6.3-volt a.c. unit keyed from a voltage derived from the KWM-2's accessory socket. The other relay, K_2 , has a 117-volt a.c. coil and is connected across the red pilot lamp in the GSB-101.

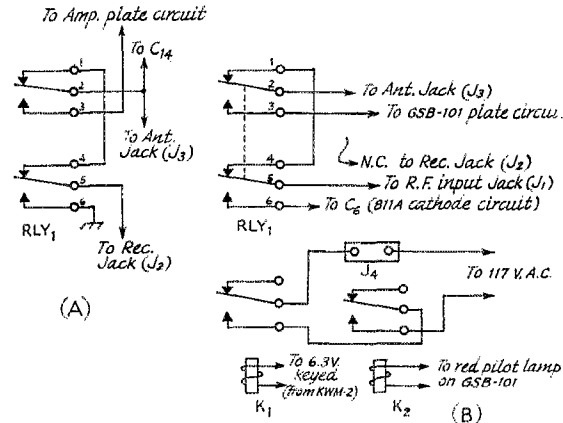


Fig. 6—Modifications to the GSB-101 for automatic operation with the KWM-2. Relay RLY_1 is the GSB-101's antenna relay.

K_1 —6.3-volt relay.
 K_2 —117-volt relay.

When the plate switch on the GSB-101 is in the "off" position, relay K_2 is open. When the KWM-2 goes to "transmit," 6.3 volts is applied to relay K_2 , closing it. However, the 117 volts necessary at Terminal J_4 to close RLY_1 isn't present since K_2 is open. Therefore, output from the KWM-2 comes in jack J_1 , through the relay RLY_1 (which is not closed), and out to the antenna, for "barefoot" operation.

However, when the plate switch on the GSB-101 is closed, power is applied to the red pilot lamp which closes relay K_2 . When the KWM-2 goes to transmit, 6.3 volts is applied to K_1 . Now there is 117 volts appearing at J_4 which closes relay RLY_1 . The KWM-2 output is now fed to the 811A cathodes and the GSB-101 amplifier is in the circuit.

— Eugene M. Zimmerman, K1ANV

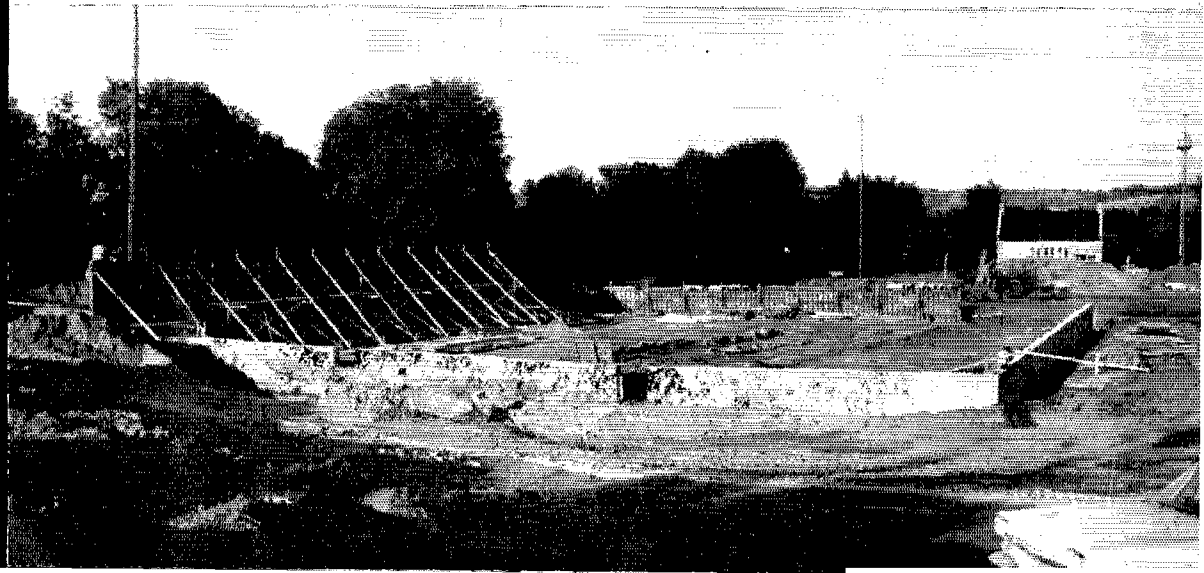
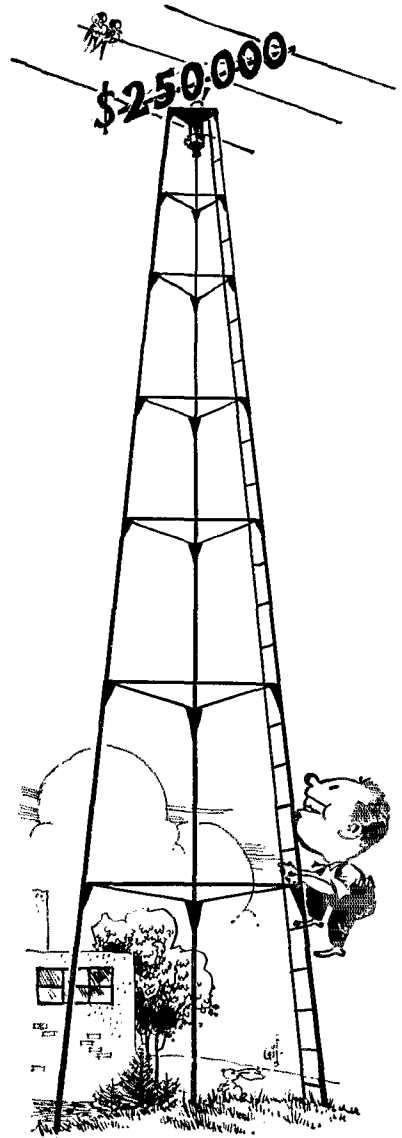
Building Fund Progress

MEMBER contributions to the Building Fund continued their steady, if summer-slow, pace during August, but our little man on the tower moved up only slightly. Most encouraging are plans of a number of clubs for fund-raising projects, some in process and some scheduled this autumn (such as described on the facing page) and of convention or hamfest sponsors to make substantial donations to the Fund (such as the Southwestern Division Convention and the Dayton Hamvention). We expect to see a real boost in the fund drive as we get into the autumn and winter seasons.

As to the building itself, rough grading has been completed, an extensive storm drainage system is in place, footings and concrete base walls are nearly finished, and the steel framing is due to go up about the time you read this. The structure should be enclosed well before the onset of severe weather, and barring complications the building should be ready for dedication and occupancy in the spring.

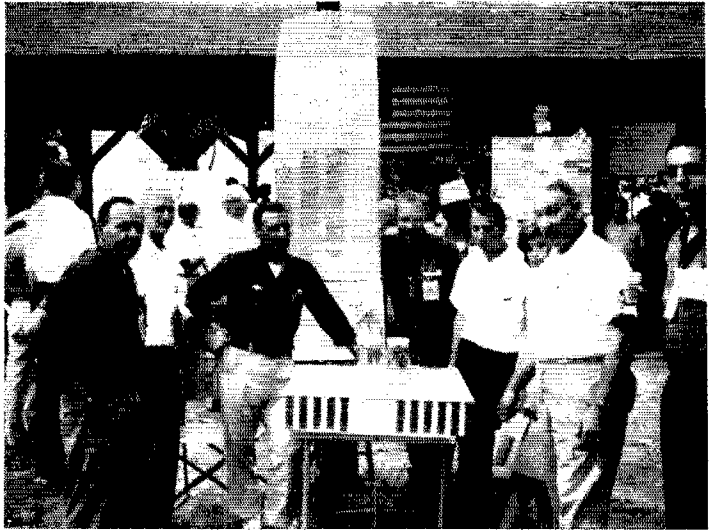
Will *your* name and call be inscribed in the Building Fund record of participants? It should be — and we can provide no better reasons than those in various comments from contributing members, examples of which are on the facing page. If you missed it, a subscription form is in the May issue of *QST*, or another will be sent on request. A helpful reminder: contributions are U. S. tax-deductible. Each individual or club donor receives a handsome certificate of participation in the Building Fund drive. Get yours now, OM!

This is the ARRL Headquarters building, as of August 22. There are no startling day-by-day changes in over-all appearance, but many essential basic operations are being completed. We expect that by the time you see this in print, the steel work will have been started.



Members Are Saying . . .

W3KKN, W2EIF, W3JSD, W2LOY, K3AUH, W3CL and K3IUV at the Operation Building Fund activity of the Pack Rats at their August picnic. The placards at the back of the model were filled with call letters of those participating at "a buck a brick."



At yesterday's Pack Rat Picnic we had the first showing of our new ARRL administration building model . . . All of the Pack Rats had bricks with their call letters on the building and additional friends to the number of 177 contributed for a plastic brick with their call letters thereon. This particular part of Operation Building Fund will be followed by subsequent events, such as a white elephant sale, auctions, viewing of the model and other activities . . . We will forward to you progress reports indicating the status of "our" new administration building and we trust that the new one up there in Connecticut will proceed with like speed. — *K5HWZ*

Even though a new ham, I realize that I would not be a ham if it were not for our wonderful League, and its many contributions to ham radio. I am behind the Building Fund 100%. Here is my contribution; it is not much, but I hope it will help. — *W1N0CKK*

Half of the enclosed I would like to donate in memory of the late VE3WM. Bill was a great friend of mine and helped me considerably in ham radio and I know that if he were alive he would appreciate this gesture very much. — *VE3BMZ*

Though I received my General Class license only this morning, my first act is sending my membership to ARRL. Your publications have been so helpful in my studies for the license, as well as so interesting, that it seems to me only fair that I support your activities.

As a further token of my appreciation and recognition of your consistent efforts through

the years to assist radio amateurs in all phases of their activities as well as to represent them constructively with legislative bodies, I enclose a check for your building fund. — *W6BAUQ*

Please send me a subscription blank for the building fund. I have already contributed, received the certificate and notification. However, in retrospect, it seems to me that I should be more cognizant of all the things the League has done for ham radio in general and me in particular. Perhaps I'll forego the new tools I thought I needed and add another "brick" to the building instead. I am absolutely positive that the brick will do much more good than the tools. — *K9LKA/W9CPD*

Enclosed herewith you will find a check for the building fund. The members of the Honolulu Amateur Radio Club voted this to the ARRL from their funds with the hopes that it will help and assist in the new building program which we have been hearing about here.

May I on behalf of all of the members of the Club wish you our best with the hope that you will soon be in the new quarters and finally comfortably set up. — *K16W0*

Enclosed is the August payment on my pledge. Powerful elements exist that desire the ham bands. Any ham who does not recognize this is naive. Without doubt, they are observing this building drive to gauge our present strength and our response will give them a true evaluation of our willingness to stand behind our only line of defense — the ARRL. A mere number count of the hams in this country gives little insight into the true staying power of the group. — *K6KKG*

The World Above 50 Mc.

1215-1300 2300-2450 3300-3500 5650-5925 10,000-10,500 21,000-22,000 35,000-40

CONDUCTED BY SAM HARRIS,* W1FZJ

DURING the month of August we were privileged to have the Massachusetts VHF Society hold their August meeting at our QTH. I don't know how much they learned, but I received a liberal education in everything from "How to be a well-rounded amateur" to "How to be an OO (Official Observer) without losing friends." Senior member at the meeting was W1IO. Bob has been one of the mainstays on the u.h.f. bands for years and his unswerving loyalty to operation and experimentation has been a real service to the v.h.f. fraternity. Just to make sure that the low bands (50 Mc. and up) were taken care of properly, Bob tutored his XYL into becoming KIAAA. Bob says it wasn't really like losing a wife but more like gaining a ham. Jack, W1QXX, president of the Mass. VHF Society and latest Massachusetts 50-Mc. man to work 48 states, points out that the object of the club is to promote interest in v.h.f. at the

* P.O. Box 334, Medfield, Mass.

family level. A large percentage of the membership are husband and wife hams, attesting to the efficacy of the club aims. It certainly was a pleasure to see a ham club demonstrating that there is a place in ham activities for the whole family. Among the many subjects discussed, the following seem pertinent to this column.

Crystals. The old saw about "what frequency am I on?" comes up every month. It doesn't seem possible that there is anyone who hasn't read at least one dissertation on frequency control. Maybe it just goes by as something that applies to the other guy. Anyway, here it is again! The frequency marked on a crystal holder is placed there by the manufacturer and represents the frequency on which that particular crystal will oscillate under a certain set of conditions. If the crystal has not been abused, it will quite probably oscillate on that frequency under the same conditions. It is very unlikely that your transmitter will be making use of these exact conditions and as a result your actual frequency may be many kilocycles away from the marked frequency. This does not mean that the crystal is bad or that the circuit is bad. It only means that the only way to check your frequency is to measure it. While we are on the subject I would like to point out that phone operators are required to keep their sidebands inside the edge of the band. An a.m. phone signal is generally conceded a six-kilocycle bandwidth and must thus stay at least 3 kc. inside a given band edge. On 50 Mc. this means your frequency must be 50.103 or higher if you are operating a.m. with the accepted bandwidth. S.s.b. stations with good unwanted sideband suppression can, of course, operate much closer if they are using upper sideband.

50-Mc. c.w. band. Big complaint about "nobody listens in the c.w. band." My own personal comment here is "Why should they? There is nobody there that you can't hear just as well in the phone band." This is not entirely correct, however, as there are a few dedicated workers who do indeed inhabit the wide-open space between 50.000 to 50.100 Mc. Mostly the activity is confined to scatter schedules and these efforts do pay off in reliable long-distance contacts. The claim that nobody listens is, however, just not so. All you need as proof is one rare station in the c.w. band, like XE10E or VE8BY (on the east coast). The truth about the matter is that the preponderance of activity on 50 Mc. is on phone. As a result, a band opening is much more likely to be spotted in the phone band. Hence, anyone looking for a band opening usually listens in the phone band. Once an opening is observed it is possible that something a little more on the rare



V.h.f. antenna going up in Canada prior to June contest. On top of tower: 3-element 6-meter beam, 16 elements for 2, 26 elements for 1 $\frac{1}{4}$. On tower—top left: John Ebersole, SWL; VE3BGB. Bottom left: VE3CWR, VE3BYU, VE3FBE.

side might be found on c.w., but the likelihood is small, as most of the stations capable of c.w. operation are listening for a band opening in the c.w. band where the activity is not sufficient to alert them. The day when you needed a beacon to tell if six meters was open has long since passed. The best way to promote c.w. activity on 50 Mc. is to operate religiously and tell people what you are accomplishing. If you are in fact consistently working more than most others from your area (à la W6NLZ, W6BAZ, K7AAD, etc.), you have a point to make and you will get response.

OOs. "It is a comforting feeling to know that someone is listening who cares enough to try and help you keep your signal legal." I wouldn't say that this is a typical answer from the recipient of an official observer report, but it is safe to say that it typifies the interest of the official observer class. An OO has no ax to grind, has no friends and no enemies. His reports are, to the best of his ability, factual and without bias. His official duties do not include contacting you on the air to advise you, although he will in general be glad to give frequency checks and signal checks in an unofficial capacity, as will any well-equipped amateur. His reports are generally restricted to advising the recipient of a violation of some portion of the FCC rules and regulations. He is not supposed to be perfect but he is supposed to be overly careful in his observations. If you get an OO card, you probably did what it says. Your OOs deserve your support and cooperation. If you think you are qualified to argue with him, why not apply for an OO position yourself? The v.h.f. bands need you.

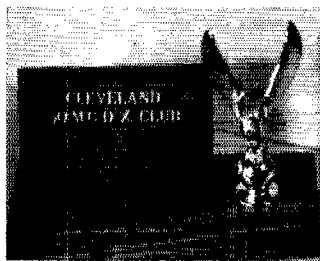
Moonbounce

Well, KH6UK and W1BU finally made it two-way. I am waiting for some erudite character to figure out how far it is. Don't forget to come to the Syracuse V.H.F. Round-Up as Tommy (KH6UK) will be on display (probably still trying to catch up on three months' sleep). Next stop — Switzerland!

50 Mc.

Reports received from Pete, VE8BY, for the month of July state that six-meter activity has picked up a bit for him, partly because he now is running 150 watts input to the sideband rig. Contacts for the month into Yellowknife included KL7FLB, K7CQI, W7SFK, VE4TL, VE4YW and VE4TX, with KL7FLB being heard or worked twelve times during July. On July 27 Pete heard two W8 stations but was unable to attract their attention after using s.s.b., c.w. and a.m. Best day since his last report was August 1 when he worked VE2AIO (2-way s.s.b.), nine VE4 stations, one VE5, and seven W7 stations. Pete sez: "Seems strange when I have to ask a station to repeat because KL7FLC is causing QRM on the frequency; they don't hear him and yet he's causing QRM off the back of my beam."

From Quebec, Canada, and VE2AIO, we hear that "In general, six-meter conditions have been very interesting here. Single hop was heard every day during the month of July, at times spotty, but more often than not, very intense openings. Aurora has been noted here every evening in July, usually weak auroral openings but those of July 25 and 30 were as intense as any I have ever heard. As far as I am concerned, July has been the most interesting month this year, certainly more openings noted than in either May or



Trophy awarded by the Cleveland 50-Mc. DX Club. For details write to K8NUE.

June; and whereas the long-skip openings earlier in the year seemed to land into the Southwest and Mexico primarily, in July the long skip openings hopped all around making life most interesting." Among interesting stations either heard or worked by Geoff during July were: W5SFW, W5PVT, VO1DW and W8GNS, all worked on July 6 within a two hour period; CO5CN heard on July 7; VE8BY heard on July 10 and worked on July 26 and August 1. On July 11 K8BCW (Colorado) was worked two-way s.s.b. for a new state at VE2AIO; July 14, heard K4PGL VP9 working east coast stations. July 19 another new state, Washington, was worked for added interest and on that same day K76B? was heard calling "CQ" with a very weak and rapidly fading signal. Heard only the one time and not identified. PJ2AA on Aruba was worked on the 22nd and K8TSD in Denver worked on the 29th for another 2-way s.s.b. contact.

In VE6-land, Bob Henry, VE6LB, says that six-meter activity is considerably better and that there have been frequent openings into W6, W8 lands and a few into W7 and VE4 areas. Word received from Scotty, W5DZF, to alert v.h.f. gang that VP7BO, Lee, will soon be operating on 50 Mc. from the Bahamas and hopes to operate on 144 Mc. at a later date.

We find that in spite of the skip conditions prevailing on 50 Mc. during the spring and early summer months, a number of the 50-Mc. operators in the Detroit, Michigan, area have retained their interest in RTTY. At the present time the following are operating on six-meter a.f.s.k. K8IPN, K8EUO, K8KYS, K8AMG, K8NTB, K8PZG, W8SWC, K8LXJ, K8AIZ, W8LW and K8NBC.

WA4BMC sez that 50 Mc. had its share of openings into Lake Worth, Florida during July, having been open on nineteen different days; and K9FNB in Illinois sez that the band was open several times during that month with the best opening being a (almost) day-long-one on July 30 when it was open to the southeast, south, southwest and northeast Dick worked WA2IYZ 4 who was mobile at the time. In Pennsylvania, Bill, K3ARR, notes that conditions have been



Can anyone identify this well-known s.s.b., 50-Mc. operator?

220- and 420-Mc. STANDINGS

220 Mc.		W9ZIH.....10		5 500	
W1AJR.....11	4	480	K0DGU.....5	3	425
W1AZK.....9	3	412	K0TFE.....6	3	615
W1HDQ.....10	5	450			
K1HX.....10	5	450			
W1OOP.....12	4	400	KH6UK.....1	1	2540
W1RUF.....15	5	480			
W1UHF.....11	4	385	VE3ALB.....7	4	450
			VE3BPR.....3	3	300
W2AOC.....13	5	450			
K2AXQ.....9	3	240			
W2BAH.....4	2	167			
K2CBA.....13	6	650			
K2DIG.....4	3	140			
W2DWJ.....15	6	740			
W2DZA.....12	5	410			
K2TTP.....11	5	265			
K2TQJ.....11	5	265			
K2JW T.....6	3	244			
K2KLB.....12	4	300			
W2LRF.....10	4	250			
W2LAV.....12	4	400			
W2NTY.....12	5	400			
K2PPZ.....11	4	390			
K2QJQ.....13	5	540			
W2SBU.....4	2	150			
K2UUR.....4	3	105			
W3AHQ.....4	3	180			
W3FYE.....10	5	350			
W3JYL.....8	4	295			
W3JZL.....4	3	250			
W3KKN.....10	4	255			
W3LCC.....9	5	300			
W3LZD.....15	5	425			
W3RUE.....9	5	450			
W3UJG.....13	5	400			
W3ZRF.....5	4	112			
K4TFU.....5	4	400			
W4TLC.....1	1	315			
W4UXB.....7	5	320			
W5AJG.....3	2	1050			
W5RCL.....5	5	700			
K6GTG.....2	1	240			
W6MIU.....2	2	225			
W6NLZ.....3	2	2540			
K7ICW.....1	1	250			
K8AXU.....10	5	1050			
W8JGG.....9	5	475			
W8LPD.....6	4	480			
W8RNM.....8	4	390			
W8PT.....10	5	660			
W8SVL.....6	4	520			
W9AAG.....9	4	660			
W9GQC.....11	5	740			
W9JCS.....6	2	340			
W9JEP.....9	4	540			
W9OVL.....6	3	475			
W9UED.....4	4	605			
W9ZIH.....10	5	500			
K0DGU.....5	3	425			
K0TFE.....6	3	615			
KH6UK.....1	1	2540			
VE3ALB.....7	4	450			
VE3BPR.....3	3	300			

420 Mc.

W1AJR.....11	4	40			
W1HDQ.....8	3	210			
W1MFT.....8	3	170			
W1OOP.....11	3	390			
W1QWD.....9	3	410			
W1RUF.....7	4	440			
W1UHF.....6	4	130			
W2AOD.....6	4	290			
W2BLV.....12	5	360			
K2CBA.....5	3	225			
W2ADTPZ.....6	3	200			
W2DWF.....10	4	196			
W2DZA.....8	4	130			
W2HQE.....8	4	280			
K2KLB.....4	2	100			
W2NTY.....3	2	100			
W2OTF.....10	4	300			
K2URR.....8	3	215			
W2VCG.....9	4	280			
K3CLK.....9	4				
K3BOF.....6	3	250			
W3FBY.....7	3	296			
W3LCC.....2	2				
W3RUE.....2	2	96			
W3UVG.....6	6	4			
W4HHK.....6	4	550			
W4VVE.....7	4	430			
W5AVG.....5	1	425			
W5HTZ.....5	3	440			
W5RCL.....11	3	600			
W6GTG.....1	1	180			
W7LIL.....2	1	180			
W8HCC.....3	2	355			
W8HRC.....3	2	350			
W8JLQ.....4	3	275			
W8NRM.....3	2	390			
W8PT.....6	3	310			
W8RCL.....4	2	270			
W8TNY.....9	5	580			
W8UNT.....3		225			
W9AAG.....8	4	525			
K9AAJ.....7	3	425			
W9GAB.....9	4	608			
W9GJL.....6	3	330			
K0TFE.....3	2	185			

The figures after each call refer to states, call areas and mileage of best DX.

generally good with 8, 9 and 9's coming through and a few 6's being heard on double hop; and down in Georgia, Walt, W4VWH, says that there were too many openings to mention the peak being around July 7, 8, 9, and 10 when 6's, 7's and 8's were heard and worked. Other openings were mostly to 2's, 3's and 5's. W7ADR observes that 50-Mc. skip has been better this year in Portland, Oregon than last year during the same period with 2's, 3's, 4's and 5's coming in very well. Niles sez that although there was talk in his area of U's being worked no one has received any QSO verification in the form of a QSL.

In Columbus, Ohio, K8HRR noted openings on July 6, 7, 19 and 22 with the one of the 19th being the best having lasted longest and with all of New England being heard. Out Tennessee way W4HHK relates openings on seven days during July with New England, Michigan, VE3 Florida, Colorado and New York and New Jersey being heard. Paul says that 50-Mc. activity is good but nearly all A3 emission.

We (and all of New England) are happy to report that Jack Wilson, W1QXX, has Wyoming confirmed, making his score 50 states worked on 50 Mc. Sorry to say though that he'll have to rework Hawaii and Alaska before getting 50-Mc. WAS. From Manchester, N. H., and K1PDA we hear of the band opening of July 14 when Dave worked VE4MA, W3BWM and K3NNZ; he also heard VE3CJN and VE2MJ working W8SSU. K9J8B reports an interesting QSO on July 10 when K0MSS, W0YZV, K0SKV (all Nebraska), K0JRM (Iowa) and K9J8B (Illinois) held an hour and twelve-minute contact. Stan is one of those who need only K1I6 and KL7 to complete his 50-Mc. WAS.

2-METER STANDINGS

W1REZ.....32	8	1300	W6UNH.....6	3	1200
W1AZK.....28	8	1205			
W1KCS.....24	7	1160	W6WVSQ.....15	5	1300
W1RFU.....24	7	1120	W6NIZ.....12	5	2540
W1AJR.....23	7	1130	W6DNG.....9	5	1040
W1MMN.....22	8	1200	W6AJF.....6	3	800
W1HDQ.....22	6	1020	W6ZL.....5	3	1400
W1EZY.....22	7	1180	K6HMS.....4	3	850
K1CRQ.....19	6	800	K6CTG.....3	2	800
W1AFO.....18	6	920	W6MIU.....5	2	950
K1AFR.....17	5	450			
W2NLY.....37	8	1360	W7JRG.....15	6	1280
W2CXY.....37	8	1360	K7HKK.....13	5	1130
W2ORL.....37	8	1320	W7LHT.....5	3	1050
W2BLV.....36	8	1020	W7CJM.....5	3	670
K2GQL.....35	8	1365	W7JIP.....4	2	900
K2LMG.....29	8	1290	W7JU.....4	2	235
W2AZL.....29	8	1050	W8PPT.....39	9	1260
K2IGT.....27	8	1060	W8KAY.....38	8	1245
K2CRH.....26	8	1200	W8SDJ.....37	8	1220
W2AMJ.....25	6	960	W8IFA.....35	8	980
W2ALR.....24	8	1100	W8SPG.....34	8	1040
W2RNG.....23	8	1200	W8LOF.....33	8	1050
W2RHM.....23	7	1090	W8RMT.....32	6	910
K2HOD.....22	8	1040	W8HJH.....32	8	1180
W2DWJ.....22	6	860	W8BAA.....32	8	960
W2PAU.....23	6	753	W8NOH.....31	8	1090
W2LWL.....21	6	753	W8SVI.....30	8	1080
K2KLB.....21	5	700	W8RHW.....30	8	860
W2B8N.....21	6	750	K8ACU.....29		1050
W2UFL.....20	7	880	W8JTG.....28	8	850
W2WZR.....19	7	1040	W8WRN.....28	8	680
W2RGV.....19	8	720	W8DX.....26	8	720
W2RLQ.....17	6	980	W8LCC.....25	8	800
K2JW T.....16	6	550	W8JWV.....25	8	940
W3RUE.....33	8	1100	W8WNM.....25	8	900
W3GKP.....31	7	1180	W8RML.....25	8	920
W38GA.....31	8	1070	K1CRQ.....22	8	690
W3TDF.....30	8	1125	W8LVC.....22	7	680
W3KCA.....28	8	1170	W8BLN.....21	7	610
W3BVF.....28	8	1070	W8GTR.....17	7	550
W3BPH.....28	8	1090	W8NRM.....17	7	550
W3LNA.....21	7	720			
W3L8T.....21	6	800	W9KLR.....41	9	1160
W3NRM.....20	7	730	W9WOK.....40	9	1170
W3LZD.....20	7	650	W9GAB.....34	9	1075
K3HDW.....12	6	1015	W9AAG.....34	9	1050
W4HJQ.....38	8	1150	K9AAJ.....31	8	1070
W4HHK.....37	9	1280	W9RNL.....31	8	840
W4LPU.....34	8	1160	W9ZIH.....30	8	830
W4XLL.....34	8	950	W9BVP.....28	8	820
W4MLK.....33	8	1149	W9LVC.....27	8	950
W4AO.....30	8	1120	W9OJL.....27	8	910
W4WNH.....30	8	1050	W9BPH.....25	8	1030
W4LVA.....26	8	1000	K9SGD.....24	7	1100
K4GOS.....26	7	1130	K9AQF.....24	7	900
W4PKM.....25	8	1040	W9LFE.....22	7	825
W4AIB.....25	8	900	W9KPS.....22	7	690
W4JCC.....23	6	725	W9CJN.....21	7	840
W4VVE.....23	6	724	W9ALU.....18	7	800
W4RAM.....21	7	1080	W9BFB.....37	9	1350
W4RVA.....20	7	1000	W9THP.....31	8	1030
W4IRZ.....20	6	720	W9SLV.....29	8	1075
W4OLK.....20	6	720	W9LFE.....28	7	1050
W4LNG.....19	7	1080	W9QDL.....27	9	1300
W4RFR.....18	9	820	W9RUF.....23	7	900
K4YUX.....18	8	830	W9IC.....22	7	1360
W4CZ.....18	6	650	W9MOX.....22	6	1150
K4VWL.....18	6	590	K9TFE.....21	6	940
W4MDA.....17	6	757	W9INL.....21	6	830
			W9TGC.....21	7	870
W5RCL.....38	9	1280	W9RYG.....20	8	925
W5FYZ.....33	9	1275	W9BNC.....20	6	1100
W5AJG.....31	9	1360	W9LZP.....18	7	1100
W5JWL.....29	7	1150	W9JAS.....18	6	1030
W5DFU.....28	9	1300	K9AQJ.....16	6	1020
W5PZ.....27	8	1300	W9DS.....16	6	1100
W5LPG.....25	7	1000	VE3DIR.....10	8	1330
W5KED.....23	8	1200	VE3AB.....28	8	1340
W5SV.....20	5	960	VE3BPR.....24	7	950
W5AIL.....16	6	700	VE3BQN.....19	7	790
W5KFU.....13	4	1300	VE3AQC.....18	8	7300
W5PSC.....12	5	1390	VE3ERF.....17	8	1340
W5HLC.....12	5	1250	VE3HW.....17	7	1350
W5CWF.....11	5	1180	VE3BFB.....10	4	580
W5NDL.....9	5	620	VE3EJ.....2	1	365
W5YV.....10	3	1200	VE3EJ.....2	1	365
W5EDZ.....8	5				
W5YVO.....7	4	1330	KH6UK.....2	2	2540

The figures after each call refer to states, call areas and mileage of best DX.

Down in Pittsburgh, W3BWU reports excellent conditions again this summer. On July 7 within a two-hour period Ed worked C05CN, K4RNG, KP4BEL and VE1OM. Keith Armstrong, W7UBI, in Boise, Idaho, has passed along some interesting words from KL7AUG and from himself also. Bob, KL7AUG, has been operating 50,095 e.w. only since June 26, running 18 watts to a 6-element beam up 70 feet. He says: "I'm in the process of building an s.s.b. converter to use with my HT-37 on six meters. We'll use a 6146 driving a 4CX350B in passive grid." Bob also stated that he was hearing good signals from the Seattle-Tacoma (Continued on page 176)



How's DX?

CONDUCTED BY ROD NEWKIRK,* W9BRD

Who:

It's not easy to associate the hoop skirts, gas lights and horse-pulled buggies of the Gay '90s with DX. Sherlock Holmes and Dr. Watson were still solving an occasional enigma, and one T. Roosevelt was just getting set to gallop up San Juan Hill. Airplanes? Later. . . .

W9KJ recently produced an instructive review of *My Father, Marconi*, by Degna Marconi [McGraw-Hill, 320 pp., \$7.50] for a local gazette. Although the book isn't long on the technical, it flavorfully recreates the Edwardian sphere in which the great inventor triumphed.

Marconi, who liked to consider himself a radio amateur, was essentially a DX hound (there are a few around today). He began sending signals from the attic of an old house in Italy way back in the autumn of 1894. These buzzes were finally detected by his brother in a vineyard over the hill, and the DX bug bit 20-year-old Guglielmo hard and deep.

Before concluding preliminary wireless experiments at his father's estate near Bologna he had spanned a mile and a half, and had already devised a directional top-loaded vertical beam to go with his rudimentary induction-coil spark and filings coherer. Marconi then packed up his outfit and went to England, probably the first DXpedition in history, where he communicated a 4-mile distance on Salisbury plain, then 9 miles across Bristol channel. By 1897 he was working Italian warships 12 miles from his station at Spezia. Marconi was beginning to get out!

All this time, like a good DX man, he was modifying and refining his homebrew gear. Thus in 1899 he was able to increase his countries total by working France from South Foreland, England, a 31-mile hop. British battleships doubled this record the same year but they were maritime mobiles without DXCC status.

In 1901 Marconi did the impossible, leaping the Atlantic between Newfoundland and England. But a DX man is never satisfied. The following year he was working distances of 2000 miles at night and 700 miles by daylight aboard U.S. liner *Philadelphia*. Not bad. In 1910 he voyaged to Argentina to copy Ireland on 8000 meters, a 6000-mile path.

The antipodes remained as ultimate DX challenge. Marconi got around to that objective in late 1918 by sending the first wireless traffic from England to Australia. After this he concentrated on wavelength DXploration, coming to appreciate what all hams quickly discover: WAC on 20 or 40 meters isn't quite the same achievement as WAC on 6 or 160 meters.

How many countries did OM Marconi work?

*7862-B West Lawrence Ave., Chicago 31, Ill.

Oh, not many by today's standards. But we know he had a wonderful time on all those far-ranging DXpeditions, and we hear he QSL'd 100 per cent.

What:

Autumn usually means a return to decent DX conditions after the summer let-up, but the pattern for the past year or two has varied from the norm. Ten meters doesn't quite make it, 15 has a few transitory openings, and 20 tries awfully hard but tires itself out by evening. It looks as though 40 and 80 will just have to pitch in wholeheartedly this season to help carry the DX load. Seventy-five phone will do its part, and so will 160. But it's certainly a far cry from the late '50s when we had a six-ringed DX circus going all the way down to 6 meters!

Oh, the DX is there, all right. It just isn't so easy and simple to fill the log these sunspottless days — much more finesse and patience called for, higher station efficiencies, and careful selection of mode to match conditions. The following "How's" contributors report doing well on these respective bands:

10 phone: W2ELW.

15 c.w.: Ws 7POU 8YGR, Ks 1JFF 3CNN 5YFU 9SRR, WAs 2J88 6KHK 6TZN.

15 phone: K9s SRR UKM.

20 c.w.: Ws 2TKG 6JQB 7DJU 7LZF 7POU 8YGR, Ks 1JFF 1LOM 2HTA 2UYG 3CNN 3AINJ 5RCO 5YFU 6TZN 9SRR 9UKM, WAs 6RS HRS JVD KHK TZN, IER, VE7BBB.

20 phone: WIAPA, Ks 1JFF 2TDE, VE7BBB.

40 c.w.: Ws 2TKG 7DJU, Ks 1LOM 2HTA 3CNN 1MYO 5YFU 9JLQ 9SRR 9UKM, WAs 6PIB 6TZN 9AUM, W6GUSQ.

80 c.w.: W7DJU.

160 c.w.: W2TKG.

Next month we hope to present the regular cross-check of DX stations reported active per band if deadline developments permit. For now we'll jump right into the QTH/QSL department and see what the mailbag has to offer in that line. . . .



RIGHT, JEEVES,
KIDS ARE TAME TODAY...
... REMEMBER THE
HALLOWE'EN PRANKS
WE USED TO PLAY?



HH2CE is a c.w. fixture on 14 Mc. where his 25-wattter is worked far and wide. Lionel is a member of the QRP Amateur Radio Club mentioned recently in "How's".
(Photo via K8TBR)

Where:

Asia — "I shall be handling the QSL situation for VS9AAA," states W3IQO. "John replaces VS9APH who returns to GW3IEQ. I'm still handling Phil's cards for VS9APH and Kamarin VS9KPH contacts." Reg gets monthly log shipments from Aden. AP4TAO shut down in August but may get back to Abu Dhabi in a couple of years. "M1BZ will continue to fulfill my QSL obligations, so anyone who has not yet received my card should contact him. It is doubtful if any cards sent to my old AP4 address will receive attention in the future. There is no post office in Abu Dhabi, so QSLs arriving after my departure may well become a wall decoration in the local bazaar. Found quite a few there!" Those Cyprus 5B4s appear to have retained old ZC4 suffixes in most cases and can be QSL'd accordingly.

Africa — "I will be QSL manager for TT8AJ," notifies K2UYG. "Have all logs through January 13, 1962, and I expect the rest shortly. Yves has had several hundred contacts since starting up last December and he looks forward to many more W/K QSOs this season." OT VQ8AI tells W8KX that International Reply Coupons are most welcome in Mauritius. NEDXA learns that ZD8RN stands by at home to replace his earlier homemade QSLs with commercial versions. Newark News Radio

Club's *Bulletin* has it that K4TWF is attempting to obtain copies of the XT2Z logs destroyed by fire at his QTH so that he can continue as the station's QSL manager. Meanwhile, there's a fresh XT2Z lead in the listings to follow. From well-meaning VE10X: "Sorry to disappoint the boys but in nearly a year I have not had the courtesy of receiving a letter, let alone logs, from EL6E. I am sending everything I have received for Philip to him by surface mail. I hope he will acknowledge his responsibilities." Such lapses of liaison are regrettable but they do come along once in a while to leave a QSL manager holding a hot potato.

Oceania — VR2DS, lately superactive on 20-meter single-sideband, holds to a 100-per-cent QSL policy but insists on self-addressed envelopes and appropriate International Reply Coupons from those who desire direct reply. KH6DOX was involuntarily designated QSL manager by KJ0CA but Mike has never heard from the fellow. Further check reveals that he left Johnston for Alaska, so KH6DOX is unable to oblige with confirmations. CT1CB tells W5KHP that somebody arrogated his son's CR8AB label after Joao closed down in mid-July. W1WPO of the ARRL DXCC Desk affirms that WA6MAZ handles VR3S QSLs only for operator Martin. Newark News Radio Club sources have it that VR3S staffers K6PWJ and K9USL are now liquidating Christmas QSL debts back home.

Europe — Crete's SV0WT has QSL affairs managed by K0RDP who also assists GW21UR, HH2P, HH2P/3, PJ3AR, VE8MZ and YN1TAT. K2FDI says that SV0WT contacts around May, 1961, may possibly be confirmed through one Bob Stinson, P.O. Box 888, San Marcos, Texas. Furthermore, there's the direct P.O. Box 606, Iraklion, address for SV0WT, as well as the SV QSL bureau — take your pick. Sven Elfving of SL3ZO renews his offer of such items as U.S.S.R. prepaid airmail envelopes, Russian callbooks and other interesting QSL-grabbing equipments. Check with him for terms. West Gulf DX Club's newsy organ identifies W4OPM as QSL manager for EI8P, s.a.s.e. or s.a.e.-and-IRCS required.

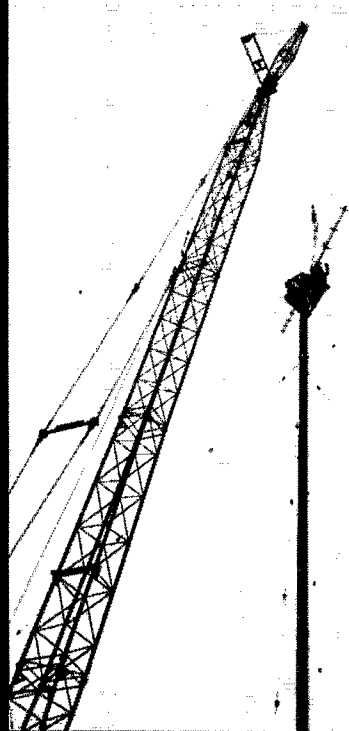
South America — K9KPI stresses the s.a.s.e. requirement for QSLs confirming his PJ5MB St. Martin work of last month, according to WGDXC. W1UED of ARRL Hq. points out that K1NAP continues as clearinghouse for KC4-bound QSLs. Carelessness in referring to the *Call Book* results in many cards being sent erroneously to W1NAP's address. Similarly, K4DQS gets a large helping of mail that should be addressed to W4DQS. Until the *Call Book* commences segregating U.S. amateurs by prefix instead of suffix this type of confusion obviously must increase.

Florida DX Club's *DX Report* reminds us that CV7YT's single-sideband QSOs are confirmable through W4JQM, others via W3AYD. VERON's *DX press* gives us a return on those tricky LU-Z calls of the far south. The numbers mean six, but watch the final letter after the "Z". A, G and M go for South Orkneys; I, O and S for South Shetlands; Y for South Sandwich; and most of the rest for various parts of Antarctica proper. VP4NC announces "The government of Trinidad and Tobago has authorized a commemorative QSL card marking this country's emergence as one of the newest independent nations. The card will be used by hams in 'the land of the hummingbird' beginning Independence Day, August 31, 1962."

Hereabouts — "Kindly announce that I am QSL manager for H8S CLU and XAC," requests K4BMS. Done, Jim. From ARRL's East Bay SCAL, W60JW: "Approximately every two months the Nicaragua QSL Bureau sends me a batch of QSLs for W/K/WA/WB/KH6/VE areas. Please announce that s.a.s.e. to me will bring cards to those awaiting such confirmations. YN cards are held one week after arrival, then are cleared through the ARRL QSL Bureau." K4ZZP disclaims responsibility for the verification of FM7 QSOs despite recent 7-Mc. evidence to the contrary. WGDXC indicates that W5NOP can oblige with VP2AP pasteboards when the proper log transcripts arrive. S.a.s.e., to be sure. WA5 4EP11 and 9AIT offer to act as QSL managers for overseas ops in need of such assistance. WA4EP11 would prefer an applicant from Europe or South America. W2TKG wonders if someone can supply QSL hints for verification of QSOs with FASCR in 1955, KR6AC '59, KH6BDV/KJ6 '59, O151B '58, UO5AA '59, VP2AD '55, VP2LH '57 and ZB1KQ '52. And did anyone ever find those 1952 EA9DC logs, if any? Re that lend-lease s.s.b. rig bouncing around the Caribbean, W4OPM continues to handle QSLs for this hemisphere. Q8KS the rest. WGDXC understands that Joe issued all FM7WQ and DL4FC/DL8 QSLs as of mid-July. Our "QSLers of the Month" turn out to be G4HRV, H4Ls KN KR, HP1E, KM6C9, PJ2AE and XE2HN as nominated by K6TZX and WA6HRS. QSL managers also are widely applauded, and K6TZX credits ARRL's Sixland bureau as a regular QSLer of the Month every month. And now let's see what the mailbag has to offer in the way of individual specifics.

KG1BO's Hy-Gain log-periodic beam goes atop a 100-foot stick thanks to a huge crane loaned by RCA. K8NFC and an s.w.l. assistant tighten the nuts and bolts.

QST for



AP5HQ, Tigers Amateur Radio Club, STC, Kohat, W. Pakistan
 AP5SS (via AP5CP)
 DJ1ZG/M1 (via DARC)
 DL4BV, S. Kuebler (K1KRY), Hq. & Hq. Co., 507th USASA
 Gp., APO 34, New York, N.Y.
 EA9AP, A. Real, P.O. Box 213, Melilla, Sp. Morocco
 E18P (via W4OPM)
 EL2C, R. Pierce, U.S. Embassy, Monrovia, Liberia
 F67XT, P.O. Box 185, Pointe-a-Pitre, Guadeloupe
 F88CB (to K2OJD)
 GC2HCD (to G2HCD)
 GC3MLR, S. Faulkner, Sentosa, St. Saviours, Guernsey,
 C.I.
 H17JFR, Box 2, La Romana, D.R.
 H18CLU, c/o U.S. Embassy, Santo Domingo, D.R. (or via
 K4BMS)
 H18XAG (via K4BMS)
 HL9KB, A. Martin, Sig. Sect., Hq. 8th U.S. Army, APO
 301, San Francisco, Calif.
 HL9KN (via K7KID)
 IS1KMU (to H1KMU)
 K3TSC/KP6, J. McGill, c/o TGF 8.5, APO 86, San Fran-
 cisco, Calif.
 K4GH/V02, D. Nixon, 4082nd Opns. Sqdn., Box 35, APO
 677, New York, N.Y.
 K0DDMU/KB6 (to K0DDMU)
 KH6DRM/KP6 (via KH6DRAM)
 KL7DBG/KS6, Det. A, GTF 8, APO 953, San Francisco,
 Calif.
 KR6AR (via OARC)
 LX3MA (via DL4-5 bureau, attn. DL4FZ)
 MP4QBB, c/o Southeastern DX Club, P.O. Box 749,
 Atlanta, Ga.
 ex-MP4TAO (via DJ1BZ)
 PJ3AR (via K0RDP)
 PJ5CG (via K0GZN)
 PJ5CH (via K0GZO)
 PJ5MB (via K9KDI)
 SL1CF (via SM1AS)
 SU1AC (via W2CTN)
 SV0WT (via K0RDP)
 TA2BK (via DJ2PJ)
 TT8AJ (via K2UYG)
 TY2MY (via KV4AA)
 VP2AP (via W5NOP)
 VP5XG (via G8YG)
 VP8GV, Post Office, Port Stanley, Falkland Islands
 VQ9AC (via WA2WPW)
 VR1K (to VR2DW)
 VR2EH (via W8WFB)
 ex-VR4CV (via VK4SS)
 VR5AA (via W9ADN)
 VR5AH, Box 36, Nukualofa, Tonga Islands
 VR5HP (via W9ADN)
 ex-VS4RM (to G3OEF)
 VS5DO, Box 41, Singapore
 W5VWU/KJ6 (to W5VWT)
 WA0CYJ/KJ6, Det. 1, 1937th Comm., Box 157, APO 105,
 San Francisco, Calif.
 ex-XT2Z (via HB9ZY)
 YV5ASP (via RCV)
 YV5BCG, D. Martinez, P.O. Box 4997, Caracas, Venezuela
 YV5BFJ (via RCV)
 YV5BLZ, P.O. Box 2737, Caracas, Venezuela

ex-ZC6UNJ, P. Altorf, 44 de Moucheronstraat, The Hague,
 Netherlands
 ex-ZD8RN, D. Davies, RN, 27 Peak Rd., Clantfield, Hamp-
 shire, England
 ZK1BY (via W8EWS)
 ZK1PK (via W2CTN)
 ZS6PC (via WA6APZ)
 5B4GT, P.O. Box 216, Famagusta, Cyprus
 5V4MY (via KV4AA)
 ex-9M2DB (to GC3MLR)
 9NT5O, P.O. Box 27, Kathmandu, Nepal
 9O5JR (via UBA, Belgium)
 9U5BB, Box 14, Usumbura, Burundi
 9U5CB, Box 1122, Usumbura, Burundi
 9U5JH, Rev. L. Little, P.O. Box 76, Kitega, Burundi
 9U5PC, Box 18, Ruhengeri, Ruanda
 9U5XX, Box 490, Usumbura, Burundi

Nothing necessarily accurate, complete or "official" about the preceding recommendations but they may do the job for you. This QTH catalog comes courtesy Ws 1APA 1DGL 1HGT 1JFG 1WPO 7LZF 9IHN, Ks 1JFF 1KRY 1LOM 2TDI 2UYG 3CNN 4BMS 5YFU 6TZX, WA6s HRS JVD, club groups DARC (DLs 3RK 9PF), Far East Auxiliary Radio League (KA2EB), Florida DX Club (W4CKB), International Short Wave League, Japan DX Radio Club (JA1DM), Newark News Radio Club (L. Waite, 39 Iannum St., Ballston Spa, N.Y.), North Eastern DX Association (W2DGGW), Northern California DX Club (K6CQM), Okinawa Amateur Radio Club (KR6AR), Polar Bears Radio Club (SL3ZO), Universal Radio DX Club, VERON (PA6s FX LOU VDV WWP) and West Gulf DX Club (K6ADQ).

Whence:

Europe — Forty-meter men, this is for you. Radio Society of Great Britain invites radio amateurs throughout the world to participate in the first RSGB 7-Mc. DX Contest, a DX brawl scheduled for (phone) 0600 GMT, October 27th, to 2400, October 28th; and (c.w.) same hours November 3rd-4th. Our object will be to catch as many British Isles brethren as possible, and the serial exchange is the customary RST001, RST002, etc., the "T" omitted on phone. It's a single-operator affair. Scoring for non-U.K. types: 5 points for each station worked; fifty points for every numerical British Isles prefix collected (G2 G3 G4 G5 G6 G8 G9 G0 G1 G2 G3, etc., through G8s); and fifty points for every ten stations worked in each of those prefix categories. Your log transcript should list on one side of each sheet GMT and date, call of station worked, serial sent, serial received, bonus points claimed, and contact points claimed, in that order. To be eligible for certificates of merit offered to high scorers in each overseas country and W/K/VE call area, entries must be submitted to Contests Committee, RSGB, New Ruskin House, Little Russell St., London W.C. 1, England, postmarked no later than November 19, 1962, with the signed statement, "I declare that this station was operated strictly in accordance with the rules and spirit of the contest and I agree that the decision of the Council of the RSGB shall be final in all cases of dispute. I certify that the maximum input to the final stage of the transmitter was ——— watts." Ready? DL4BV (K1KRY) gets

HL9KB is evidence of a happy ham development in Korea. U. S. military personnel now can qualify for off-base station licenses and HL9 call signs. Al has this 25-watt 14-Mc. c.w. layout and bamboo ground-plane installed at his quarters in downtown Seoul.





MP4BDC prefers multiband a.m. work and occasionally samples single-sideband on 20. Frank is another antenna addict with cubical quads on 10 and 15, a 20-meter ground-plane and dipoles for 20 and 40. MP4BDC has a 138/125-country Bahrain DX tally despite lengthy sessions with North American pile-ups.

his kicks on 15- and 20-meter RTTY. Stan's talking up an HE MI or PX sojourn with friend DLICG. Neighbor DLIBT, in Schwetzingen, has his beam atop a movie house, and F7AA (K5MXS) says the sound track would be full of Karl's Qs if he didn't stay politely QRT during showings. . . . WASH-hunters are apprised by SALLAS that he's ready to dish out s.s.b. and c.w. QSOs on 20 meters, also that near-by SLICF is quite available on 40 c.w. with a ground-plane. Schedules are invited. . . . W8IBX visited DLs 1PM 9PF and HB9AC while touring Europe with a university choir. Kurt says HB9AC yearns to complete WAS with Delaware, Nevada, Utah and Wyoming QSOs on 11 or 21 Mc., c.w. or sideband. . . . Club outings from the Continent: Polar Bears Radio Club sponsors several new certifications for collectors on the bases of working different Scandinavian prefixes, accumulating SL QSLs, etc. Check with SL3ZO for details. . . . LX3MA, operated by DL4FZ and friends, celebrated General Patton's liberation of Luxembourg with an anniversary DXpedition in late July. . . . Ex-5N2AMS and K1TWF are thinking in DX terms of Rockall island, a forsaken bombing range off England.

Asia — AP5CP really has the amateur radio ball rolling in West Pakistan with activity by fellow AP5s AH JA and SK, plus the formation of Tigers Amateur Radio Club (AP5HQ). Check directly with Mohd for scoop on WAT (Worked All Tigers), and WA-AP (Worked All Pakistan)



DM3RBM runs 300 watts to a variety of antennas in Leipzig. Ludwig is a foundry engineer. (Photo via W5V5Q and WA2HGP)

LICENSES IN GERMANY

Editor, QST:

Since I recently received my amateur license in Germany, I decided to pass along the necessary information. This applies only to the following persons: Uniformed personnel, civilians, and dependents under the command of the:

- (1) Commander in Chief, U. S. Army, Europe.
- (2) C. in C., U. S. Naval Forces, Europe.
- (3) C. in C., U. S. Air Forces, Europe.

This does not apply to:

- (1) The Berlin Command. Personnel within the Berlin Command should contact the Signal Officer, Berlin Command.
- (2) The United Kingdom, since there are no agreements which permit the licensing of U. S. personnel in that country.

For current information and application blanks for amateur radio and MARS (Army) licenses, contact USAREUR MARS Director, USAREUR Headquarters, APO 403, U. S. Forces.

German licensing requirements:

(1) Hold a valid FCC license of the Extra, General, Advanced, or Conditional Class.

(2) Agree in writing to abide by the German law regarding amateur radio.

(3) Pay the required fees.

(4) Be 18 years old.

German license fees are:

(1) DM 1.00 initial fee (about 25¢)

(2) DM 3.00 per month.

(3) The initial license will not be issued for less than one year or a total cost of DM 37.00.

Completed application blanks will be returned to the USAREUR MARS Director who will request the appropriate Deutsche Bundespost (DBP) office to issue a license. The Oberpostdirektion (OPD) nearest the address of the applicant will advise the applicant that his license is available. The applicant will then pay the necessary fees to a Deutsche Bundespost (Post Office) and forward the receipt to the OPD.

If the amateur desires to renew his license, either monthly or yearly, he will pay the required fees at a DBP office and forward the receipt for the fees and his license to the OPD.

There are three exceptions to the law governing amateurs, which apply to members of U. S. Forces:

(1) A maximum of 500 watts d.c. input power to the transmitter final amplifier stage is authorized.

(2) Amateur radio stations located on U. S. Government property will not be inspected by the officials of the Federal Republic of Germany, but will be inspected by U. S. personnel when necessary.

(3) Disciplinary action resulting from infraction of the regulations will be administered by Hq. USAREUR, USNAVEUR, or USAFE.

Frequency bands and emissions of amateur stations in Germany are:

- (1) 3500 to 3800 kc.: A1, A3, F3.
- (2) 7000 to 7100 kc.: A1, A3, F3.
- (3) 11,000 to 14,350 kc.: A1, A3, F3.
- (4) 21,000 to 21,450 kc.: A1, A3, F3.
- (5) 28,000 to 29,700 kc.: A1, A3, F3.
- (6) 144 to 146 Mc.: A1, A3, F3.
- (7) 430 to 440 Mc.: A1, A3, F3.
- (8) 1250 to 1300 Mc.: A1, A3, F3.
- (9) 2300 to 2350 Mc.: A1, A3, F3.

Notice that there are no required phone bands. However, the following are suggested:

- 3600 to 3800 kc.
- 7075 to 7100 kc.
- 14,150 to 14,350 kc.
- 21,100 to 21,450 kc.
- 28,200 to 29,700 kc.

A photostat of the applicant's FCC license must be submitted with his application.

Perhaps this information will be of assistance to servicemen expecting to come to Germany. —

— Lt. Horace J. Towler, DL4KW (K4KWB)
2D How Bn. 78th Arty, APO 751, New York

VP2SM prefers 15-meter phone when the band is decent. Vincent gives his off-the-air hours to the St. Vincent Police Force as sergeant in charge of telecommunications. (Photo via W1WKO)



(VR2IDW) of Ellice joins Ocean Island's VR1G to double the VRI ham population. VRI1B has returned to VK3IB, and VRI1M is back at G3HFE. VK9s AT GK NW and RR are active in Papua but VK9RO now signs VK5RG. . . . The sideband signal of VR2DS often can be found on 14,275 (Continued on page 166)

certifications now available world wide. TARC also will sponsor a Pakistan Day DX Contest to be held every March 23rd in conjunction with observances of the national holiday. And so another far-away country leaves the super-rare category! . . . "Anyone interested in an HL9 QSL, can find me most often on c.w. between 11,000 and 14,050 kc., 1200-1500 GMT," declares HL9KB, one of the new off-post breed of Yanks in Korea. Al quickly collected 50 countries and 35 states with his 25 watts and ground-plane on 20 meters. "The power situation isn't too good at times, and I find myself very frustrated some week ends when the a.c. is turned off entirely." . . . WA6HRS credits UM8KAT as a fast 14-Mc. c.w. candidate with weak signal but sharp ears. . . . ZC4s PB and PB enthusiastically hit the bushes during this year's RSGB National Field Day. ZC4RT learns that ZC4PB/p edged out ZC4FB/p, 114 QSOs to 99, and great sport was enjoyed by dozens of ZC4 (now 5B4) participants on the outing. . . . Club offerings from the Orient: Ex-XW8AS (W5ZG) says that XW8-AT can keep Laos workable. W0FWA is out that way, too. . . . MP4QBB was recognized by many as ex-5A5TA (W5LAK). John may sign MP4MAO this month. . . . KA2EB relieves FEARL *News DX* editor KA2AB who rotated Statesward. President KA2AO likewise heads for Hawaii. . . . TA4KZ's usual 14,043-ke. c.w. appearances occur between 2300 and 0230 GMT with a half gallon, 75A-4 and whip antenna. TAs 1AH 2AR and 2BK also abound. . . . G5KW has sideband facilities in Iraq and Jordan but usually sticks to local chats. Ex-JT1s AA and YL also are reported in that area. . . . XU6AL (W6OMP/XU6) has a popular KWM-2 on 14-Mc. c.w. and sideband. . . . Ex-9M2DB continues to look for old on-the-air friends from GC3MLR, mainly 20 s.s.b. . . . W2KZZ/V80 apparently scored QSOs from Kuria Maria way back in '48. . . . UA1CK tried his sideband DX luck as UA1CK/U118 in August. . . . SM5OY, now signing ET3Y, is entertaining a Yemen yen. Meanwhile, a peculiar 4W1AA or two have fun. . . . Nepal's 9NT50 is said to be ex-W6RTK with a KWM-2 on 14,230 kc. . . . The Okinawa Typhoon Net, KR6GH net control, had several busy sessions on 14,155 and 21,255 kc. beginning with a big blow in July.

Africa — Mauritius note from VQ8AI through W8KX: "I'm an old-timer since 1936 and was very active before WW-II with an 18-watt 6L6 Tritet oscillator rig. A photo of my station appeared in *March '39 QST*." Raouf's son now signs VQ8BI. They'd like to get around to rare VQ regions à la WIBPD but circumstances keep them tied to home base where the pile-ups are quite sufficient as it is. . . . W2ELW says that ZD6HK's new Eddystone 888A receiver and revised 813 final should be about ready for the fray. . . . T78AJ stays with 7- and 14-Mc. c.w. as a rule, according to K2UYG. . . . African addenda via club sources: VQ8AP became St. Brandon isle's VQ8APB briefly in August on 20 c.w. . . . EA9AZ has his DXpeditionary eye focused on Rio de Oro. . . . Most 9U5 action seems centered on 21 Mc. . . . W0MILY/TJ8/TL8/TN8/TP8/TZ8-TY2MY-5V4MY terminated his triumphant ten-kilo QSO African tour in late July. The liaison labors and QSL output of KV1AA kept Dick rolling in high gear. Where next, OM?

Oceania — "I wonder how many U.S. and Canadian hams would survive under New Zealand conditions," muses VE3EMF who recently enjoyed a lively visit with the hospitable ZL gang. "Electronics parts cost roughly three times U.S.A. prices and the cash value of the average wage is approximately half that of the States. You W/Ks and VEs multiply your expenses by six or divide your station cost by six and see what you would have. I'll bet there would be a lot less QRM. Then, too, there are the much more stringent licensing requirements, even for s.w.l.s. There seem to be more 807 rigs in New Zealand than kangaroos in Australia. I saw one capable rig that used all prewar components, and I met another ZL who had earned WAS and DXCC with less than 15 watts." Among the many New Zealanders I'd met was ZL1FG (ex-ZL5AA) who lost his legs climbing the Himalayas with Hillary. Colorful, rugged segment of hamdom, those ZLs. VE3EMF wants to go back there again. . . . Pacific notes via W1HGF: VR1K

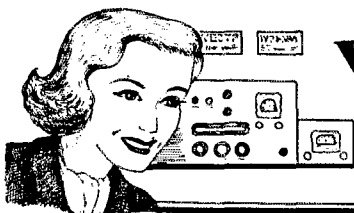
VK/ZL Oceania DX Contest

NZART and WIA invite all amateurs to participate in this year's VK ZL Oceania DX Contest. The usual contest rules apply with some major changes to allow QSOs with any Oceania countries as well as VK ZL stations. Contest rules follow.

DATES: Phone: 24 hours from 1000 GMT October 6 to 1000 GMT October 7, 1962. C.W.: 24 hours from 1000 GMT October 13 to 1000 GMT October 14. **SCORING:** For Oceania stations other than VK ZL: 2 points for each QSO per band with VK ZL stations; 1 point for each QSO per band with stations in rest of world. For rest of world other than VK ZL: 2 points for each QSO per band with VK ZL stations; 1 point for each QSO per band with Oceania stations other than VK ZL. **FINAL SCORE:** Multiply total QSO points by the sum of VK ZL call areas worked on all bands. The same VK ZL call area worked on different bands counts as a separate multiplier. **EXCHANGE:** Six figures (five for phone) made up of RST plus QSO number, starting with 001. Example: 579001, 589002, etc. **LOGS:** Logs must show date, GMT time, stations worked, band, number sent, number received, and points. Underline each new VK ZL call area contacted. Use a separate sheet for each band. Include a summary sheet to show call, name, address, rig, and score computations; include a statement that all rules and regulations were observed. **AWARDS:** Especially attractive certificates will be awarded to each country (call area in W/K, JA, SM, UA) on the following basis: (1) Top scorer using all bands. (2) Top scorers on individual bands. (3) Those with minimum contact requirements to be determined by conditions and activity. LOGS should be posted to reach NZART Box 489, Wellington, N. Z., on or before January 19, 1963.

ZD8RN's brief but spectacular June-July Ascension Island action accounted for 272 DX QSOs with 25 countries and 185 lucky W/Ks in 30 states. Dave used a BC-458A at 25 watts, a CR-100 receiver and long-wire. ZD8JP uses this same shack, gear at left, with new s.s.b. apparatus. (Photo via K2UYG and W9IHN)





YL NEWS AND VIEWS

CONDUCTED BY ELEANOR WILSON,* W1QON

ALL-WOMAN TRANSCONTINENTAL AIR RACE

THE Powder Puff Derby: This is the 16th year • 681 stock model planes participated in past • 1335 contestants flown since 1947 • Power range from 85-100 h.p. • Over 3,265,000 miles flown • Race course over 2500 miles • Flying permitted daylight hours only, v.f.r. conditions • Course completed in specified time • Each make and model handicapped • Scored on elapsed time/ground speed basis • Entrants from all 50 states, Canada, Australia and Europe.

"Purpose: To increase public interest and confidence in the private airplane as a family vehicle demonstrating the ability of pilots from novice to expert.

"Organized in accordance with the Sporting Code of the F.A.I. and with the sporting regulations of the National Aeronautic Association."

Thus reads the official letterhead used by AWTAR, Inc. for the 16th annual race, July 7-11, 1962 -- a summation which just hints of the unique event that has occurred annually since 1947.

Usually, in reporting on the Air Derby, here, we have confined comments primarily to a recapitulation of the assistance given by the amateur radio communications net. The complete story of the exciting race and of the remarkable women who fly the race must be sought elsewhere -- in newspaper, radio, TV accounts, publicity releases, in aviation publications (The Race Program each year gives, among other information, a description and photograph of each participant in the race.) This year, however, we are indebted to Kay A. Brick, Chairman of the Board of

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

Carolyn Currens, W3GTC, chairman of the amateur communications net for AWTAR for the fifth year. Carolyn comments: "Some of the gals go all-out for certificates, but I'll stick to the AWTAR".

Directors of AWTAR, Inc., for volunteering the following highlights of the air derby itself.

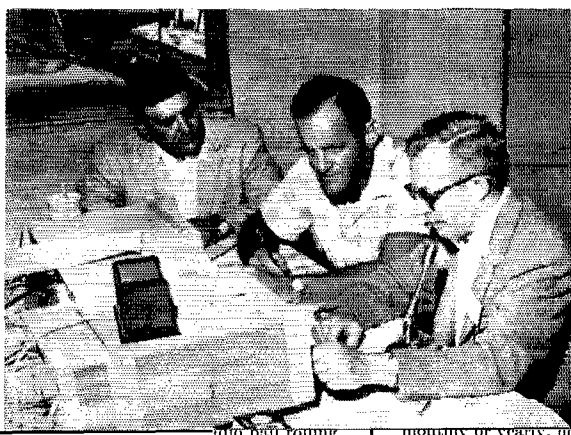
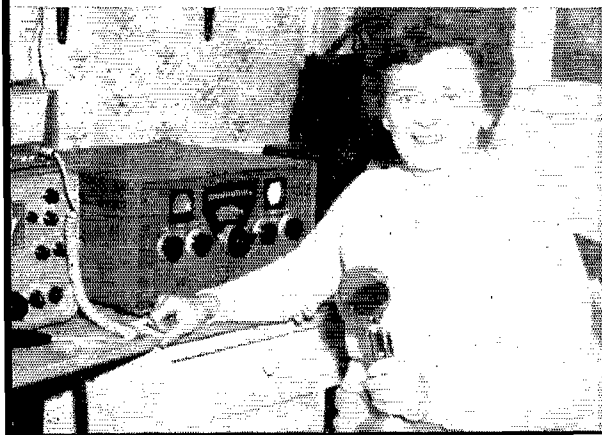
"The race proved to be the highest and fastest on record. One Comanche was flying at 19,500 feet, but Fran Bera, who won for the seventh time, flew the entire race at 15,500 feet. Her speed was 196 m.p.h. while second placer, Betty Miller, averaged 197 m.p.h. (she did not win due to the handicap factor). Although we had upgraded pilot entry requirements, 11 new crews participated. Among the entries was one grandmother team which had 16 grandchildren between them; a mother-daughter team; a flying dentist, Dr. Helen Myers, who is also a Major in the Army Active Reserve. There were 20 states represented and England participated for the first time. That country's entry, Janet Ferguson, is the first pilot from a country other than the U.S. to fly solo, and she flew the smallest ship -- a 90 h.p. -- over all those mountains, and did very well too, claiming a couple of leg prizes. There were 14 crews from California, 6 from Michigan, and 4 from Pennsylvania. This is an interesting departure, for in the past the majority of crews have come from California. States seldom represented were included this year: Washington, Oregon, Utah, Wyoming, Nevada, Alabama, Kentucky, and Florida. All planes were in way ahead of schedule. Also, it was a very closely contested race in that the scores of those placing 2nd, 3rd, and 4th were apart by only 10ths of a point. Your hams were wonderful and the Rangers did a terrific job. Thanks to your group!"

Telephone and teleprocessing devices linked all enroute airports to Greater Wilmington Airport, where an IBM 1620 computer determined the scores. Computers have been used in prior years, but this was the first time that the relative standings of the contestants were available day-by-day.

Amateur Liaison

For the eleventh consecutive year, the amateur radio net for AWTAR assisted with communications during the race. Carolyn Currens, W3GTC, of Norristown, Pa., was chairman of the net for the fifth year.

K3EMT/3 at Greater Wilmington Airport, Terminus of the Powder Puff Derby. Equipment furnished by Collins. R. to I. Local chairman, K3EMT; K3AMC, Delaware Amateur Radio Club; W3CMR, First State Radio Club.



In California, Elaine Carter, K6SZT, reported that the Derby got off to a flying start at 11:30 A.M. on July 7, after being socked in at the Oakland Airport for over two hours. All aircraft were in the air in 33 minutes (54 ships). Amateur communications at take-off were directed by Gertie Cassady, W6FEA, with BAYLARC YLs W6-QGX, W6HHD, W6WVW, and K6SZT assisting. Among the race officials was K7ANT, Melba, who was one of the pre-flight inspectors. (One AWTAR flyer, co-pilot Anita Conley of Vallejo, Calif., is a novice ham, but her call is not known.)

Report From Chairman W3GTC

"I can't begin to tell you how fine everyone was and how well the net operated. We worked 75 mostly, but when band conditions were not good we went to 40 meters. There were times when we could not get much — especially the first day. After that things went very well. One of the planes broke down in Peoria — TAR #39 — and through the efforts of the net, parts were procured in Dayton, thus enabling the contestant to rejoin the race. Praises came from the Grand Island stop-over for amateur Larry Abbott, K0JXN, who did a splendid job of relaying and jumping between 40 and 80. An amazing feat, inasmuch as Larry is paralyzed from the neck down. He tunes his rig with an assortment of gadgets held in his mouth. Participation in AWTAR continues to be a marvelous experience for all hams involved."

W3GTC agreed to serve as radio net chairman again next year, making it her sixth consecutive year of service in that capacity!

Stop-Over City Chairmen

Across the country many hams gave enthusiastically of their time in assisting the AWTAR net. A complete list of every ham who assisted with communications is not available, unfortunately, but W3GTC wishes to express her appreciation for the help volunteered by all participating hams along the race route.

The following is a list of radio chairmen of the stop-over cities. (In addition, the calls of hams who assisted are listed where known.)

Oakland, Calif. — Gertrude Cassady, W6FEA, Oakland ARC, W6QGX, W6HHD, W6WVW, K6SZT; Fallon, Nev. — T. Sgt. Thomas King, K7MIX, Fallon ARS-K7TEM; Elko, Nev. — Mil Taber, W7QYK, W7VR, W7OIR, W7VIU; Salt Lake City, Utah — W.J.C. Fahey, K7FCN; Rock Springs, Wyo. — Grant Brown, W7BJ; Scottsbluff, Neb. — Howard Poppert, W0VQR, Tri City ARC; Grand Island, Neb. — R. E. Wiles, W0DLL, K0JXN, Grand Island ARS; Des Moines, Iowa — Rev. Winthrop Mager, W0MJH, W0AK; Peoria, Ill. — D. W. Birks, K9IUI, Peoria Area ARC, K9TSX, K9FCC, K9YVG; Dayton, Ohio — Clem Wolford, W8ENH; Pittsburgh, Pa. — John Staude, W3-LFQ; Wilmington, Dela. — E. B. Baylis, K3EMT, First State ARC, K3s DTZ, EMT, BWK, JFK, JIX, LEC, LGJ, LVF, OZM, QCN, QDY, QPD, RNO, SMN; W3s CFA, OMR, DEO, FJF, GTC, IVS, LQE, QNR, ST, URR and W6s MUG and OFY.

YLCC Statistics

Custodian of the YLRL YL Century Certificate, Katherine Johnson, W4SGD, (custodian since Sept. 1955) has compiled some interesting statistics on the certificate, as of August 1, 1962.

The first YLCC was issued to OM W1BFT April 9, 1953.
 YLCC certificates issued to YLs to date.....300
 YLCC certificates issued to OMs to date.....258
 Total number issued to date.....558
 Endorsement stickers issued to date.....491
 Total number of QSLs processed in issuing certificates



In Peoria, Illinois, K9TSX, K9FCC, and K9YUG operated from the Peoria City CD mobile communications truck. (Unidentified ham snoozing in background between rig shift.)

and endorsement stickers.....80,350
 First issued in each district: (and number of certificate)
 W1BFT-1; W2QIHF-2; W3JSH-3; W4SGD-5; W5WUX-46; W6WRT-20; W7HJHF-8; W8HJLF-4; W9CMC-14; W0TAB-19; KL7BJD-154.

YLCC with endorsement stickers of 500 or more have been issued as follows:

YLs — W4SGD-1000; W8HJX 650; K5BNQ-650; K6-EXQ-550; K4RNS-550; W4HLLF-500; W4VCB/3-500; W5JCY-500; K5OPT-500.

OMs — W2QIHF-1200; W9CMC-600.

Thirty husband and wife ham "combinations" have YLCC, and the certificate has been issued to 39 DX stations, including Alaska and Hawaii.

Condensed rules for the YL Century Certificate are as follows: The certificate is issued for contact with 100 different YLs. All contacts must be made within 25-mile radius of the original location. Send list in alphabetical order by operator's last name, showing operator's full name, call letters and date of contact. Enclose postage for return of cards by 1st class mail. Endorsement given for each additional 50 YLs. Application for stickers to be in same form as application for original certificate. This award is for working different YLs — same YL worked under different calls counts only once. Send application and QSLs to Katherine Johnson, W4SGD, Box 666, Fuquay Springs, North Carolina.

Custodian W4SGD reminds certificate seekers that a



When her husband's work takes him to far countries around the world, Mrs. Leona Hudgins, WA2UZX (ex-W6TTT), keeps in touch with him via sideband on the DX bands. Leona was licensed in 1958 and now resides in Haddonfield, N. J. Her OM is WA2OQE (ex-W6CIW and W4NUU). (Photo courtesy OM W4CVO)



There is no telephone at Girl Scout Camp El-O-Win in the High Sierras in California, but the communications problem is nicely solved by Girl Scout Counselor Sharon Baker, K7EBS, of Tucson, Arizona. Sharon holds daily schedules with W6JPS in Fresno. For the 45-mile hop, six meters has been found to be the ideal band. (Girl Scout Nicole Felton, standing, takes notes for K7EBS.) (Photo via SCM W6JPU)

QSL cannot be honored if the call letters of both stations are not on the card. The call letters must be correct, and the QSL cannot have been altered in any way by the applicant. If a YL QSL has been used before, it cannot be honored, regardless of location or change of call. A QSL must carry the usual complete information considered necessary to confirm a contact. Keep duplicate lists of each application, checking with these is the only sure way of detecting duplications when applying for stickers. Silver stickers will be awarded provided only that the holder of the certificate, in moving more than 25 miles, retains the same call letters that appear on the original certificate. Complete rules for the certificate are available upon request from the custodian.

YL Nets

Do you enjoy participating in a net? Fine — you now have your choice of checking into some 35 different YL nets. Ten years ago, when this column began, there were six nets from which to choose. Yes, Ma'am, YL activity is growing and growing!

The list of YL Nets published below was received from YLRL Vice President Lillian Byrne, K2JYZ. If a net has been omitted, it is unintentional and the NCS is invited to send necessary information to K2JYZ, 24 Stillwell Place, Freeport, New York, and corrections will appear here.

Look over the list and join in the fun. Why not resolve to brush up on your c.w. this fall? Join a YL c.w. net and the girls will go all-out to help you build up your speed and confidence.

YL Nets

Please note that in keeping with QST policy all time is given in Greenwich Mean Time.

Time (GMT) Freq.	Name	NCS or Manager
Monday		
1300 3900	Buckeye Belles, Phone	K8MZY
1400 7225	Floridora	K4JZX
1400 3920	U.P. Michigan YL	rotates
1600 7235	Loaded Clothes Line	K6GAS

1800 50.4	Ind. Mich. Petticoat Sisters (IMPS)	K9YIC
1930 3738	Buckeye Belle C.W.	WN8AOK
2300 3800	Oregon YL	W7HHH
0400 50.56	Baylarc	K6SZT
<i>Tuesday</i>		
1330 3900	Blue Ridge	K4CZP
1330 3940	Jayhawker	K8HEU
1400 7215	Floridora Lower SSB	W4TF
1430 145.26	Buckeye Belle	K8NQG/ K8WDZ
1500 50.33	Floridora Southern	K4ACF
1800 50.4	IMPS	K9YIC
1900 3910	HAWK Roost	K9ILK
1500 3820	No. Star YLs	rotates a.m. or s.s.b.
<i>Wednesday</i>		
1330 3900	WRONE-Yankee Lassie	K1LCI
1400 3900	YL Welcome Net	W8ATB
1500 7278	Buckeye Belle C.W.	K8TFG
1600 7123	So. African's Woman's Radio Club Housewives C.W.	K6GAS
1630 7100	C.W.	K8ITE/ W8UWX
1800 7260	Buckeye Belle-Phone	K9YIC
1800 50.4	IMPS	W1HOY
1900 50.65	WRONE 6 meter	rotates
1900 14.280	YL SSB	



1900 50.7	CHIX on Six — Phone Akron Area	rotates
2100 3950	G.P. Roundup	K4RHU
0300 146.1	Los Angeles YLRC	K6BUS
0800 —	ZS YL net on 10 meters — freq. unknown	—
<i>Thursday</i>		
1400 7270	Friendly Forty	W3WFG
1400 7260	Georgia Peach	K1KIH
1400 3880	TYLRUN	K5BNH
1630 7235	TYLRUN	K5BNH
1800 14.277	Floridora Int'l Upper SSB DX (U.S. YLs check in on rotating basis)	K1CA/ KP1CL
1900 14.240	Tangle Net	K0EPE
2400 50.64	Buckeye Belles Columbus area	W8LGY/ K8CEN
0100 50.7	Buckeye Belles Cleveland area	K8SOU
<i>Friday</i>		
1330 3600	WRONE YL C.W.	K1LHV
1800 50.4	IMPS	K9YIC
<i>Saturday</i>		
1800 3845	BAYLARC	W6BDE
<i>Sunday</i>		
1400 7225	Floridora Business Girl	K4UIZ
2200 3940	Jayhawker	K0HEU

Feedback

Ooops — our captions for two photographs in the August column were switched. On page 84, lower left, blonde Lou Fontenot is WA5ARV and brunette Eve Gardner operates KA2MM in Japan. Additionally, WA5ARV's husband is W5HCF, not OM K5CRE, as it perhaps was implied. Apologies to all concerned.

(Continued on page 174)



Correspondence From Members -

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

FUNNY BUT TRUE!

☞ My place of employment has a subscription to *QST*, and browsing through the August issue the other day, I came across another W6ISQ article. Feeling that he had managed to hit the nail on the head every time in the past, I settled down to read his latest blast. Unfortunately, I as yet have been unable to finish the article, for each time I get two or three sentences into the story, I begin to laugh, at first emitting slight choking sounds, but gradually building into guffaws, giggles, and tears, and I must put down the magazine and run from the library in disgrace, to collapse quietly at my desk until more sobering thoughts (my salary, monthly bills, lousy antenna, etc.) catch up with me.

Give this guy another award; he deserves it. — *George W. Hippisley, jr., W2KIR/1, Needham #2, Massachusetts*

☞ I would like to extend my congrats to John Troster, W6ISQ, on his hilarious series of articles in *QST*. I have met many of the characters he describes and a few I know as well as I know myself — hi! I admire his quality of being able to laugh at himself and I think other hams should do the same more often. — *Russ Lichter, W1ZVOB, Rome, New York*

☞ The gentle ribbing W6ISQ gave the Charlie Ex-ray-Queen Roger Mary boys is much needed and I hope he will carry on in the noble tradition of TOM. I copied the following some eight months ago with the intention of sending it on to *QST* but never did. Now ISQ's article prompts me to do so.

"Name here is Abe, (spells) A-B-E, Abe, Able Baker Easy, just like in Abe Lincoln, (spells again) A-B-E, Abe, Abe"

No doubt about it, much of our radiotelephone operating procedure is clumsy and out-moded. We should realize very few hams are receiving us on detector and two-step receivers any more and all have some kind of push-to-talk. Let's try to really communicate! — *Hugh W. Holt, W4TP, Warrenton, North Carolina*

☞ Having seen the new phonetic alphabet in the "Strays" in the August *QST*, I am sending in one I have had for years.

A — Anthropomorphic	N — Necrophilic
B — Beneficiary	O — Ontogenetically
C — Concentricity	P — Parapsychology
D — Differentiation	Q — Quadricentennial
E — Epithalamium	R — Republicanism
F — Fiduciary	S — Santification
G — Gastrointestinal	T — Triskadekaphobia
H — Hypercatalytic	U — Underspeculative
I — Interrogatory	V — Valedictorian
J — Jejunectomy	W — Whimsicality
K — Ketogenesis	X — Xerophthalmia
L — Laccadaisical	Y — Ytriferously
M — Miscegenation	Z — Zinziberaceous

They're all words that you can find in any good dictionary, except possibly triskadekaphobia, which is a morbid or irrational fear of the number or quan-

tity 13. Now I only hope some clod doesn't decide to use that alphabet. There are enough clowns on the air without providing W6ISQ, John Troster, with more fodder for his great satirical cannon. — *Kim A. Boriskin, K1PLG, Burlington, Vermont*

FM FREQUENCIES FOR 2 AND 6 METERS

☞ Since commercial users of two-way, wide-band f.m. equipment must convert to narrow-band f.m., many of these crystal-controlled stations are being purchased by amateurs for use on either two or six meters. Usually, no modifications are required for operation in either band depending upon the equipment's frequency range. (Clubs and individuals often procure quantities of these stations for local fixed-frequency net operations.

When used locally, frequencies are not too important, but upon occasion those mobiles away from home would like to contact others along the way. Many f.m. amateur groups have selected 116.940 Mc. and 52.525 Mc. as their primary communication channels. Both frequencies are rapidly becoming standard throughout the country.

If you have not selected a frequency for your newly acquired f.m. gear, consider these frequencies so that visiting mobileers to your community can have a QSO with your group. — *George W. Tracy, W2EFC, Schenectady, New York*

QUIET PLEASE

☞ I noticed when I was listening to Oscar II that some hams discussed the passing they just heard. On two meters I have double conversion and to my best judgement they were only 5 kc. above Oscar's frequency. I think they should have waited before they transmitted because I could still hear Oscar. — *Jim Woods, K9RVC, Jacksonville, Illinois*

NETS ON 10

☞ Look at your net directories and you may notice that most nets operate on 80 meters. Some meet daily, others on odd days, etc. Every day of the week seems to be covered by some net somewhere. While performing a public service, these nets could also serve the ham fraternity by arranging at least one weekly check-in on 10 meters. This check-in could be an extra one after the regular 80-meter check-in or on 10 instead of 80 once a week.

Two purposes would be accomplished. First, we would increase the 10-meter activity and second, we would have an extra frequency all prepared for our nets in case 80 was jammed up in an emergency.

I realize this means reconnecting our antenna tuners to different antennas and reloading our transmitters to say hello to people we just talked to but think of the day that 10 meters really opens up for that DX it had a while back.

Let's get our nets to check in once a week on 10. — *Daniel J. Kenny, W1GILY, Orndahl, California*

(Continued on page 162)



Operating News



F. E. HANDY, WIBDI, Communications Mgr.
GEORGE HART, WINJM, Natl. Emerg. Coordinator
JOHN F. LINDHOLM, WIDGL, Ass't. Comm. Mgr., C.W.

ROBERT L. WHITE, WIWPO, DXCC Awards
LILLIAN M. SALTER, WIZJE, Administrative Aide
ELLEN WHITE, WIYYM, Ass't. Comm. Mgr., Phone

On-the-Air Plans for October? Join in organized amateur operating in the fall season. This month we hope to say good-bye to summer QRN; the fall season holds inviting prospects for traffic netting, exciting DX contacts and rag-chewing. If you don't already hold your SCM's recognition of your activity by appointment as OES, ORS, or OPS, report your station activities and get in line for the one of these posts which best suits you. You will find your SCM's address on page 6 of every issue of *QST*.

The Sweepstakes announcement is scheduled for next *QST*. Follow the Activities Calendar for advance dates on this and other special ARRL activities. Contest rules appear usually in the same month's *QST* in which a given activity takes place. Whether you work in v.h.f. nets or the h.f.'s, you will find in the nets the finest kind of fraternalism. The latch string is always out to any amateur who calls into a net with traffic and just a few minutes each day can be highly rewarding.

Many nets are now registering to get in the new ARRL Net Directory. There are a few vacancies in the Transcontinental Corps of the National Traffic System. The number of BPL listings, with fall, is again in an uptrend. WA-, WB- and recent amateur calls in traffic and net reports show the active participation of this group in the work that makes for public service values and appreciation of the amateur through message handling.

Simulated Emergency Test . . . October 7th-8th. Local ARRL Emergency Coordinators are the key men in the annual test. Each radio test is to involve a *simulated emergency condition*. Check with your EC to see if the date of his test will be as above or a few days earlier or later. A

listing of all SECs is given this month, to be contacted for AREC data, if for any reason you can't contact your EC. We're looking for messages to ARRL as a report of group participation. The SET is each year the starting point or first emergency test of a new season. ECs, we hope, will use the test at annual roll call time. All amateurs in stand-by radio groups should get their ECs annual endorsement of their AREC membership cards in this period. It's a challenge to work out a real demonstration of what we can do, and also radio fun.

Emergency Coordinators should sign up Technicians, Novices and all available amateurs, regardless of what bands they work. All are needed. Amateurs with mobiles can ask ECs for both the *Official Mobile Unit* pocket cards and the *Emergency Radio Unit* placards. Use of these helps improve public understanding of our amateur service functions. After each local SET the EC can count up his "points credit" by a simple system explained in a bulletin about the SET sent ECs. Following the test, ECs should discuss and analyze results for the betterment of the whole Corps, now over 36,000 strong. The SET represents ARRL preparedness. Belong to AREC and get in the SET.

Ideas for Clubs. One good way for clubs to find from their members which projects are most popular and useful in program planning is to approach club members or even the local amateur community in advance of any club membership drives, with a questionnaire. We report here the highlights of one such questionnaire. Detailed results were available before the Radio Association of Erie started its membership drive in July. Hank Schneider, W3KPJ, editor of the

29th ARRL Sweepstakes — Nov. 10-12 and 17-19

Next month *QST* will have the complete announcement of the Sweepstakes Contest. This early announcement is for the benefit of amateurs in remote ARRL sections who will not have received the next issue before Sweepstakes. Refer to November 1961 *QST* for contest details. The rules are the same as last year's contest.

If you are anywhere in the League's field-organizational territory (see page 6, this *QST*) you are urged to take part in this popular contest activity. Although not an ARRL section, Yukon-N. W. T. (VES) counts as a section multiplier in the contest. There are two separate contests, phone and c.w. The total operating time allowed each contestant in either contest is 40 hours. There are section awards, and special Novice awards as well. The week-end periods start Saturday afternoon (2300 GMT) on the 10th and 17th of November.

Contest reporting forms will be sent free to anyone requesting them by mail or radiogram. *Get your requests in early.* Check the full details in next month's issue of *QST*. Good luck.

Tri-State Radio News Letter (Wesleyville, Pa.) got a return of 118 from a mailing of 463 questionnaires. His main coverage was of the third and eighth licensing areas. Responses indicated that about 59% of these amateurs belonged to some radio club. Thirty-five "would like to belong"; fourteen "did not care to belong." On the question "Should all club officers be elected by members?" 112 favored this rather than having them appointed by club directors. Forty-seven per cent favored one business meeting a month, more were for two meetings a month. About 85% favored one business meeting and one project meeting each month. Ninety-nine amateurs of the 118 returning questionnaires signified they were members of ARRL; nine that they did not belong.

Check-offs on different kinds of club activities showed an order of popularity as follows: Demonstrations 97, work projects 97, code and theory sessions 95, speakers 80, bull sessions 70, movies 65, cards 14, music 12. Operational: 25% reported ability to work all bands. 96% operated fixed stations, many had mobiles, 70% in this area along Lake Erie could use the v.h.f.s and a large number favored having a net.

ARRL Code Proficiency Program. We're happy at the start of another active radio season to invite all amateurs everywhere, not thus far "certified" to use the monthly W1AW-W6OWP Qualifying Runs to apply for a certificate. Operators qualify at only one speed per test, but can submit as much copy as desired (a) to make sure a full minute without error is submitted and (b) so we can give full credit for the highest correct-copy speed turned in. In the 10-35 w.p.m. range covered whenever there's advancement on a subsequent qualifying run an endorsement sticker is issued to encourage all concerned to go to the highest speed we certify!

Hundreds of unsolicited letters thank ARRL for the program insofar as it helps to acquire a license. Increasing numbers of amateurs show CP-ratings with the other awards listed on their QSLs. Such a rating and certification very often is the mark of the operator who has "arrived."

This fall as a special incentive we're going to start giving the calls of those qualifying each month in the 30 and 35 w.p.m. bracket. Because of the great number of issuances at lower speeds we can hardly find QST space to show them all.

Certificate Issuances April through July '62. We'll start this off by showing the recent issuances covering the latest four months. An asterisk indicates the award of endorsement stickers for the speed indicated, indicating a step-up from an earlier certification. During 1961 nearly 3500 copies were submitted and checked, the failure rate running at about 12%. W1AW had the greater following of operators, since the transmissions covered more bands but W6OWP picked up 21% over his coverage of the year previous. This dependable over-all program continued to reflect the high interest of many users. The following qualified for ARRL CP certificate recognition Apr. 1962 through July 1962.

ARRL certified at 35 w.p.m.:
 W1JBV, K1LBB*, W1NTH*, W1SWX/1*, K2BCD, WA2EDG*, W2ETY, WA2EXP*, WA2FZJ*, K2KBI*, K2SSX*, W3LE, K3OYG*, W4GTN, K4MTL, W4NTE, W5JD, K5PXM, WA6DUG*, W6MMC/7*, W6MYP*, K6VVA*, WA6NYK*, K7BVZ, W7KMU, W8CQN*, K8QHA, W8WGR, W8ZLN, W9BLV/6, WA9AJF*, K9FOQ, W9IFF*, K9OKD*, W9ZAB, W0IJW, K0YBD, GM3OEV, I1GO, L. G. Guillet, John Haekert.

ARRL certified at 30 w.p.m.:
 K1LDK*, K1LQD*, W1OPZ*, K1RTV, W1SWX*, WA2PDU*, WA2QPM*, K2QYI*, K2ROM*, K2SBS*, WA2SNY*, WA2SRK*, WA2SZK*, WA2VQV, K3LOW*, K3ODS, W3VYL, W3ZHQ*, WN4CTD, W4EJU, K4KWQ, K4ISM, K4NZE*, K4PFK*, K4WVX*, W5V8Q*, WA6OCW, W6WNR*, W7ESV, W7JOQ*, K7MRP, K7PPX, W7SZM/7*, W8CQN, K8MTI*, WA9AJF, W9KQB, W9OKN, K9ZNC, W0AXS*, W0NWX, VE2SI*, VE4OJ*, VE5JW*, VE7AJ*, DL7JY/W2*, David T. Holmes, jr., Rodger J. Ross*.

* Endorsement Sticker.

Tape-Sent Code Speeds from W1AW.

From time to time people ask at what speeds we normally run c.w. bulletins sent at 0000 and 0400 GMT. Eighteen words per minute is the speed. Persons who can copy bulletins solid can be sure they are ready for FCC's 13 w.p.m. General. It is a good margin of safety for which to aim. The preamble to W1AW's tape-sent code practice, which starts after a call to all radio amateurs at 0130 GMT daily, is 10 w.p.m. on the four slow-speed nights (5, 7½, 10, and 13 w.p.m.) and 15 w.p.m. on the three high-speed (15, 20, 25, 30, 35 w.p.m.) nights. About ten minutes of practice material is sent at each of these designated speeds.

Clubs: About Setting up Class Instruction. Last season the Kingsport Amateur Radio Club and the Bays Mountain Radio Club committee (W4PID, W4TYV, W4WQZ) worked up a six-week program. The purpose was to help a group achieve Novice license in 18 sessions with three nights a week study together. All classes met at 7:00 P.M. and were dismissed by 8:30 to accommodate students with school work. Sessions were half lecture and half code work. Each student had to have an audio oscillator by session six. The course started with talks on the history of amateur radio, on FCC and ARRL, and how to operate *well*, not just as some other stations are operated! The KARC got exam papers from FCC to have control of the expiration of the forms; the club supervised exams at the proper time. W4PHQ, W4VOS, WA4BXZ, K4SHY, WA4AIA, W4EUM, W4NLF helped.

Here is the 18-session subject outline: (1) Begin code reception. Continue, each class time. Give history of amateur radio, opportunities and obligations of amateur radio. (2) Explain types of amateur radio licenses, begin d.c. circuits (3) Conclude d.c. circuits (4) A.c. circuits (5) R.f. circuits (6) Review of d.c., a.c. and r.f. circuits.

Begin code transmission; include all remaining sessions. (7) Vacuum tube fundamentals, power supplies, filters. (8) Transmitters. (9) Propagation and reception of radio waves: the FCC. (10) FCC regulations. (11) Review Novice section of License Manual; all previous subjects. (12) Antennas and feed lines. Test equipment. (13) Tuning transmitters and antennas. Station efficiency. Getting most signal per watt. (14) Transmitters. How big? What kind? Operating procedures. (15) The ARRL Review complete Novice section of License Manual. (16) Simulated code test. Simulated examination. (17-18) Probably split class for two dates, to give code tests and FCC exams.

All clubs additionally can ask ARRL for its further Suggested Course Outline based on the *Handbook* to help students go even further; also we'll be glad to send our CD-158 which details information to help setup code exams along the line of FCC standards. The KARC graduated 30 of 68 starting the sessions.

We Each Share Band Use. Just as the motorist under common sense rule shares his highway with fellow motorists, courteous and careful procedures insuring benefits for all, we amateurs share our frequency bands together. Our rights and interests in the common medium are equal. A good understanding of the rules, customs and procedures and cooperation of all is required in this sharing. Paul Lee, W3JHR, (Md.) puts this nicely in a letter to one out-of-line amateur who appeared to act the "road hog" in his use of amateur frequencies:

"... We in the amateur fraternity have for many years tried to exhibit tolerance and good sportsmanship towards all. We do *not* sit on or move in on a frequency when in use by others, and name-call these others "jammers." We move off, and carry on our communications on another channel.

"This is part of the code that experienced radiomen live by; it is the only way we can get along, with the bands as crowded as they are. If others use a more modern and spectrum saving mode of transmission than yours, at least have the common courtesy to observe their right to operate, as well as your own. The operators who were copying through your remarks with 100% contact were to be commended for their skill and tolerance."

Some Observations on Phone Operating. Voice operation has now come a long way. It's interesting to note how voice operation is divided within the phone bands. Sideband is almost equally half and half with a.m. on 75- and 15-meters. A.m. accounts for roughly two-thirds of phone operation on 40, while s.s.b. again makes up about two-thirds of 14 Mc. domestic phone band operating. We can count on further changes in the complexion of the use of our bands, of course. This, we suspect, will include the substantial and growing s.s.b. use of 10-, 6-, and 2-meters.

The evolution of equipment comes through engineering, construction, economic considerations, and popular choice. Whichever type of gear we choose to use, operating techniques must conform to getting the best effective results. Reducing interference levels in the bands we work is a two part problem. It takes constant vigilance to have transmitters in perfect adjustment, and operational care to be courteous and

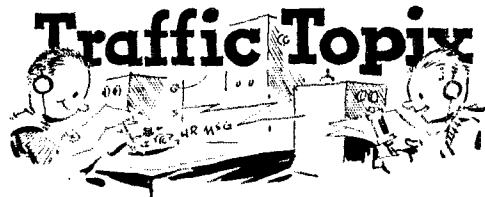
avoid making QRM on an already-busy channel. Listening before and in the course of calls is a first essential to minimize conflict in channel use. In sharing the bands successfully we must learn to be brief. You can start off a contact with name and report. The better operators have something to say beyond an RS-report, but these operators certainly avoid speech making. The best ops on the air, we think, are those that get right to the point.

With s.s.b. the importance of proper adjustment, of cutting the gain control back, and not going over the point recommended in the engineering instructions for that particular circuit is just as essential as when you were using a.m.

One manufacturer now provides a scope kit to use with the transmitter, but a review of *The Radio Amateur's Handbook* will disclose a number of ways to use scopes as well as many other practical ideas. Pages 295-302 of the 1962 edition has good information on a.m. checks. See Chapter 11 for sideband techniques. From time to time it's good to check the sideband transmitter with a dummy load using the receiver to check signal quality to see not only that the speech is crisp and clear, but that there are no spurious effects in or outside the band. It may be found that such troubles are a matter of riding the gain too high. Hold the gain close to those values that guarantee linearity and effective operation. Don't always rely on signal reports!

Add OO Credits. In July *QST* we commended ARRL Official Observers for their 1961 results, naming those OOs leading their licensing areas. Because of a clerical error in compiling totals, there were two omissions from our listing. Clint Daws, W3NNC, Trout Run, Pa. sent out 2037 of the cooperative OO notices, helping to keep amateurs out of FCC difficulty. He led the country as well as his licensing area in this work, which was participated in by 318 different OOs. W9NPC (OO, Ill.) should also have been credited with consistent leadership in this cause for his area, reporting 302 notices sent. Kudos to W3NNC and his brother OOs... Adding that work incidently brings our total of the OO System to over 24,000 helping suggestions sent out during last year.

—P. E. H.



Every phase of amateur radio has its legends, and the traffic game is no exception. We think that one of the fondest legends of the traffic game is the work of one "Dixie" Jones, formerly W4JR, who produced, in the 1930's, an AARS paper called the *Dixie Squinch Owl*. AARS was the Army Amateur Radio System, a sort of forerunner to the present MARS (but all former AARS'ers will tell you

it was far superior), and the *Dixie Squinch Owl* was the official paper of the Fourth Corps Area with headquarters in Atlanta.

"Dixie Jones' Owl Juice, always a part of the paper, became so popular that *QST* reprinted parts of it from time to time. If you will leaf through copies of *QST* in the 30's, you will find them. Old-time traffickers will find them nostalgic, but at the same time there appears the kind of caustic humor, typical of the author, that will probably get a chuckle from anyone.

Take the following, for example — and apply it to electronic keys instead of "splatter bins":

"Telegraphin' ain't what it used to be. This here editor learned the rudiments of hamography back in the days when men wuz men and made their own dots. Nowadays everybody's got a splatterbin with no weights on it and the guy that's waggin' it don't no more know what it's goin' to make than you do. The race is on to see who can splatter messages around faster than anybody else.

"You set there tryin' to get a message from some mug. You get the preamble by intuition, guesswork and the Grace O'God. He hits the address, eyes a-rollin', bug a-smokin', goin' to town. The first time through he don't even try to make it right as he knows he is goin' to mess it up. The second time through he slobbers it up and has to go back and repeat it a third time and you sorta strike a average and say to yourself — well, he made it thataway once and thisaway twice so I reckon it's thisaway so you put down what he made it the most and then you look in the postal guide and there ain't no such town in the postal guide or nowhere else so you throw the blamed hamgram in the waste basket where it might as well have been in the first place.

In the good old days, when the script called for a A or a B or a C, why you simply handed off and sent a A or a B or a C as the case might be, and having made it you stopped fooling with that letter and proceeded to the next one. They done it right the first time. I like the old way best." — *W1NJM*.

Someone asks for information on counting bulletins as traffic handled. There is a very simple rule to follow. Bulletins can be counted as traffic *only* when they are individually receipted for by copying stations. This applies both to the originating station and the receiving station or stations, and only when the bulletin is transmitted in complete ARRL message form.

Ordinarily, bulletins are not receipted for, especially ARRL Official Bulletins being transmitted by Official Bulletin Stations, and are not counted as messages transmitted or received.

July Net Reports.

Net	Sessions	Check-ins	Traffic
Mike Farad E & T	53	334	387
Northeast Teen	15	81	60
20 Mtr I.S.S.B.	28	706	1366
All Service	5	40	21
Eastern Area Slow	28	122	33
Northeast Area Barnyard	—	943	10
7290	42	1466	696

National Traffic System. One thing that had to be decided, before NTS was first put into operation, was this: Shall the natural operating habits of available operators take precedence over efforts to implement the system, or shall NTS implementation be sought on the basis of those operators whose natural operating habits fit into it? In other words, shall the individual take precedence over the system, or vice versa?

The answer to this question is so basic that we think it deserves another look. Obviously, NTS could not and cannot work in its projected concept if it is to be subservient to individual operating habits. No system can, and still be deserving of the name. No system, organization or society, voluntary or otherwise, can function or even exist without depending on those whose individual habits fit into it or can be moulded to fit into it. Everything we do which is part of a cooperative plan (as most things are) depends on the development of habits or customs that will contribute to the furtherance of that thing, whether we all *want* to do them or not. Society has its morals, professions have their ethics, government has its laws — all these things are not based on individual habits but on over-all needs. Any venture in which individuals do not or will not conform is doomed to failure.

NTS depends, for its success, on individual amateurs adapting their operating habits to the NTS structure. Most amateurs operate when or if they feel like it. Their operation is irregular, slipshod, a "spare time" avocation meriting their attention only after other things they consider more important have been taken care of. Some amateurs consider amateur operating of a higher priority than others. A few spend great amounts of time at it. Another small group think enough of it to participate in organized ventures such as clubs, emergency work and regular traffic work (NTS).

Each amateur has a place in NTS commensurate with his own outlook — that is, is it important enough to him to spend regular time on it, to devote some thought to it, to try to interest other amateurs in it. The extent to which NTS and other organized activities succeeds depends entirely on how avidly amateurs are interested in it and work toward its success. They have to get into it, it cannot get into them;

BRASS POUNDERS LEAGUE

Winners of BPL Certificate for July Traffic:

Call	Orig.	Recd.	Rel.	Del.	Total
W3CUL	139	1992	1347	634	4112
W6RFP	98	1945	1816	127	3986
W1DK	104	432	4	18	558
W9UOZ	14	903	917	4	1838
W6SCA	28	680	662	0	1370
K9ONK	115	625	595	18	1353
W7JHA	28	670	629	2	1329
W9LGG	112	545	514	29	1201
K1MZB	1	371	369	1	1142
W8UPH	11	485	421	63	980
W3EAL	26	480	415	25	946
W7BA	5	464	426	37	932
W6VPE	36	437	400	37	910
K4AKC	13	438	363	75	889
W7IDZ	8	442	402	13	865
V13FFS	127	378	281	49	835
W4ZMLP	35	367	260	101	813
W4PL	9	394	367	22	792
W6GVT	148	318	304	11	781
K1NCF	39	375	348	16	778
W9RLE	68	351	304	47	770
W3VR	31	371	360	6	768
W8DAL	29	380	281	59	749
W7VU	13	351	292	59	715
W5QMLJ	700	0	0	0	700
W1PFX	30	339	304	25	698
W8CHT	50	295	277	26	642
W9DYG	35	306	251	21	613
K9ZP	15	300	291	3	609
W4AKB	42	314	32	219	607
K6KCB	17	315	267	2	601
K1HPT	268	209	32	51	560
K4SLL	33	280	198	14	575
K0IVQ	21	271	272	10	574
W4ZGP	31	264	241	23	559
K1MZM	16	287	204	43	550
W1TSL	43	249	198	51	541
K6MDJ	7	263	230	33	533
W9KQB	19	266	235	3	521
W2EW	240	152	66	69	527
W6EOP	1	265	257	4	527
W7PGY	18	252	231	18	519
W3AVS	5	254	222	32	513
K9WR	65	249	189	32	512
K0VPH	35	249	221	3	508

Late Reports:

K2UTV (June)	13	814	802	10	1639
W3VNS (May)	14	414	379	35	842
W6FNE (May)	21	275	268	7	571

More-Than-One-Operator Stations

Call	Orig.	Rec'd	Rel.	Del.	Total
W6IAB	194	1315	1251	57	2817
W5TPK	0	694	344	0	1038

BPL for 100 or more orations-plus-deliveries

W44AMC/4	286	W3EFL	119	W9AKV	107
W9NZZ	286	W9TT	119	K9IVG	106
W44BMC	222	W41IH	113	K1KSH	4 105
W42GCT	217	K9LGO	113	K9ABV	104
W42BNE	214	W9SA	113	W3ZL	102
W4SHJ	214	K0GFA	110	Late Report:	
K6CZ	149	W3TN	108	W44MCA	(June) 143
W0HTP	148	W4NTR	108	K3KZP/3	(Ju.,e) 122
W3RV	124	W42CCF/1	107		
V13FA	121				

More-Than-One-Operator Stations

Late Report:

K6WAI (May) 204

BPL medallions (see Aug. 1954 *QST*, p. 64) have been awarded to the following amateurs since last month's issue: K3RDP, W4WIK, K8ONQ, K9C70.

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



The communications for Alhambra's (Calif.) 17th Annual Hi Neighbor Parade on May 26 were handled by local amateurs under the direction of EC K6SUJ from a van loaned by a local dealer. Pictured above, inside bus are K6SUJ (l.) and WA6ISQ. Sitting on step are (l. to r.) K6KRA, WA6QNN and WV6ZCI. Outside bus (l. to r.) are WA6NTY, K8UHH/8, W6MWP, WA6GDF and WA6HGC.

that is, its successful implementation depends on their interesting themselves in it, because if it must go too far toward adapting itself to their many whims, fancies and operating habits, it loses its "system" aspect and becomes a bunch of amateurs playing.

NTS is a tightly-knit organization, with definite policy lines and flow patterns. If we want to keep it that way, we must avoid too many concessions to individual convenience. To as great an extent as possible, we must decide first the best way to do the job, then find the people who can do it that way.

July reports:

Net	Ses-sions	Traffic	Rate	Average	Representa-tion (%)
1RN	59	518	.386	8.8	73.9
2RN	62	489	.455	7.9	94.7
3RN	62	362	.433	7.2	98.4
4RN	62	584	.338	9.4	86.3
RN5	62	429	.211	6.9	78.8
RN7	61	595	.274	9.7	71.5
8RN	61	357	.201	5.9	76.8
9RN	60	968	.620	16.1	66.2
TEN	51	804	.524	15.8	62.3
ECN	17	63	.232	3.7	78.4 ¹
TWN	31	376	.436	12.1	69.6 ¹
EAN	28	1461	.967	52.2	98.2
CAN	11	1250	.700	40.3	96.8
PAN	30	1300	.683	43.3	97.8
Sections ²	524	3628		6.9	
TCC Eastern	126 ³	334			
TCC Central	93 ³	976			
TCC Pacific	115 ³	854			
Summary	1201	15848	EAN	11.4	3RN
Record	1918	20350	1,050	15.2	100.0

¹ Representation based on one session per day; others are based on two or more sessions per day.

² Section nets reporting (17): WSB (Wis.); GBN (Ont.); SCN (S.C.); SCN (Calif.); MDD (Md.-Del.-D.C.); QMN (Mich.); VN, VSSN, VFN, VN (Va.); CN (Conn.); MSN, ALN, MSPN, MSPN Noon (Main.); BN (Ohio); RISPNI (R.I.).

³ TCC functions reported, not counted as net sessions.

Well, our section net reporting really took a drop in July, the lowest it has been in a long time; and this accounts almost entirely for the poor showing compared to previous years. How about some more section net reports? If you don't have CD-125, send us number of sessions and traffic total of net; also, your NTS liaison.

Eastern Penna. has been 100% present in all 3RN sessions since Oct., 1959. RN5 certificates were issued during July to W4PEX, WA4BLR, K5GTN, K5WNI, W5UMY and W9PHR/5; a new RM promises to improve representation from Mississippi. K7JIA submits his second report as RN7 manager, and it's a honey; RN7 is already looking up. W8DAE submits an optimistic report, and says that West Virginia is doing much better in representation now. We are still looking for a new TEN Manager to bring that net out of the doldrums. VE3BZB holds out hope for improvement on ECN in the fall. W6FEO says QRM from work is keeping his own activity in TWN down, but the net is doing pretty well. W9DYG sends in his usual complete

discussion of the month on CAN, saying 9RN deserves to be "tops." RN5 is improving and TEN is slipping. WA6ROF says not much change since last month; TWN is getting liaison assistance from W4UGI/8 and needs help to strengthen PAN representation; not much sense complaining about conditions because we're all in the same boat.

Transcontinental Corps. WISMU is all moved and rolling from his new QTH; we note four vacancies in the TCC-Eastern schedule, all Station D (receive EAN traffic from PAN Station J). K4AKP tells us that vacations and newer ops who don't know all the ropes yet are causing some difficulty. Incidentally, Johnny is no longer "acting" TCC Director, Central Area. His permanent appointment is now official. W7DZX commends W6EOT and W8CHT for their fine efforts in maintaining EAN to PAN schedules.

July reports:

Area	Functions	% Suc-cessful	Traffic	Out-of-Net Traffic
Eastern	126	84.9	1043	334
Central	93	88.2	2054	976
Pacific	124	83.1	1705	854
Summary	343	85.1	4802	2164

The TCC roster: Eastern Area (W18MU, Dir.) — W1s EMG NJM OBR SMU, W2MTA, K2UAT, WA2OPG, W7s BML FAF, W4s DLA FOR, W7s CIT ELW UPH, VE3FES, Central Area (K4AKP, Dir.) — K4s HIG AKP, W7s JOZ DYG CXY ZYK, K9UGY, W6SCA, K0IVQ, Pacific Area (W7DZX, Dir.) — W5ZHN, K6s GID ZYZ, W6s EOT WPF HC, K7s NWP TBB, W7s DZX GMC, K8s EDH EDK, W9s WHE KQD.

RESULTS, JULY CD PARTIES

The following are the high claimed scores. Figures show the score claimed, number of QSOs, and the number of different sections worked. Final and complete official standings will appear in the October CD Bulletin.

C.W.	Score	QSOs	Sections
K4BAI	205,020-605-67	113,425-348-65	W9AQW
K2EU/2	193,475-577-65	110,250-346-63	W6ETT
W2JAE	187,110-567-66	110,160-402-54	K2SIL
K4ZRA	183,300-534-69	109,500-360-60	K9CQC
K4TEA	181,470-555-66	109,200-336-65	W6BCT
K3RCF	182,700-522-72	105,210-327-63	W2GKZ
W9YT	174,850-531-65	105,020-350-59	K5OCX
K4ZYI	172,130-534-64	100,800-351-60	W9CQJ
K5HRR	164,000-515-65	116,510-382-61	W4PRO
K1JDN	165,750-510-65	100,130-319-62	WA2NCE
K8RMK	154,375-470-65	172,530-482-71	K3JCT
W1EOB	150,280-435-68	150,150-455-65	W1AW
W9MAK	149,160-445-66	116,510-382-61	W4PRO
W6NKR	145,500-415-69		
W6ISQ	143,680-442-64		
W8VPC	141,240-421-66		
W4MLE	137,330-437-62		
W6WNI	134,300-388-68		
K1LPL	130-315-382-67		
K9ELT	127,300-400-63		
K4RIN	126,880-412-61		
K4JLD	114,240-357-64		
K3JTC	113,850-345-66		
W9MAK	149,160-445-66		
K2PHF	12,325-78-29		
W9YT	12,150-75-30		
K8RMK	9230-66-26		
K4ZRA	8500-62-25		
WA2NCE	8125-61-25		
K1LPL	8040-60-24		
W1FJJ	6405-55-21		
K4BAI	6360-46-34		
K2QDT	5800-56-21		

¹ W9SZR, opr.; ² K5ABV, opr.; ³ K3JIG, K3JCT, oprs.; ⁴ K1AJJ, W1ECH, W1WPR, oprs.; ⁵ W4PRO, K4FMS, WA4DUS, oprs.; ⁶ K9ELT, opr.



We were mildly surprised, in looking back over past issues of *QST* in search of a suitable topic for this month's column, that the subject of the relation between AREC and RACES has not been discussed in detail heretofore. It has been given so much attention in *Emergency* and *Traffic Bulletins* and in talks before clubs and conventions that its absence from this column has not been noted. And we were wondering why we kept getting inquiries about it.

The fact is, the subject doesn't really deserve a great deal of attention. There is no conflict between the AREC and RACES and none should be allowed to exist. The reason any does exist is primarily twofold: first, misunderstanding on the part of amateurs regarding the status of RACES; second, misunderstanding on the part of c.d. people on the status of the AREC. We have tried hard to dispel all illusions on the part of our amateur radio leaders (and to some extent c.d. leaders as well), and now we would like to attempt to do the same thing on the part of all AREC members, or whoever it is that reads this column.

The first thing that needs to be clear is that RACES was created exclusively to serve a civil defense communications purpose, that it was originally intended and still remains a means for amateurs to serve civil defense communications in their own name with their own organization, a sort of wartime continuation of the services performed by the AREC during peacetime. It was *not* intended as a means for civil defense to utilize frequencies in the amateur bands, except through this amateur service. ARRL from the very beginning has lent its full support to the original intent and continues to do so to this day. AREC groups have been urged to contact their c.d. directors and offer their services in starting and implementing the RACES program, and many of them have done so to excellent advantage. Why not? RACES is an amateur service serving civil defense; it is also a civil defense service utilizing amateur radio. It is, in brief, amateur radio's part of civil defense communications.

RACES and the AREC, while having similar aims, can serve a useful purpose in emergency radio communication whether operating in consonance or separately. That is why we have always urged our AREC personnel to sign up in RACES if it exists locally so that they may make their facilities and skills available to serve c.d. if war should break out. It is why we have urged, where possible, RACES amateurs to sign up in the AREC, so that civil defense can benefit from the availability of the greater flexibility and fewer restrictions thereof during peacetime operations. Where the two organizations exist together, whether completely or only partially overlapping, they can then do a complete and efficient job in war or in peace — given proper planning and training, of course.

In some places local c.d. is not organized and RACES does not exist, in which case a local AREC can do the job in peacetime while trying to get RACES started in case of war; and in other places RACES exists without the AREC, in which case it labors under restrictions which could be alleviated by formation of an AREC group. Reciprocity is the solution. Each of these two branches of the amateur service has advantages the other does not have. Each is perfectly capable of realizing and utilizing the advantages of the other; all that is required is a little coordination and cooperation and relaxation of prejudices and partialities.

Whence arises, therefore, any conflict between and among them? They're a "natural" to work together. Let's get to it, before Uncle Sam declares "a plague on both your houses" and looks elsewhere. — *WINJAM*.

In July *QST*, page 91, there was a squib about the activities of the Polk County-Des Moines AREC-RACES group during a flood. We want to correct a mistake: KØHRO should have been KØHRD. Also, omitted as having actively participated were WØUDO, KØLEZ and KØZCA.

On July 15, W4HFF of Tampa, Fla., heard HK5OW requesting assistance in locating a newly developed drug to save the life of a dying man. W4HFF called his local physician and ascertained that the drug was manufactured by Eli Lilly laboratories in Indianapolis. A local representative contacted the home office and extracted a promise of immediate shipment as a public service for the charity patient in Cali, Colombia.

Southern Michigan was threatened by tornadoes in mid-July and amateurs were ready to cope with any disaster. On July 20, the Southern Michigan Net was activated at the request of the Calhoun County sheriff's department to follow storm fronts and keep them informed. None of the storms did any damage requiring communications, although two mobiles went to the Tekonsha area, which was hard hit, and stood by. Besides the two mobiles units, there were 19 amateurs standing by at their home stations, and two portable power units were in reserve in case needed. — *K8AEM, EC Calhoun County, Mich.*

The following material might well be entitled "The Diary of the AREC." It is a thumbnail résumé of reports of special or routine drills and tests and non-emergency activities of various kinds in which amateurs have participated but which we were not able to report herewith in detail for reasons of lack of space. These are the activities that give our AREC and other amateur emergency communications groups the training that enables them to do a worthwhile service when the chips are down. Chronologically, then:

Dec. 21, 1961 — A simulated emergency test based on an actual emergency in the past was conducted by the AREC of Lucas County, Ohio, to show that amateurs could effectively provide communication in such situations. It was a resounding success, with 16 amateurs taking part.

Feb. 12, 1962 — "Operation Ready" was conducted by Redwood City, Calif., c.d. and the entire amateur radio staff, encompassing activities within 10 cities.

On the same date, the Hillsborough Amateur Radio Society provided communication for the annual "Gasparilla Day" parade in Tampa, Fla.

Feb. 14 — Seven operators and 4 mobile units responded to an alert call in Redwood City, Calif. area when it seemed heavy rains might cause flooding. This was a RACES alert, no emergency developed.

Feb. 25 — The Cuyahoga County (Ohio) AREC assisted with the collection of funds for the Heart Society under the direction of W8NZL.

Members of the Central Indiana Mobile Radio Club assisted the Marion County Heart Assn. by providing communication for solicitors. Fifteen amateurs took part.

Mar. 3 — A joint exercise of the Emergency Measures Organization and the AREC in Ontario County, Ont., was conducted on 75 meter mobile and two meters by 8 amateurs led by EC VE3ATI.

Mar. 10 — The Steuben County, Ind., AREC provided communication for a sports car rally sponsored by the Society of Automotive Engineers. Eleven amateurs took part under the direction of K8JPC.

Communications for the "Motorcycle Run" of the Road Riders of Southern California were provided by amateurs of the AREC of Southern California. This is WA6SXG operating WA6HBU/6 at the six-meter position on Ranger Peak.

October 1962



Section Emergency Coordinators of the Amateur Radio Emergency Corps

The Section Emergency Coordinator is appointed by the SCM to take charge of the promotion of the Amateur Radio Emergency Corps organization throughout the Section. He acts as the SCM's executive in the furthering of provisions for emergency amateur radio communications in every community likely to suffer in case of a communications emergency. One of the duties of the SEC is to recommend the appointment of Emergency Coordinators for the various communities in his Section. Does *your* town have an EC? If not, recommend the name of a likely prospect to the SEC. The SEC invites your questions concerning the status of the AREC in your Section.

ATLANTIC DIVISION			
Eastern Pennsylvania	W3DH	Emmet W. Kuehner	242 E. Broad St.
Maryland-Delaware-D. C.	W3CV3	Conah W. B. Barger	7512 Foster Ave., S.E.
Southern New Jersey	K2ARV	Norris J. Mundell	345 Laurel St.
Western New York	W2LXE	John S. Tyler	193 Atron Rd.
Western Pennsylvania	W3LIV	William T. Tobin	4916 Fifth Ave.
CENTRAL DIVISION			
Illinois	W9PSP	Jack Stanton	2632 E. 7th St.
Indiana	W9SNQ	Leonard M. Chalk	845 West Arch St.
Wisconsin	W9BCO	Frank L. Guth	128 Ellis St.
DAKOTA DIVISION			
North Dakota	W8CAQ	Douglas Clason	449 — 16th Ave., So.
South Dakota	W8SCT	Lester R. Lauritzen	Rt. 3, Box 32
Minnesota	K8KKQ	Lloyd Pearthree	800 — 5th Ave., Wes
DELTA DIVISION			
Arkansas	W5KRO	Kenneth M. Goode	31 Carol St.
Louisiana	W5MXX	A. L. Powell	224 Hollywood Drive
Mississippi	K58SQ	William R. Butler	Box 8
Tennessee	W4WBK	Franklin Cassen	925 North Trezevant
GREAT LAKES DIVISION			
Kentucky	W4BAZ	J. B. Wathen, III	391 Mockingbird Valley Rd.
Michigan	W8LQX	Wilbur S. Stoltz	348 Starr Road
Ohio	W8LNP	Arlington A. Garn	5034 Oak Ridge Drive
HUDSON DIVISION			
Eastern New York	W2KGG	William L. Stahl	Shirley Ave.
N. Y. & Long Island	W2ADO	Maurice Ahulligan	Box 134
Northern New Jersey	K2ZFI	John Banke	P.O. Box 177, Main Rd.
MIDWEST DIVISION			
Iowa	K8RXN	Ronald M. Schweppe	609 W. 9
Kansas	K8BAF	Robert M. Summers	3051 North 17th St.
Missouri	K8WNZ	Mal. R. C. Gordon	545 S. Monroe
Nebraska	K8TSU	John Spahr	705 W. 28
NEW ENGLAND DIVISION			
Connecticut	W1EOR	John J. Henley	RFD 2
Maine	W1GRG	Robert Curtis	RFD 1
Eastern Massachusetts	W1AOG	Donald P. Guphill	17 Park St. Court
Western Massachusetts	W1BYH/ K1APR	Norman Rivers	18 Saari Pkwy.
New Hampshire	K1GJK	Howard Hook	RFD 5
Rhode Island	W1PAZ	Thomas C. McCormick	1934 Smith St.
Vermont	K1DQB	Gerald B. Wood	RFD
NORTHWESTERN DIVISION			
Alaska	K17BES	Herbert R. Tresidder	1710 Snowcap Drive
Idaho	W7WU	Alan K. Ross	2405 Irene St.
Montana	W7RZY	Harry Roynance	Box 621
Oregon	W7WKP	Jesse E. Parrish	P.O. Box 11
Washington	W7HMQ	Everett E. Young	2247-5th St., S.E.
PACIFIC DIVISION			
Hawaii	KH6CQV	Bill Cameron	810 — 5th Ave.
Nevada	W7JU	Ray T. Warner	539 Birch St.
Santa Clara Valley	W6ZRT	Jean A. Gmelin	1089 Huntington Drive
East Bay	W6AMIE	John A. Howell	1293 Walden Rd.
San Francisco	W6KZF	Bill Ray	52 Matilda Ave.
Sacramento Valley	K6IKV	Antone P. Buzdas	1308 — 38th Ave.
San Joaquin Valley	K6ODA	Heinz King	1926 Chelsea Ave.
ROANOKE DIVISION			
North Carolina	W4YMI	Robert C. O'Bryan	Box 3
South Carolina	W4BCZ	Phillip A. McMasters	5809 Moore St.
Virginia	W4VMA	Roy E. Ridgeley	114 Patrician Drive
West Virginia	W888A	E. Keith Chambers	P.O. Box 62
ROCKY MOUNTAIN DIVISION			
Colorado	W8SIN	Charles Cotterell	130 South Swadley
Utah	K7BLR	Ronald B. Twelves	1150 Harvard Ave.
New Mexico	K5QIN	Robert E. Cowan	3806 Gold St.
Wyoming	W7HII	Donald T. Wright	1417 Flint St.
SOUTHEASTERN DIVISION			
Alabama	W4FQQ	Harry L. Tooker	P.O. Box 1962
Eastern Florida	W41YT	Andrew C. Clark	41 Lenape Drive
Western Florida	W4MLE	George Thurston	3407 Brook Drive
Georgia	W4TFS	A. J. Parr	672 Wells Ave.
West Indies (Cuba-P.R.-V.I.)	KZ5RM	Roger M. Howe	Box 462
Canal Zone			
SOUTHWESTERN DIVISION			
Los Angeles	K6YCX	Frank P. Merrill, jr.	3131 Riverside Dr.
Arizona	K7NIV	George Mezey	P.O. Box 814
San Diego	K6JPI	Wes Lees	1321 Tourmaline
Santa Barbara			
WEST GULF DIVISION			
Northern Texas	K5AEX	Robert G. Bender	c/o O'DM Civil Defense
Oklahoma	K5KTW	Bill Lund	1220 South Owasso
Southern Texas	W5AIR	G. D. Sears	5634 Eskridge
CANADIAN DIVISION			
Maritime			
Ontario	VE3AML	Rowland Beardow	1899 Lakeshore Rd.
Quebec	VE2QN	Pelix Edge	2604 de la Falaise Ave.
Alberta	VE8BS	Walter Jordan	443 — 19th St., N.
British Columbia	VE7QM	W. C. Orhard	13733 — 62 Ave., RR 15
Manitoba			
Saskatchewan	VE5IG	Harold Gromsdahl	
			Sarnia
			Sillery 10
			Lethbridge
			North Surrey
			Congress



Harris County (Houston), Texas, AREC members offered communications facilities for a "Victory over Polio" drive conducted from July 22 to July 29. Over 50 amateurs participated. Above are K5RDP (left), Harris County EC and W5DSF (right) with W5AUP in the background at Polio Headquarters in Houston.

Mar. 17 — The Cuyahoga County (Ohio) AREC provided mobile communication for the St. Patrick's Day parade of Greater Cleveland. Nine amateurs participated.

The Oakland County, Mich., AREC conducted a simulated emergency test involving a tornado problem under EC K8GJK. Thirteen amateurs were in on this one.

Mar. 25 — The Lehigh County AREC (Allentown, Pa.) supplied communications for a convoy to Ocean City, N. J., on its way to assist in the clean up after the devastating storm on the New Jersey coast. Six amateurs were in the convoy, under the direction of EC K3LJK.

Mar. 30, 31 — Iowa amateurs set up a watch along the Rock and Sioux Rivers in Rock Rapids and Akron, Iowa, relaying crest information down river so officials would know how much sandbagging would be necessary. Lyon County EC W0NLF led nine other amateurs in this operation.

Apr. 1 — The Shiawassee Amateur Radio Assn. (Mich.) held a simulated emergency test to determine their capabilities in supplying communication between their headquarters and all other communities in the county. Seven mobiles and a number of fixed stations were used. Fifteen amateurs participated under EC K8BDR.

Apr. 13-14 — The Clinton County, Iowa, AREC, put on a demonstration of emergency communications by establishing contact between Boy Scout expositions in Clinton and Davenport, Iowa and passing many messages. Nine amateurs took part under the direction of Assistant EC K0VBV.

April 14 — EC K0UAB and his boys cooperated with the sheriff's department in "Operation Roadblock," a special exercise to close escape routes out of Council Bluffs, Iowa, using a simulated stolen car. Five amateurs took part.

The Cuyahoga County (Ohio) AREC conducted a special training exercise under Assistant EC K8GBH, with the object of locating hidden stations on both 6 and 10 meters. Twenty-five mobiles came out for the event.

Apr. 18, — In the middle of the Southern Michigan Net's regular session, NCS K8AXV called a special drill to ascertain how many mobiles could be activated how quickly. Five mobiles were on the road within moments.

Apr. 27 — Twenty-five amateurs in California's San Gabriel Valley under EC W6NAA provided communications for the Road Riders of Southern California during their motorcycle run (see out). W6NAA and K6JNP wrote a fine article on the subject which we were unfortunately unable to print.

May 3 — Cuyahoga County (Ohio) provided mobile communications for the VFW Loyalty Day Parade in Cleveland. Operation was on six meters using mobiles and a walkie-talkie, with Assistant EC K8MBW in charge. Nine amateurs were involved.

May 5-6 — Amateurs in Dixon, Calif., provided communications for the Dixon May Fair; four amateurs did the job.

May 14 — A joint drill of the Kings County (N. Y.) AREC and Brooklyn RACES was conducted by EC

K2OVN to "shake down" Brooklyn RACES equipment. Sixteen amateurs were in on it.

May 20 — The annual clothing drive sponsored by the Boy Scouts and others was assisted by the radio amateurs of Greater Cincinnati. Forty-eight amateurs participated.

That brings us up to June 1, 1962. We'll try to continue the "Diary of the AREC" in a subsequent issue when we aren't overloaded with reports of actual emergencies. Some day we may even have enough space left over to give some details on these non-emergency activities. We hope so. Many of them deserve it.

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We hit a low for the year with only 28 SEC reports for June, but it was still two more than June of 1961. The AREC members represented, at 14,331, exceeded last year's figure by almost two thousand and set a record for June. Ontario reported for the first time in 1962. Other sections reported: E. Mass., NYC-LI, W. Fla., Tenn., Ind., Mich., Alberta, Wash., E. Fla., Nevada, Ohio, Ore., N. Texas, N. C., S. Texas, S. Dak., Ga., E. Bay, N. N. J., E. Pa., Utah, W. Pa., Los A., Sac. V., Kans., Okla., W. Mass.

This brings us to the half way mark in 1962, so let's see how our SEC reporting stacks up. We are four reports ahead of last year, and we have heard from 14 different sections (12 last year). The progress isn't phenomenal, but it's there. Nineteen (not counting those who will now write to protest) sections are 100% for 1962: E. Mass., Mich., Alberta, Wash., Ind., N. Y., C.-I., I., Utah, Ore., N. Texas, Los A., S. Texas, Tenn., E. Fla., Nevada, Ohio, W. Pa., E. Pa., S. Dak., Okla.

The following sections *have not been heard from* up to June, 1962: W. N. Y., Ill., Wis., Ark., La., Miss., Ky., E. N. Y., Mo., Conn., N. H., R. I., Vt., Alaska, Idaho, Mont., San Fran., S. C., Wyo., W. I., C. Z., San D., Santa B., Mar., Que., B. C., Man., Sask.

RACES News

The situation at federal OCD is somewhat fluid, to say the least. There seems to be a total reorganization of federal civil defense in progress, starting with the discontinuation of Conrad and going right down the line. OCD Operational Headquarters at Battle Creek, Mich., is no more, and much of the personnel has been transferred to other government agencies or moved into private industry. At this writing we're not quite sure what is going to happen to RACES, if anything. There was never any particular centralization of RACES matters at

federal level, except that accomplished through the efforts of the U.S.C.D. Amateur Radio Alliance, so the fact that no one appears to be actively heading up RACES at the Pentagon (new location of O'CD Communications) is no great change. OCD regional offices seem to be still in business, so whatever reorganizational spasms have hit federal O'CD have not yet reached regional level.

Right now, it appears that the effects of top-level reorganization never will reach local levels. We hope so, but you may be assured that we are keeping in close touch with the situation for whatever information may be forthcoming.

— * — * —

On July 20, e.d. authorities in Detroit asked that the Detroit RACES networks be placed on alert with all mobile units to act as weather observers. Eight amateurs responded and remained on duty from 2345 to 0130 GAT, when it was decided the danger had passed. This activity was conducted by W8DOO and K8LOS, RO and Alternate RO for Wayne County Zones 10/12.

— * — * —

Forty members of the St. Louis-St. Louis County RACES turned out on July 29 to provide communication for the St. Louis County police in handling traffic at the County Police Show. Directed from the RACES mobile truck at the field, 18 amateur mobiles were situated at critical intersections to provide a radio network. RACES frequencies on 6, 2 and 10 meters were used under very hot, uncomfortable conditions. This situation gave a small approximation of what could happen in a real emergency. Police were quick to admit that they had neither the personnel nor the communications to handle traffic problems of this magnitude and gratefully acknowledged the help of e.d. and RACES. W0KY headed up the RACES forces.



DX CENTURY CLUB AWARDS



Honor Roll

The DXCC Honor Roll consists of the top ten numerical positions in the DXCC. Position in the Honor Roll is determined by the first number shown. The first number represents the participant's total countries less any credits given for deleted countries. The second number shown represents the total DXCC credits given, including deleted countries. Positions in cases of ties are determined by date of receipt. All totals shown represent submissions received as of the end of the month of July, 1962.

W6CUQ . . . 308/322	W8JIN . . . 306/320	W5ASC . . . 304/317	W7PHD . . . 302/313	W9NDA . . . 300/313
W2AGW . . . 308/321	W8MDM . . . 305/317	W9OVT . . . 304/315	VEZMZ . . . 302/314	W3LMA . . . 300/312
W3GHD . . . 308/321	W6AM . . . 305/319	W8UAS . . . 304/316	W6GPP . . . 302/314	W7WJH . . . 300/313
W1GKK . . . 308/322	W8BKP . . . 305/317	W6EBG . . . 304/318	W1BHH . . . 302/315	W9LNM . . . 300/314
PY2CK . . . 307/320	W3KT . . . 305/318	LU6DJX . . . 304/317	4X4DK . . . 302/313	W2LPE . . . 300/313
W8BRA . . . 307/320	W3JNN . . . 304/317	G3AAM . . . 303/316	W7GBW . . . 302/315	W4TAM . . . 299/312
KV4AA . . . 307/321	W1ME . . . 304/317	CE3AG . . . 303/316	W9HUZ . . . 302/314	W2WZ . . . 299/312
W2HUQ . . . 307/320	W8BF . . . 304/316	W2HMJ . . . 303/315	CK2CO . . . 302/314	W4OCW . . . 299/310
W4DOH . . . 307/320	W7GUV . . . 304/317	W1CLX . . . 303/315	W8KML . . . 301/313	W8LKH . . . 299/311
W9RFI . . . 306/320	W9YFV . . . 304/317	W2BXA . . . 303/316	K2GFO . . . 301/314	W0ELA . . . 299/311
W8KIA . . . 306/319	W5ADZ . . . 304/316	G2PL . . . 302/314	W8JBI . . . 301/312	W2JT . . . 299/311
		W5MMK . . . 302/314		

Radiotelephone

W3RIS . . . 309/323	W9RBI . . . 305/317	W7PHO . . . 302/311	4X4DK . . . 298/309	W3INN . . . 297/309
PY2CK . . . 307/320	W8BF . . . 303/315	W8POQ . . . 301/312	W8KML . . . 298/310	W2ZX . . . 295/307
W8GZ . . . 305/317	VQ4ERR . . . 302/315	CK2CO . . . 301/314	W6YY . . . 298/310	W6AM . . . 295/308
		W4DOH . . . 300/311		

From June 1, to July 1, 1962, DXCC Certificates and Endorsements based on contacts with 100-or-more countries have been issued by the ARRL Communications Department to the amateurs listed below.

New Members

GR8DA . . . 204	DL1AM . . . 121	UBKED . . . 110	KR6ML . . . 103	K8LNL . . . 101	K8WOT . . . 100
W8DNK . . . 180	G8JKY . . . 115	OKINR . . . 109	W1HOZ . . . 102	VE3CWE . . . 101	K8YGM . . . 100
K1SHN . . . 173	PY5EJ . . . 114	YQ2VG . . . 109	K4KJC . . . 102	VE7AGC . . . 101	W9NHP . . . 100
Z86VX . . . 161	UA4KHW . . . 114	UC2WP . . . 107	K6RSY . . . 102	W1FRX . . . 100	W0DXB . . . 100
K4HJJ . . . 152	UB5FY . . . 113	W2BFL . . . 106	W8KOS . . . 102	W3PVZ . . . 100	G3JUL . . . 100
S01THR . . . 137	YQ5GC . . . 113	W9BWM . . . 105	W9KQB . . . 102	K4OLQ . . . 100	DJ5IH . . . 100
W5EJ . . . 129	YU3LB . . . 113	UB5MZ . . . 105	J47KY . . . 102	K5EJA . . . 100	YU8FY . . . 100
UA4KED . . . 127	DJ48J . . . 111	W3GCA . . . 104	U4IKBR . . . 102	W5VA . . . 100	Z01AOV . . . 100
K8ITH . . . 126	DL9KJ . . . 111	K7LHW . . . 104	W3SQX . . . 101	W46BBJ . . . 100	Z82MI . . . 100
SP2BK . . . 126	W5V8Q . . . 110	YU3CG . . . 104	W46SBO . . . 101	W7CLS . . . 100	Z84LX . . . 100

Radiotelephone

W1FJG . . . 242	W1G0X . . . 115	YV2CJ . . . 106	W9BWM . . . 102	W9KWC . . . 101	VE2AYY . . . 100
W9YJ . . . 168	W6USG . . . 115	G3HDA . . . 105	K1OYM . . . 101	T2FHE . . . 101	VE3AGC . . . 100
W8ALJ . . . 129	W0YYS . . . 110	ZF4JN . . . 104	K4WNL . . . 101	K8AXG . . . 100	DL4FC . . . 100
Z86VX . . . 121	K5CC . . . 107	VE7MT . . . 103	W6ZJY . . . 101	K0LFY . . . 100	KP4CK . . . 100
W1JSK . . . 116	W4BWR . . . 106	W46DET . . . 102	W8QNW . . . 101	W0ZXX . . . 100	

Endorsements

HB9J . . . 312	DL1IN . . . 264	W3KA . . . 233	W4MS . . . 203	Z85KU . . . 171	W41EN . . . 132
W8EWS . . . 309	W3ALP . . . 263	W3LFP . . . 232	W6PL . . . 202	W1NIP . . . 170	W8WBT . . . 132
W9GUM . . . 302	W1BAN . . . 262	W4JLL . . . 232	W0VAF . . . 202	W7BFS . . . 170	VQ4WLH . . . 131
W2DS . . . 301	W2ICO . . . 262	W9EHW . . . 232	W2MES . . . 201	W8FAW . . . 170	K3ALD . . . 130
W6LDD . . . 301	W5DA . . . 262	VE2BV . . . 231	W6MIW . . . 200	K9HOL . . . 170	W5PAK . . . 130
W28UC . . . 300	W8ZCQ . . . 260	S12AR . . . 231	W0CJZ . . . 200	W4FEU . . . 169	K5STL . . . 130
W6VH . . . 300	DL3RK . . . 259	K1MLR . . . 230	D1JVS . . . 200	W1FJF . . . 164	K8ANK . . . 130
W8UD . . . 300	W4EJ . . . 252	W4ZGZ . . . 230	DL1LA . . . 198	W1AP . . . 163	W6NTR . . . 124
W22GB . . . 299	W2TP . . . 252	K8ONV . . . 228	W9AKH . . . 197	W1QV . . . 163	K1HMD . . . 122
W8WZ . . . 298	W9DWQ . . . 251	VE1WL . . . 228	W48TB . . . 196	W4NJF . . . 161	K8RBB . . . 122
W1HN . . . 293	K9RAL . . . 251	W1MQV . . . 224	W42ELS . . . 193	W8QNV . . . 161	W42LWT . . . 121
W2H8O . . . 292	W31OU . . . 251	W7BTH . . . 224	W3MOG . . . 191	Z86ASW . . . 160	W2FSD . . . 121
W9UXO . . . 292	W1ORV . . . 250	W2RGV . . . 225	W8QJH . . . 191	D15VQ . . . 159	K3AG . . . 121
W28UT . . . 290	W6HFL . . . 250	W5EJT . . . 222	W4AVY . . . 190	K4MTP . . . 155	W42SSD . . . 120
W4BYU . . . 290	K8LSG . . . 250	H89KU . . . 221	W4EJN . . . 190	W1MD . . . 153	K2QXN . . . 120
W4OPM . . . 290	W9RQM . . . 250	W2PDB . . . 220	W4LZW . . . 190	W46DUG . . . 153	W46MVG . . . 120
W6KZL . . . 290	VE6JR . . . 250	W6WX . . . 216	K4WIS . . . 190	W0NGM . . . 153	W7QDM . . . 120
W3RANQ . . . 288	W4NNE . . . 248	D42KS . . . 212	G2AJB . . . 182	T2WA . . . 153	W9NVT . . . 120
W5LQG . . . 281	P21AN . . . 245	W4MS . . . 211	G8HJ . . . 182	S46HEU . . . 151	W9UTQ . . . 120
W1BL . . . 280	W6KUP . . . 241	W4GAMZ . . . 211	W40VJ . . . 182	W40VJ . . . 150	KP4PY . . . 120
K2UVU . . . 280	K1JDN . . . 241	K7GCM . . . 211	W2REH . . . 181	W71YW . . . 150	K7AVH . . . 116
W60UV . . . 280	W2QKJ . . . 241	W1AW . . . 210	K5UXP . . . 180	W8CUT . . . 150	K0LFL . . . 116
W9VU . . . 280	K6PDE . . . 241	W4NO . . . 210	K6HOR . . . 180	G2HNO . . . 150	W46KNE . . . 113
W9KXK . . . 280	W9PIO . . . 241	W6LQZ . . . 210	W46FGY . . . 180	DJ1WP . . . 148	W6BJL . . . 112
W4HQX . . . 277	K6CJF . . . 240	W8KMD . . . 210	W9NZZ . . . 180	K2RAC . . . 146	W9WU . . . 112
W9CPE . . . 273	W9WLD . . . 231	K2AFY . . . 201	W40IP . . . 176	W6HVN . . . 140	W4RXY . . . 111
W8J8U . . . 272	W6PLK . . . 239	W8RQ . . . 210	W2JWK . . . 173	K7BJE . . . 140	W4HOS . . . 110
W2HSZ . . . 271	W0DEL . . . 239	W5QN . . . 207	K9LJO . . . 172	VE3AGC . . . 140	K4RDE . . . 110
W4GRP . . . 270	E4IBC . . . 239	F3AT . . . 205	VE3LZ . . . 171	K2LQJ . . . 135	K5OJL . . . 110
V81PQ . . . 270	W4IF . . . 234	Z86EU . . . 204	E4IGZ . . . 171	W3APM . . . 135	K97QW . . . 110
					Z86YB . . . 110

Radiotelephone

W8DM . . . 294	W2LV . . . 251	W3FWD . . . 216	W8WZ . . . 185	F9MD . . . 151	W3OBD . . . 130
T12HP . . . 291	DL1TN . . . 249	W3LFP . . . 213	W4JWC . . . 181	W9MUI . . . 150	W6LJC . . . 129
W8K1P . . . 290	P21AX . . . 245	W2HMJ . . . 212	D13RK . . . 183	VK4RQ . . . 150	W4BQY . . . 128
W8BKP . . . 290	W8WT . . . 240	W2QKJ . . . 212	W3MQG . . . 178	W3LEP . . . 141	XE1HHT . . . 127
W4QCW . . . 283	W1ORV . . . 232	W2RGV . . . 212	H89KU . . . 176	W42ROQ . . . 140	K9AZB . . . 121
W8UAS . . . 280	W3CGS . . . 232	P49WWP . . . 210	W3YZI . . . 173	W2PGD . . . 140	W6KUT . . . 114
W9JFF . . . 277	W5KC . . . 232	W4BYU . . . 203	K8LSG . . . 172	W21OF . . . 140	W7BTH . . . 113
H89J . . . 272	W1WLD . . . 231	K2AFY . . . 201	K6HVS . . . 170	K6HVS . . . 140	W4RXY . . . 112
K8RO . . . 271	K1JNG . . . 230	VE1WL . . . 196	K8ONV . . . 163	W42ROQ . . . 139	W8FAW . . . 112
W2WZ . . . 270	W42LZS . . . 230	W0U7C . . . 195	W8GUZ . . . 155	G3HJJ . . . 135	W9KXK . . . 111
W0QVZ . . . 270	W1YDO . . . 228	W4MS . . . 194	W4NJF . . . 154	VE3CJ . . . 133	K4BMS . . . 110
W1BAN . . . 261	W1HN . . . 221	W9PGI . . . 194	VE2WY . . . 153	DJ3OJ . . . 133	W7QDM . . . 110
W1LFL . . . 261	W4TDW . . . 221	VE1PQ . . . 190	W4FEU . . . 152	W9JY . . . 131	W0OYQ . . . 110
W9LNM . . . 260	W1BTH . . . 220	K9RAL . . . 187	W42ELS . . . 151	W1BHF . . . 130	



Last month in "With the AREC" we reported operation by the Signaleers" in a tornado at Oak Park, Ill. Here is a disaster unit used at the scene of the tornado. That's W9HIC partially hidden by the car, with W9VRP looking on.

A.R.R.L. ACTIVITIES CALENDAR

(Dates shown are per GMT)

- Oct. 4: CP Qualifying Run — W6OWP
- Oct. 6-7: Simulated Emergency Test
- Oct. 13-15: CD Party (c.w.)
- Oct. 19: CP Qualifying Run — WIAW
- Oct. 20-22: CD Party (phone)
- Nov. 2: CP Qualifying Run — W6OWP
- Nov. 17: CP Qualifying Run — WIAW
- Nov. 10-12, 17-19: Sweepstakes Contest

OTHER ACTIVITIES

The following lists date, name, sponsor, and page reference of QST issue in which more details appear.

- Oct. 6-7: VK/ZL Oceania Phone DX Contest, NZART (p. 81, this issue).
- Oct. 13-14: VK/ZL Oceania C.W. DX Contest, NZART (p. 81, this issue).
- Oct. 12-22: Goose Bay QSO Party, GBARC (p. 154, this issue).
- Oct. 20-22: Second World-Wide RTTY Sweepstakes RTTY, Inc., (p. 68, this issue).
- Oct. 27-28: R.S.G.B. 7 Mc. DX Contest (phone), (p. 79, this issue).
- Nov. 3-4: R.S.G.B. 7 Mc. DX Contest (c.w.), (p. 79, this issue).
- Dec. 8-9: New England QSO Party, Conn. Wireless Assn., (next issue).

SOME CODE PRACTICE STATIONS

Call	Location	Speeds (w.p.m.)	Freq. (kc.)	Time (GMT)	Days
W1EIA	Newington, Conn.	15, 25, 35, 45, 55, 65	3637 & 7120	0130	Mon.
K2IBC	Avenue, N. J.	15	3675	2300	MTWThF
W3UVE	District Heights, Md.	10-40	3565 7034 146,250	0100	TF
W3UVD	Jeannette, Pa.	2 1/2, 5, 10 15, 20	3700	0100	SMTWThF
W4RUR	St. Petersburg, Fla.	6, 9, 14, 18, 22	7086 28,050 51,000	0000	TTh
W5ROH	Albuquerque, N.M.	Various	7070	1300	MTThF
K6CCZ	Fontana, Calif.	5, 20	7090	0200	daily
W7IBR	Seattle, Wash.	7, 15	3550	1700	MTWThF

ELECTION NOTICE

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

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

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

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

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

The following nominating 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
Vermont	Oct. 10, 1962	Miss Harriet Proctor	Aug. 10, 1962
North Dakota	Oct. 10, 1962	Harold A. Wengel	Aug. 19, 1962
Canal Zone	Oct. 10, 1962	Thomas B. DeMeis	Oct. 1, 1962
Alabama	Oct. 10, 1962	Harvell V. Tilley	Resigned
Colorado	Dec. 10, 1962	Donald S. Middleton	Feb. 14, 1963
Minnesota	Dec. 10, 1962	Mrs. Lydia S. Johnson	Feb. 23, 1963
Sacramento Valley	Dec. 10, 1962	George R. Hudson	Feb. 25, 1963
Eastern Florida	Dec. 10, 1962	Albert L. Hamel	Feb. 27, 1963
Missouri	Dec. 10, 1962	C. O. Gosch	Mar. 1, 1963

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.

Maritime	D. E. Weeks, VE1WB	June 11, 1962
Quebec	C. W. Skarstedt, VE2DR	June 11, 1962
Santa Clara Valley	Jean A. Gmelin, W6ZRJ	Oct. 15, 1962
New Hampshire	Albert F. Haworth, W1YHI	Oct. 26, 1962

In the Montana Section of the Northwestern Division, Mr. Walter R. Marten, W7KUH, and Mr. Ray Woods, W7SFK, were nominated. Mr. Marten received 112 votes and Mr. Woods received 96 votes. Mr. Marten's term of office began Sept. 1, 1962.

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.

SUGGESTED RTTY OPERATING FREQUENCIES

3620, 7040, 14,090, 21,090 kc.

GMT CONVERSION

To convert to local times subtract the following hours:

ADST -3, AST -4, EDST -4, EST -5, CDST -5, CST -6, MDST, -6, MST -7, PDST -7, PST -8, Honolulu -10, Central Alaska -10.

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 October 19 at 0130 GMT. Identical tests will be sent simultaneously by automatic transmitters on 3555, 7080, 14,100, 21,075, 28,080, 50,700, and 145,800 kc. The next qualifying run from W6OWP only will be transmitted October 4 at 0400 Greenwich Mean Time on 3590 and 7120 kc. **CAUTION:** Note that since the dates are given per Greenwich Mean Time, Code Proficiency Qualifying Runs in the United States and Canada actually fall on the evening previous to the date given. *Example:* In converting, 0130 GMT October 19 becomes 2130 EDST October 18.

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.

W1AW conducts code practice daily at 0130 GMT on all frequencies listed above with speeds of 15, 20, 25, 30, and 35 w.p.m. on Tuesday, Thursday, and Saturday, and at 5, 7½, 10, and 13 w.p.m. on other days. Approximately 10 minutes' practice is given at each speed. To check your copy, the texts used on several transmissions are listed below. The order of words in each line of QST text is sometimes reversed. To improve your list, try to send in step with W1AW.

Date Subject of Practice Text from August QST

- Oct. 3: *Handy 13-Volt D.C. . . . Inverter*, p. 18.
- Oct. 9: *Complete Transmitter from an 8B-10 . . .*, p. 12
- Oct. 12: *12th National ARRL Convention*, p. 20
- Oct. 17: *Retrievable Antennas*, p. 34
- Oct. 22: *Three-Band Crystal-Controlled Converter*, p. 24
- Oct. 23: *Some Tips on Neutralizing . . .*, p. 36
- Oct. 26: *A Novel Key for Use with Electronic Keyers*, p. 39

W1AW SCHEDULES

(October 1962)

Operating-Visiting Hours

Monday through Friday: 1 P.M.-1 A.M. EDST.
Saturday: 7 P.M.-2:30 A.M. EDST.
Sunday: 3 P.M.-10:30 P.M. EDST.

The ARRL Maxim Memorial Station welcomes visitors. The station address is 225 Main St., Newington, Conn., about 4 miles south of West Hartford. A map showing local street detail will be sent on request. On Oct. 28, W1AW will switch to its winter schedule. The winter schedule will appear in November QST.

Operating Frequencies

C.w.: 1820, 3555, 7080, 14,100, 21,075, 28,080, 50,700, 145,800 kc.

Voice: 1820, 3945, 7255, 14,280 (s.s.b.), 21,330, 29,000 50,700, 145,800 kc.

Frequencies may vary slightly from round figures given; they are to assist in finding the W1AW signal, not for exact calibrating purposes. Amateurs are respectfully requested to refrain from transmitting on the above frequencies during W1AW bulletins and code practice.

Official Bulletins

Bulletins containing latest information on matters of general amateur interest are transmitted on the above frequencies according to the following schedule in Greenwich Mean Time.

C.w.: Monday through Saturday 0000; Tuesday through Sunday, 0400.

Voice: Monday through Saturday, 0100; Tuesday through Sunday, 0330.

Caution. Note that in the U. S. and Canada, because times are GMT, bulletin hours actually fall on the evening of the previous day.

W1AW CONTACT SCHEDULE

Would you like to work W1AW? W1AW welcomes calls from *and* amateur station in accordance with the following schedule:

Time (GMT)	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
0000-0030 ¹		14,280	3555 ²	14,100	14,100	7080 ³	14,100
0030-0100		14,280	3555	14,100	14,100	7080	
0100-0130 ¹		145.8 Mc.	21,330	145.8 Mc.	50.7 Mc.	21,330	
0230-0300				1820		1820	
0300-0330				3555		3945	
0330-0400 ¹			3945	7255	3945	7255	3945
0400-0500 ¹			3555 ³		3945	7080 ³	
1700-1800 ²		21/28 Mc.	21/28 Mc.	21/28 Mc.	21/28 Mc.	21/28 Mc.	
1900-2000		7080	14,100	7255	14,100	7080	
2000-2100		14,280	7080	14,100	14,280	14,100	
2200-2300		14,280	14,280	14,280	14,100	7255	
2300-2330		7255		21,075 ³		14,280	
2330-2400		14,100		3555		14,280	

¹ Starting time is approximate. General-contact period on stated frequency begins immediately following transmission of Official Bulletin, on c.w. at 0000 and 0100, on phone at 0100 and 0330.

² Operation will be on 21,075, 21,330, 28,080 or 29,000, depending on band and other conditions.

³ W1AW will listen for Novice Class licenses on the Novice portion of this band before looking for other contacts.

WHAT IS R.I.T.?

THE INCREASING POPULARITY of transceiver operation on SSB is and has been a mixed blessing. How often have you heard an operator apologize for system inflexibility by saying, "You are a bit off frequency. Will you please tune in on me as I am running transceive."

WHAT IS THE REASON for this error in frequency between stations? It can be shown that when tuning SSB even under ideal reception conditions, no two operators will tune exactly alike and under QRM conditions it is common to detune slightly to enhance the signal readability.

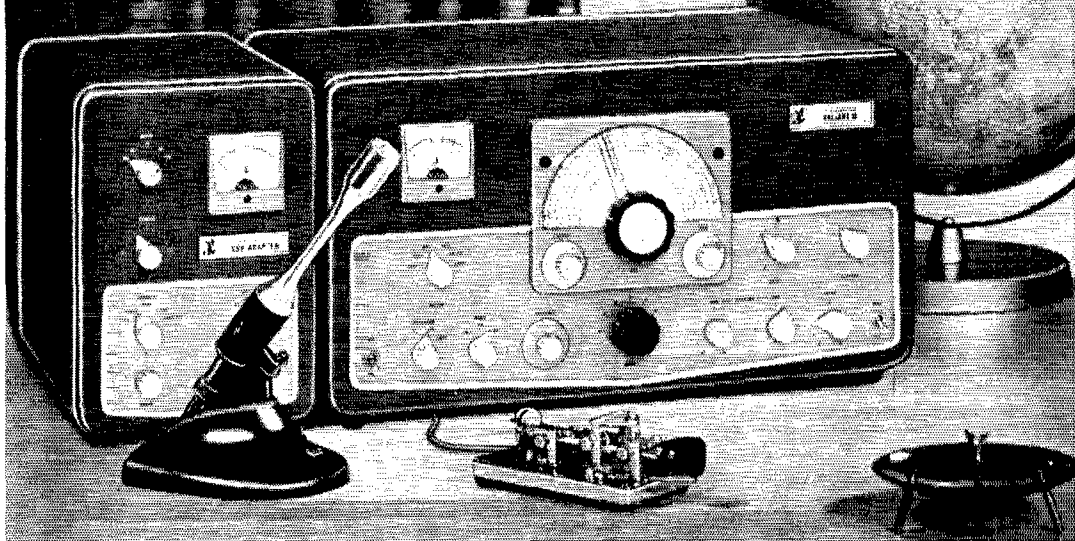
WITH A TRANSCEIVER, if you retune your receiver, the transmitter frequency changes also. This causes the station on the other end to retune slightly and if he is also running transceive, "walking" up and down around the frequency can occur.

R.I.T. (Receiver Incremental Tuning) is incorporated in the new Hallicrafters SR-150 Transceiver which at the flick of a switch permits the receiver to be tuned over a few KC without disturbing the transmitter frequency. This is only one of many new features incorporated in the SR-150 which will be announced in next month's *OST*.

R. J. ORWIN, W9YKA

W. J. Healy W9AC Lewis Marshall K9EBE for **hallicrafters**

**New!
Matched pair for
SSB, AM and CW!**



Outstanding performance on SSB, AM and CW with absolutely no compromise on any mode!

"SSB ADAPTER"—Here's the filter-type SSB generator amateur operators everywhere have been asking for! Bandswitching 80 through 10 meters . . . more than 50 db sideband suppression . . . more than 45 db carrier suppression! When used with the Viking "Valiant" or "Valiant II" it places 275 watts P.E.P. at your command—gives you the punch and penetration necessary for solid communications on today's crowded bands!

Two compact units and interconnecting cables . . . RF unit is only 8" wide—may be placed on your operating desk—power supply unit may be placed in any convenient location. Unique design features built-in multiplier requiring VFO input only—band-pass interstage couplers require no tuning—design and front panel layout make operation practically "foolproof"! Superb audio fidelity and balanced audio response; excellent sideband, spurious and carrier suppression. Other features: positive VOX and anti-trip circuits with built-in anti-trip matching transformer and adjustable VOX time delay.

Cat. No. 240-305-2—Wired and tested with remote power supply, tubes crystal filter, less microphone. **\$369⁵⁰**
AMATEUR NET

"VALIANT II"—Newly restyled, the "Valiant II" gives you outstanding flexibility and performance in a compact desk-top rig! Bandswitching 160 through 10 meters—delivers a full 275 watts input CW or SSB (with auxiliary SSB exciter or the new Viking SSB Adapter) and 200 watts AM! Low level audio clipping prevents overmodulation and increases modulation level and intelligibility—differentially temperature compensated VFO provides the extreme stability necessary for peak SSB operation! High efficiency pi-network tank circuit—final tank coil is silver-plated. Other features: complete TVI suppression; timed sequence (grid block) keying; high gain push-to-talk audio system built-in low pass audio filter; self-contained power supply; and single control mode switching.

AS AN EXCITER—Drives any of the popular kilowatt level tubes, and provides a high quality speech driver system for high powered modulators.

SSB OPERATION—Provision for plug-in SSB operation with no internal modification necessary. Rear panel fittings provided for VFO output and SSB input, connections for remote control of final amplifier bias and VFO keying through the VOX control of the SSB adapter.

Cat. No. 240-105-1—Kit with tubes, less crystals. **\$375⁰⁰**
AMATEUR NET

Cat. No. 240-105-2—Wired and tested with tubes, less crystals. **Amateur Net \$495.00**

New Catalog

E. F. Johnson Co. also manufactures other transmitters and accessories . . . all described in our newest amateur catalog. Write for your copy today!



E. F. JOHNSON COMPANY
WASECA, MINNESOTA, U.S.A.

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B and S Electronics, Inc.
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Oak Park, Ill.

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Pinehurst Place
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Pick your power and features from these popular Viking Transmitters!

"INVADER"—More exclusive features than any other Transmitter/Exciter on the market! Specially developed high frequency, symmetrical, multi-section band-pass crystal filter for more than 60 db. sideband suppression, more than 55 db carrier suppression! Instant bandswitching 80 thru 10 meters—no extra crystals to buy—no realigning necessary. Delivers solid 200 watts CW and P.E.P. SSB input; 90 watts AM (25 to 30 watts output-upper sideband and carrier). Built-in VFO—exclusive RF controlled audio AGC and ALC (limiter type) provide greater average speech power. Wide range pi-network output smooth VOX and anti-trip circuits. Fully TVI suppressed. Self-contained heavy-duty power supply. Wired and tested, with tubes and crystals.

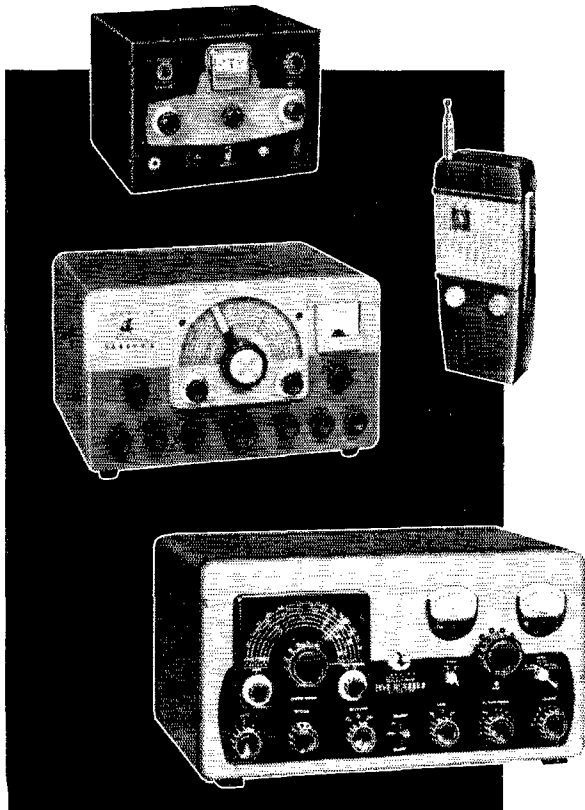
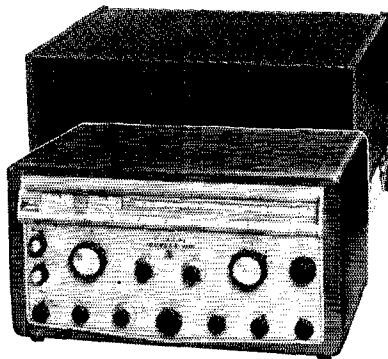
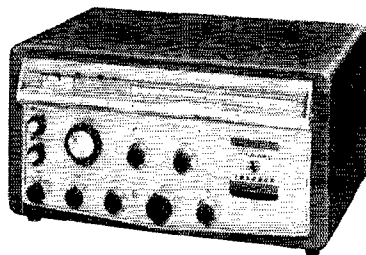
Cat. No. 240-302-2 Amateur Net.....\$619.50

"INVADER 2000"—All the features of the "Invader", plus the added power and flexibility of an integral linear amplifier and remote controlled power supply. Rated 2000 watts P.E.P. (twice average DC) input on SSB; 1000 watts CW; and 800 watts AM (250 to 300 watts output-upper sideband and carrier). Wide range output circuit 40 to 600 ohms (adjustable). Final amplifier provides exceptionally uniform "Q". Exclusive "push-pull" cooling system. Heavy-duty multi-section power supply. Wired and tested, with power supply, tubes and crystals.

Cat. No. 240-304-2 Amateur Net.....\$1229.50

"HIGH POWER CONVERSION"—Take the features and performance of your "Invader" . . . add the power and flexibility of this unique Hi-Power Conversion and you're "on the air" with the "Invader 2000". Completely wired and tested, includes everything you need—complete the entire conversion in one evening.

Cat. No. 240-303-2 Amateur Net.....\$619.50



"ADVENTURER"—Completely self contained single knob bandswitching 80 thru 10 meters . . . effective TVI suppressed . . . and puts 50 watts of power into a rugged 807 transmitting tube. Operates by crystal or external VFO control. Front panel meter switching permits monitoring of the final grid of plate currents . . . keying is clean and crisp. Wide range pi-network output with tubes, less crystals.

Cat. No. 240-181-1 Kit.....Amateur Net \$69.95

10 METER "PERSONAL MESSENGER"—Two models: 100 milliwatts for short range; 1 watt for extended range—11 transistors and 4 diodes—super-heterodyne receiver with tuned RF amplifier gives excellent sensitivity two stage transmitter punches signal home. "Quiet" control silences receiver on standby. With battery compartment for penlight cells (less cells) Rechargeable cadmium battery and other accessories available.

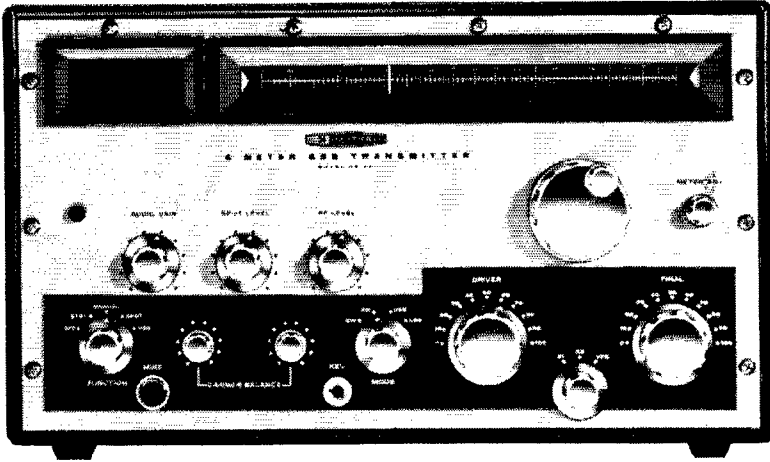
Cat. No. 242-103 100 milliwatt.....Amateur Net \$109.50
242-104 1 watt.....\$129.50

RANGER II—Now a new version of the popular 75 watt CW or 65 watt AM "Ranger". The Ranger II transmitter also serves as an RF/audio exciter for high power equipment. Completely self-contained instant bandswitching 160 thru 6 meters! Operates by built-in VFO or crystal keying, TVI suppressed. Pi-network load matching from 50 to 500 ohms. With tubes, less crystals.

Cat. No. 240-162-1 Kit.....Amateur Net \$249.50
240-162-2 Wired, tested.....\$359.50

FIVE HUNDRED—Full 600 watts CW—500 watts phone and SSB (P.E.P. with auxiliary SSB exciter). Compact RF unit designed for desktop operation. All exciter stages ganged to VFO tuning—may also be operated by crystal control. Instant bandswitching 80 thru 10 meters—TVI suppressed—high gain push-to-talk audio system. Wide range pi-network output. With tubes, less crystals.

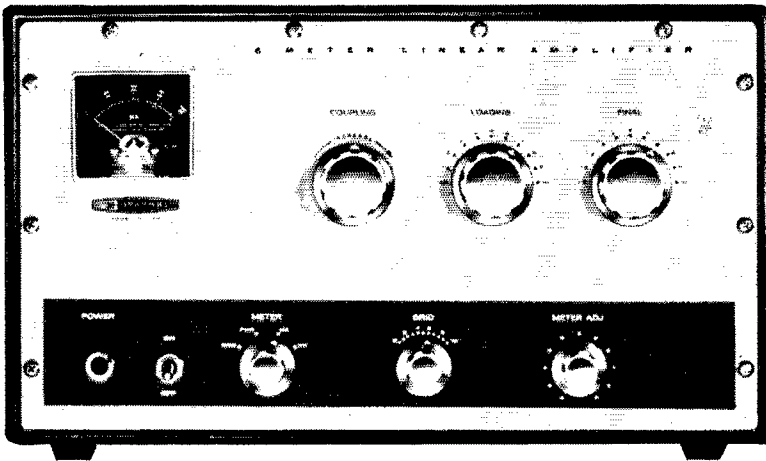
Cat. No. 240-500-2 Wired, tested.....Amateur Net \$1050.00



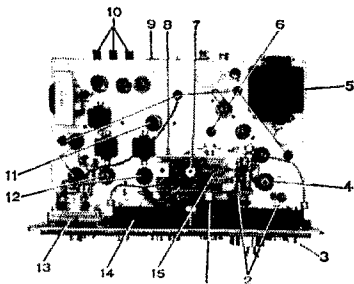
HEATHKIT HX-30 SIX METER SSB TRANSMITTER

SSB SIX PACK

A NEW EXCITER & AMPLIFIER FOR 125 WATTS PEP ON SIX

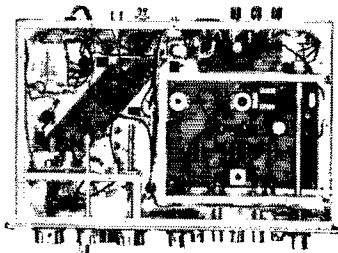


HEATHKIT HA-20 SIX METER LINEAR AMPLIFIER



**HEATHKIT HX-30
SIX METER SSB TRANSMITTER**

1. Anti-backlash helical gear for smooth VFO tuning. 2. Adjustable final amp. coupling and loading. 3. Meter control with push-button over-ride to check carrier null. 4. 6360 final amplifier for 20 watt PEP RF input. 5. Regulated power supply. 6. Five test-point jacks for easy alignment using panel meter. 7. Low frequency heterodyne VFO electronics on circuit board. 8. VFO frequency determining components mounted on "heat-sink" plate in enclosure. 9. Accessory socket for control functions. 10. Built-in VOX & anti-trip circuitry. 11. Three audio stages with speech filter. 12. Phasing type SSB generator heterodyned to output frequency. 13. Meter indicates relative power output. 14. Lighted slide-rule dial with 9" per megacycle of bandwidth. 15. Two crystal sockets for net or MARS operation (provides frequency coverage down to 49.8 mc).

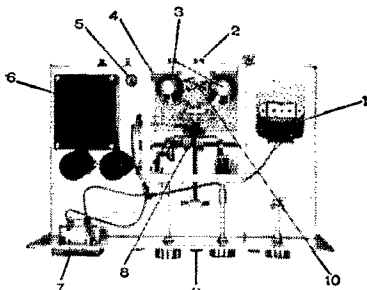


TAKES LESS THAN 30 HOURS TO ASSEMBLE: 3 extra-strength circuit boards and 3 pre-cut, cabled wiring harnesses simplify assembly and insure correct parts placement. Compartmentalized construction and thorough shielding assure stable, reliable performance. Advanced design features provide 50 to 54 mc coverage in four 1 mc segments (crystal for 50 to 51 mc supplied); USB, LSB, CW, AM operation; 50 db carrier suppression; 40 db unwanted sideband suppressions; grid block keying with filter; 50-75 ohm coax output and many more. Overall dimensions only 16 1/8" W x 10 1/8" H x 10" D.

**Kit HX-30, 50 lbs., no money down,
\$18 mo. \$189.95**

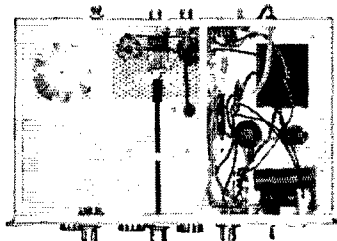
**SSB
SIX PACK
as low as
\$27 per mo.**

Attention all six-meter fans! Here's another Heathkit first! A brand new SSB exciter and linear for six meter operation at sensational savings! Only \$289.90 for the pair . . . less than the cost of most transverters. Together they form a complete, high performance 6-meter SSB station designed for maximum efficiency and operating convenience. Check the many features of these two units . . . you'll find them the perfect pair for your station . . . enter your order today and go SSB on Six!



**HEATHKIT HA-20
SIX METER LINEAR AMPLIFIER**

1. Fan forced-air cooling of final amplifier. 2. Only 2.5 to 10 watts PEP driving power required. 3. 125 watts PEP input. 4. Completely shielded RF circuitry. 5. Regulated screen voltage. 6. Solid-state rectifiers for cool, efficient operation. 7. Metered grid current, plate current, plate voltage & relative power output. 8. Link coupled RF output, 50-75 ohm coaxial. 9. 50 ohm tuned grid input to accommodate various levels of driving power. 10. Neutralized push-pull 6146 final amplifiers.



EASY ASSEMBLY: Clean, open circuit layout permits conventional wiring with less than 10 hours actual construction time. As in the HX-30, a heavy steel copper-clad cabinet provides strength, beauty and superior shielding, measures just 16 1/8" W x 10 1/8" H x 10" D. Frequency coverage is 49.8 to 54 megacycles. All power supplies are built in. A tremendous value at this low Heathkit price!

**Kit HA-20, 43 lbs., no money down,
\$10 mo. \$99.95**



**FREE 1963
HEATHKIT
CATALOG**
New edition —
more than 100
new kits since
last issue—
over 250 kits in
all.



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Benton Harbor 9, Michigan

Please Send FREE 1963 Heathkit Catalog

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Address _____
City _____ Zone _____ State _____

NOW...PROOF OF DX PERFORMANCE

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-T12TG)

OR IS K4ZRA THE NEW CHAMP?

Read his letter, and see his diagram of a typical installation and what it achieved:

2539 Christie Place
Owensboro, Kentucky

GOTHAM
Miami Beach, Florida
Gentlemen:

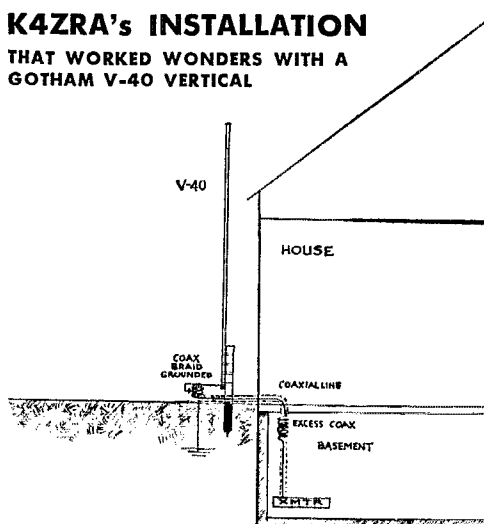
During the time I used this antenna, I worked well over 100 DX stations in 44 different countries, earned a WAS certificate, and worked the necessary stations for WAVE, receiving very fine signal reports from all. My rig ran from 75 to 100 watts plate input and the receiver was an old military ARR-7 (Hallicrafters reboxed SX-28).

The above mentioned contacts were made with the vertical mounted several inches off the ground, without radials, with only a simple ground connection to the coaxial shield.

Daniel F. Onley, K4ZRA

K4ZRA's INSTALLATION

THAT WORKED WONDERS WITH A
GOTHAM V-40 VERTICAL



FREE

Send a card for our valuable catalog of 50 different antennas with specifications and characteristics. Gives bands and frequencies covered, element information, size of tubing used, boom length, shipping weight, feed line used, polarization, and other data.

ANNOUNCEMENT!

GOTHAM proudly announces our appointment as an **AUTHORIZED FRANCHISED DEALER** for **ALL LEADING MANUFACTURERS OF TRANSMITTERS AND RECEIVERS.**

We feature a unique plan that absolutely guarantees proper installation and operation.

ORDERS AND INQUIRIES SOLICITED

WHY

THE GOTHAM V-80 IS THE BEST ALL-BAND ANTENNA

- If K6INI can do it, so can you.
- Absolutely no guying needed.
- Radials not required.
- 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.
- Many thousands in use the world over.
- Simple assembly, quick installation.
- Non-corrosive aluminum used exclusively.
- Multi-band, V80 works 80, 40, 20, 15, 10, 6.
- Ideal for novices, but will handle a Kw.
- Will work with any receiver and xmitter.
- Overall height 23 feet.
- Uses one 52 ohm coax line.
- An effective modern antenna, with amazing performance. Your best bet for a lifetime antenna at an economical price. **ONLY \$16.95.**

73
GOTHAM

DO YOU KNOW

1. YOU WILL HAVE NO DIFFICULTY INSTALLING YOUR GOTHAM VERTICAL ANTENNA IN JUST A FEW MOMENTS, REGARDLESS OF YOUR PARTICULAR PROBLEM, SO ORDER WITH CONFIDENCE EVEN IF YOU HAVE RESTRICTED SPACE OR A DIFFICULT SITUATION.
2. LOADING COIL NOT REQUIRED ON 6, 10, 15 AND 20 METERS. FOR 40, 80, AND 160 METERS, LOADING COIL TAPS ARE CHANGED MANUALLY EXCEPT IF A WIDE-RANGE PI-NETWORK OUTPUT OR AN ANTENNA TUNER IS USED; IN THIS CASE BAND CHANGING CAN BE DONE FROM THE SHACK.
3. EVERY GOTHAM ANTENNA IS SOLD ON A TEN DAY TRIAL BASIS. IF YOU ARE NOT FULLY SATISFIED, YOU MAY RETURN THE ANTENNA PREPAID FOR FULL REFUND OF THE PURCHASE PRICE. THIS IS YOUR GUARANTEE OF FULL SATISFACTION.



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Enclosed find check or money-order for

V40 VERTICAL ANTENNA FOR 40, 20, 15, 10 AND 6 METER BANDS..... \$14.95

V80 VERTICAL ANTENNA FOR 80, 40, 20, 15, 10 AND 6 METER BANDS. MOST POPULAR OF THE VERTICALS. USED BY THOUSANDS OF NOVICES, TECNICIANS, AND GENERAL LICENSE HAMS... \$16.95

V160 VERTICAL ANTENNA FOR 160, 80, 40, 20, 15, 10 AND 6 METER BANDS. SAME AS THE OTHER VERTICAL ANTENNAS, EXCEPT THAT A LARGER LOADING COIL PERMITS OPERATION ON THE 160 METER BAND ALSO..... \$18.95

HOW TO ORDER. Send check or money order directly to Gotham. Immediate shipment by Railway Express, charges collect. Foreign orders accepted.

Name.....

Address.....

City.....Zone.....State.....



The Class of '62

Gonset sets the pace in the amateur field—*the best for you in '62!*

No doubt about it. The finest communications equipment available—this year and every year for the past quarter of a century.

COMMUNICATOR IV

MODEL #3341—2 METER TRANSCEIVER

MODEL #3342—6 METER TRANSCEIVER

MODEL #3351—220 MC TRANSCEIVER

Completely new—with 20-24 watt input, high level speech clipping and 2 watts of audio. Transmitter is crystal controlled, with provision for six crystals.

GSB-201 SSB RF LINEAR AMPLIFIER

1500 W, P.E.P. SSB-1000 W CW—400W AM. Exceptionally compact, this all new linear amplifier lends itself readily to table-top mounting. It covers 80, 40, 20, 15 and 10 meter amateur bands.

P.E.P. input is approximately twice average d.c. input.

G-76 ALL BAND TRANSCEIVER FOR FIXED OR MOBILE SERVICE

An entirely new unit with transmitter and receiver in single compact housing. AM or CW operation on 80, 40, 20, 15, 10 and 6 meter amateur bands.

GR-212 DUAL CONVERSATION RECEIVER

Variable BFO. Sensitivity: At least 6 db (S+N)/N at 1 μ v. Slide-rule type dial. Panel-mounted "S" meter.

VFO for 6, 2 and 1 1/4 METER COMMUNICATORS

Designed for use with all Gonset Communicators, including Models I, II, III and IV. Dial scale calibrated for 50, 144 and 220 mc bands.

GC-105 "GOONEY BIRD" COMMUNICATOR

2 meter complete station, self contained transmitter, receiver, power supply. Completely compatible with Gonset new model 3357 VFO or 6 crystal positions available.

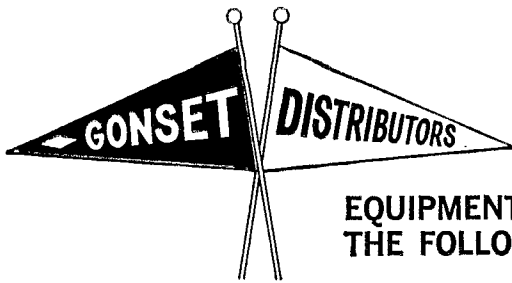
G-50 6 METER FIXED STATION COMMUNICATOR

Complete station "package" for 6 meter operation. Highly sensitive, selective superhet with "S" meter. Transmitter uses 6146 in pi network final at 40-50 watts input. Features built in VFO.

GONSET
DIVISION OF YOUNG SPRING & WIRE CORPORATION
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University Service
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Custom Electronics, Inc.
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Specialists Co.
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DENVER
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Ebinger Radio, Inc.
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Radio Product Sales Co.
1501 So. Hill Street

MANTECA
Fulton Electronics
NORTH HOLLYWOOD
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ORANGE
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PALO ALTO
Zack Electronics
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Calamar Electronics Co.
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Electronics
4113 Franklin Blvd.

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930 El Camino Real

SAN DIEGO
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SAN FRANCISCO
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1280 Market Street
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Consolidated Supply Co., Ltd.
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464 McGill Street
Payette Radio Co., Ltd.
730 St. James Street, W.

SASKATCHEWAN
SASKATOON
Radio Supply Co., Ltd.
561 Second Street

DX Contest Results

(Continued from page 51)

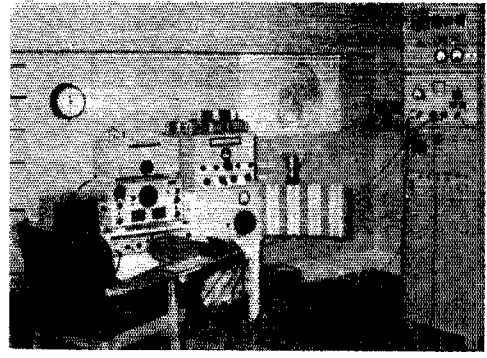
ZESJY.....43,461-33-430-A-44	UA9KER.....220-5-15-B--
South Africa	UA8KFG (UA8s EH FE)
ZS6DZ.....39,520-38-351-A-26	39,990-31-410-B--
ZS10.....12,036-34-121-A--	UA8KDA (3 oprs.)
ZS6AJO.....5376-14-128-A-5	22,083-18-110-B--
ZS2E.....4510-20-76-A-9	UA9JII (2 oprs.)
Southwest Africa	1493-13-56-A--
ZS3EW.....12,612-21-204-A-12	Turkoman
Tunyanika	UH8BI.....4690-14-112-A--
5H3IIZ.....7128-18-132-A-7	UH8BO.....1410-9-61-B--
Nigeria	Kirghiz
5N2JKJ.....163,185-45-1211-A-45	UM8KAB.....1773-9-66-A--
Ghana	UM8FZ.....95-5-7-A--
9G1DT.....12,978-21-210-A-10	India
Republic of the Congo	VU2AJ.....5473-16-114-A--
9Q5AAA.....39,990-30-445-A-9	VU2MD.....315-7-15-A--

ASIA

East Pakistan	Israel
AP5CP.....1104-8-46-A-35	4X1DH.....11,750-25-157-A--
Farosua	Kuwait
BV2A (3 oprs.) 270-5-18-B-56	9K2AM2.....17,094-22-259-C--
Iran	EUROPE
EP2BK.....55,356-42-447-A-39	Portugal
Korea	CT2AI.....121,000-10-1018-A--
HM4AQ.....10,680-20-178-A--	Germany
HM1AF.....2556-12-71-A-14	DJ2XP.....92,352-52-592-B--
Saudi Arabia	D1IKS.....52,290-42-115-A--
HZ1AB (WITYQ, W8GNCN)	DM2ATL.....26,703-27-335-A-33
55,191-27-311-B-20	DJ6RX.....22,074-26-283-AB--
Japan	DL4FT.....18,135-31-195-A-21
JA1VX.....196,456-52-1263-C-55	DJ4VO.....17,160-14-132-A--
JA1CO.....144,153-47-813-B--	DL7BK.....4023-22-61-A--
JA1BWA.....137,394-51-848-A-61	DM3VUL.....2112-16-14-B--
JA7AD.....61,152-32-637-A--	DM3ML.....1870-11-57-A--
JA6FQ.....41,290-38-363-B--	DM2BCN.....1530-15-34-A--
JA1MG.....32,935-35-314-B--	DJ2RE.....405-5-27-B--
JA1ICJ.....21,266-27-383-A-63	DL7EN.....360-5-21-B-3
JA3CKI.....20,790-30-231-A-54	DL4QF (DL4s QC QD QV)
JA1NB.....7508-18-139-A-20	120,900-18-810-B-96
JA7KY.....4719-11-43-A-11	Spain
JA1HP.....3690-15-82-A-13	EA4CE.....60,228-42-478-A-39
JA1EM.....3600-16-67-A--	EA5PI.....40,596-33-422-A-18
JA1HG.....2310-14-56-A--	EA1FZ.....34,928-37-319-A-35
JA2DN.....124-12-54-B-9	EA3NQ.....19,835-23-301-A-24
JA6AKW.....980-10-33-A--	EA3LB.....4960-16-107-A-30
JA6QA.....930-5-62-A-21	EA3GF.....2490-10-83-B-4
JA7OJ.....800-10-23-A-7	EA5EF.....344-8-15-A-10
JA8AC.....656-8-28-A-7	Ireland
JA7AKQ.....624-4-52-A-2	EI6GD.....102,735-45-764-A-47
JA8GE.....434-7-21-A--	EI9J.....98,580-53-620-A-22
JA1FWQ.....128-4-36-A-13	EI9F.....6-1-2-A--
JA1FTL.....365-5-25-A--	France
JA1DRC.....270-15-18-A-5	F9MS.....170,901-51-1117-A-48
JA2AR.....225-5-15-A-2	F8VJ.....162,074-53-1020-A-45
JA6HC.....210-5-14-A-4	F8ZV.....98,300-50-677-A-39
JA1XO/3.....182-6-9-A-4	F2PO.....18,630-27-230-A-35
JA1EFE.....120-5-8-A-3	F8TM.....17,370-30-193-A--
JA7JW.....108-3-12-A-1	F2BQ.....8460-30-141-A--
JA1CUM.....52-2-9-A--	F3II.....1512-14-36-A--
JA3CD.....3-6-A--	F2NZ.....234-6-13-A--
JA6BCV.....30-2-5-A--	England
JA4ARR.....18-2-3-A-2	G4CP.....261,300-60-1506-A-54

Ryukyu

KR6AR.....201,131-59-1140-ABC-65	CR2C.....158,058-58-941-A--
KR6LJ.....50,061-41-407-C-30	CR2Q.....151,800-50-1012-A-51
KR6LY.....19,110-29-220-A-15	CR3YV.....96,192-48-608-A--
KR6LD.....1728-9-64-B-2	CR3APN.....15,975-25-213-A--
KR8AU.....108-2-18-A-6	CR3NV.....3876-12-111-A--
Antic Russian S. F. S. R.	CR3MWZ.....1428-12-40-A-9
UA6JU.....12,104-17-238-A-23	Northern Ireland
UA8KDA.....10,620-12-295-B--	GI3OQR.....206,640-56-1230-A-62
UA8AG.....9216-16-192-B-13	GI5UR.....17,136-28-205-A-25
UA8KSB.....4392-12-124-B--	Wales
UA8KFG.....3708-12-104-B--	GW3JI.....198,432-53-1248-A-86
UA8LH.....3456-16-72-A--	GW3JJE.....3146-13-81-A-7
UA89B.....3276-14-78-A-26	Hungary
UA9XG.....2340-12-65-A--	HA6NI.....4485-23-195-A--
UA90B.....1485-15-33-A--	
UA9FM.....1820-11-40-B--	



100 watts to a 6146 made big noise for Wales' c.w. certificate winner GW3JI with scads of contacts logged on 80, 40, 20, and 15 meters. A terrific effort for 198,432 points!

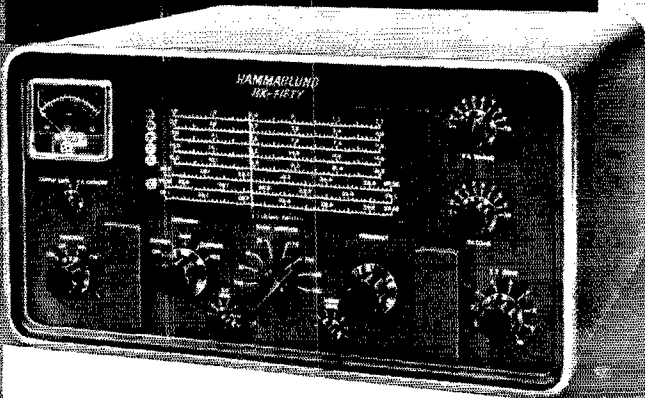
HA5KFZ.....1092-7-52-A--	OK2KJU.....756-12-21-A--
HA4KYB.....570-5-38-A--	OK3SK.....501-6-28-B--
HA5KFR (3 oprs.)	OK2KGV.....405-5-27-A--
16,030-15-356-B--	OK1NW.....234-6-13-A--
HA8KCI (3 oprs.)	OK1ZV.....96-4-8-A-2
648-8-27-A--	OK1AJT.....18-4-4-A--
	OK1NK.....12-2-2-A--
	OK3KMS (2 oprs.)
	60,996-46-448-A-40
	OK2KRO (2 oprs.)
	3683-11-112-A--
	Belgium
	ON4IGL.....186,420-52-1202-A-43
	ON4XG.....21,783-27-269-A-28
	ON4CF.....4596-12-139-A-11
	ON4UO (ON4s TJ UO)
	21,141-29-243-A-23
	Denmark
	OZ7G.....60,760-10-581-A-65
	OZ2NU.....25,813-29-299-A--
	OZ1H.....22,770-33-230-A-30
	OZ2LX.....11,760-35-112-B--
	OZ3SN.....6840-15-152-B--
	Netherlands
	PA8ADP.....116,466-47-826-A-18
	PA8LOU.....112,050-50-756-A-41
	PA8LV.....52,644-11-128-A--
	PA8VY.....27,360-32-285-A-20
	PA8WAC.....15,825-25-211-A-9
	PA8YN.....6240-16-130-A--
	PA8PLX.....1356-11-132-A--
	PA8NIR.....1030-10-35-A--
	Sweden
	SM5CCE.....12,496-32-443-B-23
	SL5LZ.....36,963-37-338-B--
	SM5UU.....24,072-34-236-B-24
	SM6APZ.....12,572-28-150-A-12
	SM3CUN.....11,220-17-226-B-17
	SM3CPM.....7820-17-154-A-26
	SM3BYJ.....6126-18-119-B-13
	SM6CWP.....5187-19-93-A--
	SM5BEU.....1725-15-105-B-12
	SM5HT.....3948-14-96-A-8
	SM5BPT.....3036-11-92-B--
	SM3BNV.....2892-9-106-A-7
	SM3BRA/5.....2576-16-54-A-7
	SM7TV.....1833-13-47-A-9
	SM5KV.....1771-11-51-A--
	SM5CAK.....1056-11-32-A-3
	SM43AT.....360-6-20-A-2
	SM6CMU.....144-12-12-A-6
	SL6BH (SM5CTV, SM6BUB, SM7CUY) 2761-11-84-B-8
	Poland
	SP6FZ.....79,840-48-611-B-42
	SP9ADU.....14,121-23-211-A-11
	SP8JL.....12,246-26-157-A-25
	SP4JF.....10,325-25-138-AB-11
	SP3KBJ.....5733-13-148-B--
	SP8YA.....5475-25-74-A-6
	SP8HR.....3888-24-54-A--
	SP8HT.....3570-14-87-B-7
	SP5ADZ.....3514-14-81-A-8

(Continued on page 108)

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<i>Crete</i>		
SV0WZ.....10,224-16-215-A-12	<i>Costa Rica</i>	TI2CAH.....223,788-68-1097-A--
<i>Greece</i>		
SV0WT.....5798-13-150-C-6	<i>Antigua</i>	VP2AB 19.....100,548-49-684-A-15
SV0WG.....4564-14-109-A-12		
<i>Iceland</i>	<i>Bermuda</i>	VP0EP.....68,985-27-861-A-20
TF3AB.....42,174-33-426-A--		
TF2WVF.....384-8-16-A--	<i>Nicaragua</i>	YN1AA.....307,368-72-1423-A-23
<i>European Russian S. F. S. R.</i>		
UA1DH.....39,585-35-381-B--	OCEANIA	
UA4PA.....13,300-25-184-B-29	<i>New Caledonia</i>	FK8AH.....225-3-25-A-1
UA4SM.....5888-16-123-A--		
UA3PC.....4788-14-114-B--	<i>Wake Island</i>	KW6DG.....203,776-64-1127-C-27
UA3TP.....3040-19-54-B--		
UA4DM.....1469-13-58-A--	<i>Marshall</i>	KX6AJ.....30,870-36-343-A-17
UA1NA.....882-6-50-A-3		
UA3KWA (3 oprs.)	<i>Australia</i>	VK2GW.....205,632-64-1071-A-65
15,174-18-281-B-25		
UA4KHW (2 oprs.)		
9090-15-203-B-20		
UA1KGC (3 oprs.)		
1035-15-90-B--		
<i>Ukraine</i>		
UB5MZ.....7728-23-112-A--		
UB5KNF.....2692-16-54-A--		
UB5DP.....2496-13-64-A--		
UB5KAD.....270-5-15-B--		
UB5KED (3 oprs.)		
17,199-27-213-B--		
UB5KAI (2 oprs.)		
336-7-16-B--		
<i>White Russian S. S. R.</i>		
UC2KAA.....3960-12-111-A-10		
UC2AR.....1944-9-72-A-3		
UC2KAB (3 oprs.)		
15,210-30-169-B--		
<i>Georgia</i>		
UF6KAE.....1195-5-82-B--		
<i>Armenia</i>		
UG6QL.....3913-13-103-B--		
UG6AW.....792-12-22-B-2		
UG6KAA (UG6 AV WW)		
620-10-21-B--		
<i>Moldavia</i>		
UO5AA.....7632-24-106-A--		
UO5BM.....2568-12-80-A--		
<i>Lithuanian</i>		
UP2NV.....18,870-17-374-A--		
<i>Estonian</i>		
UR2BV.....5694-13-153-A--		
<i>Rumanian</i>		
YO3KPA.....25,200-25-336-B--		
YO7DL.....2808-12-78-A--		
YO9IA.....1599-13-41-A--		
YO8HL.....927-9-35-A--		
YO3AC.....360-6-20-A--		
YO9IHI.....420-4-10-A--		
<i>Yugoslavian</i>		
YU2OZ.....16,124-29-194-A-28		
YU2ADE.....2904-8-105-A-5		
YU7KMN.....1242-9-46-A-5		

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FP8BX.....219,240-56-1305-A--	<i>Panama</i>	HP1IE.....210,276-54-1298-A-41
<i>Honduras</i>		
HR1MM.....18,858-31-479-B-22		
<i>Puerto Rico</i>		
KP4CC.....328,866-59-1858-B-50		
KP4CH.....17,541-23-700-A-33		
<i>Greenland</i>		
OX3DL.....187,203-61-1023-B-18		
KG1BM.....14,280-17-281-B-7		
OX3KW.....14,064-16-293-A-7		

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W6KPC.....22,311	VE4NO.....10,800
W7DQM.....11,092	VE5RU.....8370
W8CUC/KL7.....96	VE6HG.....8520
K8PUU.....120,744	VE7EH.....14,994

<i>Venezuela</i>	YV5BFZ.....6783-19-120-A--
YV5AGD.....435,150-75-1934-B-59	<i>Paraguay</i>
YV5ANT.....269,445-55-1633-B-52	ZP9AY.....266,104-62-1434-A-70
YV5BKA.....15,618-19-274-A-16	

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W3ALB.....96,480-126-268-C-70	W3IYE.....59,994-101-198-C-56
W3KAT.....80,100-108-278-C-70	W3AYD.....52,962-91-194-C--
W3EQA.....70,471-109-219-C-15	W3EIV.....23,256-68-114-C-24
W3GHD.....37,518-74-169-B--	W3ZQ.....3936-32-41-A-10
W3CCS.....31,464-69-152-C-85	W3FNC.....3510-30-39-C-8
W3FDH.....30,996-84-126-B-1	K3CBW.....1650-22-25-A-10
W3ZSS.....30,222-73-138-C-30	W3TMZ.....1440-20-24-A-3
W3PHL.....22,935-55-139-C-18	W3DRD.....765-15-17-C-7
K3AIG.....22,110-67-110-C-22	K3JZJ.....540-12-15-B-4
W3NMI.....13,489-47-97-C-1	W3BVO.....48-4-4-B-3
W3OCU.....13,489-47-97-C-1	W3MSK (5 oprs.)
W3NMI.....12,150-45-90-C-19	384,153-231-557-C-70
W3BYX.....10,125-45-75-B-15	W3GRF (5 oprs.)
W3QIR.....9944-48-76-B-19	163,680-155-352-C--
W3GRS.....6120-34-60-A-15	<i>Southern New Jersey</i>
W3IMV.....6120-30-68-B-15	W2FXN.....157,035-145-361-C-41
W3WUH.....5664-32-59-B-15	K2DCA.....99,946-121-276-C-37
W3QLW.....5100-34-50-B-15	W2XJ.....60,738-106-191-C-17
W3HHK.....2184-23-36-A-12	W2QKJ.....55,821-57-151-B-27
W3QNZ.....2280-29-38-C-19	WA2JZS.....16,254-63-86-B-15
W3JNA.....624-13-16-A-7	W2DMR.....12,500-50-82-C-25
K3HYT.....588-14-14-B-9	WA2FIY.....4524-29-52-A-12
W3LHZ.....360-10-12-A-5	W2SDO.....3348-31-36-C-18
W3EYW.....270-9-10-C-2	K2HBY.....396-11-12-A-4
K3JCT.....12-2-2-A-1	K2ODZ.....120-4-10-B-5
W3KFO (K3JGJ, W3KFO)	W2BEI.....48-4-4--
132,678-126-351-C-36	K2OXX.....27-3-3-C-3
W3GHM (W3G, GHM, KDF, NOH)	WA2KWS (2 oprs.)
73,161-91-268-C--	2625-25-35-B-18

(Continued on page 110)

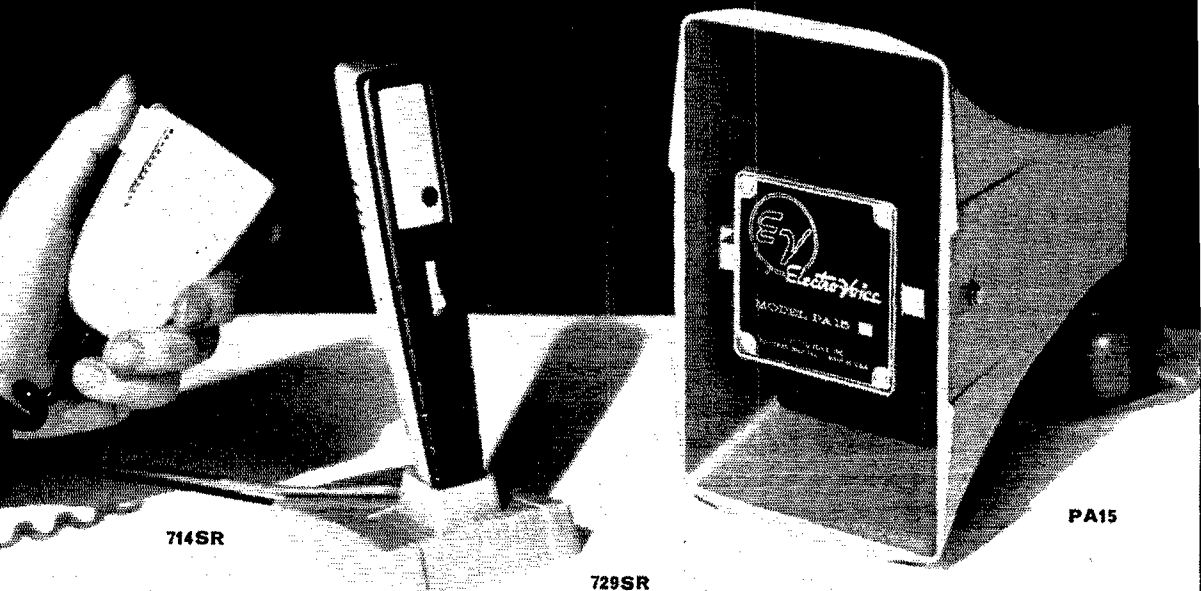


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 W2URH... 1587-23-7- B-5
 K2TQC... 147-7-7- B-3
 W2AKIZ... 48-4-4- A-3

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 K3ELL... 396-11-12- B-11

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 W9GAI... 16,000-64-81-AC-48
 K9YVY... 11,115-57-65- A-1
 K9BJM... 1794-23-26- C-4
 W9EJ... 720-13-20-AC-4
 W9CRN... 504-12-14- A-1
 W9WIO... 468-12-13- B-4
 K9ZQW... 300-12-13- A-9

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 W9KXK... 10,656-48-74- C-24
 W9EQD... 9555-49-65- C-22
 W9YTT (4 ops)... 1,853-137-223- C-59
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 K9IKL... 34,320-89-143- C-50
 K9VTC... 986-17-20- B-7
 W9LJN... 972-18-18- A-15

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 W5GFT... 1254-19-22- A-16

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 W5AJV... 10,789-58-82-AC-22
 K5QXL... 3127-43-63- A-28
 W5LDH... 6273-41-51- C-10

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 K5MDX... 255,816-209-108- B-73
 W5CKY... 300-10-10- C-2
 W5HKU... 80-5-6- A-6

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 W4OQG... 363-11-11- A-3

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 W8MRS... 1071-17-21- A-14
 W8NWO (W8s NWO TWA ZTJ)... 222,717-187-397- C-90
 W8NGO (4 ops)... 159,852-154-346- B-76

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 W8NXF... 57,645-105-183- B-43
 W8BAX... 50,193-99-169- B-51
 W8BF... 36,792-84-146- C-19
 W8BKQ... 34,446-79-158- C-21
 W8SMQ... 29,151-79-123- B-27
 K8RMI... 27,528-74-124- C-35
 W8HJK... 27,059-69-131-AC-1
 K8LNL... 18,240-64-95- B-32
 K8PYD... 7913-41-65-AC-18
 W8JAJ... 6472-38-48- C-8
 W8TTN... 2025-25-27- A-10
 K8NMG... 1737-17-27- A-1
 W8AJW... 1311-19-23- A-4
 W8GMK... 1134-18-21- A-12
 W8PIN... 714-14-17- A-4
 W8IBX... 75-5-5- B-1

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 W2NQR... 1980-22-30- B-5
 K2DEM... 48-4-4- C-3

N. Y. C. - L. I.
 K2IEG... 174,960-162-362- C-1
 W2WZ... 117,612-121-324- C-31
 K2FC... 68,478-101-228- C-30
 K2DGT... 58,328-90-216- C-18
 W2BQM... 46,550-95-164- C-83
 W2SUC... 29,008-66-146- C-19
 W2HMJ... 12,513-43-97- C-8
 W2GKZ... 12,495-49-85- C-10
 K2YOR... 8120-34-60- B-0
 W2ESO... 5700-38-50- C-6
 W2ZKC... 2208-23-32- C-4
 W2TUR... 2001-23-29- C-3
 W2ARJA... 390-10-13- A-5
 W2RDD... 370-9-10- C-1
 W2AFT... 243-9-99- B-2
 W2ELZ... 3-1-1- B-2
 W2TNX (W2s PLO TNX)... 34,599-69-167- C-28

Northern New Jersey
 W2CYX... 25,803-61-141- C-25
 W2FFQ... 7680-40-61- B-48
 W2JKH... 2415-23-35- B-12
 W2JNX... 2184-24-33- B-16
 W2MNV... 714-14-17- -
 W2OGC... 360-10-12- A-3
 W2KAZ... 27-3-3- A-2
 W2IDM... 12-2-2- A-1

MIDWEST DIVISION

Kansas
 W9ALA... 2349-27-29- C-12

Missouri
 W9BTD... 61,404-119-172- A-57
 W9NFA... 36,984-92-134- C-36
 K9UWZ... 4185-31-45- A-1

Nebraska
 K9WSR... 675-15-15- A-12

NEW ENGLAND DIVISION

Connecticut
 W1BIH... 80,784-132-206-AC-1
 W1ICP... 1500-30-50- C-1
 W1AYR... 3948-28-47- B-5
 W1WY... 765-15-17- C-1
 W1AW... 297-9-11- C-1

Maine
 W1GKJ... 17,472-64-91- A-27
 W1FDL... 319-11-11- B-10

Eastern Massachusetts
 W1ONK... 351,800-200-586- -74
 W1NJL... 22,898-72-106- B-30
 K1MID... 22,718-67-113- C-31
 K1DID... 15,488-58-89- B-1
 W1EJD... 9848-48-67- A-16
 K1MLO... 7800-40-65- C-12
 K1MEM... 1824-19-32- B-5
 W1PLF... 231-7-11- B-9
 W1HKK (5 ops)... 296,241-191-517- C-77

Western Massachusetts
 W1RIF... 54,614-83-226- C-32
 W1LIB... 17,160-55-104- A-11

New Hampshire
 K1RTB... 108,480-120-316- B-52
 W1FZ... 84,032-104-276- C-1

Rhode Island
 W1QCO... 14,274-39-122- B-18
 W1DDD (K1LZW, W1s AUT YRC)... 714-14-17- C-5

Vermont
 K1POA... 5425-31-61- A-13

NORTHWESTERN DIVISION

Alaska
 W9CUC/KL7... 96-4-8- B-1

Montana
 W7QPK... 9576-42-76 C-27

Oregon
 W7DLR... 702-13-18- C-6
 W7DIS... 27-3-3- A-11

Washington
 W7DQM... 11,092-47-79- A-20
 K7HJN... 1890-20-31- C-28

PACIFIC DIVISION

Santa Clara Valley
 K6UXV... 9324-42-74- B-25
 W6HOC... 8526-49-58- C-15
 W6WX... 558-14-14- -
 W6ISQ... 180-6-10- C-3
 W6HVN... 84-4-7- C-5

East Bay
 K17DTB/6... 6042-38-53- C-1
 W6KG... 4182-34-41- C-16
 W6PQW... 2310-22-35- B-11
 W6IPH... 1080-18-20- A-4

San Francisco
 K6OHJ... 12,324-62-79- C-20
 W6EYL... 2772-28-35- A-31
 W6GQK... 969-17-19- C-7
 W6ERS... 405-9-15- A-30

Sacramento Valley
 W6GRX... 17,160-65-88- C-46
 W6SLA... 13,983-59-79- C-22
 W6OMR... 5100-34-50- C-25
 K6TIP/6... 147-7-7- C-13

San Joaquin Valley
 W6UDR... 4692-34-46- C-9
 W6BVM... 2373-21-38- -
 W6UJ... 288-8-12- C-1

ROANOKE DIVISION

North Carolina
 K4BUJ (5 ops)... 41,280-80-172- C-72

South Carolina
 K4BMS... 95,226-118-269- C-47
 W4DPN... 216-8-9- B-8

Virginia
 W4KFC... 249,039-201-413- B-71
 W4BVV... 242,688-192-422- C-85
 W4JFE... 104,247-117-207- B-66
 W4ZM... 18,600-50-124- C-1
 W4NJF... 17,280-64-90-AC-30
 W4RQR... 15,045-59-85- C-8
 K4ORQ... 15,000-50-100- C-15
 W4HVU... 13,965-57-82- B-32
 W4VBX... 13,377-49-91- C-1
 K4WUY... 1275-17-25- A-6
 W4GF... 1152-16-24- C-1

West Virginia
 W8UMR... 13,005-51-85- A-16

ROCKY MOUNTAIN DIVISION

Colorado
 W9AGX... 972-18-18- A-1
 W9CDP... 243-9-9- B-2

New Mexico
 K5IKL... 61,632-96-214 B-52
 W5PQA... 9384-46-68- C-19
 K5UYF... 1701-21-27- B-1

SOUTHEASTERN DIVISION

Alabama
 W4LZW... 61,938-111-186- C-48
 W4OEP... 32,250-86-125- -
 W4RLS... 27,975-75-125- B-30
 W4DS... 3330-30-37- -
 K4KJD... 507-13-13- A-6

Eastern Florida
 K4WIG... 61,800-100-206- C-60
 W4LJU... 18,915-65-97- A-52
 W4PJV... 15,660-68-90- C-50
 W4EEO... 1863-23-27- B-10
 W4RJL... 3-1-1- A-1

Western Florida
 W4SHW... 1968-24-28- A-12

Georgia
 W4BFR... 16,926-62-91- C-20
 K4TEA... 10,530-54-65- A-1

SOUTHWESTERN DIVISION

Los Angeles
 W6KPC... 22,311-67-111- C-36
 W6AIPV... 7215-37-65- A-28
 W6BWWQ... 5670-42-45- C-22
 K6YRA... 4992-32-52- C-1
 W6CYV... 2940-28-35- C-5
 W6AAYF... 1575-21-25- C-12
 K6ICS... 588-14-14- B-7
 K6UPX... 540-12-15- ABC-7

San Diego
 W6AHGC... 540-12-15- B-3
 W6VZU... 36-3-4- B-1
 K6MGP... 27-3-3- -
 K6YYJ... 5-1-1- B-1
 K6EVR (K6EVR, W6GFE)... 198,000-165-100- C-80

Arizona
 WTENA... 702-13-18- A-8

San Diego
 K6CQF... 3-1-1- A-1

WEST GULF DIVISION

Northern Texas
 K5GGU... 2178-22-33- A-45
 W6MOY... 468-12-13- A-1
 W5IIV (K5PPT, W5IIV)... 10,764-52-69 A-22

Southern Texas
 K5JZY... 21,868-71-104- B-75
 W5SU... 13,542-61-76- B-35
 W5ELN... 2520-28-30- A-25
 K5LGH... 243-9-9- A-2
 W5ARJ... 108-6-6- B-1

CANADIAN DIVISION

Maritime
 VE1BC... 83,763-123-235- ABC-50

Quebec
 VE1ADA... 9660-35-92- A-14
 VE1DB... 540-12-15- -

Ontario
 VE3ES... 23,064-62-124- A-31
 VE3PY... 6810-38-60- A-1
 VE3PE... 1500-20-25- B-4
 VE3CF... 2300-10-11- A-5
 VE3DGX... 243-9-9- B-7
 VE3BWW (VE3s BWY EWY)... 29,520-80-123- C-30

(Continued on page 170)



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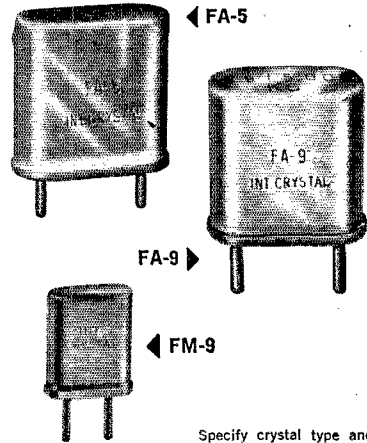
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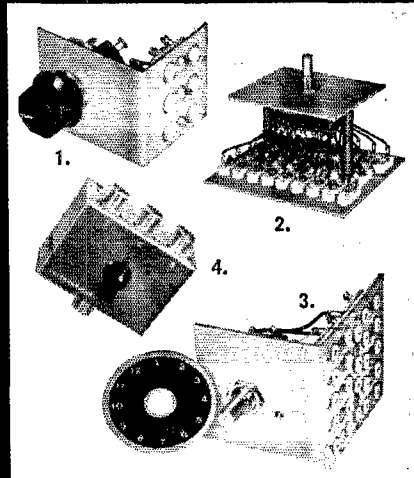
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	* 1500 - 1799 kc	Not available
	* 1800 - 1999 kc	Not available
	2000 - 9999 kc	2000 - 9999.999 kc
	10000 - 14999 kc 15000 - 20000 kc	10000 - 15000 kc 15001 - 19999.999 kc
Overtone (3rd)	10 - 14.99 mc	Not available
	15 - 29.99 mc	20 - 49.99 mc
	30 - 59.99 mc	60 - 99.99 mc
Overtone (5th)	60 - 75.99 mc	60 - 89.99 mc
	76 - 99.99 mc	90 - 100 mc
	Not available	101 - 109.99 mc
Overtone (7th)	100 - 137 mc	110 - 137 mc

* Allow three to four day processing.



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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

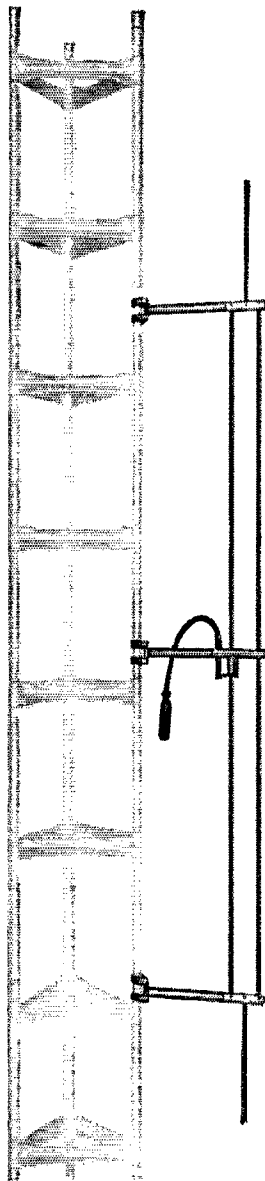
EASTERN PENNSYLVANIA—SCM, Allen R. Breiner, W3ZRQ—SEC: W3DUL, RM: W3EML, PAM: K3-BIU, V.I.F. PAM: W3SAO. New appointees are W3MIF as OO and W3FLP as OPS. K3RTH lost his high-voltage transformer during the CD Party. W3FEY is looking for skeds to the south on 432 Mc. K3NLW has been missing out on traffic because of the loss of his antennas. Vacation did not stop W3ID from his regular bulletin skeds. W3GRS has to learn c.w. all over again because of his new electronic keyer. W3AHZ added a 2-meter ground plane to his expanding antenna farm. K3GNN is now up to 58 awards, Juniata and Mifflin County 6-meter mobiles furnished communications for parades at the Port Royal Centennial. A new linear was installed by W3LC. W3JXX found the 30-watt Field Day rigs work OK for traffic handling. K3MVO is sporting a new Valiant II, K3JNX and the Susquehanna Valley group have formed a 6-meter traffic net. Interested operators, contact W3SGI, RD 1, Sunbury, Delaware County AREC has formed a 2-meter net and W3FLP is looking for recruits. K3MNT/3 is now operating out of Saylor's Lake. Aside from hamfests and traffic, W3MVS is plagued with an avalanche of rig breakdowns. W3EML still is trying to figure out who all the League Officials were visiting his shack on July 28. At the meeting on that date a Pennsylvania State AREC plan was formulated and is now past the embryo stage. It was printed and mailed to all ECs and emergency key personnel. Anyone interested may obtain a copy by sending requests to the SEC or SCM. A portion of the plan calls for an AREC net drill every Sun, morning on 3850 kc, at 9 a.m. and 3610 kc, at 9:30 a.m. Its purpose is to train newcomers and pass traffic. Details are to be announced. Officers of the Philmont Mobile RC are: W3CDY, pres.; W3GOW, vice-pres.; K3DJE, treas.; K3GNJ, secy. W3DUI is now 70 years young. Net managers please note. Daylight Saving Time ends Oct. 27. Traffic: W3CUL 4112, W3EML 946, W3VR 768, W3IVS 513, K3MNT 330, W3FLP 250, K3JNX 212, W3RW 182, W3ZRQ 162, K3MQE 137, K3JJG 100, W3HNK 94, K3MVO 90, W3UJU 80, K3ONW 75, W3JXX 69, W3AXA 40, W3NNL 30, K3BHU 22, W3TPI 21, K3-ANU 19, K3JHF 17, W3OY 14, K3HTZ 13, K3CAH 11, W3LC 10, K3RFH 10, W3BFF 7, W3ADE 4, K3AKN 4, K3POU 4, K3CNN 3, W3DUI 3, W3EU 3, W3AHZ 2, K3JJJ 2, W3EEN 1, W3GJA 1, K3LKR 1.

MARYLAND-DELAWARE—DISTRICT OF CO-LUMBIA—SCM, Andrew H. Abraham, W3JZY—Asst. SCM Del.: Skip Nelson, K3GKF. SEC: W3CVE, RM: K3JYZ for MIDD Traffic Net which meets on 3649 kc. (new frequency) at 0000Z daily. The M1D8 (slow) Net meets on 3649 kc. at 0130Z daily; MEPN on 3820 kc. M-W-F at 2300Z on Sat. and Sun. at 1800Z, Del. Eng. Net meets on 3905 kc. at 2230Z on Sat. Del.: Major activity for K3AXW is v.h.f. K3BWK handled three messages. K3GKF is having a rough time getting DX-QSL cards for 7-mc. contacts. W3JFR checks into MEPN-DEM-N-PFN. K3OZI sent his traffic report via MDD. 86 messages handled. M-DC.: W3BWT and W3AKB are remodeling. Ep had a wonderful time while in Florida. W3BKE says that the new transmitter works fine on 160 meters. W3CDQ has the Apache modified and is on 7-mc. W3CVE is busy getting the AREC nets working for the hurricane season. K3DCP reports that W3YYB is back on the air from a new QTH. Jean Pierre and NYL Monique (FG7XL) visited with several amateurs in the Baltimore Area. W3YZI and K3DCP received their WAA Award from Brazil. K3DNU has his DXCC certificate. W3EBF lost his "A" frames and window antenna in the storm. The AEPN handled 17 pieces of traffic. W3ECP was hospitalized in July for surgery. Van is back on the air after a fast recovery. W3GNQ lost his tower and had a hard time getting it

back up. W3JQK is very busy with some interesting work. Art is having trouble with his final. He reports that Dave White (retired R.L.) in Baltimore, is putting up a 100-ft. steel tower to support several amateur beams. W3OBY is busy topping trees for a new antenna. K3GYE made his first CD Party. W3IVC also made his first CD Party. K3JYZ put out a very fine MDD Net bulletin. The MDD Net will hold a picnic at Patapsco State Park. K3KHA is in the military service. W3LE says there is plenty of 10-meter phone activity in the Baltimore Area every night. Lou and K3MLX and NYL had the extreme pleasure of visiting Prince Naungyal (AC3PT) and his fiancée, Miss Hope Cook, in Washington, D.C. W3RMD has a new Apache. K3JDF is working RTTY. W3IF is gathering certificates. W3LVC, from the FARC, reports 1163 contacts from the Field Day site. K3LLR got his General class ticket. K3NAS sends in a report. K3NZV is busy working DX. W3OHI built up a power supply for general use. K3ONW has an Apache. K3QFG has his CP-25 sticker. Phil works at the National Bureau of Standards. K3SET has completed a v.f.o. W3TN made the BPL. K3TLE is the end of the Northern MD Brass Pounders of Taneytown, Md. K3LTA is a new ham in Carroll County. W3YZI had Jean Pierre and NYL Monique (FG7XL) as guests. W3ZAQ is preparing for the fall activities. W3ZNV is making some changes in his antenna farm. K3CZK is off the air because of power line QRM. K3PRN, K3DXO and K3LLR sent in nice OES reports. W3ZCP is on 6-meter sideband. The Washington County RACES group is getting acquainted with the new Poly-Comm 6- and 2-meter sets. Traffic: (July) W3TN 264, K3QFG 127, K3JYZ 94, K3OZM 86, W3IVC 79, K3MQP 52, K3OWX 32, K3WBJ 28, W3JFR 27, W3ZNV 26, W3EOY 24, K3OSX 23, W3ECP 17, W3QZZ 15, W3NO 11, W3BKE 10, W3OHI 10, K3AXW 8, K3DCP 6, K3LLR 5, W3EBF 4, K3EWK 3. (June) K3KPZ/3 126, K3KPZ 5, K3AXW 2. (May) K3JYZ 51.

SOUTHERN NEW JERSEY—SCM, Herbert C. Brooks, K2BG—SEC: K2ARY, PAM: W2ZL, RMs: W2HDW and WA2VAT. New appointment: W2ZVW, Beverly, as EC for Burlington County. Ed is ex-SCM of N.N.J. NJ Phone and Traffic Net totals for July: 31 sessions, QNI 456, traffic 127. K2CPR still is chasing awards. W2BZJ, Pennington, has been assisting W2RG with the N.J. CD Sunday C.W. Net on 3534.5 kc. New operators in Cumberland County, reported by WA2ARI, are WA2YYC, WA2YYD, WA2OYW and WR2APT. WA2WLN is a new NJN member. WA2KWB, Yardville, is planning more power on 15-meter phone. NJN's annual outing was attended by 22 members and many guests. The net's July totals were 31 sessions, QNI 561, traffic 362. WA2GQZ is manager. SCARA news: K2HBA is vacationing in Europe. K4SRQ/2 is expected back from Florida. WA2KWM is home from the hospital. K2CIR is SCARA's new editor-in-chief. WA2LBI has moved to Princeton. The following Gloucester Co. ARC members furnished communication during the Pitman July 4th Parade: K2GZH, W2KE, K2AQL, W2PLD, K2UUY and W2TSG. W28UA has been assigned work in Washington, D.C., for a short time. W2PAU, Westmont, expects to be in France for the next year. Congrats to K2BZK, who has received his flying license. We wish W2JAV a speedy recovery from a recent illness. K2MOV, Delaware, is home on a visit from ReI-Namur (Marshall Ids.) K2ECY, Raritan (KX6AM), expects to return home soon. The NJRA and Gloucester Co. ARC have plans for bigger and better hamfests this year. It is hoped that next month we will be able to announce the appointment of an EC for Camden and Gloucester Counties. Traffic: (July) W2RG 159, W2ZJ 33, K2CPR 19, W2BZJ 17, WA2WLN 10, WA2ARJ 9, WA2-BLV 8, WA2KWB 2, K2SOX 2. (June) K2SOX 18.

WESTERN NEW YORK—SCM, Charles T. Hansen, K2HUK—SEC: W2LXE, RMs: W2RUF, W2JZB and W2FEB, PAM: W2PVI, NYS C.W. meets on 3670 kc. at 1900; ESS on 3590 kc. at 1800. NYSPTEN on 3925 kc. at 1800; NYS C.D. on 3010.5 and 3993 kc. at 0900 Sun. and 7102.5 kc. at 1930 Wed.; TCPN 2nd call area on 3970 kc. at 1900; IPN on 3980 kc. at 1600; 2RN on 3690 kc. at 0045 and 2345 GMT. Appointments: WA2KQK OO, W2QHQ ORS, W2IDM OES, Endorsements: K2UJZ and W2ZRC ORS, K2BIB OPS. The NYS C.W. Net held a
 (Continued on page 114)



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 Maximum power input 500 watts
 Flexible terminal extension 18 in. of RG-8A/U
 Termination Type N male with Neoprene housing
 Lightning protection Direct ground

Mechanical:

Radiating element material 6061-T6 aluminum
 Insulated support material Phenolic
 Feed point insulator Polycarbonate
 Overall length 10 ft. at 50 Mc, 16½ ft. at 30 Mc
 Spacing from tower 8"
 Rated wind velocity 100 MPH
 Lateral thrust at rated wind 45 lbs. at 30 Mc
 Weight 15 lbs. at 30 Mc

Stainless Steel Mounting Clamps supplied to mount antenna on round tower legs 1 in. to 1½ in. diameter.

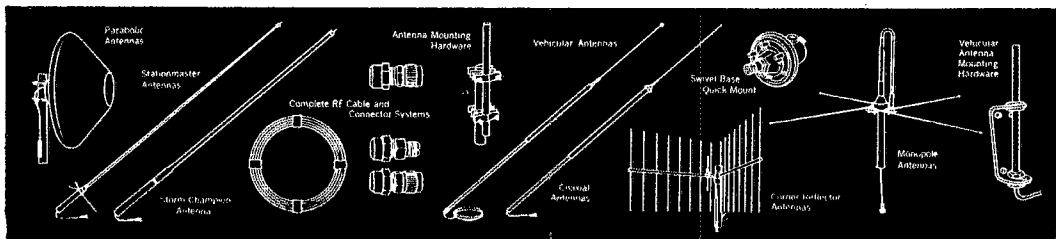


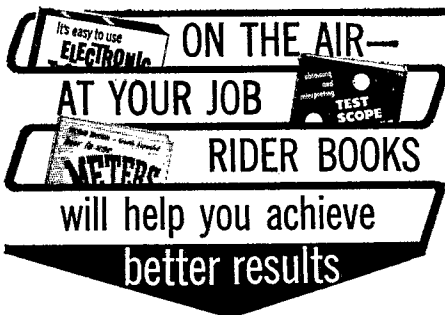
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Station Activities

(Continued from page 112)

picnic at W2MTA's QTH. The net handled 6700 messages last year; also donated to the ARRL Building Fund. Clara, W2RUF, has resumed the post of Net Manager of NYS C.W. Many thanks to W2FEB, who steps down after a fine job. W2ZRC is the proud papa of a baby girl. K2HUK and W2EPU attended the North County RC Picnic in Norfolk. It's roundup time in Syracuse (v.h.f.). The first part of October is reserved for the largest v.h.f. meeting in the U.S. Check your reservations now. In case you haven't heard, amateurs are no longer required to monitor for Conelrad. NYS hams will be receiving instructions and forms for ordering 1963 call letter license plates in the mail within a few weeks. Novices excepted. A word of caution; under present regulations all holders of special plates can have the privilege rescinded for one speeding violation or similar offense. Enjoy your new plates and let's show the people of New York State that radio amateurs are safe drivers. W2EMW has 265 countries worked with 30 watts. Are you causing unnecessary QRMI by running a full gallon to talk crosstown? W2WEE became a member of the QCWA. The RARA RAG plans to expand its coverage to include club meeting information for the Niagara frontier area. Club Secretaries in the Buffalo, Niagara Falls and Lockport areas are requested to send information to W2AKND, 153 Mason Ave., Rochester 15, two weeks prior to the first of the month in which the meeting will be held. Material for this column such as hamfests, picnics, etc., or for the hamfest calendar in QST, must be sent in at least two months prior to publication. (Example: this is being written the first week of August for the October issue). Traffic: (July) W2OE 461, W2FEB 116, W2RUF 112, K2SIL 97, K2RTQ 80, W2HIOH 73, W2RKU 62, W2KQC 39, K2OFV 37, K2AFE 28, W2RQF 24, W2MTA 20, W2HSB 19, W2-QHQ 18, W2DAC 12, K2HOH 10, W2UCI 10, K1BVI/ 2 9, W2ZOI 8, W2UFI 8, W2KZQ 7, W2GLA 5, K2MQA 4, W2EMW 2. (June) W2GLA 10.

WESTERN PENNSYLVANIA—SCM. Anthony J. Mroccka, W3UHN—SEC: W3WRE. Asst. SEC: W3KUN. RMs: W3KUN and W3NUG. The WPA Traffic Net meets Mon. through Fri. at 2400 GMT on 3585 kc. The Keystone Slow Speed Net (KSSN) meets at 2330 GMT on 3585 kc. Mon. through Fri. We wish to thank W3WRE for her efforts as SEC this past year and the swell support on WPA and 3RN traffic nets. W3WRE and W3WRC are moving to W6-Land. In the near future we expect to have a replacement for the SEC job. K3AKR reports copying four Oscar II passes and K3CFA reports copying thirty-five Oscar II passes. K3OQQ is a new General around Butler. K3RGY now is mobile on 6 meters. The Steel City ARC reports via *Kilovatt Harmonics*: K3-AXO and K3RKW are a father-and-son team; the club station (W3KWV) received the trophy from the Breeze Shooters for winning its recent ground wave contest. W3SYY is accepting a teaching position at St. Francis College, Loretto, Pa. W3TIF is back on 15-20-meter s.s.b. with a Tribander beam. The group from W3PIE recently held a Good Fellowship Dinner. The Etna RC reports via *Oscillator*: W3TOC has an all-band vertical; K3RAD is on 2 meters; K3GQX now is mobile on 6 meters. K3TUP is the son of W3NRE. W3UFU now is on 2 meters. The Bedford County ARC reports via *Shorts*: The club's picnic at Shawnee State Park was a success with W3YA as a guest; K3KYT has his 40-meter beam on a tower now. Coke Center RC reports: W3JW has a KWM-2 in his new car; K3NOU is touring the country; W3THY soon will be on the air from the Uniontown County Home. The Centre County AREC/RACES 6-Meter Net assisted the Alpha Fire Company in its annual parade. Anyone desiring Field Day Forest County QSL cards for working W3LMM/3 may have same by dropping W3LMM a card. The Western Penna. Mobilizers will have its Sixth Annual Fall Round-up Fri., Oct. 19, 1962, at 8 P.M. in the Wilkesburg Boro Building, Ross and Hays St., Wilkesburg, Pa. Mobile stations can check in on 29.360 and 50.4 Mc. Traffic: (July) W3WRE 189, W3KUN 117, W3NEM 88, K3DKK 51, W3OEO 51, K3EDO 41, W3IYI 39, W3LSS 38, W3MFB 30, K3HKK 27, W3NUG 21, K3HID 11, K3COT 5, W3UHN-5, W3-SMV 4, W3KWO 3. (June) W3NEM 84.

CENTRAL DIVISION

ILLINOIS—SCM. Edmond A. Metzger, W9PRN —Asst. SCM: Grace V. Ryden, W9GME. RM: W9USR. PAM: W9RYU. EC of Cook County: W9HPG. Section net: ILLN, 3515 kc. Mon. through Sat. at 1900 CDT. Many of the gang in this section are enjoying their vacations at this time and our RM has reported that she and her OM (K9OJG) and three harmonics have returned after three weeks in Alaska. W9TEM, the Chi-

(Continued from page 113)

Power Lost in Coax is Gone Forever!

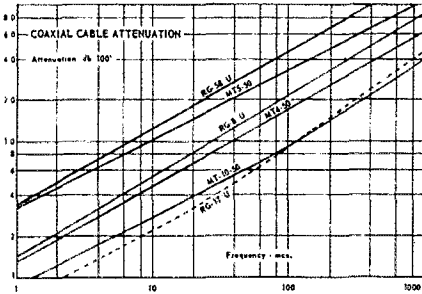
Reduce This line loss with

Mosley Lo/Ten



**Coaxial
Cable**

See article by Michael Ferber in April, 1959, Q.S.T.



- ▶ Light Weight!
- ▶ Higher Tensile Strength!
- ▶ 30% Lower Attenuation!
- ▶ 20-Year Life Expectancy!
- ▶ Suitable For Direct Burial!

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MT 5-50

MT 10-50

Similar To

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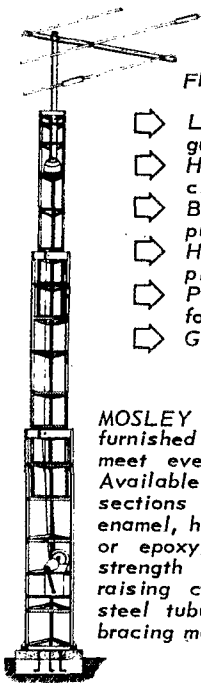
Lo/Ten is manufactured for Mosley by *Times Wire and Cable Company*, Division of International Silver Company, and is familiar to coaxial cable users as T-Line. Lo/Ten is distributed by Mosley through exclusive arrangement with *Times Wire and Cable Company*.

NEW! COMPLETE LINE OF MOSLEY TOWERMASTERS



FEATURES:

- ◁ Low friction section guides!
- ◁ Heavy steel safety clips!
- ◁ Ball bearing metal pulleys!
- ◁ Hinged steel base plate!
- ◁ Pre-drilled rotor plates for mast!
- ◁ Geared raising winches!



MOSLEY TOWERMASTERS are furnished in many designs to meet every ham requirement. Available in 10 and 20 foot sections with triple coated enamel, hot dipped galvanized, or epoxy resin finish. Extra strength galvanized aircraft raising cables, high strength steel tubular leg and channel bracing members.



THE Mosley CM-1

receiver

is the first low priced receiver with double conversion and crystal controlled first oscillator. It is also the first receiver with 5 dual-purpose tubes of one type and 4 semi-conductor diodes which perform all functions usually requiring 12 or more tube sections. See this really new design concept in amateur receivers now on display at your dealer.

CM-1 Receiver Amateur Net \$ 182.70

CMS-1 Speaker Amateur Net \$ 16.95

ASK YOUR DEALER FOR FULL SPECIFICATIONS

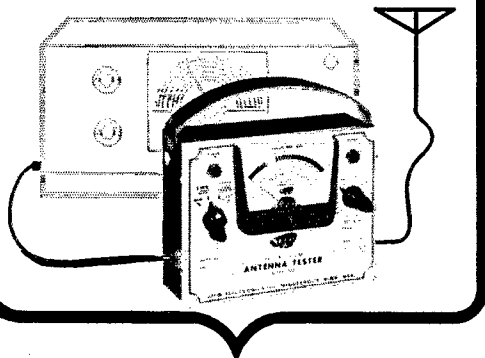


OR WRITE

Electronics Inc.

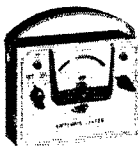
4610 N. LINDBERGH BLVD. - BRIDGETON, MISSOURI

SECO 520 ANTENNA ANALYZER



HAMS . . . this Seco 8-point antenna and power amplifier check gets more from your rig

1. Is my antenna radiating all available power?
2. Are there "Hot Spots" in my feed line?
3. Is my antenna-feed line match actually tested, or only computed?
4. What is my Forward Power?
5. What is my Reflected Power?
6. Do I have high RF resistance in splices, connectors and in series with the radiating element?
7. What is my RF Power Amplifier Efficiency?
8. How much power am I wasting in relays, filters and feed line?



\$42.95 NET

Analyze Your Antenna and RF Power Amplifier With the SECO 520

3 VSWR scale interpretations—1:1 to 8:1 Standing Wave Ratio—antenna system efficiency—GOOD-BAD scale.

3 Forward and 3 Reflected Power scales accurately calibrated (3.5 to 180 mc)—ranges 0-10, 0-100 and 0-1000 watts.

Directional Coupler and Meter are matched-pair, accurately calibrated.

Single compact case 6 3/4" x 2 1/4" x 5 1/4"—no charts or graphs to read.

Scales are calibrated for 50 ohm line (simple multiply reading by 1.4 for 72 ohm lines).

Continuous duty—may be left in line as RF monitor.



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ago Area Radio Club Council's station, operated at the International Trade Fair at McCormick Place and gave a very interesting display of ham radio. K9OOC is now W0EEE and stationed at MSM, Rolla, Missouri. W9APK took a bride Aug. 25. Congratulations. W9GFF received his W4VO certificate. A new Novice call in Decatur is WN9EOG. W9VPE has received a QSL card confirming his c.w. contact with Major Yuri A. Gargarin, the first man to conquer space. K9ZHA has left for Susanville, Calif., to attend forestry school. WN9DKL is now General Class. W9BPG has a new 2-meter rig and a telerec antenna with a 50-ft. tower. The SRO DX Club had a celebration on W9ZNY's new boat *Honey Too* with W9-BWM, K9AZB, W9SRJ and W9YTQ as guests and members who made DXCC this year. K9JAW has a new Mosley TA-33 and an HT-32. W9JLD is mobilizing with a Gonset 76. W9PBY runs RTTY regularly now on all bands. K9VQA is now operating on 1215 Mc. and would like to hear from others interested in this frequency. K9CNE was home on leave from the Navy. K9DDA finally made W.A.S. The Northwest Amateur Radio Club of Evanston provided communications for the Boy Scout Council Camporee between the campsite and the Evanston office. A new Chicago call heard was WN9ELN. K9MTE has a new rotary dipole for 10-15-20 meters. W9YYG, W9MAK, W9QQQ, W9FET, W9NPC and W9NIU were scorers in the April CD Party. New appointees are K9QIZ as OO, W9EJA and W9BPG as OESs. The North Central Phone Net handled 155 messages, the ILN traffic count was 250 and the CAEN was 182 for the month of July. ILN's June total was 316 and the CAEN's April traffic was 202. This column's sympathy is extended to the family and friends of W9KDP, who passed away recently. K9EZF and W9AKY are recipients of the BPL Award. Traffic: (July) K9EZF 608, W9AKV 252, K9UOV 233, W9USR 191, W9JXV 190, K9KZB 122, K9DRS 100, K9JSV 73, K9OCU 72, W9-MAK 54, K9OAD 54, W9DEW 48, K9OQT 44, W9AZ 41, K9UCG 41, K9LXG 14, K9CRT 14, W9PRN 12, K9RAS 12, K9TVA 2, W9IDQ 1, K9RHU 1, W9UCZ 1, (June) W9ISR 288, W9IDA 135, K9VUL 24, K9TVA 12, K9RAS 10.

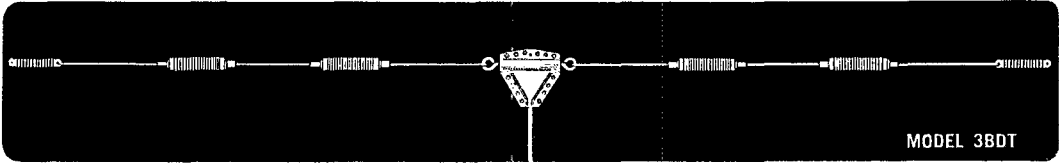
INDIANA—SCM, Donald L. Holt, W9FWH—Asst. SCM, Clifford M. Singer, W9SWD, SEC, W9SNQ. PAMs: K9KTL, K9CRS, K9GLL, RMs: W9TJ, W9-VAY, K9WET, Net (scales all times in GMT.): IFN, 1300 daily and 2300 M-F on 3910 kc.; ISN (s.s.b.) 0300 daily on 3920 kc. QIN (training) 0000 M-W-F on 3745 kc.; QIN daily at 0300 and RFN at 1300 Sun. on 3656 kc. New appointments: W9BEU, EC of Putnam Co.; W9JSV, EC of Parke Co.; K9EYF, EC of Carroll Co.; K9DXQ as OES. With deep regret the following Silent Key is reported: John J. Doherty, K0YOX of Geneva, Ind. The QIN would like more stations to participate in the south and central portions of the state. There are 596 stations on 52,525 wide-band fm, nationally of which 292 are in Indiana, reports WACTU-9. W9AVW is a new General in Harrison Co. The IRCC Annual Picnic, because of bad weather, was held in a covered bridge at Highland Park with a tremendous turnout. Sunny skies blessed the WVARA annual picnic at Turkey Run State Park with a tremendous turnout. W9BYL is the new station of W9AB. Those making BPL: K9ARW, W9JOZ, W9RE, K9IVG, W9TT and W9NZZ. Making BPL this month makes 119 BPL's for W9NZZ. *Amateur radio exists as a hobby because of the service it renders.* July net reports: IFN 289, JSR 516, QIN 227, QIN (training) 2, RFN 106, Hooper V.H.F. 103, 9RN 968 with Indiana represented 100 percent. QIN Honor Roll: W9TT, K9EZF, K9SGZ, K9ARW, W9ZYK, K9DNY, K9WWJ. Traffic: W9JOZ 1838, W9RE 9 770, W9NZZ 479, W9ZYK 143, W9TT 288, K9RWQ 142, K9ARW 139, K9IVG 139, K9SGZ 133, K9DHN 118, W9QYQ 100, W9BUQ 76, K9ZLA 76, K9KTL 64, K9CRS 61, W9MM 60, K9BHH 59, K9OET 58, K9YIC 51, W9OG 49, W9FWH 43, K9GLL 38, W9PMT 38, W9DOK 31, W9EJW 28, K9ZLB 27, W9AWH 26, W9RTH 25, W9BTZ 24, W9SNQ 24, K9KFM 22, K9WET 21, W9BVL 19, K9DUV 19, W9ETI 17, W9QLW 15, K9DZW 13, W9BDP 12, W9CC 10, K9HYV 10, W9DKR 9, K9WWJ 9, K9HYV 8, W9MTE 8, K9MWC 8, W9YX 8, W9DZC 7, K9EYF 6, W9AVW 5, W9AQW 4, K9SST 4, W9YEW 4, K9VBA 3, K9YZC 3, W9AB 2, W9AAL 2.

WISCONSIN—SCM, Kenneth A. Elneter, K9GSC—SEC, W9BCB, RMs: W9VTK and W9VHP. PAMs: W9NGT, W9NRP and W9SAA. Nets: WIN, 3535 kc. 0115Z daily, WSSN 0030Z 3535 kc. Tue. through Sat., BEN 3950 kc. 2400Z daily, WSSN 3985 kc. 2400Z daily. Endorsed appointments: W9ANS, W9UFY and W9KWJ as ECs; W9CXY, W9LFK and K9GDF as ORS; W9NRP and K9GDF as OPSs. K9UTQ received his Armed Forces Day certificate. W9AOI is building a 75-meter hand-held transceiver. W9OTL is working out very well with his 2-watt mobile. W9PBC and K9YKL are active on 2 meters. The Milwaukee AREC, along with the Oshkosh Club, provided communications for the American Legion Convention at Oshkosh. K9HBT

(Continued on page 118)

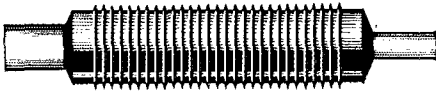
hy-gain multi-band DOUBLET

... the doublets that are different!



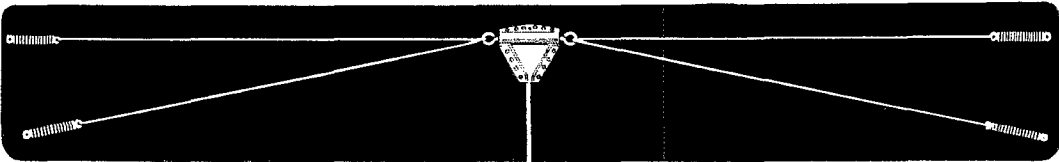
TRAP DOUBLET takes up to 500 Watts AM, 1 KW PEP

Here's the answer to unsurpassable doublet performance—new Hy-Gain Trap Doublet—engineered to deliver true half wave resonance at every design frequency. Featuring a matched set of Hy-Gain Slim Line traps for each band, various sections of the doublet are effectively isolated so that a true electrical $\frac{1}{2}$ wave length exists on all bands. Antennas can be adjusted for phone or CW. SWR 2:1 or less at resonance on every band. Fed with 52 ohm coax (not supplied).



Traps used in doublet are reliable Hy-Gain Slim Line traps that have merited user acclaim from daily use in over 100,000 units throughout the world. Complete unit guaranteed to equal the performance of any multi-band doublet system and to withstand winds up to 100 mph. The Hy-Gain Trap Doublet is the ideal system for any Ham with multi-band capability.

Trap Doublet for 10-15-20-40-80M, Model 5BDT.....	\$34.95
Trap Doublet for 10-15-20M, Model 3BDT.....	\$17.50
Trap Doublet for 10-15-20-40M, Model 4BDT.....	\$24.50

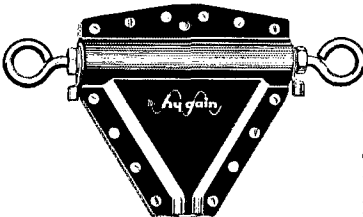


TRAPLESS DOUBLET takes unlimited power on 40 & 80M

Complete antenna system, single 52 ohm coax fed, and constructed of copper clad steel stranded wire, cyclocac insulators and coax center insulator assembly. Fan configuration eliminates traps, increases band width and is virtually impervious to all weather conditions. Takes unlimited power. SWR less than 2:1.

Fan Doublet for 15-40-80M, Model 2BDP.....	\$19.95
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HY-GAIN CENTER AND END INSULATORS



Lightweight, strong, weather-proof Hy-Gain doublet insulators are available separately for the

Amateur who wants to construct his own doublet. Insulators are molded from high impact cyclocac plastic. Center insulators accept either $\frac{1}{4}$ " or $\frac{3}{8}$ " diameter coax cable and are furnished with iridite-treated hardware in accordance with military specs. 7" end insulators feature heavy serrations increasing leakage path to approximately 12".

Center Insulator, Model CI, Wt.: 4 oz.....	\$ 3.95
End Insulator, Model EI, Wt.: 3 oz.....	\$ 1.00

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A Word from Ward . . .



"LET'S TALK ADVERTISING"

A while back the F.C.C. got into a rhubarb with a manufacturer of razor blades. It seems said manufacturer ran commercials on TV showing his blade actually shaving the sand off a sheet of sandpaper. Piped the F.C.C., "Not true!"

That distinguished branch of the U.S. government scratched and scraped with sand paper and razor blade and finally came to the conclusion that no razor blade can make a piece of sand paper smooth as silk. And the blade manufacturer had to withdraw his sensational commercial.

You have no idea what lengths some people will go to, to sell their products. A luggage manufacturer pitched his suitcases out of an airplane to prove their durability. A pen maker launched a nation-wide campaign for his ballpoint with the assertion that it could write under water. I remember a watch manufacturer who once tied his watch to the fly-wheel of a railway engine to show how rugged his timepiece was. Then came along another watchmaker who decided that that test was too sissified. He attached his watch to the business end of a pneumatic hammer—and let the hammer rip.

These shenanigans might warm the cockles of an advertising man's heart—but they leave me cold. Who cares a hoot whether a suitcase can withstand a fall of 5,000 feet? What I want to know is—how'll it pack my clothes?

Here, at little old Adirondack Radio, we don't play those games with our customers. When we advertise, we say what we mean—and mean what we say. Every year more and more customers approve our methods, for which we say "Thank you"—

Sincerely,

Ward J. Hinkle W2FEU

We also have a constantly changing line of good used equipment. Be sure to write for our latest "used" list.

Before you buy or trade, wire, write, call or drop in to see WARD, W2FEU

ADIRONDACK RADIO SUPPLY

185-191 W. Main St., Amsterdam, N. Y.

Phone: Victor 2-8350 Ward J. Hinkle, Owner

is working 6-meter scatter. W9DFS has a new antenna on 6 meters. W9IHR has a new G-76. W9HAG has a new homebrew v.f.o. W9HQT is putting up a new beam for 20 meters. K9GSC worked KP4 on 6 meters. K9MLD has a new HT-31 linear. W9KQB received the "Royal Order of Ariers" from the Morning Watch Net. K9PKQ is active on 6 meters. The c.w. nets are looking for more members, and liaison stations who can work both the phone and c.w. nets. W9MWQ is working on his tower and beam. K9LGU and W9SAA made the HPL in July. Traffic: (July) W9DYG 613, W9KQB 531, W9SAA 171, K9LGU 156, K9GSC 145, W9VHP 145, K9AIR 90, K9-BLN 89, W9YT 49, K9TRB 45, W9WGN 44, K9BWL 39, W9CBE 37, K9DOL 36, W9MWQ 28, W9NRP 23, W9DWJ 22, K9GDF 18, K9ZMU 18, K9WVM 13, W9VIK 12, K9-BOJ 11, W9IHN 10, W9HPC 9, W9AOL 8, W9IOW 8, W9OTL 7, W9UEB 5, K9WIE 4, K9OCA 3, K9UTQ 3, (June) W9AOL 2.

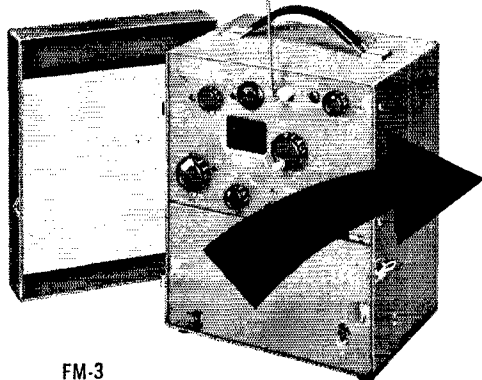
DAKOTA DIVISION

NORTH DAKOTA—SCM, Harold A. Wengel. W0-HVA—SEC: W0CAQ. PAM: K0TYY. RM: K0QWY. The North Dakota 75-Meter Phone Net reports for July, 19 sessions with 362 check-ins; 47 pieces of normal traffic and 11 informal handled. The net control stations for the summer were K0JNB, K0QYD, W0BHF, W0GQD, K0MHC, K0MPH and K0AJW. W0YCL was Acting PAM because K0TYY was off the air. A new call in Williston is W0DQG. K0TFB has returned to Williston after a year's active duty with the National Guard. K0IVQ has received his second HPL award. Between 80 and 90 hams turned out for the picnic at Garrison sponsored by the Minot Amateur Radio Association. Traffic: (July) K0IVQ 574, K0TFB 34, K0JNB 34, W0IRN 24, K0GGI 14, W0AYL 12, W0YCL 9, K0MPH 4, W0CZL 3, W0MQA 2, K0YWD 2, W0BHT 1. (June) W0IRN 38, W0ESC 5, K0MPH 5.

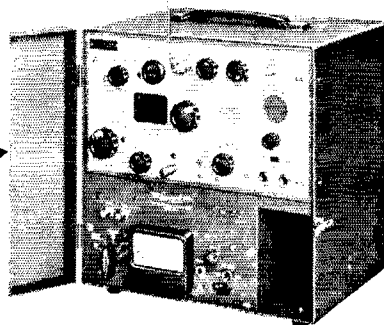
SOUTH DAKOTA—SCM, J. W. Sikorski. W0RRN—SEC: W0SCT. W0SCT has not missed a monthly report as SEC in the 37 months of his appointment. W0ENC sends in regular reports as OES. New equipment: K0WEI and K0WEN have a Swan 120 mobile; W0FNM has a Gouset mobile; W0BXQ purchased a GR-212 for the club; W0CWF and W0CWFY have an HQ-170; also an HQ-170 for W0GCWY and W0-CWZ. New General Class tickets: K0FKJ, Dell Rapids; K0IBX, W0AGD, W0ABW and K0JHI, all of Sioux Falls; W0BET, of Brookings. W0OCPY and W0OCPY are newly-licensed at Platte. K0YAA, Brookings, earned his first commercial phone. W0LXQ purchased an Apache from K0TKN, who is going mobile. K0VIZ renewed his OO Class IV certificate. W0OFCF, Fulton, received his General Class ticket. W0PMA's activities were curtailed by the mumps. Traffic: (July) W0SCT 270, K0BMQ 50, W0AOY 26, K0BSW 26, K0ALT 18, K0QYV 15, W0BQS 10, W0GWV 9, K0KOY 8, K0ZBJ 6, K0ZTV 8, K0GZZ 5, W0FJZ 4, W0YVF 4, K0HQB 2, W0NNX 2, K0YJF 2. (June) K0ZTV 25.

MINNESOTA—SCM, Mrs. Lydia S. Johnson. W0KJZ—Asst. SCM; Charles Marsh. W0ALW. SEC: K0KKQ. PAMs: W0GCR, K0EPT. RMs: K0UXQ, W0ADN. MSSB Net Mgr.: W0HEN. All ECs and AREC members please take note: Lloyd Pearltree, K0KKQ, of Pine City, is our new Section Emergency Coordinator. K0ORK, an OO, made HPL and in his monthly report listed thirteen violations. The Rochester Radio Club's Annual Picnic had an attendance of 125 hams and their families in spite of the cold, rainy weather. The Mankato Radio Club Picnic also had a good turnout with about 130 in attendance. W0AIIH has moved to Virginia. K0PIZ is building a linear using a pair of 813s. By the time you read this our former phone NCS and EC, W0TCK, will be married. OES K0AKC vacationed in VE-Land. K0EWF had surgery in Rochester. The father-son team, W0AS CAI and CAH, put up a folded dipole antenna. W0BBY spent the summer at Lake Washington. W0TUS/VPO can be heard from Walker. A new Novice in Janesville is W0DEF. K0ZZR does a lot of 20-meter work with our boys in the service and sees that they get an opportunity to talk with their families at home. W0TJA is building a plate-modulated 6-meter rig for his home station. W0TYH travelled in the Northwest and attended the World's Fair in Seattle. K0OTH returned from his summer stay in Colorado. W0BPE rebuilt his antenna system. W0CRQ and family and Asst. SCM W0ALW and family vacationed in the Black Hills of So. Dakota. K0S VPJ and UOZ. YL operators, along with W0ATO, can be heard on s.s.b. W0JMI, Clara, is one of our "OT" YL operators, still active on phone nets. Traffic: (July) K0ORK 512, W0ABU 253, W0BIV 226, K0WPK 193, K0RCF 152, K0JFJ 125, W0HEN 124, K0VTG 121, W0KJZ 100, W0ATO 88, W0ADN 76, W0KLG 46, K0VPJ 34, W0ALW 33, W0UAX 31, K0GCG 30, K0ZKK 23, K0MGT 20, W0WMA 20, W0GCR 18, (Continued on page 120)

YOUR GERTSCH FM-3 FREQUENCY METER CONVERTED TO MEET FCC REQUIREMENTS



FM-3
Frequency Meter



FM-3A 2-Way Communication
Frequency Meter

— factory conversion provides direct reading
of all allocated channels in the 150-170 mc band

All Gertsch Model FM-3 frequency meters can now be factory-converted to measure and generate *all* assigned channels in both 150-170 mc, and 450-510 mc bands.... with $\pm .00025\%$ (2.5ppm) accuracy. Instrument features a single 1-mc crystal which is easily standardized against WWV.

Converted units can also be operated as standard FM-3 instruments through 20 to 1,000 mc, at .001% accuracy.

Conversion includes: an all transistorized converter module, a new front panel and carrying case, and a built-in amplifier (with speaker). Also, a front-panel jack allows input of external audio signals, such as those from a Gertsch Model DM-3 deviation meter. Space for a DM-3 is provided in the case.

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The fellow who already has a membership well knows that his investment helps support an organization that represents his hobby at all international radio conferences, in the Congress, and before domestic regulatory agencies, an organization that publishes over a dozen books and booklets to help the beginner get started and the licensed ham advance himself, an organization that sponsors conventions, contests, and awards such as DXCC, WAS, and the RCC, and an organization that is completely governed and run "By and For the Amateur."

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WAOAM 16, KOEPT 14, WOTHY 11, W0BUO 9, KOZRD 9, KOPIZ 5, KOONI 4, KOUBA 4, KOFLT 3, KOLWK 3. (June) W0BIV 204, W0KLG 76, KOPII 27, KOZKK 18, KOUBA 1.

DELTA DIVISION

ARKANSAS—SCM, Odia L. Musgrove, K5CIR—PAM: W5DYL, RM: K5TYW. Another month has come and gone and fall is just about here, and with the cooler weather activity should begin picking up on all the nets. The OZK Net and the RN5 Net needs more c.w. operators. Activity on the Arkansas Emergency Phone Net has been good all summer but little traffic was handled. The net met 26 times with 1001 checking in. It is with much regret that we list W4CV among the Silent Keys. He was one of the oldest operators in this part of the country and was a member of the Arkansas Emergency Phone Net. All members are requested to attend the South East Arkansas Amateur Radio Club's annual election meeting. Traffic: K5SGG 30, K5IPS 8, W3NTV 5, K5ABE 4, K5CIR 2, W5DYL 2.

LOUISIANA—SCM, Thomas J. Morgavi, W5FMO—The Springhill Radio Club is making application for its club station license and is requesting the call W5GHF, held by Robert E. Barr, Louisiana SCM, 1950-1954. K5ELM, K5QNK and K5WOD are working on mobile sideband units. W5DYY is the first YL in New Orleans to get DXCC and CHC. Shirley uses a 100V driving a Johnson KW Desk to a 20-40-meter beam, RTTY, too, and a Swan for mobile. W5BLE is back on v.h.f. with a homebrew Nuvistor converter and a modified Johnson 6N2 for s.s.b. use with his 100V. W5BGL is back from Alaska. K5UYL had his OIRS-OPS appointments renewed. W5NDV was reapointed OIRS-OPS. W5CEZ is back home after a nice vacation visiting harmonics in N.J. and taking in W1AW while up east. K5ESW is operating 1/2 from Ocean City, N.J., with a Sixer and a three-element beam. We were sorry to hear of the passing of W5BUZ. K5OVR reports that radio club plans are progressing in Alexandria. K5CTR has the 3-400Z final completed. K5CZV has been very active on MARS. W5KAT has noticed some connection between 2-meter band openings and severe fading in the 4000-Mc. commercial microwave band. W5KRX has been active handling traffic. The Jefferson ARC has taken possession of a real FB clubhouse in Metairie. A new Novice in Metairie is W5DUL, Helen, who is building a DX-60. W5NUH has been reapointed OPS. W5SUM is working on a new Pelican. W5CFW is listening to s.s.b. more and more. W5BV has trouble tuning his new store-bought final. Make sure that your ARRL appointment is current. Check the expiration date. Traffic: (July) W5CEZ 238, K5QXV 230, W5MXQ 55, K5CZV 26, W5FEA 8, W5NDV 6. (June) W5KRX 176, K5QXV 143, W5CEZ 116.

MISSISSIPPI—SCM, Floyd C. Teetson, W5MUG—SEC: K5SQS. Hamfest activity in the section is really booming. The Jackson gang just put on a real humdinger. The Saturday dinners are being well attended too. W5ALL is now on from Pontotoc sporting a General Class ticket. He won the Novice Roundup in our section the last time out. K5RUO reports that K5ZRK is a new licensee from Jones County. Larry is 12 years old and can be heard on 6 meters. K5RUO and K5UBI are running 100 watts on 6 meters now. New appointments in the section are K5RUO as OO, K5WSY as PAM and OPS and W5AMZ as OIS. Other appointments are available. Write in for them. K5YTA reports that the Magnolia Net had 504 to check in last month and hundred 20 formal and 75 informal pieces of traffic. K5FNV is on from Brooksville. K5MDX reports more DX was worked via W0MLY. Nice going. Dave. Traffic: K5MDX 2, K5WSY 1.

TENNESSEE—SCM, David C. Goggio, W4OGG—SEC: W4BWK. PAMs: W4LLJ, K4WWQ, RM: W4OQG. Traffic: TN, 3635 kc. 47 QTC; TP, 3980 kc. QTC 60; ETPN, 3980 kc. QTC 48. New officers of the Loudon County ARC are K4UFD, pres.; K4DAA, vice-pres.; K4WRV, secy. Many thanks to the secretary, Betty Blankenship for the monthly club news. New appointments: K4WUH as EC; W4LLJ and K4WUH as OPS. We are looking for OIS applicants. Anyone on v.h.f. with good monitoring equipment to make detailed observations for analysis by ARRL is eligible. With deep regret we report W4BQK, Jonesboro, and W4CV, Memphis, as Silent Keys. Hamfest attendance: Whitehaven (Delta) 204, Crossville (Oakridge) 155 and Kingsport (Bay Mt.) 122. Coming events: Oct. 6-7 the S.E.T. Alert. All ECs, please report your activities to W4BWK. Oct. 13-15, C.W. C.D. Party; Oct. 20-22, Phone C.D. Party. All appointees are eligible. We are pleased to announce that for the first time in ten years, all appointees in this section hold a valid current appointment. The new manager of the Sideband Net is K4WWQ, president of the Delta Radio Club. W4UVU is building a new
(Continued on page 122)



great response

Naturally. This smart ham is using a University Model 70. It's dynamic! Now his QSO's are more frequent with better quality. You'd be surprised at the compliments he gets. He's also improved his SSB transmissions . . . found the perfect budget-minded way to increase peak power and intelligibility. And he doesn't have to swallow this microphone to be heard. All he does is sit back, relax and speak normally. The Model 70 does the rest. Why not let it do the same for you. Comes complete with integral 15-foot 3-conductor shielded cable, Model SA10 slide-on stand adapter and cloth carrying bag. Check the 'specs'. No other dynamic of its type can match the great Model 70! Only \$29.95*

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445-Mc. TV converter. K4JXG would like to hear from all interested in starting an RTTY section net. Address 1641 Kendale (Memphis), EC W4VNU reports the Roanoke County ARC assisted the Kingston Boat Races on 6 meters. OBS K4KYL soon will complete a stacked 10-over-10 on 144 Mc. Your SCM would like information on the correct name, mailing address, name and address of the president, name of the secretary and meeting night of each Tennessee club. Support your local emergency net or state section net. Amateur radio operates for the public's service. Traffic: K4AKP 889, W4PL 792, W4ZJY 68, W4OQG 65, W4PQP 57, W4OGG 33, W4PFP 32, W4LLJ 30, W4MXF 27, K4AQA 26, K4OLK 26, K4WWQ 24, K4WUH 15, W4ZG 14, W4JVM 12, K4VOP 11, W4VTS 11, K4TAX 10, W4HPN 8, K4LTA 7, W4TYV 6, W4TIO 6, K4CPC 5, K4JXG 4, W4SGI 2, W4BUV 2, W4VNU 1.

GREAT LAKES DIVISION

KENTUCKY—SCM, Elmer G. Leachman, W4BEW. SEC: W4BAZ, PAM: W4SZB, RM: W4CDA, V.H.F. PAM: K4LOA. New antennas are going up, rigs are being rebuilt and numerous hamfests are being held. Six-meter activity continues to grow. Ashland (W4AXN) contacts Lexington (W4AXM) also W4AAJ, W4HFKI, K4WLV, K4TTL, W4JNW. K4VEZ has contacted W4AOZ, K4ZUU and W4VLA. K4LOA, our good PAM, should be able to set up relays via these stations. Western Kentucky reports via K4WOL. We need more contacts. RM W4CDA says the going was rough this summer. K4GSU is starting his junior year of medical school at U. K. K4KIS is Asst. EC for Boyle County. W4BAZ wants coordinated activity among all ARRL appointees. The SCM does also. Adv suggestions? The Eastern Kentucky Amateur Radio Society (EARS) has a membership of over thirty and is going strong, says W4APU, reporting for the secy. K4HHG still is traffic champion with a tie in to all major regional nets for cross-country traffic. Feed it to him, boys. K4WJI attended Field Day in Louisiana with W5AVT. Former SCM W4JUI is building more s.s.b. gear and is going mobile on 20 meters. The MKPN has an early session (6:30 A.M. EST) for early birds—later session at 8:30 A.M., all on 3960 kc. Traffic: K4HHG 118, K4KWQ 61, K4DFO 36, W4CDA 17, K4LOA 13, W4TSF 12, W4KJP 11, W4EON 10, W4BEW 9, W4VDN 9, W4CQG 8, K4WJI 2.

MICHIGAN—SCM, Ralph P. Thetreau, W8FX—SEC: W8LOX, RMs: W8EGI, W8QQQ, W8FWQ, W8KMQ, PAMs: W8CQU, K8LQA, V.H.F. PAM: W8PT. Appointment: W8WVL as ORS. K8JQP is hospitalized and partly paralyzed from a stroke. K8AEB has a new 75S-3 and a Valiant II. This OT goes back to 1914. W8PCR lost his Hi-Gain vertical by lightning. The EARL still issues "Tin Lizzy" Awards. Contact K8PCD on this. 60 percent of these are on v.h.f. Most clubs now take color slides of their FD activities. Many clubs now have regular transmitter hunts during the summer. During FD, W8ACW worked all bands except 6. K8EFO, ex-W8YIZ, and K7KCH, ex-W8BVY, were back in Michigan on visits. Sorry cannot report all the radio picnics held this summer! W8BAN thinks that 6-meter men not using s.s.b. are missing a good thing. W8DTZ says that: The "5 O'clock Country Cousin Clam Bake" is an informal 10-meter net, Fling Area, that runs from 5 to 6:30 P.M., mostly mobile. W8EFF, K8UOI and K8TXI are sparkplugs, and 42 different stations have checked in, with some DX. "Project Monitor," same group, monitors this 10-meter band from early morning to 9 P.M.; to help out-of-town mobiles through the Flint area. W8NOH/6 is on 14.075 at 9 P.M. EST. Glad to hear that W8CRM is getting over his heart attack. Recently attended a nice U.P. Hamfest at Munising with over 200 present. K8YQF and K8YQE (father and son) and W8UJC are on 432-Mc. TV with W8MIPR nearby ready. W8PT has a good sked nightly with W9AAG on 432 Mc. W8MBH says that 11 stations in this area are using RTTY, a.s.k., on 50 Mc. K8PBA now has 900 watts on 144 Mc. all modes. Mrs. W8VPC is doing fine after an operation. It's about time that W8EGI junked that 61.6 buffer! K8GOU suggests that ARRL special membership certificates be issued for each 5 years of consecutive membership. W8EMD is working on a new shack on his "Aurora Acres." Traffic: (July) K8ELLR 230, W8LXJ 147, K8KMQ 142, K8PKU 71, W8BEZ 57, K8QKY 52, W4DNE 47, W8HKT 46, W8EC 39, K8TFE 36, W8FX 35, K8ZZV 34, W8EGI 28, K8NJW 26, K8QLL 21, W8TBP 19, K8VDA 17, W8AFV 14, K8IUZ 12, K8KQV 12, K8GOU 11, K8GJD 10, W8ACW 7, W8AUD 6, K8IZF 6, W8RTN 5, K8KYV 2. (June) K8PKU 113, K8QKY 32, W8MAI 4, W8CNT 1.

OHIO—SCM, Wilson E. Weckel, W8AL—Asst. SCM: J. C. Erickson, W8DAE. SEC: W8HNP, RMs: W8BZZ, W8DAE, W8VTP and K8ONQ. PAMs: W8VZ, K8KSN and K8UNB. The Ohio Phone and Buckeye Nets lost an
 (Continued on page 124)

NEW Sonar - MONO-BANDER



SSB transceiver for any one Amateur Band 80 to 10

- 50 db unwanted sideband suppression; and 60 db carrier suppression
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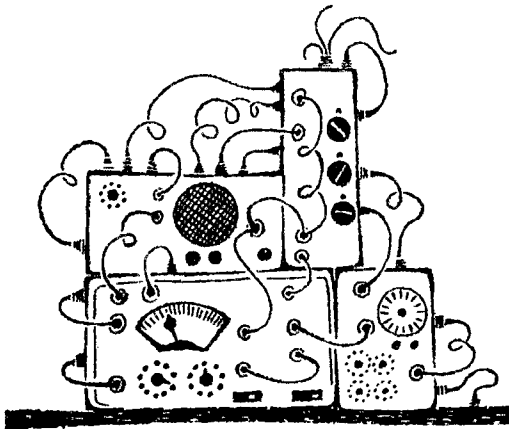
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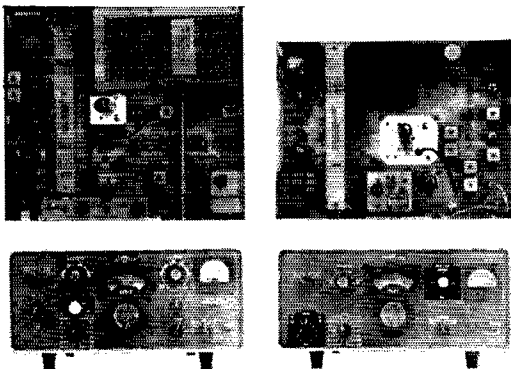
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active member in an auto accident in Tennessee as K8QHH joined the Silent Keys. Columbus ARA's *Carascope* informs us the club held its Annual Picnic, and its code and theory class has been terminated. W8HFX toured Europe with the Capital Univ. Choir and he had excel ball QSOs with H9BAC, O8TRQ, DL1PM and DL8PF. Dayton ARA's *R-P Carrier* states the club held an auction. The ARC of Ohio State University's *W8LT Log* tells of the 834-ft. long wire antenna the club used on FD. K8AOP received his General Class license. K8SQK received his CP-25 sticker. K8MTI received his CP-30 and vacationed in Texas, where he met 5N2AMS. W8GPH received HTH, Cardinal E, Novice and Twin Cities Awards. Canton ARA's seven-page *Deadline* had 19 pictures of FD, and reports W8BHY, WN8BJJ, WN8BZC, WN8DST, WA8DIT, WN8ECJ, WN8EEX and W4UEX/8 are new hams. K8DQW received his General class license. W8UNE has his HBR-16 completed. W8NAL has a new TA-33-Jr. W8YAB vacationed in the Smoky Mts., W8RTR has a new 11Q-170 and a 411-4 beam. K8YLK vacationed in V-E-Land, the club was advised they had won the Ohio Council's 1961 SS Trophy and W8LCA has the new Collins 8 Line. We learned that 97 took the General Class examinations at the Lancaster Hamfest with 53 passing the code. Greater Cincinnati ARA's *The Mike and Key* informs us that WA8ECQ talked on Astronomy, K8HHY has moved to Michigan and W8FN was in the city for a month. Chemung County ARC completed its radio school with W8GAL. W8OWP and K8SYS as instructors and had a nice write-up with a group picture in the local newspaper. Year SCM attended the Buckeye Net Picnic in Mt. Vernon, where 16 traffic-handlers met to discuss better traffic methods and to get ready for the winter season's heavy traffic. Springfield ARC's *The Q-5* states that K8WQE, a build-your-own man, showed and discussed a linear final he built, the stork brought W8KPZ a baby girl and K8DCR moved to Colorado. Parma RC's *P.R.C. Bulletin* mentions that K8ZBI received his General Class license, the Cuyahoga County AREC Picnic was attended by about 50 amateurs and their families with the Outstanding Award Certificate presented to W8TNB by W8VPU. K8ASK joined the Silent Keys. The Seneca RC held a hidden transmitter hunt. K8BXT sends these news items: W8KAK spent a month in Wales, K8KHS is going to college in Tennessee. WA8EDM has a ham family with WA8BBE XYL, WA8AVL YM and WA8RBD YL; also K8ORG has a ham family with the XYL as WA8EDN and two sons as WA8BBH and WN8EDR. WN8BJJ and WN8EY are new hams in Ross County as well as WA8EFL and WA8EFLX, on 6 meters. Toledo's *Ham Shack Gossip* names W8DN as its Ham of the Month, the Toledo Area hams furnished communications during the Mills Trophy Race, K8RGK is out of the hospital, K8QAY and family visited the World's Fair, W8HTF completed a training course at Ft. Lee, Va., and W8TTM is now WA4FPR. W8CHT, W8DAE and W8UPH made the BPL in July. WINBC visited with WA8AJD. Thanks go out to Findlay RC's *H8FT News*, Warren ARA's *The Q-Match* and South East ARC's *Ham Fax* for their bulletins. Traffic: (July) W8UPH 980, W8DAE 749, W8CHT 642, W8BZX 266, K8SQK 149, K8ONQ 47, K8PRZ 44, K8RXD 32, K8BNT 24, W8LZE 19, W8AL 18, K8MTI 18, W8BFX 16, K8KLA 8, K8RYU 6, W8HJZ 4, K8KXS 4, K8DDG 3, W8WYS 3, W8AJD 2, K8BHI 1, (June) W8PAL 20, W8QCU 19, W8LZE 13. (May) W8LT 68.

HUDSON DIVISION

EASTERN NEW YORK—SCM, George W. Tracy, W2EFU—SEC, W2KGC. RMS: W2PHX and K2QJL. PAM: W2JG. Section nets: NYS on 3670 kc, nightly at 0000 GMT; NYSPTEN on 3925 kc, nightly at 2300 GMT; ESS on 3590 kc, nightly at 2300 GMT; MHT (Novice) on 3716 kc, Sat, at 1800 GMT; Inter-club on 28,690 Mc, Mon, at 0130 GMT. Appointments: K2IM as EC and WA2TZK as OPS. Endorsements: WA2EKE as OBS and K2IDEM as OO and OPS. A Novistor converter and hundred watts on 2 meters is reported by K2-DNR. K2S3N has a new SB-10 rig with an SX-101A and is doing fine on s.s.b. Nice to meet so many NYS-PTEN members at the North Country Radio Club Picnic at Norfolk July 14. A delegation including K2S3N, W2AAO, W2APF, K2SJO, W1UED and W2EFU met with Motor Vehicle Commissioner Hulse on July 21. About Oct. 15, all New York State amateurs except Novices will receive application forms by mail for their new 1963 call letter license plates. An additional five dollar charge over the regular registration fee is required and amateurs are requested to return forms and payment within ten days. The call letter plates will be mailed back in January and old plates should be returned to the Department of Motor Vehicles upon receipt of new ones. A word of caution is in order: one speeding violation or similar offense will cause the holder to lose his special plates. (The same color as 1962, but designated (Continued on page 126))

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Fig. 1

and one with 14 segments, to form the complete alphabet. These are shown in Fig. 1. Applications of these EL panels are virtually limitless. For instance, though you would have to have rocks in your head to attempt it in your own workshop, you could construct a pointerless transmitter or receiver scale providing a direct readout of frequency or degrees. In fact, Beckman Instruments, Inc., has adapted Sylvania EL to an entire line of electronic counters and timers which automatically provide digital readouts with decimal point and units of measurement,



Fig. 2

such as MC, KC, mSEC or SEC. In use, it looks like the illustration of Fig. 2.

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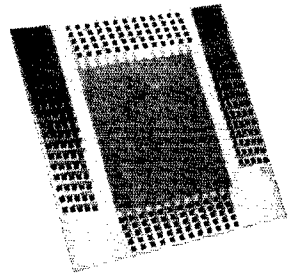


Fig. 3

that's pretty comprehensive. You can get a copy by writing the Electronic Tubes Division, Sylvania Electric Products Inc., 1100 Main St., Buffalo 9, New York.

73,

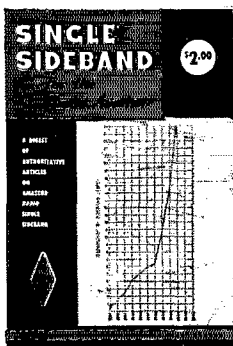
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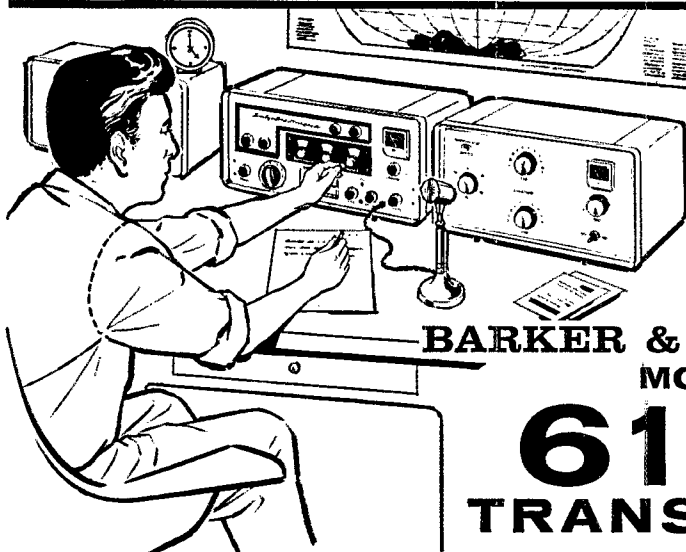
West Hartford 7, Connecticut

'63. they are very attractive so let's show the Commissioner and people of New York State that radio amateurs are -ate drivers. Traffic: (July) W2EFU 223, WA2UZK 206, W2DQW 144, W2THE 136, WA2HGB 131, WA2MID 88, K2SJN 63, W2PKY 34, W2URP 33, K2MPK 17, W2PHX 10, WA2YHA 7, K2DEM 6. (June) K2UTV 1639.

NEW YORK CITY and LONG ISLAND—SCM. George V. Cooke, jr., W20BU—SEC: WA2DO, RM: W2WFL, PAM: K2ZCU, V.H.F. PAM: W2EW, Section nets: NLI, 3630 kc. at 0015 GMT nightly; NYCLIPN, 3908 kc. at 2230 GMT nightly; V.H.F. Net, Tue.-Wed.-Thurs. 145.8 Mc. at 0100 GMT and Fri. through Mon. on 145.25 Mc. at 0000 GMT; Mike Farad Net 7238 kc. at 1700 GMT; All Service Net at 1800 GMT Sun. on 2770 kc. The Q5 Net operates on 3935 kc. at 2100 GMT. BPL certificates went to WA2RMP, WA2GPT and W2EW for high traffic scores and to WA2TQT for originations and deliveries. This is W2EW's 25th consecutive award for monthly high traffic points. Section net certificates have been awarded to WA2QJU, WA2IUQ and WA2RMP, who also received recognition as the highest scorer outside of Connecticut in the recent Connecticut QSO Party. About Oct. 15 all radio amateurs in New York State, except Novices, will receive forms for ordering their new 1963 call letter license plates. The name and address on the amateur license must agree with the motor vehicle registration. A non-notarized affidavit enclosed with the registration form must be filled out and returned at the same time stating that the applicant holds a valid amateur license and its expiration date. It is urged that applications be returned within ten days accompanied by the usual fee plus an additional five dollar charge. Plates then should be received prior to Jan. 31, 1963. A word of caution: Under present regulations one speeding violation is cause for rescinding special license plate privileges. Enjoy your new plates and let's show the public that radio amateurs are safe drivers. WA2TQT has installed a new three-element Telrex and an AR22 rotator. K2UBG is mobile on 75 meters with an Elmac 67. WA2EXP received QRP Club Nr. 20. W2EIC worked W6JWD and discovered him to be an old W2 buddy of 25 years ago. An SX-100 has replaced the S-708 in the setup at WA2KER's shack. WB2BGS acquired a new license and a bride all in several weeks. WA2WXJ has received his General and is operating all bands with a Globe Chief. WA2PMW worked KL7EBM in Kodiak, running a Gonset G50 and a four-element beam, on 50.3 Mc. Dotty, K2DNY, can be heard on 2 meters with a new GC105 Communicator and is active also as Alternate Net Control on the NYCLI V.H.F. Traffic Net. WA2QEB has gone s.s.b. using an SR-10. WA2GJT now has 21 states confirmed s.s.b. on 50 Mc. WN2CWQ, a new ham in Little Neck, is 10 years old and the cousin of WA2VPI. W2QPQ has become a charter member of the Amateur Radio Editors Association, recently formed by W8BAH. Alice, WA2VVV, is a new station reporting into the 2-Meter V.H.F. Net, covering the Staten Island Area. The July Bunny Hunt of the Mid-Island 6-Meter RC brought out 20 cars and 65 ardent people and was won by WA2MHJ and his teammate son, K2UWR. WA2GFP reports a new net called the Mystic Midnite Moronic Modulators on 50,225 Mc. Sun. at 0000. WA2BLH traded his KWS-1 and 75A-4 in the basement for the S/line so he could join the family upstairs. K2OZH has taken unto himself a bride. Final plans for the HARC Hudson Division Convention on Oct. 13 are completed, I do hope, as your SCM, to meet all of you there and talk up section activity at the series of meetings scheduled and at the ARRL Booth. Traffic: (July) WA2RMP 813, WA2GPT 559, W2EAV 527, WA2TQT 431, WA2QJU 249, K2UBG 81, WA2IUQ 63, K2THY 55, WA2EXP 45, WA2GAB 43, W2DRQ 40, WA2RUE 36, WA2LJS 23, K2AAS 21, WA2GFP 16, W2JGY 16, W2JL 14, WA2WYH 13, WA2EPN 11, K2SPG 11, W2EC 10, K2ASP 8, WA2IMH 7, WA2FTL 6, W2EIC 3, WA2SYD 3, W2IAG 3, WA2WIF 3, WA2KER 2, W2RF 2, WA2PMW 2, K2PQY 2. (June) K2SPG 32, WA2WYH 2

NORTHERN NEW JERSEY—SCM. Daniel H. Earley WA2APY—SEC: K2ZFI, RM: WA2GQZ, PAM: K2SLG, V.H.F. PAM: K2VNL. The section nets, time and frequency: NJN, 2300Z daily 3995 kc., NJPN, 2200Z daily 3900 kc.; NJ G&Z, 0200Z on Thurs. and Sun. 51.15 Mc., 2100Z Tue. and Sat. on 146.70 Mc. Net sessions attendance and traffic: NJN 31, 561, 362; NJPN 31, 456, 127; NJ G&Z 13, 80, 21. New appointments in July: ORS WA2LUD, OPS WA2ZQH, EC WA2GBW, OES WA2JQC, OO K2VNL. Renewals: ORS W2CVW, OPS K2OEL. We want to welcome K2OEL into the NJJ section. We forget to add WA2KIY as a new OBS. K2OKA wants to find a PYT committee in the Metuchen Area. WA2MYB got the

(Continued on page 128)



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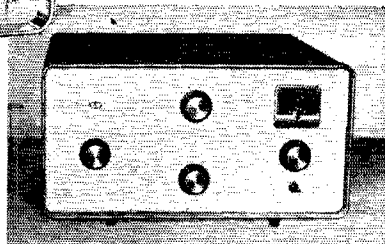


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highest N.J. score in the Conn. QSO Party. It's 17,000 QSO's completed for W2EWZ. I guess anybody who is anything got a picture of Edleen's (K2AGJ) new shack. WA2SRK is working on a 150-watt amplifier. WA2UCY is chief tech. at WF3U (91.1 Mc.). We haven't forgotten those who have applied for appointments but we are going to change RNs and this has confused the issue. Someone says that W2JUJ (trustee K2UCY) is QRMing Oscar. W2OXL blew an r.f. choke but will be on soon. K2LQJ wants to pass on 73 to her old Novice buddies. K2VNT, K2UCY and W2OPB. Congratulations, grandma. K2SBS received his 30-w.p.m. sticker. The Windblowers V.H.F. Society, Inc., will hold its eighth annual Big Blow Sept. 29, 1962, on 2 meters. Stations will be in Sam's Point, N.Y.; Redding Ridge, Conn.; Lake Arcadia, N.J.; and High Knob, Penna. Anyone contacting all three will get a certificate. W2ERZ says so. The N.J. had an outing Aug. 4 and a good time was had by all. K2AGJ won a call book. W2NAK got a *Mobile Handbook* and W2BZJ and WA2SRK both won lightning calculators. There were 22 net members and 33 guests attending and the fishermen in the group caught 33 fish. A good time was held by all and I think the only casualty was the SCM's sprained ankle when he got going faster than the water skis. All the N.J. members wish to thank WA2GQZ for the work he did in arranging the outing. A lot of the good traffic men in the N.N.J. section were all over the country for the summer but K2UCY was here and made BPL in July. WA2KRC finally got the beam up and says it's swell. Watch out, DX. The South Amboy Radio Assn. provided communications between an airfield in Monmouth Co. and the sky divers airplane in a celebration commemorating the first Air Mail flight between South Amboy and Perth Amboy fifty years ago. Haven't we come a long way. Traffic: W42SRK 253. WA2HNF 236. WA2JTZ 216. WA2KRC 210. K2VNL 210. WA2APY 207. WA2OVK 111. WA2GQZ 78. WA2LUD 77. WA2WSB 73. W2CVW 55. WA2CCE 49. K2JTU 39. W2TFM 38. W2QNI 27. WA2ZQH 24. WA2AKM 18. K2SLG 16. W2CFB 13. W2ABL 10. WA2IGQ 9. W2OXL 5. K2QGD 5. W2NY 3. W2EWZ 1.

MIDWEST DIVISION

IOWA—SCM, Dennis Burke? WONTB—SEC: KOEXN, PAM; WOPZO, RM; WODUA, OOS; WOQVZ, KOAZJ, KOAKQ, KOWWQ, KOYUT, WONWX visited old friends in the Caribbean during his vacation, among them several VPs and a KV 4. This, along with his activities on 2- and 160 meters kept him busy. WOKHB, WOLSE and KOHGH are among the many Iowa hams visiting the Seattle World's Fair, July reports. 160-Meters, Net: QNI 588, QTC 30/31 sessions, 75-Meter Net: QNI 1259, QTC 196, sessions 26. The Tall-con Net still is breathing, thanks to KOHGH and KOUAA. Traffic: (July) WOSCA 1370, WOLGG 1201, WOHTP 150, KOMMS 145, WOPZO 56, KORHI 36, KOBGP 35, KOAFI 24, WOREM 24, KOAFG 20, KOKAQ 18, WOBTX 16, WOYDY 13, WOFAM 8, KOUAB 6, KOZLN 6, WOCG 5, WOBDR 4, WONTB 4, KOUAA 4, WOQYZ 3, KOVDY 2, WONWX 1, KOQKD 1. (June) WOPZO 73, KOAFG 12, WONGS 3. (May) WOPZO 126.

KANSAS—SCM, Raymond E. Baker, WOFNS—SEC: KOBEF, Asst. SEC: KOEMR, RM; WOSAF, PAM; KOEFL, V.H.F., PAM; WOHAI, Nets: KPN, 3290 kc. Mon., Wed., Fri. 1245z, Sun. 1400z, 18 sessions; QNS 381, high 42, low 9, average 21.16; QTC 68, high 12, low 0, average 3.71; NCS's WOORB, FHU, KOHII, YTA, EFL, QKS, 3610 kc. daily 0030Z, 31 sessions; QNS 166, high 9, low 2, average 5.11; QTC 79, high 9, low 0, average 2.17; NCS's KOBEF, EFL, IRL, YTA, WOQGG, SAF, FNS, TOL, KSBN, 4 sessions; QNS 31, high 10, low 6, average 7.3; QTC 2, high 2, low 0, average 2. KOFSW has a new Invader and is working DX. WOQJV and his new Swann are mobiling with great results. WOFON and his XYL as well as his KOJAW, XYL and family attended the World's Fair. KOEMR is back from an eastern trip after installing company equipment. We wish to thank KOJAW, WOFWD, WOABJ, WOALD, WOSAY and WOFDJ for their splendid help on KPN. Without our faithfuls we would fail. *Wanted:* CW operators interested in keeping the QNS Kansas CW Net on 2610 kc. daily at 0030Z, one of the best. Traffic: (July) WOSAF 216, KOEFL 57, WOFNS 27, WOABJ 24, KOYTA 21, KOHII 20, KOHF 20, WOTOL 14, KOEMB 13, KOHYG 15, KOBWC 8, KOQKS 4, WOFWD 4. (June) KOYTA 79, KOQKS 7.

MISSOURI—SCM, C. C. Goeh, WOBUL—SEC: KOWNZ, RMs: WOOD, KOONK, PAMs: WOBUL, WOIPE, WOIPE (V.H.F.), Net reports: (July) PON (Mo.) 3810 kc. 2100 GMT M-F, 29 sessions; QNI 209; QTC 108; NCS's: WOHVJ 11, KOBWE 5, KOPIQ 2, WOTXC 1, KOVQ 1. Mo. 88B 3963 kc. 2100 GMT Th-Th, 9 sessions; QNI 122; QTC 57; NCS's: WOPNE 5, WOUMM 4, MSN 3517 kc. 2200 GMT M-F, 1400 GMT

(Continued on page 130)

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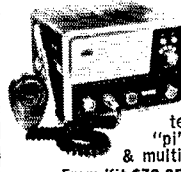
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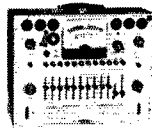
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S), 24 sessions; QN1 142; QTC 167; NCSs: KOONK 9, KOEPC 6, KOVPH 5, KOGFA 4, MEN (3885 kc. 2400 GMT MWF), 13 sessions; QN1 317; QTC 192; NCSs: KOVPH 5, KOONK 4, WOTPK 3, KOWNZ 1, SMN (3580 kc., 2200 GMT Su) 5 sessions; QN1 17; QTC 10; NCSs: WOUD 5, MON (3580 kc. 0100 GMT, Tu-S), 26 sessions; QN1 182; QTC 177; NCSs: WOUD 11, WOKIK 6, KOEPC 4, KOVPH 4, WORTW 1. It is with considerable regret that we must report the resignation of KOLTP and KOLTJ as SEC and Asst. SEC, respectively, because of a change in QTH to Texas. KOWNZ, the new SEC, already is doing an excellent organizational job. WOTPK was elected PAM/MEN Mgr. to succeed KOWNZ. Appointments: As SEC, KOWNZ; as PAM/MEN Mgr., WOTPK; as OES, WORVA; as OO (Cl. II and IV), KOPYB. Endorsements: As PAM (v.h.f.), WOLEE; as OBS, WOKG; as OO (Cl. III and IV), KOJPL; as ORSs, KOEPC and WOWVJ. As OO (Cl. I and IV), WOVH; as OO (Cl. III and IV), KOVXU; as ORS, KORPH; as OES, WOIFC; as OO (Cl. I and IV), KOYOU; as Asst. SEC, as PAM/MEN Mgr., KOWNZ; as OES, KOLCB. Cancellations: As SEC, KOLTP; as Asst. SEC, KOLTJ; as PAM/MEN Mgr., KOWNZ; as OES, WOIFC; as OO (Cl. I and IV), KOYOU; as OPSs, WOEEL and KOLTJ; as ORSs, KOHIM, KOBLJ and KOVBU. Appreciation is expressed to the following OESs for fine reports: WOCMI, KOLCB, WORVA, KOEPC; also to OOs, KOJPL and WOWVH. Traffic: KOONK 1353, KOVPH 508, KOEPC 334, KOGFA 171, WOKIK 80, WOUD 62, KOVIQ 57, KOUWZ 51, WOOMM 44, WOPNE 40, WOBUL 31, KOVRT 26, WORTW 23, KOWNZ 23, WOBVL 17, WOAYB 16, KORPH 15, WOGBJ 4, WOOPY 2, WOWAP 1.

NEBRASKA—SCM, Charles E. McNeel, WOENP—SEC; KOTSU. New appointment: KOYDS as ORS. Morning Nebraska Phone Net, KODGW NC, reports QN1 569. QTC 99, Nebraska Emergency Phone Net, WOHXH NC, reports QN1 550. QTC 31, new members KOMY, WOPTW and WONOW. The Western Nebraska Phone Net, WONIK NC, reports QN1 543, QTC 49, 100 per cent check-in WODVB, WAOAS, KOAIE and KOBIQ. The Nebraska Section C.W. Net was on informal roll call during the summer but became active again Sept. 1. The Central Nebraska Amateur Radio Club's Annual Hamfest was held at Hulsey Park July 22 with about 50 in attendance. The Annual North Platte Hamfest was held at Cody Park Aug. 5 with about 100 in attendance. All ECs and AREC members are urged to check into the Central Nebraska AREC Net each Sun. at 0830 CST on 3960 kc. KOPZS is NC. Traffic: (July) KOYDS 68, WOOKO 60, WOFNH 59, KODGW 53, KOKJP 48, WONIK 35, WOLOD 28, KOZYP 18, KOZEQ 18, WOEQG 17, KOGAT 17, KO MISS 14, KOUWK 13, WOYFR 13, WOYJZ 10, WOGCP 9, KOMVZ 8, WOSJF 7, WAOBES 6, WOGCH 6, WONOW 6, WOKWK 4, WAOAS 3, WOHOJ 3, WOAAB 2, WODSU 2, KOEIT 2, WOKFY 2, KOVTD 2. (June) KOYDS 27, KOSBV 11.

NEW ENGLAND DIVISION

CONNECTICUT—SCM, Henry B. Sprague, Jr., W1CHR—SEC; W1EOR, RM; W1KYQ, H.F. PAM; W1YBH, V.H.F. PAM; W1FHP. Traffic nets: CPN, Mon.-Sat. 1800, Sun. 1000 on 3880 kc.; CN, daily 1845 and 2000 on 3640 kc.; CVN, Tue., Thurs. and Sat. 2030 on 145.93 Mc.; CTN, 0900 on 3640 kc., all local times. W1BDI has been putting gear together for son W1N8YGN. K1BSY is converting a DX60 to 6 meters. The Tri-City ARC plans a hamfest on Oct. 20, Crocker House, New London. W1QV is Chairman, K1GZJ and W1YNP are new s.s.b.ers. W1NTH is s.s.b.ing and just made DXCC. K1s OJZ, ONW and K2DDZ/1 are new on CPN. K1PUG has been Acting EC for Thomaston. K1QPN is building a 20-15-meter quad and is active in CPN with a new 300-watt rig. K1UPE built a 40-meter vertical in the cellar and can't get it out! K1UIVR is using a Knight T-60. K1UIVT is in the service. K1UIWR is having TVI problems. K1SBB is relocating the shack. K1RTS likes his 2-meter 7-over-7 beam. K1PKQ enjoyed the July CD Party. W1OJR made his first sport parachute jump and continues to add to his DX record now at 272/265. K1TTA has his General, thanks to K1EAO. A new YL in Waterbury is K1NWSN. K1NWK's father is a new Novice. K1NWWV, in Hamden, K1HTV caught Oscar II on 23 passages. The Hamden ARA operated FD from Gaylord Mt. W1UWY experienced unusual QRM—lions roaring and elephants trumpeting from local circus animals. W1TYQ has been visiting the States on leave from Saudi Arabia. K1IWR should be back on the air soon. K1UHJ traded in his DX-40 for an Invader. K1TBC got married and will live in So. Carolina. His brother, K1RVL, has a new 6 and 2 converter and broad beam—no front-to-back ratio! K1WTB runs a Heath Comanche on 6 with an eight-

(Continued on page 132)

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element beam. KILOM is building a kw. s.s.b. amplifier. WILLG converted a T-23/ARC-5 to 6 and 2. KILAL is building a 420-Mc. transceiver. KIBHY is strictly a DX hound. WIKAM is concentrating on DX also. WIASK is getting the urge to be active again choosing 2 meters, I'm unable to run for SCM again after my term expires Dec. 9. You should all give serious consideration to a qualified replacement and nominate him for election. Contact me if you want details on needed qualifications and required duties. Connecticut deserves a top section leader so give this project serious thought. *Then act.* Traffic: KIMZM 550, WIVVA 134, WIAW 122, WIRZG 119, WA2CCF/1 108, WINJM 96, KIGGG 91, KIPPF 88, KIEIC 66, KIDGK 65, K1HTV 59, WIOBR 55, KIUVV/1 52, WIEFW 51, WIVBH 37, KIQPN 34, K1HTV 32, WIFXS 30, K1PUG 30, K1LFW 24, WICUH 20, KIMBA 16, WIBDI 13, WIOV 12, WILUH 11, KITTA 10, WIBNB 9, KIONW 7, KIONZ 6, KIQX 6.

MAINE—SCM, Albert C. Hodson, WIBC—SEC; WIGRG, PAM; KIADY, RM; KIKSG. Thanks to all for their assistance and especially to Net Control Stations during the past year for their patience under adverse conditions. KIMZB established a record in traffic handling with a count of 566 messages for the International Girl Scout Roundup at Button Bay, Vt., and a total for the month of 1142. Most were relayed directly to their respective call areas by Bob. He also is c.w. operator for Cumberland County RACES headquarters. Many 2-meter openings were enjoyed during July with openings to W2s from points in southern and coastal Maine. Six-meter openings were reported by KIGPJ with contacts as far as the West Coast. Sorry to report WIMW as a Silent Key. KIADY, WIEXD, W1CBV and KIDTW found the Pinchill golf course a good spot for the mobiles between rounds. Ellsworth and Knox County Radio Clubs were presented ARRL affiliation charters July 12 by New England Director Milt Chaffee. WIEFW, WIGPY received special recognition for his excellent performance while on duty with the U.S.S. *Tills*. Traffic: KIMZB 1142, KILPC 295, KINDM 27, K1RZD 17, KIDYG 14.

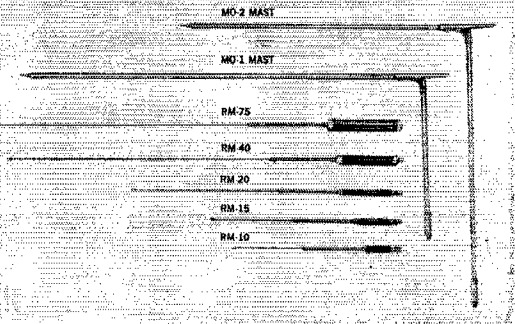
EASTERN MASSACHUSETTS—SCM, Frank L. Baker, jr., W1ALP—SEC; W1AOG. Reports were received from ECS WIACB, W1AAU and K1ICJ. K7OTR, WBIO and W1ALP visited W1AKN and his son, K8MZD, was there, too. W1BJP is a Silent Key. The Whitman ARC is new. Officers are W1AAU, pres.; K1CIC, secy.; K1TZC, treas. The club will have another school for theory and code this fall. The Massasoit ARA and the Lexington IIS Radio Club are now affiliated with the ARRL. WIOFK, while on vacation at Manomet, met K1PLU. K1ELY now is in No. Andover. K1BUT and W1ZQM were married and now live in Somerville. W1SVU is a new OO. K1TFV, ex-WAKHA, has an SX-7, VLF ARC-5. K1KEC was mobile on a trip. K1MOD has a Valiant transmitter, an SX-100 receiver and a TA-33 jr. beam on 20 and 15 meters. W1NF has a new Plymouth and will have a 2-meter rig in it. K1DYA would like to make skeds with DX stations on 6 meters and will have a Telrex four-element beam for 6 meters. K1VBN is up in New Hampshire. K1RHY passed the General Class exam. K1ICJ, our Sharon EC, sends in a very nice report and says their net is on 51.9 Mc. K1UZM is treasurer of the Mass. V.H.F. Society. The club met at K1AAA's in July and had a time at WIKCO's QTH. K1VUT passed the General Class exam, as did K1SPP. The Massasoit ARC held a Family Day Picnic. K1HFG sent out a club bulletin. K1NYAS is a YL. The EM2N had 22 sessions, 166 traffic, 242 check-ins. K1VBN's father is K1WYN. K1DFJ had a nice write-up in our local paper. K1WUB has an HT-40 transmitter and an R-55 receiver. K1OJQ is out of the service and has a Valiant. W1BB is busy on 160 meters. W1DDX has an a.m. and s.s.b. rig for 2 meters and is working on one for 220 Mc. K1JUJ has been in the hospital but is coming along. K1OGG has a Valiant. K1KPD is on all bands. W1PEX made the BPL again. W1BGW has worked 12 new countries in the past few months. W1AUQ is up in Montreal. K1PVV has a Valiant and an NC-109. The 6-Meter Net had 284 stations, 43 traffic. EM17N had 221 stations, 74 traffic. The Tewksbury ARA's experimental ground communication is being conducted by K1LQJ. The REC Net is on Mon. nights at 7:30 on 147.325 kc. This is an open net and W1AAU says anyone is welcome to check in. The Dedham C.D. Net held a meeting with W1SH, RO, and W1AAU. EC, W1JLL, up in New Hampshire, kept in touch on 2 meters with his Dedham net. By the time you read this your SCM will have a new QTH, and I will advise all nets and clubs of same. Traffic: (July) W1PEX 698, W1ZSS 187, W1AWA 174, W1OPK 150, W1DOM 98, W1EMG 87, W1RAE 80, W1SIV 44, W1VYS 31, W1AOG 27, W1AUQ 23, W1AU 23, K1DGI 22, K1QNZ 17, K1LCQ 12, W1EJH 11, W1GKE 5, K1BKG 4, K1O'D 4.

(Continued on page 134)

GOOD MOBILES GO...



10-15-20-40-75 METERS NEW-TRONICS MOBILE ANTENNA



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Buy only the mast and resonators for the bands you operate. No need for matching devices, no feed line length problems. Use any length of 52 ohm cable. This is a new, efficient concept of center loading. Each of the five resonators has a coil specially designed for maximum radiation for a particular band. Center frequency tuning is by means of an adjustable stainless steel rod in the resonator.

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ANTENNA ASSEMBLY CONSISTS OF 1 MAST and 1 RESONATOR

Part No.	Description	Total Height of Antenna	Amateur Net
MO-1	54" Mast folds at 15" from base	(For Rear Deck or Fender Mount)	\$ 7.95
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RM-15	15 Meter Resonator	Maximum 81" — Minimum 76"	6.95
RM-20	20 Meter Resonator	Maximum 83" — Minimum 78"	7.95
RM-40	40 Meter Resonator	Maximum 92" — Minimum 87"	9.95
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ANY MAST OR RESONATOR MAY BE PURCHASED SEPARATELY

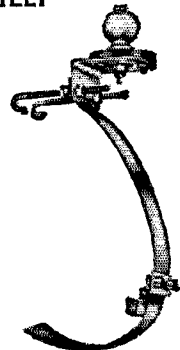
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SAN FRANCISCO, CALIF. - WASHINGTON, D.C.

KIRHY 4, WIBGW 2, WIGMT 2, WISVU 2. (May)
KIMVN 32.

WESTERN MASSACHUSETTS—SCM, Perry C. Noble, WIBVR—SEC: WIBYH/KIAPR. RM: KIJJV. PAM: KIRYT. You will note that our section has a new Phone Activities Manager, KIRYT/K8BDZ, David Angel, Green River Road, Williamstown. He is a newcomer to our section but has had plenty of experience in phone nets having been NCS of the Ohio Phone Net for quite a few years. Let's get behind him and get a good West. Mass. phone net going once more. RM KIJJV reports that WAIN cleared 65 messages during July with the high stations in attendance being KISSII, KIPES, WIBVR and KILBB. KIRNI, KIRNI and WIFBE moved up from Tech. to General Class. KITLY and KNIWGN are working on a 420-Mc. TV transmitter. KNIWVK is a new Novice in Gardner. KIJQT has a new Globe Scout and V.F.O., and will be operating from Hiram College in Ohio come fall. WIBYH/KIAPR is now on sideband with GSB-100 and is working on a linear. New officers of the Massachusetts Amateur Radio Club are WIBYH/KIAPR, pres.; WIMDS; 1st vice-pres.; WIJTL, 2nd vice-pres.; and KIKBS, secy-treas. Following is the list of our Emergency Coordinators. Get in touch with the one nearest you and get signed up in the Amateur Radio Emergency Corps! WIAMI, Henry Loiselle, 501 Grafton St., Worcester; W1BKG, Milton A. George, 35 Ridgeway Ave., Pittsfield; WIBYH/KIAPR, Norman L. Rivers, 18 Saari Pkwy., Fitchburg; WIDEV, William L. Dunn, 35 S. Prospect St., Lee; WIEFC, Charles R. McLam, 89 Dennison Lane, Southbridge; W1HRV, Osborne McKeaghan, 22 Mutter St., Easthampton; KILNC, Edwin Petzolt, 190 West Broadway, Gardner; W1LRA, Alden E. Bosworth, 10 Noble Ave., Westfield; W1NLE, Robert A. Adolphson, 38 Larkspur St., Springfield; W1OBA, John H. Kenney, 75 Alger St., Adams; W1OY, Morris Kasanof, 420 Sumner Ave., Springfield (for Westover 1FB); K1PCW, Ely W. Wyman, 316 Log Plain Rd. E., Greenfield; and W1RFU, William Rosner, Cadwell Dr., Wilbraham. Traffic: KIRYT 580, WIBVR 135, KIJJV 133, KILNC 107, KISSH 68, KIPES 43, KIJQT 38, KILBB 34, WIEFC 4.

NEW HAMPSHIRE—SCM, Ellis F. Miller, W1IQ—SEC: K1GQK. PAM: K1NXY. GSPN meets Mon. through Fri., 2300 and Sun. 1330 on 3842 kc. CNEN meets Mon. through Sat. 1030 on 3842 kc. NHN (a.w.) meets Mon. through Sat. 2330 on 3585 kc. Appointments: K1NXY as PAM, W1ARR as OPS and ORS. We are pleased to announce the appointment of K1NXY as PAM. Roger is a loyal Net Control of the GSPN and as such qualifies for the job. Good luck, Roger. We are sorry to lose W1TES from our midst. Ty has been transferred to Alaska. Hope we can work you on 20, Ty, when you get settled. By the time this report is printed SCM elections may have been held. Please let me thank you one and all for the splendid support given me during my term of office. It has been really appreciated. The Midstate ARC held a cookout at K1NXY's on July 29. Swimming, waterskiing, horseshoes and pranks were the order of the day. The chocolate-covered pickles were the gastronomic event of the day. Needless to say, all had a bang-up time. K1PDA still is going strong on 50-Mc. DX. Traffic: W1TA 64, W1QGU 52, K1DQM 39, K1HK 13, W1AGM 9, W1BYS 8, K1NYS 6, K1GUG 6, W1SWX 2.

RHODE ISLAND—SCM, John E. Johnson, K1AAV—SEC: W1PAZ. RM: W1SMU. PAM: W1TXL. The RISPAN reports 30 sessions, 443 QNT, 79 traffic. The NCRC of Newport installed new officers at its Annual Meeting July 14 at Newport. W1JFF was installing officer for the following officers: W1TXL, pres.; K1DPY, vice-pres.; K1IRK and K1VQO, program; W1MMX, membership; W1WLG, certificates, W1ETM and K1PTY, code and theory; Phil Gaudett, s.r., publicity. K1TPK spent his vacation at Stow, Mass., working portable 1 and while there worked 22 states. The W1AQ Club of Rumford reports that it has new cement steps with the club call filed in the top step. K1RLE was elected a club member. The W1DDD Club of Woonsocket has received civil defense equipment and is sponsoring a drive to get more members into the RACES program. K1TTD of the club has a new General Class license. During the recent Newport Jazz Festival the following amateurs provided radio communication with the c.d. and local police: W1s TXL, JFF, M1X, ETM, JAF, WLG, LUQ, K1s UCT, EGE, PHO, STB, OZI, GRC, MYU, RPC, JFD, PTY, DZX, MCT, IRK, ELL, NJT, and KN1s VQO, TDE, WQN. Traffic: K1NEF 778, W1TXL 541, K1DZX 30, K1GRC 19, K1SXY 15, K1TPK 8.

VERMONT—SCM, Miss Harriet Proctor W1EIB—SEC: K1DQB. PAM: W1HRG. RM: W1KRV. Vermont amateurs appreciate the assistance of the many operators outside the state who relayed and delivered the more than seventeen hundred messages originated at
aa(Continued on page 136)

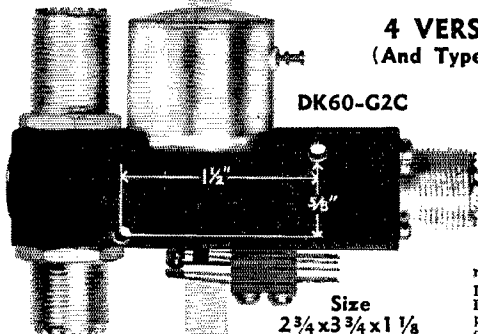
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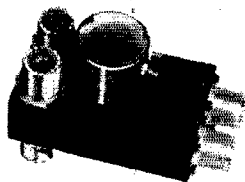
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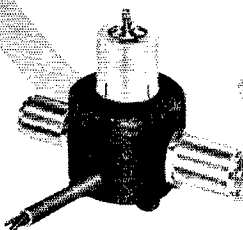
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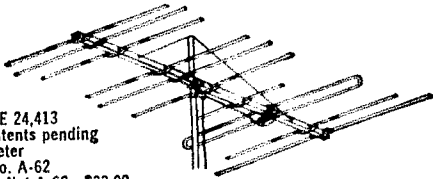
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Button Bay Girl Scout Roundup. Many thanks to all in the state who did the many needed jobs, both large and small, with the assistance and leadership of K1-DQB. We wish we could name everyone. WIUXK is active in Bennington, both fixed and mobile. The CVARC has applied for a club station. The club has provided communications for three swim meets, doing it on 420 Mc. New amateurs in Chester are KN1UZG and KN1-UZK. Welcome to them, as well as to KN1WNE, KN1-WRP and KN1WSS in the Newport Area. The BARC held International Field Day under the leadership of WIHRG.

NORTHWESTERN DIVISION

IDAHO—SCM, Mrs. Helen M. Maillet, W7GGV—The FARAI Net meets at 0200Z on 3935 kc. The Gem State Net meets at 0300Z on 3580 kc. The Intermountain Weather Net meets at 1345-1420Z on 3970 kes with W7-DLW as net manager. K7LJA was appointed EC of Twin Falls County to succeed W7SGS, who moved to Utah. Friends of W7VQC set up a rig in his bedroom and he's handling traffic while recuperating. W7EEQ's rig is silent; she fell in her kitchen and broke 4 ribs and injured her right arm. K7KRO was elected president of the WIMU Hamfest for 1968. K7HLR, editor of *Hambone News*, would like comments on issuing a "Worked Idaho Counties" certificate. W7BSP is Idaho's first CHC member and W7GGV is the first YL number. New amateurs are KN7s TNS, TTH and K7PLU. W7-GSF and family visited K7KBY, his buddy in the Pacific during WW II. FARAI Net traffic: 49; Gem State Net traffic: 45. Traffic: (July) K7KBY 78, W7FBL 63, K7NNM 37, K7OAB 30, W7VQC 23, W7GJV 14, (June) W7EEQ 7.

MONTANA—SCM, Ray Woods W7SPK—SEC: W7-BOZ, PAM: W7YHS, RM: K7AEZ. The MPN meets on 3910 kc. at 1800 hours M-W-F; the MSN meets on 3550 kc at 1830 hours TFS; PSN meets M through F at 1200 hours on 7230 kc. The Glacier Hamfest was well attended and the Butte gang did a real fine job. W7UWY vacationed in Eastern U.S. K7ECP is back after his trip to the hospital in California. Missoula hams met at the home of W7JZ and had a fine picnic. W7CLB and W7-CFC will move to Harlowton in the interest of the Minuteman Missile Project. Eleanor Meal, the XYL of SK W7LCM, visited W7NVP and W7OOY at Harlo. W7BOZ had a short visit from his brother Ollie, who is now stationed in Hawaii. K7MEG is heard with a new Heathkit linear. W7IDK is putting out some "Gobblety Gook." Miles City radio officers are W7YUP, pres.; K7JLM, vice-pres.; K7KJH, secy.; and K7JLL, act. mgr. W7BOZ and W7SPK, with their wives, spent several days in old ghost towns rock hunting. Quite a few Montana hams attended the Four-State Hamfest at Macks Inn in Idaho. W7QYA and W7VMB went from the Glacier Hamfest to the World's Fair at Seattle. Traffic: K7EWZ 160, W7SKF 2, W7BOZ 1.

OREGON—SCM, Everett H. France, W7AJN—SEC: W7WKP, RM: W7MTW. Section nets, times GMT: ONS, 3585 kc. 0230 Tue.-Sat.; OAREC, 3585 kc. 0330 Wed.-Thurs.; AREC, 3875 kc. 0300 Tue.-Sat.; OBN, 3840 kc. 0200-0300 daily; AREC V.H.F., 50,550 Mc. 0400 Fri. W7ZFH, ONS manager, reports sessions 20, attendance 212, traffic 118. BRAT Awards went to W7MTW, W7-ZFH and K7IWD, also to K7DYD and K78QC for 100 per cent attendance. OAREC, sessions 7, counties 5 with a total attendance of 33, traffic 5. AREC V.H.F., sessions 4, attendance 42. The Portland Roses held its first Field Day in June located on top of Mount Scott, using the club call K7UER. The YLs and XYLs made 200 contacts using surplus gear and a gas-operated field generator and a Communicator on 6 meters. Station operators were W7ZAN, W7REU, W7GRC, W7ZKY and W7HPT. The Southern Radio Club of Grants Pass held its Annual Picnic with 63 adults registered. K7PUV is working DX on 40-meter c.w. with 80 watts input and an inverted "V" antenna. K7DVK now is using an eleven-element 220-Mc. Yagi. Activities were slow during July and your SCM took a little vacation from the daily networks. Traffic: (July) K7IWD 268, W7ZFH 101, W7MTW 54, W5RVN 44, K7JVN 22, W7DEM 21, W7AJN 17, W7MAQ 14, W7BVH 10, K7PUV 4, W7YG 4, W7DIC 1, (June) W7BVH 8.

WASHINGTON—SCM, Robert B. Thurston, W7PGY—SEC: W7HMQ, RM: W7AIB, PAM: W7LFA. Nets in the Washington sections are W8N-3535 kc. 0200Z; WARTS-3970 kc. at 0130Z; CBN-3960 kc. at 0230Z; NSN-3700 kc. at 0400Z. About 200 attended the annual hamfest of the Washington Amateur Radio Traffic System (WARTS) at Lake Wenatchee, with QPZ taking home the top prize. A new 6-meter net on 50.4 Mc. Mon. through Sun. at 2000 PDST has been established with K7PIG as temporary mgr. Members of the Radio Club

(Continued on page 138)

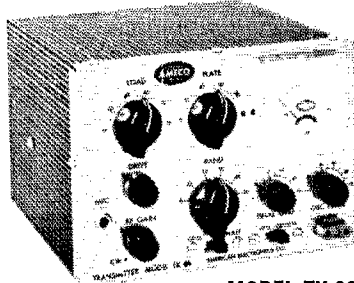
NUVISTOR PREAMPLIFIER
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Model PV—
Uses 6CW4 Nuvistor. Improves gain and noise figure of present converter or receiver. Specify frequency.

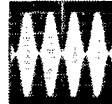
Model PV Wired & tested \$13.95

Model PH—Uses 6CB6 tube—for any frequency or ham band, 2 to 27 MC. Wired & tested \$13.95



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6 thru 80
TRANSMITTER**



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SHOWING 100%
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Tube lineup:—12BY7 oscillator, a 6BQ5 buffer, a 6146 final modulated by a 12AX7 and a 6AQ5. Power requirements of 6 V at 3.2A or 12 V at 1.6A and 300 V at 75 ma. plus 600 V at 150 can be supplied by PS-3 for fixed use or W612A for mobile. Smaller power supplies can also be used. Other features include: Final operates STRAIGHT-THRU on all bands, push-to-talk mike jack; Pi-net output ckt., true potentiometer drive control (no detuning of circuits), can take crystal or VFO.

- Model TX-86K Kit** (specify 6 or 12 V)..... 89.95
- Model TX-86 Wired** (specify 6 or 12 V)119.95
- Model PS-3 Power Supply, Wired** 44.95
- Model W612A 12 V Mobile Minn.-Honeywell Power Supply**54.95

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Require only 12 volts B+. Crystal controlled. For any FM or AM frequency or band from 2 to 54 MC. **Model CLB**—for 6 meters or citizens band. \$24.95
Add \$1 for any other frequency



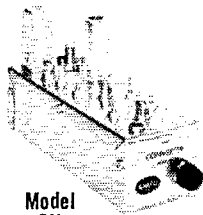
Model CLB

Squelch ANLimiter

A combination squelch & noise limiter. Requires only 12V B+. **Model SNL-12**, for 12V or SNL-6, for 6V, \$17.95. Noise Limiter alone, **Model ANL-6** or **ANL-12**, \$7.95

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Model CN

\$49.95 wired \$34.95 kit

Two Nuvistor RF stages, a Nuvistor mixer and a 616 osc. give lowest noise figures and high gain. Ameco converters do NOT become obsolete as their IF output is easily changed to match any receiver. All CN models (CN-50 for 6 meters, CN-144 for 2 meters and CN-220 for 1 1/4 meters) are available in ANY IF output. (Specify IF output in order.) Specs. Noise figure 2.5 db at 50 MC; 3.0 db at 144 MC; 4.0 db at 220 MC. Gain 45 db average, image and spurious rejection—better than -70 db. IF rejection—better than 100 db. Power required—100 to 150 V at 30 ma, 6.3 V at .84 A. See PS-1 Power supply.



CB-6

Tube-type low noise, high gain converters. IF easily changed. Specify IF.

CB-6K—6 meter kit, 6ES8-rf amp., 6U8-mix./osc. only \$19.95
CB-6W—6 meter wired & tested\$27.50

CB-2K—2 meter kit, 6ES8 1st rf amp., 6U8—2nd rf amp./mix. 616 osc. only \$23.95

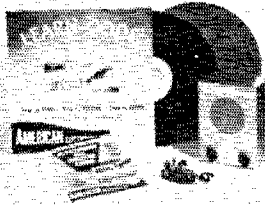
CB-2W—2 meters wired and tested. \$33.95

Model PS-1—Matching Power Supply—plugs directly into CB-6, CB-2 and all CN units. **PS-1K**—Kitonly \$10.50
PS-1W—Wired\$11.50



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- Radio Operators' Lic. Guide, EL 3.... 1.75
- Radio Operators' Lic. Guide, EL 4.. 1.25
- Amateur Log Book50
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of Tacoma held a family type picnic at the QTH of HF on Hood Canal, W7RGD is doing a nice job on communications during the salmon bakes at Ft. Defiance State Park. The WSN had 22 sessions 192 QNIs and 114 QTCs in July. The NSN had 25 sessions and 203 QNIs with 101 QTCs and has 47 members. W7BTH reports tests are being conducted on the 10- and 100-meter bands for nets during the coming possible blackouts. K7PIG received his Official Experimental Station appointment. K7JRE is a new ORS in the Bellevue Area. W7AIB took a business trip to Pittsburgh, Pa. W7IEU has just completed a net history of the Northwest Slow Speed Net (NSN). W7AMC has donated the Moose Horns he won last year at the Waterton Lakes International Hamfest to the group as a perpetual trophy. K7s PVF and PVG are sporting a new Invader 2000. W7OEB and family were visitors to the World's Fair in Seattle and Ev took home a TH-3-TriBauder. W7CXJ and family took in the Glacier Hamfest. K7OFW and W7CUD have their new Heath s.s.b. rigs on the air. W7CWN has finished his new v.f.o. W7SAB installed a new 6-2-meter beam. K7CWO and his new XYL are living in Richland. K7GGQ is moving to Montana. W7JBN again is being heard on NSN. W7NO. of Port Townsend, joined the ranks of Silent Keys. K7BKY operates portable from a fire lookout in Southwestern Washington. K7QMG still is looking for rare DX on 6 meters. The 6-meter gang is thinking of starting Bunny Hunts again. K7ODC heads communications for the junior fair in Sumner. W7AICU is working out a call system for Pierce County AREC; also sports a New Yorker with AF-68 and PMR receiver. W7HAMQ was elected president of the Puget Sound Council of Amateur Radio Clubs. K7USO is making lots of QSOs from the World's Fair in Seattle. W7WHV and her OM attended the Lewis County ARC and Northwest Amateur Radio Communications System Picnic near Olympia with about 37 other hams. W7NWK has his new Knight V-44 v.f.o. working. K7JHA, W7BA, W7DZX and W7PGY made the BPL in July. Traffic: K7JHA 1320, W7BA 032, W7DZX 865, W7PGY 510, W7GIP 224, W7APS 159, W7OEB 149, W7GYF 61, W7AMC 35, W7IEU 33, K7MWF 29, W7AIB 20, W7JC 11, K7JRE 4, W7BT 2.

PACIFIC DIVISION

NEVADA—SCM. Charles A. Rhines, W7VIU—K7ICW found some good 50-Mc. openings during June, with his XYL, W7SNP, working the DX. Their new eight element 6-meter beam is doing a fine job. K7NYU and K7QZM are new members of the Las Vegas AREC 2-Meter Net using Heath "twoers." K7KRII is using 4E27s in the final of the new 6-meter s.s.b. rig. K7AIN and K7TYE showed color slides of their stay in Ethiopia at the last SNARC meeting. The latter is a new ham in Las Vegas. W7SHY has returned to Fallon after a stay in K66-Land. Nevada Achievement Certificate No. 80 was awarded to W7DZB. W7MWF now is in Boulder City. K7FEM, Fallon, and W7VIU, W7QYK and W7VR handled Powder Puff Derby traffic through Nevada. The son (ex-KN7LPM) of W7KOA and XYL, W7QYL broke his leg in a fall in Ruby Mts. and was missing four days. He is recovering nicely in Elko Hospital. Traffic: W7VIU 715, W7PBV 10.

SANTA CLARA VALLEY—SCM. W. Conley Smith, K6DYX—The Monterey Bay RACES Net is called on 147.16 Mc. at 0100 GMT Tue. (Mon.) by W6HXY of Watsonville. Some 30 members check in regularly from around the Bay, Gilroy, and Hollister with liaison stations from San Jose, Carmel Valley and even Oakland RACES. Seems like everyone took a vacation in July. K6DYX tried it in June but got snowed out of the High Sierra. W6NVO had good luck salmon fishing up Trinidad way. K6BBF is back from the Seattle Fair. W6ZLO has returned from his extended motor trip to the East Coast. W6DEF is flying with the family to N.Y.C. and D.C. K6ZCR has been taking short trips to Clear Lake, Carmel and Big Sur with visits to ham friends and club meetings. W6RSY has a new T-150 Knight transmitter. W6AUC is out of the hospital after a hernia operation brought on by hoisting a heavy transmitter. K6MITX has been working WA2WUV on an RTTY sked. W6VMI still is burning because work made him miss the V.E.P. Party. K6KCB, RM, is forced to resign as RN6 manager because of the job. We have a new OO, W6ASH of Los Altos. Traffic: (July) K6KCB 601, K6GZ 190, W6YBV 141, W6RSY 100, W6DEF 92, W6AUC 87, W6BIC 65, W6AIT 54, K6DYX 54, W6OII 32, K6YKG 23, W6ATNY 21, W6RFF 13, W6UYB 15, K6EQE 9, W6ZLO 7, K6ZCR 6, K6VQK 4, W6AOLQ 1. (June) W6UW 19.

EAST BAY—SCM. B. W. Southwell, W6OJW—WA6RGD is setting his sights on going RTTY. WA6MXJ and K6QXY have their joint tower up 100 feet and have only 30 feet to go before installing dual spirals. WA6VAT has a new modulator and is running out of wall
(Continued on page 140)

P & H PRODUCTS

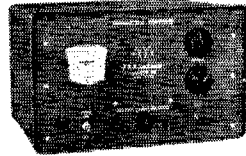
TOP'S IN VALUE/QUALITY/PERFORMANCE



MODEL 2-150 TWO METER TRANSMITTING CONVERTER

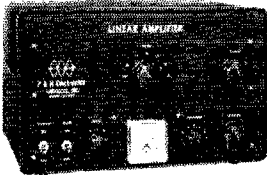
Converts the output of your 10 to 100 Watt SSB, AM or CW exciter to TWO METERS, retaining all exciter features. POWER INPUT to 7854 final: 175 Watts PEP on SSB, 165 Watts CW, 90 Watts Linear AM. Built-in 3 section power supply. Quiet forced air cooling. 50 ohm input/Output.
 MODEL 2-150 Complete with tubes and crystal\$329.95

the VHF TWINS



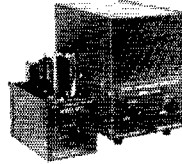
MODEL 6-150 SIX METER TRANSMITTING CONVERTER

Converts the 20 Meter output of your SSB, CW or AM exciter to SIX METERS, retaining all exciter features. POWER INPUT to 8117 final: 175 Watts PEP on SSB, 165 Watts CW, 90 Watts Linear AM. 50 ohm input/Output. Built-in 3 section power supply. Quiet forced air cooling.
 MODEL 6-150 Complete with tubes and crystal\$299.95



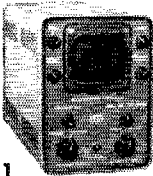
MODEL LA-400C LINEAR AMPLIFIER

This popular 80 thru 10 Meter Bandswitching Linear gives you 800 WATTS PEP on SSB; 400 Watts CW, FSK or FM; 230 Watts Controlled Carrier Linear AM or 185 Watts Constant Carrier AM. Uses four 1625s (or 837s on request) in GROUNDED GRID. Low Z 50-70 Ohm input and output. Drive it with any 20-100 Watt exciter. Built-in power supply using 816s.
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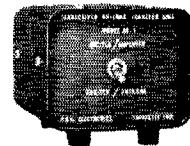


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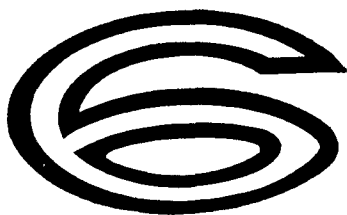
space for awards and QSLs. WA6VAT is a new OBS. WA6LGE got his HTH-25 and HTH-50 Awards. WA6-PRX, WA6LGE, W6IZU, WA6LGD, K6OKO and K6MIS participated in the July 4th Boat Parade in Vallejo; all but K6OKO and K6MIS were maritime mobile. WA6MIE has a new Swan rig on 7 Mc. WA6KUK is recuperating from a detached retina eye operation. K6-GE, 68 years old, has joined the Peace Corps and will teach radio communications to the people of Malaya. K6YSS has a new QTH and put up a vertical. W6TYM is the new trustee of the LARK Club. The MPARC meets at the Red Cross Center on Ygnacio Valley Road, one mile east of Walnut Creek, the 3rd Fri. of each month. WA6LVX/6 is teaching electronics at summer Camp in Yosemite National Park. This is Mariposa County for WACC award aspirants. The HARC meets the 2nd and 4th Fri. nights at the club house. Write Box 113, Hayward, Calif., for directions. New members of the HARC are W6ZXXU, W6ZXS, W6WXM, K6-SFY, W6ZXX, W6MJY and ex-9ALG. WA6RXN has his General Class ticket. W6NYK is portable 4 in Tennessee. WA6JCS is on 50 Mc. The HARC had a 24-member turnout for FD location operation. WA6PKN is building 50-Mc. gear. K6SPP blew 2 transistors in his mobile power supply after his return home. WA6GPB is roving ambassador of the Early Worms Net. W6-ZXU has a new Eico rig and an RME-4700. W6ZXX had the thrill of his first contact recently. W6IFF visited Canada and the World's Fair. W3WAU/6 is moving to Florida. WA6LSU is a new General call in Hayward. W6ICR/0 is vacationing in Nebraska. K6VXJ has returned from a trip to KH6-land. WA6KUN was discharged from active reserve call-up with the USN Aug. 1. The XYL of K6SPP is studying for her ticket. K6-TKL is awaiting his SWAN dealership franchise. WA6-NLG is interested in starting a club in the Milapitas Area. *Comina soon*, the Greater Bay Area Hamfest. Contact your club secretary for information. W6QJW is sweating out the last few QSLs for his USA-CA-500 award. Traffic: (July) WA6RGD 277, W7QOH/6 15. (June) WA6RGD 356. (Apr.) WA6WHR 8.

SAN FRANCISCO—SCM/Asst. Director, W6BIP —S.F. Club: W6VLX, the new editor, is doing a fine job. K6IPM resigned as vice-pres. because of a heavy work shed. W6AGN now is a Silent Key. WA6IVM offers to help anyone interested in learning the code. SE 1-3533 any Sat. A.M. *BAYLARC*: YLs WA6JGR, WA6PKP, W6BDE, K6NIW and W6GQC gave such good support to the S.F. Club on 6 meters during FD. *Humboldt and Far West Club*: W6GYC has a new YL. W6FBK is getting along okay after being very ill in the hospital. Joe Conroy has charge of obtaining a building for club meetings for the Far West Club. W6SLX visited the YL and grandchildren in Sonoma. *Marin Radio Club*: K6-LCF says the club had its station active at the Marin Art and Garden Fair. Emphasis was on MARS but both ham and MARS frequencies were used on s.s.b., a.m., c.w. and RTTY. Amateurs are invited to see the Hamilton Air Force station in Bldg. 442 any day during the regular weekly business hours. *Tamalpais Radio Club*: W6MQQ spoke on s.s.b. as used in Telephone Co. serving. He illustrated his subject with slides. More than 20 showed up for the club's PD. DL6LJ, of Kiel, Germany, visited the club at one of its regular meetings. WA6BXV soon will return from overseas bringing a new XYL. SEC W6KZF notes, "Be sure your local club net is signed up with C.D. Thus members participating in drills or actual emergency operations are covered by State Compensation Insurance in case of accident. Keep in touch via the AREC Net, 3900 kc. 10:30 A.M. Sun." Notes. W6KZF now has a 3-kw. 110-v. a.c. generator. W6GQA faithfully participates in Frequency Measuring Tests. K6LHV reports 6-meter opens to KF-K0. WA6-BPN has been doing lots of c.w. operating on 6 meters lately. K6OHJ's new address as of November will be 2306 Monserat Ave., Belmont. WA6MDL put up a new antenna on 75 meters, then a new 40-meter 3/4 vertical supporting a 75-meter dipole on top of it. WA6ADX observes that 6 meters was very active because of good band conditions. W6DEF, Northern Calif. Net, requests that all net business mail be addressed to WA6DAU. Dee Rigg, Clovis, Calif. WN6ABI is a new call in the HAMS ranks. There was a fine turnout at the HAMS meeting for guest speaker W6BF. WA6NDZ worked K7-LPB on 8 meters. WA6ROJ listened in on 2 meters and made observations of Cosmos II on 20,000 kc. W6GQA and W6FDU were active in the July C.D. Party. Traffic: WA6MDL 62, W6GGC 12, W6JWF 10, K6OHJ 10, W6-GHI 8.

SACRAMENTO VALLEY—SCM/Asst. Director, George R. Hudson. W6BTY—Asst. SCM/SEC: Antone F. Buzdas. K6IKV. EC's: W 160XK, K4VPN/6, K6BNB, K6GOT, W6LSW, K6BYS, OBS's: W6AF, K6HHD, K6-EIL, WA6CJU, OOs. W6WLI, K6ER, K6HEZ, W6ZJW, K6EIL, WA6NAU, W6FTH, W6GDO. ORS's: W6WGO.

(Continued on page 142)

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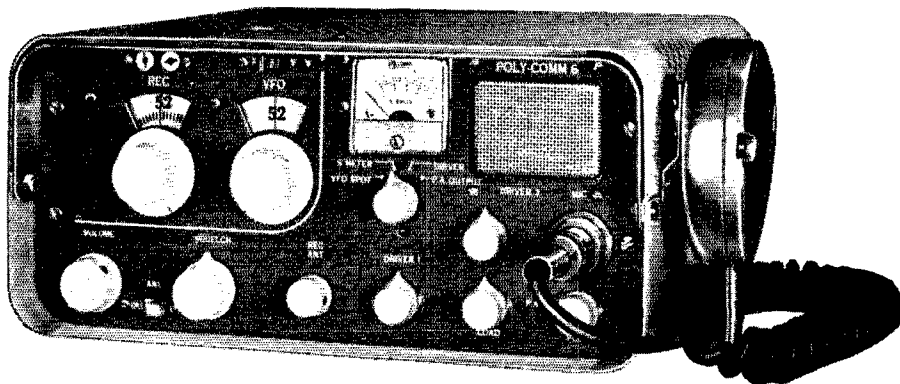
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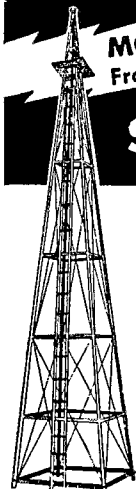
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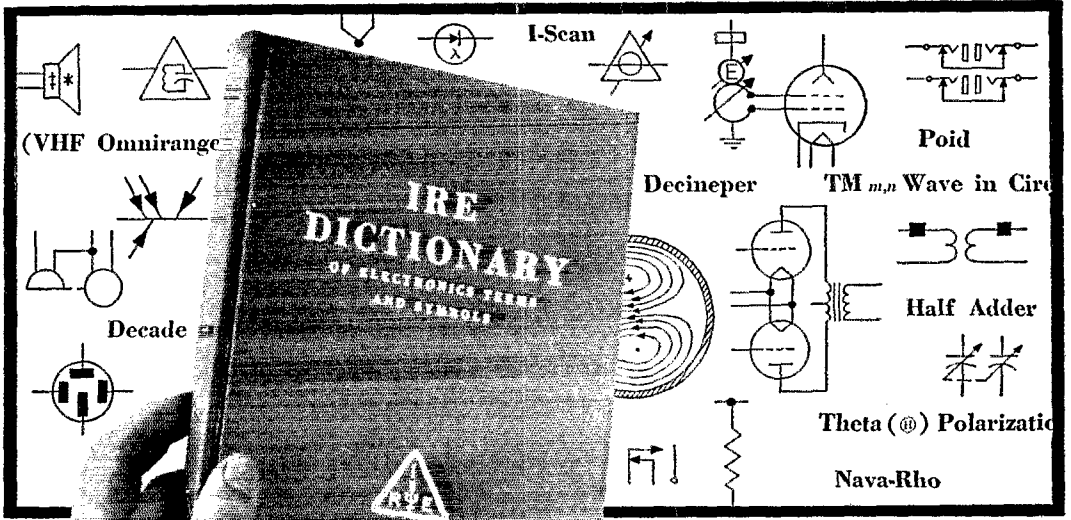
W6CEI, K6YZU, PAM: W6GQS, OES: W6PIV, OPSS: W6WGO, K6ELL, W6PIV, W6GQS, WA6PVT, WA6ONK. A tip of the hat to WA6SDJ, Aerojet ARC's new proxy, and his committee for hosting a hang-up Sacramento Valley inter-club meeting. Honored guest and speaker was Mr. Handy, WIBDL Vice-Pres. and Communications Manager of ARRL. WIBDI was introduced to Valley hauns by Mr. Engwicht, W6HC, ARRL Pacific Division Director, who was accompanying the ARRL Official to Pacific Division sections prior to Mr. Handy's departure for the National ARRL Convention in Portland. WB6-AMV/K6ROU is state fingerprint examiner and a newcomer to Sacramento. K7DGF, from Seattle, passed through on the way to Stockton and will operate portable running 5 watts on 6 meters, K5LAZ/6 at home station runs a KWM-2 driving 4/1000Z and 15 watts on 2 meters with a twenty-element spiralray; on mobile Dave runs a KWM-2 and a Communicator IV in a 1952 1/2-ton truck and packs along enough food for one man for 30 days! WA6PVT vacationed in Seattle. W6WGO reports new Mission Trail Net officers are W6HRA, proxy; WA6JKB, vice-pres.; W6RXX, secy.; and K6RMI, treas. K6LFH, senior engineer and designer of the Oscar Group, was featured speaker at the recent MARS club meeting at Sacramento's McClellan AFB with over 150 in attendance! W6KTB has a new G-76 on the air. WA6NDL, W6GTG, WA6DGH, W6GPX, W6VHT and K6ZFI were heard working the RAMS Net frequently while mobiling to the fair in Seattle. W6QIP and family are mobiling to Utah and trying out a new HX-20. Traffic: W6WGO 73, K6HEZ 29, WA6PVT 16.

SAN JOAQUIN VALLEY—SCM. Ralph Saroyan, W6JPU—W6BVM is trying to break 300 countries. WA6OYP has a Swan, and will be mobiling soon. WA6GJA is on 2 meters mobile. The Modesto gang is going to use 10 meters for mobile communications. W6PXY is on 75 meters with a home-built transceiver. W6PNP is heard on 20-meter s.s.b. working VR3s. W6KTW is on 20-meter s.s.b. with a beam reading for K16-Land to talk with his son. W6JPS is on 6 meters daily holding skeeds with K7EBS who is at the Girl Scout Camp. W6ZFN has an SX-101. K6QOK is on 40 meters with an SX-99 receiver and his rig is giving him trouble. The new call around town, General Class, is WA6RQB. K1LYW, ex-K6SNA, is back in Modesto and is on 2 meters. WA6-FUF has reported to the Navy for a 2-year term. WA6LTK is on 6 meters from Rio Vista. W6NCG is the call of the f.m. 2-meter repeater located on Mt. Breckenridge. Talk in frequency is 146.06 and talk out is 146.9 Mc. This is f.m., not a.m. The SJVN had an election and the following officers were elected: W6CUA, pres.; K5CWB/6, net mgr.; WA6IYU, asst. net mgr.; WA6BXW secy.-treas. The club reports 838 check-ins, 86 contacts, 26 traffic, 17 QST, 2 phone calls and 13 bulletins. Traffic: W6A1DB 146, W6JPS 57, W6HFB 20, K6AXV 2.

ROANOKE DIVISION

NORTH CAROLINA—SCM. N. J. Boruch, W4CH—SEC: W4YMI, RM: K4CPX, VHF PAM: W4ACY. We regret to announce as Silent Keys W4US, of Wilmington, one of our real old, old-timers, and K4TPZ, of Black Mountain, former manager of NCN, K4QFV and W4-BUZ are putting their OBS appointments to good use by retransmitting many O.L. Bulletins. W4BUZ also reports running propagation study and scheduling daily at 10 a.m., 3 and 6 p.m. K4WVP is constructing a 220-Mc. converter and adds that 220-Mc. activity is growing in Burlington. W4OAB suffered extensive damage to his antenna arrays during the Charlotte storm. W4BAW is hard at work on his k.w. linear and announces that the Coastal Carolina Emergency Net is now operating each evening at 7:30 on 3905 kc. As usual, WA4FJM and W4-FUI made their fine OO reports. K4JYN tested 10-KMC. and 1250-Mc. signals with good results. K4LTG was appointed Radio Officer for New Hanover County C.D. Known as the CRAB Net, and operating nightly on 30.2 Mc. for over two years now, are the following stations in the Wilmington Area: K4RYD, W4OQS, W4-KYB, W4VNK, W4EC, W4LWS, K4SRM, K4VGY, W4-GBW, WA4SLG. Congratulations to W4MDA, who received his A.B. from U.N.C. and has accepted a position at New Hanover High School to teach Spanish. Traffic: K4CPX 109, WA4FJM 105, W4BDU 70, W4BAW 64, W4LSX 59, K4IBX 57, K4VCL 33, WA4ANH 25, K4QFV 25, K4NPE 11, WA4AA 6.

SOUTH CAROLINA—SCM. Lee F. Worthington, K4HDX—PAM: K4KCO, RM: W4PED, Nets: C.W. (SCN) 3795 kc. 1200 GMT; A.M. (SCEN) 3930 kc. 0030 GMT; S.S.B. 3915 kc. 0100 GMT. My thanks to the ARRL members for their confidence in electing me SCM. We all owe a vote of thanks to the outgoing SCM, W4-GQV, for over four years of devoted work. New appointments: W4V1W as OO Class I; K4FPF as OES.
(Continued on page 144)



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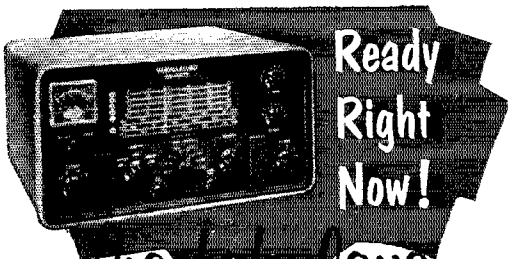
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K4KCO has been endorsed to continue as PAM. W4AKC is running for reelection as Vice-Director of the Roanoke Division and deserves our full support. The Spartanburg ARC assisted in recovering model planes via 75-meter mobiles at the All Dixie Model Air Meet on July 7-8. K4FYI is the new SCEN net mgr. W4TLC reports poor conditions on 220 Mc. during July. The Mike & Key Club of Greenville staged a hamburger fry on Aug. 10. All S.C. clubs are urged to forward their Field Day scores to the SCM for state recognition. W4YVW is installing s.s.b. on 80-2 meters and reports 6 meters open in July. The DX ARC of Camden held a picnic Aug. 26. Traffic: K4OCU 83, W4AKC 50, K4WOI 46, W4ADGH 39, W4-ANK 35, K4LND 18, W4ACSO 12, K4YFK 10, W4YVW 4.

VIRGINIA—SCM, Robert L. Follmar, W4QDY—Asst. SCM: H. J. Hopkins, W4SHJ. SEC: W4VMA, RMs: W4LK, K4ITY, W4A, W4SHJ, W4QDY. PAMs: W4-BGP, W4UFX, K4JQO. Your Director, SCM and Asst. SCM attended the VFN picnic at Gordonsville in July and the Hamfest at Winchester in August. W4UFX was elected the new manager of VFN and K4JYL asst. mgr. K4TSJ reports DX 58/45 with WAC. Newcomer WA2-EBR/4 is trying to get set up. K4QIY is activating the club station. OBS W4OWV reports a busy month. W4ZM likes the new Virginia-Locator, as do many others. The Virginia Ham is being sent to more and more of our active (net) members. W4OID, EC, of Eastern Shore, is lining up his AREC gang. W4QDY is endeavoring to get his AREC group on 10 meters without much luck at this writing. Two missing traffickers showed up recently—K4KNP and K4JKK. Interest is picking up rapidly in the VAH-500 and the Virginia Merit Awards for traffic work. W4YUJ picked up 2 new countries and worked both the Phone and C.W. CD Parties. In the Washington, D.C., Area W4NVX is working on a new rig and W4-WBC is busy putting together a Marauder with too many pieces. Hi, W4FOR changed rigs, celebrated two birthdays as well as the arrival of Nr. 2 grandson, then wondered what was the matter with his traffic total. W4NTR reports a nice traffic total in the Intercontinental Tfc. Net. W4REA gives his half-gallon credit for helping with the traffic totals. W4PTR is a new ORS in Lynchburg and is ready to go on 160 meters if necessary for traffic. Traffic: (July) W4DLA 301, W4SHJ 283, W4-RHA 262, W4NTR 240, W4FOR 221, W4WDZ 160, W4LK 139, K4RNH 115, W4ZJ 86, W4NVX 82, K4ITY 46, W4-PTR 42, W4BIK 41, W4QDY 30, K4FSS 28, K4IP 28, K4TSJ 22, W4A 18, K4AL 12, W4YUJ 12, W4CVO 11, W4OWV 9, WA2EBR/4 8, K4SGQ 6, W4BZE 5, W4ADUW 5, K4JKK 4, K4MLD 4, W4TE 3, W4XK 1 (June) W4ZM 104, K4RNH 84, W4BIK 60, K4PQV 54, W4CFV 18, K4JQO 4, K4QIY 1 (May) K4JQO 17.

WEST VIRGINIA—SCM, Donald B. Morris, W8JM—SEC: W8SSA, RM: K8HID, PAM: K8CFT, ECs, ORS, and OPSS are needed, WYN C.W. meets on 3570 kc. at 0000 GMT and WYN Phone on 3890 kc. at 2330 GMT. W8ZWM is a new OBS in Elkins and K8PJC is OBS in Hinton. The Phone Net reports 12 sessions, 334 stations and 34 messages. C.W. Net reports 12 sessions, 72 stations and 47 messages. W8LD, ex-W8JKN, now teaching in Baltimore, will be on s.s.b. from Buckhannon after September. K8ZPR, now active on 3890 kc., will be glad to give you Hancock County. K8CSG is back home after Army service. K8JLF will be inactive while attending Duke. K8MQB received the new CHC award. K8BIT finds time to work RTTY along with his duties as editor of *Splatter*. All West Va. amateurs interested in Centennial QSLI cards should contact T. D. Foster, K8-FID, Tornado, West Va. amateurs interested in outstanding, Fairmont, Morgantown, Clarksburg, Grafton and Wheeling are now linked on 144 Mc. A dependable link is needed with the Kanawha Valley. Have you and your club made a contribution to the ARRL Building Fund? Traffic: K8UQY 45, K8LOU 23, K8CSG 22, K8-JLF 14, K8ELH 12, W8JM 5, W8JUE 5.

ROCKY MOUNTAIN DIVISION

COLORADO—SCM, Donald S. Middleton, W0NIT—SEC: W0SIN, PAMs: W0CXW, W0JIR and W0GNK. RMs: W0FEO, K0DTK, OBS: K0DCC. Send activity reports to 920 West Adams Pueblo, Colo., by the 5th of each month. Congratulations to the DRC for a very successful Rocky Mtn. Division Convention. W0BWI, Division Director, reported that there were 417 registrations. The speakers were K16KG, 5N2AMS and ZL1-AAX. Also on the program were W6SAL, W1LVQ and K000A. W0SIN, Colorado's SEC, writes that he has not heard from many of the ECs for a period of six months or longer. ECs are requested to keep their SEC informed. The CTNN is in the red and needs an editor. Any volunteers should write to the SCM. TVFN moved to 7060 kc. for the summer. W0KQD is recovering from surgery. The Colorado Springs hams were on hand to provide communications for the Pikes Peak Annual Auto

(Continued on page 146)

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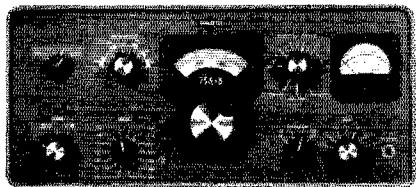
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Race. They had a fine plan and all went well. Traffic: (July) W0NIT 3, K0WVJ 3. (June) W0FEO 200.

UTAH—SCM, Thomas H. Miller, W7QWH—Asst. SCM; John H. Sampson, W7OCX. SEC: K7BLR, W7s OCX and QWH and K7s BLR, OIP, AIPQ and NCA represented Utah at the recent Rocky Mountain Division Convention in Denver. W7OCX received the coveted A-1 Operators certificate at the convention. W7BAJ has a kw. linear and is interested in RTTY. K7NWP says that the fishing is too good to spend much time humming; even so Marty has a traffic total of 417 this month. The Utah Amateur Radio Club has won the first annual award for the highest Utah club Field Day score. The trophy is presented by the Utah Council of Amateur Radio Clubs. A club keeps the trophy permanently only if it can win three consecutive years. Traffic: K7NWP 417, W7OCX 54, W7QWH 4.

NEW MEXICO—SCM, Carl W. Franz, W5ZHJN—SEC: K5QJN. V.H.F. PAM: W5FPB, K5FMF has started the Novice section of the New Mexico Brass Pounders on 3737 kc. at 1400 daily. Here is a chance for Novices to learn good operating procedures and at the same time carry out the traditional public service of the amateur. There are a number of Emergency Coordinator appointments open in various locations in our section. Those interested in coordinated emergency activities, please contact K5QJN. Sixteen hams and families from Albuquerque and Los Alamos attended the Division Convention at Denver. Our thanks to the Denver ARC for a nice time and a warm and friendly welcome. The 1963 Convention Committee is hard at work for next July. W5WZK is chairman. Our new President, Herbert Hoover, jr., W6ZH, has confirmed that he will attend. The 4th N.M. QSO Party will be held on Jan. 26 and 27, 1963. The Chamber of Commerce/Caravan Club tourist message service is going over with a bang. Local amateurs and ARCs made the press, TV and other publications 16 times in 42 days. How about some reports for this column, gang? Traffic: W5ZHJN 218, W5WZK 48, K5LDT 2.

WYOMING—SCM, L. D. Branson, W7AMU—SEC: W7HH. The Pony Express Net meets Sun. at 0800 MST on 3920 kc.; the YO Net is a c.w. net on Mon., Wed. and Fri. at 1830 MST on 3610 kc.; the Wyoming C.D. Net meets Wed. at 1900 MST on 3537.5 kc.; the TWN Net daily at 2000 MST on 7050 kc. SEC W7HH attended the WIAU Hamfest in Big Springs and reports a large group in attendance and everyone seemed to have a good time. W7AMU still is under the doctor's care but has his new teeth. Quite a crowd from Casper attended the Picnic at Cheyenne Aug. 12. Both Cheyenne clubs made a joint meeting of the Picnic. W7LVU has a new SB10 with linear doing a nice s.s.b. job. W7BHH has returned from Yellowstone Park. W7MGM has new Gonset Twins with a fine signal. Traffic: W7AMU 18, K7ONK 16, W7DXV 12, W7GZG 11, W7LVU 9, W7BHH 8, W7HH 6, W7EUZ 3, W7HDS 2, K7TPQ 2.

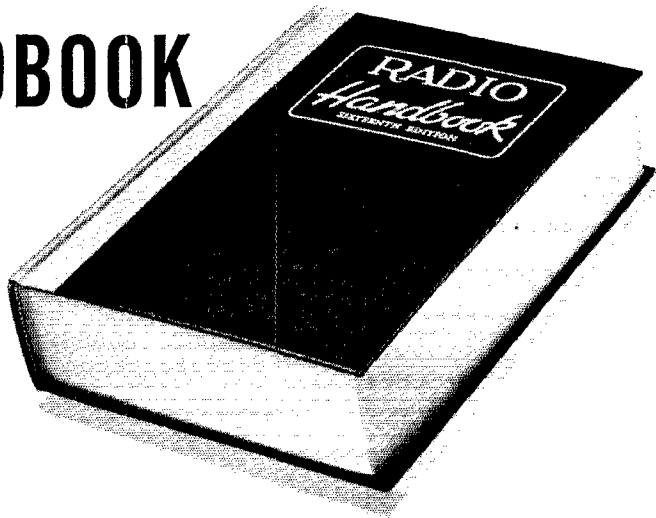
SOUTHEASTERN DIVISION

ALABAMA—SCM, Harvell V. Tilley, K4PHH—SEC: W4FQQ. RM: K4YUD. PAMs: K4BTO, K4PFM. S.S.B.: K4KJD. Congratulations to new hams WN4HG, WN4HJ, WN4TE and WN4IUV. K4FQG has a new SX-71. K4WOP is on 6 meters with a Sixer. K4BOK has a new HT-37. The U. of A. ARC has resumed activity. The AENM in July had the largest month on record for attendance. K4QIW has located in Jasper. K4FQG operated portable from Camp Winnataska, Ala., recently using an AF-67. K4ZTT has a new TA-33 jr. The mobile ARC has purchased a Heath Sixer for hams who are in the hospital. W4PIA has put up a five-element beam for 6 meters. W4VGV is on 2 meters with a Heath tower. A new 6-meter station in the Anniston Area is W4A-AQQ, running a Globe Scout with an HQ-110 and a converter. K4KZM is using two new beams, a 6-meter and a tri-band beam for 10, 15, and 20 meters. Traffic: (July) K4WWP 88, K4FZQ 75, K4LNA 68, K4WOP 61, K4AOZ 55, W44BDW 50, K4PFM 43, W44BSE 28, K4DJR 24, K4KJD 21, K4WHW 21, K4NKT 20, W4CIU 18, K4BRZ 16, K4UMD 13, K4DSO 11, K4SAV 10, K4GXS 9, K4ZY0 9, K4ZTT 8, K4BTO 7, W4BTA 5, K4JDA 4, K4KDE 4, W4MI 4, W4RLG 4, W4WGI 4, K4PHH 3, K4TDJ 3, W4HEDF 2, K4WSS 2, K4AAU 1, W4AVM 1, W4DFE 1, W4EEC 1, WN4TE 1, K4RIL 1. (June) K4NUW 43, K4FQG 41, W4ZNI 7, K4AAU 2.

EASTERN FLORIDA—SCM, Albert L. Hamel, K4SHJ—SEC: W4YTT. RM: K4KDN. RM RTTY: W4EHU. PAMs: 40 W4SDR; 75 K4LCP; V.H.F. W4RMU; S.S.B. W4CNZ. Skip conditions on 40 meters have played havoc with FAITN and have remained consistently bad. GN still is on the secondary frequency of 3650 kc. K4BRU is back in Orlando after five years in Japan. Don't know exactly how many years "young" K4ILB is but
(Continued on page 148)

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from the skeels he keeps he is good for another 40 years at least. W4BBZ had bugs in his balun box—terminates no less which "fixed" it good. Our estimable Doctor of Forestry, K4ZIF, now is studying electronics at high school. W4BNE's outline of rigs reminds me of the layout at Army Sigs WTA on Corregidor, W4AKZX now is Chief of Communications for the Salerno Zone of C.D. You are, AREC aren't you? K4ILB is now NA7HB of CG Auxiliary, Traffic; (July) W4AKB 607, K4SJE 575, W4A-BMC 460, W4TUB 393, W4AAMC/4 311, K4BY 260, W4A-IHH 222, W4NDL 178, W4KIS 172, W4EHW 136, W4CNCZ 115, K4RNG 104, W4ACJC 101, K4FMA 88, K4KDN 82, W4AAME 77, W4ABGW 77, K4YOO 72, W4HYT 47, K4-NVD 45, K4AKQ 44, W4CWD 43, W4MIN 43, W4HDM 42, W4URX 42, K4MTP 39, W4KCG 37, K4YLN 36, W4BKC 33, K4ILB 32, K4JWM 32, W4HRC 30, K4JZU 30, K4MZR 28, W4HFR 25, W4ZAK 25, K4LVE 23, K4-ENW 22, K4COO 21, K6SXX/4 19, W4A4H 18, W4VCX 18, K4AX 17, W4BBZ 16, K4OSQ 16, W4ABYP 15, W4-ESS 15, W4GBM 15, W4AFP 13, W4AAZZ 12, W4LSA 12, K4ZIF 11, K4NTA 10, W4BNE 9, W4EAT 9, W4A-KZX 8, W4NGR 8, W4UEO 8, W4YVD 7, W4ACOR 7, K4FQP 7, W4AHCJ 7, W4ULH/KIONW 7, W4DFZ 6, W4DGL 6, W4AIVC 6, K4IWT 6, W4QVJ 6, W4ABAW 5, W4AISJ 5, K4AHU 4, K4NXW 4, W4ERM 3, W4HGO 3, K4UKF 3, K4BHL 2, W4SVI 2, K4PVP 1. (June) W4AAMC/4 157, K4ILB 42, W4NGR 39, W4ABGL 24, W4AHCJ 23, W4HRC 22, K4NYD 10, K4YSP 18, W4-KCG 17, K6SXX/4 16, W4A4H 14, W4ABGL 12, K4GUE 9, K4ODS 9, K4ZIF 9, K4LVE 7, K4PPX 7, K4QQE 7, K4CMK 6, W4A4H 5, K4DBT 4, W4RIK 4, K4VGD 4, W4AAMV 3, W4DTS 3, W4UEO 3, K4UKF 2, K4BHL 1.

WESTERN FLORIDA—SCM, Frank M. Butler, jr., W4RKH—SEC; W4MLE, PAM; W4WEB, RM; K4UBR, Panama City: The 2-Meter C.D. Net now meets Wed. at 0230 GMT on 147.3 Mc. W4AFLJ and W4AFFF completed WAS. Their 6 & 2 beam is now up 55 ft., and they have a Big Wheel 2-meter mobile antenna. W4-GJO is on 6-meters using Elmac gear and hulo. W4-LMC is a new ham, K4MZA has joined the 2-meter gang. K4VFF recently was appointed OO, Blountstown; K4-UNT and W4ACIH are on 2 meters; K4KHV and K4YSQ have gone mobile on 75 meters, K4DHK is on 40 and 10 meters; W4AKT is on 10 and 75 meters. Madison: W4PBO is having rig trouble. W4AGHE has gone s.s.b. Tallahassee: A new RACES Plan is almost complete. K4YPI is the RO. Alternates are W4GAA, K4OHR and W4MLE. W4DCN received his Conditional Class ticket. K4ARK has a new 758-1, W4MLE is now listening on an HQ-170, Fort Walton/Eglin AFB: The EARS held an FB picnic; W4RKE won a prize. W4IYH is a new ham on 2 meters. W4SRX has moved the operating room and meeting place to a new air-conditioned QTH in Bldg. 44, EAFB, Pensacola: K4-DDD has been appointed EC for Escambia County. He is also RO for RACES. K4QAC is NCS for AF MARS 6-Meter Net on 49.98 Mc. Tue. and Thurs. at 7 p.m. K4FOG has been ill in the hospital. A 2-meter net now meets Thurs. at 7:30 p.m. on 145.44 Mc. Crystals are available from the V.H.F. Club. The Corry Field Club call is now W4AECY. Traffic; (July) K4VFF 102, K4-KHC 68, W4BVE 59, W4AFLJ 23, W4GAA 22, W4MLE 10, W4ZGS 4. (June) W4MLE 25.

GEORGIA—SCM, James A. Giglio, W4IG—SEC; W4TJS, RM; W4DDY, PAM; W4KR, New officers of the Georgia Cracker Radio Club are: W4KR, pres.; W4PCF, vice-pres.; K4ZSZ, 2nd vice-pres.; K4FRM, 3rd vice-pres.; W4MZO, secy.-treas.; W4ZD, historian. The Columbus Amateur Radio Club has completed a roster of all hams in the Columbus Area. Write K4RHU for a copy. W4EYG is sporting a new all-band GG amplifier. The Georgia Peach YL Net has moved from 7260 kc. to 3860 kc. each Thurs. at 0900 EST. K4FRM reports good DX on 40-meter c.w. with low power. The Georgia Cracker Mobile Net meets each Sun. on 3995 kc. at 1330 EST with K4DKY as NC. For the benefit of those who believe in "finders-keepers" we have a report that K4-ZYI found a snake in his exciter! And K4UJS is now using a portable home-brew 80-meter c.w. transceiver to help meet traffic skeels. Lucky W4TT continues to win prizes at the hamfests. Happy new home-owners are K4WNH and W4ENW; also K4LIU and K4YMR. We hear that K4KBZ now has a 4-1000 GG amplifier to go with his Eico 720. And W4NAG now has a 20-A on s.s.b. The annual meeting of the Georgia Single Sideband Association will be held Oct. 20 and 21 in Macon, Ga. New appointments: W4KR-PAM, W4YFR-EC, W4YE-ORS and K4KSH/4-ORS. Traffic; K4ZYI 437, K4MCL 297, W4DDY 223, K4KSH/4 127, K4QPL 123, K4UJS 36, K4-NGI 32, K4BAI 15, K4RHU 10, W4BZ 6, K4FRM 5, K4BVD 3, W4LG 3, K4BWQ 2.

WEST INDIES—SCM, William Werner, KP4DJ —C.D. Radio Officer; KP4MC, QSL Mgr.; KP4YT. All the friends of Alicia, KP4CL, join in her sorrow at

(Continued on page 150)

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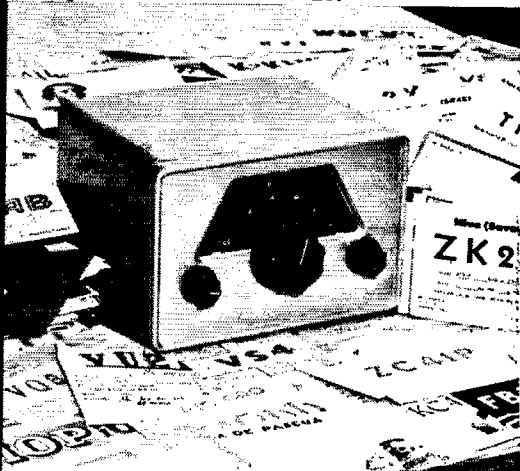
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the death of her mother. Officers of the newly-formed El Morro Radio Club are KP4ASL, pres.; KP4BDO, vice-pres.; KP4ASK, secy.-treas.; KP4BCA, corr. secy. Meetings are held at the Porto Rico Iron Works every other Thurs. at 7:30 p.m. The club "net" meets the 1st and 3rd Thurs. on 28,740 kc. at 7:30 p.m. KP4BCA has applied for appointment as AREC Emergency Coordinator for San Juan District. He can operate mobile using an AF-68 and a Morrow converter. KP4AFL reports to the C.D. Net each Sat. at 1700 GMT on 7205 kc. KP4GN has a G-76 mobile, plus Collins 51J4. KWS-1, Globe King and a model 15 teletype. KP4ASL has AF68. PMR8 mobile and a Valiant 75A-3 for a home station. KP4-AXD and KP4BAN are active on 50 Mc. KP4AXD also is mobile on 50 Mc. KP4CH brought a Courier amplifier from New York and is on all bands. KP4ASK is using a Heath Tenner mobile on 29,715 kc. at 3 watts. KP4CH skeds K2KGU on 14,030 kc. KP4GN owns a TV relay station (translator) operating on Channel 8. KP4CGB, at USCG Base in San Juan, is now NCS of the Antilles Weather Net, operating daily at 1045 GMT on 3815 and 7245 kc. KP4CGB delivers weather reports received on the net direct to USWB via teletype where they are posted along with other reports for pilot information. The Coast Guard Base at San Juan has KP4AOO, KP4-AKW, KP4BEA, KP4BHR, KP4BIE, W4RUX/KP4-CGB, W4ZMC/KP4, K1DZB/KP4 and K8MDK/KP4. KP4AOO, KP4BEA and KP4CGB have ordered HT-37 transmitters. Traffic: (July) KP4CGB 380, KP4WT 120. (June) KP4CGB 313, KP4BAU 10.

SOUTHWESTERN DIVISION

LOS ANGELES—SCM, Albert F. Hill, jr., W6JQB—Asst. SCM: Lyle G. Farrell, W6KGC. SEC: K6YCX. RMs: W6BHG, WA6ROF, PAMs: W6ORS, K6PZM. The following stations earned BPL for the month: W6WPF, W6GYH and K6MDD. Congrats, fellows! New officers of the Rio Hondo Radio Club are: WA6MLL, pres.; WA6HY, vice-pres.; WA6ODF, secy.; K6RDQ, treas. WA6ODF will be signing /5 from Texas for a few weeks. K6UMV is working on a B.S. degree at night school. W6OZ has just completed 34 months of code practice on the air. Congrats, Dick! WA6HUO is working up a big AREC Drill for San Fernando Valley. W6UGA is back in business on the v.h.f. bands, the eggs hatched that were in converter! W6AM is putting up new antennas at the "Ranch"! K6UYK is engaged in the National Soaring Contest. K6IWV is heading out for a vacation in September. WA6MFH put up an eleven-element Spiral-ray on 6 meters. W6VOZ participated as /0 on the Pikes Peak Auto Race. WA6ROF is attending Riverside City College. W6CK is back home in Hemet after a stint in the hospital in San Francisco. WA6DJB has a VHF-126 for 2 meters. New officers of the Downey Amateur Radio Club are: WA6DCF, pres.; WA6MAT, vice-pres.; WA6-MQF, secy.; WA6NER, treas. A new reporter this month is W6YSL, who has just completed his first 6 contacts. Support your section nets. On c.w., the Southern California Net (SCN) meeting at 0300 GMT on 3600 kc. daily; on phone, the Southern California Six Net (SoCal 6 Net) meeting at 0230 GMT on 50.4 Mc. daily. Traffic: (July) W6WPF 910, W6GYH 781, K6MDD 533, K6IWV 408, K6SUJ 300, K6OZJ 288, W6QAE 275, WA6DJB 232, K6YVN 226, WA6ODF 153, WA6JDB 124, WA6WTK 106, WA6ROF 96, W6BHG 95, WA6KAW 44, WA6CKR 25, WA6AAH 11, K6UMV 11, W6UGA 6, K6-YUK 6, WA6MFH 5. (June) WA6VIK 9. (May) W6FNE 574, K6WAH 464.

ARIZONA—SCM, Kenneth P. Cole, W7QZH—Asst. SCM/SEC: George Mezey, K7NIY. PAM: W7OIF. RM: W7LND. The Copper State Net meets at 1930 MST Mon. through Fri. on 3880 kc.; The Grand Canyon Net Sun. at 0800 MST on 3880 kc.; The Tucson AREC Net Wed. at 1900 MST on 3880 kc.; The Cochise County AREC Net each Sun. at 1400 MST on 7260 kc.; The Tucson 2-Meter Net at 1000 MST on 145.35 Mc.; The Arizona Interstate Net, C.W. Mon. through Fri. at 1900 MST on 3555 kc. Because of the efforts of W7RFE and a group of Arizona radio amateurs, the annual hamfest, formerly held at Montezuma Wells, was held this year at Ft. Tuthill, a park area located five miles south of Flagstaff, Ariz. Old-timers will recall Montezuma as the annual gathering place of amateurs, not only from Arizona but from California, Nevada, New Mexico and Texas. After 15 years it was discontinued because of Federal regulations regarding the use of park facilities. This year, after much favorable publicity, the annual get-together was reorganized and the amateurs met for three days in the Ft. Tuthill recreational area. More than 300 people were present. It will be held again next year sometime in July. K7EBS is chief radio operator as well as counselor at the El-O-Win Girl Scout Camp, Dinkey Creek, located in the Sierra Nevada Mountains of California. Having no telephone service, all communications are handled by K7EBS:6 through W6JPS in

(Continued on page 152)

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 Technical Editors—Bob Grimm, K6RNO—Paul Wilson, W4HHK—Len Garrett, W7JIP—Ernie Manley, W7LHL
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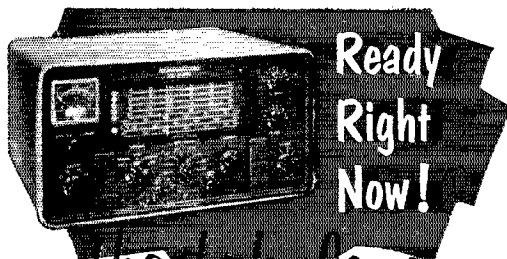
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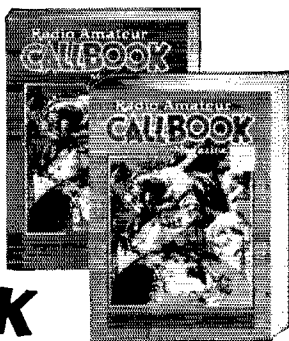
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SAN DIEGO—SCM, Don Stansifer, W6LRU—The three Orange County clubs who sponsored the 1962 Southwestern Division Convention donated \$300 to the ARRL Building Fund from monies received. W6PMI was the guest speaker at the July Orange County Club meeting and spoke about Mexican amateur activities. The early August meeting of the Newport Club included an auction and was presided over by W6WSW. WA6PDE is now on 6 meters and building a rig for 432 Mc. WA6ZOW, in Orange County, had a traffic total of 111 for July, highest in that area in some years. W6YDK, with one operator, originated 2104 pieces of traffic during July. W6LAB reports the transfer of operator K5UVP to Lincoln, Nebr., and that a new ham shack is under construction. K6BPI hit a traffic total of 3984 during July. Who said the summer months were low for traffic? W6LEY, OES, reports much short skip on 6 meters during July. K6GJM reports operating mobile marine on 6 and 2 meters in the channel near Catalina with eight other operators, and making 53 contacts on both bands. W6JQB, Los Angeles SCM, visited me in Mono County while on vacation. Plans are taking shape in San Diego for the Southwestern Division Convention to be held there in 1963. K6RWM is now out of the Navy and has returned to Iowa, with his family. Traffic: K6BPI 3984, W6LAB 2817, W6YDK 2223, WA6CDD 97, WA6ZOW 111, WA6PDE 6.

SANTA BARBARA—SCM, W. C. Shelton, K6AAK—This will be my first report as SCM in approximately 25 years as I served the ARRL in this same capacity in the middle thirties. It is great to be back again and hope that I can be of some service to you and this great fraternity of ours. I would like to take this opportunity to outline some of the plans I have for the section. However, to see these plans fulfilled I will need the assistance and cooperation of every active ham in the section. I have three objectives in mind to assist the section in keeping ahead of the other sections in the division. (1) To see the ARRL membership double. (2) Increased activity in ARRL affairs. (3) Every club an affiliate and 100 per cent ARRL membership. I plan to visit every club at least once a year or more often if necessary to keep you informed of the section's affairs and to offer you any assistance necessary in making these plans a reality for the good of our fraternity. Please forward your activity reports so the section can receive recognition.

WEST GULF DIVISION

NORTHERN TEXAS—SCM, L. L. Harbin, W5BNG—Asst. SCM: E. C. Pool, W5NFO. SEC: K5AEX. PAM: W5AYX. RM: W5LR. Congratulations to the Corpus Christi ARC on the excellent manner in which they handled the 32nd Annual Convention of the West Gulf Division Aug. 3-5. Every operation was performed so smoothly that you would think it was planned by professionals rather than by a group of volunteers. More than 350 pre-registered and all attended the pre-convention party. John Huntoon, W1LVQ, General Manager ARRL, gave an interesting talk on the organization of the League. W5AWT was presented a plaque for the highest amateur award and a proclamation by the Governor of Texas designating Aug. 5 as Mel Boatman Day was marked by the sounding of air raid sirens in Corpus Christi. The Magic Valley Amateurs won the bid for the 1963 convention to be held in McAllen, San Antonio, Houston and Ft. Worth also bid for the honor. W5DX won the award for the oldest license, dated 1917. Code speed winner was W5APS. Home-brew equipment contest winner was K5KDN. Aug. 10 marked the end of my second term as your SCM and I want to thank my assistants, appointees and other contributors of news and activities reports for their help in making my job possible. I sincerely hope you will continue to help your SCM in the future. Traffic: W5BKH 134, W5GY 108, K5PXV 102, W5LR 78, K5-SXK 59.

OKLAHOMA—SCM, Adrian V. Rea, W5DRZ—SEC: K5KTW. W5IER informs us that the new emergency center at Sand Springs is ready for operation. Stephens and Craig Counties have had their RACES plans approved. The appreciation of all Oklahoma amateurs goes to Governor Edmundson for his proclamation, setting aside the week of June 24 to 30 as Amateur Radio Week in Oklahoma. The following stations sent reports to the SCM of Field Day activities: W5GU, W5CDF, K5LRU, W5NS, K5TRO, W5PAA, W5OX and W5HTK. The latest list of 2-meter stations we know about includes K5CKO, K5AUX, W5ASX, W5YLI, W5MGZ is the new Custer County EC. W5CZB, K5CAI and W5KY deserve the thanks and appreciation of all
(Continued on page 164)

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Oklahoma amateurs for their faithfulness in emergency work with the weather net. Our sympathy to W5PHU in his recent sorrow. K5DYF has become a Silent Key. K5FKV has completed his new home. W5JMQ has a new high-power linear with a pair of 813s in the final. Old Man Lightning has been after K5OOV, but the beam rotator was the only casualty. The Oklahoma State Convention will be held at Lake Texoma Lodge, Oct. 27 and 28 and is sponsored by the Oklahoma City V.H.F. Club and a few Texoma Area amateurs. W5EHC and W5HXT are in Washington on TDY. K5ZEP is busy building audio tuners. K5LUT is a new amateur at Poteau. K5LXS is radiating signals from Oklahoma City. K5KTW has a new 813 amplifier with a good signal on both s.s.b. and a.u. K5RCW, OBS, moved to Chicago, where he is going to school taking advanced training in the electronics field. W5UGO is a new OES. We have reluctantly accepted the resignation of K5JGZ as RML. Lee has been very active on the c.w. nets for many years. Traffic: (July) K5TEY 106, W5JXM 86, K5IBZ 56, W5JMQ 50, W5DRZ 42, K5ZCJ 37, K5ZEP 28, K5OCX 28, K5ZFF 20, K5AUX 17, W5BNG 15, K5OOV 10, W5CCK 9, K5JOA 8, K5LZF 7, W5PNG 6, W5UYQ 6, W5PKL 5, K5RWL 5, W5EHC 1. (June) W5HTK 1038, W5QMJ 700, K5TEY 115, W5DRZ 61, K5AUX 58, K5IBZ 41, W5JMQ 41, K5OCX 41, W5CCK 31, W5FEC 26, K5LZF 26, K5JOA 23, W5PML 17, K5ZCJ 16, K5FQJ 11, K5ZEP 11, K5DMS 9, W5FKI 9, W5UYQ 8, W5PNG 7, K5OOV 5, K5BAT 4, W5WAF 4, W5EHC 1.

SOUTHERN TEXAS—SCM, Roy K. Eggleston, W5QEM—SEC; W5AIR. Thanks to the Reynolds Metal Amateur Radio Club for putting me on their mailing list for the K5JUR bulletin. The latest addition to the club's shack is a new 3011 linear. W5BRY, WA5AUB, WA5CXX, W5BBO and WA5DFG all passed the General Class examination. This is a sample of the good work the gang at Reynolds are doing. Anyone missing the West Gulf Division Convention at Corpus Christi missed a good one. We certainly owe AQK, HQR and their committees a rousing vote of thanks for all the work that went into this. Also thanks to LCDR Bartlett, W5IAA, and his cast for the good Wouff Hong initiation. WA5AUA is on vacation at Las Vegas. Good luck, Gene. BRZ is mobiling around on his vacation. W5MVL and family are vacationing on the Coast. K5GPR is a new OES. K5RDP is the new OO for the Houston Area. The Stephen F. Austin Amateur Radio Club is setting up a 2-meter net for emergency use using all homemade equipment. WA5BFZ and WA5DQG have new General Class tickets. I wish that someone from each club would send me just one news item each month and then we would be able to fill up our space.

CANADIAN DIVISION

GOOSE BAY QSO PARTY

Oct. 12-22

All amateurs are invited by the Goose Bay Amateur Radio Club to participate in the annual Goose Bay QSO Party which commences at 2400 GMT Oct. 12 and ends at 2400 GMT Oct. 22. All bands and either phone or x c.w. may be used. The exchange will consist of RS(T), name, and QTH. A WAG (Worked All Goose) certificate will be awarded to all W/VE stations reporting QSOs with four GBARC members during the contest period, and to all other stations reporting QSOs with three GBARC members. QSL cards are requested from all stations during the 10-day period to help club members qualify for trophies. Send reports to Jack Willis, VO2NA, Awards Manager, Aeradio, Dept. of Transport, Goose Bay, Labrador, Canada. The following VO2 stations are members of the GBARC: VO2s AA AH AI AV DP HA NA PC RC RN UA, and VE1MW/VO2.

MARITIME—SCM, D. E. Weeks, VE1WB—Asst. SCM; A. E. W. Street, VE1EK, and H. C. Hillyard, VO1CZ. Newly-elected officers of the NBARA include VE1BL, pres.; VE1AFP and VE1AEB, vice-pres.; VE1MZ, secy.-treas. Recent transfers include VE1DO to New York, VE1ACY to Montreal, VE1GI to Newfoundland and KINPS/VO1 to the W3 district. VE1AFP has acquired W-CONN and YLCC certificates. Recent visitors to the section include K2SQM, VE3LK, VE6DW and K1AFF. VO1CZ, VO1DW and VO1AE were active in a recent 6-meter opening. VO1FO has constructed a 200-watt linear for fixed or mobile use. New calls include VO1DB, VO1DJ is now on phone. VE1QA has transferred to the VE7 district. VO1NA has added
(Continued on page 158)

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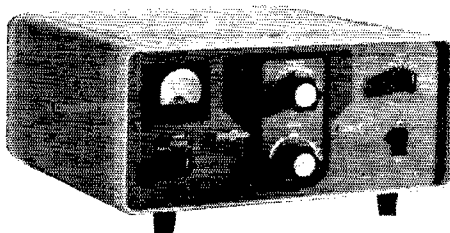
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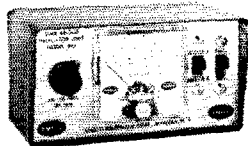
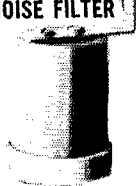
WAVO, WPX 300 C.W. and DLD 100 to his award collection, bringing the total up to 70. VE1AFP has a new Tower. Do you use GMT when logging? Nova Scotia amateurs wishing to obtain QSL cards made available by the N.S. Tourist Bureau should write immediately to the Secy., NSARA, P.O. Box 663, Halifax, N.S. Do not contact the Tourist Bureau. Traffic: VE1OM 11, VE1ES 9, VE1AEB 4.

ONTARIO—SCM, Richard W. Roberts, VE3NG—The Disaster Communications Unit in Hamilton is tops in activity and exercises. This unit is cooperating with the Red Cross in that city on 2 meters. How about other centers getting on the beam? Two is the apparent answer to the local communications problem. What with all the club projects during the past winter, it should be a cinch to organize. Possible EC's, write VE3NG or VE3AML re appointment. Clubs also please take note. Put your 2-meter gear to work. We regret to announce the passing of one of North America's leading DX men, VE3HB, of Toronto and Oakville. He was a member of the Ontario DX Assn., the Nortown and Westside Radio Clubs, and was treasurer of the Ontario Amateur Radio Federation, Inc. soon to be known as the Radio Society of Ontario. VE3AUH is portable at Sundridge, VP5GH and VP5VL from Jamaica, were visitors to Ontario recently. VE3DUU is out of the hospital. The Amateur Radio Club of Sarnia did very well on FD. VE3CEB is on 75-meter mobile. VE3AK had his rig hit by lightning. VE3ECN is now in Israel. VE3CFR is on 2 meters. Scarboro and Nortown get together for transmitter hunts and will hold a picnic soon. VE3ESE is now OES in Toronto. The Scarboro ARC is very active on 2 meters assisting the local Parks Sports programs. VEFAS made his first BPL. VE3EZO and VE3EZI are both Class A. We regret to report VE3DFZ is a Silent Key. VE3NG and VE3BD were guests on the HMCS *Victorian* while the ship was in Toronto. Unmodulated carriers are a nuisance to all of us. May we remind you that the D.O.T. regs. require all of us to identify our signals. VE3AGG is Class A now. Traffic: (July) VE3FES 835, VEFAS 345, VE3NG 198, VE3CFR 129, VE3DPO 98, VE3GI 48, VE3DRF 46, VE3BSY 43, VE3AYP 39, VE3EHL 32, VE3AML 31, VE3AUH/3 28, VE3BAQ 28, VE3BZU 26, VE3APK 25, VE3ELQ 21, VE3FES/3 20, VE3DWN 16, VE3DU 13, VE3BUR 12, VE3DH 11, VE3AKQ 7, VE3AUU 4, VE3VD 4. (June) VE3BSY 36.

QUEBEC—SCM, C. W. Skarstedt, VE2DR—Asst. SCM: Jean P. Achim, VE2ATL. In July three persons were electrocuted and four burned while raising a tower at Chateauguay. The *Press* reported the owner an "amateur" but actually he held a Citizens Radio license. Regardless, the accident emphasizes the importance that extreme care must be taken when working near power lines. The annual RAQI Convention at Chicoutimi was a great success, with 400 attending. VE2s AZF, SC, BG, BE, BDV, AG, AVY, AOV, AGQ, TM and ACH attended the outing at Burlington, Vt. VE2SC won the 75-meter transmitter hunt. *Don't forget the 5th Jamboree-on-the-Air, Oct. 20 and 21.* VE2BHH, at Camp Bnai Brith, Petit Lac Long, finds ham radio helpful traffic-wise. VE2JJ is now posted in Mont Joli. BLT is busy with complicated electronic equipment. AOV is on 10-meter phone. VE2ATL reports: VE2BJV is experimenting with QRP on 80 meters. VE2BMW is a newcomer at St. Jerome. VE2BCL heard Cuba on TV during a nuclear explosion. VE2BBR and VE2TZ are active mobiles. VE2BAA est actif sur 20-m. c.w. VE2AJV et VE2PY ont installé un Gamma Match chez VE2RKL. VE2BAM est un nouvel amateur, gradué des cours du C.J.O. VE2IM et VE2IK ont fait des expériences sur 2 m. de Saint-Jean Port-Joli. Ils ont entendu les stations suivantes: VE2ABA, DZ, BBC, AL, VE2ALH est le "manager" du Que. Fone Net. VE2BCZ se rétablit d'une maladie dans un hôpital du Pérou, après avoir été porté disparu pour 2½ semaines. Traffic: VE2DR 100, VE2BHH 42, VE2BFT 37, VE2AUU 33, VE2AJD 31, VE2BG 30, VE2AGQ 28, VE2AQV 26, VE2ALE 24, VE2EC 21, VE2BDV 14, VE2AMA 10, VE2AKK 9, VE2TA 8, VE2CP 6, VE2ATL 4, VE2BFB 3, VE2MR 3, VE2BDP 2.

ALBERTA—SCM, Harry Harrold, VE6TG—SEC: VE6FS, PAM: VE6PV, RM: VE6AEN, ECs: VE6FK, VE6SS, VE6ABS, OOs: VE6HM, VE6NX, VE6PL, OBS: VE6HM, ORSs: VE6BR, VE6WG, OPS: VE6CA, OESs: VE6DB, VE6HO. Yours truly will be away on holidays in October, so send your September reports to VE6PV, 3016-6th Ave., So. Lethbridge. Start planning now for the '63 Glacier-Waterton International Hamfest to be held in Waterton National Park, the third week end of July '63. We now have legal counsel in Canada for amateur legal advice only. Our PAM reports that while band conditions are not very good these days he would like to see more of you try for the
(Continued on page 158)

GOLD LINE MOBILE GENERATOR NOISE FILTER
Eliminates hash and generator whine while charging in any amateur band between 80 and 6 meters. Handles up to 30 amps. Connects in series between armature terminal of generator and "A" terminal of voltage regulator. Suppression adjustment is made with screwdriver with engine running. Specify unit desired for 6, or 11 meter bands. **\$3.49 ea.**



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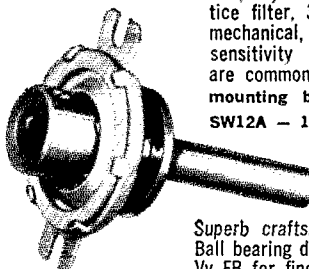
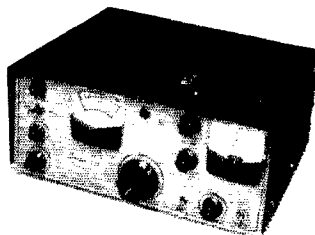


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3 tunable models available: SW175 (3.8 to 4.0 mc); SW140 (7.2 to 7.3 mc); and SW120 (14.2 to 14.35 mc). See QST Aug. '62, pp. 52-54 for details on unit. 120 W. PEP, crystal lattice filter, 3kc bw on Transmit/Receive, exceptional mechanical, electrical and thermal stability. Receiver sensitivity less than 1 microvolt. Tuning controls are common to Transmit/Receive. Transceiver with mounting bracket. Specify model. **\$275.00**
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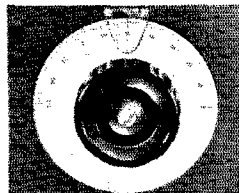
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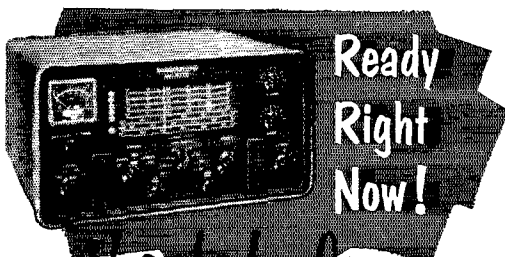
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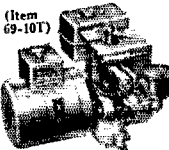
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Section Net certificates. Our SEC reports that you are all doing a fine job these days and says not to forget the province-wide test coming up this fall. The 1962 International Hamfest was successful with VE6AO walking off with the top prize, a new receiver. VE6FK is busy getting things ready for the AREC Picnic. Don't forget, fellows, to send in your donations for the building fund. OESs report some openings on 6 meters with some long skip coming in. Traffic: (July) VE6HM 163, VE8MA 112, VE6AEN 14, VE6TG 9, VE6FK 8, VE6BA 6, VE6CA 4, VE6UH 3, VE6PV 2, VE6SS 2, VE6VE 2, VE6ADZ 1. (June) VE6BR 47.

BRITISH COLUMBIA—SCM, H. E. Savage, VE7FB—VE7JD and VE7APC were on a fishing trip and worked portable with low power and good signal reports. VE7JQ, ORS, reports the old rig won't stand many more CD Contests. VE7ALU is too busy pushing box cars to find time to operate. VE7AAF, RM, who is out on a Surrey trip, writes that he is doing fine and hopes the Whirly-bird brings him in a 6AX5 so he can fire the Ranger up. VE7DH is deserting phone and is on c.w.; he even sold his s.s.b. rig. VKØIK, ex-VK2VK, VK4VK, is now VE7DC. The Calgary Stampede certificate is one for the shack. VE7BDB now has DX YL #86. That gal has so many certificates the OM will have to move his over. VE7RR and Beulah have taken up residence in Richmond. The gang that attended the hamfest at Coconally Park reports it was a great success. But it is advised not to ask VE7LC how much custom duty he paid for a \$2.00 purchase. VE7OM, our SEC, is looking for those promised Forms 7. Come on gang, sign for those big things coming for the winter. Traffic: VE7DH 6.

Ultimate Exciter

(Continued from page 14)

synthesizer to the same frequency and note the low-frequency beat, seldom more than 100 cycles, between the two. And this can be done consistently.

I use this exciter to drive a 6146 which, in turn, drives a pair of 4X250Bs in the final. The final operates as a linear for s.s.b. operation, or as a Class C plate-modulated amplifier for a.m. The latter type of operation requires some power in driving the final tubes to grid current. The broad-banded 6146, run on about 250 volts, furnishes adequate excitation. For Class C final operation, full carrier is reinserted as provided in the s.s.b. exciter.

This exciter is in use practically every week end on both a.m. and s.s.b., so don't be surprised if I zero your frequency with a crystal-controlled signal!

QST

Power Supplies

(Continued from page 32)

In Fig. 12, with a line frequency of 60 c.p.s., the critical inductance for each winding is

$$L_{CRIT} = \frac{R_B}{4560} \text{ henrys,}$$

where R_B is the bleeder resistance in ohms. This inductance is just one-fourth the inductance required for a full-wave rectifier with the same bleeder resistance, so that the total inductance required (both windings in series) is identical with the full-wave case. For the same load current in the two cases, the choke should be somewhat larger for the voltage multiplier. It must carry twice the load current (in, however, only one winding at a time), so that for the same winding loss it must be made with larger wire.

QST

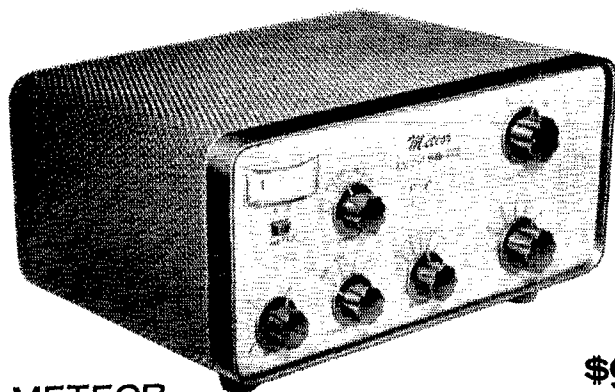


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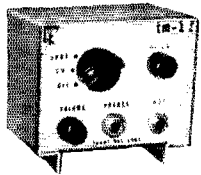
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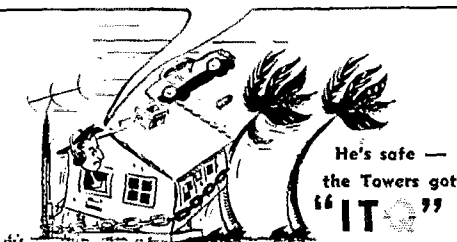
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Phasing/Filter Generator

(Continued from page 42)

to use maximum filtering in the power supply. A good double-section filter has been found necessary.

It is felt that the combination of phasing and filtering gives such good results with a minimum of pitfalls that it is well worth consideration by any home constructor. It is capable of results equal to those of any commercial unit, and the exciter will test the selectivity of any receiver. Best of all, the results are easy to duplicate as attested to by the fact that several successful conversions have been made.

Acknowledgments are due to KH6BCX who suggested the dual system so long ago that he will probably have forgotten about it; to VK2AJZ who constructed the "Package" on which all of the original experimental work was done; to VK2AST who complicated the subject by introducing mathematics; and to all others who can see any evidence of their work in this unit.

QST

2-Meter Moonbounce

(Continued from page 52)

Such an array defied rotation by conventional methods, so a circular track was built from cedar logs cut especially for this purpose. Supports at opposite ends of the main horizontal member of the array run on automobile wheels resting on this track. Rotating the array requires the co-ordinated efforts of several strong pushers on each end. Elevation of the array can be controlled by ropes from the ground.

In a small prefab building at the edge of the clearing is a kilowatt transmitter, with a pair of 4X250Bs in the final, precisely frequency-controlled just inside the low end of 144 Mc. Receiving is done with a parametric amplifier ahead of a 417A converter.

As we go to press, K1HMU is banging away at W6DNG at propitious times, on schedule and with the highest hopes. Whether a 2-meter moonbounce QSO is the result or not, we thought you'd like to see this example of an all-out amateur effort, the motives behind which are not unlike those attributed to Sir Edmund Hillary, when he was asked why he climbed Mt. Everest. "Because it's there!"

So is the moon . . . and few people have reached for it with more determination than K1HMU and W1ZIG.

— E. P. T.

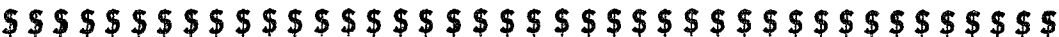
Happenings of the Month

(Continued from page 53)

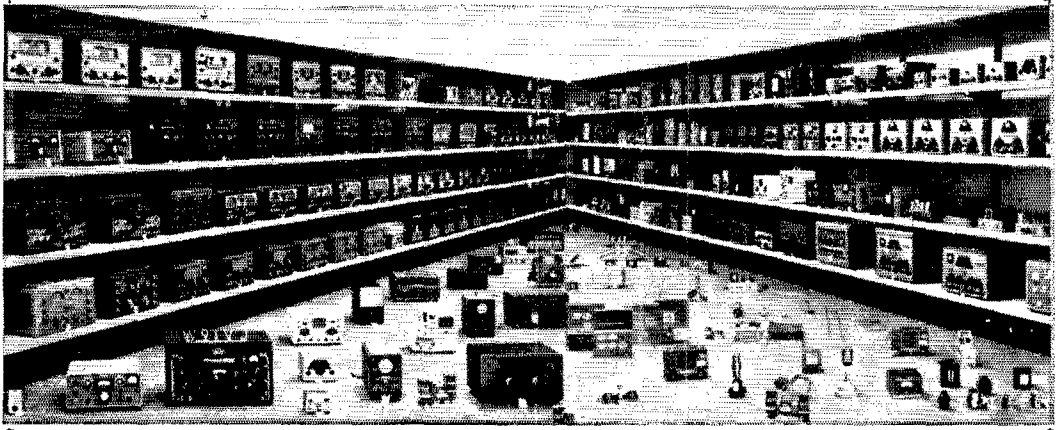
teletype equipment, techniques and operating procedures will be possible. The all-too-scarce frequencies will be used more efficiently. More amateurs may be attracted to teletype operation. Thus, the Commission will further the advance of the Amateur Radio Service without making more difficult its monitoring duties and responsibilities.

6. The requested changes may be accomplished by

(Continued on page 162)



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| SX101A—\$269.95 | HQ110—\$149.50 |
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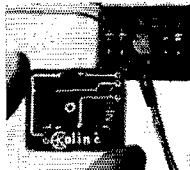
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amending the second sentence of Section 12.82 (a) (2) to read as follows:

"In addition to the foregoing, when a method of communication other than telephony or telegraphy using the International Morse Code is being used or attempted, the prescribed identification shall be transmitted by the method of communication being used or attempted and the call sign of the transmitting station also shall be transmitted by telephony or telegraphy using the International Morse Code."

WHEREFORE, the premises considered, it is respectfully requested that the Commission institute a rule making proceeding to amend Section 12.82 (a) (2) as set forth herein.

Respectfully submitted,

**THE AMERICAN RADIO RELAY LEAGUE
INCORPORATED**

By (s) **ROBERT M. BOOTH, JR.**
Its General Counsel

August 24, 1962

WASP Certificate

(Continued from page 69)

"OK, that's good. We should get in the act too. Right? OK, so this is it. Our club will present the Worked All State Parks award, WASP. The Little Certificate With the Big Sticker. Get it, you guys? All they have to do is work a station in each of the . . . ahhh . . . 144 State Parks. Endorsements, stickers, ribbons for everything. Right? Then they have to work some of us club members at our home QTH. OK?"

"Hey, Charlie, how many members should we have 'em work?"

"How about 53?"

"Fifty-three? My gosh, Charlie, we only got 27 members!!!!"

"So it takes a little longer. Now all in favor say . . ."

QST

Correspondence

(Continued from page 85)

Here are a few more observations on the use of 10 meters.

1. Cross polarization doesn't work well in ground-wave communications. Horizontal antennas should be used due to the widespread use of beam antennas.

2. The effects of cross polarization are less pronounced when long wire antennas are employed to receive vertically polarized signals. (I have one 240 feet long).

3. While the band goes dead after sundown on days it is open, time and again it opens to the west around 2230 EDT and re-opens until midnight with very strong signals. These signals can come in with a bang or build up fairly slowly out of the noise.

4. Stations on high points can work s.s.b. over distances of 100 miles quite readily on ground wave. The average for a number of stations in all types of locations is 60 miles or so. The same should apply to c.w.

5. The ratio of s.s.b. to a.m. stations on ten is astonishingly poor. When we have an opening, the ratio of s.s.b. to a.m. is approximately 1 to 75 or worse. . . . Dana A. Griffin, W2AOE, Summit, New Jersey

HOW ABOUT 15?

Ten meters is not the only dead band on the high frequencies; lately all I hear on 15 is the novices on the c.w. portion. Some of the OMs should go on

(Continued on page 164)

NEW

By



From

HARVEY RADIO



COLLINS NEW 62S-1 VHF CONVERTER

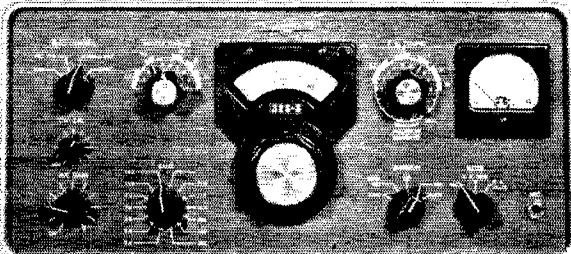
Doubles your present frequency coverage with full 6- and 2 meter operation. Covers 49.6 to 54.2 mc and 143.6 to 148.2 mc. ■ ALC built in ■ Switch from HF to VHF, from 6 to 2 all from the front panel — no cable changing ■ No need to buy extra crystals ■ Fits CC-2 suitcase ■ Uses high voltage from 32S-1 or KWM-2 power supply — 160 watts PEP ■ Available in December! Order now for early delivery ■

Amateur Net **\$895.**

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Real value for the discerning Ham . . . It features keyed carrier on CW ■ Adjustable keying hardness control ■ A zero-beat spotting control ■ ALC ■ Easier access to patch cords ■ Sidetone level adjust ■ For SSB or CW ■ Have the cleanest signal on the air ■ Order now for October delivery ■

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**HAMMARLUND
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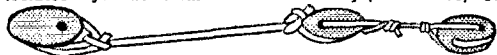
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A & F ELECTRO MART

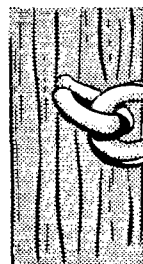
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View of an open thimble and eye bolt for coupling the Glas-Line guy wire to a tree. GLAS-LINE cannot rot, will not shrink, stretch or sag... has high breaking strength of over 500 pounds with proper use.

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15 or 10 instead of the 20-, 40- or 75-meter bands, which are now over crowded.

Think of listening to one contact alone without so much QRM on your frequency from other stations. It can happen, just by using the other less popular bands. — *Mark Shurr, W121 BH, Brooklyn, New York*

NEW AWARD

Just a line to let you know I would like to see the award "Heard While Copying W1AW" in full force. What really throws me is the fellow that repeats the same characters in step with W1AW. I would be glad to send this echo an award but for some reason he never signs his call. Maybe this is part of the old saying, "there always had to be one." — *Jack Kissinger, KN3TYJ, Carlisle, Pennsylvania*

IDENTIFICATION REQUIRED

Please inform our bilingual hams that the FCC requires that station identification be made in the English language. Recently after hearing about a W3 who got a citation because he identified his station in Spanish I wrote to the FCC inquiring about the subject. Here is the reply I received: "When Commission-licensed amateurs are making transmissions in other than the English language, they shall transmit station identification in English. There is no objection to transmittal of station identification in both English and the foreign language being utilized for the communication.

"In the event of harmful interference to a safety service by an amateur station, our monitoring personnel must identify the amateur station quickly and this would not be feasible unless our licensees identify in English."

Since Sections 12.82 and 12.105 of the Regulations specify plain language I had assumed that identification in any language was legal. Apparently other hams have thought likewise. From now on I will identify both in English and Spanish in all my contacts with Latin America. Muchas gracias, amigos. — *Reinaldo Ghigliotti, W2NYO, Elmhurst, New York*

HELLO TEST

I had a sked with my cousin on 14.1 Mc. I turned on my receiver and very close to this frequency I heard a very loud signal. It was someone testing an electronic keyer obviously with the B-plus on sending a steady stream of dits and signing a call every ten minutes! Sure, this type of operation is legally OK — but taking up a frequency for over 10 minutes in such a way is not in the true ham spirit.

If you want to test such equipment, the oscillator of the transmitter, with the B-plus off, will do okay, and without disrupting the band. — *Mike Lefhoe, K3LWY, Philadelphia, Pennsylvania*

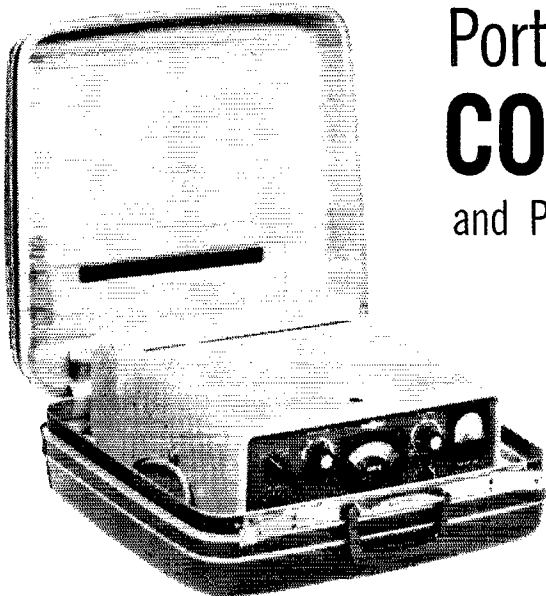
GET YOUR PERMITS

Perhaps it is an oversight but I've seen nothing in QST to indicate any special permits required for amateur radio operation in National Parks. Acadia National Park in Maine has one of the choicest locations on the east coast for v.h.f. operations from Mt. Cadillac. While there I found out about the permit required and from local hams understand it is being enforced. The idea is to preserve the natural beauty and not mar it by masts, wires, etc., at least in the tourist season. Also probably they don't particularly like to have roadways and parking lots clogged by gabbing hams.

I believe that for special events such as a v.h.f. field day or contest, permission for towers, etc. could probably be gotten, if such occurred out of season. — *Charles H. Willard, W2EZB, Utica 3, New York*

Your Ham Headquarters — WASHINGTON to FLORIDA

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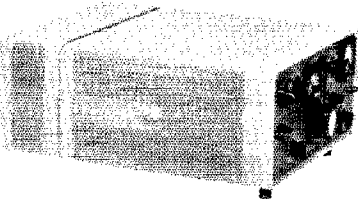
Collins PM-2 Portable Power Supply with built-in auxiliary speaker connects directly to the KWM-2 to give you a rig that operates on either 115 or 220 volt ac. Formed plastic-lined Samsonite suitcase provides shock-resistant protection for the KWM-2, the PM-2 and accessories. Your complete portable station weighs less than 45 pounds.

Portability Plus Power... **COLLINS KWM-2** and PM-2 Portable Power Supply!

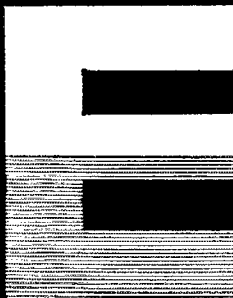
Your ham shack goes where you go with the KWM-2 Transceiver and the Portable Power Supply. In your den at home, for the mobile unit in your car, or for use aboard a boat or plane, the KWM-2 means a complete, superior SSB station.

Collins KWM-2 Transceiver covers all amateur bands from 3.4 to 29.7 mc with 1 kc accuracy. 175 watts P.E.P. input on SSB; 160 watts on CW. Weighs only 18 pounds.

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138 Lincoln St. Manchester, N. H.

How's DX?

(Continued from page 81)



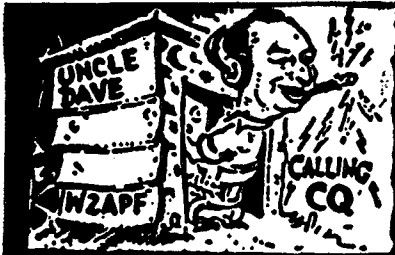
5N2s AMS and DMS, a famous DXpeditionary duo, inspect VCC's display at the May ARRL Roanoke Division Convention. (Photo via WA4BIX)

kc., Wednesdays, 0800-1200 GMT. Club organs supply further Pacific patter: ZK1BY is FORAN-VP2VB/mm of *Yasme I, II and III* fame. Danny tried out his new call from Raura Tonga and Manihiki. . . . ZL4JF departs the Campbells but expects to have a sideband outfit cooking from the Kermadecs before year's end. . . . VK9GK expects to join the s.s.b. fun from Papua shortly. . . . KB6CL and associates anticipate some British Phoenix DX doings, and the Guam gang intends further Marianas flings as KG6RD, Rota, etc. . . . VR5AA, who uses c.w. and sideband with an HT-37 and HT-41 combo on 15 and 20, gets over to ZM7 now and then. . . . W8WHQ remarks on the potent 7105-kc. signal put out by KX6NG of Roi Namur island around 0800-1000 GMT. An inverted Vec beamed our way. . . . After a stint at the University of Scotland and G3OEP, ex-V84RM hopes for assignment to more rare DX points. . . . VR1CV knocked off for Australia in September, according to the vine.

South America — Contrary to the CE1AGI photo caption in July's "How's", W3E1S is associated with HC1AGI and has never been to Chile. Nor does CE1AGI frequent 160 meters. Don remarks, "Probably the mix-up occurred because of the similarity of the calls HC1AGI and CE1AGI. There are also CE3AGI and OA4AGI. The letters 'AGI' stand for Año Geofísico Internacional in Spanish, or International Geophysical Year in English. These calls were assigned in 1957 to the Minitrack stations in Quito, Santiago, Antofagasta and Lima. The latter station has now had its call shortened to OA4AG. and the government of Ecuador has canceled HC1AGI. We have received authorization to use HC1DC at the Quito Minitrack station and hope to continue active under this call." PY4AP fired up first as PY4ADC, switching to his present call a year later in 1961. He now has a 7-Mc. DX record of 106/89, 153/116 over all, most of these countries worked with 807s at 100-150 watts and dipole. . . . From VP4NC: "The recent tragic crash of a 707 on a Guadeloupe hillside provided some of the most difficult traffic handling chores in a long for time members of the Antilles Emergency Weather Net. NCS KP4CGB at the U.S. Coast Guard Base in Puerto Rico called in early, raising VP4NC and FG7XL. Later VP3YG, FG7XL, VP2MC and VP2GAQ completed the net that carried first news and confirmation of the tragedy. FG7XL, OM and XYL, provided direct contact with the airport at Pointe-a-Pitre. Monique was still handling traffic six hours after the accident despite the fact that she with many others on the island lost close friends in the crash. French and English, c.w. and phone, were used as necessary to speed the traffic."

Hereabouts — Regarding our August mention of the QRP Amateur Radio Club, secretary-recorder W6CIS

(Continued on page 168)



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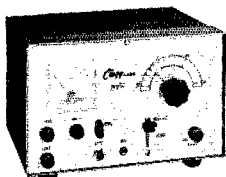
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- ★ A true ham station, ideal for both fixed station and mobile operation.
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HALLCRAFTERS SX-115

New triple-conversion heterodyne receiver. Frequency coverage: Nine 500-kc segments:

3.5— 4.0 Mc.	21.0—21.5 Mc.
7.0— 7.5 Mc.	28.0—30.0 Mc.
14.0—14.5 Mc.	(4 segments)
	WVV

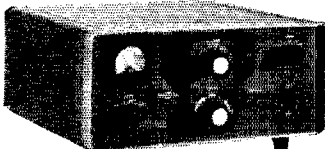
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NEW 75S-3 RECEIVER

The latest addition to the famous S/Line! A versatile receiver for 5SB, CW, RTTY and AM. Sharpest selectivity—5SB—2.1 kc. CW—200 cycles. Q Multiplier, with 50 db rejection notch. Variable BFO, with calibration marks for RTTY use, and crystal BFO for upper and lower 5SB. Fast/slow AGC. Spinner tuning knob.

Connects with 32S-1 for single PTO control of transmitter and receiver.



30L-1 KILOWATT LINEAR

Powerful—1000 watt PEP input!
Portable—weighs only 38 lbs.
Compact—same size as the KWM-2!
(Including self-contained high efficiency silicon rectifier power supply.)

Compatible—works with any 100 watt exciter.

Features—ALC, RF inverse feedback, hi/lo power switch, automatic antenna transfer, etc.

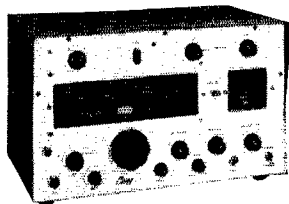


MOSLEY TA-36

4 Elements on 10
3 Elements on 15
3 Elements on 20

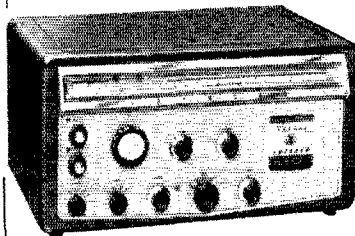
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- ★ Highly efficient 185 watt AM, high power VHF transmitter for full coverage of amateur 6 and 2 meter bands and associated Mars frequencies.
- ★ Automatic modulation control with up to 18 db of speech clipping. Gives you "talk power" greater than many kilowatt rigs!
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AMERICAN RADIO RELAY LEAGUE

West Hartford 7, Connecticut

writes: "The thing has grown so rapidly it's almost out of hand. It has climbed to 264 members as of last night. The 'committee' agrees with me that it's too much for one man, and that we will have to find a good representative in each call area to put out his own newsletters, etc., at least for the time being. I will continue to issue membership certificates. It's lots of fun — apparently the 'little people' (power-wise) feel they have found something for them. For example, we have VK3NC who has well over 200 countries with only eight (8) watts input." . . . WA2QMJ thinks that DX men ought to keep an ear on our National Calling and Emergency Frequencies and would like to see the idea expanded to include International ECFs as well. Dave points to the regular news items concerning urgent pleas for drugs, etc., relayed and delivered by world-wide amateur radio . . . W6JBQ says that WA6VUI (W6LRU) operated from Mono country last month to help the gang along toward WACC (Worked All California Counties). Ohio-88, another counties deal, encouraged W8YGR to go after K8MTI and W8IBX who visited Vinton county, and K8ITH in Morrow . . . W8YGR deplors the breed of phone operator who can't seem to read code in a pinell, even far below the renewal-requirement speed. Eleven-meter types? . . . K6s GZN and GZO expect to use single-sideband on Curacao and Bonaire in January or February as PJ5s CG and CH, respectively . . . "About those superlocations you mentioned in the August issue — I've got one," asserts K1LOM. "Virtually no QRN at all and I invariably work every station I call, DX or Stateside, with 599 reports while running only 75 watts." Make way for the gold rush, OMI . . . W1BB, our 160-meter specialist de luxe, is all set for the 1962-'63 low-band season, even down to a special 160-meter QST printing . . . W9YIX uses a Zepp that has been hanging undisturbed for 20 years. Anybody got an older flattop? . . . Club localisms: XE1CV mentions possible Socorro XE1 going-on in January. . . VP2KJ hopes to score more c.w. and s.s.b. Anguilla QSOs. . . More than 400 West Gulf DX Club "Ranger" certifications have been issued to overseas DXers since the club inaugurated the award in 1955. QSOs with 25 WGDXC members are required. DX stations can check with W5FJ for details. . . Don't forget the New England DXCC Dinner scheduled at Motel 128, Dedham, Mass., for the 6th of this month. W1BAN can supply information on request.

Ten Years Ago in "How's DX?" — Jeeves analyzes some QST statistics and finds that new confirmed countries per year are hard to come by when one reaches ARRL DXCC Honor Roll status . . . Twenty-phone reports dwell on FL8MY, FR7ZA, HZ1s SD TA, JY1OG, KA0JL, KT1s DD PU, MI3s AB LK RC UG YG, OE13AL, ST2NW, SU1s 1AS SCC 5EB, TA2EFA, VK1PN, VSs 2CB 2CY 2DB 7WE, W8MUP/KS6, YA5XY, Y1s 2FD 3BZL, ZC6UNJ ZD8 4AX 4BC 4BF 9AA and 4W1MY . . . Twenty c.w. also is fruitful: AP2L, B1AB, C3s AR MC, CR5JB, CU3YY, ET3R, FN8AD, 15A, 11YCC/Trieste, KH6CB/KJ6, KM6AH/KB6, MF2AG, MIBUS, OQ5RA, SU8 1GG 5BM, TA3AA, VK1EM, VSs 2CR 5ELA 7NX 7YL, VU7FK, Y1ZAM, ZA3KAA, ZC2MAC, ZD4AB, 9S1s AD and AX, . . . Fifteen features KC6QY, KTIUX and others . . . Forty's best are VP8s 4LZ 8AJ and VR2CO . . . Capt. Kurt Carlsen, W2ZXM/mm, keeps 28-Mc. on the DX map . . . Odds 'n' ends: Y13BZL claims a 4-hour "WAS". . . W0ELA had rough going in Brunei as VS5ELA. . . W6MLY scored 632 4W1MY QSOs, and 160 as FL8MY. . . AC4YN, contrary to earlier rumors, is reported alive and well in Tibet after the Red take-over. . . VS9AO (ex-MT2E) made five rare QSOs from Kamanaran island . . . Halp! Jeeves & Co. are harassed by real Tennessee Valley Indians. **QST**

Strays

W6HTA is operating maritime mobile on board the USS *Scanner*, a radar picket ship, off the west coast of the U.S. The four hams aboard (W6HTA, WA6YEEY, K5QDR, K7RLC) are looking for QSOs on 7, 14, 21, 50, and 144 Mc. They say their QSLs are a bit different.

A ham by the name of Doc Flister
With bourbon had tied on a twister.
He tried, in delusion,
To give a transfusion
To his rig for its bleeding resistor.

— W1HAK

K4IGW is very appropriately named — *Will I. Hamm*.

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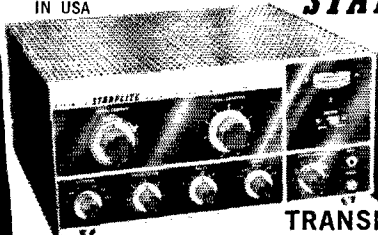
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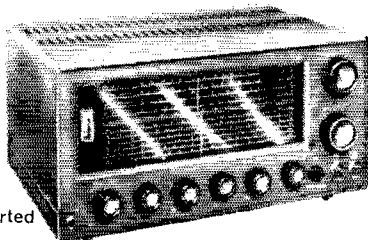
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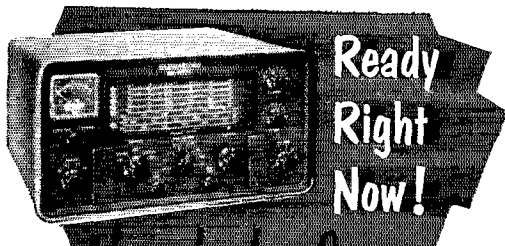
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VE5JV....1224-17-24- C-12	G3LNT....28,080-28-360- A-30
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<i>Alberta</i>	<i>Northern Ireland</i>
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<i>British Columbia</i>	<i>Scotland</i>
VE7EH....14,994-49-107- A-25	GM8MN....42,636-38-371- A-24
AFRICA	<i>Switzerland</i>
<i>Angola</i>	HB9DX....912-8-38- A--
CR6CA....35,316-36-327- A-11	<i>Norway</i>
<i>Mozambique</i>	LA4TE....17,226-22-261- A-12
CR7GF....252-7-12- B-3	LA6CP....2541-11-77- A--
<i>Liberia</i>	LA3K....231-7-11- A-4
EL4A....180-5-12- A--	LA8DS....72-4-6- A--
<i>Algeria</i>	<i>Luxembourg</i>
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<i>Northern Rhodesia</i>	<i>Austria</i>
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<i>Kenya</i>	<i>Finland</i>
VQ4HX....21,083-29-243- A--	OH5SM....24,360-29-280- B-24
<i>Sierra Leone</i>	<i>Czechoslovakia</i>
ZD1JWC....1872-12-52- A-6	OK3KGL....336-7-16- A--
<i>Southern Rhodesia</i>	OK2KAU....300-5-20- A--
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<i>Nigeria</i>	<i>Belgium</i>
5N2JKO....50,826-43-391- A-27	ON4XD....10,659-17-209- A--
<i>Mauritania</i>	<i>Denmark</i>
5T5AB....6915-15-155- B-7	OZ5JT....32,130-30-357- A--
ASIA	OZ3KE....1690-10-57- A-7
<i>Iran</i>	OZ4FT....108-4-9- A--
EP2BK....2058-14-49- A--	<i>Netherlands</i>
<i>Japan</i>	PA0PRF....8280-12-330- A--
KA2MA ³ ...35,560-35-339- B-10	PA0HBO....3570-17-70- A-7
JA1BWA....11,745-27-145- A-25	PA0LV....2250-15-50- A--
JA1CWP....5280-16-110- A--	<i>Sweden</i>
JA1FSL....3528-14-84- A--	SM5BPJ....22,100-26-281- B--
JA1BUL....72-4-6- A--	SM5CZQ....2959-11-90- B-9
JA3BEA....18-2-3- A--	<i>Poland</i>
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XW8AS....1749-11-53- A-12	NORTH AMERICA
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CT1UO....1716-13-44- A-12	<i>St. Martin</i>
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(Continued on page 172)

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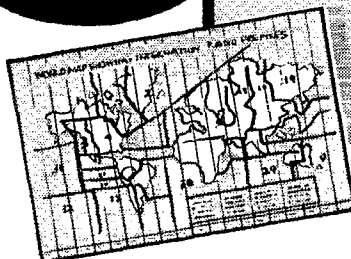
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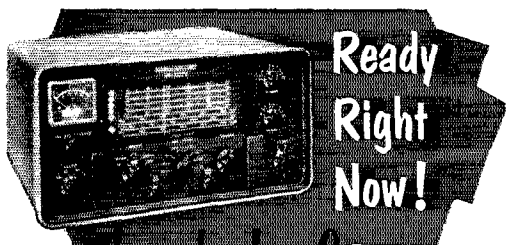
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<i>Mexico</i>	LU1DAR... 135,168-14-1021- B-37
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<i>Australia</i>	<i>British Guiana</i>
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<i>Cook Islands</i>	<i>Venezuela</i>
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SOUTH AMERICA	YV5AKU... 89,568- 48-622- B- --
<i>Chile</i>	YV2CJ... 62,558- 52-105- A-33
CE1AD... 17,238- 34-169- B- --	YV5AKP... 15,810- 32-166- A- --
<i>Ecuador</i>	YV5AHG... 8304- 28-106- A-14
HCIAG1... 231,264-73-1056- B-34	<i>Paraguay</i>
	ZP5CG... 1350- 10- 45- A- --

* 1W1WR, opr. 2 Hq. staff -- not eligible for award. * K2J0Z, opr. * K5JFV, opr. * LA6VH, opr. * HC1DC/W3EIS, opr.

ARRL thanks the following amateurs for submitting check logs. C.W. -- W1GYE K1OOV W1RWU K1UDU K2DNN K2QHL W3ARK W3QLW W4LYV W4RBZ K3SDS W6AM W8HA W91Z K9MBM VE2YA OK2LN O77ML OZ4FF OZ5WJ OZ7KV PA9QM PA9WDG SM3CJD SM5BFE SM5CZQ SM6JY VE6EX VP5BP Y05-195; Phone -- W2HXF W2OUY W3AKG W3UHN W4QD W4RBZ K5DEC W4GLD W9AOW VE1EK VE3DYB VE8BC G3OEY G1RY OK3KMS ZL1HY Z86DE.

Hamfest Calendar

(Continued from page 10)

Merritt Preston, chief of pre-flight operations, NASA Manned Spacecraft Center, Cape Canaveral, will be the featured speaker at the main banquet. Perry Williams, W1UED, will be present from ARRL Hq. Costs -- Registration, \$2.00; main banquet, \$5.00; s.s.b. dinner, .50.00; YL luncheon, \$2.25. Make your hotel reservations directly with the Hotel Sheraton-Cleveland. Convention registration and banquet tickets from Cleveland Amateur Radio Convention, Box 5167, Cleveland 1, Ohio. Pre-registration deadline October 10.

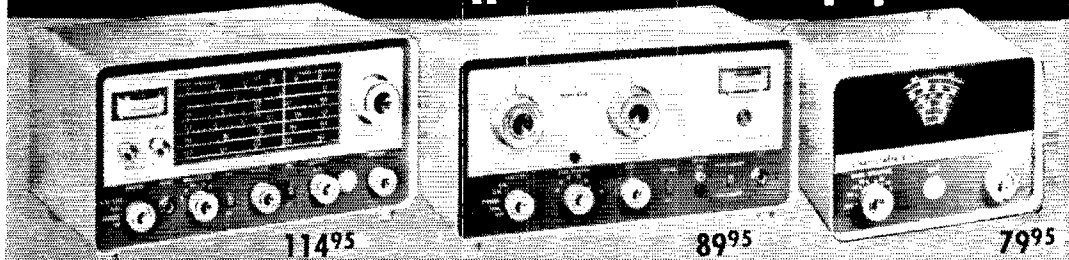
Pennsylvania -- The fifth annual banquet/hamfest of the Mahanoy Valley Brass Pounders Club will be held October 27 in the Hometown Fire Company hall on Route 45, one mile north of Tamaqua, Pa. Talk-in frequency 50.64 Mc. FCC will give General Class exams at 1600. Pennsylvania-Dutch style ham and turkey dinner will be served at 1800, followed by professional entertainment and dancing. Attendance by advance registration only, prior to October 20, \$4.00 each. No tickets sold at the door. For info and reservations, contact Jim Miller, K3KNP, 98 Railroad St., Gardville, Pa.

Pennsylvania -- The Tri-State Sidebanders are sponsoring a dinner on Saturday, October 20, at Johnny Garneau's Smorgasbord Restaurant, 3800 William Penn Highway, Monroeville, Pa. (one mile west of Pittsburgh interchange on Route 22) beginning at 1830. Cost per person \$4.00. Reservations must be made prior to October 13. Contact D. R. Shafer, K3COU, 233 Marshall Drive, Pittsburgh 35, Pa.

Pennsylvania -- The Western Pennsylvania Mobileers will hold their sixth annual Fall Roundup on Friday, October 19, at 2000 in the Wilkinsburg Boro Building, Ross and Hay Streets, Wilkinsburg, Pa. Mobile stations check in on 29.36 and 50.4 Mc. For further info contact Tom O'Toole, W3SHT, Pittsburgh telephone WA-2-0987.

South Carolina -- The Rock Hill, S.C. ARC will hold its annual hamfest at Joslin Park, Rock Hill, S.C., on Sunday, October 14. Contact W. L. Jennings, W4UNP, P. O. Box 90, Rock Hill, S.C., for further info.

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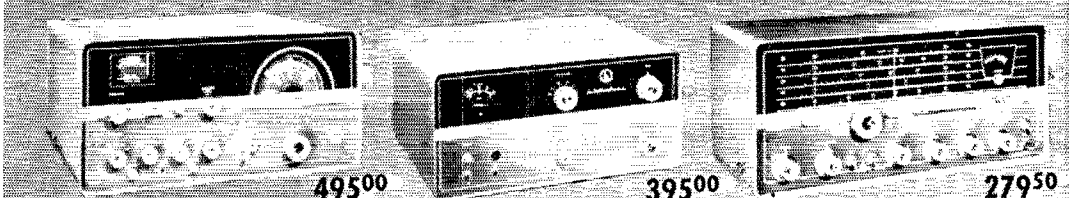
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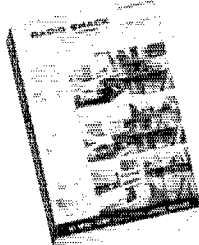
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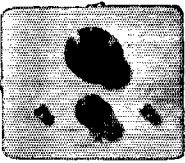
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YL News and Views

(Continued from page 84)

**Contest For All YLs
23rd YLRL Anniversary Party**

CONTEST PERIOD

C.F. —

**Starts: October 24, 1962 1700 GMT
(1200 EST)**

**Ends: October 25, 1962 2300 GMT
(1800 EST)**

PHONE —

**Starts: November 7, 1962 1700 GMT
(1200 EST)**

**Ends: November 8, 1962 2300 GMT
(1800 EST)**

Eligibility: All licensed YL and XYL operators throughout the world are invited to participate. YLRL members only are eligible for the cup awards. Non-members will receive certificates. Only YLRL members are eligible for the Corcoran award.

Operation: All bands may be used. Cross-band operation is not permitted. Only one contact with each station will be counted in each contest.

Procedure: Call "CQ YL".

Exchange: Station worked, QSO number, RS or RST, ARRL section or country. Entries in log should also show the time, band, date, transmitter and power. Please know your own ARRL section or country. (Section list available for s.a.s.e. to V.P.)

Scoring: (a) C.w. and phone sections will be scored as separate contests. Submit separate logs for each contest. (b) Multiply number of contacts by total number of ARRL sections and countries worked. (c) Contestants running 150 watts input or less at all times may multiply the results of (b) by 1.25 (low-power multiplier).

Awards: Highest c.w. score — gold cup. Highest phone score — gold cup. Highest phone log and c.w. log in each district and country will receive a certificate. Highest combined phone and c.w. score, YLRL member only, will receive Corcoran Award.

Logs: Copies of all logs must show claimed score, be signed by the operator and postmarked no later than Nov. 22, 1962, and received no later than Dec. 6, 1962, or they will be disqualified. Send copies of logs to Lillian Byrne, K2JYZ, 24 Stillwell Place, Freeport, Long Island, N.Y. No logs will be returned. Be sure it is a copy of your log you send in for confirmation.

Vice President's Note: It is recommended that all YL nets close for the contest period, inasmuch as net contacts do not count. Also, all YLs are urged to participate in the c.w. section of the contest. Give the c.w. YL operators a contact! — K2JYZ!

Coming Events

YLRL Anniversary Party — The 23rd annual contest for all YLs. C.w. section Oct. 24-25; Phone section Nov. 7-8. See rules this column.

Ladies Day — The second Monday of each month is reserved for just plain YL ragchewing on all the bands. Let the laundry go in favor of a fun day of YL QSOing.

YLRL President Onie Woodward, WIZEN, announces that the 4th International Convention of the YLRL will be held sometime in 1964 and will be sponsored by the Buckeye Belles of Ohio. It's too early to buy your tickets yet, but keep it in mind when formulating long-range plans.

Strays

WA2NJC thinks he may have solved the problem of negative resistance — insert the resistor in the circuit backwards.

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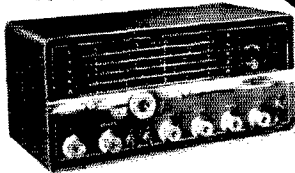
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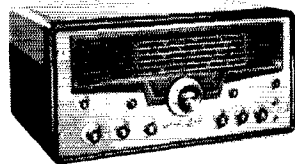
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SX-101A



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Model SX-101A offers complete coverage 80-10 meters, plus a calibrated band for 2 and 6 meter converters, S-meter functions with AVC off. Fast/Slow switch for AVC. Dual conversion. Exclusive Hallicrafters upper-lower sideband selection. Special 10 Mc position for WWV. Tee-notch filter. Sensitivity: one microvolt or less on all bands. Large slide rule dial. Product detector. Full gear drive. \$445.00

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Evans RADIO

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CONCORD, N. H.

The World Above 50 Mc.

(Continued from page 76)

area from June 1 to 25 between 0200 and 0600 GMT. Lately evening signals have been nil but activity is being heard quite frequently from W6 and W7's (particularly Arizona, Idaho and Utah) from 1600 to 2100 GMT at his QTH. However, as Bob sez: "Very few tune the c.w. end of the band." Keith agrees with the foregoing sentiment as do many others who write us concerning c.w. operation and band openings. Must be that the openings to many of the c.w. operators are not concurrent as each and every one sez the same thing. "No one ever tunes the c.w. end of the band." Incidentally, that's the place to look for Ed, WHDQ. He operates 50.02/50.08. Keith also sez that activity in Idaho has been given a boost with K7AAV on in Idaho Falls, and that on July 18 W7EGN worked his first Idaho station when he worked W7UBI. "Only 3 or 4 openings to the east coast this season with first hop hitting Nebraska, Iowa and Illinois. There have been several good evening openings into VE4 and VE5 areas lately with VE4's CX 4, RV, MA, YW, TX and VE5IG being worked." Listed among the 2-way s.a.b. contacts Keith has made this year are K0REE, W0QIN, K0GJX, W0PFP, K6GJD, K6IXL, K6BOM, K6YDF, WA6DBA, K6KFY, K6RAW, K6UBT, K6VLM, WA6LTH and WA6CTL.

Among our many faithful correspondents has been Ray Clark, K5ZMS, from whom we have just received a final report from Duncanville, Texas. "Here is my final report from this QTH. I have been QRT since the 10th of the month. I've sure had a good time working from this QTH and wish I could thank all the gang I've worked for the many fine rag chews I've had all over the country. I have my 522 ready for two meters when I get back and I plan on getting on six also, of course. I have been doing some tabulating and come up with the following figures for band openings from the latter part of April to July 10. Openings are as follows 9-30; 9-27; 8-34; 7-20; 6-17; 5-10; 4-35; 3-20; 2-16; 1-10; XE-15; CO-11; KP4-5; VE5-1; VE4-7; VE3-2; VE1-3." Thanks, Ray, for the many lengthy reports which you've taken "time out" to write us to and sure hope we'll be hearing from you again in the not-too-distant future. Report from Emil, K3MZO, says that six has been very good this summer and that he has worked CO5CN and KP4AXC. Groundwave has also been good to Plymouth, Pennsylvania as he has been working W4KLC in Fairfax, Virginia every Sunday. A post card received from KL7ECT reports the interesting news that KL7FLB, Bob, is operating at 50.045 Mc., A1, and will shortly be operating on 50.250 Mc., A3; also, KL7FLC, 50.050 Mc., A1, shortly to be operating on 50.183, A3. Both stations on the air about 0900 GMT.

WA8BHB in Coloma, Michigan, has been on 50 Mc., since the end of May, 1962 and during the period between May and August has worked 26 States and VE1. John has also heard but not worked Cuba and Mexico. Word received from Bob Leo, K7KOK in Bozeman, Montana, sez that he has been operating 50.180 and 50.164 Mc. since June 11; has worked about 100 stations in twenty states. Bob is running 100 watts to a homebrew 829B rig, has an 8-element beam 70 feet high, and is located at the field site of Montana State College.

A letter from the much-needed state of Maine and K1NTC says that sporadic E has been very good in Maine this year. Curt (K1NTC) and his mother, K1NTD, have heard and worked XE10E and heard CO2GX many times, and both W7VDZ and W7UFB were worked by K1NTC on July 6. The 19th of July came up with a double-hop opening into Maine when K7KHU and K7NQR in Washington were both worked. K8DTU was also worked on that day and gave Curt the news that he had worked both KL7AUV and VE8BY during July. K4CBM in Naples, Florida, reports band openings daily since June 5 (until July 16) with California being

(Continued on page 178)



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HX-50

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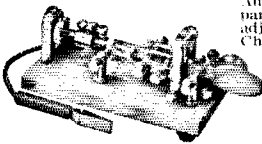
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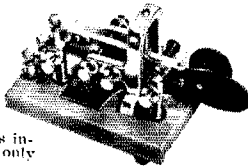
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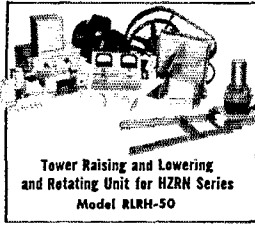
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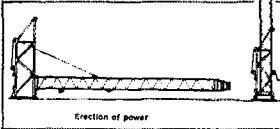
guying, and the unique 30-degree bracing of alternating design assures highest degree of strength and wind resistance.

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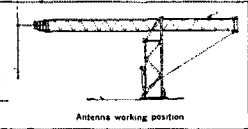
Model HDM-237	2 Section	37 feet
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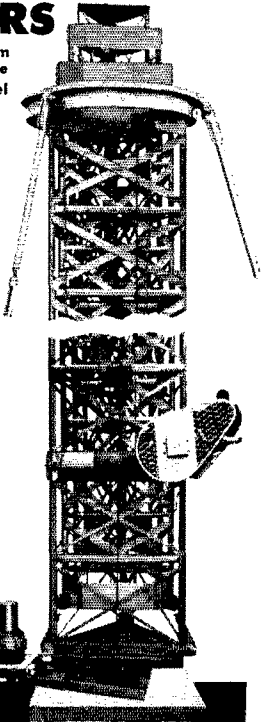
The new HZRN Rotating Tower is completely redesigned for smooth, frictionless rotating and raising and lowering. Featuring increased strength and greater weight, it meets and surpasses RETMA and URC Building Standards.

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C & G

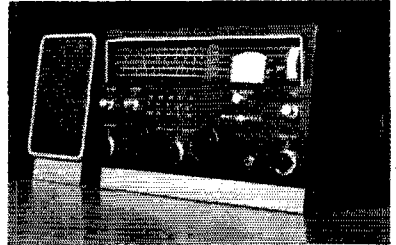
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NC-190

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heard twice and with openings ranging from all day sessions to just a short evening period. During the second week in July K4CBM worked 23 states and Puerto Rico. K1VBN who is operating portable in Bethlehem, New Hampshire for the summer says that he has had only three QSOs during July. Terrain is mountainous and antenna is only a 50-Mc. dipole about 15 feet high. (That's Crafton County, too!)

In Plymouth, Mass., K1DYA reports the opening of July 6 when he heard Alabama, Tennessee, Georgia, North and South Carolina, Virginia, West Virginia, and Nova Scotia. According to Al, K7ICW, sporadic E improved over the month of June with signals having stronger strengths and wider areas being covered. The first openings to VE3, VE4 and VE5 in 3½ years were noted on July 16. On that same date K2QFN was worked on c.w. when no one else in the eastern part of the country was working anything beyond 9 land. Larry, K5ERQ, in Rhomb, Texas, reports hearing CQ2GX on July 13; W9SRT/4 and WA0CZC heard on July 17; K7HAA worked on July 20. Larry also observed visually what apparently was an aurora on July 20, but only locals were heard. W7NPV reports from Harlowton, Montana, that he observed openings on 10 days during July. However, he was absent from the station for another 10 days, so probably missed a few. During the openings he did hear fourteen states were worked and July 18 was the best of all when Vern copied signals for 12 hours.

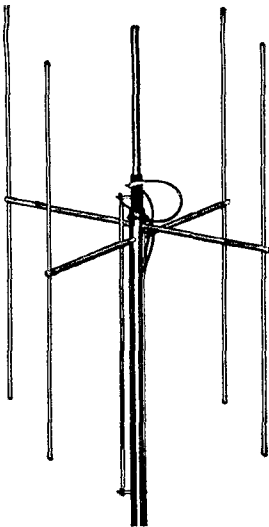
South Dakota and W0ENC come forth with the news that 50 Mc. was open into that state on 26 days during the month of July. On July 5 all call areas and CQ2 were heard; July 6 all call areas except 1-land were heard; July 9 all call areas except 6-land; July 10 all call areas heard between 0600 and 0800 local time. From Louisville, Kentucky, WA4CQG writes that he noted openings on 9 days during the month and that 18 states were heard or worked during this period. Increased A1 and A2 activity in that area. Tobe, K1PYI, sez that the first few days in August were noteworthy because of excellent temperature inversion conditions. During the late evening and early morning hours he worked consistently down the Atlantic coast on a.m., c.w. and s.s.b. On August 1 he worked VE2A10, two-way s.s.b. with 59 aurora reports and 54 groundwave reports. Between August 3 and 6 forty-seven W2's, about a dozen W3's and five W4's were worked via temperature inversion. Farthest south was K4QNF in Elizabeth City, North Carolina. To date Tobe has worked 42 states 2-way s.s.b. K1NTC also reported the excellent conditions to the southwest on the night of August 6 when a number of stations were worked in New York and New Jersey, from Maine.

144 Mc. and Up

The Perseids Meteor Shower has enabled a number of the 144 Mc. & Up devotees to increase their states-worked total by keeping skeds during the shower and making good. Ernie Brown, W5FYZ, kept four skeds during the recent shower, all on 144 Mc. and was fortunate to be able to make solid QSOs with all four stations; K2LMG, W7JRG W4VHH and K8AXU. This brings his total states worked up to thirty-three. Ernie comments that this shower was the best Perseids for him for at least three years, with a greater number of 15- to 30-second bursts and signal strengths unusually good. He also sez: "I use a 2.4 bandpass on my receiver for m.s. and if it hadn't been for different characteristics of their signals, W2AZL and K2LMG would have been a little rough to separate. Carl was on 144.013 and Dave was on 144.014. There was about a one-second delay between pings for them, but on sustained bursts they were banging each other pretty well!"

K2LMG also reports a "good shower," having made contact with two of his three skeds. Lucky stations were W5FYZ in Louisiana and W5KXD in Texas; unlucky one was W0ENC in South Dakota with whom Dave was unable to complete a contact. From K8AXU we hear that his only m.s. contact was with Ernie, W5FYZ, the others just didn't pan out. However, Al also notes the band opening on 144 Mc. on August 10 when he was hearing everything from Ohio to Minnesota: he heard the Columbus boys working W0IFS and giving him 89 reports, but Al was unable to even hear a beat note on him. On the 11th however, Al had better luck when he worked W9JFP in Wisconsin and also Illinois and Indiana. The night of August 14 also turned into an opening and Al worked W0EMS in Nebraska; the following morning was very good and a cross-band contact (144 Mc., 432 Mc.) with W9ZIH in Chicago was successful. Anyone wanting a meteor shower sked with Al for the November shower? Line forms to the right.





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11 METER

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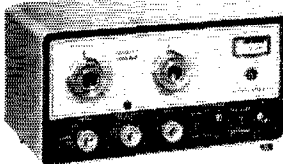
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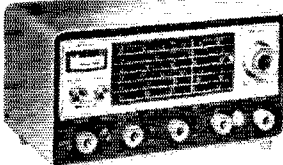
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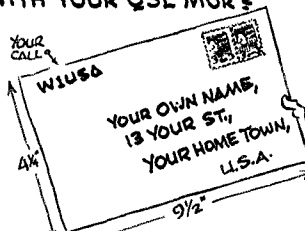
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The function of the ARRL QSL Bureau system is to facilitate delivery to amateurs in the United States, its possessions, and Canada of those QSL cards which arrive from amateur stations in other parts of the world. All you have to do is send your QSL manager (see list below) a stamped self-addressed envelope about 4 1/4 by 9 1/2 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, P.O. Box 303, Bradley Beach, N. J.
 - W3, K3 — Jesse Bieberman, W3KT, P.O. Box 400, Bala-Cynwyd, Pa.
 - W4, K4 — Thomas M. Moss, W4HYW, Box 20644, Municipal Airport Branch, Atlanta 20, Ga.
 - W5, K5 — Brad A. Beard, W5ADZ, P.O. Box 25172, Houston 5, Texas.
 - W6, K6 — San Diego DX Club, Box 6029, San Diego 6, 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 — Ray P. Birren, W9MSG, Box 510, Elmhurst, Illinois.
 - W0, K0 — Alva A. Smith, W0DMA, 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 Point Claire, Montreal 33, Quebec.
 - VE3 — Leslie A. Whetham, VE3QE, 32 Sylvia Crescent Hamilton, Ont.
 - VE4 — D. E. McVittie, VE4OX, 647 Academy Road, Winnipeg 9, Manitoba.
 - VE5 — Fred Ward, VE5OP, 899 Connaught Ave. Moose Jaw, Sask.
 - VE6 — W. R. Savage, VE6EO, 833 10th St., N., Lethbridge, Alta.
 - VE7 — H. R. Hough, VE7HR, 1291 Simon Road, Victoria, B. C.
 - VE8 — George T. Kondo, VE8RX, Dept. of Transport, P.O. Box 65, Fort Smith, N. W. T.
 - VO1 — Ernest Ash, VO1AA, P.O. Box 8, St. John's, Newf.
 - VO2 — Douglas B. Ritcey, Dept. of Transport, Goose Bay, Labrador.
 - KP4 — Joseph Gonzalez, KP4YT, Box 1061, San Juan, P.R.
 - KH6 — John H. Oka, KH6DQ, P.O. Box 101, Aiea, Oahu, Hawaii.
 - KL7 — Alaska QSL Bureau, Box 6226, Airport Annex, Anchorage, Alaska.
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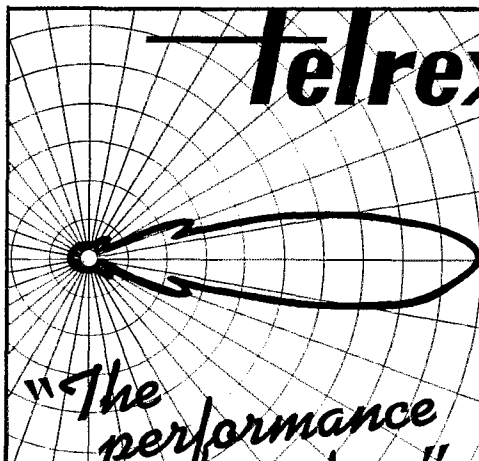
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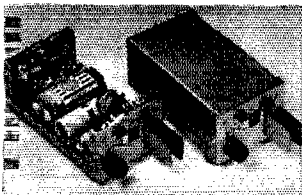
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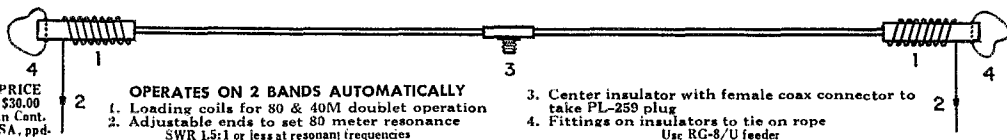
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- K1LVM, Stephen D. Youman, Medway, Mass.
- W1NW, Allen W. Jones, Somerville, Mass.
- W1VX, Oliver E. Merrill, Wollaston, Mass.
- W2BFF, Lawrence Cubberly, Trenton, N. J.
- W2BLS, Carroll S. Banfield, Rutherford, N. J.
- W2FLY, Charles T. Dieffenbach, jr., Tenafly, N. J.
- K2FAI, ex-W1CF, Lee W. Clifford, Plainfield, N. J.
- K2HQ, William C. Nesbitt, Port Washington, N. Y.
- W2ILL, Joseph F. Mullin, New Milford, N. J.
- W2IVG, Louis J. Hefele, jr., Pearl River, N. Y.
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- W2SHL, Arthur J. McKinstry, Browns Mills, N. J.
- W2WTS, Howard F. Barkley, Maplewood, N. J.
- K3JIY, Paul C. Wittig, West Lawn, Pa.
- W3QD, Albert Rapp, Philadelphia, Pa.
- W4BMR, David M. Heath, Port Lauderdale, Fla.
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- K9YOX, John J. Doherty, Geneva, Ind.
- W0JAH, Zeph B. Willison, St. Louis, Mo.
- K0JBR, William M. Kent, Omaha, Neb.
- VE1EY, William W. MacLean, Sackville, N.B., Canada
- VE3IB, Harold L. Benson, Oakville, Ont., Canada

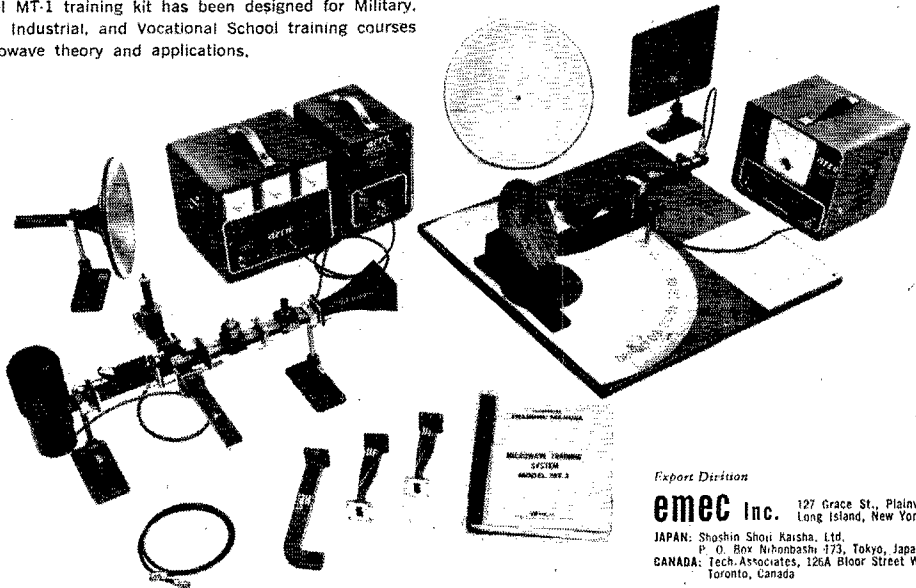
FEEDBACK

In the sideband-generator circuit diagram of K9YHT's article, page 29 of the September issue, the connection labeled with a circled 2 going to the 0.1- μ f. capacitor and 33K resistor should be deleted.

In the circuit of the despiking filter of W9YVZ's 12-volt d.c. to 110-volt a.c. inverter (Fig. 3, page 19 of the August issue), the choke should have a value of 0.1 mh. instead of 10 mh.

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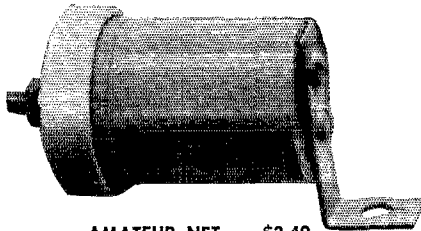
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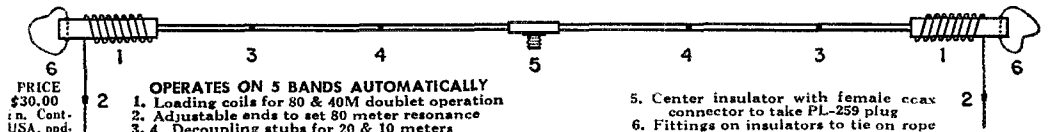
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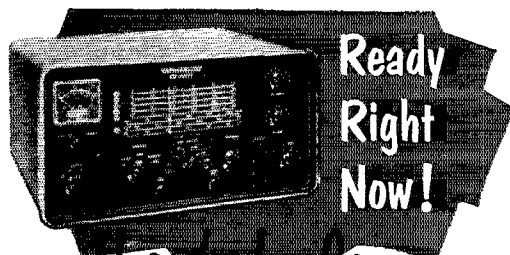
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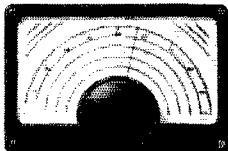
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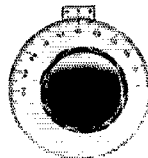
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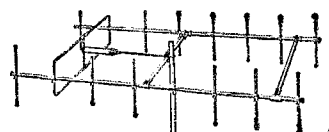
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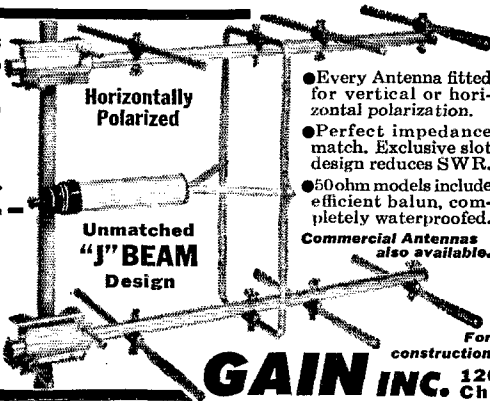
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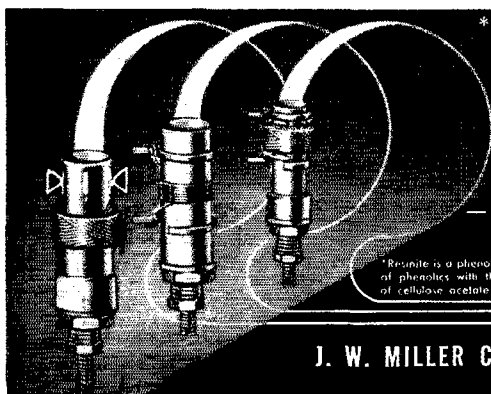
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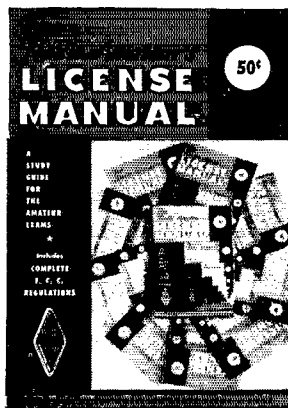
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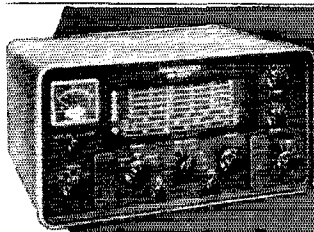
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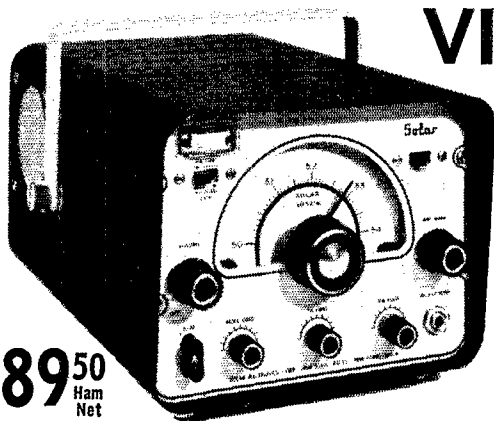
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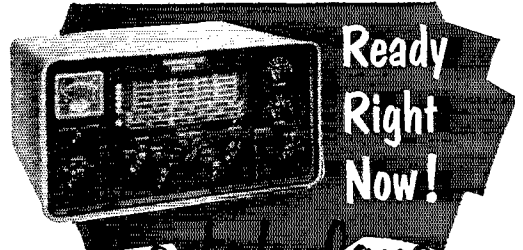
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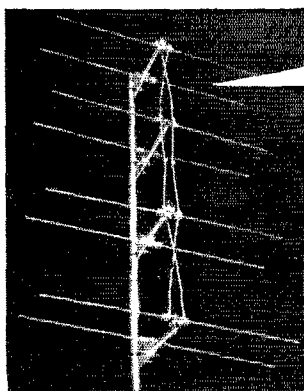
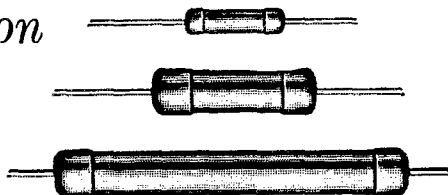
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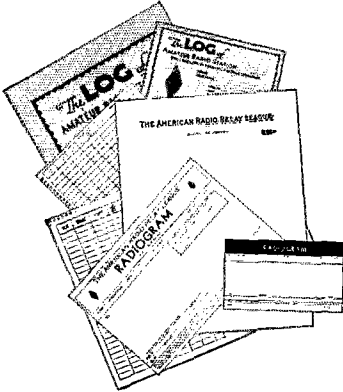
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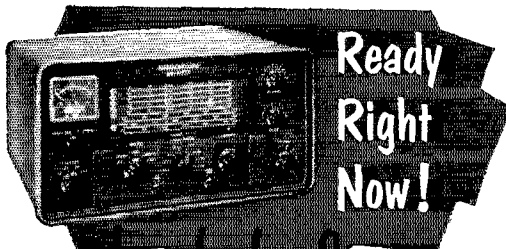
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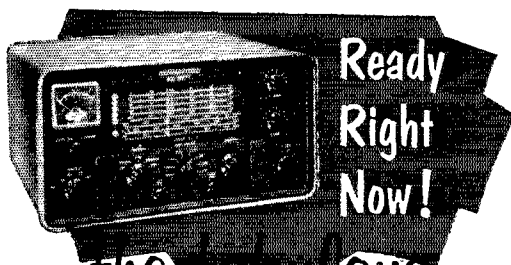
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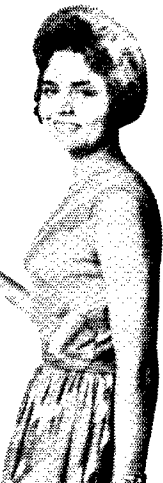
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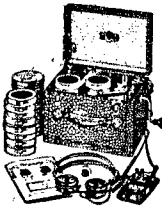
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(1) Advertising shall pertain to products and services which are related to amateur radio.

(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. Ham-ads signed only with a box number without identifying signature cannot be accepted.

(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.

(5) Closing date for Ham Ads is the 20th of the second month preceding publication date.

(6) A special rate of 10¢ per word will apply to advertising which, in our judgment, is obviously non-commercial in nature. Thus, advertising of bona fide surplus equipment owned, used and for sale by an individual or apparatus offered for exchange or advertising inquiring for special equipment, takes the 10¢ rate. Address and signatures are charged for. An attempt to deal in apparatus in quantity for profit, even if by an individual, is commercial and all advertising so classified takes the 35¢ rate. Provisions of paragraphs (1), (2) and (5), apply to all advertising in this column regardless of which rate may apply.

(7) Because error is more easily avoided, it is requested 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.

MOTOROLA used FM communications equipment bought and sold. W3BCO, Ralph Hicks, Box 6097, Tulsa, Okla.

We buy all types of tubes for cash, especially Eimac, subject to our test. Maritime International Co., 199 Front St., Hempstead, N.Y.

STORM Warning Stations. Send \$2.00 for our book on making 12 Weather instruments. Saco Press, Box 2513, South Bend, Ind.

RECEIVERS: Repaired and aligned by competent engineers using factory standard instruments. Factory service at reasonable prices on Collins, Hallicrafters, Hammarlund, Gonset, National, Harvey-Wells. Our 26th year, 90 day guarantee. Douglas Instrument Laboratory, 176 Norfolk Ave., Boston 19, Mass.

TRIGGER, Cash paid for ham equipment. 7361 W. North Ave., River Forest, Ill. PR 1-8616. Chicago #TU 9-6429

TOROIDS: Uncoiled 88 Mhz. like new. Dollar each. Five/\$4.00 P.P. DaPaul, 309 So. Ashton, Millbrae, Calif.

SOUTHERN California: Transmitters and receivers repaired, aligned, Bandwidth, frequency, harmonics measured. Used ham gear bought, sold, traded. Robinson Electronics, 922 W. Chapman, Orange, Calif. Tel. KEllogg 8-0500.

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CASH for your gear! We buy, trade and sell. We stock Hammarlund, Hallicrafters, National, Johnson, RME, 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.

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WANT 1925 and earlier ham and broadcast gear for personal collection. W4AA, Wayne Nelson, Concord, N.C.

MICHIGAN Hams! Amateur supplies, standard brands. Store hours 0830 to 1730 Monday through Saturday. Roy J. Purchase W8RP, Purchase Radio Supply, 327 E. Hoover St., Ann Arbor, Michigan. Tel. NOrmandy 8-8262.

CHICAGOLAND Amateurs! Factory authorized service for Hallicrafters, Hammarlund, Johnson, Gonset. Service all amateur equipment to factory standards. Heights Electronics, Inc., 1145 Halstead St., Chicago Heights, Ill. Tel. SKyline 5-4056.

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KWSI, \$900, W2ADD

DETROIT Authorized distributor offers amateur equipment new and used from Collins down. Volume purchases permit bargain prices on new units at old prices while they last. Hallicrafters HT-37, \$450.00; SX-101A, \$399.50; SX-111, \$249.50; HT-40, \$99.95; HT-40K, \$79.95; SX-140K, \$94.95; Collins 75S3, \$620; all new, not demos., full warranty. Write or phone for prices. Pay cash and save money! Reference D & B Radio Supply & Eng. Co., RSE Ham Shack, Keese, W8VSK, 90 Selden, Detroit 1, Mich. Tel. TEmple 1-3171.

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QSLs: Twenty exclusive designs in 3 colors. Rush \$3.85 for 100 or \$6.90 for 200 and get surprise of your life, 5 days service, satisfaction guaranteed. Constantine Press, Bladensburg, Md.

\$1.00 Frames 60 QSL cards in clear plastic! See picture on page 192 this issue. John Thomas, K4NMT, Box 198, Gallatin, Tennessee.

QSL-SWL-WPE, Finest. Since 1946. Largest assortment. Priced right. Send 10¢ for samples to: Glenn Print, 1103 Pine Heights Ave., Baltimore 29, Md.

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QSLs-SWLS, Samples 10¢. Malgo Press, Box 375 M.O., Toledo, Ohio.

DELUXE QSLs, Petty, W2HAZ, Box 27, Trenton, N. J. Samples, 10¢.

QSL Cards. Call-letter D-cals. Samples 10¢, or send 25¢ for extra large selection and free "Danger, High Voltage!" card. Dick, W8VXX, Rte. 4, Gladwin, Michigan.

QSLs-SWLS, 100 2-color glossy, \$3.00; OSO file cards, \$1.00 per 100. Samples, 10¢. Rusprint, Box 7507, Kansas City 16, Mo.

QSLs: samples 25¢ (refundable). Schuch, W6CMN, Wildcat Press, 6707 Beck Ave., North Hollywood, Calif.

QSLs, SWLS, WPE, Samples 5¢. Nicholas & Son Printery, P.O. Box 1184, Phoenix 17, Ariz.

QSLs, SWLS, XYL-OMs (sample assortment approximately 95¢) covering designing, planning, printing, arranging, mailing: eye-catching, comic, sedate, fabulous, DX-attracting, prototypal, snazzy, unparagoned cards (Wow!), Rogers, K0AAB, 961 Arcade St., St. Paul 6, Minn.

SUPERIOR QSLs, samples 10¢. Ham Specialties, Box 823 Bellaire, Texas

PICTURE QSLs. Cards of your shack, home, etc., Made from your photograph. 1000, \$13.00. Raun's, 4154 Fifth St., Philadelphia 40, Penna.

QSLs, 300 for \$4.35, Samples 10¢. W9SKR, "George" Vesely, Rte. #1, 100 Wilson Road, Ingleside, Tenn.

QSLs-SWLS, Samples free. W4BKT Press, 123 No. Main, McKenzie, Tenn.

QSLs, Samples free. Phillips, W7HRG, 1708 Bridge St., The Dalles, Oregon.

QSLs, Samples dime. Rubber stamps: name, call and address \$1.35. Harry Sims, 3227 Missouri Ave., St. Louis 18, Mo.

QSLs, \$2.50 and up. Samples 10¢. RBL Print M.R. 12, Phillipsburg, N.J.

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QSLs, SWL's that are different, colored, embossed card stock, and "Kromekote". Samples 10¢. Home Print, 2416 Elmo, Hamilton, Ohio.

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QSLs, Kromekote 2 & 3 colors, attractive, distinctive, different. Free ball point pen with order. Samples 10¢. Agents for Call-D-Cal decals. K2VOB Press, 62 Midland Blvd., Maplewood, N.J.

QUALITY QSLs. New designs monthly. Samples 10¢. Giant, 25¢. Savory, 172 Roosevelt Rd., Weymouth, Mass.

RUBBER Stamps, \$1.00. Call and Address. Clint's Radio, W2UD0, 32 Cumberland Ave., Verona, N. J.

QSL-SWL Samples 25¢. Spicer, 4615 Rosedale, Austin 5, Texas.

QSLs, Samples, dime. Printer, Corwith, Iowa.

QSLs-SWLS, 3-colors 100 \$2.00. Samples dime. Bob Garra, Leighton, Penna.

1 1/2" CALL QSLs (2 sides printed), 100, \$2.75. Sample free. Garipey, 2624 Kroemer, Ft. Wayne, Ind.

HUNDRED QSLs: 80¢. Samples, dime. Metinger, Jesup, Iowa.

ATTRACTIVE QSLs: Large variety of styles, cartoons, colors. Personal ham stationery. Samples 25¢ (deductible). Paul Levin, K2MTT, 1460 Carroll St., Brooklyn 13, N.Y.

RUTGERS Vari-Typing Service, 7 Fairfield Road, Somerset, N.J.

QUALITY QSLs. New designs monthly, samples 10¢, Giant 25¢. Savory, 172 Roosevelt Rd., Weymouth, Mass.

ATTRACTIVE QSLs: Large variety of styles, cartoons, colors. Personal ham stationery. Samples 25¢ (deductible). Paul Levin, K2MTT, 1460 Carroll St., Brooklyn 13, N.Y.

QSLs, 3-color glossy, 100, \$4.50. Rutgers VariTyping Service, 7 Fairfield Rd., Somerset, N.J.

QSLs, Free samples. W6EZF Press, 12622 South 8th St., Garden Grove, Calif.

QSLs-SWLS. The type 1 personally use for immediate and 100% response DX or otherwise on any band. Very reasonable. Samples 10¢ refunded. Joe Harms, W4AFJE (ex W2JME/W1GE1/W3COP), 905 Fernald, Edgewater, Fla.

RUBBER Stamps for hams, sample impressions. Hamm, W9-UNY, 542 North 93rd, Milwaukee, Wis.

100 QSL Cards \$1.00. Lewalski, 1367 Perkiomen Ave., Reading, Penna

QSLs, Nifty, thrifty, dime. Filmmakers, Box 304, Martins Ferry, Ohio.

QSL Stamp and call brings samples. Eddie Scott, W3CSX, Fairplay, Md.

DON'T Buy QSL until you see my free samples. Bollos, 7701 Tisdale, Austin, Texas.

RUBBER Stamp, Call, Name, Address, Case, Ink pad, \$1.00. Perry, K4ISA, Box 8080, Allandale, Fla.

RUBBER Stamps, 3 lines \$1.00. Travis, Box 612, Austin 63, Texas.

WANTED: Hallcrafters SX-42, VE3DQP, Box 2411, Pctal Stn. D, Ottawa, Ont. P., Canada.

LOOK. Look for sale. One ART-13 non-modified with power supply, in steel floor rack. Also Johnson Ranger; Johnson Viking II CDS; Johnson Viking Courier, all like new. Priced to sell because I have too much equipment. H. H. Parker, W5GDJ, P. O. Box 218, Buffalo, Texas.

TOROIDs: 88 mly, with mounting hardware. Uncased; like new. Information sheet included. \$1.00 each, \$3/4-1.00 postpaid. KCM, Box 88, Milwaukee 13, Wis.

APACHE, Perfect, \$175.00. Will ship. WA6VSC, 16 LaSalle, Moraga, Calif.

SX-100 R43, HT-30, exceptionally good condition. Best offer. Myron Ely, 1404 N. Kenmore, South Bend, Ind.

CUP-CORE Inductances, excellent for sharp or band-pass 50 to 100 KC. I.F. O. Very high Q. Unused, cased, adjustable; solder terminals. Type 1, 2.9 Mh. Type 17, 3.7 mH. Dollar each postpaid U.S. Circuit suggestions included. H. Woods, 2346 Clover Lane, Northfield, Ill.

MY Fifty-foot fold-over tower built for less than fifty dollars. Send three dollars for specifications, drawings, instructions and photographs. Satisfaction guaranteed or money refunded. Jim Brimman, W41EN, Norcross, Ga.

XTAL-CONTROLLED 21 Mc converter for sale. See November 1959 CQ, p. 100, \$15.00. W3GHS, Hauff, 420 S. Lewis Road, Royersford, Penna.

QSTs need all early issues: CQ all issues 1945. W4ID, 461 3rd Ave., Sea Park, Eau Gallie, Fla.

CHANGE X-tal frequency, including plated type. Safe method, ammonium bi-fluoride, containers, holders, instructions, complete, \$1.00. Deluxe model, \$2.00. Ham-Kits, Box 175, Cranford, N.J.

WE Pay cash for used 2-way radio equipment. State model, price, quantity and condition. Communications Service, 3209 Canton, Dallas, Texas. Tel. RI 7-1852.

WANTED for personal collection. QSTs January through August 1916. WICUT, Box 1, West Hartford 7, Conn.

TUBES Wanted. All types, highest prices paid. Write or phone. Lou-Ironic, Inc., 131 Lawrence St., Brooklyn 1, N.Y. Tel. UL 3-2615.

WANTED: All types military aircraft ground radios, teletype and test equipment. GRC, PRC, etc. Have all types amateur gear for tradng, purchases or cash. Phil Rickson, K2HJC, Morrisonville, N.Y.

WANTED: Old wireless gear, tubes, magazines and catalogs before 1925. Amateur or ship equipment only. Please give complete information including prices. My purpose is to buy this equipment, put it in first-class shape and make it available either in a museum or demonstration basis to all amateurs who didn't live and operate during this era. W5VA, T. Frank Smith, P.O. Box 840, Corpus Christi, Texas.

WANTED: Late model car with ham gear installed, commercial or home brew, SSB preferred. Cash deal. No trades! Send full particulars to Albert J. Bertolisi, 382 Fulton St., Farmingdale, N.Y. Tel. CH 9-0923.

SOUTHERN California: KWM-2 with AC supply, extra crystals, \$995. Prefer not to ship. W6BLZ, 528 Colima St., La Jolla, Calif.

PROCEEDINGS OF THE I.R.E. 1914 through 1949, 1923, 1928, 1931, 1932 complete. Will sell any copy or copies. Excellent price on entire lot. Mrs. Miriam Knap, W1ZIM, 191 Beechwood Rd., West Hartford 7, Conn. Tel. 521-2055.

WANTED: All types of aircraft or ground radios. 17L, 618F or 388, 390, GRC, PRC, SLL, RYX. Especially any item made by Collins Radio, ham or commercial. Also large type tubes and test equipment in general. For fast cash action contact Ted Dames, W2KUW, 308 Hickory, Arlington, N.J.

HAM Discount House. Write us for lowest prices on ham equipment. Factory sealed cartons. H D H Sales Co., 327 Greenwch Ave., Stamford, Conn.

SALE: Collins 75A-4 receiver, serial 2319, in gud cond with .8, 2.1 and 6 kc. filters, \$495. Irwin Reed Weir, K2POL, 559 Grant Blvd., Syracuse, N. Y.

SELL: Hallcrafters SX-100, \$175.00; Heath Cheyenne, Comanche and UT-1; BC-221; BC-604, M. H. Klapp, W2EQV, 17 Kenosha St., Albany 9, N.Y.

FOR Sale cheap: QSTs 1917 to 1960. One or a hundred. Send your list to Rasmussen, Box 612, Redwood City, Calif.

SELL Or trade: Friez dual traverse weighing type, recording rain and snow gauge. New condition. Weekly record. W1LWV.

TFLEX 56-149-3 el. beam, like new, \$50. W2DVH, 61-58 71 St, Middle Village 79, N.Y. Tel. Hk 6-6373.

304TL tubes wanted. Also other xmitg and special purpose tubes. We will buy military or commercial transmitters and receivers with designations ARC, GRC, URR, 51 and MN, Air Ground Electronics Co., 64 Grand Pl., Keany, N.J.

FOR Sale: Complete instructions including 23 p. booklet and 2 x 36 schematic for converting the AR1713 transmitter to AM and SSB, \$2.50. Satisfaction guaranteed. Sam Appleton, K5MKI, 501 N. Maxwell St., Tulsa, Texas.

ATTENTION Mobilizers! Heavy-duty Leece-Neville 6 volt 100 amp. system, \$50; 12 volt 50 amp system, \$50; 12 volt 60 amp system, \$60; 12 volt 100 amp. system, \$100. Built-in silicon rectifier alternators 12 volt 60 amps, \$100; 12 volt 100 amps, \$125.00. Guaranteed no ex-police car units. Herbert A. Zimmerman, Jr., 225 E. 1907 Coney Island Ave., Brooklyn 30, N.Y. Tel. DEwey 6-7388.

RUTGERS Vari-Typing Service, 7 Fairfield Road Somerset, N.J.

MUHL Antenna trans now available; 80 thru 15M bands can be used on 88 foot lot with recommended configuration. Amateur rate \$18.00 pair. Send for literature. Muhl Engineering Co., Box 105, Greenville, Ohio.

YLRO Specials, OMs. Reasonable. Nice designs, samples dime. W2DJH Press, Warrensburg, N.Y.

ARRL Building Fund needs your support! K6POD/5.

WANTED: Heathkit HH-1 Legato speaker system. August Wickland, 308 Monroe St., Kalamazoo, Mich.

MAIL \$3.00 annual membership dues and save with these free services; automated QSL card mailing (save more than dues); exciting contests; fast becoming major ham events; club endorsement; unlimited incoming QSLs; convention activities. Send dues, ask for free brochure. Continental QSL Club, P.O. Box 92, Dabel Station, Dayton 20, Ohio.

FOR Sale: AF-67, PMR-7 and M-1070 p/s with Shure mike, antenna relay and manuals. Beautiful condition, \$269, SX-24, \$59; ceramic mike, \$12. W0FSH/9, 940 Saylor St., Elmhurst, Ill.

7544 with four filters, \$595; KWS-1, \$990; Collins 302C-1 wattmeter, \$75; D-104 with PTT stand, \$25; Telex boom crystal mic/headset, \$25; American D4T dynamic mic, PTT stand, \$15; bug, \$10; Biliu, 200 KC xtal, \$10; Marconi M3 VU meter, \$15; Variac, 20-230 volts 8 amps, \$75; Collins 10 in. spkr., \$10; Dumont 27A 3-in. scope, \$50; I Transitor I/R switch, \$10. Want complete "S-Line". Miller, 88 Stonewall, Fairfield, Conn.

SELL: Hallcrafters SX-100 with speaker, like new; Elmac AF67 with power supply, EV-727 mike. Sell complete \$250. W1FOA, 45 Oak St., Cohasset, Mass.

FOR Sale: HO-129X spkr., in excnt cond, realigned, updated, 15M band spread, new tubes, \$125.00; Johnson 122 VFO, \$20; Vibroplex blue racer chrome deluxe in excnt cond, \$15. Want: 2 mtr. Converter, Comet Communications, TC99, Newark, Dick Marsino, W2UGM, 66 Columbus, Closter, N.J. PO 8-1884.

TRIBANDER Beam, Gotham, 20-15-10, \$40; AR-22 rotor w/100 ft. cable, \$30; 200 ft., R08/U, \$20. Glenn K2SN2, 31 Claremont, Scarsdale, N.Y.

6 Mtr. SSB adapter, 10-26 final, 14 Mc. input; pwr. supply, \$30; 6 mtr. converter 10-14 Mc. output, \$8.50; 6 Mtr 60W xmitr, 829B final 6L6 mods., \$35.00; 6 mtr. tunable converter, 7 Mc. output \$10; 75 mtr. 20 W. mobile xmitr, 12V fil., \$15. F.o.b. W6RET, 8831 Sovereign Rd., San Diego 23, Calif.

FOR Sale: Collins 75S-1, 32S-1, 312B-4, mikes: EV-911; Astatic 10C; Q-multiplier; Vibroplex key; all exc. condx., \$900. Gar Tomlin, K1IDR.

SELLING Out station: All in A-1 condition and purchased recently; Hallcrafters SX-111 with matching R-48 spkr. DX-60, Heath VFO, Model 153-B, H-49-11n Beam Antenna, with mast sections, Dow-Kelley relay, and coaxial cable. Electro-Voice mike, \$300 takes all or none. Must pick up. Call Tom, K9BJB, HU 5-5718, Brookfield, Ill.

TRADE Colt .22 Frontier Scout, like new condx, for Novice transmitter. Jim Hulett, 3785 Scranton, Beaumont, Texas.

AIRPLANE: Trade beautiful Piran Tripacer 135HP, only 11325 hours. Arc Omni Value \$KBus. For Collins, other top ham equipment. Good telescope. Cash. W8VZ, Marietta, Ohio.

SELL: AF67, PMR7, Model M1470 pwr. supp., ant., center loading coil, 10 to 40M, mike, all manuals, in excnt condx, \$200. Glenn Winters, K5SYM, Box 125, Bull Shoals, Ark.

SELLING Out: KWS-1, 75A4, station control, beam, Tel-rer rotor, miscellaneous. All in new condition. High serial numbers. All letters answered. Frank Lindsay, 1326 10th St., Holdrege, Nebraska, K0MVY.

SK-20 Tunable Preselector, calibrated 3.5-30 mc., boosts reception 3-5 db. Complete 3 kit, cabinet, built-in pwr. supply, \$18.98 postpaid. Holstrom Associates, Box 8640-T, Sacramento 22, Calif.

CONTEST QSLs! Special quantity prices. Cleancut layout designed to bring you maximum return. Send for samples. Saedi Unlimited, P.O. Box 44, River Grove, Ill.

WANTED: Electrical part manual Signal Corps power unit PE-141A, W4NFC.

RANGER, \$175.00. W6RDK, Sacramento 25, Calif.

COLLEGE: Will sell SX-110 with external speaker and Heath QF-1, \$125.00; Globe Scout Deluxe, \$110 or both for \$200. Guy Hoose, W2AJWP, 24 Pinchurst Rd., Albany 5, N.Y.

SIMPSON 479 TV sweep and market generator, \$225.00; Eico TV color scope, \$55; 100-watt Variac, \$3; 1/2 ARF meter, \$2.00; Phone dial, \$1. W6EZH, 14945 Dickens St., Sherman Oaks, Calif.

HELP! Made DXCC. Now want boat. Sacrificing entire station at giveaway prices. 75A-4, Telrex beam, etc. Send for list of stupendous bargains. K5JCC, Peter Roussel, 6515 Brompton, Houston 5, Texas.

WANTED: BC348, gte condition and lowest cash price. Dan Lee, 3167 E. Green St., Pasadena, Calif.

HQ-145 Revr. with xtal cal. and clock for sale. Only 9 months old, in excnt condx. No scratches or modifications made. Like new. Price \$200 cash. No shipping svy. Alan Harvey, W2AUM, 106 Willis Ave., Syracuse 6, N.Y. Tel. 468-5242.

SELL: H. B. rig, 25W, 110W mod, 4-65A/809 VFO 80 thru 15M, V1 suppressed, \$75. D. Klinger, W3KBR, 801 S. 60th St., Harrisburg, Penna.

COLLINS KWM-2, like new, \$900. WA2BKT, Al Mandel, 1701 Albemarle Rd., Brooklyn, N.Y.

BC221T frequency meter with AC supply, \$50; 3000 watt 115VAC light plant, \$150; Hickok 288X signal generator, \$75; Heath audio generator \$25; BC453, 10; BC603 and AC supply, \$10; RCA cool KW mod. xfmr., \$25; BC610 mod. transformer, \$20; 75A4 spkr., \$10; 12VDC to 115VAC 200 watt inverter, \$34; UTC plate transformer, 4.800 VCT at 1500 ma., \$50; RCA 12VDC VFO pwr. supply for AAT11n, \$15; mF 6000VDC capacitors, \$1.50; new tubes at bargain prices, 4X150 and socket, \$33 and socket, 3C24, 832A, RK65, GL 446A, M. D. Haines, 1316 S.W. Military Dr., San Antonio 21, Texas.

HT32A, Cables, SX101 Mark III, R46B spkr, Low relay, RG58/U, balun coils, D-104C mike, RG59U, excellent in every way, now on air. Back to college. Will deliver within radius 300 miles and help set it up. First \$800 takes all. Doug, W9VCQ, 1002 N. 12, Fargo, N.D., Dakota.

SELL Mohawk, Apache and accessories, \$425.00. Excellent condition. Bob Snicker, 217 Osborn Rd., Albany 5, N.Y.

TRADE For gud revr: Lionel "O" gauge, 2 track, freight, passenger, automatic switches, scenery, etc. Cost \$375.00. All inquiries honored. S. Spino, 156 Bateswood Rd., Waterbury, Conn. K1SCN.

QSTS 1928-1962 30¢ each. K1PL, 108 Whitehall, Providence 9, R.I.

FOR Sale: Good SX-99 with spkr, \$95. New DX-20 with xtal, \$30. Will ship postpaid, just bought. Blue Racer deluxe bug, \$22.50. Write KNIYAH, Box 136, North Haven, Conn.

WANTED for office file. RTTY Vol. III, No. 6 (June 1955). WILKE c/o ARRL Hq.

G1B-100, \$320.00; HQ170C, \$270. Both perfect. 458 VFO, Central conversion 160 through 10. \$18. W3RKR/4, 5540 Berryhill, Norfolk, Va.

WANTED: Filter capacitors, oil filled 4000 VDC, W5LGD, Bob Ruffer, 4013 Cleveland Pl., Metairie, La.

FOR Sale: NC-125 receiver with manual, matching speaker, Heathkit Q-Multiplier, and Texas Crystal 100 Kc transistorized calibrator, \$125.00. Would like to purchase chain SX-101A. Paul Wade, Rte. 2, Kevill, Kentucky, Phone 488-2227.

FOR Sale: GSB-101 linear, new, \$235.00. Transmitter, pair 833's, with 3000 volt amp, power supply, built in BC-610 cabinet, \$230. new 4-400A tube, \$25. power supply, 2000 volts at 500 Ma. \$50. Collins coax relay, \$15. James Craig, 72 E. Sixth, Peru, Indiana. GR 3-9306.

SELL: Solid mobile and other gear for best offer whole or part: TBS-50C with 12 volt transistorized power supply; RME MC-53 for 2, 6, 10 feeding Gonset Superceiver; 6M Halo; HQ-170; Viking Valiant; 75 ohm filter; Heathkit SWR bridge. W1QOU, 53 Austin St., Leominster, Mass.

APACHE—Gud condx! \$150 or best offer, Radio Club sacrifice. You pay shipping. K1BSB, Edgar Mack/Pres., RFD #1, Box A-37, Litchfield, Conn.

SELL: Gonset G-28 ten mtr. transceiver, Heath Sixer month old. Both perfect. Al Peterson, 6710 No. Oconto, Chicago 31, Ill. Tel. SP 5-1886.

WANTED: National Presclector type PSK for FB7 receiver. Jack Shiels, W3OKP, 3212 Chestnut St., Murrysville, Penna.

JOHNSON Viking "500", factory wired, in exc. condx, \$550; Johnson KW Matchbox w/s.w.r. meter, new, \$165; NC-300 revr, new condx, \$215; Telrex 3-el. 20 mtr. beam, \$50; 3-el. 10-mtr. beam, \$20; 45 ft. Rohn Tower, \$30; D-104 mike w/switch stand, \$15; Vibroplex Lightning Bug, \$10; new Eimac 4-400-A, \$35; 40 spare tubes, 811-A, 866A, etc. For above equip., \$30. Cash and Carry, W3LTL, D. Phillips, 49 E. Grandview Ave., Sellersville, Penna. Phone AL 7-2027 after 5 PM.

FOR Sale: HT-37, \$340. Lewis Goekler, K9IFR, 915 N. 7th St., Marshall, Ill.

SSB Heath HX-20, professionally wired and tested, beautiful rig, \$298 F.o.b. Waterman Pockscope \$10A, \$40; Astatic T3, never used, \$10; D-104 mike, \$10. F. H. Garrahan, W3OZ, 1448 1/2 Wyoming Ave., Forty Fort, Penna.

"HOSS TRADER Ed Moory" is leaving the "barn door" open. No reasonable offer refused for the following used items: Swan-175, KWM-2, Drake 2-B, HT-37, 75A-4, HO-180-C, 75S-3, 32S-1, 30L-1 and 20-A, "Package Deal" new Ham-M rotor and used HT-4 beam, \$175; "Packaged" New HT-37 and used Drake 2A, \$595; "Package deal" New KWM-2 with used 516F-2 and 30L-1 for \$1495. Can deliver Swan and Sonat transceivers also Collins 32S-3's and 62S-1's, "Horse Thief Specials"—new RCA color television, \$299; Viking Valiant, \$299; Viking Ranger, \$179; HQ-140XA revr, \$139. Terms cash. Ed Moory Wholesale Radio, Box 506, DeWitt, Arkansas, phone WHitney 6-2820.

1924-1962 complete file QST's. Make offer. W6FBW.

LIKE New, one owner, Collins 75A3 with Jensen sound speaker, packed for shipment. F. A. Fayetteville, N.C. \$300. Box 70, T. Hunter, W4EBM.

SELL: HT32B, excellent condx, \$550. SX101A, \$300. Fred Gwyer, 6 South Stone, La Grange, Ill.

SELL: Eimac AF67 in gud condx, \$100; Johnson Valiant in mint condx, \$300. W4SAC, 14421 Biscayne Dr., Leisure City, Fla.

A-1 Reconditioned equipment. On approval. Trades, Terms. Hallicrafters S-107, \$69; S-85, \$79; SX-99, \$99; SX-100, \$199; SX-111, \$179.00; SX-101A, \$269; Hammarlund HQ-100, \$129.00; HQ-110, \$169.00; HQ-160, \$229.00; HQ-170, \$239; HQ-180, \$239; Valiant, \$270; NC-300, \$239; NC-3, \$299; Collins 75S-1, \$329; 75A-4, \$349; 75A-4, \$499; 32S-1, \$499; KWS-1, \$995; Central 10A, \$79; 20A, \$149; National, Gonset, Eimac, Heath, Johnson, RME, many others. Write for list, Henry Radio Co., Butler, Mo.

QSTS to highest bidder: 147 copies 1947 to 1959. Also CQs, 54 copies 1948 to 1959. Marv Mincer, W9HJH, 1733 N. Spencer Ave., Indianapolis 18, Ind.

SWAP: BC 610-E on the air. Want Gonset Communicator Six meters. Write W1DDZ.

TBY: Ultraportable 6 meter transceiver. Batteries, power supply, case, headset, mic, all accessories. Best offer. W4ZAOB, Rick Merwin, Staatsburg, N.Y.

GOING Mobile for collete. Must sell my NC-303. In perf. condx. Under 1 year old. \$300. Dain, K8MLR, 932 Renwood Dr., Kettering 29, Ohio.

FOR Sale: HT-37, sud condx, 1 year old, little used. I need the money. \$350.00. John Lässig, 2025 Bingle, Houston 24, Texas. K5GFV.

SELL one Heath linear kit, Warrior. Box same as factory packed; was opened to check parts and returned to box and sealed. Linear goes to best offer when getting check. Rodio, 466-55th, Bklyn 20, N.Y.

TRADE: BC-610 with BC-614 speech amp. In xclnt condx for Apache or equiv. or sell for best offer. K8HRX, 959 Kohler St., Kenton, Ohio.

SELL: DX-20 and homebrew modulator, Knight VFO, dozen xtals, all gud condx, \$60. You pay postage. WA4EPH, 314 Jamestown Rd., Williamsburg, Va.

ALUMINUM for every ham need. Write to Dick's, 62 Cherry Ave., Tiffin, Ohio, for list of tubing, angle, channel, castings, plain and perforated sheet, and complete beam kits.

WESTERN Electric 416B tubes. Guaranteed. \$10 each, postpaid. Jim Ariana, Box 285, Kincaid, Illinois.

VARIACS: Large quantities brand new factory cartons, 120 volt types; W2 @ 2.4 amps, \$15; W5 @ 6 amps, \$18; W10 @ 10 amps, \$31; W20 @ 20 amps, \$48; also 240 volt types; W5H @ 2 amps, \$21.50; W10H @ 4 amps, \$33; 20H @ 8 amps, \$50; W30H @ 12 amps, \$75; other models available, F.o.b. Los Angeles. No C.O.D.s. Westates Electronics, 6344 Arizona Circle, Los Angeles 45, Calif.

FOR Sale: Johnson 250-23-3 275 watt Matchbox, \$50; Johnson 250-30 kilowatt Matchbox with Heath SWR built-in, \$90; Johnson T-R switch, 250-39, \$16. All like new. Amos H. Carmical, K4IZU, 321 Fleda Road, Memphis 17, Tenn.

FOR Sale: QSTs, April 1932 to Dec. 1950. Best offer. Daniel J. Umholtz, W3ZAL, 392 Armstrong Ave., Jersey City 5, N.J. Tel. HE 4-2486.

SELL: AF-67, PMR-7 and M-1070 Pwr. supply. In vy nice condx. Ready to operate, no bugs. I bought all new in January 1959. Includes 12VDC relay, all coax outfits and power cables. Instrux. \$200.00. K4KHE, Larry McCreary, RFD 4, Franklin, Ky.

FOR Sale: BC-610E complete with tubes and coils for 10-15-20-40-80 BC610E speech amplifier, antenna tuner, Collins 310B, all manuals, W4T, W4AJT, C. Weldon Fields, 2707 Fairway Dr., Greensboro, N.C.

WANTED: Johnson KW without desk. Also factory wired Ranger for driver. Raymond W. Andrews, K2KZJ, 110 Sickles Road, RD #2, Elmira, N.Y.

SELL: Hy-Gain 2-el. Tribander, \$30; Prop pitch motor, xfmr, solvns, \$25; Eimac VC50-20 vac. cond., \$5; 16 sets of 5 lattice xtals, \$5; 2 meter and 10 meter xtal cond. converters, \$10; QST run 1946 thru 1961; CQ 1949-1954. Make offer. W. R. Hatchard, W3KHU, 2306 Marlyn Dr., Wilmington 8, Del.

MOBILE Morrow Twins, MB, 560A xmttr and MBR-5 revr. Ant. ant. matcher, both P.S. all cables, speaker, microphone, etc. Spare dynamotor, 30 hours use, ready to go. \$300; M-1 Mu Western teletype converter like new, \$87.50. Instrux books for all equipment. K0AEK, 6351 E. Dakota, Denver, Colo.

WANTED: Commercial or surplus airborne, ground, transmitter receivers, testsets, 618S, 18S, 17L, 51R, ARN14 GRC PRC, BC, ARC, Bendix, Collins, others. RITCO, Box 150, Annandale, Va.

UNBUILT Heathkit Seneca, National 303, converters for 6 and two, Hy-Gain beams for 6 and 2. All new cost \$300. Asking \$225. Michael Myster, WA2UNE, 295 Grand Ave., Lindenhurst, N.Y. Tel. 1U 8-8598.

WANTED AC Coil for HRO50T. Name your price. Wells Chapin, 118 Woodmanney, Fayetteville, N.Y.

TRADE Two new 4-400A for six meter mobile rig. Write W4RDHU/7, 4542 Orcas, Seattle, Wash.

LINEAR 2 KW P.E.P. built by Eimac using 4CX1000A with pwr. supply, \$500. See November 1957 QST. Pick up deal only. Jack Anderson, 126 Fairway Gate, Roslyn Harbor, L.I., N.Y. Phone HT 4-1149.

SELL: Altec-Lansing 605A 15" speakers w/Altec 854A/B matching enclosures in walnut. The ultimate theatre stereo speaker system for home use. Must sacrifice for \$300, the pair. Also have Blaupunkt pushbutton FM-AM-SW car radio, for 6 or 12V neg. or pos. around w/installation kit \$89.50. Heath HD-20 crystal calibrator, \$50 and Lafayette K7550 100-watt stereo amplifier modified, \$75. W2BCEQ, Fred Salzman, 293 Monmouth Ave., New Milford, N.J.

NOVICE Sale: Knight T-50, \$26; Hy-Gain 14AVS mint condx, \$17.00. Skillman bus, \$5; Skip McElfresh, 61 W. South St., Jackson, Ohio.

SELL: Collins KWM-1 DX adapter 399B-1 complete with one extra crystal. Best offer. O'Brien, W2EQS, 48 Prospect, Westwood, N.J.

SSB Viking Pacemaker, vy clean in appearance, late model with all-factory modifications, \$175.00. Hess, W8GTT/1, 50 Warren Rd., Framingham, Mass.

FOR Sale: SX-28, \$60; Gonset G76 with AC supply, \$300; Gonset GSB201 lin. amp., \$300. W1QBI, Richard Lindquist, Atkins St., Middletown, Conn. Tel. BE 7-3354.

WANTED: Cabinet only from B&W L-1000A; Eimac SK500 arsocket, Cardwell 1500 mfd., variable cond. B&W 850A coil 2.1 Kc filter for 75A4, Anthony Marinka, 3723 Magnolia Ave., Chicago 13, Ill.

KWM-1, newly factory reconditioned, 516E-1 DCPS, 516F-1 ACPS, mobile mount, mike cables, bumper mount, Triband unit, \$690. Delivered via air anywhere. W4SWY, 9100 S.W. 61 Court, Miami, Fla.

CLEANING House: \$22 xmttr completed converted, 6 volt Leece-Neville generator and rectifier, Carter Dynamotor. Tubes. Send for list prepaid envelope. W2HNG.

WANTED: LWM-3 or other homebrew multiband mobile SSB transceiver; 3 Gonset G-II citizens and transceivers, hardly used, \$120. K. Schulz, 4655 Broadway, Gary, Ind.

GOING Overseas. KWM-2, 312B-5, CC-1, PM-2 and SM-1. In mint condx. 11 months old. Pair 4-400As linear with power supply. TH-4. Package deal: \$1595.00 cash. James DeMott, Box 571, Shaw AFB, S.C.

FOR Sale: Hy-Gain 10M beam, \$10; 15M, \$15; Heath EA-2 Hi-Fi amplifier, \$20; Miller AM tuner, \$10; PE-103, \$10; 5 Heath scope, \$10, as is. K5CCO, Box 119, Sapulpa, Okla.

FROM Anyone driving to Mexico will buy good mobile rig. "REVMEKX", Apartado 2207, Mexico City, D.F. 1.

HEATHKIT Apache, \$285; Mohawk \$250, both for \$450. In A-1 condx and guaranteed, Unused BC654, \$15. F.o.b. Portland, W7CJR, 662 N.E. Royal Ct., Portland, Oregon.

GLOBE CHAMPION 300-A, Hammarlund HQ-150, \$200 each or nearest offer. Both in perf. condx, little used. Butterworth, K3AKB, 2708 Gaither, Washington 21, D.C.

HT-32 \$375; SX-101A with matching spkr. \$360.00. Exc. equipm. Willard Fiscus, 1 Maiden Lane, Lynntield, Mass.

GLOBE KING 500 C. Excint! \$489.50. Will ship. Ed Noble, Gilman City, Mo.

MOBILE For sale; Ham or citizens band Stancor ST 203. A 10-11 meter Xmtr, Gonset 10-11 meter converter, Pioneer Dynamotor Best offer. K2GDE, 1321 East Broad St., Westfield, N.J.

HALLICRAFTERS HT-40 transmitter 80 thru 6 c.w. and AM TV1 filtered; Hallicrafters SX-140 revr matches xmtrr. Both brand new in sealed cartons with factory guarantee. Bargain at \$175 for both. Rev. Richard Schacht, 135030, 232 St., Springfield Gardens, P.O. Jamaica 13, L.I., N.Y.

VHF Geloso 2M VFO transmitter \$25; National 6 M converter, \$30; Filter King 6M converter, \$25; CB 30A, MM1 scope, 75 mtr. Swan; Heath pwr. supply. Make offer. Bob Heil, 402 Border, Marissa, Ill.

75A-3 Available, W1AW now using latest Collins. For sale the displaced 75A-3 with 3 kc. filter, provision for second mech. filter. Best offer over \$300. Contact ARRL, Att: Ed Handy, 38 LaSalle Rd., West Hartford 7, Conn.

HEATHKITS for sale. Apache, \$225, Mohawk \$250, SB-10, \$75 and Johnson KM Matchbox with SWR indicator \$125; MM-2 RF analyzer with 50 Kc IF amp., \$100. All units unscratched and in new cond. Priced F.o.b. Goodin, 486 Hollyhill Dr., Lexington, Ky.

FOR Sale or trade. Heathkit DX-607, like new, used by little. \$250 an excellent oscilloscope, Model 470. Will trade either or both items for DX-100 or DX-100B in gud shape. Make offer. Darwin A. Leuk, K0DD, Algona, Iowa.

SELL: Fico 720, factory wired in original carton, \$80. WA2KJS, 4324 Wickham Ave., NYC, FA 4-6865.

SELL: SX-16 with spkr, DX-40, Hy-Gain vertical, Gud condx. All for \$150 or separate. WA2MKI, 400 Seeley Rd., Syracuse, N.Y.

COLLINS 7551 still new; little used; perfect. F.o.b. \$400. Shipped in original carton. Write 6K Locas, 8420 51 Ave., Elmhurst, L.I., N.Y.

S-38C, NR66C772, \$32; NC-33, NR2150313, \$35.00; working condx, postpaid Continental USA. Want Blue Racer bug, Drake 2B; state price, model and serial, condx. W6MMC/7, Box 412, Sedona, Ariz.

NELL: HQ129X. Best offer over \$105.00; Viking 6-2 meter converter, \$35.00, no shipping, sry. Must pick up personally. Fred Corliss, 6431 Ave. A, New Orleans 24, La.

VIKING I, shielded and filtered, in gud condx, \$90. W2NKH, Huntington, 70 Greenlawn Rd., L.I., N.Y.

ONE Pacemaker, \$225; 1 LA400B, ampl., \$100; Gonset III 2-mtr. with xtal and mike, \$175; AOK, On air, Harmon Radio No. 7A10, AM/FM Tuner with amplifier, \$65; 1 corner cored spkr, \$20. Sry, will not ship. Ross B. Hunt, W2WEVY, 14 Byron Pl., Livingston, N.J.

WANTED: C-E 600-1 linear. Also 6 Kc filter for 75A4. All replies answered. Stan Cokas, 16 Edgchill Rd., Swampscott, Mass.

WANTED: 850A inductor and swing, choke, 5-25. Hy 500 Ma. Joe Klize, Bennd, Ill.

ATTENTION: Amateur Radio equipment repaired, work guaranteed. L & S Electronic Technicians, WA2OQG, Sam Levinson, 393 South 3rd, Bklyn, N.Y. Tel. EV 4-7864.

QST: 1932 thru 1952 complete except 4 issues in 1942. \$50.00 F.o.b. WZMR, Hereford, Ariz.

TERMS Available on reconditioned units! Babcock MT-5A, \$49; KWS-1, \$995; KWM-1, \$449; 32V-3, \$349; 40S-1, \$995; AF-67, \$114.95; King 500C, \$499; Commander mobile, \$59; G-77, \$159; HT-37, \$375; TRS-50, \$49.95; DX-40, \$59.95; Valiant, \$329.00; 75A-3, \$379; 75A-4, \$450.00; 75S-1, \$349.00; HR060, \$299.50; NC-188, \$99.50. Write Leo, W0GFO, WRL Council Bluffs, Iowa.

FOR Sale: Heath Apache and SB-10 perfect. No drift. Extra 6146s and other parts. K0HWK, Alburnett, Iowa.

NEW 75A4 noise blanker; Collins 136C-1 complete with step by step instructions. Any kit builder can install. \$49. New Collins KWM mobile mount, never unpacked. \$39. Wanted KWM-2 or KWS-1 and 75A4 combination cash. W0NHP, Richard E. Mann, 7205 Center Dr., Des Moines, Iowa.

WANT to buy manual for Digital Instrument Co., Model 955 counter; sell Heathkit GC-1 receiver, \$85; D-104 mike PPT stand, \$20; Simpson testers models. 378, 373, 362 \$15 each; 260 with leather case, \$25; Triplett 630NA, \$50; Weston 982 VTVM, \$45; Paco T60 tube tester for latest tubes including Nuvistors, \$30; S-50 scope, \$30; Hickok 890 transistor tester, \$90; 6000 tube tester, \$10; CRT adapter, \$5; CA-4 adapter, \$30; 690 gen, \$90; Gonset 301T timer 40-50 Mc. FM 12 volt, \$30; Riders TV Vol. 3, 5, 6, 7, \$15; Precision E-310 S-Sq. wave gen., \$100; 78 VTVM, \$40; Lampkin 103B, \$175; R-307 Ireland, Pleasant Valley, N.Y.

HQ-180C receiver. In mint condx, approximately 19 months old, little used. First certified check for \$290. Brand new Hornet TR-10004 beam. Box never uncrated, \$90. F.o.b. Okc. 2 heavy duty extremely rugged 10 element Taco channel 2 in. built halon yams. Designed for 2 inch ice loading 150 m.p.h. winds. 73 ohms. Phasing harnesses for stacking supplied. Original cost \$265. each. Brand new, never assembled. The pair for \$200. F.o.b. Okc. Caribbean Video Co. P.O. Box 244, Oklahoma City 1, Okla.

MUST Sell College bound; Ameco CN-144V 2-meter converter, \$38; International FCV-1, 6 meter converter, \$13; Hy-Gain 2-meter, 10 element beam, \$13; Heathkit Model MMV VOM, \$30; Heathkit model AR-3 revr, \$35. All are in excellent condx. K8-VEX, Box 385, Wauyland, Mich.

CUSTOM Building. Ham gear. VHF specialists. Converters, power supplies, etc. Free quotes. Frontier Electronics, Orr 1, Minnesota. W0HPS, Everett Hoard, W0PYC, Frankie Hoard.

BEST Offer over \$25 takes perfect Heath OM-3 5" oscilloscope. Relay for receive and transmit. Monitoring. Mannings, Box 563, Riverside, Mich.

DX-100. Exc. condx. with DX-100B modifications. Local sale only, sry. \$150.00. WA2CTB, 82-23 246 St., Bellerose 26, N.Y. FI 7-4468.

VALIANT, Excellent, \$275. Hal Crispell, 4261 Santa Cruz, San Diego 7, Calif.

B&W 5100B and 515B-B with B&W CA-1 compression amplifier, mint condx, \$350.00. R. Carlsen, W2ISD, 45-42 Utopia Pkwy, Flushing 58, L.I., N.Y.

HT-32B bought Oct. 26, 1961. Used by little, \$550.00 or your best offer. K3CQV, Bernard Schwartz, Huntingdon, Penna.

SALE: New power supply, will deliver 600 watts at 2.1 Kvdc. Send for info. K7NKD, 1539 W. Virginia Ave., Phoenix 7, Ariz.

SELL: Lattice filter AM-SSB homebrew 14 Mc. 9-tube receiver, \$40.00; excellent Viking Courier, \$135.00; HB self-contained 600 watt GG all-band amplifier 814's, \$120; SSB generator cheap and easy with VFO and power supply, \$75. W4NWW, 122 Beverly Place, Greensboro, N.C.

HQ-145C, \$210; Eico 720, \$65; wanted: Matchbox and/or SWR bridge, WA2ZVJ, 2115 East 27th St., Brooklyn, N.Y. Tel. SH 3-2525.

TRADE! Homebrew 80-10M 100W c.w. xmtr. Want Globe Scout, W4ASP, Rte. 2, Owensboro, Ky.

75A4 serial #5795, in mint condx. with 3.1 Kc filter in original carton, \$550; Jennings 1000 MMF vacuum variable, 7500 volts, \$75; DX-100 transmitter, \$125.00; Stancor A-3899 Multimatch modulation transformer 1000 watt audio power insulated for 15000 volts, \$30; Navy black wrinkled BC-459 new unused, \$10; new 1625's, three for \$1.00; HDVL coils 40 and 80 meters, \$7.00 each; Johnson split-stator 100DD90, 9000 volt 100 mmf. variable, \$5; Ed Schmeichel, W9YFF, 190 E. North Ave., Elmhurst, Ill.

QUITTING Ham Radio. For sale F.o.b. Viking Ranger I, factory-wired, like new, \$150.00; NC-183D with prod. det., \$180; Viking II factory-wired, \$130.00; Johnson 6N2 with HB PS and mod., \$125.00; Dow-Key ant. change-over relays, \$8.00 each; B&W ant. switch, \$8.00; Astatic D-104 with "C" stand, \$15.00; Collins crystal cal., \$12.00; speaker for 75A3, \$10; SX-28, \$80. Other items. Write Gerald Skeen, Statts Mill, W. Va., Tel. ES 2-6957.

TOWER 50 ft. crank-up, \$49; 20'40 Birdcage, \$39. Both \$75. W4GMN, Box 371, Lebanon, Va.

WANTED: Good used 50W Globe Hi-Bander, 6/2 meters, \$75.00. W3LOR, 116 Georgetown Ave., Pittsburgh 29, Penna.

FOR Sale: Plastic laminating press, Warner model 100B, used for pictures, licensus, etc. Good condition, Jack Chichester, 33 Cedar Road, 9800 W. Joliet Rd., La Grange, Ill.

SCR 522. Converted, 2 meters and mounted, 14 x 19 rack panel. Meter and control dials, \$58.00. F.o.b. Pittsburgh, W3MTK, 314 Tassel Lane, Pittsburgh 36, Penna.

VIKING II in good operating condx and appearance. Will sell for best offer or first certified check for \$135.00. See results CW DX contest. Lewis Prescott, W1RFQ, 15 Loring Drive, Lincoln, R.I.

NEED Following issues of OST: Oct. 1940; July and August 1930; Also CQ for Jan. 197 and Jan., Feb., March, May 1945. W60ZE, 444 East Frost St., Covina, Calif.

WANTED: DC-34, DC-35 type crystal units for BC-669 set. 1690 to 3190 Kc. Pearce, W5ACH, 427 Mayflower St., Baton Rouge 2, La.

NEW Johnson 500, \$685; mint Hammarlund 145-C, \$185; new Deluxe Vibropile, \$18.50. Health OM-3 oscilloscope, \$45.00. WA2LIM, Flushing, N.Y. Tel. IN 1-1779.

USED Mobile equipment for sale. Gonset G-77-PMR7 revr with power supplies and gear. Make offer. Charles E. Glass, 224 Newbridge Ave., East Meadow, N.Y.

SELL: Fico 720 c.w. xmtr. \$80; Fico 730 modulator, \$55. Gonset G-43 revr, \$150. Louis C. King, R.D. 2, Box 249, Seaford, Del.

SELL: Viking Ranger II and NC-190. Both new in original cartons. Best offer. W. H. Wiley, 1519 Pass Rd., Handsboro, Miss.

SELL: 100-V, 515; Heath 2M converter, \$25; E-V 630 dynamic mike, \$15. W5BLE, 1427 Louisiana Ave., New Orleans, La.

SELL: Collins 32V2, Extra 4D32, \$234.00; SX96 with prod. detr., \$125.00; D104 mike, stand, \$20. In exc. condx. W8-BTW, 7390 Sawmill Rd., Worthington, Ohio.

KWM-2-516F pwr. supply, 516E-1 pwr. supply, HT33A linear amp., all like new, original cartons, \$1300. takes all, pkg. deal. Mel Murray, W9EJY, 7129 W. Farragut Ave., Chit. 31, Ill. Area code 312 NE-1262.

FOR Sale: Comco 2-Way radio equipment on 35 mc., FM, Exc. condx. Guaranteed 20 mi. radius, 180 watt base with tone saucich, 40 watt mobile, 2 antennas. Cost \$1500. Selling price, \$750. Can use a Gonset 201 linear as part payment. Nat Capon, 217-35 47th Rd., Bayside 61, L.I., N.Y.C. Tel. BAYSIDE 5-7200.

WANTED: Manuals, schematics, information; Navy model TCK transmitter, L. Coleman, WA2BMM, N. Pearl St., Canandaigua, N.Y.

RANGER Push-to-talk plus microphone, \$180; SX-99 spkr and Q-multiplier, \$90. Johnson T-R switch, \$10. vy gud condx. K1HXY.

FOR Sale: SX-100 in mint condx, recently factory recalibrated and realigned, with matching R-46B speaker. Will include 30 ft. of RG-8U coax. Asking \$220. Howard Shieber, K2UZT, 142-10 Hoover Ave., Jamaica 35, L. I., N.Y.

MOBILE: All-band complete station: Multi-Elimac AF-68, PMR-8, M-1070 Universal pwr. supply, R-47 spkr. Down-Key 12V relay; Turner 350 C. PTT mike; Heliwhips, 10 & 20 heavy duty mount, all cables and manuals. Hardly used, in mint condx. Need the money. \$300. Gerald Kolton, K9GBH, 1801 W. Armitage, Chicago 22, Ill.

HEATHKIT SSB Mobile package. HX-20, HR-20, HP-20, HP-10, EV-729SR, \$350; Heathkit SC-1A, \$100. Leaving U.S. F.o.b. John Jelluma, W8SWN, Zeeland, Michigan.

FOR Sale: Collins 755-3A, serial 10348 with xtals covering major short wave bands, \$720; 312B-4, \$160. W8BBA/6, 17552 Kirtland, Van Nuys, Calif.

WANTED: Collins 51J-3, R-388, R-390A, 75A-4, SP-600, tele-type, Kleinschmidt, test equipment. Cash, or trade for new amateur equipment. Write: Tom WIAFN, Alltronics-Howard Co., Box 19, Boston 1, Mass. Tel. Richmond 2-0048.

FOR Sale: Like new GPR-90 receiver. No reasonable offer refused. Will deliver within 100 mile radius of NYC. H. Smith, 276 W. 117th St., NYC, N.Y.

WANTED: January 1937, Proceedings of IRE. Name your price, W4BZX, RFD 1, Box 332, Columbia, S.C.

SELL: Gonset G66B, 12V power supply, new tubes, \$125; Gonset G77 new tubes and new vibrator, \$150 or both for \$250; Gonset Communicator III, 6 meter, cables and mike, \$185; Elimac AF67, \$80; Super Pro 400SX, 1250 Kc—40 Mc with power supply and cabinet, not surplus, \$135; B&W 380B TR switch, \$15; Milten DeLuxe VFO \$50; Milten 500 watt final, coils and tubes, \$60; Milten 2-6-10 xmitr with pwr. supplies and modulator, \$175. Heath Sencra, \$15, may consider some trades but prefer cash. R. Forman, P.O. Box 1032, Grand Central St., NY 17, N.Y.

SELL: 755-3 with speaker. Want 51J-4 or 75A-4. Consider trade. Sell 32S-1, 516F-2, 30L-1. All new 1961. Excellent condx. W4EAB.

FOR Sale: Science & Invention, complete run: Radio Craft, complete run: Wireless Arts, 1913 to 1925, Popular Radio and other Television and Radio magazines. Send for list. Mrs. Dorothy Simpson, 85-39 152nd St., Jamaica 32, L.I., N.Y.

SELL: Gonset 2 mtr. Communicator VFO amplifier; Super-Vee Super Six converter; 2 mtr. mobile converters; Com-mander xmitr, VFO, FM mobile tuner. All 12v. Johnson mobile xmitr VFO. Want late 676. W1AMK.

SELL: Drake 2B xtal calib. Q-mult. and speaker. 1 week old, \$270; Eldrid SSB 100w, \$400; RME #303, CB walkie-talkies, pair \$80; all lit. and f.o.b. Lamb, W3VDE, 1219 Yardley Rd., Morrisville, Penna.

QUICK Sell: Pair No. 5/125b Elimac pentodes, used, \$11 ea or \$20 the pair; new surplus 12 volt dynamotor, 12 volts and 60 at 210 ma. out, \$9; Triplet No. 341 r.t. ammeter, 2 amps., \$4.50. All postage paid. W3OJW, Pittsburgh 6, Penna.

WANTED: Collins 75S-1 and 32S1 with pwr. supply; or any other reasonable SSB combination. New York, New Jersey and Connecticut area only. WA2NYO, Jeff Gilbert, 162 Mackenzie St., Brooklyn 35, N.Y. (212) NI 8-7784.

GLOBE-KING 500C. In exc. condx. \$425.00. K8LTT, 153 Jefferson Park Dr., Huntington, W.Va.

COLLINS Owners work AM! Wired kit, \$5.00. Instant switching! Install in five minutes! Kit Kraft, Hartan, Ky.

SELL: Allied tape recorder, \$145.00 value, \$70; Super Six, \$20. Details. Write KSDZE, 316 South 11th St., Columbus, Miss.

GLOBE Scout 680. \$60. Drake lo-pass, \$40.00. Triebold, K0-MBO, Cooperstown, N.D.

SELL: DX-100B, sud condx, \$165.00, Ship collect. Herbert Cobb, W1ROU, Harris Dr., Southboro, Mass.

MOHAWK: Expertly wired, in perf. condx—\$220. W4ZSV, 225 Shirley Ave., Warrenton, Va.

HQ-170 mint condx. Best offer takes it. Ed Lauster, WA2MXW, 209-14 82nd Ave., Queens Village 27, L.I., N.Y. Tel. HO 8-5320.

OCTOBER Ham Tube Specials: 2C39A, \$6.50; 4X150A, \$8; 4-65A, \$8; 4-125A, \$16; 4-250A, \$28; 4-400A, \$26; 4-1000A, \$63; 5894, \$9.95; 6146-, \$1.95; boxed and guaranteed. Stamp for list. Lou-Tronics, Inc. 131 Lawrence St., Brooklyn 1, N.Y.

MUST sell because of family quarrel: entire station—ST P-50 transmitter and modulator, R-44/ARR-5 VHF rxvr, 2 ARC-3 (6-9 Mc) txvrs, IRT-19/ARC-4 2 meter transceiver, 1-60 ft. crank-up tower, assorted meters, 1-4-250A, 2-701As, 6-1625s, assorted hardware—1 Triplet 630-PL VOM, etc. Package local deal only. Must dispose of this quickly, \$250 or best offer. You pick up with trailer. WA6SSK, 11137 Van Buren Ave., Los Angeles 44, Calif.

WANTED: 75A-4. Will pick up within approximately 200 miles of Chicago. Please give condition, serial number, filter frequency, and price. All replies will be answered. No dealers. L. E. Kraft, K9ZWJ, Rt. 4, Elgin, Ill. SH 1-2197.

2E26 100-80m. VFO or xtal, mobile rig. Minus mike es xtals. Includes Dynamotor 6v. system. K2JIT.

SALE: Globe Scout xmitr, \$50; Knight VFO, \$10; Electronic keyer, paddle, \$10. Lot price: \$65. K2KJV, Phone 212 WE 3-8338. Write: L. Lester, 2241 Creston Ave., Bronx 33, N.Y.

WANTED: 75A-4, KWS-1 or Collins S line. State serial numbers, condx, extras and price. Also want Roberts 990 or Revco stereo, K2HWB, 125 Amherst Ave., Syracuse 5, N.Y.

SX-101A and HT-32, \$575. Factory-wired Viking II and VFO, \$195; Central Electronics Hex-B slicer, \$30; Hallcrafters Tokeyer, \$40. W2DHB, 119 Goldenrod Ave., Franklin Square, N.Y., Tel. IV 1-3470.

SALE: C.E. 10A exciter complete and operating with OT-1, E.C.O., 75 and 20 meter coils and manual, \$75.00. W0HNG, Box 485, Coffeyville, Kans.

COLLEGE Bound. Must sell NC-303, \$300; Ranser II, \$220. Both year old and in excnt condx. K6SXA, 4209 Burrell Way, Sacramento, Calif.

A-1 DX-100 with 75 meter SSB exciter bonus, \$145.00; Miller R9'er with coils, \$9.00; pair 810's, 805's, 813, 250THs, offer, 75 meter 6146, 616's transmitter, \$12.00; E-V Good, \$7.00; 616-625 transmitter, \$7.00; BC-312 pwr. supply, \$6.00. W4QCF, 401 Waterloo St., Warrenton, Va.

HALLCRAFTERS S-38D receiver, \$40; Gotham V-80 vertical, \$10. You ship. K0DLB, 1501 Plass, Topeka, Kans.

EICO 720 transmitter with three 40-m tubes and instrux book. In perf. shape and expertly wired, \$65.00. Heath balun coils, \$7. Will ship. R. R. Polk, 338 W. Culver, Scottsdale, Ariz.

SELL: Factory-wired Valiant, low pass filter. In excnt condx, \$250.00. Jack Simpson, 4409 Canton, Lubbock, Texas.

HARGAINS in excnt condx: HT-32B, NC-303, Millen erid dipper, reasonable offers considered. R. B. Cooper, 132 Guild St., N.E., Grand Rapids 5, Mich.

Original, \$10; Electro-Voice 729, \$10; need money. Must sell! entire rig: \$500. WA2DYK, 138 Baker Hill Rd., Great Neck, L.I., N.Y.

GOING Portable! KWS-1, \$875; 75A4 with NB, \$550; Globe 6N2, \$85; Tecraft 6M xmitr, \$30; Six meter transceiver AC/DC supplies, \$45; SB-10, ARC-5, list of goodies. W4API, Box 4095, Arlington 4, Va.

SELL: Poly-Comm "62" B complete, 6N2 transceiver in excellent condx, \$230; Instructograph with 40 tapes, like new condx, \$30; original cost over \$80. Astatic 10Q mike, \$15. Must sell, college bound. Robert Caliva, WA6IQV, 6927 Cedar St., Huntington Park, Calif.

FOR Sale: Heathkit Apache \$200; National NC-303, \$335; Vibronex Original, \$10; electro-Voice 729, \$10; need money. Must sell! Entire rig: \$500. WA2DYK, 138 Baker Hill Rd., Great Neck, L.I., N.Y.

COLLINS 75A-4 recvr Serial No. 4921, in excnt condx, \$500. Kenneth H. Engstrom, W3CUM, 833 Oak Forest Dr., Dallas 32, Texas.

75S-1 excellent, \$385; HT-37 purchased new, never used, \$370. El-Key, \$8. R. Cassutt, 10234 Vista La Cruz, La Mesa, Calif.

PACEMAKER, \$325.00; SX-100, \$200. Little used, in excnt CONDx. G. Fenning, W2ZDO, 11 Piermont Terr., Wayne, N.J.

HAM BUERGERS—Used Equipment, Money Back Guarantee. Astatic JT30 Mike, \$7.95; B&W 370, \$79.95; B&W 515B, \$165.00; Gonset 6 Meter Linear, \$90.00; Hallcrafters SX101, Mark 3, \$274.95; HT33A, \$449.95; HT32, \$350.00; FPM200 Complete, \$1500; SR34, \$274.95; Hammarlund HX500, new, \$55.00; Johnson VIK (1V1) pro, \$124.95; National NC303, \$244.95; NC03, \$359.00; RME VHF, 152A, Converter, \$49.95. Trades — Write for FREE List. Ham Buegers, Wyncote, Pa. CA4-1740.

FOR SALE, BC-639A Receiver Tunable 100-156 Mc. S-Meter, BFO, 115VAC Power Supply \$75.00, RA-42A 250v Metered Power Supply \$15.00, Tapetone 2 Meter and 220 417A Converters \$65.00 each, 6 Meter 417A Converter \$45.00. Same with Regulated Supply \$65.00, Prop Pitch Motor \$20.00, Budd Crystal Calibrator \$10.00, Tellego 6 Meter Beams 3 Element (new) and 4 Element \$10.00 each, Instructograph Code Machine \$10.00, TG34 Tane Puller \$15.00, ICA Code Oscillator \$10.00, Carborundum Dummy Load \$15.00, New #117 Powerstat \$15.00, Mon-Key \$10.00, New Maverick 6 Meter Filter \$12.00, Frank Grosso, K2MLB, 45 Rock Spring Avenue, West Orange, N.J.

75A-4, Clean, \$475; Ranger, nearly new, \$175; GG 813s, \$100; McCoy 48B1 filter, \$30; DX35, \$25; accessories and parts. Sry, no shipping. Harris, K6ZYZ, Concord, Calif. Tel. area 685-5485.

DELUXE 813 transmitter per January 1954 QST. Improvements: Rack mounted power supplies and modulator. Complete with Vario, relays, meter, and control box. First \$150.00 takes all. F.o.b. Guthrie, Okla., W5SSA.

WANTED: 4000-0-4000 or 3500-0-3500 VAC, 500 Ma, or more power transformer. Larry Kleber, K9LKA/W9CPD, Belvidere, Ill.

CRYSTALS Airmailed: SSB, MARS, Marine, CD, Novice, CAP, Net, etc.—Custom finished FT-243, .01% any kilocycle 3500 to 8600 \$1.49, (10 or more same frequency FT-243, 99¢), 1707 to 20,000 Kc, \$1.95. Overtones above 10 megacycles. Fundamentals 10 to 13.5 megacycles \$2.95. Add 50¢ each for .005%—Add 65¢ each for HC-6/v hermatics, OST Projects (FT-243) "SSB Package" five mixer \$9.95, seven matched filter (FT-241-A) \$9.95, "DCS-500", "IMP", "Phasing" \$9.95 per set. Write about crystal needs, Airmailing 10¢/crystal surface \$5. Crystals since 1933, C-W Crystals, Box 2065-O, El Monte, Calif.

FOR Sale: FW Valiant, \$315; Ranger, \$175; NC-300, \$240. All little used, in exc. condx, and on the air. Will ship if necessary. Dan Vermont, 83 Blackheath Rd., Lido Beach, L.I., N.Y. GE 2-0707.

SELL: Hallcrafters S-86 (Mark I), \$75; Ameco 2-meter converter, new, \$25; together, \$90. Dave Menke, WN0BRG, 1190 Broadway, Cape Girardeau, Mo.

TRADE: Good used Elimac 4-1000A for 115 V AC 15 to 20 amp. Variac, Jack Slats, K0TJW, 1204 Fernleaf Dr., St. Louis 26, Mo.

SELL: Hallcrafters SX-101, MK III, like new condx, \$225.00. WA2GRA, 466-55th St., Brooklyn, N.Y.

FOR Sale: Type 516E-1 12 volt pwr. supply for KWM-1, like new with set of cables and connector, \$160; Mobile Mount for KWM-1 complete, two sets of full length cables and connectors, in exc. condx, \$50; Collins type F-250-22 mech. filter, new for KWS-1 and matched pair of 250 Kc crystals, new for SSB, same unit; four new 4X150A tubes, each \$15. All items guaranteed. Will ship. Sv Hernandez, W2BBSA/1, 62 North Main St., Essex Conn.

KWM-1, AC power supply; Collins speaker, console with SWR meter, etc. In excnt condx W9IKC, 634 Vernon Ave., Glencoe, Ill.

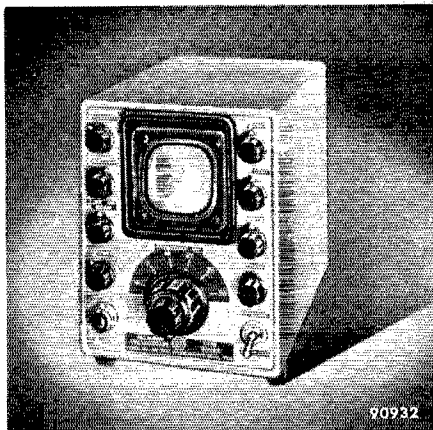
NEW Demonstrators: HT-32B, \$575; SX-115, \$450; HT-41, \$315; B&W 1.P.A. with MU, \$315. Used in mint condx. Viking Range, \$175; SX-96, \$150; S-72, \$50. W2WEE, Edward Muska, 77 Union St., Colonia, N.J.

SELL: DX-40, \$55; V71, \$160.00, extals, \$1.50. P.E. Novice station-of-month rig, K1VMT, 46 Oak Hill Drive, Arlington, Mass.

Designed for



Application



90932

THE NO. 90932 MODULATION MONITOR

The No. 90932 Amateur Band Monitor Oscilloscope is a complete oscilloscope for monitoring the modulated r-f output of a transmitter. Built-in link-coupled tuned circuits cover all amateur bands 3.5 to 54 mc. All circuits and accessories are built in. The monitor will display the r-f envelope and /or the trapezoidal monitoring pattern of single side band transmitters or amplitude modulated transmitters. It shows the linearity or non-linearity of Class-B r-f amplifiers, parasitic oscillation, neutralization, and r-f output.

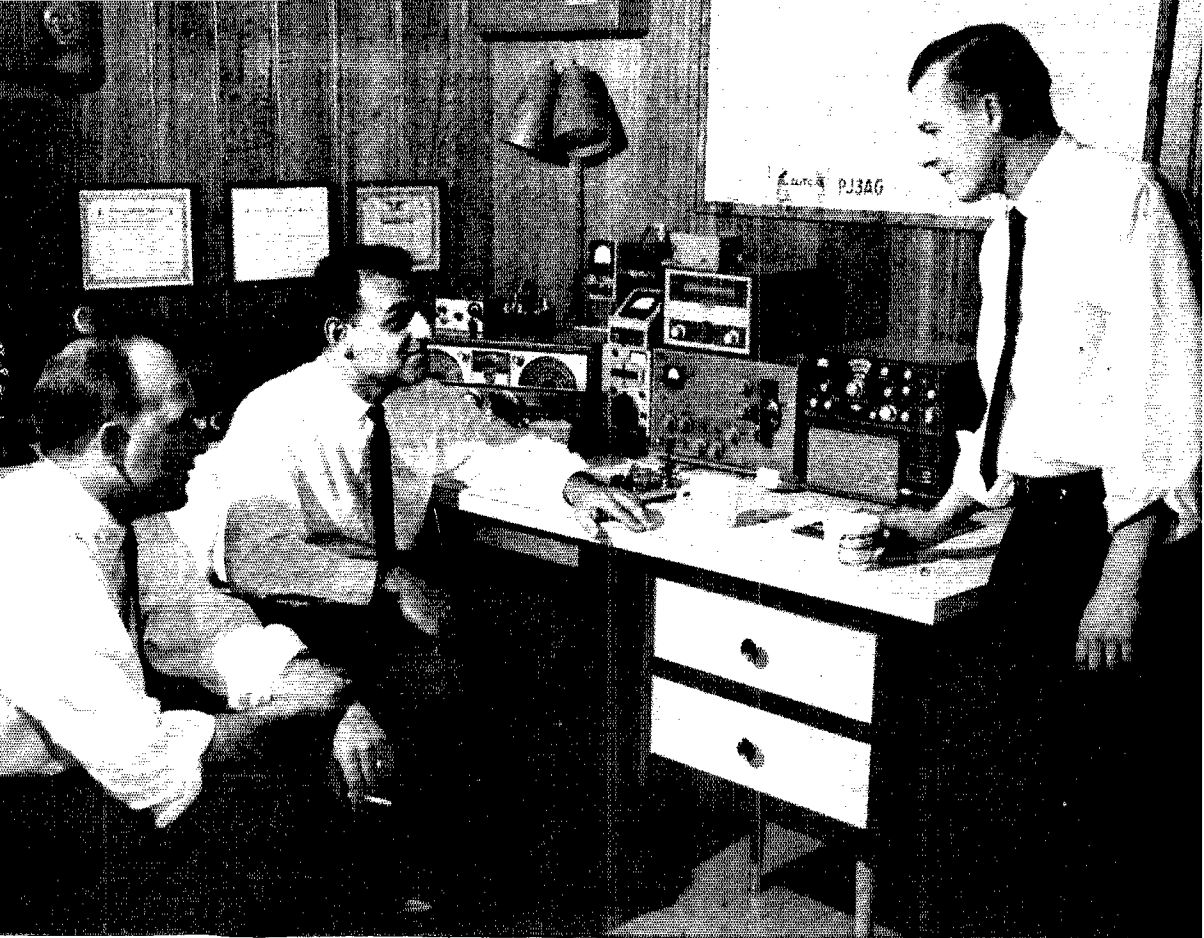
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George Lucas, W1ZYS, "Pops" Karentz, W1YLB, and Ray Churchill, W1VBI, enjoy an infrequent eyeball QSO at "Pops" Millis, Mass., QTH.

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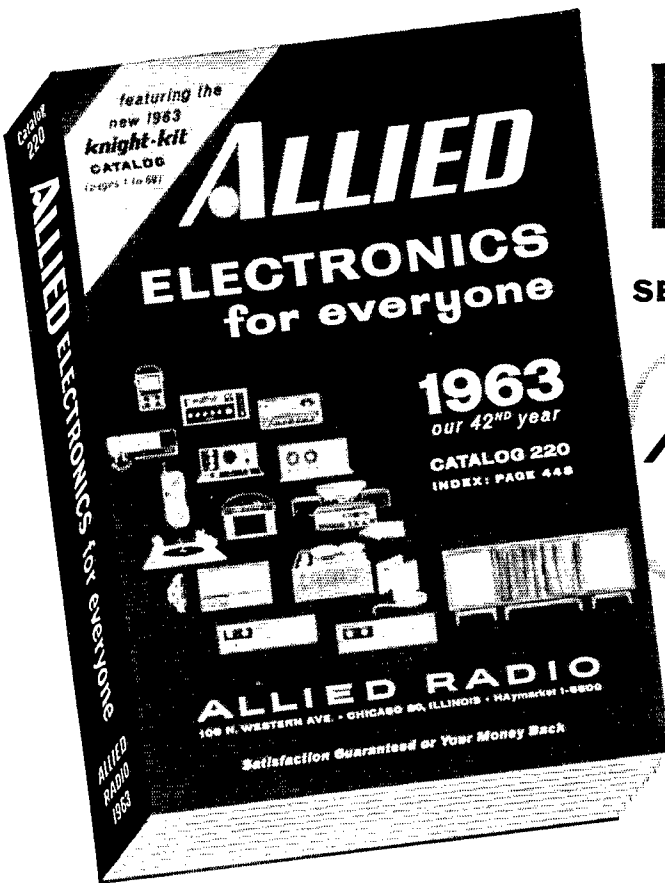
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cathode current on transmit; S-Meter on receive • Receiver Sensitivity: 1.0 μ V. for 10 db S/N ratio • Receiver Selectivity: 2.5 Kc at 6 db • Receiver Audio Output: Better than 2 watts; 3.2 ohms • Size: 6" H., 13 $\frac{1}{2}$ " W., 11 $\frac{1}{4}$ " D. • Shipping Weight: 20 pounds • Power Requirements: 700 V.D.C. @ 300 ma., 280 V.D.C. @ 100 ma., — 80 V.D.C. @ 10 ma., 12.6 V. @ 5A. • Tube Complement: 17 tubes, 4 diodes; parallel 6GJ5's in final amplifier, Mechanical: $\frac{1}{4}$ " solid extruded aluminum front panel; perforated steel enclosure; cadmium plated steel chassis; chromium plated steel mobile mounting bracket. • Main Tuning Ratio: 45:1, employing planetary and split gear drive. • Finish: Front panel — Hydro-etch off-white matte with brushed aluminum trim; Knobs — Mil-Spec, matte black; Enclosure — gray-blue wrinkle enamel. • Accessories: NCXA 115 V.A.C. power supply/speaker console; NCXD 12 V.D.C. power supply • Price: Your National dealer has complete price information ready for you — call him today for a very pleasant surprise! (at the same time, why not check his trade-in allowance on your present AM or SSB rig toward a new NCX-3?)



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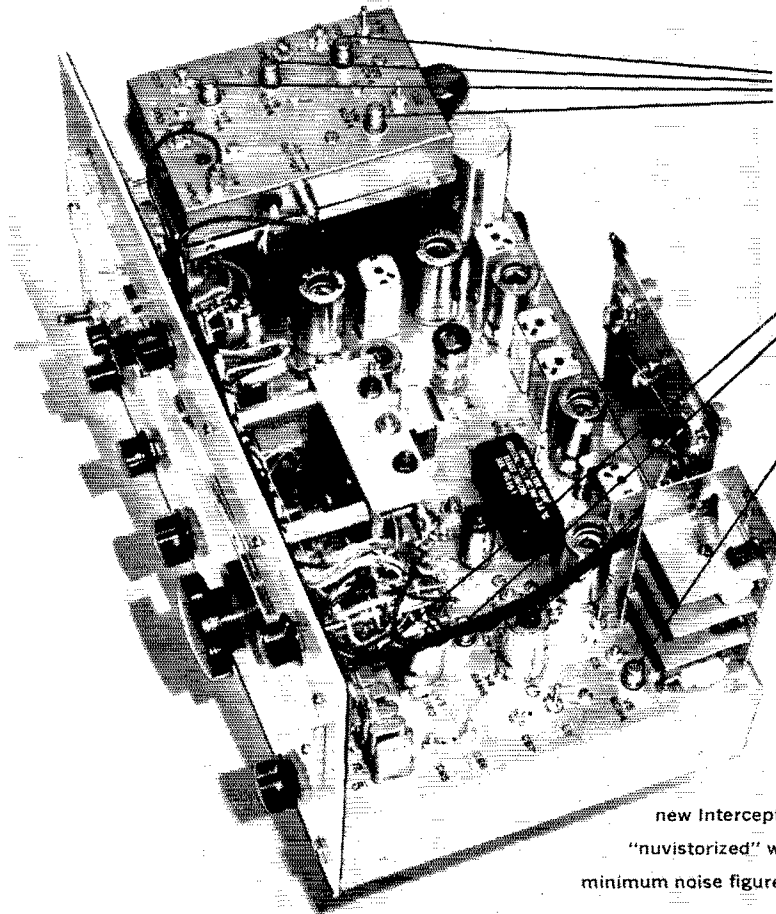
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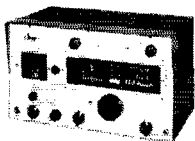
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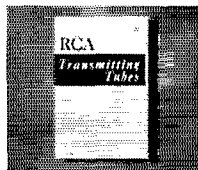


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About the size of a thimble, these self-shielding triodes provide outstanding amplifier, oscillator, and mixer service in amateur gear. Because of their low noise and high signal-gain characteristics, RCA 6CW4's help pull in those weak signals. And the nuvistor design, featuring RCA's "Dark Heater" for long and dependable performance, assures exceptional uniformity from tube to tube, ruggedness, and long-term stability.

The new edition of RCA TRANSMITTING TUBES (TT-5) has been extensively revised and contains data on over 180 tube types. It includes maximum ratings, characteristics, and typical operating values, power-tube circuit-design considerations, as well as tables for quick, easy tube selection. Also included are circuit diagrams for transmitting and industrial applications and new design information on linear rf amplifiers for single-sideband service. Available from your RCA Electron Tube Distributor or Section J-37-M, Commercial Engineering, RCA Electron Tube Division, Harrison, N. J.

[Optional List Price: \$1.00]



RCA-6CW4 nuvistors are available from your RCA Electron Tube Distributor.



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