June 1957
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amateur radio

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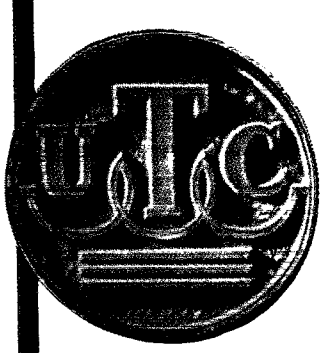
LARGEST PRODUCERS IN THIS FIELD FOR TWO DECADES...

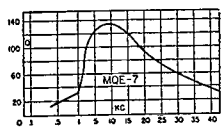
HIGH Q INDUCTORS
FOR EVERY APPLICATION

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

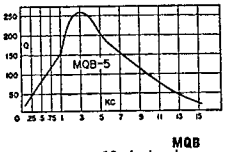


MQ Series
Compact Hermetic
Toroid Inductors

The MQ permalloy dust toroids combine the highest Q in their class with minimum size. Stability is excellent under varying voltage, temperature, frequency and vibration conditions. High permeability case plus uniform winding affords shielding of approximately 80 db.

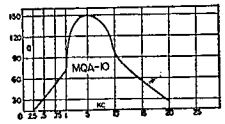


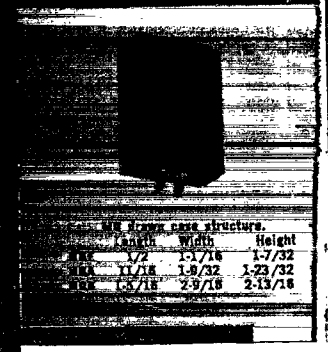
MQE
15 stock values
from 7 Mhy.
to 2.8 Hy.



MQB
12 stock values
from 10 Mhy.
to 25 Hy.

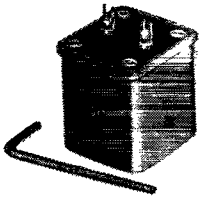
MQA
19 stock values
from 7 Mhy.
to 22 Hy.





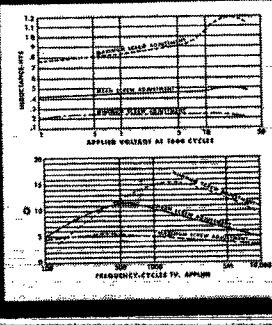
MQ drawn case structure.

Length	Width	Height
1/2	1-1/16	1-7/32
11/16	1-9/32	1-23/32
1-5/16	2-9/16	2-13/16



VIC case structure

Length	Width	Height
1-1/4	1-11/32	1-7/16

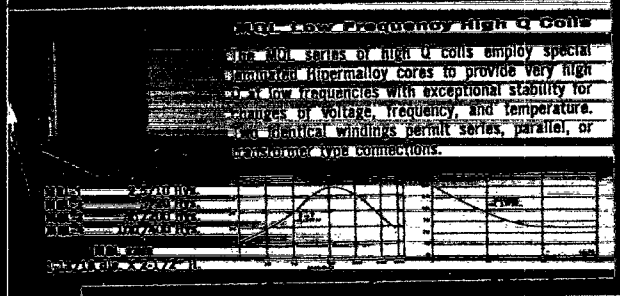


Type	Mean Hys.	Type	Mean Hys.
VIC-1	.0085	VIC-12	1.3
VIC-2	.013	VIC-13	2.2
VIC-3	.021	VIC-14	3.4
VIC-4	.034	VIC-15	5.4
VIC-5	.053	VIC-16	8.5
VIC-6	.084	VIC-17	13.
VIC-7	.13	VIC-18	21.
VIC-8	.21	VIC-19	33.
VIC-9	.34	VIC-20	52.
VIC-10	.54	VIC-21	83.
VIC-11	.85	VIC-22	130.

VIC Variable Inductors

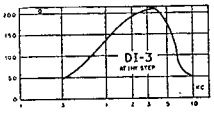
The VIC Inductors have represented an ideal solution to the problem of tuned audio circuits. A set screw in the side of the case permits adjustment of the inductance from +85% to —45% of the mean value. Setting is positive.

Curves shown indicate effective Q and L with varying frequency and applied AC voltage.

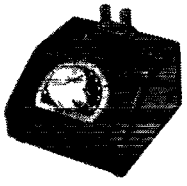


DI Inductance Decades

These decades set new standards of Q, stability, frequency range and convenience. Inductance values laboratory adjusted to better than 1%. Units housed in a compact die cast case with sloping panel ideal for laboratory use.



DI-1 Ten 10 Mhy. steps.
DI-2 Ten 100 Mhy. steps.
DI-3 Ten 1 Hy. steps.
DI-4 Ten 10 Hy. steps.

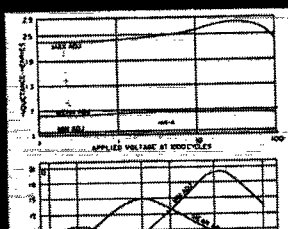


DI DECADE

Length	4½"
Width	4⅜"
Height	2⅜"

HVC Hermetic
Variable Inductors

A step forward from our long established VIC series. Hermetically sealed to MIL-T-27 . . . extremely compact . . . wider inductance range . . . higher Q . . . lower and higher frequencies . . . superior voltage and temperature stability.



Type No.	Min. Hys.	Mean Hys.	Max. Hys.
HVC-1	.002	.006	.02
HVC-2	.005	.015	.05
HVC-3	.011	.040	.11
HVC-4	.03	.1	.3
HVC-5	.07	.25	.7
HVC-6	.2	.6	2
HVC-7	.5	1.5	5
HVC-8	1.1	4.0	11
HVC-9	3.0	10	30
HVC-10	7.0	25	70
HVC-11	20	60	200
HVC-12	50	150	500

HVC case structure.

Width	Length	Height
25/32	1-1/8	1-7/32

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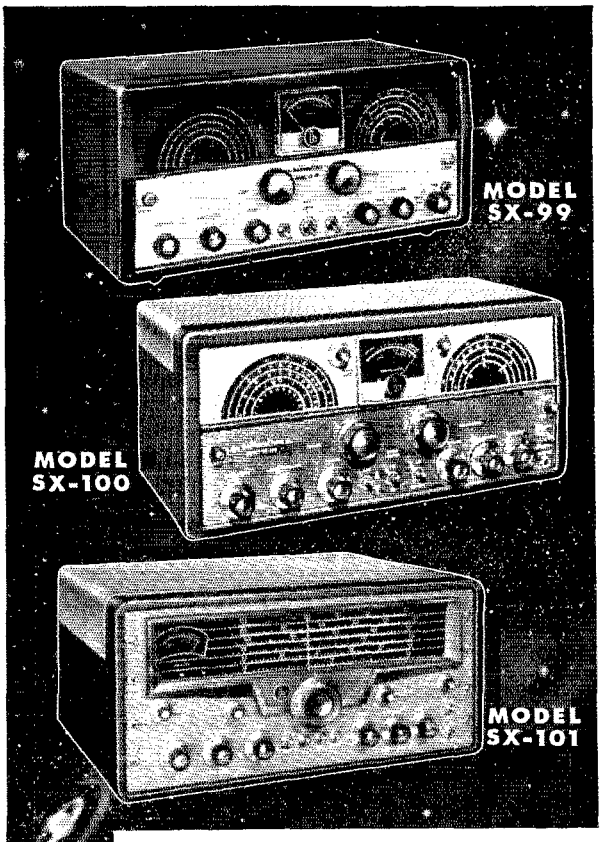
PACIFIC MFG. DIVISION: 4008 W. JEFFERSON BLVD., LOS ANGELES 16, CALIF.

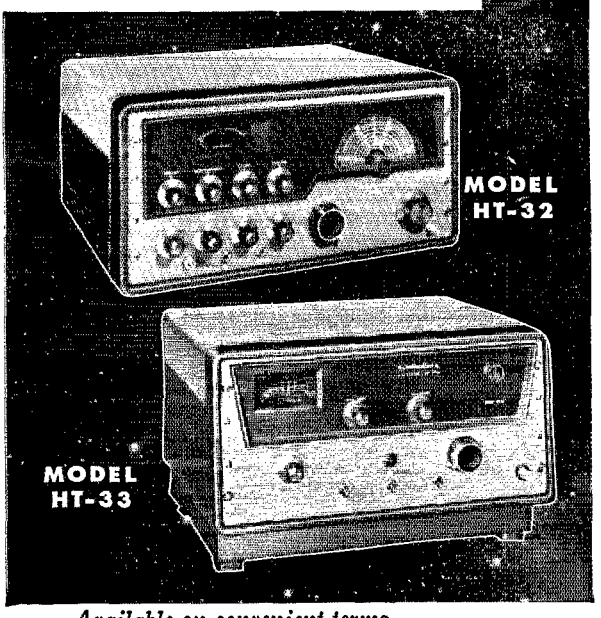
The New Ideas *in communications are born at* hallicrafters

Brilliant performance! The SX-99 receiver features broadcast coverage 540-1680 kc plus three S/W bands, 1680 kc—34 mc. Bandspread calibrated over 10, 11, 15, 20, 40, 80 meter amateur bands. Antenna trimmer, "S" meter, crystal filter. Seven tubes plus rectifier. Black cabinet, silver trim, piano hinge top. **Model SX-99—$149.95**

Incomparable value! SX-100 Selectable Sideband Receiver proved best for your money by far in its field. "Tee-Notch" filter provides stable non-regenerative system for rejection of unwanted heterodyne. Notch depth control; antenna trimmer; 100 kc quartz crystal calibrator. Logging dials for both tuning controls. Freq. range: 538-1580 kc; 1720 kc—34 mc. **Model SX-100—$295.00**

New heavyweight champion! Rugged is the word for the SX-101 receiver—and it's all amateur. Heaviest chassis in the industry. Full gear drive. Complete coverage of 7 bands: 160, 80, 40, 20, 15, 11-10 meters. Special 10 mc. pos. for WWV. Tee-notch filter. S-meter functions with A.V.C. off. Selectable side band. **Model SX-101—$395.00**





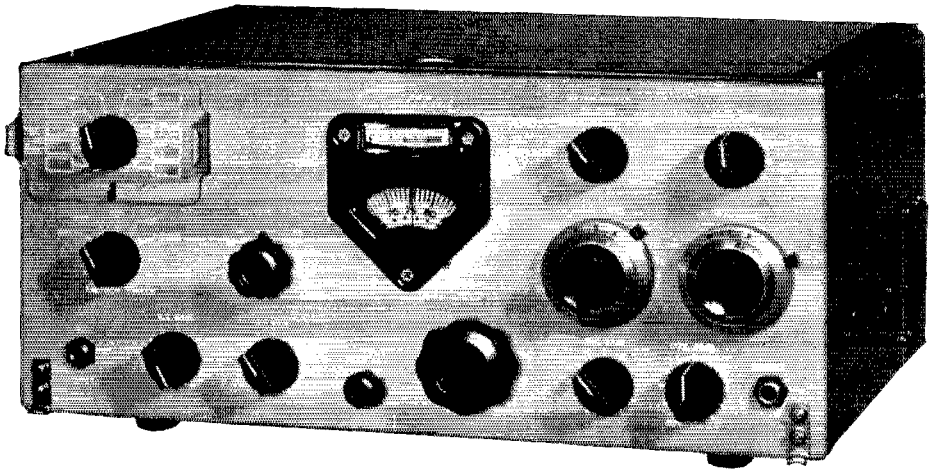
Cleanest signal on the air! Hallicrafters new HT-32 transmitter brings you a new standard of clarity with two exclusive features: (1) 5.0 mc quartz crystal filter—cuts unwanted sideband 50 db. or more; (2) new bridged-tee modulator, temp.-stabilized and compensated network provides carrier suppression in *excess* of 50 db. SSB, AM or CW output on 80, 40, 20, 15, 11-10 meter bands. High-stability gear-driven V.F.O. 144 watts peak input. Ideal CW keying and break-in operation. **Model HT-32—$675.00**

New ceramic tubes! Ultra-compact new HT-33 kilowatt amplifier accents *performance* and *dependability* with costlier ceramic tubes—another Hallicrafters first. 100 watts greater plate dissipation. Greater overload safety. Unsurpassed ruggedness. *More features:* six amateur bands, 80, 40, 20, 15, 11-10 meters; simplified tuning; low drive requirement; quieter operation from low speed blower. All control leads filtered. **Model HT-33—$775.00**

Available on convenient terms from your radio parts distributor

The hallicrafters Company
Chicago 24, Ill.

ANOTHER COLLINS FIRST



KWM-1

With These Firsts in Amateur Mobile Equipment:

FIRST TRANSCEIVER • FIRST SSB • FIRST VOX AND SPEAKER ANTI-TRIP CIRCUITS • FIRST ALL-TRANSISTOR POWER SUPPLY • FIRST AUTOMATIC LOAD CONTROL • FIRST PRECISION TUNED VARIABLE FREQUENCY OSCILLATOR • FIRST TO USE MECHANICAL FILTER • FIRST CRYSTAL-CONTROLLED BFO AND RECEIVER HF OSCILLATOR.

These are *important* firsts in Amateur mobile communication, and all designed into one compact unit — the 175 watt* 14-30 mc KWM-1. This compactness and the low cost of the KWM-1 are a result of using common components for both transmit and receive, which also results in exact coincidence of signals in frequency-determining elements. Other top features include frequency stability comparable to the KWS-1/75A-4 combination; break-in CW using VOX circuits; side tone for monitoring CW. An optional adaptor will be available to separate transmit and receive frequencies for working out-of-band DX. Only 6¼″ H, 14″ W, 10″ D. Weighs 15 pounds.

Your Collins distributor has full details on the KWM-1, which will be available from production in August. Contact him today.

KWM-1 Transceiver	$770.00
516E-1 12 vdc Power Supply	248.00
516F-1 115 vac Power Supply	103.00
312B-2 Speaker Console with directional wattmeter	146.00
312B-1 Speaker in cabinet	25.00
351D-1 Mobile Mounting Tray	TBA

*RF PEP Input

Collins CREATIVE LEADER IN COMMUNICATION

QST

JUNE 1957

VOLUME XLI • NUMBER 6

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

OFFICES

38 La Salle Road
West Hartford 7, Connecticut
TEL.: ADams 6-2535 TWX: HF 88

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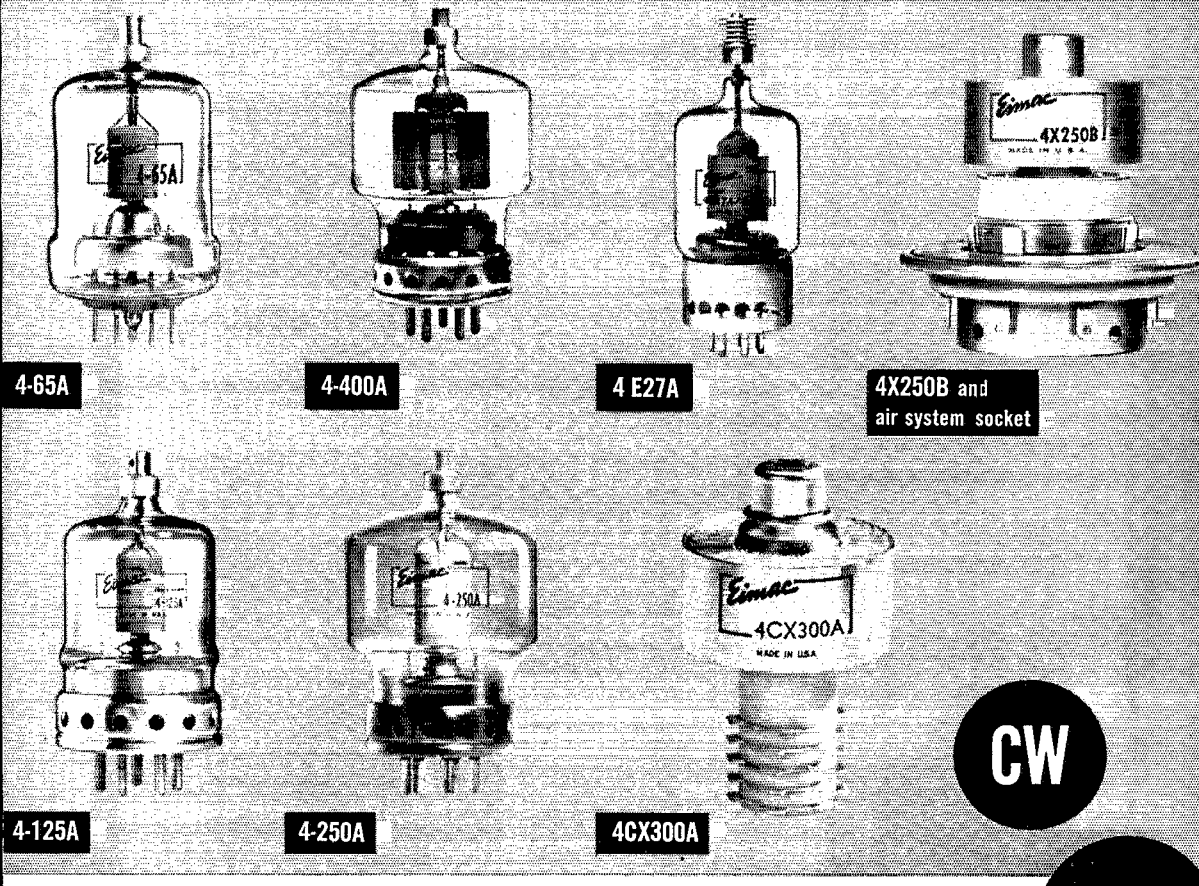

Eimac First...for all band transmission

4-65A Radial-Beam Power Tetrode

Smallest of the Eimac internal anode tetrodes, the 4-65A has a plate dissipation rating of 65 watts and is ideal for deluxe mobile as well as fixed-station service.

	CW	AM	SSB
Plate Voltage	3000v	2500v	3000v
Driving Power	1.7w	2.6w	0
Power Input	345w	275w	195w

4-400A Radial-Beam Power Tetrode

Highest powered of the Eimac Big Six, it will easily deliver a kilowatt per tube in CW, AM or SSB application. Forced-air cooling is required.

	CW	AM	SSB
Plate Voltage	3000v	3000v	3000v
Driving Power	6.1w	3.5w	0
Power Input	1050w	825w	900w

4E27A Radial-Beam Power Pentode

The 4E27A gives outstanding performance in all types of operation. When suppressor-grid modulated, it will deliver 75 watts at carrier conditions.

	CW	AM	SSB
Plate Voltage	2500v	2500v	3000v
Driving Power	2.3w	2.0w	0
Power Input	460w	380w	345w

4X250B Radial-Beam Power Tetrode

A compact, rugged tube unilaterally interchangeable in nearly all cases with the famous 4X150A, with the advantages of higher power and easier cooling.

	CW	AM	SSB
Plate Voltage	2000v	1500v	2000v
Driving Power	2.8w	2.1w	0
Power Input	500w	300w	500w

4-125A Radial-Beam Power Tetrode

The versatile tube that made screen grid transmitting tubes popular. This favorite for commercial, military and amateur use is radiation cooled.

	CW	AM	SSB
Plate Voltage	2500v	2500v	3000v
Driving Power	3.8w	3.3w	0
Power Input	500w	380w	315w

4-250A Radial-Beam Power Tetrode

A high power output tube with low driving requirements. A pair of Eimac 4-250A's easily handle a kilowatt input in AM, CW or SSB service.

	CW	AM	SSB
Plate Voltage	3000v	3000v	3000v
Driving Power	2.6w	3.2w	0
Power Input	1035w	675w	630w

4CX300A Ceramic Power Tetrode

A new all ceramic-metal high power tetrode designed for rugged service. Will withstand heavy shock and vibration and operate with envelope temperatures to 250° centigrade.

	CW	AM	SSB
Plate Voltage	2000v	1500v	2000v
Driving Power	2.8w	2.1w	0w
Power Input	500w	300w	500w

Information on Eimac tubes and their applications is available free upon request from our Amateur Service Bureau. Write today for copies of our Quick Reference Catalogue, Application Bulletin No. 8 "Power Tetrodes," Application Bulletin No. 9 "Single Sideband," and other valuable literature.

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The World's Largest Manufacturer of Transmitting Tubes

Eimac

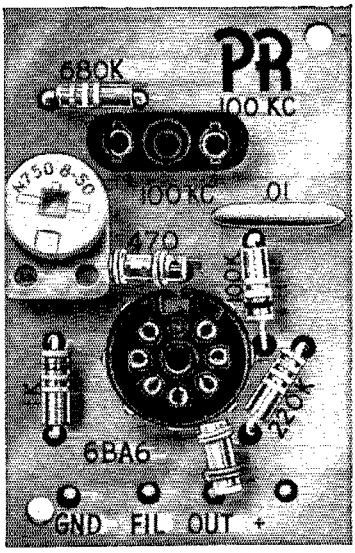
PR *Printed Oscillator Kit . . . has Many Uses!*

- As 100 Kc. Marker
- As 1000 Kc. Marker for Check Points up to 54 Mc.
- As Foundation Circuit for low Frequency SSB Crystals

Yes—the new PR 100 Kc. Printed Oscillator Kit is already doing additional jobs . . . and well! For instance, by using a PR 1000 Kc. crystal it will give useful check points up to 54 Mc. on receivers where high frequency dial calibrations are not accurate enough for 100 Kc. determinations. Also—it's proving very useful for low frequency SSB crystals. Where a number of circuits are incorporated, this kit may be used.

Assemble in MINUTES. Kit contains everything but 6BA6 oscillator tube and crystal. Circuit guaranteed only when used with a PR crystal. See your dealer.

Amateur Net, **$4.50**



Actual size illustration.

PR Crystals

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Section Communications Managers of the ARRL Communications Department

Reports Invited. All amateurs, especially League members, are invited to report station activities on the first of each month (for preceding month) direct to the SCM, the administrative ARRL official elected by members in each Section. Radio club reports are also desired by SCMs for inclusion in *QST*. **ARRL Field Organization station appointments** are available in the areas shown to qualified League members. These include ORS, OES, OPS, OO and OBS. SCMs also desire applications for SEC, EC, RM and PAM where vacancies exist. *All amateurs* in the United States and Canada are invited to join the Amateur Radio Emergency Corps (ask for Form 7).

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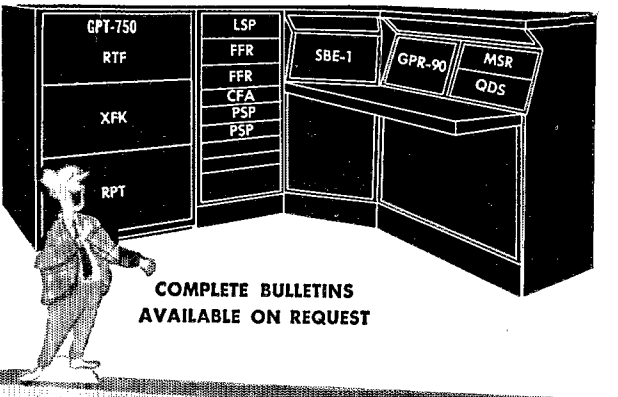
* Official appointed to act temporarily in the absence of a regular official.

SERIES 5800 STATION

Provides a complete SSB, AM, CW, MCW and FS Transmitting and Receiving facility. Continuous frequency coverage 2 to 32 mcs band-switched. Up to 1100 watts output CCS.

Modes of operation: Single Sideband, Two Independent Sidebands, Double Sideband (all with adjustable carrier insertion), Conventional AM, Moduplex, FM, CW, MCW and Diversity Frequency Shift RTTY.



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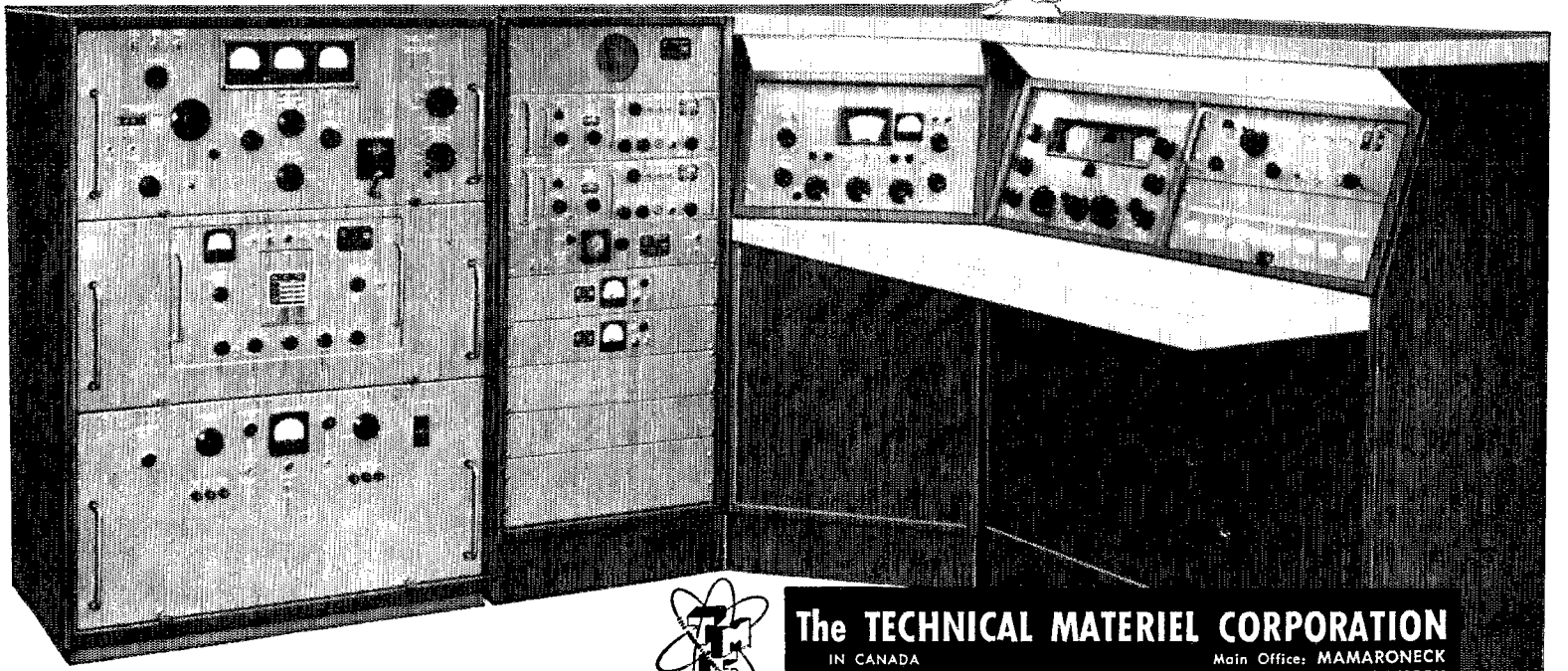

The TECHNICAL MATERIEL CORPORATION

IN CANADA
TMC Canada Ltd., Ottawa, Ontario

Main Office: 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.

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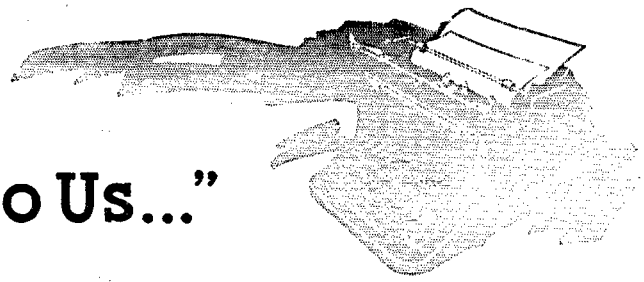


"It Seems to Us..."

THIRD-PARTY TRAFFIC

The May issue of our esteemed contemporary *CQ* contains a "correction" by the editor of a January item he wrote which indicated third-party traffic was taboo internationally unless some special treaty was in effect between the United States and the country concerned; that is, the January piece indicated such traffic was taboo, and now the May issue says it ain't necessarily so.

The editor was right in January; the May item is wrong.

Before some amateurs get cited by FCC for handling, or attempting to handle, third-party traffic internationally, let us make the situation perfectly clear. *You can't do it*, except in those cases where we have specific treaty arrangements permitting it. These special cases involve Canada, Chile, Cuba, Costa Rica, Ecuador, Liberia, Nicaragua and Panama. With these countries personal third-party traffic (of a nature that would not normally be handled by commercial communications facilities) may be handled freely, in either direction. With other countries, absolutely no, even if "unimportant."

The League has been through this matter many times, over the years. It is important for U. S. amateurs to realize that, for the most part, other countries of the world simply do not want their amateurs handling messages for, between or on behalf of third parties, *even within the boundaries of their own countries.* Admittedly, when the first international conference was held, in Washington (1927), it didn't say anything prohibiting international handling of amateur third-party traffic. It just didn't occur to most other nations to say anything about it, since they didn't permit it domestically. But in 1932, at the Madrid conference following up Washington, somebody got hold of an ARRL message blank and noticed it said something about handling messages anywhere in the world, and all Hades broke loose. We'll never forget the uproar. *Amateurs* handling *messages!* They wanted none of it and at Madrid they wrote in what was intended to make it clear it wouldn't be permitted, internationally. That language, repeated at the Cairo Conference of 1937; read: "*It shall be strictly forbidden for owners of amateur stations to transmit international communications emanating from third persons.*"

But some U. S. amateurs adopted various subterfuges to handle international third-party traffic anyway — things such as asking the amateur at the other end to convey an informal "message" to somebody in the foreign amateur's town, or getting the non-amateur (or amateur) friend at the station at this end.

Well, this had the inevitable result: at the next conference, at Atlantic City, in 1947, these practices having come to the attention of various foreign administrations, they changed the old Madrid language to plug the loophole (if any). The text, adopted then and now binding upon United States and all other amateurs, reads as follows: "*It is absolutely forbidden for amateur stations to be used for transmitting international communications on behalf of third parties.*" It's all there in big print. And we assure you that if this language doesn't work it will be changed next time, after some hard and critical looks at what some amateurs are doing, or trying to do, which won't do the rest of us any good. (The "some" will probably have received citations from FCC anyway.)

You may wonder why, if there is such a flat prohibition of international third-party traffic or message handling, we do have it permitted with the countries enumerated earlier. That comes about from a paragraph immediately following the prohibitive text. "The preceding provisions may be modified by special arrangements between the countries concerned." It is under this provision we have been able to effect special message-handling treaties with the countries listed.

Let us have no more "lawyerizing" about what the international regulations mean. They mean we don't handle any communications, traffic, messages, memoranda or whatever to, from or on behalf of third parties — and that goes even if the third party is another amateur.

(Continued on next page)

Internationally, amateurs working each other are supposed to confine their remarks to themselves.

Period.

27 Mc.

The Federal Communications Commission has issued a notice of proposed rule-making which, among other things, would withdraw permission of amateurs to use the ISM (industrial, scientific and medical) "11-meter" band, 29.96–27.23 Mc.

The amateur aspect is only part of an involved series of changes FCC is proposing for a number of radio users, mostly in the growing safety and special services category. At present, the Citizens Radio Service operates in 460–470 Mc., but it is now proposed to take away from that service all but 500 kc. of this band and re-assign it to other services such as industrial and domestic public. Searching for another location in the spectrum for use by the Citizens licensees it would evict from 460–470, the Commission believes 26.96–27.23 would be a suitable spot. FCC points out that inasmuch as a large portion of the Citizens operation is remote control by radio, it would be logical to locate most of that activity near the Citizens "control" frequency at 27.255 Mc. FCC supports its proposal to delete amateurs from the band with the argument that amateur activity in this portion of the spectrum is almost exclusively in the adjacent 28-Mc. band; and anyway, it points out, any amateur wishing to continue "control" use of the 26.96–27. 23 channels may do so by obtaining a Citizens license.

Admitting that FCC is faced with serious and numerous allocations problems, and without going at this time into some of the technical aspects involved in putting a low-powered Citizens service into a growing ISM band, we think somebody overlooked a more basic question: the Commission's proposal is counter to an international treaty to which we are a party (Atlantic City, 1947). In that treaty, the allocation table indicates that the band 26100–27500 kc. is allocated on a world-wide basis to the fixed and mobile services (except aeronautical mobile). Then there's a footnote which says that a band at 27120 kc. is designated for ISM (with a tolerance figure of 0.6%) and then there's another footnote which says that in the ISM band 26960–27230 kc. in Region 2 (that's the Americas), Australia, New Zealand, the Union of South Africa and the territory under mandate of Southwest Africa, the amateur service will operate.

We know all about how this rather involved-sounding business happened; we were in on it from its beginnings in the United States just before Atlantic City. It started when, at the last minute, the ISM people suddenly came in with a lot of requested requirements for space in the spectrum. No provision for such a service had been made: what to do? Rather than tear the U. S. proposed table apart, and in view of the unknown future requirements of ISM, it was decided to spot some ISM frequencies in the table, in the "fixed and mobile" assignments. It was generally supposed that when ISM got going on these frequencies they'd pretty well ruin them for fixed and mobile, and in fact the first footnote indicates that on the ISM frequencies (and tolerance limits) anybody else trying to work would simply have to take it. But it sounded pretty grim as a prospect. So we decided maybe amateurs could get some use out of the ISM band, interference or no interference, and we got ourselves written in. Eventually, this got carried into the international document in the additional footnote we've referred to.

No country has to assign its amateurs anything just because the international table says something is "amateur," anymore than it has to assign other services which may be listed. (For instance, the international table lists 3500–4000 kc. as "Amateur, Fixed and Mobile" but FCC assigns it only to amateur.) So FCC isn't necessarily obliged to assign 26960–27230 to amateurs in this country, because of that footnote; on the other hand, if it doesn't we don't see how it can assign anybody else!

A nice technical point to enliven the discussion, and not the complete story we'll have for the rule-making procedure (the Board will discuss our whole filing at its meeting in May) but to us it looks as if the contemplated FCC action is out of order, under the existing Atlantic City treaty.

In the meantime, the text of the Commission's proposal is in "Happenings" in this issue. We suggest you read it. We think the Commission is wrong in its view that very little use is made of the band. Short of v.h.f., it is the only band where A0 (duplex), A2 (tone-modulated telegraphy) and A4 (facsimile) emissions are permitted. It is a band that is often open when 28 Mc. is not, at least not the voice segment. Assuredly, there is much more activity on 28 Mc. — it is a band many times larger. However, in proportion to its size, and considering the occasions when the band is useless because of diathermy or other interference, we think the 27 Mc. band is by no means an orphan in the amateur family.

By the time you read this the Board of Directors of the League will have met, examined the FCC proposal, determined ARRL policy toward it, and directed the filing of appropriate comment. We suggest that if individual amateurs and club groups have comments with respect to the Commission's points as regards the reasons for deleting the amateur service, they be forwarded direct to FCC in time to meet the June 10th deadline.

Strays

Ed Shepherd, of Swampscott, Mass., has an appropriate call — KN1BAH.

"Autosync" Frequency Control

Simultaneous Tuning of Transmitter and Receiver for Spot-Frequency Operation

BY R. J. MOSER,* W8OPB

THE TREND in modern transmitter design seems to be to parallel closely the design practices used in communications receivers. A kilowatt transmitter not only looks like a receiver, it uses similar tubes and circuits. Several factors have dictated this somewhat different approach to transmitter construction, among them TVI and s.s.b.

Two specific functions that have common grounds of design and application to transmitting and receiving equipment are those of frequency control and frequency selectivity. The requirements as to frequency stability are equally exacting in either application and much stress has been placed upon this aspect of transmitter and receiver design. As to selectivity, it will be noted that identical filters are being used in receivers and transmitters, where single side band is employed.

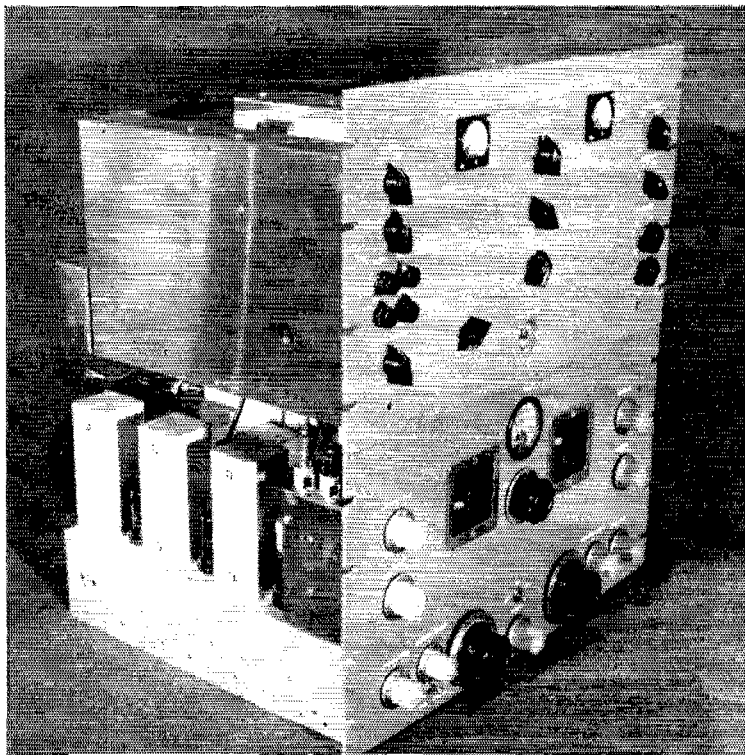
Undoubtedly, it has occurred to many hams that it should be possible to integrate these functions in the transmitter and receiver by allowing one oscillator to control the frequency of transmission and reception and to use one filter in providing the necessary frequency selectivity in both applications. It was with this idea in mind that the unit described here was worked out.

* Pine Drive, Dalton, Ohio.

• No need to worry about "zeroing" the other station in a single-side-band contact when the frequency control system described here is in use. Utilizing the same oscillators for both transmitting and receiving, the transmitting frequency is automatically the same as that to which the receiver is set. The same mechanical filter is used for s.s.b. selection in both cases, too.

In this unit a Collins mechanical filter is used as an i.f. filter in a modified Super Pro receiver and is also used, when transmitting, as a side-band filter for s.s.b. Further, the stabilized b.f. oscillator of the receiver is used, after being mixed with the b.f.o. signal from the receiver, to control the frequency of the transmitter — always keeping it on the frequency to which the receiver is tuned (except on c.w., as will be explained later).

The advantages of this "Autosync" principle should be readily apparent, particularly to s.s.b. operators. When s.s.b. is being used, especially in round-tables, it becomes a practical necessity that all stations operate on exactly the same frequency. Those who have attempted to follow a rapid-fire voice-controlled conversation between two or more s.s.b. operators will readily agree



Transmitter and receiver are coordinated units at W8OPB. The modified Super Pro receiver supplies the frequency control for both receiver and transmitter, automatically placing the two on the same operating frequency.

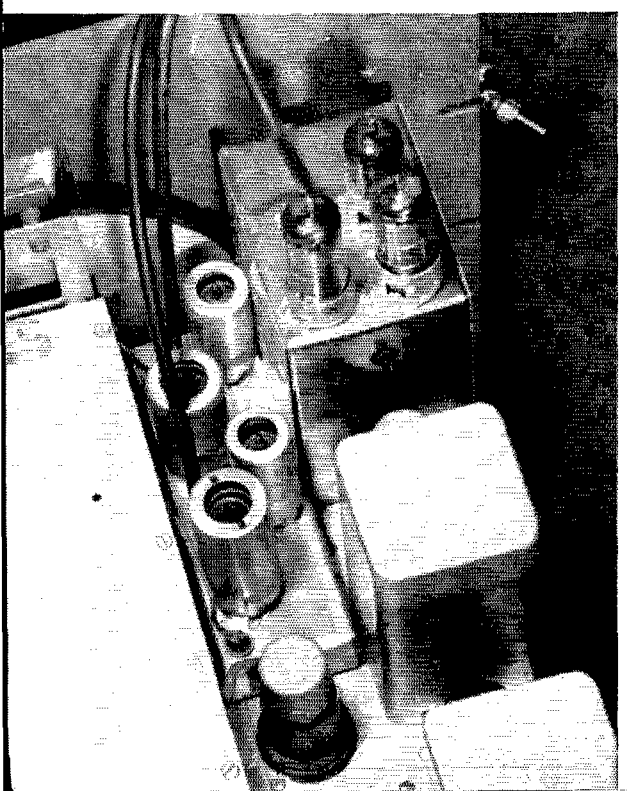
that it is difficult to get solid copy when constant retuning is required. Those interested in c.w. work, DXers particularly, also should find the "Autosync" feature helpful.[1]

It is inherent in the system described that on c.w. the transmitted signal is not on the exact frequency of the received signal but is removed from it by an amount equal to the c.w. beat-note frequency. This offset feature should actually prove an advantage for DXers (except when working on the extreme band edges) since it precludes the possibility of operating at zero beat with that elusive DX station.

How It Works

The mechanical filter used has a pass band of approximately 3.1 kc., centered on 455 kc. The h.f. oscillator in the receiver operates on the high side of the incoming signal. Thus, when receiving an s.s.b. signal on a suppressed-carrier frequency of 3900 kc. and transmitting the lower side band, the receiver h.f. oscillator must be set to a frequency which, when combined with 3900 kc. in the mixer, will produce a difference frequency equal to the b.f.o., or carrier-reinsertion, frequency. If the b.f.o. frequency is 453.3 kc. (approximately 20 db. down on the low-side slope of the mechanical filter response curve) the receiver h.f. oscillator must be on 3900 + 453.3 kc., or 4353.3 kc. Since the lower side band is being used, it will occupy the spectrum 3897–3900 kc., assuming the highest modulating frequency to be 3000 cycles. This side band, when mixed with the h.f. oscillator on 4353.3 kc., is converted to the range 453.3–456.3 kc. and is passed by the filter to the following i.f. stages of the receiver.

[1] LaRue, "A Contest Man's Receiver-Tracking V.F.O. for 7 Mc.," *QST*, May, 1956.



If the upper side band had been transmitted using the same suppressed-carrier frequency, a different b.f.o. frequency would be required in order to allow the upper side band to fall within the pass band of the mechanical filter. In this case we would use a b.f.o. frequency of 456.7 kc., which is 20 db. down on the high-side slope of the filter. Therefore, to receive the upper side band the h.f. oscillator would operate on 3900 + 456.7 kc., or 4356.7 kc.

To transmit an s.s.b. signal on the same frequency and use the same side band as is being received, we simply apply the two local-oscillator (h.f. and b.f.o.) frequencies to a mixer and retrieve the difference frequency. In the case of the 3900-kc. lower side band example, we will be using 4353.3 kc. − 453.3 kc. or 3900 kc. as the carrier frequency. By the same token, the upper side band will be transmitted when we take the difference between 4356.7 kc. and 456.7 kc., or 3900 kc. The same results obtain when receiving a double-side-band a.m. signal, except that in this case we will actually be copying only one of the transmitted side bands (the choice is ours) and will be transmitting carrier plus the side band of our choice.

C.W. Operation

For c.w. operation the situation is slightly altered. Here we no longer wish to convert the incoming signal to the same frequency as the b.f.o., since doing so would produce no audible output from the detector. We need, instead, to convert the received signal to a frequency which differs from the b.f.o. frequency by a matter of 1000 cycles or so. Obviously, there is a choice of b.f.o. frequencies, either of which will produce the desired beat note, the choice being made on the basis of interference conditions or operator preference as to direction of tuning the band (low to high or high to low). If the 453.3-kc. b.f.o. frequency is used the receiver h.f. oscillator must be set to a frequency which, when combined with the 3900-kc. c.w. signal, will produce a 1000-cycle note at the output of the detector. For the converted c.w. signal to pass through the mechanical filter, the h.f. oscillator must be set to produce an i.f. frequency of 454.3 kc., giving the desired 1000-cycle beat with the 453.3-kc. b.f.o. Thus the h.f. oscillator will be operating on 3900 kc. + 454.3 kc., or 4354.3 kc.

When the procedure is reversed for transmitting, the transmitter frequency will be the difference between 4354.3 kc. and 453.3 kc., or 3901 kc. — just 1000 cycles higher in frequency than the received signal. Had we chosen to use the other b.f.o. frequency, 456.7 kc., the

«

Receiver modifications for the "Autosync" are confined to one corner of the Super Pro at W8OPB. A new oscillator-mixer chassis occupies the space where the original h.f. oscillator and mixer tubes were, and a box containing the mechanical filter, i.f. buffer, and VR tubes replaces the crystal filter assembly.

transmitter would be operating on 3899 kc., 1000 cycles lower than the received signal.

The foregoing example is based on single conversion in the receiver. With receivers using double conversion an equivalent end result may be obtained with the slight added complexity of an additional mixing process.[2]

Circuit Description

The block diagram, Fig. 1, and the circuit diagrams show the essential details of the unit whose operation has been discussed. In practice, isolating buffer stages at the input and output of the filter were found necessary in order to eliminate unwanted feedback through the system. These isolating stages are bias controlled so as to act as "gates" which steer the signals to the proper paths for receiving or transmitting. It was also necessary to isolate the receiver h.f. oscillator from the transmitter portion of the unit to minimize the effect of transmit-receive switching on the oscillator frequency. Considerable time was spent in trying all types of mixers in the receiver in the search for one which could be blocked, while transmitting, without causing perceptible change of the h.f. oscillator frequency. Even those having exceptional freedom from pulling were unsatisfactory when it was attempted to cut them off completely. It was finally found necessary to allow the mixer to operate continuously and to apply cut-off bias to a succeeding buffer stage in order to eliminate the slight frequency shift.

B.f.o. voltage is taken from the plate of the b.f.o. amplifier in the receiver through the isolating 6BH6 stage, V_9 (Fig. 3), which in turn provides driving voltage for the series balanced modulator,[3] consisting of two 1N63 germanium diodes. R_1, the modulator carrier-balance control, is shunted by a panel control, R_2, which allows carrier reinsertion when a.m. or c.w. operation is desired.

The output of the balanced modulator is fed via a short length of coax cable to the receiver chassis, Fig. 2, where it is applied to the 6BH6 isolator, V_4, at the input of the mechanical filter. V_4 is cut off when the receiver is activated by the transmit-receive control relay shown at the lower left in the diagram. The 5K loading resistor across the secondary of T_3 is used to reduce the signal level at the filter to the least amount necessary for driving the grids of the 12AT7 mixer, V_8 (Fig. 4).

The filter output signal is passed through the 6BH6 isolator, V_5, before being applied to the grids of the balanced mixer stage. This isolator, when biased to cutoff by the action of the control relay, prevents *received* signals at the filter output from being passed to the 12AT7 mixer, V_8, where even a small amount of unwanted mixing while receiving could cause feedback to the receiver input circuit.

The receiver h.f. oscillator voltage is taken off the cathode of the 12AU7 oscillator tube, V_{2A}, through the cathode follower/isolator, V_{2B}, and fed to the 6AH6 amplifier, V_7, on the transmitter r.f. chassis (Fig. 4). Since the voltage appearing

[2] Also, with receivers of either the single- or double-conversion type, it is possible to produce a resultant output frequency which does not have the feature of being automatically the same as that to which the receiver is tuned but is in some other part of the frequency spectrum. An obvious application would be to extract a control signal in the 5-Mc. region where it could be used to replace the v.f.o. commonly used with exciters that generate a crystal-controlled s.s.b. signal on 9 Mc.

[3] Berry, "The Series Balanced Modulator," *QST*, Sept., 1952.

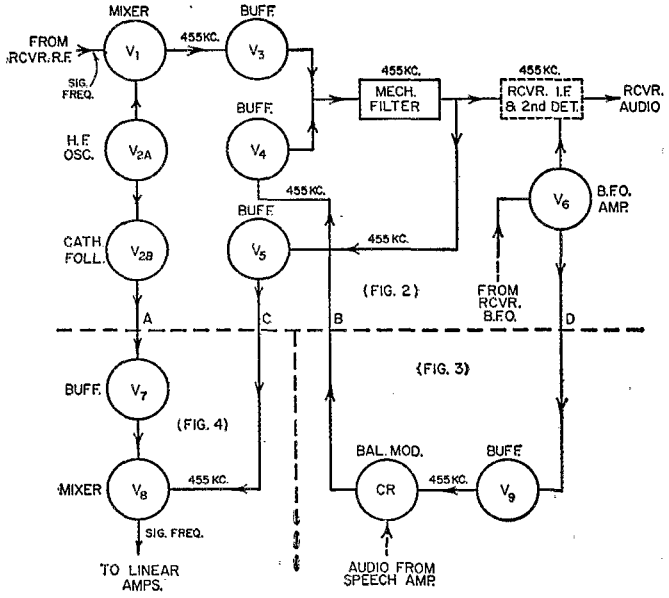


Fig. 1 — Block diagram of the frequency control and single-side-band generating system. Actual circuits of the sections portioned off by the dashed lines will be found in the correspondingly-numbered figures.

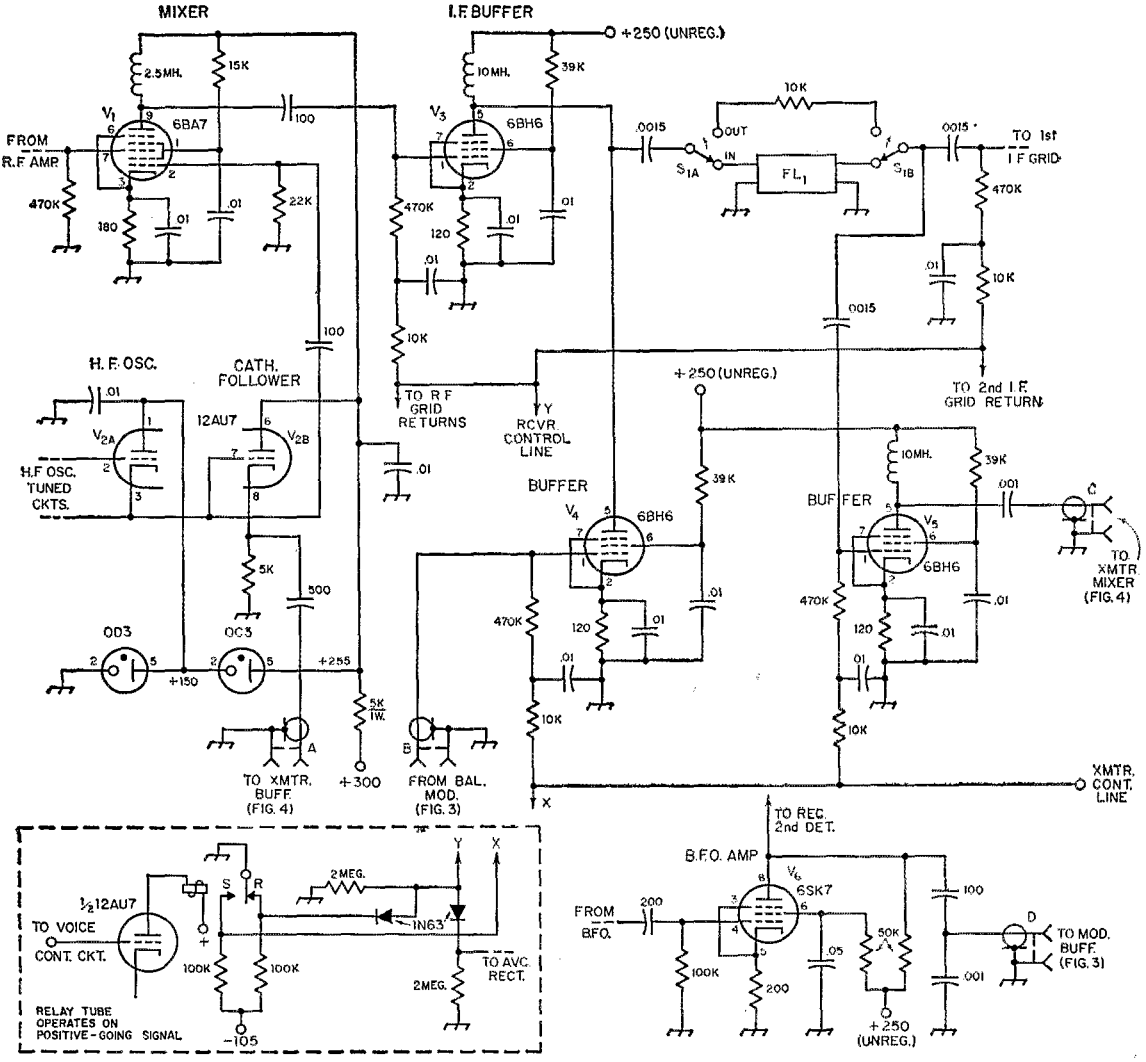


Fig. 2 — These circuits, which include the high-frequency oscillator common to both the receiver and transmitter together with the mechanical filter used for side-band selection, are installed in the Super Pro receiver at W8OPB. Section enclosed in dashed lines indicates method of incorporating send-receive relay in the system. The relay tube may be either voice or manually controlled. This circuit is included in the audio chassis in W8OPB's transmitter.

Capacitances below 0.001 μf. are in μμf. Resistors are ½-watt composition. Letter designations on terminals correspond with similar designations in Figs. 3 and 4.

FL_1 — 455-kc. mechanical filter (Collins F455D-31).

S_1 — 2-section rotary, 2 positions used.

at the cathode of the oscillator tube is only a few volts and is further greatly attenuated by the cathode follower, it is necessary to amplify this voltage to a level sufficient to give linear mixing in V_8 with the output signal of the filter. The 6AH6 is operated as an untuned Class A amplifier on all bands except the highest, 20 meters. Here it was found necessary to provide a higher-impedance plate load than was furnished by the r.f. choke normally used. L_1 and C_1 (Fig. 4) broadly resonate the plate circuit of the 6AH6 on 20 meters, thereby providing sufficient voltage to keep the 12AT7 mixer happy. Different cathode resistors are switched into the 6AH6 circuit by S_{2B} to adjust its output to the same value on each band.

The 12AT7 mixer stage, V_8, is of the balanced type and nulling of the oscillator input voltage in the plate circuit is aided by the dynamic balance control, R_4, in its cathode circuit. Since the oscillator signal frequency is only 455 kc. from the desired output frequency, it is necessary

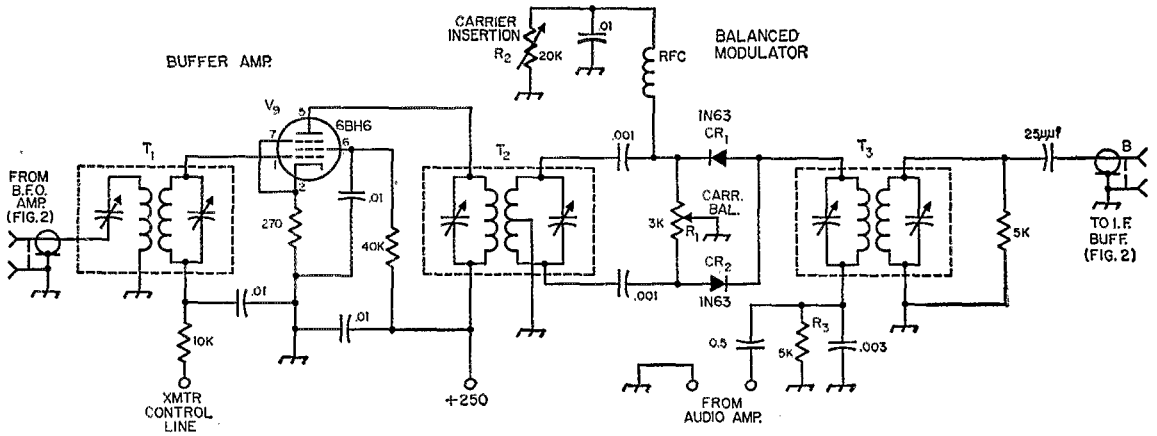


Fig. 3 — Balanced modulator circuit. In W8OPB's installation this circuit is included on an audio chassis which also contains voice-control equipment.

Capacitances are in μf. except as indicated. Fixed resistors are ½-watt composition; variable resistors are composition volume controls.

T_1 — 455-kc. midget interstage i.f. transformer (Miller 112C2), primary circuit modified as shown.
T_2 — 455-kc. midget full-wave diode i.f. transformer (Miller 112C3).
T_3 — 455-kc. midget interstage i.f. transformer (Miller 112C2).
RFC — 10 mh.

to attenuate it as much as possible before reaching the subsequent amplifier stages. The plate coils for the mixer stage (in I_5) are bifilar wound over the grid coils for the following amplifier stage, a 6AK6, in the transmitter. This method of coil winding allows a balanced plate circuit without the need for an additional tuning capacitor. The two windings are tightly coupled and the tuning of the secondary serves to tune the primary as well.

Provision has been made for the possible future addition of a remote-tuned v.f.o. which could be used in lieu of the receiver oscillator signal for mixing with the filter output. The panel control, S_3, would switch from one source of oscillator signal to the other and a socket has been provided on the r.f. chassis to accommodate the tube required for this possible modification. It would also be possible to provide for crystal-controlled injection if this were considered desirable.

Construction

The relevant modifications of the receiver are shown in one of the photographs. The small subchassis mounted in the position formerly occupied by the receiver mixer and oscillator tubes contains the new receiver mixer and oscillator tubes, plus the circuitry for isolating the filter input. The leads which formerly terminated on tube grid caps now go through feed-through insulators to their respective grids. Oscillator output voltage from the cathode follower to the transmitter is via a short length of coaxial cable. The input signal to the filter from the transmitter is likewise through coax cable.

The mechanical filter is contained in the small box which replaces the former crystal-filter assembly of the receiver. The filter by-pass switch, S_1, and the switch which manually disables the receiver are also in this box. Mounted on top of the box are the voltage regulator tubes and the transmitter output isolator tube, V_5. Another short length of coax cable is utilized here in feeding the filter output to the transmitter chassis.

Adjustment and Operation

The r.f. input to the 6BH6 b.f.o. isolator, V_9, is adjusted by means of the capacitive divider in the plate circuit of the 6SK7 b.f.o. amplifier, V_6, so that approximately 8 volts r.m.s. is developed across the carrier balance control, R_1. This voltage should be obtained when the input voltage is well below the grid current point of the 6BH6. The audio input to the 1N63 balanced modulator should not exceed 0.15 volt, as measured across R_3, on voice peaks. The 5K fixed resistor across the modulator output coaxial cable (Fig. 3) is chosen so as to set the maximum level at the grids of the 12AT7 balanced mixer at 0.8 volt r.m.s. at the above speech level.

The voltage available at the cathode of the receiver h.f. oscillator, V_{2A} (Fig. 2), varies from 6 to 15 volts r.m.s., depending on the band in use. Cathode bias on the cathode follower, V_{2B}, is made sufficiently high to prevent grid current flow with the maximum oscillator voltage applied to the grid. No loading of the oscillator tube should be permitted. The voltage output at the cathode of V_{2B} will vary from 1 to 6 volts, depending on frequency.

The cathode bias resistors for the 6AH6, V_7 (Fig. 4), are chosen for each band so that the r.f. voltage at the cathodes of the 12AT7 mixer, V_8, is 4 volts r.m.s. This voltage will vary slightly over each band but its value is not highly critical. On the 20-meter band the minimum allowable resistance is used in the 6AH6 cathode, and the plate circuit is adjusted by means of the trimmer capacitor, C_1, so that proper voltage is available at the 12AT7 cathodes.

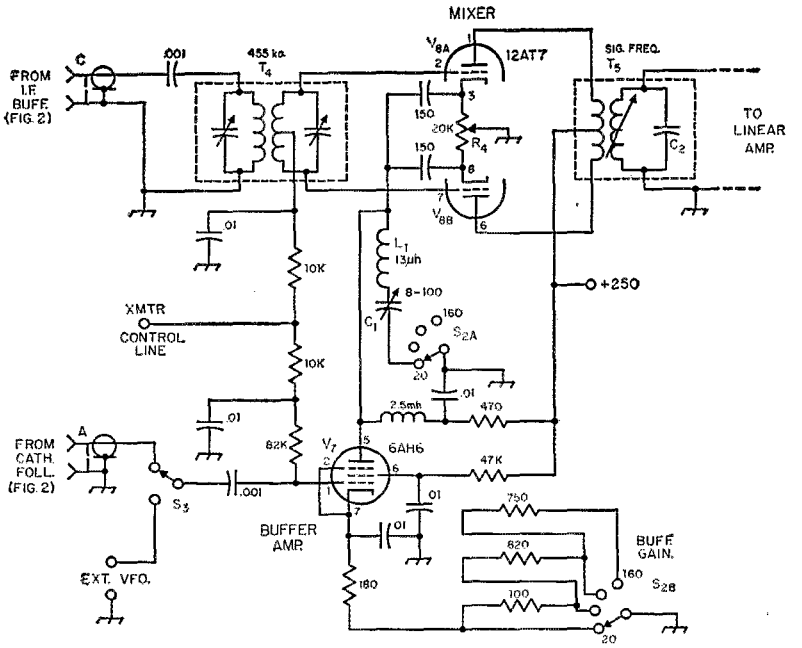


Fig. 4 — Transmitter mixer circuit. This circuit is included on the transmitter chassis in W8OPB's setup. Band-switching details following the 12AT7 mixer plates are not shown.

Capacitances below 0.001 μf. are in μμf. Fixed resistors are ½-watt composition.

C_1 — 8–100-μμf. mica trimmer.
S_2 — Rotary switch, 2 poles, 4 positions.
S_3 — Rotary switch, 1 pole, 2 positions.
T_4 — 455-kc. midget full-wave diode i.f. transformer (Miller 112C3).
T_5 — Signal-frequency transformer, home-wound on slug-tuned forms (TV replacement type, ¼-inch diam. form).

Band	*Primary* *	*Secondary*	C_2
14 Mc.	6 turns No. 20	4 μh.	None
7 Mc.	8 turns No. 24	6 μh.	56 μμf. mica
3.5 Mc.	20 turns No. 30	14 μh.	91 μμf. mica
1.8 Mc.	50 turns No. 30	24 μh.	270 μμf. mica

* Double (bifilar) winding of enameled wire each having the number of turns specified. Center tap formed by connecting finishing ending of one winding to starting end of other.

The balance control, R_4, in the 12AT7 mixer stage should be adjusted with the aid of an r.f. probe and v.t.v.m. connected across the secondary of T_5. Tune the transmitter to about the center of the 20-meter band and adjust T_5 for maximum voltmeter reading. Then, without changing the tuning of T_5, move the receiver tuning to a frequency 455 kc. lower, until evidence of the receiver h.f. oscillator is seen on the r.f. voltmeter. Then adjust the balance control for minimum reading. The signal output of the balanced mixer is sufficient to drive a small pentode or tetrode as a Class A amplifier; in the writer's transmitter the following tube is a 6AK6, which in turn drives a 2E26 and then a pair of 6146s. The driving voltage for all tubes is kept below the grid-current point.

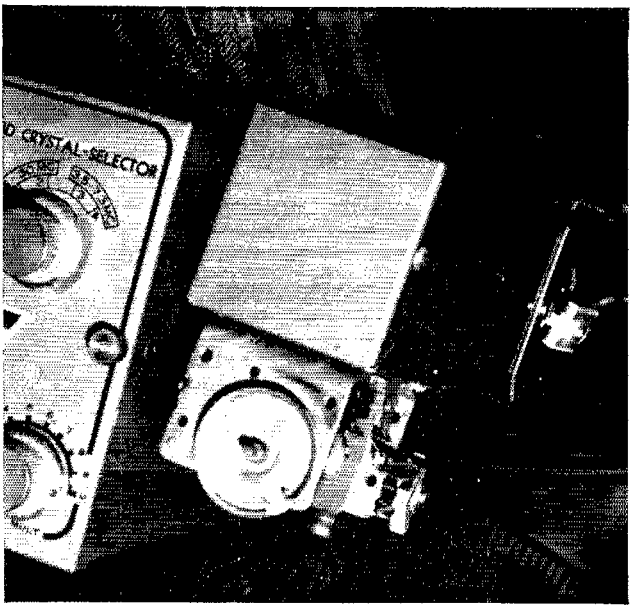
Operationwise, little can be said except that one may well forget the problem commonly known in "zeroing" to the received signal. Once the other station is tuned in properly it simply follows that the transmitter is properly zeroed and ready for a quick call or answer.

The only disadvantage thus far encountered has been on 20 meters. On occasion, when some DX s.s.b. phones were heard above 14,300 kc. the temptation to give them a call was great indeed. This seems to be the only case, on the bands covered by this unit, where the external v.f.o. would be desirable.

Strays

With reference to the Minitrack calibration (April, 1957, *QST*, p. 42) W2GTY points out that Cygnus (for example) is not a star but a constellation.

The Amateur Radioteletype Society announces that literature on RTTY is available from the Society. Address 38-06 61st St., Woodside 77, N. Y.



The mobile conelrad converter mounted alongside the rig under the instrument panel of the author's car.
(The trimmer attached to the tuning gang is a replacement for the original built-in oscillator trimmer built into the gang which was damaged.)

Conelrad Monitoring for the Mobile Operator

A One-Tube Converter for the BC Band

BY EDMOND D. WRIGHT,* W4GFQ

• Those mobile operators who have tried to make the car's broadcast receiver serve both as an i.f. for a tunable converter and as a conelrad monitor have not found it too convenient, since the BC receiver must be reset after each conelrad check. W4GFQ has solved the problem with a simple converter tuning the BC band and working at the same i.f. as the ham-band converter. It will also provide BC-band coverage for any communications receiver tuning to approximately 1500 kc. that does not already include the broadcast range.

CONSIDERING the number of articles that have appeared in *QST* on the subject of conelrad, still another might appear superfluous. However, I venture to say that a large percentage of us still have an ear toward the TV set as a means of complying with the regs. For fixed stations this may not be too bad, but mobile operation presents a different picture.

A device such as the Conelette,[1] whose tuning is fixed to one of the local BC stations, is also a simple and satisfactory means for a home station. But when you're on the road, you can't always depend on a single station over any appreciable distance. Some means of tuning the entire BC band is needed, and a little extra gain would be an asset.

If you are using the car's BC receiver as the i.f. for a tunable converter, it will provide all the gain you need. However, there is the problem of how to switch back and forth conveniently every ten minutes between the BC receiver and the ham-band converter without having to retune the BC receiver each time.

A possible answer might be a separate tunable converter covering the BC band, and converting to the same i.f. as the i.f. used by the ham-band converter. But will it work smoothly when some of the desired BC stations may be close to 1500 kc.? The answer is that it does work, and very nicely, too. One of our local stations is on 1490 kc. With this station tuned in on the converter, no one could detect that it was not being received directly on the BC tuner itself.

Circuit

The circuit of the converter is shown in Fig. 1. It is a conventional arrangement. Any other

*3631 N. W. 18th Terrace, Miami, Florida.
[1] Lukoff, "Conelette," *QST*, Dec., 1956.

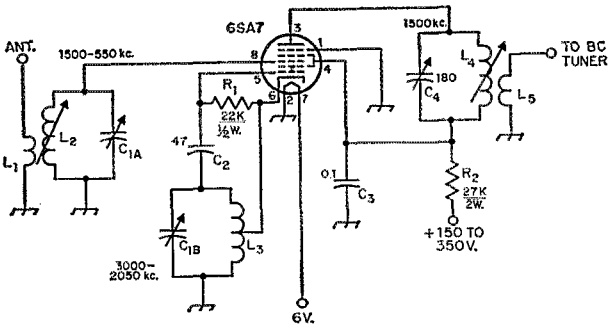


Fig. 1 — Circuit of the conelrad converter for mobile use.

C_1 — Dual variable capacitor, broadcast-replacement type for superhet receivers, C_{1B} altered as described in the text (approx. 90 $\mu\mu$f.).
C_2 — 47-$\mu\mu$f. mica.
C_3 — 0.1-μf. 400-volt paper.
C_4 — 180-$\mu\mu$f. mica trimmer (Arco type 463).
L_1 — See text.
L_2 — BC ferrite core loopstick (approx. 230 μh.).
L_3 — See text (approx. 65 μh.).
L_4 — National XR-50 iron-slug form wound full with No. 32 enam. wire (approx. 85 μh.).
L_5 — 15 turns No. 28 wound over cold end of L_4.

converter circuit should work equally well, of course. The input circuit $C_{1A}L_2$ covers the BC band. The oscillator circuit $C_{1B}L_3$ covers the range of about 2050 to 3000 kc. to produce an i.f. of 1500 kc. The 6SA7 was used simply because it was in the defunct a.c.-d.c. BC receiver that I chiseled from a local radio service shop. This receiver also yielded the dual tuning capacitor C_1 and the oscillator coil L_3. New components may be used, of course, and they are not expensive.

Tuning Capacitor

Plates must be removed from C_{1B} to provide the required tuning range. The oscillator section of the dual unit is the one having the smaller number of plates. Starting at the rear, all rotor plates except five should be removed. It isn't necessary to remove the unused stators. Be very careful to make sure that there are no shorted plates after the modification is complete.

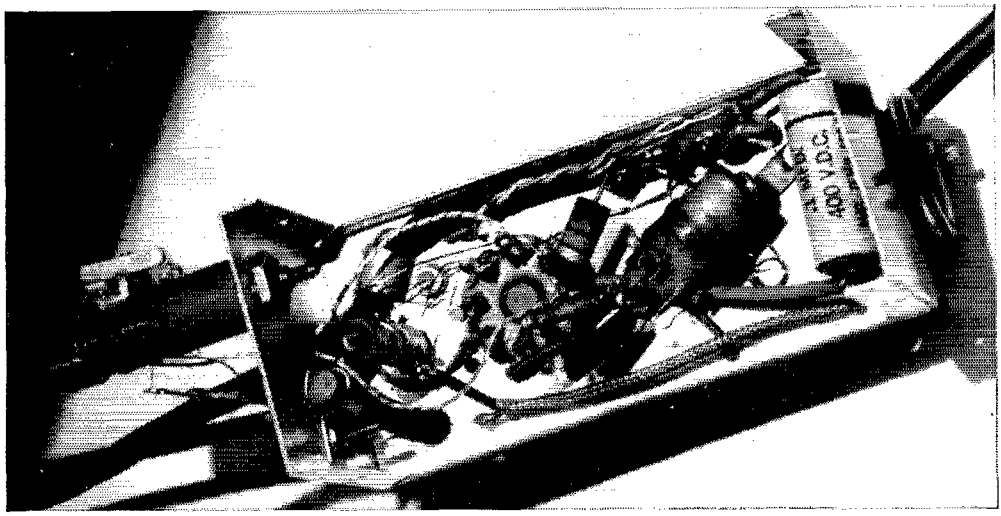
Input Coil

L_2 is a ferrite-core loopstick. It is sold by radio dealers for use as a built-in BC receiving loop. This coil usually comes with a length of wire attached to the ungrounded end and wound around the loopstick. When unwound, the short length of wire is intended to provide additional pickup if needed. I disconnected this wire from L_2 and, without unwinding it, used it for L_1.

Oscillator Coil

For L_3, I used the oscillator coil I found in the a.c.-d.c. receiver. Locating the end of the winding going to the oscillator grid of the converter tube, I removed 36 turns after softening the wax with a soldering iron. However, this may not mean too much because oscillator coils vary widely in dimensions, and also in the method of obtaining feedback. Unless you are familiar with the original circuit, it might be easier to wind a new coil. If the original coil is used, only a turn or two at a time should be removed, after the first 10 or 15 turns, until the oscillator frequency is about 2050 kc. with C_1 at maximum capacitance.

A substitute coil would be approximately the same as L_4, close-wound with 60 turns No. 30 enameled, and either tapped at about one third of the way up from the ground end, or with a separate cathode coil consisting of about one third the number of turns on L_3, wound over the ground end of L_3, and wound in the same direction. The



Top view of the converter for mobile conelrad monitoring with cover removed. The oscillator coil L_3 is to the right of the tube socket. The loopstick used for L_2 is to the left. The i.f. output-circuit components are mounted externally as shown at the extreme left.

bottom end of this winding should be grounded.

Output Circuit

A National XR-50 iron-slug form was used for L_4. The winding space is wound full with No. 32 enameled wire. L_5 consists of 15 turns of No. 28 enameled wire wound over the cold end of L_4, with a coat of Krylon and a thin piece of plastic wrapper between the two windings.

The top-view photograph shows an Arco type 460 trimmer for C_4. This trimmer has a maximum capacitance of 100 $\mu\mu$f. and was used with a 100-$\mu\mu$f. fixed mica in parallel. The type 463 has a maximum capacitance of 180 $\mu\mu$f. and, if this is substituted, the fixed capacitor should not be needed.

Construction

The foundation for the converter is a 2¼ × 2¼ × 5-inch aluminum box (made by both ICA and Bud). The tuning capacitor and the tube are mounted on the bottom. The arrangement of components inside the box isn't critical. I placed L_1L_2 at the rear, near the signal-grid terminal of the tube socket, and L_3 toward the front near the oscillator-grid terminal. L_4L_5 was mounted externally at the rear to reduce "birdies."

Power Supply

Power for the converter may be taken from the BC-receiver supply since the current requirement is negligible. With 150 volts at the positive B terminal of the converter, the converter draws 3.75 ma. and the drop across R_2 is about 100 volts. The converter will work well at supply voltages up to 350 or more without change in the resistance value of R_2. The current drain will, of course, be higher at the higher supply voltages, and the wattage rating of the resistor may have to be increased. If current drain is an important consideration, the resistance value of R_2 can be increased in proportion to the increase in supply voltage.

Adjustment

The oscillator can be checked for proper frequency range by the use of a grid-dip meter before power is applied or, after power has been turned on, by listening on a communications receiver covering the 2-to-3 Mc. range.

Now connect an antenna to the input of the converter and connect the converter to the BC receiver. Set the BC receiver at 1500 kc. (or to the frequency that you normally use with your ham-band converter). Turn on the power and adjust C_4 and the slug of L_4 for a peak in noise (if you can't find a signal). Then adjust the slug of L_2 for maximum response.

Switching System

Fig. 2 shows how the converter can be connected into a convenient switching system. K_1 represents a spare set of contacts on the change-over relay. (In my Babcock MT-5B I use the contacts that were originally provided to open the speaker voice coil while transmitting.) With the relay in the receiving position, plate power from the BC receiver can be switched to activate either the ham-band converter or the BC converter by the s.p.d.t. toggle S_1. With the relay in the transmitting position, power is applied to the BC converter so that you can hear the BC station you are monitoring while you are transmitting. This works without BCI while I'm transmitting on 10 meters. I haven't tried transmitting on other bands, and it's possible that the BC receiver might have to be treated for BCI for the lower-frequency bands. If there is some objection to the BC signal while transmitting, a visual device could be applied to the BC receiver.

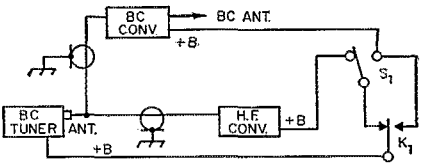


Fig. 2 — Block diagram showing a switching system for the conelrad converter. K_1 represents a spare set of contacts on the change-over relay. S_1 is a s.p.d.t. toggle. With K_1 in the receiving position as shown, power from the BC receiver may be applied to either the BC converter or the ham-band converter. With K_1 in the transmitting position, power is applied to the BC converter for conelrad monitoring during transmitting periods.

In conclusion, I might point out that this converter will provide broadcast-band coverage with any receiver that does not already include this band, provided that the receiver will tune to approximately 1500 kc.

Strays

W2QBB suggests that the small plastic boxes which are about 4 × 8 × 1 inches in size are just right for storing the coils of the Heathkit grid-dip meter. He pastes the correlation chart for the low-frequency coils on the cover of the box.

—•••—

The Voice of America needs some radio broadcast technicians at a salary of $5915 per year. For full details write to U. S. Civil Service Examiners, U. S. Information Agency, 1776 Pennsylvania Ave., NW, Washington 25, D. C. and ask for announcement No. 98B.

FEEDBACK

The figures in the last four lines of the meteor shower table (April, 1957, *QST*, p. 23) given as the velocity and period of the daylight showers are displaced one column to the right. Actually these figures are for the hourly rate, as observed by radio means, and the velocity, in that order.

Lighthouse Tube Tank Circuits for 432 Mc.

Easy-to-Build Amplifiers or Frequency Multipliers for Surplus Tubes

SOME TIME AGO W4ECL, Pensacola, Fla., wrote that he had been experimenting with flashing copper tank circuits for use with surplus lighthouse tubes. Would we be interested in the details of some of the equipment that had resulted? We were, and if you're the experimenter type who likes to make do with what you have around, we think you'll be interested, too.

W4ECL's tank circuits will never win any beauty prizes, but they are built on good sound principles — and they work. What's more, they make use of tubes that many of us have kicking around from our surplus-collecting days. Either stage can be run as an amplifier on 432 Mc., or driven as a tripler from any 144-Mc. stage that delivers a few watts.

Using the 2C43

Several versions have been constructed, two of which are shown here. First is one designed to take the small lighthouse tubes that have been so plentiful on the surplus market. Best results have been obtained with 2C43s, though 446As also have been used. The receiving counterpart of the 2C43, the 2C40, would probably also do, though at somewhat reduced input. Details are shown in drawings and photographs.

The tank circuit is a 432-Mc. half-wave line (tube at one end, tuning capacitor at the other; plate voltage fed in at electrical midpoint) designed for grounded-grid service. Mounting the lighthouse type of tube and making connection to its elements has always been thought of as difficult mechanically, but these units make it look easy. Nothing more refined in the way of tools is called for than sheet-metal shears, a fairly heavy soldering iron and a hack saw.

The end of the plate line is slotted with a hack saw and then squeezed slightly to make it fit the 2C43 plate cap snugly. The tube is held in alignment by the cathode ring. This is a square piece of flashing copper held in place by two ⅝-inch ceramic stand-off insulators. Contact fingers made of brass shim stock are soldered to the outer side of this ring. The grid plane of the tube makes contact to the end of the trough. Here an end plate of brass shim stock has a hole

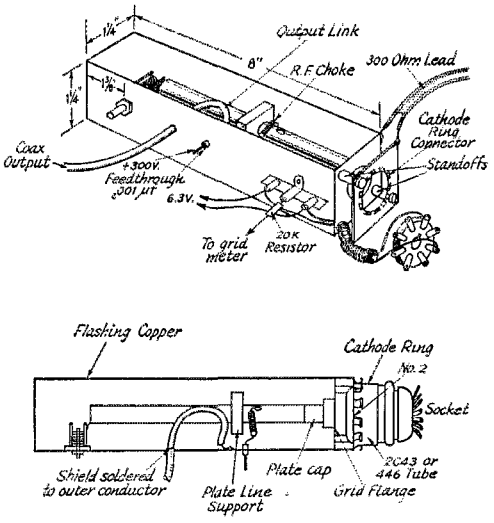
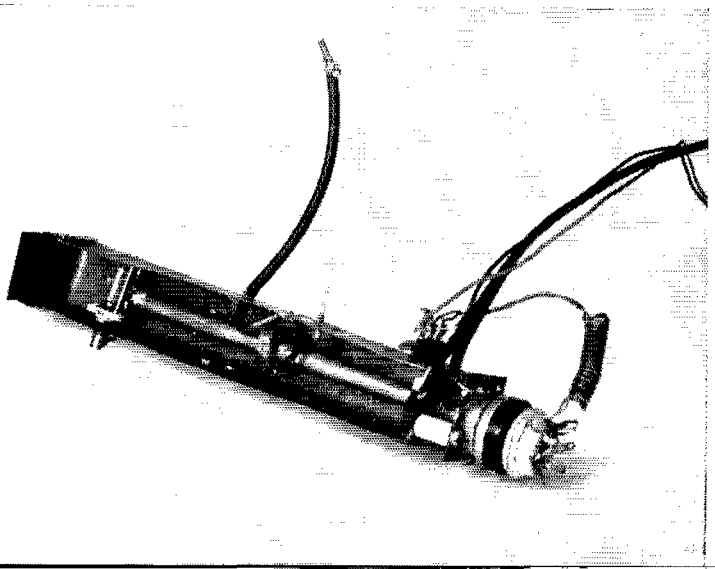


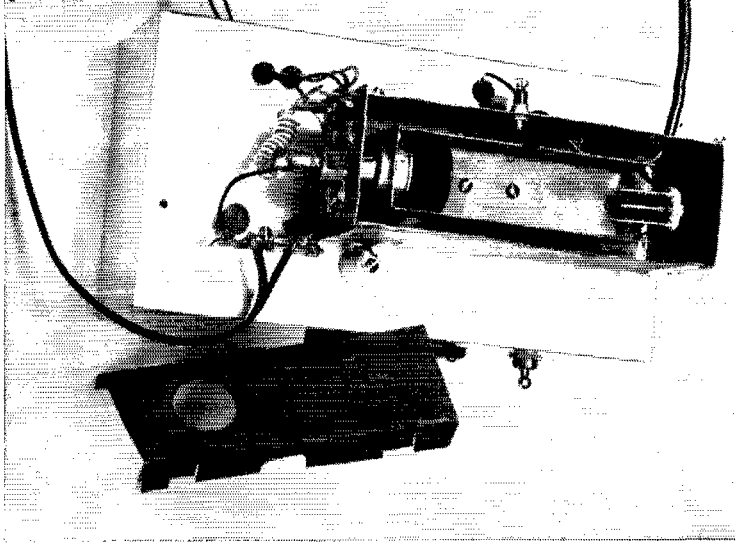
Fig. 1 — Detail drawing of the tank circuit for 2C43 or 446A tubes. Lower portion is top view.

large enough to pass the plate terminal. Radial shear cuts in the plate give it resilience for a spring contact to the grid plane.

Heater connections are made with an octal socket, but this is merely pushed onto the tube pins and is not mounted to any support. Heater



Tripler or frequency-multiplier stage using the 2C43 lighthouse tube. Bifilar r.f. choke at the right is in heater line. The Twin-Lead is for coupling in the drive from the preceding stage. Output is taken off through coax, without the use of fittings.



Trough-line amplifier or frequency multiplier for the 2C39A. Copper cover, lower left, was added after it was found that the open trough wasted much of the power output by direct radiation.

voltage is fed through bifilar chokes. These should be wound for the driving frequency, so their size depends on whether the stage is to be used as a tripler or an amplifier.

The half-wave plate line is supported near its point of lowest r.f. voltage, so the quality of insulation here is not too important. Plate voltage is fed through an r.f. choke, via a feed-through by-pass. Output is coupled through a loop made from the inner conductor of a piece of coax. The braid is cut back to the point where the coax runs through the trough wall, where it is soldered to the outer surface. The inner conductor, with its insulation intact, is made into

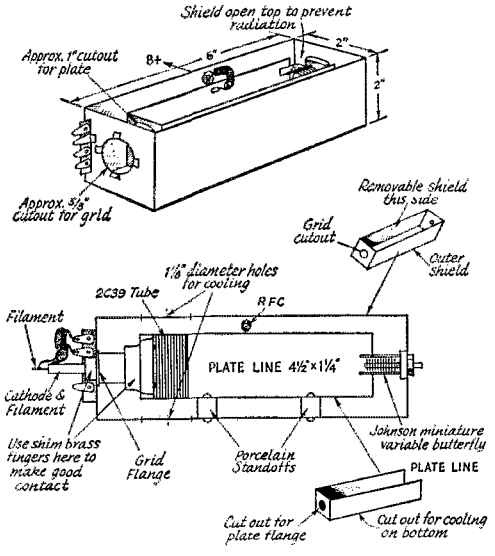


Fig. 2 — Tank circuit for 2C39 has tube inside inner conductor. Details of construction that are not apparent from photographs are shown.

a coupling loop and soldered to the inner surface of the trough. Result: coaxial coupling with no expensive fittings.

The 2C39A Amplifier

The larger of the two amplifiers is a higher-powered version using a 2C39A, mounted inside the line. The inner conductor is a trough instead of tubing. Contact fingers of brass shim stock are soldered to the inner surface of its end plate, making contact to the plate sleeve of the tube. Similar spring fingers contact the grid sleeve, on the outer surface of the end plate on the outer conductor. Cathode and heater contacts are made at the tip of the tube.

As in the other amplifier, the plate circuit is a half-wave line. It is supported on ceramic insulators that do not show in the photograph. Plate voltage feed and output coupling methods are similar to those employed in the other amplifier. Ventilating holes are punched in the bottoms of both troughs, and in the cover of the outer one. These seem to have no effect on the performance of the amplifier. Bias voltage developed on the grid appears on the outer conductors of both amplifiers, so these must be insulated from the chassis or negative end of the system. The voltage also appears on the coaxial feed line, so the amplifiers cannot be used with grounded antennas unless some form of capacitive coupling is provided for both conductors of the coax.

Operation

When the stages are used as triplers W4ECL takes the drive from an SCR-522 transmitter. This is equipped with 300-ohm output, and the line from it is connected to the cathode and grid elements of the amplifier through blocking capacitors. This rather haywire method of coupling the drive seems quite adequate for the purpose, for there is no trouble in getting enough grid drive to make the stages operate efficiently.

Plate voltage used is between 250 and 300 volts. At this level, the 2C43 stage draws 25 ma. off resonance, and 15 to 20 ma. when tuned on the nose. Current to the 2C39A is 60 ma. off resonance, and around 50 ma. tuned and loaded properly. Efficiency is around 30 per cent when

(Continued on page 158)

Low Cross-Talk Six-Meter Converter

Design Features for High-Activity Areas

BY FRANK C. JONES,* W6AJF

• With 50-Mc. activity rising steadily, it is becoming more obvious to 6-meter men all the time that a hot converter is of little value if one or two strong local signals can tie it up in knots. Here is a simple converter design aimed at preventing much of the cross-modulation trouble that is currently all too common in densely-populated areas. Its noise figure is lower than you'll ever need, and it can be adjusted readily to give uniform response across the band.

THE problem of receiving weak signals in the six-meter band through local stations has become acute in many localities. One or more strong signals can cause cross modulation or cross talk into the desired signal and so apparently cover the band. This often creates ill feeling as amateurs usually blame the owner of the transmitter that is the source of the trouble.

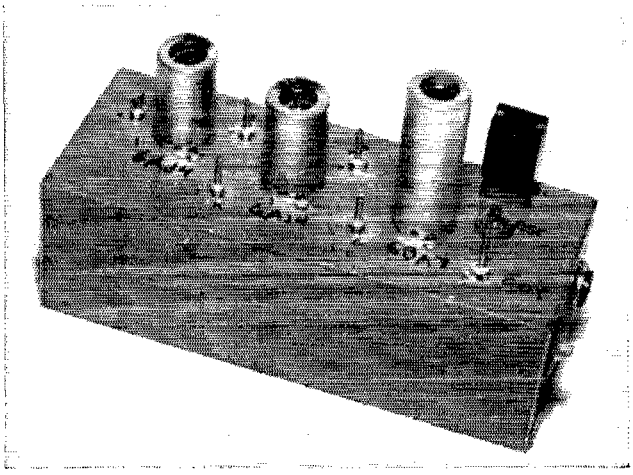
Actually, the blame should be placed on the receiver, where a strong signal can cause mixing action in an r.f. stage or a mixer circuit. Communications receivers have gone over to r.f. tubes which are designed for minimum cross-modulation effects, and to mixer tubes which will stand greater inputs before mixer action takes place between undesired signals. It is time to treat converter design in the same way.

Six-meter converters have been designed for greatest sensitivity with little thought about other defects. Grid-leak bias mixers are the rule since these work very well on weak signals and only require a volt or less of injection from the oscillator for maximum sensitivity in their mixer action. By the same token, a strong signal or two in the band can cause mixing action, and thus cross modulation, on the desired signal. This is fed into the i.f. system and no degree of selectivity there will be of any help. The answer is to use a more linear type of mixer such as a low- or medium-mu triode, with cathode bias instead of grid-leak bias, or to use a screen-grid mixer tube such as a 6BA7. The noise figure of this pentagrid mixer is lower than that of older types such as a 6SA7, so it should be better for operation at 50 Mc. The 6BA7 noise figure is higher than for a triode mixer, but its freedom from cross-modulation effects is better, even when enough radio-frequency amplification is used ahead of it to arrive at a low over-all noise figure.

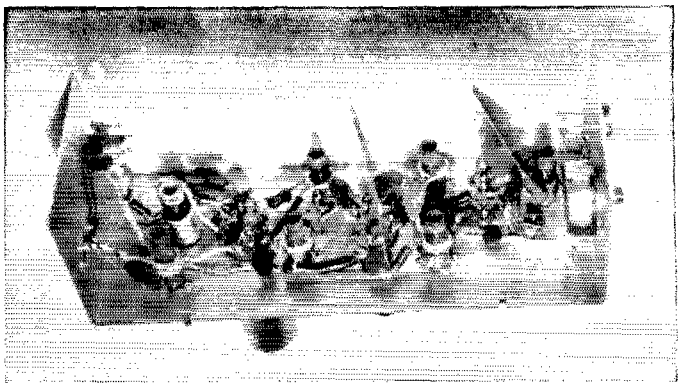
The six-meter converter illustrated here was built to test some of these ideas. It consists of two 6AJ4 grounded-grid r.f. stages and a 6BA7 oscillator-mixer. The grounded-grid r.f. amplifier is fairly free of cross-talk and has a very low noise figure. It also is exceptionally stable and free of regenerative effects. The gain per stage is not over 3 or 4, thus permitting the use of two stages ahead of the 6BA7. This allows use of band-pass tuning to cover 50 to 54 Mc., and the extra tuned circuits help to eliminate image responses. The image rejection was measured at 80 db. The spurious signal response to any frequency was measured at values of 60 to 80 db. down from the desired signal. This is a great improvement over the usual 10 to 30 db.

The noise figure runs between 2 and 3 db. over the band, which is more than ample for weak-signal reception in the quietest location. This

*850 Donner Avenue, Sonoma, Calif.



The low cross-talk converter for 50 Mc. is built in a 4 × 8 × 2-inch box.



Interior of the W6AJF 50-Mc. converter. The grounded-grid r.f. amplifier stages have small isolation shields across their sockets.

low noise figure also makes the converter a good first i.f. system for the 432- or 220-Mc. bands, or even 144 Mc. A signal of 0.25 microvolt will produce a good usable response in a reasonably selective communication receiver.

The i.f. tunes from 30 to 34 Mc. A lower i.f. range can be used if a higher-frequency crystal is used in the 6BA7 oscillator circuit. The oscillator coil should tune through the desired injection frequency, and the 6BA7 plate circuit should be broadly resonant at the i.f. output frequency. The latter calls for high L/C ratio and tight link coupling on the output coil.

Band-pass circuits between stages permit higher-Q tuned circuits, resulting in better image rejection and more uniform response across the band than would be possible with capacitive coupling. All of the 50-Mc. coils were wound with 10 turns on an iron-slug coil form, $\frac{5}{16}$-inch diameter, to cover $\frac{3}{8}$-inch winding length. Nine turns may be used with $\frac{3}{8}$-inch CTC iron-slug tuned forms. Two-turn links on each interstage coil provide a good band-pass effect.

The cathode of each grounded-grid stage taps into the coil at about 3 turns up from the grounded end. This provides about the best "mismatch" for optimum noise figure, with only a moderate reduction in over-all gain. The cathode input resistance is a little over 100 ohms for a 6AJ4 tube, so a good noise figure can be obtained when it looks into a 200- to 300-ohm input impedance. The usual 50-ohm coax input circuit should tap into the input coil approximately half as far up as the cathode tap, or at $1\frac{1}{2}$ turns.

The first grounded-grid stage is protected from damage from the station transmitter by means of a grid leak 50,000 to 100,000 ohms, to limit grid current during transmission periods. The grid is grounded for r.f. by means of .002-μf. ceramic capacitors, with very short leads to chassis ground lugs. Some r.f. leakage across an antenna relay can convert a fine new grounded-grid amplifier tube into a noise generator with no amplification, unless this precaution is taken, or the cathode d.c. circuit is broken by auxiliary contacts on the relay.

The second r.f. stage has a gain control in the cathode circuit. This is used only in case of operation near another six-meter station with a signal strong enough to overload the 6BA7 tube. Normally, this 2000-ohm variable resistor is left

(*Continued on page 158*)

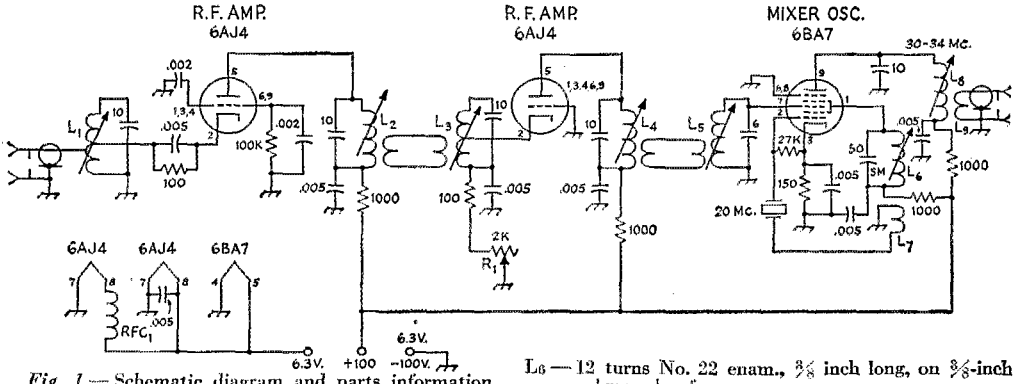


Fig. 1 — Schematic diagram and parts information for the 50-Mc. converter. Capacitor values below .001 are in $\mu\mu$f. Resistors are $\frac{1}{2}$ watt. SM indicates silvermica.

L_1-L_5 inc. — 10 turns No. 22 enam., $\frac{3}{8}$ inch long, on 5/16-inch iron-slug coil form. Cathode taps at 3 turns; antenna tap at $1\frac{1}{2}$ turns. Link windings each 2 turns.

L_6 — 12 turns No. 22 enam., $\frac{3}{8}$ inch long, on $\frac{3}{8}$-inch brass-slug form.

L_7 — 1 turn insulated hookup wire; see text.

L_8 — 17 turns No. 22 enam., close-wound, on 5/16-inch iron-slug form.

L_9 — 3 turns insulated wire around cold end of L_8.

R_1 — 2000-ohm potentiometer.

RFC_1 — 20 turns No. 26 enam. $\frac{1}{16}$-inch diam. close-wound. Slip inside spaghetti tubing.

A Novel Electronic Transmit-Receive Switch

Improved Performance Through An Unconventional Method of Application

BY SAMUEL SABAROFF,* W3DM

• The thought of connecting a receiving tube across a transmitter tank circuit is startling, to say the least. But once the shock wears off, the idea begins to make sense, in terms of logical operation of an electronic t.r. switch.

VARIOUS types of electronic t.r. switches have appeared in the past, many with indifferent success. Their defects have generally included one or more of the following major items: generation of TVI, loss of receiver sensitivity, degradation of receiver signal-to-noise ratio, instability, dependence on physical placement, dead spots in the band, and crosstalk. A logical analysis of the difficulties mentioned above led to the design of a simple t.r. switch in which practically all of these defects have been eliminated.

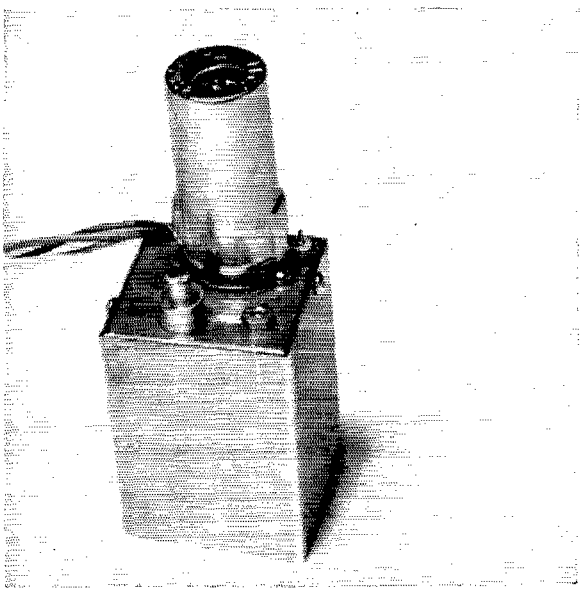
The first big step in the new design was to acknowledge the fact that the t.r. switch could be considered to be basically a part of the transmitter and should be contained therein. It was further accepted that best reception be restricted to the band on which the transmitter happens to be operating, and that the t.r. switch output be broad-banded. This automatically took care of most of the difficulties, as will be shown later.

An analysis of transmitter output circuits showed that from the point of view of a signal coming from the antenna, a stepped-up voltage appeared at the plate of the transmitter output tube. In addition, spurious and out-of-band signals are discriminated against at this point, because of the inherent selectivity of the plate tank circuit. Actually, the transmitter output circuit when operated in reverse can be considered to be an efficient input circuit for receiving.

From the point of view of the received signal, the tank can be considered to be an absorption trap. This accounts for the dead spots that appear when a signal close in frequency to the tank circuit is picked off the transmission line. However, this absorbed energy is responsible for the voltage at the plate tank, so that dead spots do not appear when signals are picked off at this point.

A transmitter tank circuit was set up in the laboratory and the remarks above essentially confirmed. The logical question then arose as to what would happen when the high voltages appearing on the transmitter tank circuit are applied to the grid of a tube during transmission.

*Lynmar Engineers Inc., 1432 N. Carlisle St., Philadelphia 21, Pa.



This manufactured version of the circuit shows how compactly the t.r. unit can be built. The box dimensions are 1½ inches square by 2¼ inches high. The coax output cable attaches to the fitting in front of the tube.

Unfortunately, this kind of information was not available and it was necessary to get it the hard way.

T.R. Tube Requirements

The main tube requirements were low output capacitance, excellent grid to plate shielding, high mutual conductance and, most important, the ability to withstand a high grid-to-cathode voltage. In addition, the tube had to be small in physical size and relatively inexpensive. A search of both transmitting and receiving tube manuals did not reveal a tube that met these requirements. This meant, therefore, either that a tube would have to be developed for the purpose or some existing tube would have to be used in an unorthodox fashion. Needless to say, the latter course is the one that was pursued. A group of tubes was selected that satisfied the circuit requirements, and then deliberately blown up in an effort to discover the maximum safe r.f. voltage that could be applied between grid and cathode.

The final choice was the type 6AH6 tube. Experiment showed that the grid of this tube can withstand peak r.f. voltages of approximately 250 volts for long periods of time without breakdown. Other tube types broke down with voltages ranging from 100 to 400 volts. Unfortunately, the tube types withstanding the higher voltages did not have suitable electrical characteristics and were therefore discarded.

The shielding of the 6AH6 was also found to be quite adequate, there being negligible feed through when deenergized (tube cold). Another important factor is the saturated output with maximum grid voltage. In the t.r. switch that was finally developed, the maximum r.m.s. voltage output to the receiver is limited to approximately two volts.

The input voltage to the t.r. switch is stepped down to a safe value by means of a simple capacitive voltage divider. Obviously, greater received signal will result with low power transmitters than with high power transmitters, since the received signal applied to the t.r. switch is multiplied by the gain in the tank circuit and then diminished by the ratio of the capacitive voltage divider. With transmitters of 150 watts or less, the received signal applied to the t.r. switch may be increased by as much as 15 to 20 db. as compared with direct connection to the transmission line.

Circuit and Use

The resulting t.r. switch circuit diagram is shown in Fig. 1. The physical dimensions of the version shown in the photograph, excluding the tube, are $1\frac{1}{2} \times 1\frac{1}{2} \times 2\frac{1}{4}$ inches, so it is quite capable of being mounted in most transmitters. A Teflon-insulated feed-through terminal is provided for connecting to the plate-tank voltage divider, together with a simple fitting for attaching the RG-59/U coaxial cable that feeds the receiver.

The power requirements for the type 6AH6 tube are 6.3 volts for the filament and 100 to 150 volts d.c. at approximately 13 ma. for the screen and plate. This power is quite nominal and is generally available from the transmitter supply. In any event, the junk box surely contains the materials for the required supply.

The t.r. switch should be mounted as close to the plate tank as is practicable so that stray fields and ground currents will be minimized. For example, in the B & W Model 5100 transmitter a logical mounting is at the right between the multiplier and the front panel while in the B & W Model L 1000-A linear amplifier, a good spot is between the plate tank and the rear panel. Similar locations may be found in most other transmitters. The leads supplying power to the t.r. switch should be dressed away from any r.f. fields, and the shield of the RG-59/U cable feeding the receiver should be grounded to the transmitter cabinet at the point of exit.

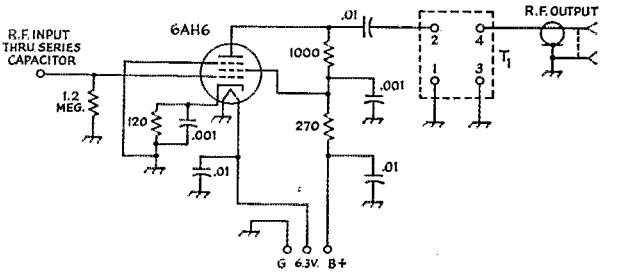


Fig. 1 — Circuit of the transmit-receive switch. Resistors are ½-watt composition; capacitors disk ceramic. Capacitances are in μf. See text for method of connection to transmitter tank circuit.
T_1 — Broad-band output transformer (Lynmar type TRS-1T).

The capacitive voltage divider for feeding the t.r. switch is composed of the t.r. switch input capacitance (about 10 μμf.) and a series capacitor for connection to the plate tank. A conservative value of the series capacitor for an a.m. plate-modulated final can be calculated by the following formula:

$$C\ (\mu\mu f.) = \frac{2500}{d.c.\ plate\ volts}$$

The series capacitance as calculated above may be doubled in value when the final is not modulated, as in c.w., grid modulation or in a linear power amplifier.

The series capacitance is generally less than 20 μμf. The capacitor should be of the low-loss variety and should be capable of withstanding the tank voltage. For plate voltages of 800 volts or less, the disk type ceramic capacitors have been found to be adequate. For greater voltages, an inexpensive capacitor may be fab-

(*Continued on page 160*)

A 200-Watt Balun Coupler for Center-Fed Antennas

Feeding Balanced Line from Pi Network

BY J. M. SHULMAN,* W6EBY

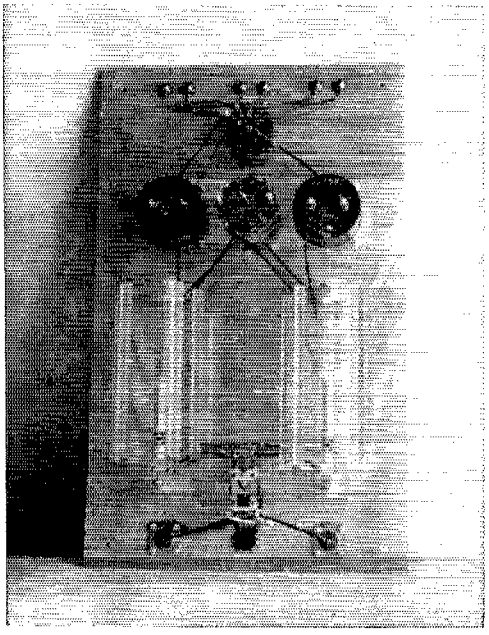
• In feeding a balanced antenna system, such as a half-wave dipole, from a pi-network output circuit, proper operation requires the use of some device for producing a balanced connection to the line from the unbalanced output of the pi section. This can be done with a link-coupled antenna tuner but the tuner requires adjustment. The balun coupler described here eliminates the need for tuning on any band. It can be switched to feed any one of three or more antennas of either dipole or folded-dipole type.

THE center-fed dipole antenna remains popular even in this "beam age" because it is simple and effective. Its driving-point impedance of approximately 75 ohms unfolded and 300 ohms folded make it a natural for feeding with 75- or 300-ohm Twin-Lead, or 300-ohm Ladder Line. It can be either horizontal or vertical with numerous possible supporting arrangements. Its main disadvantage is that it is good for one band only, and an easy way out of this limitation is to use more than one.

A second problem arises because the center-fed antenna system is balanced and the output circuit of most modern multiband transmitters is a single-ended pi network. How to get power from a coaxial line into a balanced line? Antenna couplers are one answer; balun coils offer another one — a preferable one if you want to eliminate additional tuning controls.

* 789 Garland Drive, Palo Alto, Calif.

Rear view of coupler panel which serves as mounting plate for all components. Panel is aluminum, preferably at least 1/16 inch thick.

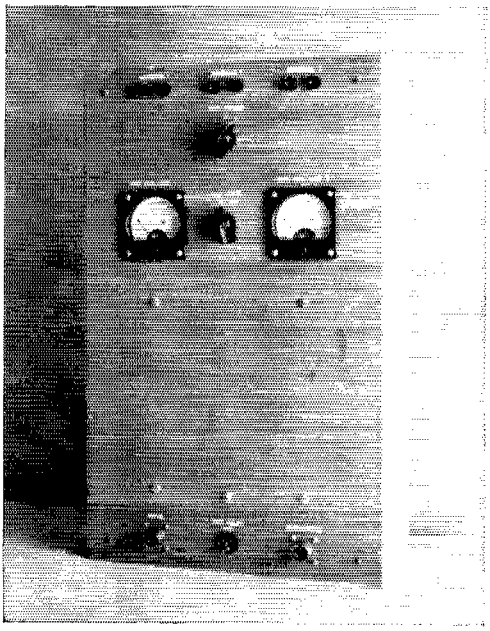


Characteristics

Balun-coil theory is outlined briefly in recent editions of the *Handbook*. The balun coil consists of two separate coils wound on the same axis, with the wires of each coil spaced to give a characteristic impedance Z_0 equal to twice the low impedance and half the high impedance to be matched. It might be described as a two-wire line wound into a coil and it retains the characteristics of the two-wire line even though lumped in a coil.

For parallel line currents, it acts as a choke, isolating one end from a ground connection at the other end. It is effective over a wide frequency

Front view of coupler mounted in a 16¼ × 10 × 4½-inch box. The box is made of ⅜-inch plywood and is mounted on a window sill directly below the entry point of the three balanced lines from antennas.



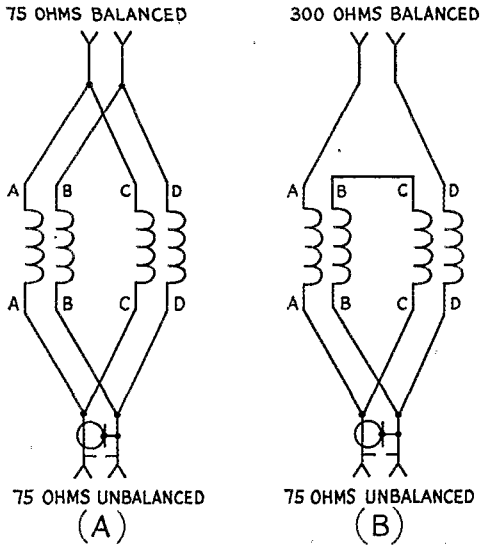


Fig. 1 — Basic circuits for connecting balun coils. (A) Both ends connected in parallel for matching 75-ohm coax to 75-ohm Twin-Lead line. (B) Balanced end connected in series for matching 75-ohm coax to 300-ohm Twin-Lead or Ladder Line.

range extending from the lowest frequency for which it is designed upward.

The balun coils now available are designed to couple between a balanced and unbalanced line over a range of 3.5 to 30 Mc. with a single set of coils. Antennas can be switched at the balanced-line end, and no tuning adjustments are required. The coil connections are shown in Fig. 1. Each coil can be thought of as a line with a characteristic impedance of 150 ohms. Connecting the lines in parallel at both ends matches 75 ohms unbalanced to 75 ohms balanced. Connecting the lines in series at the balanced end matches 75 ohms unbalanced to 300 ohms balanced.

Construction

Figs. 2 and 3 describe a balun-coupler unit designed to perform three functions: (1) select one of three antennas, (2) connect it to the balun coils in either 1-to-1 or 4-to-1 impedance ratio, and (3) relay-switch the unbalanced end of the baluns to coax lines going to receiver and transmitter. Although in this unit it was desired to switch only three antennas, there is space on the panel for two more sets of antenna jacks if five-band coverage is wanted.

As shown in Fig. 3, the arrangement of components and wiring is made so as to keep symmetry between the two halves of the line circuit from the point where the leads leave the selector switch, through the meters down to the balun terminals, so as to preserve balance in the system. It is desirable that the baluns be mounted on a metal plate at least 8 inches square although the coils need not be completely enclosed by metal shielding. The aluminum mounting plate also serves as the front panel.

Since it was desired to use the same antenna for both transmitting and receiving, the unbalanced end of the system is switched to two coax receptacles through a small relay. The relay shown is adequate for powers up to 200 watts and frequencies up to 30 megacycles. For higher frequencies or higher power, a coaxial-type relay would be preferable. A shielded 115-volt line terminating in a 3-pin miniature receptacle powers the relay and connects the shield to the panel through the male connector, J_8.

Balance

Meter readings during transmitting give an indication of whether the balanced end of the system is truly balanced, in which case the two meters read identically. With either horizontal or vertical dipoles having the line running a reasonable distance perpendicular from the center, the unit was found to give excellent balance. A check of the amount of unbalance which might be expected when coupling a Twin-Lead line directly to a pi-network transmitter output was made by connecting the leads from the meters to the transmitter coax receptacle, bypassing the baluns. The unbalance under this condition as indicated by difference in meter readings was

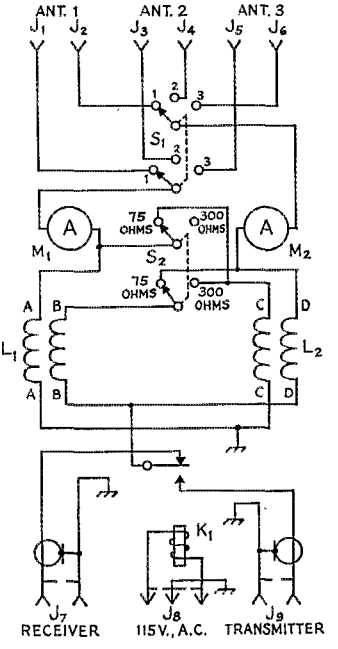


Fig. 2 — Circuit of the balun coupler.

J_1–J_6, inc. — Insulated banana jack.
J_7, J_9 — Coax receptacle (SO-239).
J_8 — Three-pin miniature male connector (Amphenol 86-CP-3S).
K_1 — S.p.d.t. relay, 115-volt coil (Advance AM/2C — 1 pole used).
L_1, L_2 — Balun coil unit (Air Dux B2009).
M_1, M_2 — 2-inch r.f. ammeter; 3-amp. for 75-ohm, 1.5 amp. for 300-ohm line at 200 watts r.f. output.
S_1 — Antenna-selector switch: bakelite rotary, 2 wafers, 1 pole per wafer, 3 positions (Centralab 1411).
S_2 — Series-parallel switch: bakelite rotary, 2 wafers, 1 pole per wafer, 2 positions (Centralab 1411).

10 per cent. The meters were included in this unit primarily to verify and check balance, and they could be omitted with the assurance that the line currents will be equal if the antenna itself meets the conditions of balance mentioned above.

Aside from the assurance of having good balance and minimum radiation from the feed line when using the balun coupler, a major operating advantage is that no antenna tuning adjustments are necessary when changing bands.

How does it work? This question will probably be on your mind before deciding to invest in a set of balun coils.

The other night, W6QPM, a few houses down the street, pushing 800 watts into a 3-element 14-Mc. beam 50 feet high, worked UA1OE and got a 559 report. A short while later, W6EBY, nursing 150 watts through the balun coupler into a vertical dipole, worked him and got the same report! Let us disregard the statistics on our relative ratios of worked/called and other such comparative data, and close the subject by saying that it *can* happen!

Acknowledgment is made to Mac Petersen, W6BIQ, and Les Worcester of Illumitronic Engineering Co. for their assistance.

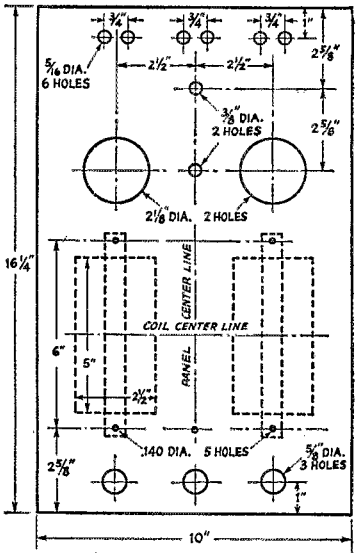


Fig. 3 — Panel layout of holes, showing dimensions of balun coils. Coil centers should be at least 4½ inches apart.

Strays

If you'd like to be an electronic technician in Alaska, at a salary of some $5000 to $5600 per year, CAA has some openings. For full details and application forms, write to The Executive Secretary, Anchorage Joint Board of U. S. Civil Service Examiners, Pouch 9, Anchorage, Alaska.

—···—

K2BDA and K2DPS were recently working two-meter mobile while parked along the edge of a road one dark night after a meeting of the Hamilton Township Radio Club, when a police cruiser pulled alongside to investigate. The officer, after being persuaded that all was OK, returned to the cruiser and was heard to tell his companion officer, "Phooey, they don't get music on their radio, either."

—···—

KN2ZHH had his first QSO four minutes after receiving his ticket from FCC.

—···—

K4CAP has his call letters prominently displayed at his front door. Recently a salesman came to the door and asked for Mrs. Kayforcap.

— *W8BYB*

»

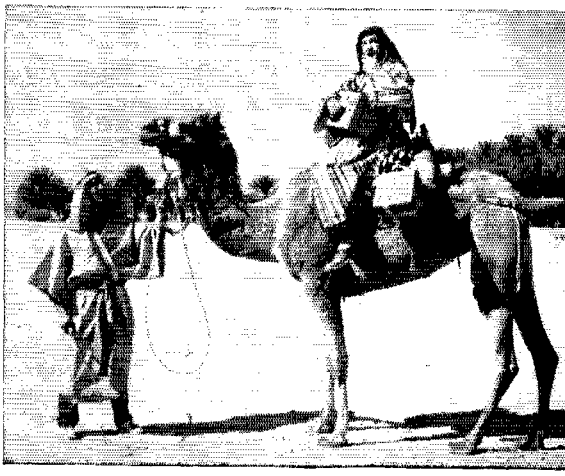
W5BVW/VO1 now has evidence that the air age is here. Two QSLs received by him on the same day were GM3*FLY* and W5*JET*.

—···—

What's in a call? K9DEN is a Den Chief of a Cub Scout pack. — *W9QGR*

—···—

Now in the States is 4X4CR, who would like visitors. His QTH: Moshe Fleisher, 131 Corbin Place, Brooklyn 35, N. Y.



The latest thing in no-ignition-noise mobiling is demonstrated by Bud Pearson, K6DXA/camel-in-motion. Bud was among the nine amateurs who set up the first amateur radio exhibit at the recent National Date Festival, Indio, California.

Quist Quiz

This simple wiring question was suggested by a problem submitted by KN6YAR.

Given three lamps and four single-pole switches, wire the lamps and switches so that switch *1* turns on lamp *1*, switch *2* turns on lamp *2*, switch *3* turns on lamp *3*, and switch *4* turns on all the lamps regardless of the conditions at switches *1*, *2* and *3*. Don't clutter up the circuit with rectifiers, relays or what-have-you; all you need is the above, some wire, and a voltage source.

—···—

The answer to last month's Quiz lies in the high internal resistances of the exhausted batteries. At very low current the voltage measurements were close to the no-load terminal voltages of the batteries. As the load was increased and higher current was demanded, the drop across the center battery (the current in the circuit times the internal resistance of the battery) exceeded the no-load terminal voltage. With the numbers shown, the internal drop must have been 7 volts, accounting for a measured voltage of −2 under load conditions (7 − 5 = 2).

June, 1932

. . . The lead article twenty-five years ago dealt with that perennial problem — greater selectivity for receiving. In this article James Lamb, then the technical editor of *QST*, discussed the various factors affecting selectivity and promised a constructional feature on a "single-signal" superhet in an upcoming issue.

. . . W9FJV told how to use a Ford spark coil as a vibrator in developing high voltage d.c. from 6-volt batteries.

. . . "Fun on Five Meters" outlined some of the simple gear that was being used on various field tests.

. . . The month's "lesson" was contained in an article by George Grammer on "The A, B and C of Amplifier Classifications."

. . . In Strays, W1BBJ suggested the use of aluminum pans for radio chassis, while another fellow, unidentified, thought that the *Handbook* should have aluminum covers which could be removed and used for shielding.

. . A DX contest was announced in which contestants would report only their 20 best DX contacts.

Strays

What's in a name? C. W. Ham, W4NYX, just made DXCC — on phone. And he lives on Beam St.

—···—

K6YRA is a member of the UCLA Radio Club — which is W6YRA.

DX Contest High Claimed Phone Scores

Based on logs received at ARRL through late April, the following are claimed scores in the 23rd ARRL International DX Competition of last February and March. More entries are en route, especially from overseas points. These, together with the intensive checking program now underway, will cause some changes. Figures indicate claimed score, multiplier, and number of contacts.

Single Operator

W2ATE	844,584	312	903
K2AAA	717,024	308	776
W6YY	426,930	214	665
W3MSK	398,286	218	609
W8BKP	322,875	205	525
W4OM	304,200	200	507
W3ECR	298,374	223	446
W9EWC	286,650	182	527
W6VSS	271,078	166	545
W8NWO	232,245	195	397
WØEDX	229,104	172	444
W4KWY	220,698	201	366
W8NXF	216,594	191	378
W4DQH	213,120	180	396
W8ZOK	200,725	155	433
W9NZM	187,312	184	340
W1ONK	180,334	154	393
W3GHS	179,180	170	352
W8BF	160,356	161	332
VE4RO	157,209	139	378
W1PST	131,616	144	306
W3ALB	129,861	141	307
W3HIX	116,983	131	299
W1BIH	114,816	128	300
K4CTU	107,442	127	282
W8DUS	99,432	136	229
W1FZ	83,570	122	229
K4LPW	82,215	105	261
W8AJW	79,677	117	227
W5KC	74,295	117	213
W9JIP	72,360	120	201
W3DRD	72,102	122	197
W9WKU	71,721	117	204
VE5VL	66,096	102	221
W9GIL	63,630	101	210
W5DQK	62,521	103	203
VE5RU	59,200	100	197
W5ALB	52,398	71	246
W9JYU	51,510	101	170
W8SDD	50,490	99	170
W1YQC	48,438	78	207
K9EWL	46,740	76	205
W8BTI	45,900	100	153
VE2JR	45,500	91	168
W3IMV	45,018	82	183
W2TQR	42,552	72	197
W1QWI	41,735	85	165
W9RBI	40,548	109	124
W1MXX	39,615	95	139
W9CSU	37,584	87	144
W1DLC	35,728	88	136
W3IYE	35,343	77	153
W6GUV	33,615	83	135
W2DMR	32,913	69	159
W9MBF	32,472	82	132
W6GEK	32,160	67	160
W1OGU	32,085	69	155
W1KKT	31,872	77	138
W9VZP	31,680	66	160
W8QAD	30,441	73	139

Multiple Operator

W3DHM	271,584	184	492
W8NGO	268,488	198	452
W3WQN	206,298	146	471
W3EBG	143,264	148	324
W3EQA	104,020	140	249
W4YHD	92,256	124	248
VE3DMT	84,656	104	272
W3KT	78,153	109	239
W3GRF	70,200	108	218
W3CUB	51,597	91	189
K6EXO	38,640	80	161
W3TMZ	33,033	77	143

Caught in the cross fire were these top-ranking competitors outside the U. S. and Canada:

Single Operator

KH6IJ	466,074	81	1918
KH6PM	157,182	67	782
F8PI	140,616	56	865
HH2RM	131,157	57	769
HC2BH	108,228	58	622
ON4OC	106,062	66	537
ZL1MQ	95,676	67	476
CT1PK	94,464	64	492
ZS5JY	89,802	54	559
ZS9G	88,992	48	618
EI5I	81,276	52	527
G3DO	80,288	52	515
KL7AZN	63,081	43	496
SVØWT	61,236	63	324
G3HJJ	51,948	52	334
I1ASM	47,799	47	339
OZ3TH	42,237	39	362
VP5DS	40,590	30	455
OH5QN	40,188	34	394
HI8SKE	40,128	44	304
XE1RE	40,071	37	361
ZE2KR	39,780	39	340
SM5WE	36,049	47	257
ZS5NZ	35,520	40	296
EA8CF	33,670	35	328
I1AMU	30,960	40	258
DL4SK	30,192	34	297
DJ2YL	29,280	32	305
KA2FQ	28,866	34	283
CO2HB	25,896	26	338
DL9MZ	24,428	31	265
OH3RA	23,040	40	192
VR2BC	22,923	27	283
G3COJ	22,788	54	141
ZS5OA	22,770	30	253
KP4DH	21,582	33	222
G2DYV	21,204	38	186
XE1QB	17,416	28	210
SM5AI	16,870	35	162
F8LE	16,380	26	210
OZ7BG	16,275	35	155
KA5ZS	14,850	22	225
PJ2MC	13,888	31	116
HB9RG	13,536	32	141
SM6BTT	13,338	27	166
EA3LI	12,975	25	173
VQ3ES	11,088	21	176
DL9SN	10,902	23	158
PA0VB	10,890	30	121
LA8WE	10,143	23	147

Multiple Operator

KH6CBP	435,672	72	2017
OA5H	395,199	81	1631
VP2VG	162,296	72	756
KH6AYG	141,284	44	1076

A c.w. preview next month. — *P. S.*

A One-Tube Two-Meter Rig with Transistor Modulator

Direct Frequency Control at 144 Mc.

BY R. J. SCHLESINGER,* K6LZM

• The frequency at which direct crystal control can be used has been rising steadily in recent years. Here we have a tiny r.f. section for use on 144 Mc. that employs crystal control at the operating frequency. Extremely low power consumption and freedom from radiation on unwanted frequencies are two of its advantages. A companion modulator using transistors enables the transmitter to deliver exceptional overall efficiency.

THE TWO-BY-TWO-INCH HANDFUL shown in the accompanying photograph is a complete r.f. section for a low-powered 144-Mc. transmitter. Despite its small dimensions, the rig is not a toy. It delivers enough power output for good communication around the Los Angeles area, and it has covered the 100-mile hop to San Diego on numerous occasions.

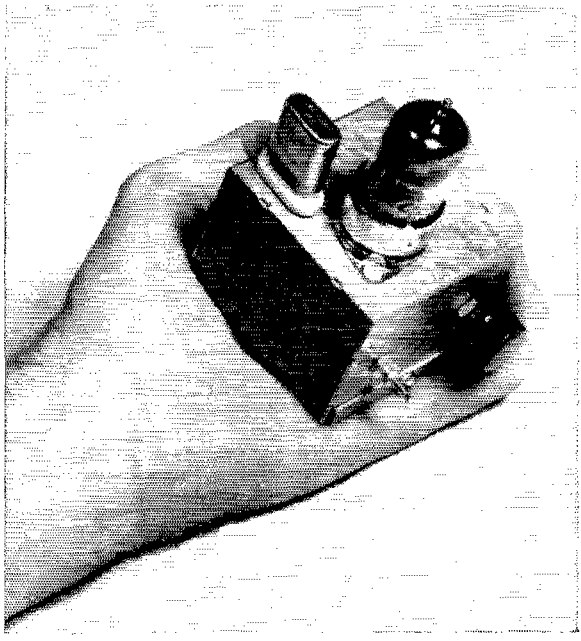
It incorporates two principal elements of novelty. One is the use of direct frequency control, with a 7th-mode overtone crystal. This does away with frequency multipliers, effecting a saving in power consumption, and greatly reducing the possibility of radiation on unwanted frequencies. The other item of special interest is the transistor modulator, shown in schematic form, Fig. 2. Though it was built for use with the tiny r.f. section described, it can be employed with any low-powered rig that requires about one watt of audio power for modulation.

Using 144-Mc. Crystals

The crystal oscillates on 144.8 Mc., using its 7th overtone. Crystals for this frequency are now made by several manufacturers, and are supplied for amateur use at about 9 to 10 dollars. This one came from the Midland Manufacturing Co., Kansas City. The oscillator is the triode portion of a 6U8, with the pentode section as a straight-through amplifier. The crystal operates in a series mode, presenting a high impedance in the cathode circuit at all frequencies except that at which it oscillates. At this frequency the cathode of the tube is effectively grounded for r.f., and the circuit functions as the familiar ultraaudion oscillator.

As the plate coil, L_1, is tuned near 144.8 Mc. the feedback will cause a rise in grid excitation. This can be observed as a sharp rise on the tuning meter, connected between the test point and ground. A meter with a range of about 3 volts will

*2024 MacArthur St., San Pedro, California.



Just a convenient handful, but it is a complete r.f. section for a 2-meter transmitter.

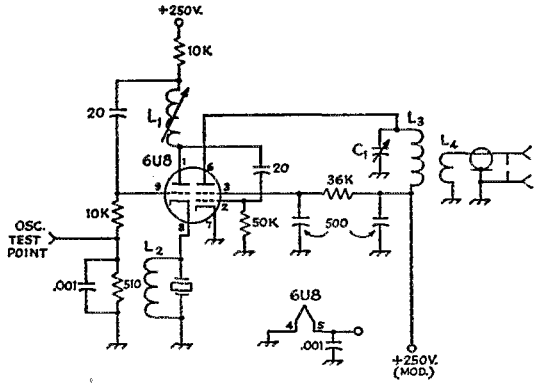


Fig. 1 — Schematic diagram of the one-tube 2-meter r.f. section. Capacitor values below .001 are in μf.
C_1 — 2.6 to 19.7-μf. miniature variable (Johnson 160-110).
L_1 — 0.17 to 0.27 μh., wound on 5/16-inch slug-tuned form (J. W. Miller No. 4301).
L_2 — 3 turns No. 20 on high-value half-watt resistor; see text.
L_3 — 3 turns No. 18, 3/8-inch diam., spaced wire diam.
L_4 — 2 turns adjacent to cold end of L_3.

give the best indication. Listen to the note on a communications receiver and converter, to be sure that the oscillation is crystal-controlled. If difficulty is experienced in finding a peak that is crystal-controlled, try varying the inductance of L_2 slightly. The function of L_2, in addition to providing a d.c. path in the cathode circuit, is to tune out the capacitance of the crystal and socket.

Once the oscillator is working properly, the final plate circuit, L_3C_1, should be tuned for maximum output. As there is only a slight indication of plate current dip, the best method of checking the tuning is to use some form of output indicator. The S meter on a communications receiver can be used, if the antenna is left off the converter in order to keep the signal from blocking the receiver. A grid-dip meter working as an output indicator also works nicely.

The Transistor Modulator

The modulator unit is shown schematically in Fig. 2. It should serve wherever up to about one watt of audio power is needed, when over-all drain is an important consideration. With the modulator hooked up as shown, the total current drawn from the 22½-volt supply is about 15 ma., and from the 12-volt supply about 125 ma. With an over-all drain of less than 2 watts, the modulator delivers 0.75 watt of useful audio power, a degree of over-all efficiency that cannot be approached with vacuum tubes.

The input transistor, Q_1, is operated grounded-base, allowing the carbon microphone to be connected directly between the emitter and ground. The emitter current provides excitation for the microphone. The 5000-ohm potentiometer, R_1, controls this and serves as a gain control. The operating point of Q_1 is fixed by the 200 and 4300-ohm resistors. The second transistor, Q_2, is operated with its emitter grounded. Both it and Q_1 are General Electric 2N107 PNP junction transistors.

The third stage uses a GE 2N170 NPN transistor, Q_3. The collector load in this case is the primary of the transformer, T_1. It and T_2 are small output transformers of the type used to couple a small audio pentode into an 8-ohm voice coil. Although the impedance match obtained with these is not ideal, their availability and low cost makes their use highly desirable. The 8-ohm voice coil winding of T_1 drives the base of a CBS 2N158 power transistor, Q_4. Its collector load is the 8-ohm winding of T_2. This allows the high-impedance side to be used to match the plate impedance of the r.f. output tube, the pentode section of the 6U8.

A point of caution in the construction of the modulator is to realize that the mounting area of the 2N158 transistor (and most other power transistors) is directly connected to the collector junction. This requires that the heat sink be electrically isolated from ground. One method of providing a heat sink with d.c. isolation is to mount the transistor on a copper or brass bar, which can be insulated from the chassis electrically by various means. Mechanical arrangement of parts is not important otherwise for an audio amplifier of this type, so it can be built in almost any form to suit one's individual needs as to final packaging.

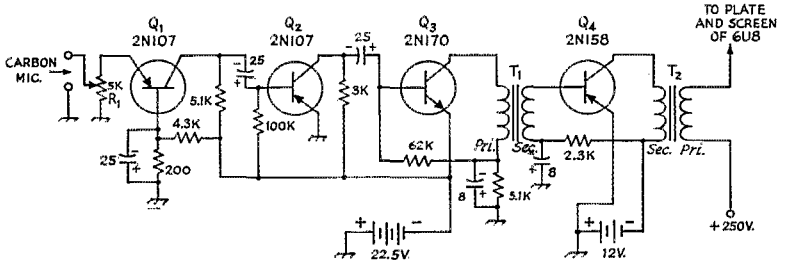


Fig. 2 — Transistor modulator for use with the low-powered two-meter unit. Capacitor values are in μf.
T_1, T_2 — Pentode to voice coil output transformer.

Mounting a Beam Antenna on a Telephone Pole

BY THOMAS BRYANT,* WØKLP

• **WØKLP describes a simple method of using standard pipe fittings to mount a rotatable array on a wooden pole.**

PROBABLY EVERY amateur has visions of owning a beam for his shack. That's the way I felt before I purchased a shiny new Tribander last fall. However, I soon found out that there is a lot more to getting the beam up in the air than meets the eye, and there were times when I almost wished that I had never thought of one.

An investigation showed that for moderate heights (30 feet or so, corresponding to an approximate half wavelength on 20 meters) a used telephone pole provides an inexpensive support. I obtained one from the local power company for ten dollars. An added advantage of the pole is that it is nonmetallic and self-supporting.

The problem of a simple mounting for the beam and rotator was solved by WØWIQ, who came up with the idea shown in the sketch of Fig. 1. It is made up entirely of 1½-inch pipe and standard plumbing fixtures.

Two holes 1½ inches in diameter must be bored in the pole with an expansion bit. These are to accommodate the two short sections of pipe that are used as supports. Care should be used in cutting these holes. The diameter of the pole where the upper hole is drilled should be at least 4 inches — preferably more. Before cutting the hole, the pole should be tightly wrapped with several turns of heavy galvanized wire, both above and below the drilling point. This is to prevent splitting. The expansion bit should be set a shade under the outside diameter of the pipe to provide a drive fit. It is important, too, that the holes run at right angles to the pole. This can be done most easily by lining up two points on opposite sides of the pole and then drilling halfway through the pole from both sides.

The proper position for the lower hole depends primarily upon how long you are going to make the rotating pipe mast. A general rule of thumb is to make the distance between the two pipe supports half the total length of the rotating mast. The lower hole should, of course, be lined up with the upper one as accurately as possible. After the upper pipe support is in place, a length of wire can be attached to it on each side of the pole, these wires to be pulled taut and used as guides in lining up the drilling points for the lower hole.

To provide a mounting for the C-D-R rotators of the popular types TR-2, TR-4 and AR-22, the lower support pipe is fitted with an elbow and a short length of vertical pipe to which the rotator can be clamped. To make sure that the torque of the motor does not unthread the short pipe from the elbow, the latter two should be spot-welded together.

A sleeve bearing is provided at the upper support pipe. A 1¾-inch "T" pipe fitting is used as the bearing. This is fastened to the 1½-inch support pipe by means of a 1¾-inch to 1½-inch reducing coupling. (Some plumbing shops may also carry a "reducing T" with the proper reduction between end and side openings so that the reducing coupling will not be necessary.)

The rotating mast that carries the antenna is a section of 1½-inch pipe. Care must be used in

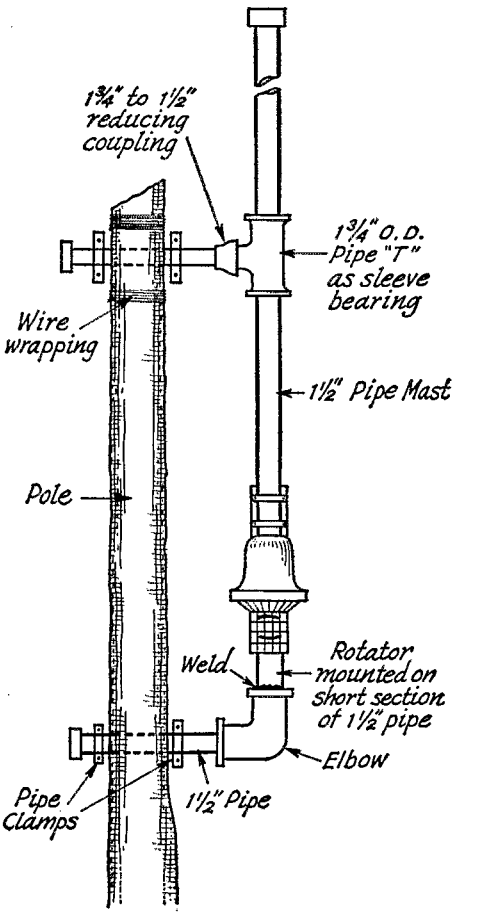


Fig. 1 — A simple method of mounting a beam and rotator on a telephone pole. All fittings are readily obtained at a plumbing shop.

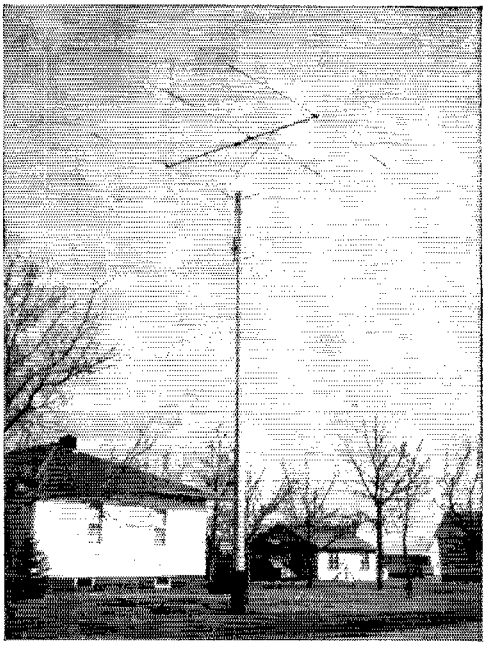
* Napoleon, North Dakota.

lining up the rotator and the bearing so that there will be no binding at the bearing. The pipe supports must be driven out far enough from the pole so that the rotating part of the rotator clears the pole. If the rotator is of the type whose mounting clamps are offset from the mast clamps, it will be necessary to drive either the top or the bottom support pipe out farther from the pole to compensate for the offset.

After the mast has been lined up, pairs of pipe clamps or U bolts can be used on both sides of the pole to keep the supporting pipes in place. It is a good idea to fit the supporting pipes and the top of the rotating mast with threaded caps to keep water and dirt out of the pipes.

The sleeve bearing should be packed with grease to provide lubrication. One way that this can be done is to force the grease in through the upper supporting pipe with a wood dowel.

Personally, I feel that this way of mounting a beam and rotator is easier, requires less use of profanity, and is perhaps less expensive than most other ways. It is now in use in two stations here in Napoleon and has been 100 per cent successful. It has withstood high winds, snowstorms, sleet, rain — everything, with no damage to the rotator or beam. The beams in use weigh over 50 lbs. and that's a pretty big structure. I hope that others trying this method of mounting will have the same satisfaction that I've had.



This beam support at WØWIQ makes a clean looking installation.

Strays

In last month's SS results one of our better contest operators commented on the business of sending words twice even when given an RS57 report. Sound logical? Then read over the following, quoted from an IRE news release. "The problem of sending coded messages as speedily as possible and yet with the least chance of error was discussed in a session on Information Theory. . . . The problem is analogous to trying to get a message across in a noisy room. Their investigation revealed that it is best for the sender to repeat the message twice without being asked rather than for the receiver to ask the sender to repeat the parts of the message he cannot understand, because a request for clearer information might also be misunderstood, resulting in greater confusion, and a waste of time and energy."

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The Samuel Gompers Vocational and Technical High School, 455 Southern Boulevard, The Bronx, is one of the public high schools in New York City, and offers a comprehensive curriculum in electronics. The principal, assistant principal, chairman of the Radio-TV department, and teachers are all hams. Anyone interested in the school's work or in gaining admission is cordially invited to visit it.

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Through the initial efforts of W8HSG and the generosity of W8FX, the Michigan Historical Commission in Lansing has established a permanent display of amateur equipment in the State Historical Museum. Other amateurs have since added to the original donation, so that it tells a rather complete story of amateur radio between 1912 and 1925. The director of the Museum, Dr. Eugene T. Petersen, would be interested in obtaining more radio gear of that era. In the photo at the right are shown W8AHV, W8PLP and W8OC looking over the attractive display. (Photo courtesy *The State Journal*)

New Life for CODAN

A Modernized Receiver Squelch Circuit

BY ROBERT G. THOMAS,* W3QZO

THE Philadelphia mobile calling frequency of 29.493 Mc. is monitored nearly twenty-four hours a day as one phase in the activities of the Phil-Mont Mobile Radio Club. For this service, most stations employ broad-band crystal-controlled receivers and, in many instances, remote operating positions in various parts of the house. Mobile calls can thus be answered immediately, regardless of what part of his home the fixed-station operator happens to be in at the time. These remote positions generally consist of a loud-speaker with attenuating pad, transmit-receive switch, and a microphone. They may be located in such places as the workshop, garage, dining area, and living room. One of the fellows has gone so far as to install a remote position at

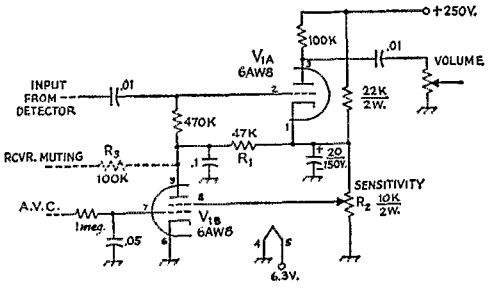


Fig. 1 — Schematic diagram of the Codan receiver squelch. Capacitances are in μf. The volume control shown at the upper right is the volume control ahead of the normal receiver output tube.

If desired, the receiver can be muted during transmit periods by grounding the left-hand side of R_3.

his back porch so he can "yak" and water the petunias at the same time!

Needless to say, the little woman would never tolerate remote rig controls scattered throughout her happy home if they all issued a monotonous stream of background noise. Most of them will reluctantly admit, however, that they like the normal chatter on the "party line" calling channel that we use, and only object to the intersignal noise. Even in cases where net receivers are operated normally (with a single speaker located right at the receiver) background noise soon promotes a "tin ear" and a tendency to turn the audio gain down, with the possibility of missing weak signals from calling stations.

The obvious solution is to incorporate a squelch system in the receiver, to eliminate audio output whenever signals are not being received. A variety of methods for accomplishing this are in use locally, including simple amplifier/relay combinations, a popular combined limiter and squelch,

* 1712 Bellemead Ave., Havertown, Pa.

• Codan is a useful operating adjunct to any fixed-tuned or communications receiver. In this article the author describes a simple and effective circuit that can be used in new gear or installed in existing equipment in place of the first audio stage. (In case you have forgotten, or never knew, "Codan" is the code designation for "carrier-operated device, anti-noise").

and the Codan circuit.[1] After reviewing each circuit and testing them under actual operating conditions for several weeks, it was concluded that the Codan arrangement offered considerable advantage over the others in performance, cost and space requirements. In addition, several improvements are possible that greatly enhance the attractiveness of the Codan squelch for fixed station use.

Operation of the circuit can be easily understood by referring to the schematic diagram, Fig. 1. V_{1B} operates as an electronic switch to turn an audio amplifier, V_{1A}, on and off. When signals are not being received, a.v.c. potential is near zero and V_{1B} conducts, drawing its plate current through the 47K plate load resistor, R_1. The voltage drop across R_1 is sufficient to cut off V_{1A}, preventing unwanted background noise from reaching the audio output stage. When a signal is received, negative a.v.c. voltage developed by the detector cuts off V_{1B}, and plate current no longer flows through R_1. V_{1A} will then conduct and amplify the detector audio output. The precise level at which the squelch opens is determined by the setting of the sensitivity control,

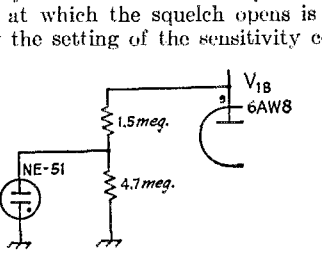


Fig. 2 — An optional addition to the squelch circuit that will furnish visual indication when a signal is received.

R_2, a 10K potentiometer in the screen circuit of V_{1B}. At one extreme in the setting of R_2, the screen voltage is quite high, necessitating a rather strong signal to develop sufficient a.v.c. to cut off V_{1B} and open the squelch. The other extreme exists with the screen grounded through the

[1] Ives, "Codan Elimination of Intersignal Noise," *QST*, October, 1952.

potentiometer, which cuts off V_{1B} and opens the squelch continuously, regardless of the absence of an incoming signal. Optimum setting is a point between these two extremes such that the squelch does not quite open on random low-level a.v.c. fluctations resulting from noise rectification while no signals are being received. With this adjustment, a signal one S unit above the noise will open the squelch and permit normal reception.

Recent advances in tube design have made available the 6AW-A, a miniature dual section type which will replace both the 6J5 and 6SJ7 used in the original circuit. The triode section of the 6AW-A has a high amplification factor and, as used here, provides an audio gain in excess of 50. This is more than enough amplification to drive the output stage with the low amplitude signal developed by the detector. The pentode section has the sharpest cut-off characteristic of any pentode available, and is therefore well suited for service here, where it must be turned on and off by small changes in a.v.c. generated by weak signals. Of course, the space occupied by a single 6AW-A is significantly less than that required by its two octal counterparts, resulting in an important advantage when compactness is a consideration.

The squelch circuit at W3QZO is built into a crystal-controlled monitor receiver. However, several possibilities exist for adding the squelch to an existing commercial receiver if desired. The simplest means is to construct the circuit in a small aluminum utility box that can be mounted on the back of the receiver or housed within the cabinet. Most receivers incorporate an accessory socket, and a compact plug-in squelch unit would be easy to add, especially since many accessory sockets already have a.v.c. and audio connections for n.f.m. adaptors. In areas where the noise level varies over wide limits during the day, readjustment of the sensitivity control will occasionally be necessary so that the squelch will react properly to weak signals but still prevent noise from breaking through. In such cases it is advisable to mount the sensitivity control where it is accessible. Of course, this is not a problem when the Codan is incorporated in a new equipment design. When the squelch is added to an existing commercial receiver, the sensitivity control may be accommodated on the front panel without drilling additional holes merely by converting an existing control to a dual concentric type that handles its original function in addition to squelch sensitivity. As an alternative, the sensitivity control can be mounted out of the way and set up so the maximum noise encountered will not open the squelch. The squelch will react normally to strong signals, and a conveniently located switch may be used to open the pentode cathode return and disable the squelch when it is desired to receive weak signals without disturbing the preset sensitivity adjustment. The latter procedure is most applicable in CD equipment where inexperienced operators might otherwise misadjust a variable control.

No special precautions need be taken in the construction of the Codan circuit other than avoiding excessive lead length and high temperature locations. It is preferable to use a high quality two-watt composition potentiometer for the sensitivity control, but if cost is an important factor, a wire-wound unit can be employed with a minor sacrifice in smoothness of operation. While the sensitivity control has sufficient range for nearly all cases, some receivers have such a high internal noise level on the higher frequency bands that they develop appreciable a.v.c. voltage even when not tuned to a signal. Because of this, it may not be possible for the squelch to cut off and eliminate noise in the output. The receiver limitation can be accommodated in the squelch circuit by putting a resistor of about 2K to 10K in the ground return of the sensitivity control, thus raising the screen voltage and requiring higher values of a.v.c. to open the squelch. The squelch will then function properly, but the fundamental problem of an inherently noisy receiver will still exist. Although the Codan circuit eliminates receiver noise and moderate amounts of impulse noise during intervals when signals are not being received, it is not intended to suppress impulse noise, and hence it must be supplemented by a conventional noise limiter at locations where interference of this type is bothersome.

One other point dealing with installation should be noted: Be sure that the a.v.c. voltage used to actuate the squelch not the delayed type, because if a.v.c. is used, the squelch will not operate properly on weak signals.

An effective means of muting the receiver during transmitting periods can be had by adding a 100K resistor, R_3, at the plate of the pentode, as shown in Fig. 1. The free end of the resistor is grounded through auxiliary contacts on the change-over relay, causing the triode section to cut off when transmitting. This completely silences the receiver with none of the contact arcing and thumps from the loudspeaker that generally accompany the method where receiver plate voltage is switched off.

Although not actually incorporated in the author's receiver, the novel visual signal indicator shown in Fig. 2 may be of interest to others. The NE-51 glow lamp conducts whenever a signal is being received, and is extinguished during no-signal conditions. The 6AW-A pentode plate voltage is used to provide an appropriate potential to the indicator dividing network. A visual indication of this type will help avoid missing a calling station if the volume control is unknowingly turned down, or if room noise is high.

Several of the local gang have used the modified Codan squelch described here with excellent results in various types of receivers. The small effort expended in its construction is more than repaid by a new operating convenience and the elimination of listening fatigue caused by incessant background noise.

A 500-Watt Audio System

4X250Bs Operating Class AB_1

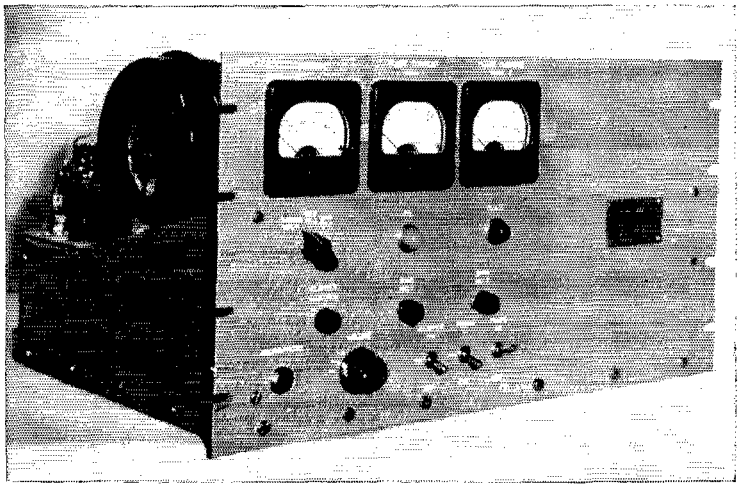
BY IRWIN R. WOLFE,* W6HHN

• A 500-watt Class B modulator with its rigid requirements as to driver-voltage and bias regulation can constitute a formidable undertaking. Such problems are eliminated in this AB_1 amplifier. The driving requirement of a peak grid-to-grid voltage of only 100 at zero current is easily furnished by a miniature tube through an ordinary voltage-amplifier transformer.

The article includes complete information on power supplies and control circuits.

NOT too long ago, I worked at a broadcasting station. The 500-watt transmitter there used a pair of WE-212D tubes in the final, modulated by four 212D tubes in parallel. For the benefit of the younger generation, a 212D is a triode just a bit larger than a two-quart wine bottle. It is rated for 250 watts of plate dissipation. In those days, there was only one kind of modulator — Class A — simple and inefficient.

Dissatisfaction often breeds progress. Some fellows wanted more than just 25 per cent efficiency. So Class B modulation was born during the early depression days. This doubled the efficiency. Part of the hot air surrounding the modulator tubes was now converted to speech, and the disgruntled were now content for the time being. Of course, there were the requirements of low-plate-resistance driver tubes, a rather special input transformer, and a low-impedance bias supply. But that was a small cry from the 25 per cent of the good (?) old days. As to compactness, the 4X250B is actually smaller than some Class B driver tubes. And, brother, a pair can really take it!



A 500-watt Class AB_1 modulator. From left to right at the top of the panel are the dual-range voltmeter and the two plate milliammeters. Immediately below are S_3, I_2 and I_1. In the next row below are controls for R_1, R_7 and R_8. Along the bottom are J_1, the gain control, S_2, S_4 and S_1.

price to pay for the increased efficiency.

Since the advent of high-power tetrodes, one need not go to Class B triodes to modulate a big final at high level. Tetrodes operating Class AB_1 will do the trick nicely with good efficiency. Since AB_1 operation is at zero grid current, no special input transformer or driver tubes are necessary. Any old bias supply you have around will handle the modulator grids.

The modulator unit described here comprises a complete audio system. It is built around a pair of 4X250B tetrodes that will deliver 500 watts of audio power as Class AB_1 modulators with a maximum input of 828 watts (1800 volts at 460 ma.). This efficiency of about 60 per cent is a far

*3467 Rambow Drive, Palo Alto, Calif.

Audio Circuits

The modulator circuit is shown in Fig. 1. The tube line-up starts with a 12AX7 high-μ dual triode in a two-stage resistance-coupled microphone preamplifier. The microphone connector J_1 is the three-terminal type that provides for push-to-talk power control. The gain control is in the grid circuit of the second stage. A pair of terminals is also provided for feeding a 500-ohm line to the unby-passed cathode of this stage.

The preamplifier output goes either to a 6AL5 clipper stage, or directly to the driver grid through a 3-kc. low-pass splatter filter. The selection is made by the d.p.d.t. toggle switch S_2. The clipping level is set by R_1.

One section of a 12AU7 is used as the modu-

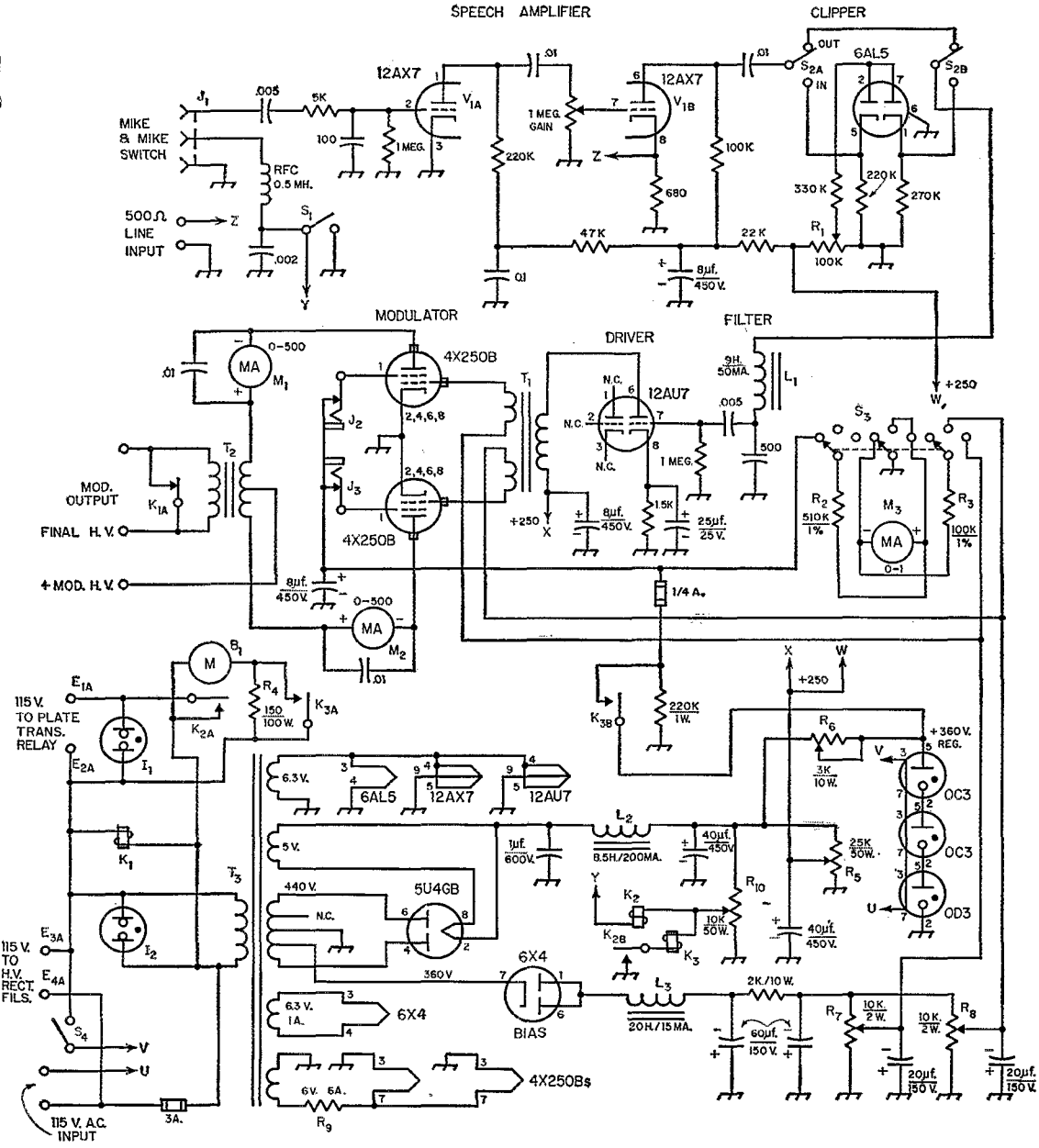
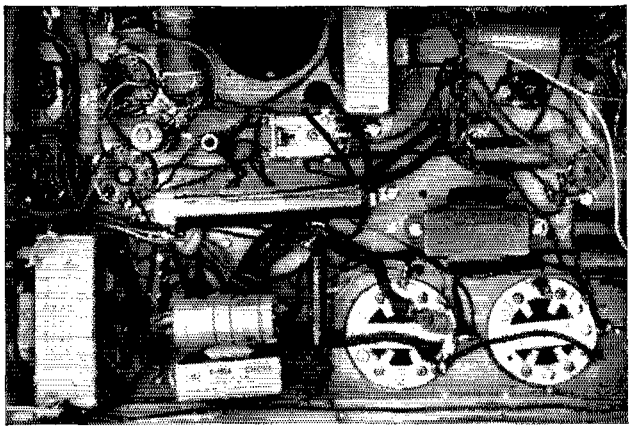


Fig. 1 — Circuit of the 4X250B modulator. All capacitances less than 0.001 μf. are in μμf. All capacitors marked with polarity are electrolytic. All other capacitors may be ceramic, mica or paper. All resistors are ½ watt unless otherwise specified. Similarly-lettered wires should be connected together. Relay armatures are in unenergized position.

Both sides of J_2 and J_3 carry screen voltage. They should have an insulated mounting and should be inaccessible to accidental contact. Meter plug should be well insulated and used with due caution.

B_1 — Ventilating blower (Dayton 1C180).
I_1 — ⅝-inch neon panel lamp, built-in 100K resistor, NE51 bulb, amber lens (Johnson 147-1144-4).
I_2 — Same as I_1, red lens (Johnson 147-1144-2).
J_1 — 3-contact push-to-talk microphone connector (Amphenol 80-PC2F or similar).
J_2, J_3 — Closed-circuit jack.
K_1 — Single-pole, normally-closed 115-volt a.c. relay, antenna change-over type (Advance AT/2C/115VA or similar).
K_2, K_3 — 2-pole normally-open 110-volt d.c. relay (Advance AM/2C/110VD or similar).
L_1 — 9-h. 50-ma. filter choke (Stancor C-1215).
L_2 — 8.5-h. 200-ma. filter choke (Stancor C-1721).
L_3 — 20-h. 15-ma. filter choke (Stancor C-1515).
M_1, M_2 — 0–500-ma. d.c. milliammeter (3½-inch rectangular).
M_3 — 0–1-ma. d.c. milliammeter (3½-inch rectangular).
S_1 — S.p.s.t. toggle switch.
S_2 — D.p.d.t. toggle switch.
S_3 — Single-wafer 3-pole 3-position rotary switch, non-shorting (Centralab 2507 or 1407).
S_4 — S.p.s.t. 15-amp. toggle switch.
T_1 — Multipurpose interstage transformer, ratio 1:3 (total secondary), step up, split secondary (Stancor A-4774).
T_2 — 600-watt multitap modulation transformer (UTC CVM-5).
T_3 — Power transformer: 880, 720 volts c.t., 200 ma.; 6.3 volts, 8 amp.; 6.3 volts 1 amp.; 6.3 volts, 3 amp.; 5 volts, 3 amp. (Triad R-26A).
R_1 — 2-watt potentiometer (Ohmite CU1041).
R_5, R_6, R_{10} — With adjustable slider.
R_7, R_8 — Wire-wound potentiometer.
R_9 — See text.



Bottom view of the 500-watt modulator through the access opening. The driver transformer T_1 is above the two 4X250B air-system sockets. Audio filter choke L_1 is to the right of the blower exhaust opening. Power-supply filter chokes are at the lower left. The large resistor near the center is R_4 and the relay above is K_3. Relay K_2 is out of sight in the upper right-hand corner, near the microphone connector J_1.

lator driver. (A 6C4 would serve equally well here, but we thought we might have future use for the spare triode section, perhaps in a.v.c. application.) An inexpensive transformer, T_1, couples the driver plate to the modulator grids. This transformer has separate secondary windings so that independent bias adjustment can be made for each modulator grid.

The modulation transformer used is the multimatch type so that adjustment can be made for proper modulator loading. The primary and secondary windings are each rated at 500 ma. and that adds up to plenty of iron and copper — about sixty pounds of it!

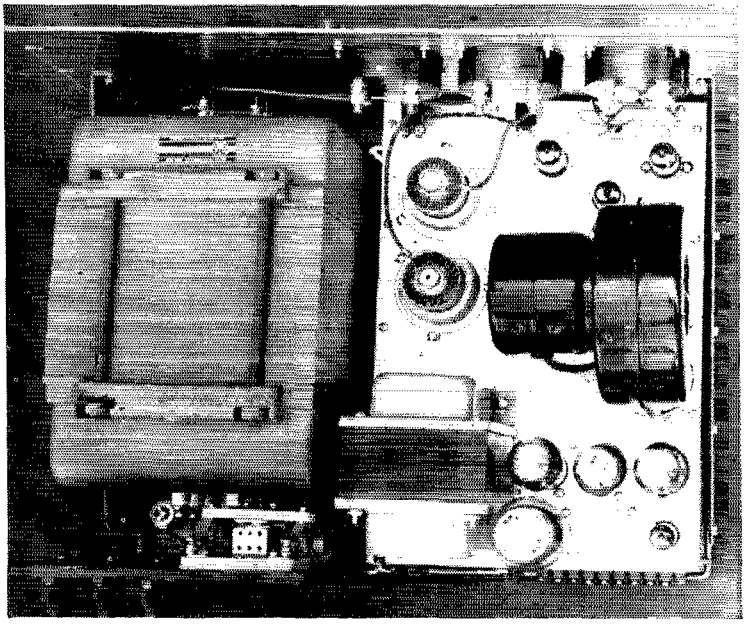
Bias and Screen Supply

Included on the chassis is a power unit that supplies adjustable grid bias and regulated screen voltage. The power transformer T_3 has enough filament windings to take care of requirements.

A voltage divider, R_5, across the output of the screen supply provides a 250-volt tap for the speech-amplifier tubes. Modulator screen voltage is regulated at 360 volts by three VR tubes in series. The VR limiting resistor R_6 should be adjusted so that the VR tubes draw about 40 ma. with no screen current to the modulator. The ¼-amp. fuse in the screen circuit is important in protecting the screens in case of failure of the plate supply.

The 6X4 half-wave bias rectifier operates from a 360-volt tap on the transformer. The biasing voltage for each modulator tube can be adjusted by a potentiometer (R_7 and R_8) across the output of the bias rectifier. The filtering in both bias and screen supplies is adequate to remove every trace of ripple.

The 4X250B has a heater rating of 6.0 volts. For maximum tube life it is advisable to drop the voltage from the transformer to this value. I used a series resistor, R_9, of $\frac{1}{20}$ ohm made by coiling a 5-inch length of No. 16 Manganin (or



Top view of the 4X250B modulator. At the rear of the chassis are the power transformer T_3, the two rectifiers, one of the filter capacitors and the three VR tubes. In front of the blower are the two speech-amplifier tubes and the 6AL5 clipper. The panel to the rear of the modulation transformer carries the modulator-output and high-voltage connectors and the shorting relay K_1.

Advance) resistance wire. The voltage should be checked at the tube socket, since your line voltage may be low and the series resistor not needed.

Metering

Separate milliammeters are installed in the plate leads of the two modulator tubes so that the individual plate currents can be monitored.[1] Jacks J_2 and J_3 are provided for plugging in a milliammeter to check the screen current to each tube.

M_3 with series resistors R_2 and R_3 form a dual-range voltmeter for checking screen and biasing voltages. With S_3 in the first position (full counter-clockwise) the full-scale meter reading is 500 volts for checking screen voltage. With S_3 in either the second or third positions, the full-scale reading is reduced to 100 volts for checking biasing voltages.

Ventilation

The external anodes of the 4X250Bs require a draft of about 7 c.f.m. to keep them healthy. This is provided by a low-speed low-noise low-priced squirrel-cage-type blower B_1. This blower supplies more than adequate ventilation for the tubes, but it is a good idea to have a margin to take care of the additional dissipation of the speech tubes, transformers and the several resistors.

It was not without some qualms that the blower was mounted on the same chassis as the preamplifier. As a precaution, the 12AX7 was shock-mounted with small rubber grommets to minimize vibration from the blower motor. Apparently, my fears were ungrounded (although the blower motor was), since any noise that may be picked up is submerged in the microphone noise level. Blower noise is eliminated under stand-by conditions by inserting R_4 in series with the motor to reduce its speed.

[1] If the meters are the metal-case type, they should be recess-mounted as a safety measure.

High-Voltage Supply

Fig. 2 shows the circuit of the high-voltage supply used with the modulator. It is conventional with a single-section choke-input filter. Output voltage is read on M_4. Terminals E_1 through E_4 are connected to similarly-numbered terminals on the modulator unit.

The plate transformer (T_4) used in this supply has a dual primary. It can be operated from a 230-volt line by connecting the primary windings in series as shown, or from a 115-volt line with the primary windings connected in parallel. With the 230-volt connection, reduced power is obtained by switching the 230-volt primary to 115-volt input, as shown in Fig. 2. With 115-volt primary input, the same reduction can be obtained by switching the primary windings to the series connection.

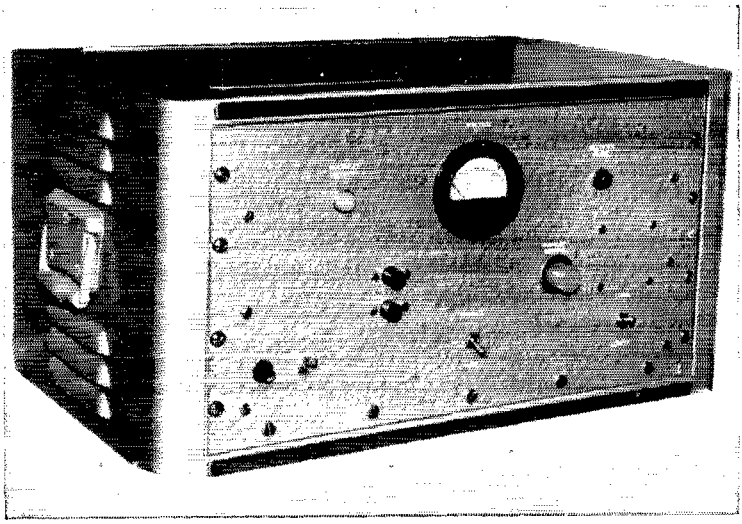
Control Circuits

I suspect that a glance at the diagrams will convince the reader that I own huge amounts of stock in a few relay-manufacturing concerns, and how I wish you were right. Nevertheless, a good control system is a wise investment when anyone contemplates the installation of a high-power phone transmitter.

S_4 is the main control switch for the audio unit. I have labeled this switch PHONE/C.W. because it not only turns on T_3 and T_5 (through terminals E_3 and E_4) to ready the modulator and its power supplies for phone operation, but it also actuates K_1 which removes the short (K_{1A}) across the modulation-transformer secondary. This short is necessary, of course, for c.w. operation. The closing of S_4 is indicated by the lighting of I_2.

S_1 is in parallel with the microphone push-to-talk switch, and either switch may be used to actuate K_2. Contacts K_{2A} supply a.c. to the plate-transformer relay K_4 (in the power-supply unit), simultaneously turning on I_1. Contacts K_{2B} actuate K_3.

Contacts K_{3A} short out R_4, bringing the blower speed up to normal. Contacts K_{3B} apply screen



The enclosure for the high-voltage supply matches the one for the modulator. I_4 is to the left of the voltmeter, and I_3 to the right. Below are the two push-button switches S_8 and S_9, and the control for R_{11}. Near the bottom of the panel, S_6 is at the center, S_5 is to the left and S_7 to the right.

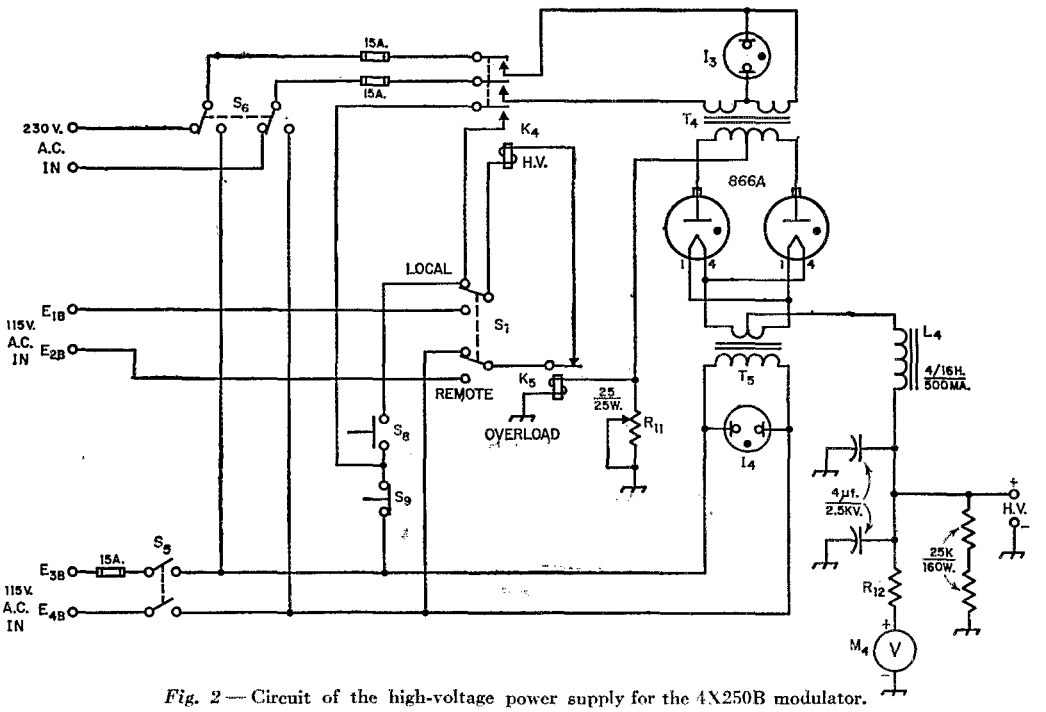


Fig. 2 — Circuit of the high-voltage power supply for the 4X250B modulator.

I_3 — 5/8-inch neon panel lamp, built-in 100K resistor, NE51 bulb, red lens (Johnson 147-1144-2).
I_4 — Same as I_3, amber lens (Johnson 147-1144-4).
K_4 — 3-pole normally-open heavy-duty power relay (Allen-Bradley Bulletin 700B300, Potter-Brumfield MR14A, Advance PC/3C/115VA).
K_5 — S.p.d.t. 6-volt d.c. relay (Advance PC/1C/6VD).
L_4 — Swinging choke, 4–16 h., 500 ma. (Stancor C-1405).
M_4 — 0–1-ma. d.c. milliammeter, 3½-inch round or rectangular.
R_{11} — 25-ohm 25-watt wire rheostat (Ohmite H-0147).
R_{12} — Two 1-megohm 2-watt 1 per cent and one 500K 1-watt 1 per cent resistors in series.
S_5, S_6 — D.p.d.t. 15-amp. toggle switch.
S_7 — D.p.s.t. toggle switch.
S_8 — Push-button switch, momentary-contact normally open.
S_9 — Push-button switch, momentary-open normally closed.
T_4 — Plate transformer: 2000 volts, 500 ma. (Electro Engineering Co. 5017).
T_5 — 2.5-volt 10-amp. filament transformer, 10-kv. insulation (Stancor P-3060).

voltage to the modulator tubes.

Since the control wire for K_2 must parallel the microphone line to get to the push-to-talk switch, it is advisable to operate this relay from a d.c. source to avoid hum pickup. In this case, the d.c. is obtained from a tap on the voltage divider R_{10}. K_3 is operated from the same source. The tap on R_{10} should be adjusted to the minimum voltage at which K_2 and K_3 will close reliably.

To summarize, S_4 puts the modulator in standby condition; S_1 (or the push-to-talk switch) applies plate and screen voltages, and speeds up the blower motor.

In Fig. 2, S_5 is a local switch applying power to T_5 and lighting I_4 when S_4 (in the modulator unit) is closed.

S_7 switches between local and remote control of the power relay K_4. In the local position, momentary closing of S_8 operates K_4, applying power to the plate transformer and lighting I_3. The third set of contacts on K_4 shorts out S_8 to hold the relay closed until the relay coil circuit is opened by momentarily operating S_9.

With S_7 in the remote position, K_4 is operated by S_1 (in the modulator unit), or the push-to-talk switch, which closes K_{2A}, applying power to K_4.

K_5 is an overload relay whose coil is connected between the high-voltage center tap and ground. When the current drawn from the supply through K_5 exceeds the value for which the shunting resistor R_{11} has been set, the contacts of K_5 open, breaking the coil circuit of K_4 and turning off the high voltage.

S_6 switches the primary of T_4 to the 115-volt line for reduced power.

Construction

Most of the constructional details are shown in the photographs. To support the weight of the modulation transformer and other components, a length of 1 × 1-inch iron angle stock was bent and welded into a 14 × 17-inch rectangle. This is fastened along the bottom edge of the 10½-inch rack panel using ¼-20 bolts. Bracing is provided by chassis brackets at the ends. A ⅛-inch aluminum sheet was cut to fit into the rectangle to form a base.

Most of the components are mounted on or housed within a 9 × 13½ × 3¾-inch chassis made of 1/16-inch aluminum sheet and ½-inch aluminum angle stock. An 8 × 10½-inch cutout in the aluminum base provides convenient access to the chassis bottom without removing the chassis. A 9 × 11½-inch aluminum plate covers this opening.

When the chassis is buttoned up, the air from the blower, discharging through a hole in the top

of the chassis, can escape only through the air-system sockets (Eimac SK-610) in which the 4X250Bs are mounted. If a cabinet is used, a 3-inch hole should be cut in the top cover in the area directly above the tubes. This hole can be covered with perforated metal.

A.c. connections are made at a terminal strip mounted on the rear edge of the chassis.

Behind the modulation transformer, a 7⅜ × 9¾-inch panel of ¼-inch phenolic material is fastened to the angle-iron frame. This panel carries three Millen high-voltage connectors type 37001. Two of these are the modulator output terminals; the third is the modulator high-voltage input connector. This panel also carries the shorting relay K_1. The metering jacks J_2 and J_3 are mounted on an insulating panel at the rear of the chassis. These jacks should be mounted in such a manner as to make accidental contact impossible. Also, the meter should never be plugged in unless the power supply has been turned off.

The high-voltage power-supply chassis is of similar dimensions and constructed in the same manner.

Operation

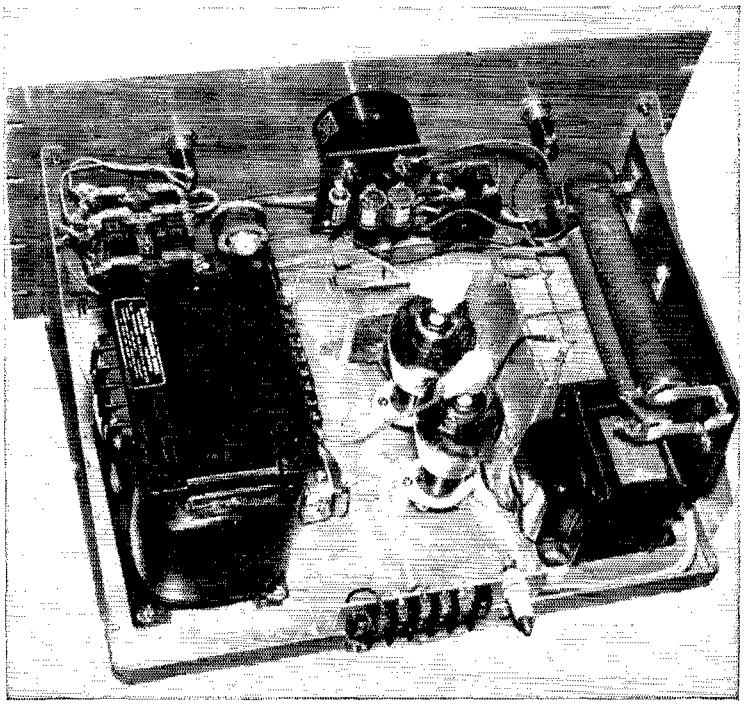
As mentioned earlier, R_6 should be adjusted so that the VR tubes draw 40 ma. with K_{3B} open. The 4X250B is rated for a maximum screen dissipation of 12 watts. Therefore, when the screen voltage is 360, the maximum screen current should not exceed 33 ma. for each tube. However, it has been determined experimentally that there is no increase in undistorted output or efficiency at screen currents above 15 ma. per tube at a screen voltage of 360 (5 watts). A total screen current of 30 ma. (for both tubes) was found to give optimum operation. When the allowable modulator input is exceeded, the screen current will rise above this value and the VR regulators will lose control. The screen voltmeter can therefore be used as an indicator of excessive screen current. The audio gain control should be adjusted to just below the point where the voltmeter begins kicking downward as you modulate.

The preamplifier has sufficient gain to operate from any of the low-level crystal or dynamic microphones. The over-all frequency response is rather good without the low-pass filter (clipper switched out). However, the filter reduces the effective band width to 3 kc. at 6 db. down. The modulator output was measured quite carefully. At a plate voltage of 1900 and a peak signal current of 470 ma., 542 watts of audio power was measured. A monitoring oscilloscope showed no visible distortion of a sine wave at the input.

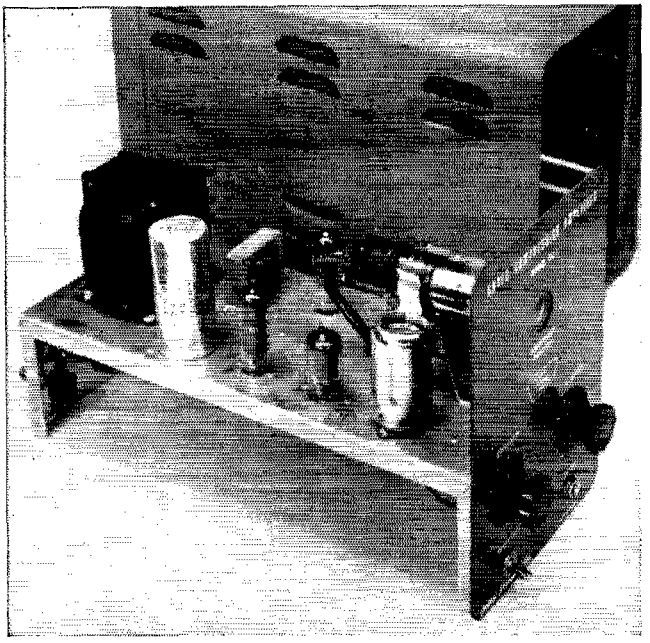
The unit has been in operation for several months and has performed well. There is no appreciable heat rise in any of the components after many hours of testing and operation. The modulator has been used to plate modulate 100 per cent a pair of 4-400As running at a brimming kilowatt input. The audio quality reports have been very complimentary. Most of the time the clipper and filter are in the circuit, and the signal still sounds good.

Overloading is carefully avoided by watching the screen voltmeter for any sign of screen overload. The clipper adjustment can be set to minimize overdrive.

The other day I was thinking of that old four-tube 500-watt modulator at the b.c. station and it suddenly occurred to me that the Heising modulation choke we used there was almost twice as big as this modulator!



High-voltage plate supply for the 500-watt modulator. K_4 and R_{11} are between the high-voltage transformer and the panel. The voltmeter multiplier resistors are mounted on an insulating panel suspended from the meter terminals. S_8 and S_9 are to the right of this panel. The bleeder resistors are fastened to an insulating panel at the right, above the filter choke and capacitors.



Cabinet dimensions of the Model GC-1 Gated Compression Amplifier are 6 inches wide, 9 inches high, and 14 inches deep. An audio amplifier with automatic gain control and integral power supply, the unit can be used with any receiver without making any internal connections.

Model GC-1 Gated Compression Amplifier

THE GC-1, a Central Electronics product, is an audio amplifier with automatic gain control, its rated control characteristic being such that the output level will be held constant within 3 db. for input-signal variations of the order of 40 db. The control threshold is 0.1 volt at maximum sensitivity. The final output tube, a 6AQ5, delivers sufficient power for loud-speaker operation through the output transformer incorporated in the unit. Power supply is also included.

In the amateur field, the principal application of the GC-1 is to hold the audio output of a receiver essentially constant despite the widely varying levels of received single-side-band signals. (Only a few of the current receivers have conventional-type a.v.c. systems that are suitable for this purpose.) No modification of the receiver is required; the input terminals of the GC-1 connect to the speaker output terminals of the receiver and the speaker voice coil terminals connect to the output of the GC-1. A control is provided for setting the speaker output at the desired level. A 6E5 tube is included to give a visible indication of compression.

An accelerated form of gain control is achieved through the use of a variable threshold or "gate." The circuit is shown in Fig. 1. A suitable amount of audio voltage from the output stage is taken from a special winding on the output transformer through the voltage divider R_1 and applied to the compression rectifier, which in the GC-1 is one section of a 12AX7 with the

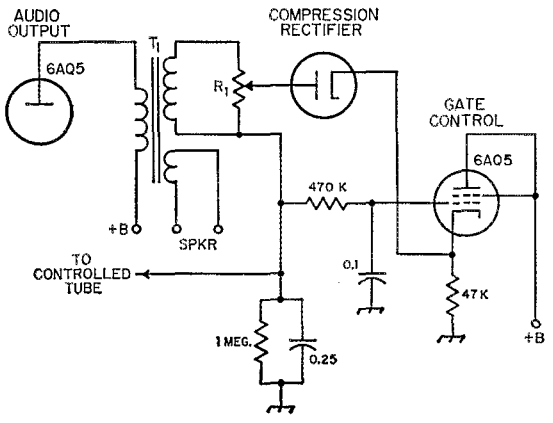


Fig. 1 — Compression circuit used in the Model GC-1. The a.v.c. voltage is applied to the Nos. 1 and 2 grids of a 7B8 (Not shown in this diagram).

grid and plate tied together (the other section is used as the audio voltage amplifier). The rectifier cathode is given a positive bias by the voltage drop across the 47K resistor in the cathode circuit of the 6AQ5 "gate-control" tube, and thus there is no conduction through the rectifier until the audio voltage exceeds the bias. When this occurs, the rectified current develops a negative voltage with respect to chassis across the 1-megohm resistor. This voltage is applied to the control tube, a 7B8, to reduce its gain, and also is applied through the 470K-0.1 *RC* network to the grid of the 6AQ5. The negative bias on the 6AQ5 reduces its plate current and thus reduces the drop across the 47K cathode resistor. As a result the compression rectifier begins conducting at a lower audio voltage, the over-all effect being to amplify the control action so that the gain of the 7B8 is reduced very rapidly when the signal level rises above the threshold. The a.v.c. time constant is set by the 1-megohm resistor and 0.25-μf. capacitor, while the *RC* network in the grid circuit of the gate-control tube determines the rate at which the variable gate goes into action.

The GC-1 no doubt could be used as a compression amplifier in a regular transmitter speech-amplifier chain. Enough preamplification should be provided to bring the microphone level up to a volt or two for operating the a.v.c. system.

— *G. G.*

The Cesco Standing-Wave Reflectometer

THE Cesco Standing-Wave Reflectometer Model CM-52 is designed to measure standing-wave ratios in 52-ohm coaxial cable. It is the type of s.w.r. indicator that can be permanently installed in the transmission line, since it will handle power inputs up to 1000 watts. The frequency range over which the meter can be used is 3 to 200 Mc. A 0–100 microammeter calibrated directly in s.w.r. is used as an indicator.

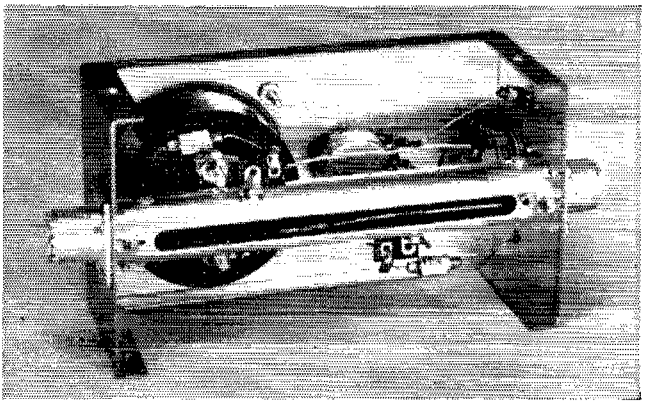
The Cesco reflectometer operates on the same principles as the Monimatch — i.e., a bridge using mutual inductance and capacitive coupling between linear conductors.[1] A 5-inch length of aluminum tubing is used as the outer conductor and a ¼-inch diameter tube as the inner conductor of a coaxial line. The two linear inductors of the bridge, along with the terminating resistors, are enclosed in the aluminum tubing.

A normally-open push-button switch is used to shift from reflected-power to forward-power readings. To read standing-wave ratio the switch first is closed and a potentiometer is adjusted to set the indicator reading to full scale. Then when the switch is released the s.w.r. can be read directly on the meter. If it is desired to use the meter as an output indicator the switch can be held closed by a plastic cap nut.

The complete reflectometer is housed in a gray Hammertone box which measures 5 inches long, 3 inches wide, and 2⅛ inches deep. As shown in the photograph, the coaxial line assembly runs the length of the box between the two coax fittings. The pick-up wire is just visible through the slot in the outer conductor. A cover plate is used to close the slot in normal operation.

— *L. G. M.*

[1] Norgorden, "A Reflector for the H.F. Band," *NRL Report 3538*.
McCoy, "Monimatch Mark II," *QST*, Feb., 1957.



A rear view of the Model CM-52 with the cover removed. The 0–100 microammeter and the potentiometer for setting the indicator to full scale are mounted on the front of the box. The unit is normally mounted vertically, with the meter at the top.

Strays

K9EFH suggests that those who are operating break-in will be interested in the Biblical reference Isaiah 65: 24.

Quite by chance, K2KEW mobile on 2 meters worked K2TSP mobile on 6 meters. It turned out that K2TSP was directly in front of K2KEW.

A "Wonder" on 20 Meters

Loaded Dipole with Fanned Conductors

BY RALPH ROSENBAUM,* W5ECP

• Impressed with the compactness and simplicity of the 10-meter "Wonder-Bar" antenna described by K6OFM in an earlier issue, W5ECP has extended the principle to the 20-meter band with convincing results.

IT WAS IN THE WEE HOURS of a cold December night that an excited call from W5KF aroused my interest. "Say, Ralph, what would be the results if we cut K6OFM's 'Wonder-Bar'[1] for twenty meters?"

Thus one Saturday afternoon the antenna was raised. So well did the "Wonder-Bar" perform with 12 watts input that this article was written.

The "Wonder-Bar" is a simple center-loaded dipole with fanned conductors. Two advantages are noted. The first is that the fanning of the conductors produces a broad band width; the second is that the antenna, as used by K6OFM, is one half the length of a standard dipole. A week end and only fifteen dollars will make the antenna, complete with coax and mast.

Construction

For each bow, two 8-foot lengths of ¾-inch lightweight aluminum tubing were used as radials. Electrical conduit or thin-wall steel tubing may be substituted. It was felt that tubing smaller

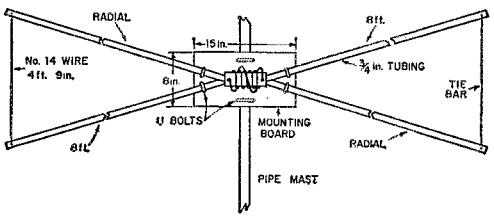
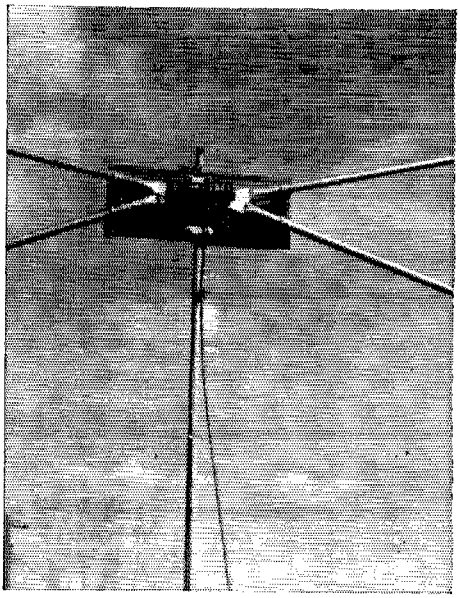


Fig. 1 — Sketch showing the dimensions of the "Wonder-Bar" antenna for 20 meters.

than ¾ inch in diameter would bend near the tie bar under wind stresses. The larger-diameter tubing should also improve the antenna bandwidth characteristics.

After the tubing or conduit is cut to 8-foot lengths, one end of each piece is flattened in a vise for a length of 2 inches. One half inch from the opposite end a hole is drilled for an 8-32 machine screw. A heavy solder lug is then bolted to the rod through the hole.

A varnished board, ½ by 8 by 15 inches, is used as the center support. Two radials, which make up one bow, are placed on the board so that the flattened ends of the radials overlap each other. The place of overlapping is located on the midline of the board 5 inches from the end. The free ends of the radials are spread so that the ends are five feet apart. Holes for U clamps are drilled close to the end of the board.



The radials of the 20-meter "Wonder-Bar" are clamped to the mounting board by means of U bolts. The loading coil and coupling link are at the center.

A hole is drilled through the center of the two overlapping ends and continued through the board. A 3½-inch bolt is passed through the wood first, and then through the rods, clamping the end of the bow securely to the board. A lock washer is used under the nut, and a large flat washer under the bolt head, next to the wooden surface. Tighten the bolt firmly to assure good electrical contact between the two radials. The remaining length of the bolt is left so that a coil form can be mounted. The same method is used for the construction of the other bow. If high power is used, it is suggested that six stand-off insulators be used in place of the four U bolts and two long bolts.

To economize, No. 14 wire, 4 feet 9 inches long, is soldered between the already-mounted solder lugs. Tension produced by the lack of 3 inches of No. 14 wire adds rigidity.

* 530 Lafayette Place, N.E., Albuquerque, New Mexico.

[1] Bishop, "The 'Wonder-Bar' Antenna," *QST*, Nov., 1956.

Loading Coil

A 5-inch spacing between bows was left for the coil mounting. Thirty turns of No. 12 plastic-covered wire are close-wound on a 1¼-inch-diameter Lucite form, 6 inches in length. A hole is drilled at each end of the winding, and a 1-inch stand-off insulator is bolted to the form at each end. The coupling coil consists of 5 turns of No. 12 wire wound on a 2-inch diameter and centered over the loading coil. This coil is fastened to the stand-offs, along with the 52-ohm coaxial feed line (RG-8/U or RG-58/U). The ends of the form are drilled so that the extensions of the bolts which clamp the intersection of the radials will pass through the ends. The Lucite form, together with the ends of the 30-turn coil, are then fastened in place with an additional pair of nuts. The resulting antenna cost four dollars!

Any convenient technique may be used for mounting the antenna. If a pipe is used as a mast, the board may be simply clamped to the pipe with U bolts. You can give the antenna a paint or lacquer finish.

Only 13½ turns were needed to resonate the experimental antenna at 14.15 Mc. The other 17 turns are shorted. Fewer turns could probably be used on the main winding, say 15 to 20, and still allow ample latitude for adjustment. S.w.r. measurements show that the number of turns is quite critical, so trial and error will have to determine the position of the tap on the coil. The antenna was raised 25 feet off the ground.

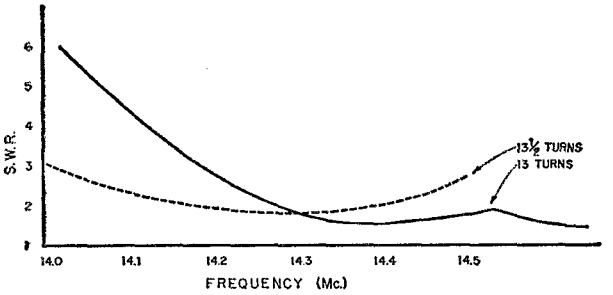


Fig. 2 — S.w.r. measurements showing the importance of adjusting the number of turns in the loading coil.

Performance

The antenna has performed excellently both on c.w. and phone. Because of its lightness, good performance, size, and ability to be rotated and quickly disassembled, the antenna should be excellent for Field Day and contest work.

The "Wonder-Bar" is bidirectional, and to work a desired area, the radials should be broadside to that direction. If a rotator is used, it is necessary to rotate the antenna only 180 degrees.

It was found that with 30 turns in the loading coil, the antenna resonated at 9 Mc. With additional turns, the antenna might be put on 40 meters. It is also suggested that a beam could be made out of two "Wonder-Bars" for 20 meters.

Strays

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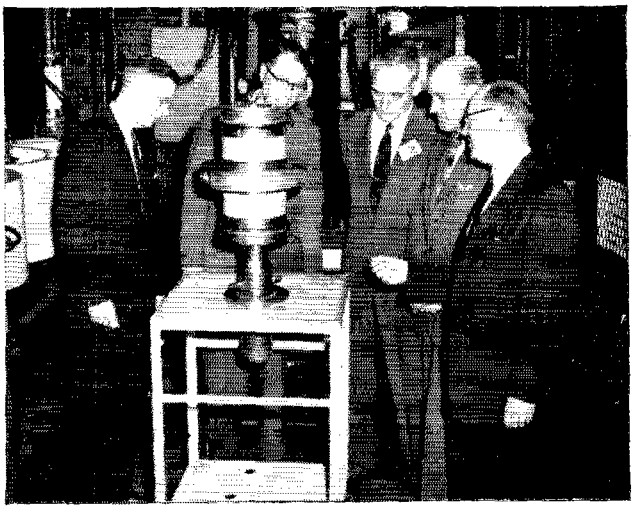
We've all heard about the California kilowatts, cool and otherwise, but here's the East-coast version of same. The center of attraction in this photo is an RCA tube weighing 150 pounds and which uses a plate voltage of some 18,000. An Army transmitter using these tubes with s.s.b. and a beam antenna in the 4–30 Mc. region will have an effective power of 24,000,000 watts. The Navy will also use some at a high-power station in Maine. The inspection party here includes, left to right, W1DF, W2YM (RCA), W1DX, W1HDQ, and K2FF (RCA).



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Hints and Kinks For the Experimenter

RECEIVER MUTING AND DISABLING WITH THE ANTENNA RELAY

THE simple send-receive circuit shown in Fig. 1 permits a conventional d.p.s.t. antenna relay to perform the following three functions:

1) Switch a single-wire antenna back and forth between receiver and transmitter.

2) Ground the receiver input during transmissions. This may be desirable in the case of high-power installations.

3) Completely silence the receiver by opening the center-tap-to-ground connection of the receiver power transformer.

In Fig. 1, J_1, S_1, T_1 and V_1 are the accessory socket, stand-by switch, power transformer (high-voltage secondary only) and rectifier tube, respectively, for the receiver. If your receiver does not have the stand-by switch and accessory socket wired as shown, it will probably be only a few minutes' work to rearrange the wiring so that the relay control circuit can be used.

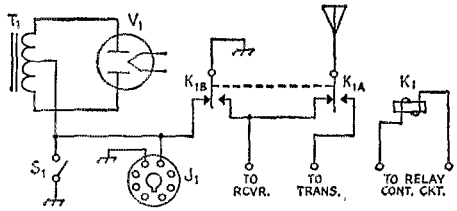

Fig. 1 — Circuit used by W4OHM for antenna changeover and receiver muting. Components are described in the text.

Notice that the circuit provides for activating the receiver power supply by means of the regular stand-by switch as well as by relay section K_{1B}. This permits receiver operation during v.f.o. frequency spotting, etc. Of course, a two-wire antenna system can be accommodated by using a relay having an additional set of contacts.

— *Warren Rudolph, W4OHM*

USING "SARAN WRAP" IN THE SHACK

A SIMPLE, inexpensive and effective protective cover for ARRL certificates, FCC licenses, QSL cards, etc., can be made with Saran Wrap. Cut a section of this transparent plastic food wrapper to a size slightly larger than the area to be covered or protected. Then take a piece of cardboard and cut it exactly the same size as the certificate, license, card or what have you. Now, sandwich the item to be protected in between the Saran Wrap and the cardboard backing. Fold the transparent wrapper over at the edges and then use Scotch Tape to bind the loose ends to the cardboard backing.

— *Charlie Tiemeyer, W3RMD*

A BANDSPREAD HINT FOR NOVICES

SOME of the popular amateur receivers provide very little band spread for the Novice bands. For example, it is not unusual to find that the calibration for the 7.15- to 7.2-Mc. range occupies less than an inch on the 7- to 7.3-Mc. scale. This condition frequently prevents accurate calibration of the "Novice" section of the dial and leaves the operator in some doubt whenever frequency checks are in order.

Fortunately, band spread can be increased in some cases without need for *diving* into the receiver. If the receiver is one having a tuning rate that requires one full turn — or slightly less — of the tuning knob for coverage of the 50-kc. Novice band, it may be possible to install a homemade circular dial of the type illustrated in Fig. 2. The dial may be held in place behind the tuning knob by means of the tuning capacitor mounting hardware, or it may simply be cemented to the panel. A toothpick cemented to the rear face of the tuning knob may be used as the pointer.

This sytem has worked real well with the National type NC-98 used here at KN5ESX. As can be seen from Fig. 2, the effective *length* of the calibrated scale for the 40-meter Novice band has been increased to approximately 5 inches. By making the scale a bit larger in diameter, it might be possible to add a second *ring* of calibration marks for another band.

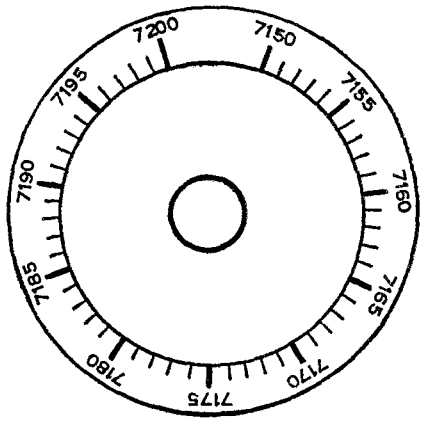

Fig. 2 — Sketch of the circular dial used by KN5ESX in the interest of increased "Novice-Band" band spread. The hole at the center of the dial provides clearance for the control shaft of the tuning capacitor.

— *C. Edward Forsythe, KN5ESX*

1957 ARRL Field Day Rules

Annual Test for Emergency-Powered Stations, June 22-23

READY for the 1957 Field Day? Almost every active amateur in the 73 ARRL sections already knows that this test of emergency-powered portables squeezes more enjoyment into a single week end than any other operating event. Clubs and other organized groups, working under conditions which could well be encountered in an actual emergency, will set up and operate multi-transmitter stations independently of normal power facilities. Other hams will have a barrel of fun at one- and two-man stations or with mobile rigs. Whatever your method of participation, hundreds of amateurs will be eagerly scanning the bands for your signal.

The rules are the same as last year except in two respects. (1) Contestants now have the option of operating a maximum of 24 *consecutive* hours out of a total period of 27 hours. A W6 group, for example, can begin its activity as early as 1:00 P.M. PST or as late as 4:00 P.M. PST and still operate 24 hours. More long-haul contacts should result because, regardless of location or time zone, all entrants can now start simultaneously. Those wishing to pack up for home as early as possible Sunday will want to begin at the opening gun. On the other hand, large club setups may prefer to spend additional time on installation, and hold off to start as late as 6 or 7 P.M. EST. Once on the air, however, operating time counts regardless of equipment failures. All reports must show the starting and ending time of the FD operating period selected, this not to exceed 24 consecutive hours. (2) The power multiplier of 2 now applies to transmitter inputs between 30 and 150 watts, not 30 and 100 watts as formerly. See rule 10.

Here are some examples designed to assist participants in figuring their scores:

Example 1

Assume a 25-watt rig wholly on batteries, not originating or relaying any messages, and not having more than two operators.

40 points (40 stations worked)
× 3 (power below 30 watts)
120
× 3 (*all* radio equipment independent of commercial mains)
360
×1.5 (If Class B or C and everything on batteries)
540 claimed score

Example 2

Same as Example 1 but one Field Day Message to the SEC or SCM is originated and passed in good form.

65 points (40 QSOs + 25 points for FD message)
× 9 (3 × 3 — power multiplier multiplied by independence-of-mains multiplier)
585
×1.5 (everything on batteries)
877.5 claimed score

(*Copies of all messages originated and relayed must accompany Field Day reports.*)

FIELD DAY TIMETABLE

Time	*Start*	*End*
	June 22	June 23
AST	5:00 P.M.	8:00 P.M.
EST	4:00 P.M.	7:00 P.M.
CST	3:00 P.M.	6:00 P.M.
MST	2:00 P.M.	5:00 P.M.
PST	1:00 P.M.	4:00 P.M.

(Operate no more than 24 *consecutive* hours out of the total 27-hour period)

Example 3

The Podunk Hollow Radio Club (or any group of three or more licensed operators), portable at its FD site, operates two transmitters simultaneously. Each rig runs 75 watts input and batteries or generators furnish power. One message is started in good form (25 points), 1 is received and relayed onward (2 points), and 230 stations are contacted.

257 points (230 QSOs + 25 + 2)
× 2 (power input over 30 and under 150 watts)
514
× 3 (all gear independent of mains)
1542 claimed score

(*No battery multiplier for either clubs or groups.*)

Call "CQ FD" on c.w. or "CQ Field Day" on phone. Then give the station you work a signal report and your ARRL section or specific location and stand by to receive similar information.

Clubs should strive to have every member-owned mobile unit in action and report their aggregate scores to ARRL. Our increased showing through individual mobile reports and club aggregate mobile scores is important because such units are considered indispensable in c.w. planning.

Convenient log forms and summary sheets are now available from the ARRL Communications Department. You may make up your own, but please remember to include starting and ending time of operating period, bands used, dates and contact times, calls of stations worked, signal reports sent and received, and locations of stations worked. Reports must also show power sources and inputs, location and call of station, number of transmitters in simultaneous operation, number of persons participating, club name (if any) and score computations. To be listed in the final results in *QST*, mail your logs by July 20.

We suggest you read over the rules below and then review the December 1956 *QST* report for hints and kinks relative to the last FD, in case you wish to challenge a club nearby. Then get your preparations underway. Let's support the 1957 FD and make it the greatest amateur emergency exercise of all time!

Rules

1. Eligibility: The Field Day is open to all radio amateurs in the sections listed on page 6 of this issue of *QST*.

2. Object: For portable and mobile stations to work as

(*Continued on page 162*)

Announcing the June V.H.F. QSO Party

Fun for All in This June 8–9 Activity

ARRL is pleased to announce another of its popular V.H.F. QSO Parties, open to all amateurs who can work any band or bands above 50 Mc. The contest gets under way at 2:00 P.M. Local Standard Time Saturday, June 8, and continues until 11:00 P.M. Local Standard Time Sunday, June 9. With June one of the peak months for v.h.f. DX, here's a great opportunity to work new states and give the gear a workout, and meet new "World Above" friends at the same time.

Call "CQ Contest" or "CQ V.H.F. QSO Party" to raise other participants. During contact, operators must exchange names of their ARRL sections (see page 6) for full credit.

Work as many stations on as many v.h.f. bands as you can. Count *1* point for successfully confirmed exchanges of section information on 50 or 144 Mc., *2* points for such QSOs on 220 or 420 Mc., and *3* points on 1215-Mc. or higher bands. Then multiply the sum of these QSO points by your section multiplier, which increases by one when the same section is reworked on another band. A station may also be contacted again for credit on each additional v.h.f. band.

A certificate will be awarded to the top scorer in each ARRL section. A certificate also will go to the high-scoring Novice, Technician, and multioperator station in each section from which three or more valid entries in these three special categories are received.

Send your results, as shown in the sample, to ARRL as soon as the competition ends. A simple tabulation of stations and sections worked is all that is required. For your convenience, free log forms are now available from the ARRL Communications Department.

Rules

1) The contest starts at 2:00 P.M. Local Standard Time, Saturday, June 8, and ends at 11:00 P.M. Local Standard Time, Sunday, June 9. All claimed contacts must fall within this period and must be on authorized amateur frequencies above 50 Mc., using permitted modes of operation.

2) Name-of-section exchanges must be acknowledged by both operators before either may claim contact point(s). A one-way exchange, confirmed, does not count; there is no fractional breakdown of the 1-, 2- or 3-point units.

3) Fixed-, portable- or mobile-station operation *under one call*, from one location only, is permitted. A transmitter used to contact one or more stations may not be used subsequently under more than one other call during the contest period.

4) Scoring: *1 point* for completed two-way section exchanges on 50 or 144 Mc.; *2 points* for such exchanges on 220 or 420 Mc.; *3 points* for such exchanges on the higher

(*Continued on page 154*)

SUMMARY OF CONTACTS, JUNE V.H.F. QSO PARTY

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

Freq. Band (Mc.)	*Date and Time*	*Station Worked*	*Section*	*Record of New Sections for Each Band*					*Contact Points Claimed*
				50	*144*	*220*	*420*	*Other*	
50	June 8								
	2:15 P.M.	W1AQE	E. Mass.	1					1
	2:26	W1RFU	W. Mass.	2					1
	2:38	K2IEJ/2	N.Y.C.-L.I.	3					1
144	3:00	W1AQE	E. Mass.		1				1
	3:10	W1OOP	E. Mass.						1
	3:16	W1DXE	Conn.		2				1
	3:24	K2IEJ/2	N.Y.C.-L.I.		3				1
	3:30	K2JLR	N.Y.C.-L.I.						1
1215	3:39	W1VNH	W. Mass.					1	3
50	3:48	W2ONV	N. N.J.	4					1
	3:55	K2HPN	E. N.Y.	5					1
220	4:04	W1OOP	E. Mass.			1			2
	4:30	W1AQE	E. Mass.						2
	4:45	W2AOC	N.Y.C.-L.I.			2			2
	June 9								
50	8:10 A.M.	W9WOK	Ill.	6					1
	8:20	WØOFZ	Minn.	7					1
	8:43	W6NLZ	Los Angeles	8					1

Number of contacts: *50 Mc.* 8 *144 Mc.* 5 *220 Mc.* 3 *420 Mc.*..... *Other* 1
Total contacts: 17 Total contact points: 22 Multiplier: 8+3+2+1=14
Claimed score: 22 × 14 = 308 Points Final Score
Names and calls of operators having a share in above work.....

I hereby state that I have abided by the rules specified for this contest and that, to the best of my knowledge, the points and score as set forth in the above summary are correct and true.

Transmitter:..... *Signature*.....
Receiver.....
Antenna:..... *Address*.....

Correspondence From Members-

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

RAPTURE

Frick Building
Pittsburgh, Penna.

Editor, *QST:*

I nominate for the Edison Amateur Radio Award, Larsen E. Rapp, WIOU, who in his April article, "A Compact All-Band Antenna," not only has introduced interesting discussions on the air, but who has also eliminated the need for large beam antennas and the resulting neighbors' complaints.

For those amateurs who cannot obtain the large ferrite rod, it is suggested that they fabricate it by welding or gluing together with conductive glue, a number of BCL loopsticks which are readily available at most radio stores or which can be removed from many receivers. It works just fine!

— *D. Ferguson, W3APG*

76–10 108 St.
Forest Hills, N. Y.

Editor, *QST:*

With reference to Mr. Rapp's excellent article on the underground antenna, may I add that I have personally *been using this system, though with some modification, for* years.

I live in an apartment house where it would have been impossible for me to dig a hole deep enough to bury the antenna. I therefore placed it under my living room rug, and brought enough dirt into the house to cover it five (5) feet. Since this was not enough, I took a piece of 300 Ω lead in — to *fool the neighbores — and ran it from the 5-ft. mound* down to the basement, and thence to the main water pipe, which takes it down another 25 feet.

Now, since I live on the 3rd floor, this gives me a reflected image advantage ratio of 104X; that is, 35 ft. above ground level; 5 ft. of dirt of the 25-ft. point; 39½-ft. lead-in; and 25 ft. of water pipe.

It works just fine. Not one case of TVI.

— *Ray R. Landman, K2AWQ*

P.S. May I add that I have the advantage of very little education!!

3837 Campbell
Kansas City, Mo.

Editor, *QST:*

. . . A point that Mr. Rapp failed to bring out is downward modulation must be used because of the reverse in polarity when using image radiation.

— *V. J. Lucas, KØHEC*

Box 109
Bayville, N. J.

Editor, *QST:*

I have just finished a series of tests on Larsen Rapp's multiband ferri-tenna, and have noted the following features.

1. Winding the coil with solid ¼ inch-silver rod has reduced the V.S.W.R. from .707:1 to .001:1.
2. Burying the antenna creates the need for a modified ground system. (I used four copper ground wires forming a counterpoise on my roof.)
3. When the higher frequency bands appear to be closing with a conventional antenna system, they appear to be just opening up on the buried antenna.

On the whole, Mr. Rapp's contributions to radio have *been a constant source of enlightenment and stimulation* to all of us and I believe a show of appreciation is in order. Three cheers and a hearty 73 for Larsen E. Rapp.

— *Richard H. Dickhaus, K2HEI*

216 South Virginia Avenue
Burbank, California

Editor, *QST:*

While it is often difficult (if not impossible) for the average ham to verify Mr. Rapp's theories mathematically, experimental results are extremely interesting.

My own experience with his antenna is truly astonishing. Extending his theory to include multi-element arrays, I constructed a two-element parasitic beam. The driven element was built according to the specifications called out in Mr. Rapp's article. The parasitic element, a director, was wound on the same type of form but with only 95.45% as many turns for L_2 and L_3. Optimum spacing was found, after considerable cut-and-try, to be precisely 1.31 feet. The antenna was buried at a depth of 60 feet — the optimum for 20 meters — pointing toward Europe (early attempts to rotate the antenna in a hole resulted in failure, confirming Mr. Rapp's statement that the antenna must actually be buried). It was found that only Oceania could be worked, thus proving that when the antenna is buried, it really does act like an image!

— *William G. Miller, K6CEF*

APRIL *QST*

634 High Street
Newark 2, New Jersey

Editor, *QST:*

In your April issue, I got my biggest kick out of "General Operating With Mike or Key." There were many things in it that could help a Novice as well as a General. I hope now that some of the Generals I work will stop this "Hello — Goodbye" type of QSO. Now I want some honest-to-goodness rag chewing.

— *Alan Birnholz, KN2VAB*

15 W. Upper Ferry Road
West Trenton, N. J.

Editor, *QST:*

The April article "How Well Do You Know the Regulations?" is well written and very timely. May I suggest that similar articles be a regular part of *QST*. I know this type of material isn't dashed off in a spare moment, but the value is so great that the time expended in preparation is worth it.

I fell down on three of the questions myself and know that many others will stumble over these and other questions of the quiz. A monthly page of this type of material would keep regulations and other parts of amateur material fresh in our minds.

— *J. B. Jenkins, K2IIW*

115 East 138th Street
New York 51, N. Y.

Editor, *QST:*

There were two excellent articles in the April issue of *QST* that seemed to me should *not* have been included in the magazine! They were "Some *QST* Abbreviations," and "That Dern 405A" under "Happenings of the Month."

Both are of too long-lasting interest to be lost in one's files of a monthly periodical. Data of this type belongs in the *Handbook*.

— *M. K. Breitzfelder, W2JPX*

P.S. I am already looking forward to *next* April's *QST* and the next Ether-Shaking Disclosure by that presumably long-bearded savant, WIOU.

[*Editor's Note*: 405-A and other renewal dope is in our "handbook," the *License Manual*. Space permitting, we'll have the abbreviations in next year's *Handbook*.]

23rd ARRL Sweepstakes Results

Part II — Phone and Club Totals

BY ELLEN WHITE,* W1YYM

IF YOU FOLLOWED the advice accompanying the May c.w. results, you'd best be seated right now. That upright position is no way to take the facts relating to the terrific results achieved by superlative operators orally active in the 23rd SS. You guessed it; this was the biggest ever with phone participation up 23 per cent over 1955. New records were established thanks to good conditions, better equipment and the best in operating techniques.

Incredible as it may seem, more than thirteen per cent of the competitors summed up points upwards of the 50,000 mark. Among this listing of seventy calls are fifteen, shown in italics, who made more than 100,000: *W1s* BFB EOR FZ GKJ YWU, W2VCZ, *K2s AAA* BHP, *W3s* AYS ECR VAM *VKD*, *W4s* FGH JLW KZF LVV YZE, *K4s* ARU CTU *GHA* LQA, *W5s* COF *DQK* IWL KC MYI VU, *K5s EAT/5* EDG/4 EDQ EXZ, *W6s AM* BSY CBE *CPL* GTG IIM *PQW* SIJ *SUP* TZN ZZC, *K6s* BWD *EVR* GLC HTL, *W7s* BAD ENA NPV OVA ZZA, *W8s AJW* HQK SSA, *W9s* FVU OHO PQA VOB VZP, K9CLO, *WØs KLP* LXA *NPR* TWH TYK *VQC* ZQV *ZSZ*, KØCRV, VE3DNE. Congratulations to all!

Pacing their respective call areas are: W1YWU K2AAA W3VKD K4GHA W5DQK W6AM W7ZZA W8AJW W9OHO WØNPR KH6CBP KL7MF KP4DH VE2KG VE3DNE VE5VZ VE6IN VE7ZM.

The Potomac Valley Radio Club can chalk up SS gavel #7 with an aggregate score approaching the four million mark. In there were 45 PVRC operators famous as the Frankford Radio Club, which placed a strong second.

Aside from the following tabulations, the true pulse of the 23rd SS just might be felt by you after reading the ensuing Sidelights. *"Viva la vocalist!"*

Sidelights

Nebraska furnished multiplier #73 for W5DQK, VE8 for W3VKD and WØZSZ, Alaska for W8AJW and WØNPR, Nevada for W6AM, while Vermont did it for W6SUP and K2AAA made it with Wyoming. . . . W6SHY wasn't backward in placing first in San Diego. . . . QRP specialist KØCRV modulated 45 watts of r.f. to the tune of 314 QSOs *and* the Colorado award. . . . Sideband specialist W9RFR stayed with 75 for 308 fancy two-ways. . . . W7BAD did plenty good with a QSO figure of 509. . . . Almost, but not quite, with 72 sections were K6BWD K9CLO and WØBCF. . . . W6AM's number 1011 went to W2COP with W1COP ticketed at 1012! . . . You might know it; W5JAW participated in the c.w. section only. . . . On November 19, after 37 hours of travail signing portable K5EDG/4, the new call arrived — K4BZJ. . . . K2DEM was surprised at the lack of 2-meter activity in N.Y.C.-L.I. . . . K2AAA attributes his 1215 tallies in part to the opening of ten the second weekend and usage of s.s.b. (50% of his contacts made in that manner). . . . No DX contest this, but hams in Damascus (Md.) and Symrna (Ga.) were on tap. . . . W7NPV and W8AJW qualify for their fifth consecutive section awards. . . . W6PQW's faith in low power, common sense and a good antenna are the "behind-the-scenes" story of his single-band (10 meters) score of 110,391 points, 600 QSOs in 62 sections. Wow! . . . In a colossal endeavor to establish new phone QSO records, both W6AM (1219) and K2AAA (1215) succeeded in surpassing W6QEU's 1950 record of 854. In fact, comparing both c.w. *and* phone, only one other contestant outdid either vocalist and that was W4KVX. . . . Club certificate awards are scheduled to go to 103 among the 89 eligible clubs. . . . Clubs making the box listing are up 19% over 1955. . . . The Aero ARC (Md.) attributes its best score to date to a good location and plenty of rest prior to the contest. . . . The Delano ARC (Calif.) racked up a total of 2249 contacts on 12 valid entries; they are planning to have plenty of SJV operators available come the SS, 1957. . . . The KBT ARC (N. Y.) W2EWT/2 uses the SS as a medium to increase contest operating efficiency while awaiting the FD. . . .

* Assistant Communications Mgr., Phone, ARRL.

VE3DNE manned his convenient station, Viking II-SX88, to lead all other Canadian entries and furnish 300 contestants with an Ontario multiplier.

Contest Quotes

"Someday I'm going to have a rig that works properly on *all* bands." — *W6CRV*. . . . "Worked 3 new states, only 5 to go." — *K#JZR*. . . . "An 80 m.p.h. wind took down all antennas one week before the SS and I was so tired from staying up the night before raising antennas that I almost didn't start." — *K5EXZ*. . . . "Believe the usual number of gripes regarding contest QRM was considerably less than in previous years, but that may be due to the extreme amount of QRM cutting off some remarks in connection therewith, hi!" — *K6BWD*. . . . "First weekend band dead. Second weekend out in tundra on a survival

PHONE WINNERS, 23RD A.R.R.L. SWEEPSTAKES CONTEST

Section	*Call*	*Score*	*Transmitting Equipment*	*Receiving Equipment*	*Bands Used*
E. Penna.	W3ECR	58,800	32V3	75A4	75, 40, 20, 15, 10
Md.-Del.-D. C.	W3AYS	66,933	5100	75A3; GRP90	75, 40, 20, 15, 10
S.N.J.	K2MZO	28,000	Globe King	NC240D, DB22A	40, 10
W.N.Y.	K2BHP	93,771	DX100	NC183D	75, 40, 20, 15, 10
W. Penna.	W3VKD	140,051	51SB-32V2	75A4	75, 40, 20, 15, 10
Illinois	W9OHO	78,840	DX100	SX100; HQ129X	40, 20, 15, 10
Indiana	K9CLO	68,400	BC221-6AC7-6AC7-6AQ5s-2E26-4-250A	HRO7	75, 40, 20, 15
Wisconsin	W9VZP	56,256	Viking II	75A2	75, 40, 20, 15, 10
No. Dakota	WØNPR	125,925	Viking II	S76	75, 40, 20, 15, 10
So. Dakota	WØVQC	102,270	32V2	75A1	75, 40, 20, 15, 10
Minnesota	WØZZT	44,546	DX100	NC98, HF10/20	15, 10
Arkansas	W5HVX	35,219	DX100	HQ140X	15
Louisiana	W5KC	95,841	32V3	HR07	75, 40, 20, 15, 10
Mississippi	W5DQK	146,621	5100	75A3	75, 40, 20, 15, 10
Tennessee	K4ARU	78,804	Viking II	75A3	40, 20, 15, 10
Kentucky	W4YZE	61,248	5763-6C4-5763-5763-5763-6146s	S76	75, 40, 20, 15, 10
Michigan	W8N8S	46,500	BC459-814s	RME45, VHF152	40, 15
Ohio	W8AJW	115,413	32V1	HQ120X	75, 40, 20, 15, 10
E.N.Y.	K2JMY	34,200	DX100	HRO60, DB22A	75, 40, 20, 10
N.Y.C.-L.I.	K2AAA	177,244	SSB100A-SSB1000	75A4	75, 40, 20, 15, 10
N.N.J.	W2VCZ	68,706	Ranger; Viking I	NC300	75, 40, 20, 15, 10
Iowa	WØTYK	76,296	32V1; BC457-6AG7-6L6-813	75A1; HR050T	75, 40, 20, 15, 10
Kansas	WØZSZ	124,392	6CL6-6AQ5-4E27/8001	75A4; HRO50T1	75, 40, 20
Missouri	WØZQV	70,716	Viking II	75A1	40, 15, 10
Nebraska	KØDLL	17,499	DX100	SX99	20, 10
Connecticut	W1YWU	97,497	Viking I	75A2	75, 40, 20, 15, 10
Maine	W1GKJ	53,382	Viking VFO-Viking II	HRO60	75, 40, 20, 15, 10
E. Mass.	W1QIB	40,362	12BY7-2E26-6146s	SX96	75, 40, 20, 15, 10
W. Mass.	W1NPL	42,215	DX100	HRO5	75, 40, 20, 10
N. H.	W1FZ	85,284	Collins VFO-Viking I	75A4	75, 40, 20, 15, 10, 6, 2
R. I.	W1BFB	68,928	Ranger-813	SX71	75, 40, 20, 15, 10
Alaska	KL7MF	480	AF67	SX25	15, 10
Idaho	W7VVC	24,780	DX100	NC98	75, 40, 20, 15, 11, 10
Montana	W7NPV	67,914	32V1	SX28	75, 40, 20, 15, 10
Oregon	W7OVA	80,487	Viking I	75A1	75, 15, 10
Washington	W7BLX	48,295	6AG7-6V6-813	SX100	40, 10
Hawaii	KH6CBP	20,196	310B-4-400A	75A1	15, 10
Santa Clara V.	K6HTL	70,173	Viking II	NC57B	75, 40, 10
East Bay	W6PQW	110,391	VFO-6L6-2E26-240s	HQ129X	10
San Francisco	W6SIJ	70,119	6BA6-6CL6-5763-6BQ6-4-65A	Homebuilt	75, 40, 20, 15, 10
Sacramento V.	W6SUP	138,846	VFO-807s	HQ120X, HF10-20	75, 40, 20, 15
San Joaquin V.	W6ZZC	81,972	DX100	Super Pro	75, 40, 15, 10
No. Carolina	K5EDG/4	51,708	Viking I	SX100	75, 40, 20, 15, 10
So. Carolina	K4GIE	10,602	DX100	SX99	15
Virginia	W4WSF	34,821	Viking VFO-Viking II	SX71	75, 40, 15
W. Virginia	W8SSA	63,054	DX100	NC300	75, 40, 20, 15
Colorado	K9CRV	63,340	Globe Scout	HQ129X	40, 20, 15, 10
Utah	W7QWH	24,780	30K1	75A3	40, 20, 15, 10
Wyoming	W7UFB	12,000	Ranger	NC183D	20, 15, 10
Alabama	W4DS	25,110	Ranger	SX100	75, 40, 20, 15, 10
E. Florida	K4GHA	107,916	DX100	75A4	40, 20, 10
W. Florida	W4JLW	80,586	32V3	75A2	75, 40, 15, 10
Georgia	W4FGH	59,902	807-811-250THs	HQ129X; SX28; NC183	40, 20
West Indies	KP4DH	126	Viking II	HRO (modified)	15
Los Angeles	W6AM	263,129	Communicator; VFO-4D32	RME50, 75A3, DB23	160, 75, 40, 20, 15, 10, 6, 2
Arizona	W7ZZA	87,969	6AG7-6AG7-1614-812As	HRO60	75, 40, 20, 15, 10
San Diego	W6SHY	53,808	Viking II	75A3	40, 10
Santa Barbara	W6NTF	21,465	DX100	NC183D	75, 40, 20, 15
No. Texas	W5VU	84,192	32V3	75A3	75, 40, 20, 15, 10
Oklahoma	W5IWL	80,376	5763-5763-5763-6146-813	NC300	75, 40, 20, 15, 10
So. Texas	K5EXZ	71,820	20A-SSB1000	75A3	75, 40, 20, 15, 10
New Mexico	W5MYI	98,892	6AG7-6AG7-6N7-6BL7-829B	SX28	75, 40, 20, 15, 10
Quebec	VE2KG	675	VFO-6V6-807	Marconi R1155	10
Ontario	VE3DNE	60,300	Viking II	SX88	75, 40, 20, 15, 10
Sask.	VE5VZ	35,400	TR1TV	HQ129X, DB23	20, 15, 10
Alberta	VE6IN	27,469	DX100	AR77	40, 20, 10
B. C.	VE7ZM	16,275	Viking II	75A4	75, 40, 20, 15

training jaunt with the USAF, temp. 45. Heard that band conditions were *hot.*" — *KL7WA H.* . . . "Had a great time, 5 new states and a KG4 too." — *W9UXM.* . . . "Although my 30,000 points won't win for L. A., this contest was the most enjoyable experience of my 2-year old ham career." — *K6IUL.* . . . "First try at the SS as a General. At 1755 all was quiet on the NC88, at 1800 bedlam broke loose. With my inexperience it was like trying to peel apart pieces of cold cheese." — *W3EFY.* . . . "Missed VE7." — *W0BCF.* . . . "One of the incidents that stands out in my mind concerns the young fellow who had just received his general class, wasn't in the contest and couldn't find anyone who would talk with him. Boy, was he desperate!" — *W8SSA.* . . . "Thanks to Walt of W3VKD for tips leading to my 72nd and 73rd section, also to VE5IW for information on VE4MO. Hats off to these gentlemen for their fine sportsmanship." — *W0ZSZ.* . . . "Things got rough on 40 at night." — *W5COF.* . . . "I hope I can remain awake for the 40 hours next session." — *W9LKB.* . . . "Ten and fifteen came through beautifully." — *W2VCZ.* . . . "Called 15 and worked fifteen. Even when I held the glamorous calls of J8AA, HL1AA and DL4LU I didn't make out with a percentage like that." — *W4HVU.* . . . "First attempt in the phone portion; better I should have stayed on c.w." — *W4LVV.* . . . "Was surprised and pleased to furnish W. Fla. for so many stations." — *W4JLW* . . . "Booby prize this year, but wait till next year." — *W5VUE.* . . . "Decided to try phone this time to win the trophy put up by the Nortown ARC. Believe me I didn't know what I was getting into." — *VE3DNE.* . . . "After hearing K2AAA give out number 1052 during the closing hours of the competition (when I was struggling with 315), I was forcibly impressed with the fact that my 1939 homemade transmitter is at last *obsolete.*" — *W2JKH.* . . . "This was my 2nd SS and I really got a kick out of it, especially when a W1 called me and explained that 15 meters was not the band for this type contest." — *W5DQK.* . . . Both the Order of Boiled Owls (N. Y.) and York RC (Ill.)

CLUB SCORES

Club	*Score*	*Valid Entries*	*C.W. Winner*	*Phone Winner*
Potomac Valley Radio Club	3,828,933	42	W4KFC	.....
Frankford Radio Club	3,161,348	45	W3JNQ	W3ECR
Ohio Valley Amateur Radio Assn	1,237,796	20	W4KVX	W8HQK
El-Ray Radio Club (Mass.)	1,060,668	35	W1DDF/1	W1QIB
Chicago Suburban Radio Assn.	725,887	14	W9WBL	W9FVU
Order of Boiled Owls (N. Y.)	707,073	7	W2PRN	.....
Westpark Radiops (Ohio)	683,386	33	W8YPT	W8AJW
Milwaukee Radio Amateurs' Club	671,772	18	W9UDK	W9PQA
Garden State Amateur Radio Assn. (N. J.)	591,737	11	W2CQB	.....
Richmond Amateur Radio Club (Va.)	584,032	42	W4BZE	W4AVO
Tri-County Radio Assn. (N. J.)	546,784	15	K2BHQ	K2EYZ
Detroit Amateur Radio Assn.	469,483	17	W8IRO	W8LOX
South Jersey Radio Assn.	451,706	24	W2EXB	K2MZO
York Radio Club (Ill.)	444,141	3	W9YFV	.....
Delano Amateur Radio Club (Calif.)	395,484	12	W6EFV	.....
Lake Success Radio Club (N. Y.)	386,978	18	W2TUK	W2MCO
Central Michigan Amateur Radio Club	357,594	8	W8OCR [1]	.....
Central High Radio Club (Iowa)	352,853	13	W9GXQ	.....
Mid-Island Radio Club (N. Y.)	312,126	8	W2KTF	.....
Hamfesters Radio Club (Ill.)	310,534	16	W9LNQ	W9TJP
Sioux City Amateur Radio Club (Iowa)	308,299	9	W9FZO	K9GBL
Long Beach Wireless Operators (Calif.)	301,440	4	W6BJU [2]	.....
Buckeye Shortwave Radio Assn. (Ohio)	298,844	6	W8OYI	.....
Minneapolis Radio Club	295,661	6	W0RLI	.....
Philadelphia Wireless Assn.	294,378	12	W3HHK	W3YHU
Nassau Radio Club (N. Y.)	275,956	4	W2IVS	.....
Columbus Amateur Radio Assn. (Ohio)	251,465	7	W8QDH	W8OMY
Connecticut Wireless Assn.	233,938	5	W1BIH	.....
Pacifico Radio Club (Calif.)	217,964	4	.....	.....
Joliet Amateur Radio Society (Ill.)	209,228	7	W9YYG	.....
Aero Amateur Radio Club (Md.)	207,138	4	W3KLA	.....
Wisconsin Valley Radio Assn.	206,811	7	W9RQM	.....
St. Louis University Amateur Radio Club	206,399	6	.....	W0ZQV
Tenn-Tucky Amateur Radio Club (Tenn.)	200,195	3	W4WQT	.....
Citrus Belt Amateur Radio Club (Calif.)	195,590	4	.....	W6IIM
Short Skip Radio Club (Penna.)	185,902	11	W2ILN	W3YLL
Middlesex Amateur Radio Club (Mass.)	182,043	7	W1DLF	.....
Radio Amateurs of Greater Syracuse	172,696	3	W2EMW	.....
Niagara Radio Club (N. Y.)	166,813	7	W2VJO	.....
Suffolk County Radio Club (N. Y.)	165,671	12	W2PZE	W2OSW
Starved Rock Radio Club (Ill.)	165,574	13	W9ZEN	W9LIG
Cuyahoga Falls Radio Club (Ohio)	157,723	10	W8SMK	W8DUI
Pottstown Amateur Radio Assn. (Penna.)	156,250	7	W3ARK	.....
Tualatin Valley Radio Club (Ore.)	154,463	6	W7AOZ	W7SPX
Northeast Radio Club (Penna.)	149,843	4	W3HTR	.....
Coronado Radio Club (Calif.)	148,918	3	.....	.....
Dayton Amateur Radio Assn.	139,292	4	W8AXX	.....
Tri-State Radio Club (Nebr.)	133,585	9	W0YRY	K0DLL
Atlanta Radio Club	129,214	6	W4ZKU	.....
Tri-State Amateur Radio Society (Ind.)	126,861	4	W9YFD	.....
Montrose Amateur Radio Club (Colo.)	123,505	14	W0WME	.....
Springfield Amateur Radio Club (Ohio)	122,912	7	W8SWZ	W8IXA
Nortown Amateur Radio Club (Ont.)	118,868	4	.....	VE3DNE
Westside Amateur Radio Club (La.)	118,787	7	.....	W5INL
Fieldston High School Radio Club (N. Y.)	116,302	6	K2GHS	K2KND
Baltimore Amateur Radio Club	114,183	3	.....	.....
Antietam Radio Assn. (Md.)	113,851	7	W3ZGN	W3VAM
Dallas Amateur Radio Club	113,734	3	K5HLG	.....
Swani Radio Club (Ill.)	109,541	5	.....	W9VZP
Casper Amateur Radio Club (Wyo.)	106,894	7	W7HYW	W7UFB
North Penn Amateur Radio Club (Penna.)	103,176	11	W3JSA	W3CNO
University of Connecticut Radio Club	102,492	3	.....	W1YWU
Chattanooga High School Radio Club	101,299	3	K4CWS	.....
Blue Ridge Amateur Radio Society (Va.)	99,687	11	K4JKK	W4ZZV
Point Radio Amateurs (Wis.)	97,898	4	W9KXK	.....
Horseshoe Radio Club (Penna.)	85,371	7	W3YOZ	W3DKH
Atlanta Teenage Radio Club	84,904	3	K4DWF	.....
Stockton Amateur Radio Club (Calif.)	82,640	3	.....	.....
Stratford Amateur Radio Club (Conn.)	82,404	7	W1GVK	.....
Canton Amateur Radio Club (Ohio)	79,152	6	W8AL	.....
Western Electric Amateur Radio Club (Mass.)	74,974	3	.....	.....
Winter Haven Amateur Radio Assn. (Fla.)	69,265	3	.....	.....
Framingham Radio Club (Mass.)	62,523	5	W1MEG	.....
807 Society of Central High School (Penna.)	52,365	8	W3WHK	W3FIT
York High Radio Club (Ill.)	33,136	3	W9CMO	.....
Johnson County Radio Amateur Club (Kans.)	32,340	4	.....	.....
Baldwinsville Academy Radio Klub (N. Y.)	31,602	6	K2IWQ	.....
City College Amateur Radio Society (N. Y.)	29,236	3	K2KYK	.....
Watchung Valley Radio Club (N. J.)	28,821	5	K2PLF	.....
South Shore Amateur Radio Club (Quebec)	27,830	4	VE2AVC	.....
Central Queens Radio Club (N. Y.)	20,017	5	K2PGP	.....

[1] W8DJN, opr [2] W6CUF, opr.

averaged over 100 thousand points per entrant. . . . For the most part, section leaders operated the 75-40-20-15-10-meter circuit. . . . "I got into this contest just for kicks, but at the end of the first couple of hours I decided to see just what kind of a job could be done on ten alone. Ole ten really came through." — *W6PQW*.

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The foregoing and following are part and parcel of Sweepstakes history. Fair warning to all who foretold of better things in '57; the two weekends preceding Thanksgiving are announced to all as the 24th SS. A clean sweep for all!

PHONE SCORES

Twenty-Third Sweepstakes Contest

Scores are grouped by Divisions and Sections. . . . The operator of the station first-listed in each Section is award winner for that Section unless otherwise indicated. . . . Likewise the "power factor" used in computing points in each score is indicated by the letter A or B. . . . A indicates power up to and including 150 watts (multiplier of 1.5, phone), B over 150 watts (multiplier of 1). . . . The total operating time to the nearest hour, when given for each station, is the last figure following the score. . . . Example of listings: W3ECR. . . . 58,800-280-70-A-21, or, final score 58,800, number of stations 280 number of sections 70, power factor of 1.5, total operating time 21 hours. . . . Multioperator stations, with calls of participants in parentheses, are grouped in order of score following single-operator station listings in each section tabulation.

ATLANTIC DIVISION

Eastern Pennsylvania

W3ECR	58,800-	280-70-A-21
W3WQF	18,513-	121-51-A-24
W3CXJ	18,450-	151-41-A-18
W3CUB	15,552-	144-54-B-14
W3RPG	15,216-	160-48-B-17
W3YHU	11,685-	95-41-A-19
W3YLL	11,115-	95-39-A-15
W3CNO	10,320-	80-43-A- 6
W3PNL	9648-	101-32-A-12
W3FIT	9440-	102-31-A-22
W3TTW	9180-	90-34-A-12
W3RAE	5916-	68-29-A- 9
W3DWN	5265-	65-27-A-16
W3TWL	4468-	60-25-A- 6
W3SMC	4380-	73-20-A- 9
W3GHU	3348-	63-18-A- —
W3EMH	1785-	36-17-A- 6
W3YRN	1404-	26-18-A- 9
W3BNR	1122-	22-17-A- 3
W3VST	660-	20-11-A- 2
W3AAU	492-	21- 8-A- 6
W3KNO	351-	13- 9-A- 3
W3YQT	180-	12- 5-A- 3
W3MQC	84-	7- 6-B- 1
W3EFY	60-	5- 4-A- 2
W3EYT	12-	2- 2-A- 1
W3FQA	12-	2- 2-A- 1
W3ZJD	3-	1- 1-A- —

Md.-Del.-D. C.

W3AYS	68,933-	333-67-A-31
W3VAM	51,682-	284-63-A-26
W3FEP	45,780-	383-60-B-37
W3YRK	41,769-	221-63-A-20
W3PKC	13,500-	125-54-B-22
W3VZZ	10,740-	90-40-A-12
W3BFW	8748-	82-36-A- 8
W3OYX	180-	10- 6-A- 2
W3ZGN	3-	1- 1-A- 1

Southern New Jersey

K2MZO	28,000-	250-56-B-27
K2BWR	26,442-	228-39-A-32
K2KTS	17,250-	130-46-A-21
W2ZX	16,512-	174-48-B-11
W2BLV	13,938-	101-46-A-14
K2AQL	10,260-	76-45-A-34
W2LBX	9078-	91-34-A-24
K2GCD	6450-	87-25-A-11
W2SDB	1620-	30-18-A- 5
W2EWN	1287-	39-11-A-19
W2ROW	1190-	35-17-B- 7
W2ILN	189-	9- 7-A- 1

Western New York

K2BHP	93,771-	456-69-A-38
K2DBB	34,867-	154-54-A-29
K2OJF	17,172-	162-53-B-20
W2UMS	8692-	106-41-B- —
W2CGU	2625-	35-25-B- 4
W2CTA	1288-	28-23-B- 4
k2OSN	216-	9- 7-A- —
W2ZRC	48-	6- 4-B- 1
W2BYJ	12-	2- 2-A- 1
K2BWK	12-	2- 2-A- —
W2MTA/2	3-	1- 1-A- 1
K2KNV (2 oprs.)	6528-	71-31-A- 7
W2EWT/2 (12 oprs.)	4047-	71-19-A-21

Western Pennsylvania

W3VKD [1]	140,051-	641-73-A-40
W3YZR	32,258-	201-55-A-23
W3KWH [2]	15,510-	110-47-A- —
W3ABW	9612-	91-36-A-13
W3DKH	5900-	118-25-B-32
W3CAZ	1404-	26-18-A- 5
W3ZUF	297-	11- 9-A- 2
W3ZUG	48-	4- 4-A- 1
W3AWU	39-	13- 1-A- —

CENTRAL DIVISION

Illinois

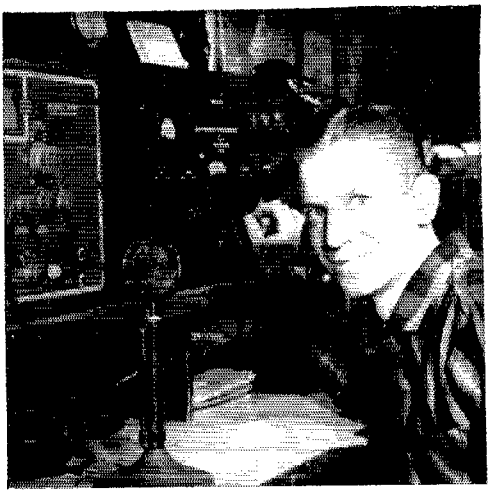
W9OHO	78,840-	443-60-A-38
W9VOB	73,284-	399-62-A-40
W9FVU	60,996-	300-68-A-36
W9HKE	46,368-	368-63-B-40
W9ATU	46,272-	242-64-A-29
W9TJP	44,162-	254-59-A-27
W9LQF	41,310-	230-60-A-31
W9LIG	37,572-	304-62-B-31
W9RFR	28,244-	308-46-B-15
W9VLR	27,300-	273-50-B-26
W9NXY	26,553-	170-53-A- —
W9GCY	22,125-	151-50-A-17
W9NLF	21,216-	136-52-A-37
K9BBC	18,968-	143-45-A-17
W9PBM	16,065-	135-42-A-20
W9PNY	13,104-	104-42-A-22
W9UXM	10,004-	86-39-A-13
W9FJH	9264-	98-32-A-11
W9IDA	7227-	110-33-B- —
W9IET	3785-	44-29-A- 5
W9YKJ	3750-	51-25-A-10
W9MHC	3618-	67-27-B- 4
W9EU	3306-	58-19-A- —
W9UAN	2970-	45-22-A- 4
W9BUT	2080-	40-26-B- 5
W9QWP	1872-	54-12-A- 7
W9OML	1823-	42-15-A- 8
W9UMF	1620-	27-20-A- 5
W9GVO	1560-	26-20-A- 4
W9AVH	966-	24-14-A- 8
W9SW	960-	30-16-B- 5
K9ACS	780-	21-13-A-14
W9NIU	36-	4- 3-A- —

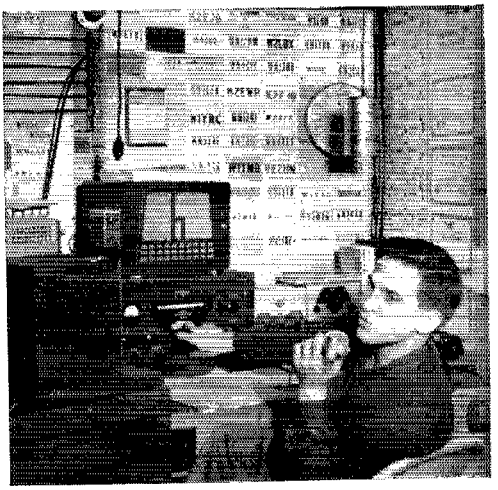
Indiana

K9CLO	68,400-	475-72-B-37
K9AYH	1596-	28-19-A- 2

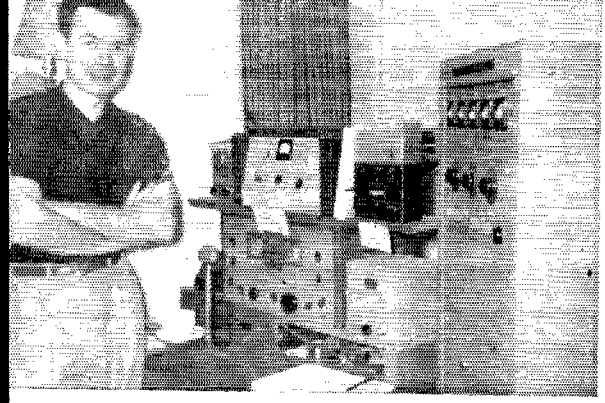
Wisconsin

W9VZP	56,256-	293-64-A-38





Three masterful men with microphones, dominating their call areas and sections through expert 75-40-20-15-10-meter parlance, are (top to bottom) Miss. maestro W5DQK, Ohio's outstanding W8AJW and Conn. champ W1YWU.



East Bay's W6PQW, a ten-meter specialist, likes the challenge of doing a job the low-power (90 watts) single-band way. As evidence, 600 QSOs! His 110,391 points ranks 9th high in the phone competition.

♦

W9PQA...52,502- 280-63-A-39
W9LKB...27,746- 176-53-A-20
W9QJW...14,850- 90-55-A-23
W9JBF...12,960- 96-45-A- –
W9LHR...12,000- 100-40-A-23
W9GIL...11,040- 120-46-B-10
W9FDX...10,100- 101-50-B- –
W9MIJ.....9405- 98-33-A- –
W9HCX.....4368- 57-26-A-10
W9RZD.....2632- 49-28-B-17
W9NRP.....1728- 36-16-A- 8
W9KQD.....1008- 28-12-A- 8
W9AOW.....819- 20-14-A-13
W9LXY.....702- 18-13-A- 5
W9SFK.....495- 15-11-A- –
W9VOD.....180- 10- 8-B- 1
W9OMZ.....72- 6- 6-B- –
K9BEL.....60- 5- 4-A- 2
W9UDK.....3- 1- 1-A- –

DAKOTA DIVISION

North Dakota

WØNPR..125,925- 581-73-A-38
WØKLP..101,790- 535-65-A-37
KØCND.....1377- 27-17-A-14

South Dakota

WØVQC..102,270- 495-70-A-37

Minnesota

WØZZT...44,546- 262-57-A-29
WØWVO..32,896- 257-64-B-27
WØTCF...21,762- 142-52-A-30
WØIVY...19,980- 148-45-A-29

DELTA DIVISION

Arkansas

W5HVX...35,219- 222-53-A-17
W5VUE.....644- 21-11-A- 4
W5KGJ.....429- 13-11-A- 1

Louisiana

W5KC....95,841- 463-69-A-30
W5INL...40,602- 202-67-A-22
W5GFS...20,925- 160-45-A-19
W5QPS.....7650- 75-34-A-12
W5DLR.....4494- 55-28-A- 5
W5ABD.....4368- 57-26-A- 7
W5ZAK.....2550- 34-25-A- 5
W5YVI.....1596- 28-19-A- 7
W5JET.....846- 24-12-A- 2
W5VND.....702- 18-13-A- 1
W5GAI.....179- 9- 7-A- 1

Mississippi

W5DQK..146,621- 672-73-A-39

Tennessee

K4ARU...78,804- 402-66-A-36
K4AAE...46,128- 249-62-A-33
W4IGW...20,706- 120-58-A-22
W4FHP.....3840- 60-32-B-13
W4CGW.....546- 14-13-A- 2

GREAT LAKES DIVISION

Kentucky

W4YZE...61,248- 354-58-A-34
W4KZF...54,600- 280-65-A-20
W8ZZK/4...4568- 54-29-A-14

Michigan

W8NSS...46,500- 250-62-A-15
W8FEV...45,077- 239-63-A-39
W8UZC...23,838- 137-58-A-31
W8LOX...20,769- 152-46-A-24
W8JKD....8058- 79-34-A-18
W8HCW....5472- 57-32-A-16
W8WBG....4500- 60-25-A-10
W8ZPU....2331- 37-21-A-10
W8CZK....1392- 29-16-A- 7
W8MDG.....90- 8- 4-A- –
W8MNZ (W8S MNY MNZ)
46,900- 350-67-B-36

Ohio

W8AJW..115,413- 531-73-A-37
W8HQK...58,988- 306-65-A-40
W8ZZC....44,404- 327-68-B-37
W8PLQ....43,512- 262-56-A-24
W8OMY...38,688- 208-62-A-37
W8BIM...34,515- 195-59-A-26
W8DUI...23,300- 161-49-A-32
W8UON...17,955- 133-45-A-34
W8OAC...16,660- 170-49-B- –
W8JSW....16,139- 102-53-A-15
W8OZW...15,750- 151-35-A-25
W8BEH...14,880- 124-40-A-22
W8MOW..12,903- 127-34-A-16
W8IXA....11,685- 95-41-A-16
K8AEK....9540- 108-30-A-11
W8RWZ....6318- 81-39-B-12
W8AJH....5712- 68-28-A- 8
W8HQN....4200- 50-28-A- 9
W8BSR....3960- 60-22-A-14
W8BPE....3528- 49-28-A- 8
W8UQZ....3510- 45-26-A- 4
W5DJG/8..3071- 45-23-A- 9
W8PCS....3060- 43-24-A- 4
W8VUV....2963- 40-25-A- 9
W8IMH....2574- 39-22-A- 7
W8FBZ....2280- 38-20-A- 3
W8INO....2268- 42-18-A- 6
W8BMX....2040- 34-20-A-10
W8MZF....1296- 24-18-A-10
W8RTF.....945- 32-15-B- 4
W8EPB.....924- 22-14-A- 3
W8MXF.....882- 21-14-A- 7
W8GKQ.....348- 15- 8-A- –
W8NNH.....336- 16- 7-A- 4
W8AGA.....253- 14- 6-A- 2
W8QAV.....252- 12- 7-A- 2
W8ZEU.....63- 7- 3-A- 1
W8SZP.....42- 14- 1-A- 2
W8GHO/8....36- 6- 2-A- 1
W8TNR.....33- 11- 1-A- 2
W8LJB.....27- 3- 3-A- 1
W8VM......27- 3- 3-A- 2
W8FOF.....6- 2- 1-A- 1
W8JNU.....4- 2- 1-B- 1

HUDSON DIVISION

Eastern New York

K2JMY...34,200- 200-57-A-32
K2PPB....16,539- 149-37-A-24
W2JYX (W2S JYX PBR)
42,930- 243-60-A-38

N. Y. C.-L. I.

K2AAA...177,244-1215-73-B-39
K2KND...22,575- 180-43-A-27
K2KXZ...19,710- 146-45-A-13
W2MCO...18,576- 144-43-A-30
W2PVV...12,204- 113-36-A-13
K2TCD...11,037- 144-26-A-22
W2JDN...10,098- 99-34-A-10
W2OBW....9828- 117-28-A-16
W2PDU....7072- 104-34-B- 8
W2UNS....6528- 64-34-A- –
K2AED....6072- 92-22-A-16
K2QIC....5427- 67-27-A-22
K2JZR....5355- 60-30-A- 7
K2KLN....5328- 74-24-A- 8
W2OQI....4050- 45-30-A- –
K2QZS....3186- 59-18-A-10
W2LCU....2550- 50-17-A- 7
W2EEN....2500- 50-25-B- 5
K2HTO....2220- 37-20-A- 8
W2IAW....1817- 40-23-B- 6
K2DEV....1350- 25-18-A- 3
K2CMV.....780- 20-13-A- 2
W2IWC.....765- 17-15-A- 1
W2OIC.....702- 18-13-A- 4
K2DZU.....504- 14-12-A-13
W2YHP.....408- 17- 8-A- 5
K2JWT.....288- 32- 3-A-14
W2KDC/2....252- 14- 6-A-12
K2DEH.....216- 9- 8-A- 3
W2YSI.....198- 11- 6-A- 4
K2GHS.....90- 6- 5-A- 1
K2DEM (K2S DEM OEG)
67,425- 363-62-A-40

Northern New Jersey

W2VCZ...68,706- 347-66-A-34
W2JKH...45,504- 316-48-A-38
K2EYZ...39,060- 210-62-A-23
K2OMP...29,376- 206-48-A-20
W2DMJ....7524- 76-33-A- –
WØOWY/2..6732- 69-33-A-17
W2WE.....3696- 66-28-B- 8
K2CVT.....1215- 27-15-A- 3
K2OFI.....525- 18-10-A- 6
K2TOU.....180- 10- 6-A- 1
W2LOP.....96- 8- 6-B- 1
K2LSA (K2S HXR JSP)
10,920- 130-28-A-19
K2PIM (K2S PIM SEB)
798- 20-14-A-20

MIDWEST DIVISION

Iowa

WØTYK[3]..76,296- 374-68-A-39
KØGBL...20,808- 136-51-A-14
WØRMG...19,800- 132-50-A-17
WØSVS....11,952- 127-48-B-14
WØFWO...11,343- 100-38-A-23
KØBYJ.....6372- 59-36-A-14
KØBHU....4820- 61-27-A- 6
WØBGB....1440- 30-16-A- 4
WØTWD.....495- 15-11-A- 3
KØDPI (2 oprs.)
1938- 34-19-A- 4

Kansas

WØZSZ...124,392- 572-73-A-38
WØLXA...77,220- 397-65-A-32
WØMXG...26,538- 161-52-A-18
WØQMS...10,845- 121-30-A-15
KØCFI....10,200- 101-34-A- –

Missouri

WØZQV...70,716- 332-71-A-31
WØTWH...51,750- 295-60-A-23
WØBCF...42,696- 300-72-B-26
WØJAH...28,917- 189-51-A-24
KØHEM...16,056- 114-48-A-9
WØPXH...13,455- 151-45-B-11
WØFLN....10,404- 103-34-A-16
KØCML....5371- 67-41-A-11
WØWKG.....66- 11- 2-A- 2
WØVLD.....60- 5- 4-A- 1
WØQON (9 oprs.)
18,200- 188-50-B-25
WØOIV (WØOIV, KNØHRN)
11,288- 88-43-A-13

Nebraska

KØDLL...17,499- 157-38-A-17
KØEMH/Ø (20 oprs.)
14,508- 194-39-B-40

NEW ENGLAND DIVISION

Connecticut

W1YWU...97,497- 471-69-A-38
W1EOR...58,338- 463-62-B 39
W1FYF...21,252- 163-44-A-34
W1AW[4,5]..15,651- 111-47-A- 6
W1BAN...14,388- 109-66-B-19
K1ABL....8181- 101-27-A-11
W1SKA....4050- 45-30-A- 6
W1DHP.....621- 23- 9-A- 2
W1LXV (W1S AON BDX)
945- 21-15-A- 3

Maine

W1GKJ...53,382- 288-62-A-39
W1COP...18,998- 161-59-B-24
W1EXZ/1....240- 10- 8-A- 5

Eastern Massachusetts

W1QIB....40,362- 217-62-A-39
W1JNX...28,728- 171-56-A-32
W1PKV...23,256- 152-51-A-29
W1LQQ...22,275- 135-55 A-12
W1ZVS....16,808- 129-45-A-12
W1PMZ...15,708- 119-44-A-23
W1VYI....14,700- 100-49-A- 9
W1SBP....13,256- 136-48-B-20
W1TOP[6]...7788- 118-33-B-17
W1OTH/1..7380- 82-30-A-11
W1WIR....7200- 100-36-B-18
W1MEG....3402- 41-28-A- –
W1FMW....1008- 24-14-A- 8
W1AQE.....660- 20-11-A- 1
W1PAW.....432- 18- 8-A- 5
W1MZF/1....270- 10- 9-A- 5
W1FVW.....84- 14- 2-A- 4
W1KIN.....75- 5- 5-A- 2
W1SNK/1....27- 9- 1-A- 1
W1SVO.....6- 2- 1-A- 1
W1AF (11 oprs.)
35,563- 295-61-B-39
WN1IWK (3 oprs.)
938- 65- 5-A-14

Western Massachusetts

W1NPL...42,215- 245-59-A-31
W1DLS...38,844- 254-52-A-29
W1SBW....2160- 30-24-A- 8
W1BKG.....224- 13- 6-A- –
W1BDV.....48- 4- 4-A- 1
W1ZPJ (W1S BDV GHG, WN1S GTZ IFH)..513- 19- 9-A- 3

New Hampshire

W1FZ.....85,284- 413-69-A-40
W1JNC....38,651- 205-63-A-32
W1GET.....7176- 92-39-B-16
W1YCZ.....6528- 68-32-A-13
W1CVK.....2168- 36-21-A- 6
W1WS.....84- 7- 4-A- 1

Rhode Island

W1BFB...68,928- 360-64-A-27
W1UTA.....945- 23-14-A- 4
W1YDH.....240- 10- 8-A- 3

NORTHWESTERN DIVISION

Alaska

KL7MF.....480- 20- 8-A- 3
KL7WAH[7]...16- 4- 2-B- 1

Idaho

W7VVC...24,780- 148-56-A-10
W7EYR....5664- 59-32-A- 7

Montana

W7NPV...67,914- 343-66-A-38
W7FIN....26,534- 181-49-A-15
W7OIQ....17,145- 128-45-A-18

Oregon

W7OVA...80,487- 407-66-A-29
W7YOZ...38,400- 205-64-A-20
W7PJK....29,912- 192-51-A-12
W7SPX.....8352- 87-32-A-11
W7ENU....2244- 44-17-A- 8
W7DIS.....3- 1- 1-A- 1

Washington

W7BLX...48,295- 375-65-B-33
W7CCY...10,440- 91-40-A-33

PACIFIC DIVISION

Hawaii

KH6CBP[8]..20,196- 188-54-B-11
KØGGZ/KH6
2304- 32-24-A-11

Santa Clara Valley

K6HTL...70,173- 341-69-A-34
K6JKQ/6..42,705- 222-65-A-37
K6BAM...18,720- 131-48-A-14
W6LDO...11,151- 89-42-A-11
W4AWM/6..5487- 61-31-A-9

East Bay

W6PQW..110,391- 600-62-A-37
W6BSY...84,560- 410-69-A-37
W7EYD/6..16,638- 118-47-A-10
W6BNH....7462- 91-41-B-13
W6WLI.....4140- 69-30-B- 8
W6/OJW.....90- 6- 5-A- 1

San Francisco

W6SIJ.....70,119- 373-63-A-37
W6CBE....60,434- 451-67-B-37
W6OST...21,384- 133-54-A-18

Sacramento Valley

W6SUP...138,846- 634-73-A-40
W6GTG...79,194- 394-67-A-39
W6QIV....15,622- 112-47-A-21
W6MYT....4624- 69-34-B- –

San Joaquin Valley

W6ZZC...81,972- 400-69-A-34

W6TZN...65,514- 361-61-A-25
K6OOW...48,458- 255-65-A-23
K6CLK.....3150- 42-25-A- 5

ROANOKE DIVISION

North Carolina

K5EDG/4..51,708- 278-62-A-37
K4JOU....41,310- 287-51-A-40
K4COB.....5250- 50-35-A-10
K4IIN.....144- 8- 6-A- –

South Carolina

K4GIE....10,602- 93-38-A- 9
W4VDG.....666- 19-12-A- 2

Virginia

W4WSF...34,821- 219-53-A-26
W4ZZV....33,660- 188-60-A-39
W4AVO...31,302- 225-47-A-22
W4NQM...28,866- 283-51-B-22
W4KMS...19,992- 136,49-A-20
K4DHB...15,362- 105-49-A-14
W4PRK...13,986- 126-37-A-17
W4IQG....12,540- 110-57-B-15
W4ZCL.....6664- 119-28-B- 9
W4WIN.....6417- 69-31-A-11
W4ZVE.....5832- 81-36-B- 6
K4FTQ.....5811- 81-26-A- 9
K4BQQ.....4872- 56-29-A- 2
K4CAD.....4785- 55-29-A-11
W4UIE.....4500- 60-25-A- 5
K4JVE.....4032- 50-28-A-15
W4JLS.....3861- 50-26-A- 9
W4YTZ.....2125- 43-25-B- 3
W4ZV.....1536- 32-16-A- 5
K4ACZ.....1482- 38-13-A- 4
K4IKF.....1377- 27-17-A- 3
W4IMP.....990- 33-15-B- 6
W4LLU.....861- 21-14-A- 4
W4PLS.....759- 23-11-A- 2
W4JOJ.....756- 18-14-A- 1
K4AL.....726- 22-11-A- 4
W4BSM.....546- 14-13-A- 2
W4KAO.....540- 15-12-A- 5
W4HVU.....495- 15-11-A- 1
W4MZR.....135- 9- 5-A- 2
W4CA[2].....120- 10- 6-B- 2
W4JFV.....72- 6- 6-B- 1
W4OWV.....72- 6- 4-A- 2
W4YL.....40- 5- 4-B- –
W4IYC.....24- 4- 3-B- 1
K4AUN.....12- 2- 2-A- 1
K4IYE.....3- 1- 1-A- 4

West Virginia

W8SSA....63,054- 347-62-A-37
W8UMR..34,968- 188-62-A-16
K8CSG.....6278- 78-27-A-10
W8FQS.....2376- 33-24-A- 6
K4IKF/8....968- 22-15-A- 4

ROCKY MOUNTAIN DIVISION

Colorado

KØCRV...63,340- 314-68-A- –
WØECY...19,512- 138-48-A-28
KØAUO..... 231- 11- 7-A- 2
WØYQ (9 oprs.)
86,970- 446-65-A-39

Utah

W7QWH..24,780- 210-59-B-12

Wyoming

W7UFB...12,000- 101-40-A- 5
W7PSO.....27- 3- 3-A- –
W7YDJ.....3- 1- 1-A- 1

SOUTHEASTERN DIVISION

Alabama

W4DS.....25,110- 140-60-A-26
W4NZM...18,189- 195-47-B-13
W4BSG.....1593- 30-18-A- 5
K4GLB.....1003- 32-17-B- 5

Eastern Florida

K4GHA...107,916- 529-68-A-36
W4LVV...67,776- 360-64-A-29
K4CTU...59,450- 517-58-B-32
K4BCN...48,960- 255-64-A-31
K4ELB....29,097- 185-53-A-29
W4HKJ....20,900- 190-55-B-23
K4AKQ...10,656- 100-37-A-15
K4KVJ.....8584- 118-37-B-18
K4DKV.....5307- 61-29-A- 8
K4IZL.....4770- 54-30-A- 4
K4IXG.....264- 11- 8-A- 1
K4DVY.....3- 1- 1-A- –

Western Florida

W4JLW...80,586- 414-66-A-28
K4LQA....63,900- 356-60-A-30
W4HIZ....16,362- 152-54-B-29

Georgia

W4FGH...59,902- 491-61-B-39
K4APC.....3929- 50-27-A-10
W4FYH.....120- 10- 6-B- 3

West Indies

KP4DH.....126- 7- 6-A- –

SOUTHWESTERN DIVISION

Los Angeles

W6AM[10]..263,129-1219-73-A-38
K6EVR...181,902- 854-71-A-40
W6CPL[11]..131,070- 646-68-A-35
W6IIM....93,030- 447-70-A-39
K6BWD...88,992- 412-72-A-31
K6GLC...87,417- 449-66-A-40
K6HTL....30,456- 190-54-A-24
W6EIG....28,812- 175-56-A-34
K6IYJ....28,365- 155-61-A-20
K6PLW...21,024- 146-48-A-15
K6DAS...19,296- 135-48-A-17
W6BUK...17,248- 154-56-B-24
W6OLY...15,000- 150-50-B-19
W6HAL...13,797- 112-42-A-16
K6HNX....7029- 72-33-A- 9
W6DXZ....6138- 62-33-A- 6
K6KME....5468- 70-27-A- 6
K6DDO....4293- 53-27-A- 3
K6CEZ....3450- 53-23-A- 7
K6ICS.....3413- 46-25-A- 6
K6DLY....1170- 26-15-A- 6
K6MQN....1152- 24-16-A- –

Arizona

W7ZZA...87,969- 418-71-A-30
W7ENA...67,470- 346-65-A-29
W7FIU....33,516- 200-56-A-26
W7PEG....24,375- 163-50-A-15
W1ZVG/7..23,027- 152-51-A-16
W7WZZ....6615- 66-35-A-13
W7BAD (W7s BAD CAF)
98,703- 509-66-A-31

San Diego

W6SHY...53,808- 310-59-A-20
W6JVA....7752- 69-38-A- 5
W6HU.....944- 19-17-A- 3

Santa Barbara

W6NTF...21,465- 136-53-A-29
W6ORW...21,225- 142-50-A-15

WEST GULF DIVISION

Northern Texas

W5VU....84,192- 440-64-A-38
W5COF...50,508- 277-61-A-24
W5WTY..40,077- 219-61-A-30
K5BSM...34,017- 197-58-A-16

Oklahoma

W5IWL...80,376- 395-68-A-40
W5QVV...13,500- 90-50-A-25

Southern Texas

K5EXZ...71,820- 514-70-B-40
K5EDQ...63,416- 321-67-A-31
W5EWS...25,200- 150-56-A-20
K5RSZ...20,349- 133-51-A-14
K5DJK...12,033- 97-42-A-18
K5AFY/5....273- 13- 7-A- 3
K5EAT/5 (W5s HYX KNZ, K5EAT, KN5HEW)
102,983- 510-69-A-40

New Mexico

W5MYI...98,892- 494-67-A-40
W5FHL...26,153- 160-55-A-26
W5NXF...33,345- 297-57-B-14
W5FUP...12,054- 100-41-A- 8

CANADIAN DIVISION

Quebec

VE2KG.....675- 15-15-A- 5
VE2AWK (7 oprs.)
13,872- 137-34-A-21

Ontario

VE3DNE..60,300- 300-67-A-37
VE3AIU...48,906- 372-66-B-24
VE3DYB..21,672- 152-48-A-22
VE3BVI....9870- 95-35-A-25
VE3AML...4743- 51-31-A- –
VE3HB.....160- 10- 8-B- 1

Saskatchewan

VE5VZ....35,400- 202-60-A-22

Alberta

VE6IN....27,469- 182-51-A-29

British Columbia

VE7ZM...16,275- 110-50-A-13

[1] W3WPY, opr. [2] W3SDV, opr. [3] KØHRX, opr. [4] W1WPR, opr. [5]Hq. staff, not eligible for award. [6] W1NW, opr. [7] W8GZF, opr. [8] KH6CBQ, opr. [9] W4FNT, opr.[10] W6FRW, opr. [11] W6CCP, opr.

ARRL thanks the following amateurs for submitting their logs for checking purposes: K2JYM, W4000, W5OYH, W6CIW/2, W8s IF PQQ.

Strays

Two young men, W7VMO and W7VMP, turned up at a convention in the Southwestern Division. They looked very much alike and W6XXX, at the registration desk, asked, "Are you two brothers?"

"Yes, we are," they replied.

On further questioning, each boy subscribed to the following facts: Each was named Fenwick. Each was born on April 13, 1936, in Indianapolis, Indiana. Each had a mother named Edna Fenwick. Each had a father named John Fenwick.

As he collected their money and prepared their call-letter badges, W6XXX then said, "You're twins, aren't you?"

Promptly they both answered, "No."

Assuming that all the answers they gave were accurate, how do you account for the fact that they were not twins?

(Turn to page 104)

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W1BDI was momentarily staggered by KN8CJX, who told Handy to throw away his 48 QSLs after the WAS application had been checked!

KN2UFB and KN2UFD operate within 4 ke. of each other on 7 Mc., live near each other, belong to the same club, but have never QSOd.

Ham radio was used to facilitate a recent gin rummy tournament conducted by the Las Vegas Resort Hotels. Here W7YKQ (right foreground) plays the hand of Chester Seagars, who was at KC4USN. Assisting were W7RBV, K6BTG/7, W7BRX, K6AFQ/7, W7ZLQ and W6AJP.

National Convention News

SPECIAL FEATURES being planned for the ninth national American Radio Relay League convention in Chicago Aug. 30–Sept. 1 promise to make this one of the most memorable ham conclaves ever held, according to Jordan Kaplan, W9QKE, convention general chairman. The entire show will be under one roof — that of the famous Palmer House — sponsored by the Chicago Area Radio Club Council, Inc. The Young Ladies Radio League's second annual international convention will be held at the same time and place. Some of the features are:

Exhibits: Conventioneers will see the first public showing of new 1958 ham gear on an industry-wide basis. Major manufacturers will have exhibit space and will display their latest transmitters, receivers and other equipment.

Plant Tours: On Friday, the first day of the convention, special buses will be leaving the hotel all day to take visitors out to leading electronics manufacturing plants where there will be guided tours showing the latest in gear, research and manufacturing techniques. Included in the itinerary will be a tour of the world's largest research environmental testing lab.

FCC Examinations: FCC examinations for Novice and Technician class licenses will be conducted Saturday and Sunday by selected members of the Society Radio Operators of Chicago. Examiners from the Chicago office of FCC will conduct exams at the hotel on Saturday and Sunday for General class licenses, and on Saturday only for Extra Class tickets.

Radioteletype: RTTY enthusiasts, as well as those who want to learn more about it, will have an opportunity to see equipment in operation, with special land lines strung into the hotel by one of the news wire services. The Chicago RTTY group will give demonstrations of audio-frequency-shift keying. Other demonstrations will be given on auto-start and -stop, and technical discussions will be given on possible narrow-shift standards. Interested persons also will be able to learn how to get into RTTY at low cost.

Mobile: There will be a special mobile room and present plans call for forum discussions of transistor applications to mobile gear. There also will be a forum on hidden-transmitter hunts. The mobile room will feature displays of mobile gear of all types, and a mobile trouble-shooting clinic will be open throughout the convention. Mobileers with problems can bring their headaches here for relief. Also among the displays will be one of mobile QSL cards.

Novice: There will be a special program aimed at Novices, Technicians and any others interested in getting a start in ham radio. Lewis McCoy, W1ICP, *QST* Technical Assistant, will give talks of interest to beginners, whether they hold licenses or not.

For the Ladies: Special activities are planned for the XYLs who don't hold ham tickets, including a tour of WNBQ, the world's first all-color TV station, and attendance at the coast-to-coast "Club 60" show emcee'd by Dennis James. There will also be a tour of Marshall Field's famous department store, plus a luncheon in the store's Wedgwood Room, during which there will be an initiation into the SWOOPS, an organization open only to unlicensed YLs and XYLs.

Many other features are planned, including special AREC and RACES programs, Army and Air Force MARS displays, a Wouff-Hong initiation, a c.w. contest, awards for the best QSLs, the best operating aid, best homebrew transmitter and receiver, best hints and kinks, best homebrew test equipment, and the photo best showing amateur radio activities such as field day or emergency work. There will be special meetings and dinners for DX Century Club members, v.h.f. enthusiasts and members of the YLRL.

Actually, the convention is shaping up as the biggest family affair in the history of ham radio. The hotel is setting up a baby-sitting service for all those little "harmonics" who can't be left alone while the XYL and OM are taking in the show. A completely equipped nursery and playroom, with a registered nurse and trained play supervisors in attendance, will be available. The hotel's Chicago Room will be converted into a children's restaurant for the convention, with menus (and prices, too!) especially planned for the kids and parents. Also with families in mind, the hotel has set up a special rate schedule: up to four members of the same family can occupy a large master bedroom (four beds) for $16 a night; single rooms are $9 per person; double room (double bed), $14; double room (twin beds), $15. Dormitory type rooms also are available for four or more persons to a room at $3 per person per night. Requests for room reservations should be sent direct to the hotel.

Pre-registrations for the convention and banquet are now being received. Rates, including the banquet, are $10.50 when made in advance, or $12.50 if made on arrival. For those who don't plan to attend the banquet, the rates are $5.50 and $6.50. Because of limited space, banquet tickets cannot be purchased without registration. Tables of 10 are available if 10 reservations are sent in a block. Advance registrations should be mailed to the Treasurer, Chicago Area Radio Club Council, Inc., P. O. Box 6797, Chicago, Ill.

Treasurer of the convention is Bill Traxler, W9FUJ; committee chairmen include: exhibits, Fritz Franke; hotel, Bud Balaste, W9QCR; program, Phil Haller, W9IHPG; YLRL, Cris Bowlin, W9LOY; food, Ed McMullin, K9AXK; legal, Bill Peterson, W9VTV; awards, Doc Krysinski, W9SQE; Novice exams, Bill Harper, W9BWM; registration, George Nesbed, W9LQF; contests, Lee Weaver, W9KCE, and publicity, Bob Seals, K9AHK.

The World Above 50 Mc.

CONDUCTED BY EDWARD P. TILTON,* W1HDQ

WHEN the 50-Mc. band was opened to Technician Class licensees in April, 1955, everyone felt that it would be a fine thing for 6-meter activity. But to some, this writer included, the move represented an abandonment of the original concept of the license that might be called an "advanced beginner's" ticket. In case you've forgotten, or weren't around when the license was made available, potential technicians (small *t* this time) were supposed to be waiting in droves, on the outskirts of amateur radio, to jump in and fill our u.h.f. and microwave bands, if only they could get a license without developing code skill.

The mob of microwave pioneers never materialized out of the bushes, however. The Technician (capital *T* again) turned out to be a fellow who took the ticket along with the Novice grade, if he could handle the technical questions — but he thought of the license mainly as a means of

Two happy 6-meter men gloat over prize QSLs. At the left, W8LPD displays ZE2JE card confirming the first Western Hemisphere 50-Mc. contact with Africa. W8PBU holds his for contact made with VQ2PL, shortly after.

keeping his foot in the FCC's door, while he boned up on the code. The idea of actually using the ticket to go on 220 Mc. or higher bands rarely occurred to most of its holders. There was a faint trace of Technician interest on 220 and 420 Mc. in some population centers, and the ARRL Information Service was called on to answer quite a few letters about simple equipment for 220 and up — but by and large the new license accomplished little in populating our u.h.f. and microwave bands. Technicians were like all other beginners in the game — they wanted to talk to people — lots of people, and in the easiest and least expensive manner possible.

Making the license usable on 50 Mc. was a tacit admission that merely making it easy to get

50 WAS Mc.

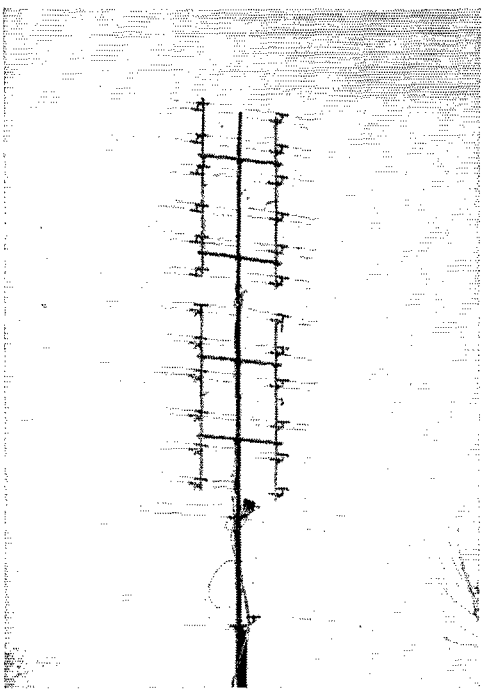
W0ZJB	48	W4CPZ	45	**W8SQU**	46
W0BJV	48	W4UCH	45	**W8NQD**	45
W0CJS	48	W4QN	44	**W8UZ**	45
W5AJG	48	W4EQR	44	**W8RFW**	45
W9ZHL	48	W4FLW	43	**W8LPD**	44
W9OCA	48	W4UMF	43	**W8HJR**	43
W6OB	48	W4IKK	42	**W8YLS**	41
W0INI	48	W4RFR	42	**W8PCK**	38
W1HDQ	48	W4OXC	41	**W8NOH**	34
W8MJD	48	K4DJO	42		
W2IDZ	48	W4MS	41	**W9BRN**	48
W1LLL	48	W4AZG	40	**W9ZHB**	48
W0DZM	48	W4FNR	40	**W9QUV**	48
W0HVW	48	W4IUJ	38	**W9VZP**	47
W0WKB	48	K4DNG	37	**W9RQM**	47
W0SMJ	48	W4AKX	36	**W9ALU**	47
W0OGW	48	W4AYV	36	**W9QKM**	47
W7ERA	48	W4GJO	35	**W9UIA**	45
W3OJU	48	W4ZD	35	**W9UNS**	45
W6TMI	48	W4ZBQ	34	**W9MHP**	43
K6EDX	48	W4HZG	34	**W9MFH**	42
				W9JEP	42
W1VNH	47	W5VY	48	**W9CJI**	41
W1CLS	47	W5SFW	47		
W1CGY	46	W5LFQ	47	**W0ORE**	48
W1LSN	46	W5GNQ	46	**W0QIN**	47
W1AEP	46	W5ONS	45	**W0NFM**	47
W1RFU	44	W5ML	44	**W0TKX**	47
W1FFS	44	W5FSC	44	**W0KYF**	47
W1KHL	42	W5JLY	44	**W0MVG**	47
W1ELP	41	W5JME	42	**W0JOI**	46
W1SUZ	37	W5VV	43	**W0USQ**	45
W1SPX	36	W5FAL	41	**W0FKY**	45
W1UHE	35	W5HEZ	41	**W0CNM**	44
W1LGE	33	W5BXA	41	**W0YJF**	44
W1WAS	31	W5HLD	40	**W0URQ**	44
W1MFM	30	W5FXN	40	**W0JHS**	43
W1FTF	29	W5EXZ	38	**W0IPI**	43
W1FMK	26	W5EUQ	38	**W0PKD**	41
		W5FRK	36	**W0ZTW**	41
W2MEU	47	W5HFF	33	**W0QVZ**	40
W2AMJ	46	W5WZF	33	**W0VIK**	36
W2BYM	46	W5NSJ	32	**K0BPM**	35
W2RLV	45	W5ZVF	31	**W0WNU**	34
W2FHJ	45			**W0YZZ**	30
W2RGV	44	W6WNN	48		
K2JNS	42	W6UXN	48		
K2AXQ	42	W6ANN	45	**VE3AET**	45
W2SHV	41	W6NDP	45	VE3AIB	35
W2GYV	40	K6GTG	44	**VE1EF**	35
K2HPN	39	W6GMG	43	VE3BBX	33
W2ORA	39	K6HYY	43	VE1QY	32
W2QVH	38	W6ABN	43	VE2AOM	31
K2ITQ	38	W6IWS	41	VE3DER	31
K2ITP	38	W6CAN	40	XE1GE	27
K2HRR	37	W6BWG	39	VE1PQ	23
K2LTW	35	K6ERG	38	VE3OJ	22
		W6OJF	31	VE1WL	21
W3TIF	47			CO6WW	21
W3KMV	44	W7FFE	48	VE4HS	20
W3NKM	41	W7HEA	47	CO2ZX	16
W3MQU	41	W7BQX	47	LU9MA	16
W3MXW	41	W7FDJ	46	PZ1AE	15
W3OTC	40	W7DYD	47	JA1AUH	5
W3FPH	40	W7ACD	45		
W3RUE	41	W7JRG	44	Calls in **bold face** are holders of special 50-Mc. WAS certificates listed in order of award numbers. Others are based on unverified reports.	
W3LFC	37	W7BOC	42		
W3AMO	36	W7JPA	42		
W3TDF	35	W7FIV	41		
W3UQJ	30	W7CAM	40		
		W7UFB	32		
W4EQM	47				
W4FBH	46	W8CMS	47		
W4LNG	45	W8OJN	46		

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

a ticket will not build up our experimenter population. The move touched off a boom in 50-Mc. activity that is still in the mushroom stage. There has never been anything like it in v.h.f. circles since the long-lamented simple-gear days on 5 meters, back in the early '30s.

After two years' experience, what has happened in the Technician ranks, outside of the rush to get on 6 and have fun? To everyone's surprise, we now find an appreciable move higher in frequency as well. The Technicians are looking for new worlds to conquer, and having got into the game actively on 6, they are now going to 220 Mc. There is a lesser, but still recognizable, growth in 420-Mc. activity, and even some signs of life on 1215 Mc. and still higher frequencies, that can be traced to the Technician influence.

The 220-Mc. band is turning out to be a natural for many of the newcomers. Equipment is not particularly difficult to build there, with modern techniques, and coverage is almost identical to 144 Mc. A good 220-Mc. array often can be erected in a spot where even a 6-meter beam looms large on the neighborhood skyline. TVI, easy to control on 50 Mc. except where Channel 2 is involved, may be too rough a battle in Channel 2 areas for some beginners. For them, 220 Mc. may be a real lifesaver. No band, v.h.f. or otherwise, is completely free of TVI, but 220 is as good as most, especially when lower power is employed.



This towering structure is a 96-element collinear array for 432 Mc. in use at W8JLQ, Toledo, Ohio. Below it is 4 halfwaves in phase, with reflectors, for 144 Mc. The 432-Mc. job has feedpoints at the center of each 6-element curtain. Coax line and a balun connect to the center of a 3-wavelength phasing line running up the middle of the array. Two 1-wavelength repeaters are used at the ends of the vertical section, and these feed the centers of four 2-wavelength repeater sections that join the 6-element bays in sets of 2.

For years most contacts made on 220 were the "arranged" variety. No more! In many regions there is now routine operation 220, and the "How-about-looking-for-me-on-220?" approach is becoming the exception, rather than the rule, as a means of checking out 220-Mc. gear. With nightly and week-end activity, 220 is getting a chance to show what it is capable of in the way of coverage. Reliable skeds are being kept over 100 miles and more of rough terrain. When tropospheric conditions are good, the signals boom in on 220 over paths such as Western Massachusetts to Eastern Pennsylvania, or Rhode Island to Upstate New York, to name typical examples.

As a dividend, 220 is showing that it is often quite good for aurora DX. There is a considerable difference between 50 and 144 Mc. in the number of aurora openings, and 220 is perhaps a similar step in the more-difficult direction, but some auroras do provide *strong* signals on 220 Mc. over distances that may reach record proportions. We have little experience to go on so far, but there seems a real prospect of working out to distances beyond 1000 miles by this means when we get enough activity in the right places.

April showed the way in the aurora department. On the night of the 18th more 220-Mc. auroral contacts were made than in probably all previous experience on the band. W3LZD and W3ARW, near Scranton, Pa., worked W1VNH, Agawam, Mass., with good signals. W1RFU, Wilbraham, Mass., hearing this going on, was getting ready to join in when he heard an S8-to-9 signal from W8IJG, West Richfield, Ohio. Bill called him, and what is believed to be the first *W1-W8* 220-Mc. aurora QSO was on. Contact was made around 1930, and W8IJG continued strong for the *W1s* and K2GRI, near Saratoga Springs, N. Y., for the better part of an hour.

W1VNH, W1RFU, W3LZD, W3ARW and K2GRI all report that W8IJG was stronger than *W8s* often are on 144 Mc. How far could the DX have been stretched if fellows in Michigan, Indiana, Illinois, Wisconsin and Kentucky had been going on 220-Mc. c.w. with good setups that night?

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

From our vantage (?) point in New England we got the impression that there was little in the way of v.h.f. DX, other than aurora, since we last reported to you, until we dug into the IGY project files. There quite a different story unfolded. There was plenty of aurora, certainly, but the IGY record shows that there are areas in the world where 50 Mc. was about the ideal DX band this spring. Users of lower bands seldom had it any better than did our 50-Mc. friends in Argentina, Chile, Uruguay, Mexico, Guatemala and Japan.

LU7AT, Buenos Aires, reported 50-Mc. DX every day in the first half of April — and what DX! Mike heard or worked DX almost around the clock many of these days, a typical session running through to 0100 or 0200. On April 9 he logged YV5GO and XE1GE around 1400 LU time. JA2JJ, halfway around the world, was in at 2210, followed by XE1GE again, at 2315. CO2XZ was worked at 2320. OA4BR, KZ5JS and YV5BX were heard around midnight, and a DX signal, believed to be KH6NS, was logged at 0200 to 0230 on the 10th. Mike was back at it by 1430,

finding the band open to California, with K6GMX, K6EQB, and W6PUZ coming through. CO2XZ and CO2XE were in at 1600; XE1GE at 1610 and 1800, W6PUZ again at 1900. KH6PP was heard at 2100, and an opening to Japan lasted from 2100 to 2305. JA2GR, JA1GP and JA7BY were worked, and JA1, 2, 3, 6 and 8 were heard. On the 11th the band opened to Mexico in the late afternoon, to YV, KH6, PZ, W4, PJ2 and PY through the evening, and to TG9 after midnight. The band repeated about the same performance the following day, and added Puerto Rico to the list. These, with the regulars CE, LU and CX, are fifteen countries workable on 6 in a span of less than 24 hours, with repeats nearly every day or night. Ah — for that transequatorial scatter!

In Japan things were about as hot, with many *JAs* working into South America. CX2RE is the farthest east to be worked from Japan, but the JA1GP-CX2RE DX figures *out to be somewhat less than that for JA6FR to the LUs*, the 12,000-mile record. JA2GR reports working VK4NG several times crossband, with VK4NG on 28 Mc. The Australians no longer have the 6-meter band.

DX was reported worked on 6 from the United States mainland on March 25 (W8CMS-LU9MA), 28 and 30. The 28th seemed to be the most widespread, with LUs reported by W5FXN, K6GTG, WØEDM, WØMVG, WØZJB and possibly others not yet in. LU7AT's list for that date includes XE1GE, *W0s* TF AEH EDM DDX ZJB MVG INL, *K5s* BDL DXJ, *K6s* GMX HYY EWS GMV, *W5s* FXN HHF, LFQ, *KH6s* NS PP BRJ, KZ5JS and PJ2AN! In April U. S. stations worked into South America on the 4th 6th, 7th, 10th, 11th, 13th and 14th, up to the middle of the month. Most of the reports are from *W5s* and *W6s*, but a batch of QSLs from LU3DH confirms early-morning contacts with several Maine and Massachusetts *W1s* on March 30. The March 28 opening affected Iowa, Kansas, Missouri, Texas and California, that we know of.

Aurora was frequent on 50 and 144 during April. It was reported all across the northern part of the country April 9 and the April 18 session should be some kind of record when the reports are in. Mostly, though, the auroral intensity *was off somewhat from March. From March 16 to April 15*, aurora was reported on just half the days, but the DX and length of openings were not comparable, generally, to a *month* earlier. A report on the March 27 aurora was received by W2CXY, Chatham, N. J., from W4DBV, Rome, Ga., who heard both ends of Walt's QSO with W9ZIH on 144 Mc. Aurora reports that far south have been rather rare on 2 meters. But the phenomenon is not necessarily rare, for W4IKK, also of Rome, has caught seventeen auroral openings on 50 Mc. since April 21, 1956.

Coincidence Department: K6JBW, Garden Grove, Cal., worked LU9MA on April 7, 1956, at 1150 PST. On April 7, 1957, he worked him again, only 40 minutes away from exactly one year later.

Prospects for 50-Mc. DX in the easterly direction have improved somewhat, politically, at least. Just too late for inclusion in last month's *QST*, word came from CT1CO that amateurs in CT1, Portugal, CT2, Azores Island, and CT3, Madeira Islands, *have received permission to operate* between 50 and 52 Mc. through December, 1958. This is a special temporary arrangement, obtained, at CT1CO's suggestion, by the IARU affiliate society, the *Rede dos Emissores Portugueses*, from their government authorities.

There is a good chance that some other European countries may give similar temporary permission, during the IGY period, to technically qualified amateurs. SM5AOG, a recent visitor at ARRL Headquarters, brought us the good news that the SSA, Sweden's IARU society, is confident that 50-Mc. work will be possible there soon, on a limited scale. The SMs are far from any European TV stations in the 50-Mc. region, so the prospect of interference is very slight, if not completely nonexistent. Judging by the harmonics and other commercial signals received from the Scandinavian countries on 50 Mc. here last fall, our friends in Sweden should do very well in this direction on 6.

Portugal, the Azores and Madeira Islands look good, too. *Portuguese hams have had little opportunity to work in* this part of the spectrum in the past, so not many stations have equipment that can be put to work right away, but several fellows are interested. CT3, by the way, counts for Africa in the WAC picture.

Other countries are making the 70-Mc. band available in Europe, the latest being Finland. The Radio Society of Great Britain is sponsoring a 70-Mc. contest the week end of June 22. Crossband work to 50 Mc., where that band is *in use, will be included.* Also participating will be the countries where the band is around 72 Mc., as in France. Other v.h.f. contests on the Region 1 IARU calendar are 1250-Mc. tests, Aug. 25 and another 70-Mc. contest, Nov. 16 and 17.

Club and Net News

Several special events of interest to v.h.f. enthusiasts are in prospect for the summer months. First is the ARRL National Convention, to be held in Chicago, Aug. 30 through Sept. 1. An extensive program is being set up by V.H.F. Chairman W9WOK, and v.h.f. clubs throughout the country will shortly be hearing from John along this line.

A summer event that has been a must for v.h.f. hams for some years is the Turkey Run V.H.F. Picnic. As before, W9ZHL is in charge. The picnic begins at 8 A.M. and lasts

2-METER STANDINGS

	U. S.				U. S.		
States	*Areas*	*Miles*		*States*	*Areas*	*Miles*	
W1REZ	24	7	1175	W5VY	7	3	1200
W1FZJ	21	6	1120				
W1RFU	20	7	1150	W6NLZ	6	3	1000
W1HDQ	20	6	1020	W6WSQ	5	3	1380
W1KCS	19	6	1080	W6DNG	5	3	660
W1AZK	18	6	850	W6AJF	5	2	640
W1AJR	17	5	810	W6RRZ	4	2	360
W1IZY	17	6	750	W6PJA	3	3	1390
W1UIZ	17	5	680	W6ZL	3	2	1400
W1BCN	16	5	650	W6AJF	3	2	640
W1KHL	16	5	540	W6BAZ	3	2	400
W1AFO	15	5	810	W6MMU	3	2	388
W1MMN	14	6	800	W6ORS	3	2	365
				W6LSB	2	2	360
W2ORI	27	8	1040				
W2NLY	27	8	1050	W7VMP	6	4	1280
W2AZL	23	8	1050	W7LEE	6	3	1020
W2BLV	23	7	1020	W7LHL	4	2	1050
W2DWJ	21	6	720	W7JU	4	2	353
W2OPQ	20	6	970	W7JIP	3	2	850
W2AMJ	20	6	980	W7YZU	3	2	240
K2CEH	20	7	910	W7JUO	2	2	140
W2PAU	20	6	880				
W2UTH	19	7	880	W8WXY	28	8	1200
W2AZP	19	7	650	W8RMH	28	8	800
K2IXJ	19	6	925	W8SRW	27	7	850
W2CBB	19	6	740	W8SFG	26	7	850
W2KIR	19	6	—	W8ILC	25	8	800
K2IEJ	18	6	745	W8LPD	25	8	750
W2AOC	18	6	660	W8DX	25	8	720
W2LHI	18	7	620	W8LOF	24	8	700
W2RXG	17	6	675	W8SVI	22	8	725
W2HTP	16	6	650	W8JWV	22	8	710
W2PCQ	16	5	650	W8PT	22	7	810
				W8BAX	21	8	685
W3BGT	28	8	740	W8WRN	20	8	670
W3RUE	28	5	850	W8EP	18	7	800
W3IBH	23	7	650	W8ZCV	17	7	970
W3GKP	23	6	800	W8RWW	17	7	630
W3FPH	21	8	—	W8LCY	17	7	610
W3TDF	21	6	—				
W3KCA	21	7	—	W9KLR	30	8	950
W3LZD	20	7	—	W9WOK	28	8	800
W3KWL	19	7	740	W9FVJ	26	8	850
W3NKM	19	8	660	W9ZHL	25	8	760
W3YHI	19	6	800	W9EQC	25	8	820
W3BNC	18	7	750	W9GAB	24	7	1100
W3LNA	16	7	720	W9EHX	24	7	725
				W9BPV	23	7	1000
W4HHK	29	9	1280	W9UCH	22	8	750
W4HJQ	26	7	750	W9UED	22	7	960
W4AO	23	7	950	W9AAG	21	7	850
W4DWU	22	6	675	W9KPS	21	7	690
W4JCJ	22	6	660	W9MUD	19	7	640
W4UMF	21	6	720	W9REM	19	6	—
W4MKJ	20	8	725	W9LF	19	6	—
W4JFV	18	7	830	W9ALU	18	7	800
W4OLK	18	6	720	W9JGA	18	6	720
W4VLA	17	7	825	W9MBI	16	7	660
W4WNH	17	7	750	W9JYI	15	7	560
W4TLV	16	7	1000	W9LEE	15	6	780
W4CLY	15	5	720	W9DSP	15	6	760
W4ZBU	14	5	800	W9DDG	16	6	700
W4WCB	14	5	—				
W4TCR	14	5	720	WØEMS	27	8	1175
W4IKZ	13	6	720	WØIHD	26	7	870
W4SOP	13	5	680	WØGUD	25	7	1065
W4LTU	13	6	1080	WØUOP	18	6	—
W4CPZ	12	5	650	WØONQ	17	6	1000
W4UDQ	11	5	850	WØINI	17	5	830
W4MDA	11	5	680	WØUSQ	14	6	750
W4GIS	9	2	335	WØOAC	14	5	725
				WØTJF	13	4	—
W5RCI	21	7	925	WØSMJ	12	5	775
W5HEH	15	7	830	WØZJB	11	4	650
W5AJG	15	6	1280				
W5ABN	12	5	780	VE3DIR	26	8	915
W5QNL	10	5	1400	VE3AIB	25	8	910
W5CVW	10	5	1180	VE3BQN	17	7	790
W5SWV	10	3	600	VE3DER	16	7	820
W5MWW	9	4	570	VE3BPB	13	6	715
W5ML	9	3	700	VE2AOK	12	5	550
W5NDE	8	3	520	VE3AQG	11	7	800
W5PZ	8	3	500	VE1QY	11	4	900
W5FEK	8	2	580	VE7FJ	2	1	365

all day. There will be special attractions for the ladies and the kids, for this is a family affair. Bring your basket lunch and join the fun. The date is July 28; the place is the State Park from which the party gets its name, near Terre Haute, Ind.

The Mt. Airy V.H.F. Club of Philadelphia is holding its annual picnic Aug. 11 (rain date Aug. 18) at the Fort Washington National Park, in Flourtown, Pa. Take Route 309 to Flourtown, where signs will be posted to direct drivers to the picnic site. More details any Monday night at 2000, when their Pack Rats Net holds forth on 144.2 Mc.

Many clubs and other v.h.f. groups are planning special trips for the June V.H.F. Party and the ARRL Field Day, the 8th and 9th and 22nd and 23rd, respectively. One such operation of special v.h.f. interest is planned by W4ZZ. Brownie & Co. will be at a high elevation in the Great Smokies Mountains, on the Tennessee–North Carolina line, about 30 miles NNW of Ashville, N. C., June 20 through 23. They will be on 50.04 and 144.45 Mc., mainly, and will be in a position to work from either state on either band.

A new group with excellent potential for improving relations between amateur radio and the public at large was set up recently in the Dallas area. Known as the 6-Meter Mobile Emergency Corps, it is the brainchild of K5DXJ. K5BQA reports that the Corps grew out of a social group that developed informally on 6 last winter, when activity on the band first began to develop sizable proportions. It wasn't long before they had a chance to show their mettle, in the tornado that struck the west side of Dallas on April 2. Working with other groups on the various bands, the 6-meter gang provided communication between the Dallas Red Cross Headquarters and the disaster area, and made possible constant-communication ferrying of personnel and supplies. The emergency organization is set up in business-like fashion. All mobiles must carry AREC mobile cards to take part in actual emergency operations, and members are asked to monitor 50.25 or 50.55 Mc. when not in communication. Drills are held each Wednesday at 1930, on 50.55 Mc., and participation in these is a requirement of membership.

VE1PQ, Bedford, N. S., writes of an informal gathering on 50 Mc. each night at 2200, in the Halifax area. Regular participants are *VE1s* WL OM ZR and PQ.

Need Vermont on 6? There are stations in the Brattleboro area ready to supply contacts with the Green Mountain State. In fact, they're actually putting on a campaign to get more fellows to look up their way. W1FMK says that the "6 × 6 Net" is giving a certificate to anyone who works three or more of their members. About 12 stations are now active, with *W1s* FMK TDG SDG AZV and MH on most regularly. Smitty will be operating on 50 and 220 Mc. from Hogback Mountain during the June V.H.F. Party.

K4DJO, Memphis, Tenn., reports operation of the Tri-State 6-Meter Net, Sunday mornings at 0800 CST. Stations call in from Arkansas, Mississippi and Tennessee. Net frequency is 50.1 Mc., and K4DJO serves as NCS.

220 and Up

Some details of recent aurora work on 220 were reported in the lead portion of this department. Details of the gear used might be of interest. W3LZD has a pair of 4X250Bs at 1 kw. on 220-Mc. c.w. This high-efficiency setup feeds a box array of four 10-element Yagis, with two wavelengths separation each way. He heard 220-Mc. aurora signals April 15–18, four nights in a row. On the 18th he worked W1VNH, for what is probably the first W1–W3 220-Mc. aurora QSO. His converter has a 417A r.f. stage. Both he and W3ARW also worked K2GRI the same evening. K2GRI has a 4X150A at 250 to 300 watts input, and four 6-element arrays in a box formation.

W3ARW's setup is of interest, in that he has 600 watts input to a pair of 4-125As, showing nearly fifty per cent efficiency. He has a fine mountain-top location and a 6AM4 converter.

W1RFU and W1VNH both have 5894 amplifiers, driven by 6360 exciters similar to that described in the *Handbook*. Both use *Handbook*-type converters, with 417A r.f. stages added.

W1VNH's nightly skeds with W3ARW and W3LZD at 2115 and 2215 paid off for the first time on the night of April 23, when improved tropospheric conditions enabled them to have their first QSO other than the aurora contact previously mentioned. That same evening, W1VNH also worked W1AZK, Chichester, N. H., W1JDF, Methuen, Mass., and heard W1PZA.

W3LZD and K2GRI feel that whenever there is usable aurora on 144 Mc. they can work out on 220. W3LZD had an aurora crossband QSO, 220 — 144 with W1AZK, at 1800, April 17. Both he and W3ARW worked K2GRI between 1905 and 1920, but when they checked with W8DX between 1950 and 2030 there was no signal on the higher band.

Word from W5GHL, Houston, Texas, indicates that there is 220-Mc. activity coming up there. He and *W5s* WZF and EWN are getting on 220. 220-Mc. activity is also on the upgrade in the Los Angeles area, according to several reports. W6DNG recently completed converters for 220, 432 and 1215 Mc. W6NLZ says that a good receiving bet for the 1215-Mc. band is the r.f. cavity from the surplus CPR-46ACJ. It works on 1215 Mc. nicely with a 416B, either as an r.f. amplifier, or as a tripler for transmitting.

Up in the Northwest, the big push during the winter season was to get on 432 Mc., according to W7LHL, Seattle. Ernie works crossband with W7JIP, McMinnville, Ore., a distance of 160 miles. W7JIP has a 4X150A tripler driving another as an amplifier, feeding two 15-element long Yagis. Signal variations seem to be of about the same order as on 144 Mc., and the two have never lost contact, with W7LHL listening on 432 and transmitting on 144. W7LHL has 4 15-element Yagis and a converter using 416B and 2C40 r.f. stages and a 6AN4 mixer.

W7OKV, Portland, has a 4X150A on 432 and is working W7LHL two-way, over 145 miles. There is similar fading to that found on the longer circuit to W7JIP. This was the first two-way 432-Mc. work over such a distance on 432 Mc. in that area, and Ernie says that there are still quite a few "d.c. band" men who will tell you that it can't be done!

OES Notes

W1CUT, Granby, Conn. — Enjoying 2-meter mobile with turnstile antenna similar to Dec., 1956, *QST*, page 13, but on bumper mount.

W1HDQ, Canton, Conn. — Heard aurora signals on mobile 50-Mc. receiver for first time night of April 18. Sigs from up to 300 miles received with surprising strength on halo antenna in downtown traffic. Observed antenna heading peculiarities at home station during aurora of March 29. Worked W9EGH with fair signals on 144 Mc., when very few stations nearer were heard. Checking beam directions with great care it was found that the three most westerly stations being heard, W9EGH, W8BAX and a VE3, peaked with 24-foot Yagi straight north. Nearer stations, W4AO and several *W2s*, were strongest with beam slightly to *west* of north! This was confirmed several times in checks on various stations, and a similar condition was observed April 26. Has anyone else had this experience?

W1UHE, Tiverton, R. I. — Now using 417A converter on 220 Mc. Series trap at antenna input eliminated interference from local Channel 10 TV station. Antenna on 220 is 4 11-element Yagis, with one-wavelength spacing. Keeping 220-Mc. skeds with W1VNH and W1BXB. Sundays at 0930, W1AZK, Tuesdays at 1915, and W3LZD and W3ARW, Tuesday, Wednesday and Thursday at 2100 and 2200. Often hear weak signals from southwest, unreadable on voice. Call many CQs on c.w. but seldom any takers.

K2ITP, Riverton, N. J. — Heard 51.75-Mc. video March 29, with signal peaking from SE. Can this be explained as other than back-scatter from BBC? Adding 6AN4 g.g. amplifier with high-*Q* input circuit ahead of 6-meter converter improved skirt selectivity. No adverse overloading effects, and much improved rejection of offband signals. Now using 5-over-5 with ⅝ wavelength spacing, but with separate feedlines. Either may be used alone, or both together. Top bay averages somewhat better than lower, and combination of two is better than the top, but large differences in these results are observed on various stations.

W2TTM, South Amboy, N. J. — Trying 30-foot long Yagi on 6 in comparison with stacked array. Looking for ideas for 1296-Mc. preamp using 416B.

W4HHK, Collierville, Tenn. — Now running beacon on 50.4 Mc. whenever license can be covered. Emission is A2, about 2000 cycles.

W5DXQ, Irving, Texas — Made first 50-Mc. South American contacts with LU3DD, LU9AS and LU8EV, 1253 to 1317 March 28.

W6SOD, Torrance, Cal. — Worked 12 different stations

(*Continued on page 166*)

How's DX?

CONDUCTED BY ROD NEWKIRK,* W9BRD

Howsoever:

Little Oswald, the neighborly inquisitor in our February foreword, recently caught the ham bug and bagged his own Novice ticket. Immediately after shipping out his first QSL he rushed over to announce discovery of the real answer to his pesky query, "What *is* an electromagnetic field?" Funny we never realized it before. The truth is obvious, right on your own operating table. Sure — Pegasus! See the cover of any *Call Book*.

Who but Pegasus could possibly cow the dragons of DX — QRM, QRN, QSB and empty space itself? And what but the mighty kick of Pegasus could crack the ionospheric void for those sudden unexpected DX openings on otherwise dead bands? Old Peg you will recall as the winged mount of the Muses. This checks. He doubtless hovers overhead while we muse over missing QSLs, later providing the inspiration for our next series of pleading missives to delinquent EA9s, CR5s and XW8s. His influence shows in other curious coincidences, too, such as that of rainy spells with mediocre propagation conditions. Pegasus never was a mudder.

—•••—

My radio for Conelrad
I find to be quite vexing.
Its programs interest me so much
I've given up DXing.
— *W6MUR*

—•••—

After browsing through her April *Sky and Telescope* W9HPJ's XYL snowed the OM with sunspot talk deriving from a report on a recent address by Dr. Seth B. Nicholson. That noted authority touched on interesting aspects of sunspot lore accumulated by scientific folk ever since 1801 when Sir William Herschel attempted to correlate Old Sol's fluctuating acne with tomorrow's price of wheat.

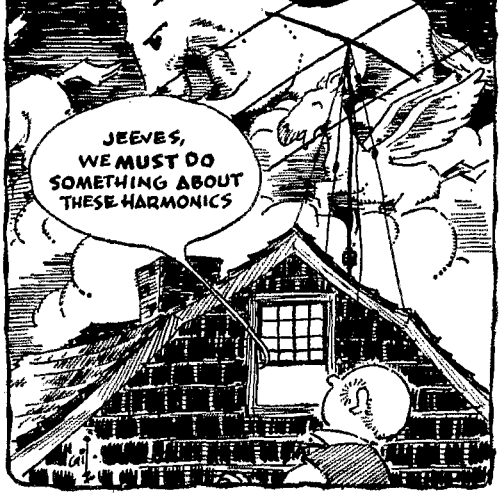
Not till around 1840 did one Heinrich Schwabe adduce the cyclic cadence of the sun's varying complexion. Now we speak of 11-year sunspot cycles. And yet over the past half century this cycle length has averaged much nearer 10 years than 11. . . . Contrary to some ham predilection, sunspot cycles are measured from minimum to minimum. . . . The peak 'spot activity of 1947 was the greatest ever recorded, and the five largest groups of sunspots ever logged date since 1945. The year 1926 saw phenomenal sunspot activity but the flurry noted during March and April of '47 was nearly 50 per cent larger (6300 million square miles, some "spots"!). . . . Yes, the pattern of past sunspot-cycle behavior suggests that our present pox peak will surpass anything previously recorded. . . . If you hear talk of 22-year sunspot cycles don't be perturbed. This would refer mainly to a certain orderly variation in sunspot polarities.

And say, you think DX conditions were awful during the recent low-activity sunspot session of 1953 and '54? Well, if you had been a ham in colonial times you might have flipped off your wig for keeps. From the year 1676 to 1724 only about two dozen sunspots were recorded; and in the nine-year haul 1676–1684 not one single spot was observed on the sun. (No, not through fault of inferior telescopes and observers. Earlier periods of high activity were logged with much more primitive equipment.) If such an unusually barren sunspot period had coincided with preliminary investigations of short waves in the 1920s — well, you take it from there.

What:

Wow! The mailsack for each June *QST* invariably establishes the yearly peak for receipt of unsolicited contributions to "How's DX?". Our 1956 June income was a healthy nearly-50 per cent over the June '55 draw. A salubrious sign, we concluded; DX is catching on. Now the paper dust is settling and *QST*'s presses are cooling after their June '57 run. What's the score? Ring up a *plus*-50 per cent increase in "How's" mail response over June of last year! It's no secret that you gentle readers write these DX pages — nice going! You're using your allotted space in our ARRL organ in the manner it was meant to be used, and to the hilt. Keep it up! Like this, we mean. . . .

20 c.w.'s army of deponents leaves scant doubt that the 14-Mc. band reigns supreme in this summer's DX festivities. From communiqués and dispatches incoming from all W/K call areas and points abroad we note, first at *W1APA:* **HH3DL**, **KR6SC**. *W1BPW:* **CR6DA** (14,062) 2200 GMT, **EA9BK** (40) 21, **FM7WR** (100) 12, **HI8BE** (38) 4, **IS1MM** (8) 22, **MP4BBA** (5) 23, **VP2LU** (80) 2,



*4822 West Berteau Avenue, Chicago 41, Ill.

UO5CA (10) 21, UR2AK (35) 20, chortles "What a difference from my old c.c. 50-watter; the new v.f.o. 125-watter really pays off!" *W1DBA:* CRs 6FC (40) 21, 7MB (20) 23, CT2BO (10) 0, EA0AD (20) 23, HK3JC (30) 3, LZ1KBL (60) 3, OA4Q (10) 8, SP7s CN HX 21–3, UAs 1KAK 3KUA, UQ2AH (65) 21, VP3AD (80) 3, VR3B (35) 3, YOs 6XV 8RL, 4X4JT (65) 0, 9S4BW (55) 22, now has new Valiant and 105 worked. *W1DFV:* to 82 with CT3AB, ET2RH, LX1FL, PJ2ME, one TA3KW, VP5BH, ZC4IP, ZP9AY, 9S4CM. *W1MAN:* now 109/90 via EL2S (30) 22, TF-2WBM (40) 16, YU1OZ (90) 21, FM7, on 75-watt 807. *W1WKW:* DU7SV (80) 13, KG6IG (30) 17, VP4MM, VS2s DW FN, CR6 VR3. *W2CTW:* KG1FA, TF3KG, HH. *W2DEC:* BV1US, CE9AQ, DU1RTI, EAs 6AF 6AZ, FK8AL, FQ8AF, OH2AA/0, UA9s KCC KCE, UA0s KCA KJA KKB KSA, UD6s AI DD, UF6AC, UL7BA, UO5AA, UO5CA (10) 21, UR2AK (35) 20, chortles "What a difference from my old c.c. 50-watter; the new v.f.o. 125-watter really pays off!" *W1DBA:* CRs 6FC (40) 21, 7MB (20) 23, CT2BO (10) 0, EA0AD (20) 23, HK3JC (30) 3, LZ1KBL (60) 3, OA4Q (10) 8, SP7s CN HX 21–3, UAs 1KAK 3KUA, UQ2AH (65) 21, VP3AD (80) 3, VR3B (35) 3, YOs 6XV 8RL, 4X4JT (65) 0, 9S4BW (55) 22, now has new Valiant and 105 worked. *W1DFV:* to 82 with CT3AB, ET2RH, LX1FL, PJ2ME, one TA3KW, VP5BH, ZC4IP, ZP9AY, 9S4CM. *W1MAN:* now 109/90 via EL2S (30) 22, TF-2WBM (40) 16, YU1OZ (90) 21, FM7, on 75-watt 807. *W1WKW:* DU7SV (80) 13, KG6IG (30) 17, VP4MM, VS2s DW FN, CR6 VR3. *W2CTW:* KG1FA, TF3KG, HH. *W2DEC:* BV1US, CE9AQ, DU1RTI, EAs 6AF 6AZ, FK8AL, FQ8AF. OH2AA/0, UA9s KCC KCE, UA0s KCA KJA KKB KSA, UD6s AI DD, UF6AC, UL7BA, UO5AA,

At his receiving position one of the ops of UA0KAD appears to have just nailed his first Utah Seven. UA0KAD runs 200 watts, receives with a 16-tube superhet and radiates with dipoles, mostly 20 c.w. (*Photo via W1ICP and W9RBI*)

UP2AS, VR2DA, VU2s JG KL, ZB2A, ZK1AU, ZS3Q, now drives a pair of g.g. RK-65s with his 32V-1. *W2DGW:* FG7XD (50) 22, HH2CL (93) 11, KC4USA (17) 10, KH6CV/KW6 (90) 11, KM6AX (38) 12, KR6QW (35) 12, LUs 1ZS 3ZI 5ZI, PZ1AP (50) 0, YO8MS, 3V8AO (22) 23, 4X4BX (75) 5, DU HI VR3. *W2HMJ:* CE9AS (52) 0, LU2ZS (24) 1, MP4BBE (58) 2–3, SV0s WD of Crete, WP (W3JTC keying), TG9MR (30) 3, VP8CI (29) 0, VR2AS, VS9AG (19) 0, one YI3AA (60) 20–21, now at 243 stalking AC3 AC5 CR10 ZD8. *W2NCI:* CN8FD, DM2AJG HK3AE (32) 1, KC4USH (76) 1–2, OY1R (3) 20, SPs 1KAA 9KAS, UI8KAA (81) 3, UPOL6 (29) 3, VPs 5RG 5WS 8AO (34) 1, 8BS (84) 1, VQ6LQ (74) 21, YV5ES (10) 1, YS1O (9) 1, ZB2R (52) 12–13, ZE1s JQ (26) 20, JV (25) 1, 4S7WP (27) 11, 4X4II (24) 0, HA HI VP2 VR3 9S4. *K2GFQ:* FL8AB, OH1NA/0, ZC5RF (56–74) 12, hears ZC5JM (40) 12, has a 217/201 record. *K2LHB:* CT1CO, YV5HL, 4X4HK, CT2 EA6 SV9 Caymans VP5. *K2MWK:* KV4AA (80) 21–0, XF1A. *K2QBW:* EAs 6AW (50) 22, 9DF (80) 20, FP8AP (78) 13, KC4USB (51) 3, OX3CP (80) 22, TI2PZ (80) 1, UA3KAN, UB5KB. ZB1BQ (80) 22, ZD3A (50) 21, ZC4BN (78) 22, 3V8AG (50) 22, BV1 FY7 HI, up to No. 67 on c.c. 50-watter and dipole. *K2QXG:* FK8AS (70) 10, XZ2SM heard (20) 13, 3W8AA likewise (75) 10 still on FCC-ITU Ban List. *K2UOY:* CX2CO 1. *W3RPG:* HH2RM, EA6 FK8. *W4AUL:* UC2CB (9) 7, UQ2AB (42) 20–21, YA1AM (5) 1, Rio de Oro EA9, Sint Maarten PJ2. *W4EJP:* heard CX1BO, JA3DY. *W4GIM:* 5A2TY. *W4NBV:* FB8CC, JA0BR, UJ8KAA (47) 13–14, VSs 1HC 6CO, VU2RM, ZD9AC of Tristan, ZL5AA (89) 12, now 190/160. *K4DAS:* CN8JX, FA8RJ, VE8PB, VPs 2LH 9VV, KS4 PJ2. *K4DRO:* VK6DJ, antarctic LU. *K4HNA:* VR2AK, VQ6, Caymans. *W5FTP:* KC6JC VR3. *K5BXG:* XE1MB, UC2AX. *K5DGI:* CR9AH, EA9AP, FK8AO, GC2FZC, KG6AGS, KR6SF, VR3 3V8 4S7, Sint Maarten, hits 123/90. *W6CIS:* FG7XE, FO8AM, HK5CR, ZK1BC, OH0 9S4, made it 201 postwar, now tries for a QRP "DXCC" with 75 watts and 30-ft. vertical. *W6KG:* jackpot job on CRs 6AI 6CS 7CI, FA8TT, HA5AL (30) 4–5, OQ5GU (91) 4, UA1IF, UB5KBU (45) 6, UC2-KAB (70) 6, UR2KAA (48) 7–8, arctic U8FA (57) 15, VSs 1GX (18) 13, 6DN (18) 16, ZBs 1CY 2I (110) 8, ZC4s IP (95) 4, VP (90) 5–6, ZC5AL (17) 13, one ZD7AH, ZE1JN (10) 5, DU FK8 KC4 LX PJ2M SP UI8 UQ2 VQ6 VS2 4S7 9S4. *W6ZE N:* HS1WR, OH0 VQ6 YI. *K6CEF:* YL CR7LU 17, EA8BF 2, FV7YF 2, PJ2AN 0, SV0WR 17, UQ2KAA 4, UR2AO 5, VK9XK 8, VP6GT 1, VS6AE 14, YO3FT 16, BV1 EA6 HI UA0 VS2 ZC4, now 136/76. *K6EAY:* JA8AA, antarctic UA1KAE, VS1GL, VS6 ZC5. *K6GLC:* SPs 6BY 8CK, TF3AB, UAs 1KAC 1KAG 0KFE, VQ2GW, VK9AU, ZEs 5JA 6JX, 4X4CJ, CR6 CR7 CR9 FK8 KC4. *K6HFA:* DU1s AQ (20) 9, OR (45) 17, JAs 1AB 4CF, KG1s AP (40) 4, AX (105) 1, KW6CM (50) 4, LZ1KNB (50) 6, OA4BP (10) 8, OE6DK (40) 7, UAs 4KYA (95) 6, 0KFG (90) 6, UB5KBR (80) 4, W9NTJ/KG6 (110) 16, FK8 KC6 VK9 VS1 VS6 for 90/72. *K6KVH:* KR6SS 16, PJ2AV 1, SP6BZ 6–7, UA0KSA 15, UB5UW 7, UL7AB 3, UQ2s AK AN 5–6, 5A3TL 7, UI8 VS1 VS2. *K6LYT:* CEs 3ZO 2, 8BT 3, 9AI 9AK 2, LU2ZS, UA0, builds cube quad. *K6SRZ:* CE8AA, DM2ACA, JA1VX, SP on c.c. 65-watter. *W7DJ U:* JA1s HP QI, JA0FZ/JA1, UA3KYA, antarctic UA1, VR3. *W7WFJ:* to 67 on GD3UB, HH2Y, UB5UB, CR9 UA1 UR2. *W7YAQ:* DU1CP (90) 15, JA1AUG, KA5MK (70) 7, KC6AK (50) 7, KR6BE (15) 13, UL7GN (40) 15, VK9, *W8IBX:* OK3EE, VP7NM, YU1DP, HH KV4 VP5. *W8MLX:* Sint Maarten. *W8NOH:* 9S4AZ (12) 17. *W8QXW:* CR6CK (40) 19, FO8s AD (320) who announces longitude and latitude of FO8AP/MM (330) 5–6 aboard *Tahiti- Nui* at 0530 GMT, ZC4CH (40) 4, KC4 TI9 UQ2 UR2, Grahamland VP8, 9S4. *W9PNE:* up to 147 via VK9 VP2. *K9DJQ:* TI2WR, XE1AX, YV4AU, CX KV4 MP4 VP5. *W0FWW:* found new beam and p.p. 701-As good for JAs 1QI 3TT, LU4ZD, UAs 1RF 6KOD 9WA, UB5KMA, VQ4BC, XE1NJ, HI HK KR6 UA0. *K0ARS:* HC1LE, UA1, now passing half-DXCC mark. *KL7BPK:* JAs. *KA3CY:* SP3DG, UAs 4KYA 9DX 9KHA 9KQ 9VA, UB5DW, ZC5. *VE1PQ:* JA2JW, KH6AIK/KG6 (80) 11, UA0CJ (50) 11, CR6 FK8 VP2 VP5 4S7 4X4.

20 phone levels off for a hot summer run and recent results are noteworthy at *W1APA:* multibandsman DU7SV (160) 8, HCs 2BH 5PW, KA2KC (181) 9, KC4s USA (281) 9, USN (270) 10, KG6s AAY FAE, TF2WBM, VE8s MB WR, VP2DJ. *W1PNR:* KM6AX (240), DU. *W2DEC:* CRs 4AP 5SP, ET2US, FB8ZZ, FK8AS, KR6SS, M1B, OD5BZ, New Guinea's VK9YT, VR2CC, 4X4HK, TI9 ZD4. *W2HMJ:* advises that VP3AD (112) is available. *K2QQQ:* CR6CX, F9RY/FC (173), CR5 TI9, *K2SYJ:* CN8s HS JA, VP1AB/m, numerous European and Oceanians on flea power for 14-Mc. phone (20 watts). *W4IYC:* the s.s.b. of ZD4BF. *W4USQ:* W4DQA/KS4. *K4DAS:* HH2Y, VPs 1RL 5AK. *K4DRO:* KG6 on 50 watts. *K4HNA:* VU2BK. *W5FTP:* ZD6DT. *K5BXG:* KG4AO, HR4WH, YV5AB. *W6ZEN:* VP5BH of the Caymans, JZ0PC of Biak Isle, N.N.G. *K6DUV:* curious HI0TC. *K6GLC:* BV1US, HS1A, VRs 3F 6AC, VSs 1GZ 2DW 2EK 2GL 6DJ, ZS8I, ZD6. *W7PHO:* C3MH of Red China, ZC5RF, reached lofty 237/208 status. *W8NOH:* CN2AK 22, CN8FV 2, ET3RL (179) 2, TF2WBU 1, YP2 á la Leewards. *W9RBI:* SV0WE (195) 2, VK9AJ (140) 14, ZD4CB (92) 7, Pitcairn Island. *W0ZSZ:* CN2BK, JA1MP, KR6s GT RB, HI8BE, OK1MB, PJ2AX, VP4KL, VR6TC,

YO3GM is thoroughly worked on c.w. and phone by the North American crowd. Those BC-221s certainly get around! (*Photo via W9WHM*)

ZS9G, 4X4DR, FK8 VP5 ZD4, reports Easter Isle's CE0AC available around (175), made it 109/79 on 14-Mc. phone within a year. *KA3CY:* gives the Oriental 20-meter A3 angle with FA9IB, HS1MQ, OA5G, SP5HH, UI8KAA, UA0KCA.

15 c.w. is the next stop for your "How's" Bandwagon and first we'll visit with *W1ANU:* SP2CX, many Europeans, UA3DQ/MM claiming proximity to the Canaries. *W1CTW:* ET2RH, FF8AJ, IS1MM, OD5LX, YA1AM, VP5 to reach 125 on 21-Mc. c.w. *W1MLG:* EAs 6AF 20, 8BF (70) 1, 9AP (20) 21, HI8BE (80) 3, KX6ZB (20) 3, UA9KYB (70) 16, VQ4CC (100) 22, ZB1HKO (30) 21, ZE5JA (50-100) 21, ZP9AY (80) 12, VP5, now 82 worked with attic ground-plane. *W2CVW:* UA3CT. *W2GJD:*

CR9AH, FK8AL, SV1AB, TA3KW, UP2AS, UR2s AM AR. VK9AJ on Direction Isle, Cocos-Keeling group, VS6-DN, ZC4IP. *K2GMF:* PJ2ME, XF1A. *K2LHB:* CN2AQ, SP1KAA, 9S4CH, UP2. *K2MWK:* HA5BW, OKs 2KBE 3DG, PJ2AJ, VP7NM, YU1FC, SP SV1. *K2QBW:* GD3FXN (74) 21, one HZ1KC (80) 0, OA4FA (80) 22, PJ2AN (75) 14, UB5CI (75) 14, XE2FL (60) 21, YO2KAB (72) 15, ZE3JJ (65) 19. *K2TCD:* OK1KTI, YU2IN, UP2 ZC4. *W3EVC:* good huntin' for CN8AS, FAs 8IH 8RJ 9VN, FO8AK, HA5AM, KG1KK, PJ2AV, OQ5GU, OD5LX, SV0WP, TFs 3KG 5TP, VK9XK, VPs 6UN 9CY, VEs 8AB 0NE, VQs 2GW 6LQ, W1UBW/VE8 on Baffin, WP4AIU, ZE2JS, 4X4s IB IO, FF8, FS7 HI ZB1 ZP9 on Globe Scout and 3-el. Mosley. *W4USQ:* HA5BI, JAs 1ADN 5AF, VS6DN, VQ6. *K4DAS:* VQ3TL. *K4DRO:* heard VU2RM. *K4HNA:* SV TF. *W5FTP:* EA6 EA8 EA9 FK8, VP2LU. *K5BXG:* XEs 1A 1PJ, VK9 of New Guinea. *W6KG:* CE3s AG ZO, CX2FD, DU7SV (100) 6, KW6CA (20) 5, UAØKKB (30) 0. *W6RZS:* CR7BS, FP8AP, FY7YE, 4X4BX, CN2 CR9 FK8 VK9 ZE, Caymans. *W6ZZ:* FQ8AG, JAs 1ACB 3HD, KH6AIK/KG6, LA2B, UA-6KOB, G3FYR/VS9 of Aden, CR9 OQ TF VP, flocks of Euros and additional Oceanians, hit 132nd 15-meter country, now has QSOd over *1400* Gs, is 167/158 for all bands. *K6LEB:* HH2DX, JAs 3GX 4JU, VP9DD, CR9 UAØ, Sint Maarten. *W7DJU:* JAs 1VX 3AF 3BB, CE OH PJ2 VP2 VP5 VP7. *W7YAQ:* JAs 1AFF 7AU, OA4FU, OE6DK, SP5KAB, UAØKFG, UC2CB (10) 15, VQ6AB (100) 21, VS6CO (18) 3, WG6AGY (110) 16, YU1DF/YU3, 4X4FQ (80) 15 for 89/64. *W8CNL:* YU4NZ, YV5HL, heard UC2KAB, now at half-DXCC mark. *W8CSK:* Caymans VP5. *W8GKB:* VU2RM (20) 18. *W8IBX:* OH2AA/OHØ, CX EA8 EA9 HH HI SP TF, Caymans, made it 65/39. *W8YGR:* making comeback on CN8JX, YU4PI (20), CX UP2 VK9, Caymans, heard KC4USV, ZL5AA, is striving for 110 endorsement. *K8ANX:* CM8EM for first DX, is W8IBX's OM. *K8AXL:* KL7-WAF. *K8BPX:* that ZD7ET guy, PJ2 SV TF 4X4, Caymans. *W9MAK:* YV5BZ, VP2 VP5. *W9PNE:* CR9 FS7 HI. *KØARS:* WL7BWY, WP4AIS, HH VQ3. *KØDQI:* CTs 1CO 3AB, JA1CO, LU2ZS, OE3AS, OK1XQ, YUs 3AV 3EO, FS7 SP, now 50/27. *KL7CA W:* VQ4GP (90) 20, KG1. *VE1PQ:* VU2HF (30) 15, EA6 FA KG1 OHØ VP5 ZC4. *KL7BKJ:* KA3CY.

15 phone brought Country No. 63 to *W1ANU:* HH2RM 19, KA2YA 16, KC4USA 3, VPs 5BH 7NB 23, VQ4EO 5, ZE2KR 21. *W1PNR:* Caymans VP5. *W1YNP:* T.N.G.'s VK9HO. *W2DEC:* HZ1AB's s.s.b. KWS-1, K6AXS/KG6, VP2LU. *K2MWK:* TG9WB, 4X4GB. *K2QQQ:* CR4AS (247), LX1DC (235), VPs 3HAG (220), 8BT (180), VR2BC (210), ZB2I (220), 4S7GE (235), now 96 on phone, 101 all told. *K2TCD:* EL2D (240) 16, HHs 2DB (240) 18, 7OR (290) 11, OD5AV (180) 11, SV1AE (230) 2, VP4KL, 53/26 in four months. *W3DDV:* egged on by W4VYP, made comeback after layoff to reach 100 on FQ8HG, KG1FR, UQ2AN, 5A5TM. *W3EVC:* VP1EE. *K4DRO:* HK3AB, HP3FL, PJ2AO, enough KZ5s to qualify for KZ5-25 wallpaper. *K4HNA:* EL5A, HI8BE, ZDs 4CH 6RM, 4X4FF, FQ8 VP3. *W4USQ:* SVØWT, VP5CP, VQ5FS, FQ8 LX1 VK9 VP1 ZD4 ZD6 5A. *W5FTP:* ZS9G, FS7 HI VP2. *K5BXG:* CO2USA. *W6ZEN:* VP4LF, HI. *W6ZZ:* KA3WG, KG6AGS, KH6s galore, KL7s likewise, KX6s BQ ZB, PJ2AV, VP9CY, ZL1AMO. *K6ICS:* OA5H. *W8GKB:* KC4USN (410) *0 at the geographic pole.* W4DQA/KS4 1. *W8NOH:* VP7BN 17, ZP5JP 17. *K8-BPX:* HC2BH, ZD6DT. *W9BEK:* 103/89, HS1MQ, JZØBP, ZD1FG. *W9RBI:* BV1US (220) 15, KC4USV (370 s.s.b.) 4, VK9YT 14, VSs 2DB (150) 15-16, 4JT (215) 14-15, ZC4IP (165) 16. *W9JDJ:* made it 63 on HC2TR, HR3HH, KG1FR, VPs 1SD 6BS 6WR. *WØQGI:* FB8ZZ (140) for No. 127 on phone, 185 over all. *KØDQI:* VP9L. *KA3CY:* HS1B, VSs 2DQ 6CO, ZB1HMQ to reach 98/71.

15 Novice happenings slacken to summer tempo but KN4JFE reached the 80-country mark via CN2AQ, CT3AB, FM7WD, IS1FIC, LZ1KDP, UA6KTB, UR2AM, VQs 6AB 8CB, VS6DN, VU2RM, XZ2OM, one of those ZA1ABs and OHØ. Can he make it? . . . . . Here and there, first W1APU's lad. *WN1LPD:* OH9RD, OK1KAM, VK7LZ, YU6QL, 9S4CM, uses DX-20. *WN1NKV:* CN8-JP, Europeans. *KN2UPD:* climbed to the 40th plateau, DM2ACM, FA8RJ, HA5BW, JA1ADN, OEs 1HV 5SD, OKs 1KDR 3DG, PY7AN, SP5KAB, TF3KG, UA3DQ/MM, UP2AS, VK2QL, WH6CCL, YUs 2IN 3OV, ZL-1APM, ZSs 2BC 6AJO, 4X4s CK DR, CN2 CT3 9S4, has DX-35, S-85, 3-el. spinner. *KN2VIZ:* HC1FS, HP6BG, OK3BE, OZ2N, SP1KAA, TI2EA, VP2AD, WL7BUA, ZL on 50 watts and dipole. *KN2VAC:* LA4K, SP5GN, YU-3FK, more Euros. *KN4JWZ:* CR9AH, KG1KK, KA2JW, SVØWP, UA4FE, VK9XK, VQs 4CC 6AB, VS1DU, YU-3FO, ZE6JX, ZP9AY, 4X4IB, CT3 UP2 9S4 with DX-100, SX-71, rotary dipole, has 56 worked on all continents. *KN5ESW:* KP4ACF, DL. *KN6SRM:* DU7SV, JAs 1ACA 1ADN 4JU 8AI, LU5FAV, UAØKFG of Sakhalin, VKs ZLs, employs DX-35, SX-99, ground-plane. *KN9DCF:* CR6CS, FK8AL, KG1KK, LA5B, OQ5GU, XF1A, ZE6JX, ZP9AY, PY VK ZL, 31 countries snagged. *KNØGRS:* KP4ABA. *KNØIKL:* nine countries on three continents.

10 phone plays a fleeting game these balmy days and the flock trends toward 15 or 20. Short skip keeps the ball rolling, though, and Pegasus kicks in with a DX opening or two when least expected. Down the list of reports from random points, first *W1EKU:* CT2AH, EAs 6AS 9AZ, KX6AF, KR6AF, OE6PF, SVØWJ, TF2WBQ, VQ3AC, ZC6UNJ at the U.N. Govt. House, Jerusalem, ZD1FG, 5A2TB, TI9 VP5, still chases ZDs 3BFC 8SC, hears CT3AI, OY1R, ZD2FNX, finally obtained his FG7XA QSL via CO2BK. *K2PSV:* CN8HM, CR6BH, CX3AA, YO3VI, 4X4DR on DX-100 and dipole. *K2QXG:* CN2WH (300) 11. *K2UOV:* VPs 1SD 8AQ, ZS. *W4YQB:* HC2BH, HH2DB, KB6BC, UB5UW, VP2LU, VP2BC, YO3VA, VP1 VKs, now 68 worked on 10 A3. *K4DAS:* good catch in such as CN8JX, GB2SM (just England), GC2RS, HC1FK, OQ5AU (400), VQ3ES, VP4LF, YN4AT, YS2AG. *K4HNA:* CR7DS, ZS, Cocos Island. *W5ERY:* EA8BV, JZØPC, OD5AV, SVØWT, ZD3BFC, 4X4s BD FV, both St. Martins, heard EA9EH. *W5EYH:* KA3CY, VK9s BS DB, VPs 4LT 7BO, ZD6DT, ZE2KR, ZP5EC, says "ZLs and VKs have been sounding like locals!" *W5WXP/5:* KM6AX, KW6CB, TF2WBG, KX6 SVØ. *K5IIX:* FK8AL, UA1KFA, YO3KBC, ZB2I, 5A1TE. *W6ZEN:* VP8BU. *K6BHM:* BV1US, EA8CF, CR4AS, PJ2CF, ZK1BS. *W8NOH:* CX1AK, HH2RM, VP5DS of Turks, 5A5TL (460) 12-13. *K8BPX:* CN8EU, CXs in number, HK3AB, HR2GH, KG1FA, LA8J, OE5CK, OQ5RU, OK1MB, TI2OE, ZD4BR, VP2 VP5 YN ZL ZS. *W9BEK:* CR7BB, JZØBP, 4X4CW, VR2. *W9NDN:* Caymans VP5. *W9YFF:* CN8FM, GD3IYS, HH3TJ, OEs 2WR 5HE, VP5. *WØQGI:* FY7YE. *KØBIB* (at mike of W1AF): CT1PK, EL1C, GDs 2FRV 3FXN, KA2KS, OD5AC, OH1RU, UC2KAB, VP1OLY, YV5AB, 5A2TF. *KM6AX:* KL7BPK. *KA3CY:* CR9AK, DU7SV, VSs 2CR 4JT.

10 c.w. still attracts *VE1PQ:* IS1MM (70) 14, OQ5GU (60) 14, UB5KAB (40) 14, VQ2GW (90) 18, ZE3JP (10) 18, 3V8FA (15) 18. *W2CVW:* ZC4IP. *K2GMF:* UC2KAB, ZE3JO (80). *W3HGP:* CT3AB, EAs 6AF 8BF,

This is it, gang — the first "DXCC 2" called to our attention (see p. 59, April *QST*). W6KG turned the trick while signing DL4ZC. To save wear and tear on your *QST*-spinning Lazy Susan here's the line-up of Lloyd's 100 DXCC-member QSLs from 100 ARRL DXCC Countries: CE3AG, CN8MM, CO2WD, CP5EK, CRs 6BX 7AF, CTs 1JS 3AV, CX6AD, DL7AH, DU7SV, EAs 4CR 8AX 9AP 9DF, EI5F, ET2US, F9RM, FA8DA, FE8AB, FF8AG, FQ8AP, FR7ZA, G6ZO, GC2FZC, GI3AXI, GM6MD, GW5FN, HA5KBA, HB9CS, HC2KJ, HK3PC, HP1BR, HZ1HZ, I1XK, I1BNU, IS1AHK, JA6AO, KGs 4AF 6DI, KH6IJ, KL7PI, KP4KD, KT1UX, KV4AA, KZ5DG, LA6U, LU9CK, MP4KAC, OD5BA, OE1FF, OH2RY, OK1HI, ON4CY, OQ5RA, OX3MG, OY7ML, OZ7BG, PZØHG, PJ2AA, PK4KS, PY2NX, PZ1AH, SM5WI, SU1AS, SVØWT, TA3AA, TF3SF, TI2HP, VE7ZM, VK3JE, VPs 5DC 6CJ 7NM 900, VQs 2GW 3HJP 4EI 5EK 8AD 8CB, VSs 1FK 6CG, VU2MD, W6DZZ, XE1AC, YI2AM, YS10, YU3AB, YV5FL, ZC4IP, ZDs 2DCP 6BX, ZE3JP, ZL1AII, ZSs 2X 3AB, 4S7GE, 4X4RE and 9S4AX. W6KG holds DXCC membership for work as JA2KG, DL4ZC, W4KE, and applied for his California certification after only seven weeks of action. Lloyd writes, "My QSL collection numbers nearly 30,000 QSLs, all arranged alphabetically in file cabinets in such a manner that I can pick out any card without leaving my operating chair." It would seem difficult to dream up a Worked-All-Anything that W6KG can't document! Anybody else out there got DXCC-DXCC?

June 1957

JA1VX, KW6CA, TA3KW, UB5CI, VK9XK, YO3s GY RF, ZP5s AY EC, 4X4IB on Viking II and homespun 3-el. beam. *W3UDO:* XF1A. *W4USQ:* KL7FAR. *K4AVU:* 4X4BX. *K4DAS:* LZ1KAC, SV1AB (50), ZD3A (100), ZP9AY (50), 9S4CM (200), 4X4. *K4HNA:* FA8RJ, ZC4JU, 4X4FR, UC2 ZE. *W5FTP:* FK8AL, PJ2ME, VP2LU, YS1AA, EA6. *K5BXG:* VP2 VP5. *K5DZF:* LZ1WD, OQ5GU, OX3LD, TI2EA, UA3AA. *W6KG:* CR6CI (65) 18, OA4BR (57) 18, OE3ED (68) 15, OKs 1MB 3DG, VQ2GW (50) 14, YV5BJ (60) 23, ZE5JA (65) 14, FK8 KG1 KW6 PJ2 UC2 VP2 YO YS. *K6BHM:* CR6AI, HA5BI, UC2AA, Jamaican VP5CP, VQ4KPB, FK8 SV VP2. *W7DJU:* Euros, VK3YS. *W8CSK:* EI9J, Europeans in number, VP7NM, Caymans VP5. *W8IBX:* EA6, many other Euros. *K8BPX:* HH3DL, JA3AB, PJ2s AJ AN AV, LZ1KDP, VK2s FU GW, EA6 KW6, Sint Maarten. *W8NOH:* K6ABM/KG6 (90) 18, FK8AH (28) 11. *W9NDN:* CN8DJ (77) 16, CR9AH (113) 23, CT1CO (184) 17, DU6IV (96) 1, DM2AEG (80) 17, JAs 1ACA 3BB 8AQ all 0-1, OA4BP (132) 13, OK1s AEH VB, YU1FC (50) 13, EA6 FK8 SV VK9 ZE 9S4 for a sharp rise to 82/40. *W9YYF:* SP6CB, YO3ZA, YU3EU, 9S4AX.

40 c.w. DX in the summer is mined deep-shaft fashion in contrast to winter's handy open-pit operations. Or one can pan a bit here and there along the stream. Anyway, we find at *W1APA:* UB5s KBA UB. *W1BPW:* persistent sad case "TI9AA". *W2JBL:* EA4ED, XF1A during 2 A.M. bottlings and burpings of new jr. op., assures that 40-meter specialist XE1KD QSLs 100 per cent. *K2GMF:* VP7NM, just-in-time 11/Trieste. *K2LHB:* old 7-Mc. stalwart G5JL. *K2QBW:* UC2KAD (38) 21, YU2ACD (40) 1. *W3IWZ:* novel Novice WP4AIT. *W3WPG:* CT2BO, HR1JZ, LZ2KML, OY7ML, SP5KAB, UB5s KBB KBR, UC2KAB, UR2AK, VP3YG, ZS, all 1-5. *W4EJP:* YU3FOP (30) answered Gerald's "CQ DEL". *K4DAS:* EA1CP, YU2GAB, HB. *K4HIG:* HK4BQ. *W6KG:* FK8AL (16) 13, JA1BU (6) 14, OA4FT (25), VP6AF (30) 11, PYs VP7 VK. *K6EAY:* JAs 1BAE 1OE 2OF 3XY 7GW. *K6HFA:* JA3BN (15) 15, UA0JE (1) 15. *K6LVT:* CE3AG 8, HH3DL 7, JAs 6FB 9GD, PJ2AJ, ZL. *K6SRZ:* JAs 1EF 2AQ 2FN 3ZP 3ZU. *W7DJU:* JAs 1AEO 1AZX 2BP, KC4USH, VKs ZL. *W8CNL:* HH2s JB LR. *W8IBX:* VP2LU, HH. *WØWYJ:* LU PY KH6, EA4BU. *VE1PQ:* CT3AB, EAs 6AF 9AP (30-40) 1-2, LZ1UR (40) 2, VP5BH, CT2 UB5. *KA3CY:* local JAs 2MR 2OW 2UW 3GC 3VD 9PO 9ZA. _ . _ . Novicewise on 40 WN1LCX captured VP5BH and WH6CEA, while KNØGRX nabbed a KP4. _ . _ . Phonewise W1APA scored with 7-Mc. voicers FP8AP, JA7GW (97) 11, OK1MB, VPs 3HAG and 7BN.

80 c.w. keeps alive with echoes of the '57 ARRL DX Test in this month's mailbag but the immediate future is obscured in QRN. At any rate, we note at *W1BPW:* VK3NR (3) 11. *W2DGW:* KZ5KK (20) 4, PJ2ME (2) 1, ZL1CI (18) 11. *W3HGP:* PAØRE, XF1A, Caymans. *W4EJP:* clicked with OK1KKJ (20) 4 and other Europeans. *K4DAS:* roving salt SM8CZH. *K4ELG:* KG1BC (30) 4, Gs. *W6CIS:* CE3AG, *W6KG:* JA3BB (12) 11-12. *K6PJT:* KL7s AIZ FM WAF. *K6SRZ:* YL WL7BXW, also 75-meter phoned with KL7BZM. *VE1PQ:* EA1AB, EI9J, OK1KTI, PJ2AV, VP6GT.

160 c.w. was the scene of a late-season coup by W1BB. Stew two-wayed with TG9AD and ZB1HKO in late February for a pair of notable 1.8-Mc. firsts. W1BB now is vacationing in Europe, possibly visiting with ops at the far ends of the many transatlantic QSOs he scored during the 1956-'57 160-meter season. _ . _ . _ W9PNE and KH6IJ have QSOd on seven bands 1.8 through 28 Mc. and have 50-Mc. schedules afoot.

. . . And so endeth our activity report for the greatest amateur radio DX season in history. You can tell your Novice grandchildren about this one! Yes, in early 1957 more DX stations were worked by more W/K/VE/VO stations than in any comparable period heretofore. And we're optimistic enough to be sure that we've only scratched the surface. *Aim those beams!*

Where:

Asia — Regarding AC3SQ confirmations W9KOK, long a confidant of lonesome AC brethren, advises: "Received Saja's log for 1956 and as soon as possible will QSL everyone who QSLd AC3SQ and who hasn't yet received his card." _ . _ . _ If possible, you'll help the BV1US gang keep QSL matters on even keel by using the most expeditious of two addresses when shipping your cards. The station operates from two separate locations under its one call: Taipei, North Taiwan (Army Section, MAAG, Taiwan, APO 63, San Francisco); and Kaohsiung (Feng Shan), South Taiwan (Army Section, SFAAT, MAAG, Taiwan, APO 63, San Francisco). The trick, of course, is to determine which outfit you're QSOing. Evidently the signing of differentiated calls would spoil the fun _ . _ . _ From 487GE, now heading back home: "I have tried to QSL 100 per cent, getting rid of about 3000 cards in the process via bureaus or direct. So anyone who hasn't received his card from 'GE will just have to hold his horses and one will turn up. . . . Regarding the percentage of QSLs in return, I am safe in saying that the W/K boys win hands down. Gs come next at a very close second." _ . _ . _ W4GIM's card to YI2OT bounced back stamped "unlicensed station." _ . _ . _ Ops Abe and Zeke of KA2MA apologize for tardy QSLs. With new stock on hand their backlog is fast disappearing _ . _ . _ "C3MH is in southeast China and cannot QSL until the end of this year. He runs 10 watts to an 807 and dipole, modulating with a 6L6." This hint courtesy W7PHO _ . _ . _ Via W1VG, VS9AG invites QSL inquiries concerning his previous activity as ST2NG and ET2NG. Pete also is informed by ET2RH that ET2US is a 100-per-center. Whoops, we're getting into

Africa — NNRC confirms the passing of CR5AA, CR5AC, Armando's brother-in-law, is tackling outstanding CR5AA QSL matters _ . _ . _ SU1IC writes to report considerable spurious "SU" activity in progress, resulting in Charmy's receipt of numerous undeliverable QSLs. SU1s AS (phone) and IM assist SU1IC in supplying bona fide Egyptian contacts.

Oceania — ZL5s AA AB and AC will QSL through NZART in 1958, according to W7FBD and others _ . _ . _ "W9NTJ/KG6 has QSLd 100 per cent since last October but some of the cards have gone astray. Anyone who hasn't received my QSL in about six weeks after QSO please send a post card and I'll QSL again via air; but check the bureaus first" _ . _ . _ From ex-PK4DA, an old favorite among Yank DXers: "I now have settled in the Netherlands as PAØFM and managed to save all my PK4DA logs for 1948 through '51. So I can still satisfy hungry brethren deserving elusive PK4 cards." And the ham outlook for Indonesia is as dismal as ever.

Europe — Our Iceland gang continues to savor ham radio far from home. TF2WBQ lists current activity by TF2s WBG (W3ESI), WBJ (W5JBB), WBK (K2GYD), WBL (W1UDL), WBM (K2HFW), WBN (W1YAD), WBO (W3DKF), WBQ (W5GDL), WBR (WØPI), WBS (K2GTP), WBT (K2YDY), WBU (W2FGD) and WOK (W8OK). TF2s WBK WBL WBN WBR and WBU are civvies, TF2s WBG WBO and WBT are Navy men, and the remainder are USAF constituents. All TF2-bound QSLs can go via APO 81, New York, N. Y. _ . _ . _ DL4 suffixes still suffer the old shell-game treatment. W3AZZ operated as DL4PR until June of last year, and in September another lad inherited the label. W3AZZ naturally is bombarded by misdirected QSLs; the current DL4PR's address follows. A plea to all licensing authorities: *no reissuing of call suffixes until three years have passed.* And what's the matter with three-letter suffixes? Assigning DL4 three-letter calls, for instance, right on down the alphabet would assure absence of QSL-address ambiguity and mistaken identity for years to come _ . _ . _ W9CFT's files reveal a YO2 QSL bureau at P.O. Box 100, Timisoara, Roumania; also a DM QSL bureau at P.O. Box 666, Halle, Saale, East Germany. So far as we know DARC of West Germany still welcomes DM-destined pasteboards for relay across the border.

Hereabouts — The mystery of KL7PI's pirated call is solved and the plot wasn't so sinister after all. KL7PIV clears it up: "It seems that during recent DX contests quite a few W/Ks left the 'V' off my call and sent the cards to Joe. I haven't yet figured out what people think that 'V' stands for if it isn't part of my call!" This episode adds more evidence to the pile of proof dictating the necessity of careful primary certification. Ed has good reason to sign KL7PIV; he's ex-W1PIV _ . _ . _ From K4HOI: "I will be handling all QSLs for VP5DS on Turks, and all previous QTHs should be disregarded. QSLs will be sent via bureaus, or sent direct only if self-addressed

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HH2Y was visited by W2GKP (standing) during the latter's recent Caribbean tour. Armand's Port-au-Prince radiotelephone is widely worked on DX bands and, because so few HHs try c.w., the quickest route to a Haitian QSL continues to be vocal.

QST for

Polish amateurs recently played gracious host to visiting CCIR conferees in Warsaw. Among this gay group you may recognize ex-SP1CM, SP2BE, SP5s AA AH AL AM AR BL BP CF EL FD FM, SP6BW, SP9s DH KJ, DM2AEO, OK1GM, W4CXA and WØJJN. (Photo via W1NS and W1HDQ)

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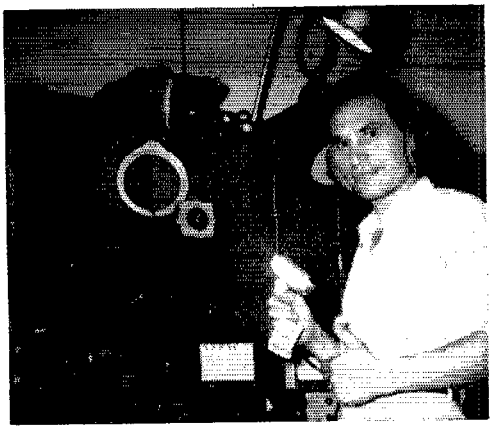
stamped envelopes are received. VP5DS promises QSLs card for card." . _ . _ . _ Another mess apparently caused by fast call-suffix reassignment, this documented by W2WHB (ex-KG1AX): "Would appreciate it if you would include a note that QSLs for KG1AX QSOs in 1957 are not mine. They should be sent to the KG1 bureau. The call appears to have been reissued to somebody named Bob." *What* a system! . _ . _ . _ From HI8BE: "The first evening after my license came through one 15-second CQ brought enough replies to fill five log-book pages. I finally had to quit at three A.M. with just as many callers on the frequency then as there had been several hours earlier. I appreciate self-addressed envelopes and postal reply coupons — keep them coming — but don't send *stamped* envelopes. I must use Dominican Republic stamps, of course. I'll be here for about three years, so have patience, all!" . _ . _ . _ G5RV, based at Caracas for the past two years, has a job which involves extensive travel in Latin America and the Caribbean. He operates from time to time under various VP calls using his RV suffix, and also as G5RV/PJ2. Louis QSLs 100-per and will receive mail addressed to him at Apartado 3443, Caracas, Venezuela . _ . _ . _ WGDXC's *DX Bulletin* reports that W4DQA/KS4's stock of 200 QSLs disappeared in no time. Smitty is to remain on Swan through next month, prefers 20-meter A1 and A3 work at 0200–0400 GMT, and requests stamped self-addressed envelopes be sent with cards to his home address . _ . _ . _ W1s APA BIH CTW MAN RDV UED VG WPR YNP ZDP, W2s DEC DGW HMJ JBL PTD, K2s GFQ QQQ TCD, W3s AXT AZZ MVQ RPG, W4s IYC USQ, K4s HNA LPW, W5FTP, K5s BXG DZF, W6KG, K6GLC, W7s FBD PHO YAQ, W8s CSK NGO NOH QXW TIZ YGR, W9s BEK CFT RBI,W9QGI, KL7CAW, ISWL, JDXRC, MARTS, NCDXC, NNRC,



XW8AC, among the more DXotic Asian catches, now finishes up his second year in Laos. He writes, "The life here is hard. Vientiane is a little town without comforts and accommodations, and the weather is no good also (hot)!" You'll make out Lucien's receiver and transmitter as venerable war-surplus items, a BC-348 and ART-13. (*Photo via W7PHO*)

OVARA, SCDXC, WGDXC and others join to suggest these individual QSL routings:

AC3SQ (via W9KOK; see preceding text)
BV1US (see preceding text)
C3MH (via W6YY)
CM8EM, O. Caballero P., Loynaz nr. 52, Manzanillo, Ote., Cuba
CN8FQ (to W4UFQ)
CR5AA (to CR5AC; see preceding text)
DL4PR, V. Bridport, RAF, 6911 RGM, APO 175, New York, N. Y. (or via G3KVV)
DM3KBH, Box 666, Halle, Saale, East Germany
FB8BD, J. Maillier-Gaste, R. P. 1310, Analakely, Tananarive, Madagascar
FF8AJ (via W2AYJ)
G3FYR/VS9 (via RSGB)
G5RV/PJ2 (see preceding text)
GB2SM (via W3JUL)
GD3GMH, G. M. Holt, Gay Heart Cafe, Queen's Promenade, Douglas, I.O.M.
GM3GZA (to G3GZA)
ex-HA5BM, A. B. Bodonyi, 530 45th Street, Union City, N. J.
ex-HA8S-HA8Z, P. Somssich, 1107 Apt. Valley View, S. 15th Elm St., Allentown, Penna.
HC5PW (via HC1ES)
HH3TJ, T. Johnson, La Plantation Dauphin, Cap-Haitien, Haiti
HH7FH, Box 506, Port-au-Prince, Haiti
HS1WR, Artillery Center, Lopburi, Thailand
I1PDN, Dr. E. Cerulli, Box 75, Modena, Italy
I1ZCN, G. Gentile, Box 511, Firenze, Italy
JZØPB, c/o Naval P. O., Biak, Netherlands New Guinea
K6AXS/KG6, Maj. C. K. Hicks, 3912th Air Base Sqdn., APO 349, New York, N. Y.
K9BPY/KP4 (to K9BPY)
KC6JC (via KC6RK)
KG1CA (via W3ZHL)
KG1AX, MARS Dir., Hq. NEAC, APO 862, New York, N. Y.
KG1FA, APO 858, New York, N. Y.
KG1KK (to W3NNK)
KH6AIK/KG6, Box 150, Navy 926, FPO, San Francisco, Calif.
KH6CV/KW6, c/o Weather Stn., Wake Island
KZ5GM, Box 33, Curundu, Panama Canal Zone
MP4BBA, B. E. C. Page, Box 29, Muharraq, B. I., Persian Gulf
OA4FU, A. Hiertzeler, Casilla 1837, Lima, Peru
OD5BZ, P. O. Box 2806, Beirut, Lebanon
OH2OJ/OHØ (to OH2OJ)
OQ5BX, R. F. Roels, Box 1501, Elizabethville, Belgian Congo
ex-PK4DA (to PAØFM)
PY2BAY, W. H. Elias, Rua Simao Alvares 313, Sao Paulo, Brazil
PY8HJ, P.O. Box 174, Manaus, Amazonas, Brazil
PY9AE, J. Jakob, P.O. Box 2, Cuiaba, Matto Grosso, Brazil
SP1KAA, G. Listkowski, Montwilla 5/5, Szczecin, Poland
SP5HS (ex-SP5EG), C. Stomczynski, P.O. Box 92, Warsaw 32, Poland
SP6XA, T. Matusiak, Szenwalda 7/3, Wroclaw 9, Poland
TF2WBU, M. T. Fricklas, APO 81, New York, N. Y.
TG9AL, G. R. Caceres, Box 676, Guatemala City, Guatemala
TI9CR (via RCCR)
UA9AA, G. M. Selewko, Radio Club, Chelyabinsk, U. S. S. R.
UA9DX, Box 9, Tulia, U. S. S. R.
UAØOM, M. Tihonov, Gorodok, Buryat-Mongol S. S. R.
UO5AA, c/o UC2AA, Box 41, Minsk, W. R. S. S. R.
USFA, U. S. S. R. Antarctic Expedition, c/o Box N-88, Moscow, U. S. S. R.
VP4MM, J. M. MacDonald, 13 Gordon Street, Curepe, Trinidad
VP5DS, c/o W. Rashok, K4HOI, RFD 2, Box 992, Merritt Island, Fla.
VP5TS, c/o Hugh Green, 42 Patrick Lane, Rockledge, Fla.
VP7BN (to W6HNX)
VP8BW, c/o 50 Lingard St., Leigh, Lancashire, England
VP9CY, S/Sgt. V. L. Gray, Box 172, 59th WRS, APO 856, New York, N. Y.
ex-VQ4AC (to VQ3AC)
VQ4AV, Box 460, Kisumu, Kenya
VQ4GO, Box 3695, Nairobi, Kenya
VQ8AP (via VQ8AF)

(Continued on page 99)

YL News and Views

BY ELEANOR WILSON*, W1QON

Coming

THE Ninth Annual ARRL National Convention and the Second International YLRL Convention, Labor Day week-end, August 30 and 31 and Sept. 1, at the Palmer House in Chicago, Illinois.

This double-barrelled affair marks the first time the Young Ladies Radio League will hold its convention in conjunction with an ARRL national convention. A record turnout of YLs (bringing their OMs with them, of course) is expected. Spaghetti supper, luncheon, banquet. YL speakers, city excursions — these are but a few of the items on the exciting agenda. And in case Grandma can't take care of the youngsters that week-end, don't fret. The Palmer House will provide a complete nursery service under the supervision of Registered Nurses for all the wee babies, and a playroom with toys and games for children up to ten years of age, with competent nursery teachers in attendance, all at no charge!

As convention time draws nearer, W9LOY will reveal more details of the three-day program. Make your reservations with Cris Bowlin, 6563 Tahoma Avenue, Chicago 30, Illinois NOW.

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All Set?

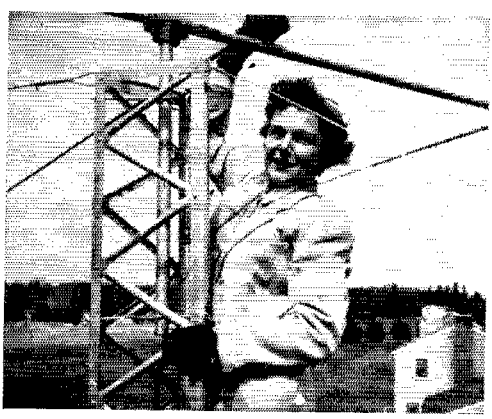
As if you didn't know it, Field Day weekend is coming up fast. We're sure you're just about ready for the grand event, the likes of which there is nothing! The dates, of course, are June 22 and 23. We'll be eagerly waiting to hear how you make out, and say, how about some interesting YL "outdoor-type" pictures this year?

—•••—

Keeping Up With the Girls

New officers of the SPARCYLS of Florida are Pres. W4BAV; Vice Pres. W4WPD; and Secy. W4TDK. . . . DJ2YL, Susi, ZP5JP, Lota, and 4SYL, Soma, in Ceylon, are all very active on 21 mcs. . . . W1YYR has submitted 102 QSLs for DXCC — Mary has 5 young jr. ops. to keep things interesting at home too. . . . W1HAG would like to be included in our list of active YLs in Maine. In eight months Sandy made 880 contacts "not counting repeats" on c.w., from 10 to 80 meters. . . . W9GME, Grace, has been appointed Assistant Section Communications Manager for the Central Division. . . . OM K4ANI reports that his XYL Lucy, K4ALM, has received her commercial radio telephone 3rd class license and is well on her way to her radio telephone second class ticket. . . . New members of the Texas YL Round-Up Net are KØBFH, WØYTB, W3YTM/5, K5EGB, W5s FFH, KRJ, LZU, and SPV. . . . YLs, accompanied by their respective spouses, who attended a YL-OM dinner-dance sponsored by the Women Radio Operators of New England on March 30, at Lynnfield Mass., were W1s CAX, FOF, QON, SVN, TRE, UKR, VPF, YYH, and YYR. . . . W9SEZ, Eleanor, and her OM are awaiting new calls at their new 55 acre antenna farm, near West Monroe, N. Y. . . . We regret to report the passing of Theodate Goodfriend, W1UZV, of Riverton, Connecticut. Though she was almost eighty years old, Theo enjoyed regular c.w. contacts.

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



W1SCS didn't exactly climb to the top of her 70-foot tower (you figure out the pose) but Ruthe certainly did come out on top in the phone section of the 1957 YL-OM contest. Her score of 15,225 points is the highest ever reported in a YL-OM contest, phone or c.w. Ruthe says that if she had a jet, she'd fly 'round the world to personally thank each of the kind gentlemen who co-operated so generously with her in the contest — all 603 of them in 75 sections. Last year Ruthe also won top phone honors in the same contest, and in 1954 and '55 she placed second in the phone section. The benign chief operator at the Ferguson QTH in Wayland, Massachusetts, who doesn't mind sharing his wife with hundreds of OMs, YL-OM contest week ends only, is W1HM. Ruthe ran up her high score with the help of a 75A2 receiver and a home-built kilowatt transmitter using a pair of 4-250As in the final.

♦

Participating in a YL-OM contest for the first time, Carol Wageman, WØIHQH, of Lincoln, Nebraska, received a certificate for the top YL C.W. score in the tenth district. She used her OM's call, KØBYY, for 206 contacts on 40 and 20. Carol lamented that her pestiest QRM was generated by her small jr. op. who wasn't used to mother attached to the rig all weekend.

QST for

Dena Morgan, W5DRI, of Brookhaven, Mississippi, took second place honors in the YL-OM Phone contest. Dena and her OM W5DQK, both licensed since 1954, take turns operating on several bands with their B & W 5100 and 75A3 and baby-sitting with their harmonics, ages 10, 7, and 5.

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Results: Eighth Annual YL-OM Contest

Three hundred and seventy-five YLs and some eleven hundred OMs participated in the 1957 YL-OM Contest, according to the logs received by current contest captain and chief log-checker for the Young Ladies Radio League, Vice President Mildred Wright, W3YTM/5. Fifty-four YL c.w. logs and 73 YL phone logs were turned in, along with 99 OM c.w. and 91 OM phone logs. All states, all VE districts, and 64 countries were represented. New scoring records were made in both the phone and c.w. categories.

Summarized W3YTM: "Fifteen meters loomed as the most popular phone band, with 10 meters not far behind. Not bothered as much by QRM, the key-thumpers made 20 meters their favorite hunting ground for section multipliers, with 40, 15, and 10 following in order. Seventy-five and 80 meters did not seem as good as in past years, but old hands scoured these bands at intervals and came up with a few worthwhile markers. Some of the top scorers stayed right at the key and mike with no thought of taking time out for rest and sleep. We all say well done! Those who did not make high scores had their reward in making new friends, renewing old acquaintances and just generally having a good time."

This is the first place C.W. winner of the 1957 YL-OM contest rappelling off a mountain cliff near her Los Alamos QTH. Nikki Boyd, K5ADQ, is as adept with a climber's rope as she is ambidextrous in contests — she uses a straight key with her left hand and an electronic key with her right. Licensed in March 1955, Nikki suspects that she falls into the "very active" category, operating primarily on 10 and 20 c.w. She has WAS, YLCC, and has worked 119 countries. The mother of two young sons, Nikki's physicist OM is W5QVZ.

Hear what some of the participants had to say about the affair:

OMs W7QLH — "Lots of fun, although I almost wore out my new call book trying to tell the YLs from the OMs in the pile-ups. Congratulations to all the fine YL operators!"

W6DAC — "I received a QSL from all but one YL in last year's contest. Hope this year will be as good."

K2DEM — "How about running two contests a year?"

W2NIY — "The YU on 3.5 mc. (YU2ACD-Melita) was a real surprise."

PAØVO — "This year I worked 36 hours on 5 bands. Got only four sweet ladies!"

W8QHW — "This is one of the best contests I have ever entered. Only two criticisms: 1. Not enough YLs in the c.w. portion. 2. Exchange should include name of operator."

YLs W1YYR — "Sure was a pleasure working alongside such efficient YL operators. Congratulations on your FB technique, gals!"

W1SCS — "Wonderful this year with so much competition. Couldn't begin to thank all the wonderful OMs for their help and cooperation."

W6QGX — "How about a shorter contest period — say 24 hours?"

KL7BJD — "One suggestion — a larger multiplier for power under 100 watts."

KZ5VR — "Do think the three log awards rule is a bit unfair." ("The highest scoring contestant in each district, where three or more logs are submitted, will receive a certificate.")

Almost all of the first, second, and third place winners, both YL and OM, have been top scorers in previous YL-OM contests.

Certificates have been awarded to the highest scoring contestant in each district, where three or more logs were submitted.

And now the winners. Congratulations to all.

YL

			Award
First Place C.W.	K5ADQ	19,630 *	Cup
Second Place C.W.	W4HLF	18,343	Cup
Third Place C.W.	W1RLQ	16,575	Certificate

Twenty-six members of the Wednesday morning YLRL net (3900 kcs., 0930 EST, W8ATB NCS) met in person at the YL Convention at Grand Rapids, Michigan on March 9th. W8FJU, Dot, and W8RIR, Beth, were co-chairmen of the affair. Shown in the photo are; left to right: top row: W8s REI, WQE, LIV, FJU, FPT, ONI, QOQ, SJF; middle row: W8s KLZ, UAP, SNB, QPT, QOY, VRH, WDW, EIR; bottom row: W9YWH, W8ATB, KN8DJH, KN8BXP, W9NWI, WØZTH, W8RIR.

First Place Phone	W1SCS	45,225	Cup
Second Place Phone	W5DRI	42,083	Cup
Third Place Phone	K5BNQ	39,675	Certificate

OM

		Award	
First Place C.W.	K2DSW	1,755	Cup
Second Place C.W.	W3ARK	1,625	Cup
Third Place C.W.	K2KDW	1,586	Certificate
First Place Phone	W8AJW	4,209	Cup
Second Place Phone	W7SFK	3,480	Cup
Third Place Phone	W1YWU	3,188	Certificate

*Fractions have been converted to the nearest whole number.

SCORES

YL C.W.

Call	*No. of Contacts*	*Sections Worked*	*Score*
W1RLQ	260	51	16,575*
W1VXC	153	32	6,210*
W1YNI	25	17	531*
W2EBW	135	29	3,915
K2JYZ	50	24	1,500*
K2DXD	47	14	823*
K2DKL	36	14	505*
W3URU	125	30	4,688*
W3TSC	146	31	4,526
W3CDQ	92	22	2,530*
W3SLS	90	27	2,430
W4HLF	253	58	18,343*
W4BLR	247	36	8,892
W3UTR/4	35	18	788*
W4KYI	7	6	53*
K5ADQ	302	52	19,630*
W5EGD	216	49	13,230*
W5KEC	211	41	10,814*
W3YTM/5	175	39	8,531*
K6OWQ	151	38	7,173*
K6BUS	156	38	5,928
W6PCA	109	29	3,951*
K6ENK	89	27	2,403
KN6RQB	60	7	525*
W6EHA	23	9	259*
W6WSV	16	8	160*
W7COX	192	41	9,840*
W7PUV	96	27	3,240*
W7PTX	38	18	855*
W7DIF	12	7	105*
W7FDE	5	5	31*
W8SJF	271	39	13,211*
W8UAP	188	34	7,990*
W8OGY	109	27	3,683*
W8SNB	102	23	2,933*
W8KLZ	79	24	2,370*
W8OTK	37	15	694*
W9WZL	258	36	11,610*
W9STR	98	20	1,960
W9ZXZ	58	21	1,523*
W9USR	45	20	1,125*
W9MYC	45	18	1,013*
KØBYY/WØHQH	206	43	11,073*
WØIRJ	36	24	1,080*
CR7LU	20	11	220
KL7ALZ	62	28	2,170*
KP4ZV	156	36	6,975*
VE3AJR	306	38	14,535*
VE3DMX	79	31	2,449
VE3DDA	8	5	50*
VE5DZ	71	27	1,917
VE8EJ	65	31	2,015

YL PHONE

Call	*No. of Contacts*	*Sections Worked*	*Score*
W1SCS	603	75	45,225
W1RLQ	373	51	23,779*
W1YYR	318	50	15,900
W1CEW	172	37	7,955*
W1ZEN	125	27	4,319*
W1YPT/1	91	23	2,616*
K1ADY	35	15	656*
W1VXC	26	10	325*
K2JYZ	135	44	7,425*
K2LTN	102	24	3,060*
K2GVM	52	21	1,365*
W3URU	376	61	28,670*
W3CZT	342	54	23,085*
W3VNN	304	55	20,900*
W3MDJ	290	42	12,180
W3ZUF	106	28	2,968
W3WML	22	11	303*
W4KYI	260	64	20,800*
W4BQI	213	34	9,053*
K4ETB	118	35	5,163*
K4KKR	121	30	4,538*
W5DRI	543	62	42,083*
K5BNQ	529	60	39,675*
W5SPV	401	48	24,060*
W5HWX	350	45	19,688*
W5KEC	327	47	19,211*
W5EGD	323	43	17,361*
W3YTM/5	272	42	13,880*
W5IIWK	308	38	11,704
W5JCY	187	34	6,858
W5WXT	166	25	5,188*
K5CCJ	143	33	4,719
W6QGX	639	55	35,145
W6JZA	459	48	27,540*
K6EXQ	360	46	16,560
K6VFE	102	28	3,570*
W6EHA/M	74	26	2,405*
K6KUP	72	23	2,070*
K6OQD	64	16	1,280*
W7DRU	246	34	10,455*
W7FDE	42	15	788*
W8NDS	276	55	15,180
W8VRH	30	14	525*
W8OTK	21	12	315*

(*Continued on page 166*)

These five Oregon YLs were all licensed before World War II. Looking over some new equipment displayed at the Oregon Amateur Radio Association convention at Eugene, Oregon, on April 13 and 14 are standing, left to right: W7ITZ, Ruth; W7FXE, Lucile; W7IIIIII, Bea; seated W7FKS, Mildred; and W7ENU, Mary. Twenty-nine YLs attended the women's program, arranged by W7FKS.

STAFF OPENING

We have a permanent opening for a young amateur to do general administrative work on the ARRL Hq. staff with the title of Assistant Secretary. Here is a chance to make amateur radio your career. The work is non-technical, requires the ability to express one's self well both orally and on paper, and will later involve a modest amount of travel. Any applicant should be one with initiative who will be able to assume administrative responsibility readily.

We'd like someone about age 25, preferably single, of pleasing appearance and personality, with at least a couple of years of ham radio under his belt, preferably someone who has had some organizational experience such as secretary or other officer of a local club. We want a young man because we would expect to train him on the job. Salary will be commensurate with ability and background.

If you are interested, write to Box A, ARRL Hq., West Hartford, Conn. State your age, marital status, and give a resume of your educational and employment or military service background, and amateur experience.

HAMFEST CALENDAR

California — The San Fernando Valley Radio Club will hold its annual Hamfest picnic on Sunday, June 9, at the Victory Van Owen Playgrounds, Area #1. For info on preregistration, contact K6PXD, 15149 Kingsbury St., San Fernando, Calif.

Illinois — The 1957 Tri-State hamfest is being sponsored by the Western Illinois Radio Club on Sunday, June 2, at Eagles Alps Park in Quincy. All sorts of contests, an auction, a grab-bag, and refreshments. A family affair. Advance tickets $1.25, at the gate $1.75. Rain or shine. Contact W9HQW.

Maine — The Augusta Radio Club will hold a hamfest at the Calumet Club, Augusta, on Sunday, June 16. Advance tickets $2.25; after June 14, $2.50. Transmitter hunt, cake-decorating contest for OMs and YLs.

Missouri — The Missouri Hamfest will be held in Sedalia on June 9, at the Missouri State Fair Grounds. Admission $1.00 per person. Basket lunch, free hot coffee and cold soft drinks. Swap shop, events for all.

Missouri — The North Missouri Amateur Radio Club will hold its annual ham picnic at Moberly in the Rothwell City Park, on Sunday, June 16. Registration is $1.00, starting at 0800. Bring your own lunch. Soft drinks and coffee furnished. Games and entertainment.

Ohio — The Second Annual Northeastern Ohio 50 Mc. picnic will be held June 30 at Loyal Oak Park, near Akron. Features will include swimming, games, YL entertainment, swap tables, and fun for the whole family. Bring your basket. Incoming mobiles will be monitored on 50 to 51 Mc. Family tickets are $2.00. Get further info from K8BDK, 1136 Dietz Ave., Akron 1.

Pennsylvania — The 8th annual gabfest of the Uniontown Amateur Radio Club will be held on Saturday, June 29, at the club house on the Old Pittsburgh Road, just off Route 51, two miles north of Uniontown. Contests, refreshments and movies. Stag. Registration $1.00.

Saskatchewan — The annual Saskatchewan hamfest will be held at Lake Waskesiu, Prince Albert National Park on June 29 and 30. Mobile judging, hidden transmitter hunt, and other contests. For further information, contact Marshall Albright, VE5PA, Prince Albert, Sask.

Hawaii — The annual Hawaiian ham convention will be held on Saturday and Sunday, July 6–7, sponsored by the Honolulu Amateur Radio Club. Lots of contests; special mobile events on Sunday. Registration $2.00 for the day; $5.50 for the evening including dinner; $7.50 for the whole affair. A Sunday picnic will be an additional $1.00. For further info, contact HARC, P. O. Box 2868, Honolulu 3, T. H.

A.R.R.L. ROCKY MOUNTAIN DIVISION CONVENTION

Estes Park, Colorado — June 15-16, 1957

The Denver Radio Club Inc. is sponsoring the 1957 ARRL Rocky Mountain Division Convention to be held at Elkhorn Lodge, Estes Park, Colo., on June 15–16.

Elkhorn Lodge is situated near some of the most scenic parts of the Colorado Rockies and can be reached by excellent paved highways. Near-by is the Rocky Mountain National Park with its wild life, fishing and high peaks, and just over the Divide are Grand Lake, Shadow Mountain Lake and Granby Reservoir with excellent boating and fishing facilities. Arrange your summer vacation to include the convention and the hospitality of cool, colorful Colorado, and be sure to bring your camera.

There will be activities for all, including technical talks, a transmitter hunt, mobile-judging contest, special program for the ladies, horseback riding and swimming at Elkhorn Lodge's beautiful new pool. There will be fun for the entire family.

Registration fee is $3.50 per person. Special rate of $2.50 if registration is postmarked no later than June 4. Send your request for hotel reservations direct to Elkhorn Lodge and write to Walter M. Reed, WØWRO, 1355 E. Amherst Circle, Denver 10, Colo., for registration information.

COMING A.R.R.L. CONVENTIONS

June 1–2 — Oklahoma State, Tahlequah, Okla.
June 7–8–9 — Dakota Division, St. Paul, Minn.
June 15–16 — Rocky Mountain Division, Estes Park, Colorado
July 27–28 — West Gulf Division, San Antonio, Texas
August 16–17–18 — Southwestern Division, Long Beach, California
August 30–31–Sept. 1 — ARRL National Convention, Chicago, Illinois
August 31–Sept. 1–2 — Maritime Provinces, Charlottetown, Prince Edward Island
September 21–22 — Midwest Division, Kansas City, Kansas
October 18–19 — Ontario Province, Toronto, Ontario
November 8–11 — Far East Pacific Division, Guam

Happenings of the Month

27 MC.

The Federal Communications Commission has proposed, in its Docket 11994, to take away amateur privileges in the ISM band 26.96–27.23 Mc. and assign the frequencies instead to the Citizens Radio Service. The action is part of a comprehensive plan the Commission has evolved, after many months of study, to shuffle frequencies in various portions of the spectrum between such services as citizens, domestic, public, industrial, and land transportation, the demands for which are becoming increasingly pressing. In brief, FCC proposes to take away from the Citizens Radio Service all but a half-Mc. of its 460–470 Mc. assignment, turning those channels over to industrial and domestic public uses. Then, feeling that the Citizens will have a need for considerably greater space than the half-Mc. they are being left at 465 Mc., the Commission has expressed its intent to assign 26.96–27.23 Mc. to the Citizens service in addition to the 27.255 "control" frequency they now have.

We publish below the notice in Docket 11994, omitting only Appendix B which is a lengthy text of proposed new regulations for the Citizens service. As the final date for comment is June 10th, the Board of Directors of ARRL will have full opportunity to examine the matter at its meeting in May and formulate the League's position.

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

In the Matter of Complete revision of Part 19, Rules Governing the Citizens Radio Service, and reallocation of frequencies in the range 26.96–27.23 Mc. from the Amateur Radio Service (Part 12) to the Citizens Radio Service.	DOCKET NO. 11994

NOTICE OF PROPOSED RULE MAKING

1. Notice is hereby given of proposed rule making in the above entitled matter.

2. The Citizens Radio Service was originally established with the intention of providing for private short-distance radio communications, for radio signalling, or for the remote control of objects or devices by radio, to be used by individuals as well as by commercial concerns. However, the actual growth of the service has progressed primarily along the lines followed by the various Industrial and Land Transportation Radio Services, although subject to fewer restrictions as to station location or usage, and lacking any requirement of a definite frequency selection in the available band (except Class C stations). With the development of equipment capable of reliable operation in the 460–470 Mc. band, many persons have obtained authorizations for Class A stations in this service as a means of meeting the mobile and point-to-point communications needs of their respective industrial activities or other commercial enterprises which could not then be served by facilities licensed in the Industrial or Land Transportation Radio Services.

3. By separate proceedings (Docket Nos. 11959 and 11991), the Commission proposes to reallocate 1 Mc. of the band 460–470 Mc. to the Domestic Public Radio Service and 8.45 Mc. of the band to the Industrial Radio Services in keeping with concurrently proposed changes in that Service. Only the frequencies between 464.725 Mc. and 465.275 Mc. would remain available to the Citizens Radio Service.

4. The Commission recognizes that many individuals will continue to desire the use of the Citizens Radio Service to provide for short-distance radio communication, for radio signalling, and for the remote control of objects or devices by radio; in fact, representations made by and on behalf of the Academy of Model Aeronautics indicates a substantial need for additional frequencies in the 27 Mc. range for use in the remote control of such objects or devices as model aircraft by radio. It is also recognized that not all persons now holding authorizations for Class A stations in the Citizens Radio Service will be able to establish eligibility in any of the Industrial or Land Transportation Radio Services, even if the proposed changes are consummated in those services. Accordingly it is proposed in this proceeding that frequencies in the band 26.96 to 27.23 Mc. be reallocated from the Amateur Radio Service to the Citizens Radio Service, for use by Class A and Class C stations only. It is further proposed that the frequency 465 Mc. be retained for use by Class B stations, as at present but under more stringent technical requirements, and that the other frequencies at 50 kc. spacing in the band 464.725–465.275 be made available to Class A stations. Additionally, it is proposed that the requirement for "type-approval" of equipment to be utilized by Class A stations be changed to a requirement that such equipment shall be of a type which has been accepted for licensing in this service, and that the specific frequency to be used by a Class A or a Class C station will be specified on the station authorization. It may be noted that the requirement regarding "type-approved" equipment for Class B and Class C stations (other than crystal-controlled Class C stations) is retained.

5. Reallocation of the frequency band 26.96–27.23 Mc. from the Amateur Radio Service to the Citizens Radio Service at this time appears appropriate for several reasons. First, the frequency band is a part of the larger frequency band 26.96–27.28 Mc. within which interference may normally be expected and must be accepted from industrial, scientific and medical (ISM) devices operating on the frequency 27.12 Mc. Secondly, because of the foregoing, it appears that normal amateur operation in this region of the spectrum is and has been confined primarily to the internationally recognized amateur band 28.0–29.7 Mc. and that amateur operation in the 26.96–27.23 Mc. band has been almost exclusively the type of operation which would still be permitted on those frequencies under the Citizens Radio Service; namely, the remote control of objects or devices by radio or short-distance radio communication. In addition, since licensed amateurs, as individuals, will be able to obtain personal licenses in the Citizens Radio Service for either radio control or voice communication in this band, it appears that very few privileges in connection with this frequency band will be taken from them. On the other hand, a need for a means of short-range voice communications for personal use by any individual, as well as a need for additional spectrum space for general use for radio remote control purposes, on frequencies in the 27 Mc. range, appears to have been demonstrated. The rule changes proposed herewith, among other things, are designed to produce those effects.

6. Accordingly, the Commission proposes to amend its rules to accomplish the following major changes:

(1) To completely revise the Rules Governing the Citizens Radio Service.

(2) To provide for "type-acceptance" rather than "type-approval" of equipment for use by Class A stations in the Citizens Radio Service.

(3) To provide new frequencies for the Citizens Radio

Service in the frequency band 26.96–27.23 Mc., in addition to the presently available frequency 27.255 Mc.

(4) To delete the availability of frequencies in the bands 460.000–464.725 Mc. and 465.275–470.000 Mc. to the Citizens Radio Service.

(5) To delete the availability of frequencies in the band 26.96–27.23 Mc. to the Amateur Radio Service.

(6) To provide for the assignment of specific frequencies to Class A and Class C Citizens Radio Stations, in addition to the assignment of the single frequency 465 Mc. to Class B Citizens Radio Stations.

7. Pending in the Commission's files is a petition filed on January 23, 1957 by the Academy of Model Aeronautics (Academy). The petition requests amendment of Parts 2, 7, 10, 11, 16 and 19 of the Commission's Rules to provide relief from interference conditions on 27.255 Mc. by reallocating assignments within the band 27.23–27.28 Mc. to provide an offset of 18 kilocycles between Class C, Citizens Radio Stations and other services, to permit the radio control of models and objects on all frequencies assigned to the Industrial, Scientific and Medical Service, to permit the assignment 460–470 Mc. band frequencies to Class C stations, and to assign a frequency or band of frequencies above 300 Mc. exclusively for the control of objects or devices by radio. To the extent that the above petition can be said to be at variance with what is proposed herein, it will be considered in any disposition of this proceeding. Such additional comments as may be submitted by the Academy will also be considered.

8. On December 19, 1956, the Commission adopted a Notice of Proposed Rule Making (Docket No. 11895) to amend Part 19, Rules Governing the Citizens Radio Service, by deleting the Note to Section 19.12. The time for filing comments thereto has expired. Comments on the above-mentioned proposal have been received from the American Trucking Associations, Inc., the Radio Specialists Company and the Kaar Engineering Corporation. Inasmuch as the instant proceeding contemplates a complete revision of Part 19, including the removal of the present Note to Section 19.12, Docket No. 11895 is merged into this proceeding, and the comments filed thereto will be considered in any disposition of this proceeding.

This big "35," along with flowers, cards and other gifts from staff associates and friends, greeted Treasurer and Circulation Manager David H. Houghton in his office April 10th, the date of completing 35 years (the longest tenure of anyone) at ARRL Hq. Throughout the summer, however, we're afraid those white spots making up the figure will disappear one by one; you see, they're golf balls, an essential — and expendable — ingredient of Dave's favorite game. Fore!

9. The proposed amendments to Parts 12 and 19 are set forth in the Appendix hereto. They are issued under the authority of Sections 4(i) and 303 of the Communications Act of 1934, as amended.

10. Any interested person who is of the opinion that the proposed amendments should not be adopted or should not be adopted in the form set forth herein, and any person desiring to support this proposal, may file with the Commission on or before June 10, 1957, a written statement or brief setting forth his comments. Replies to such comments may be filed within ten days from the last date for filing original comments. No additional comments may be filed unless (1) specifically requested by the Commission or (2) good cause for the filing of such additional comments is established. The Commission will consider all such comments prior to taking final action in this matter, and if comments are submitted warranting oral argument, notice of the time and place of such oral argument will be given.

11. In accordance with the provisions of Section 1.764 of the Commission's Rules and Regulations, an original and 14 copies of all statements, briefs, or comments filed shall be furnished the Commission.

FEDERAL COMMUNICATIONS COMMISSION

Ben F. Waple, Acting Secretary

APPENDIX A

PROPOSED AMENDMENTS TO PART 12

RULES GOVERNING THE AMATEUR RADIO SERVICE

1. It is proposed to delete paragraph (f) of §12.111 and substitute the following:

(f) (reserved)

2. It is proposed to amend §12.134 to read as follows:

§12.134 *Modulation of carrier wave.* Except for brief tests or adjustments, an amateur radiotelephone station shall not emit a carrier wave on frequencies below 51 megacycles unless modulated for the purpose of communication.

FCC FREQUENCY STUDIES

We have earlier reported in this department the study FCC is currently making into frequency allocation and usage above 890 Mc. While no amateur band in that portion of the spectrum appears directly involved, the League filed (see May *QST*) a general statement of the amateur position and an intent to submit testimony at forthcoming hearings should amateur matters be discussed.

Now FCC has extended its inquiry into spectrum utilization and has announced that it will conduct a thorough study of 25–890 Mc. (Docket 11997). The Commission says it feels such an inquiry is required, on its own motion, to carry out responsibilities assigned it under the Communications Act. In support of that view, FCC cites the phenomenal growth of radio especially since World War II, the new services which have come into being (The Act requires FCC to study new uses for radio . . . and generally encourage the larger and more effective use of radio in the public interest), the resultant overcrowding of the spectrum, and the need to prepare for the formulation of FCC's position toward the forthcoming 1959 world radio conference.

The docket cites the following objectives:

7. The objectives of this inquiry contemplate a review of the present allocation of frequencies in this portion of the spectrum, in the light of the technological progress which has been made since the last review, to determine whether a more efficient utilization thereof can be made; to evaluate the long range requirements of existing and potential users of this portion of the spectrum; to obtain data as to the feasibility of applying known and potential techniques and methods relating to efficient utilization of spectrum space; to evaluate what system or systems of frequency allocation for the future would best serve the public interest; to obtain data and information as to the requirements of non-governmental radio services; to evaluate the feasibility of making

long range plans for the future use of the radio spectrum and, in particular, to determine the impact, economic and otherwise, upon users of the spectrum and the general public of implementing such future changes as may appear to be desirable and in the public interest; and, finally, to assist the Commission in formulating its position with regard to the preparation of the formal United States proposals to be advanced at the forthcoming International Radio Conference scheduled to convene in Geneva, Switzerland, in 1959.

The Commission points out there has been no such study of spectrum usage since the general allocations proceedings in 1944; in fact, FCC quotes heavily from some of the 1944 documents to show that the scope of its present inquiry will be complete and inclusive of all factors affecting spectrum economy.

As it did in 1944, the League will of course file the required data and information on behalf of the amateur service. As the filing date is not until July 1st, the ARRL Board of Directors will have opportunity to discuss the matter in detail at its annual meeting in May and determine specific aspects of League policy toward the proceeding. FCC indicates that later it will call a fact-finding hearing for a further examination of the problem on the basis of filings made by interested parties.

Inasmuch as Appendix B to the docket outlines the type of information sought and is indicative of the inclusive scope of the inquiry, we publish it at the end of this department.

STAFF NOTES

We regret to report the departure from Hq. of Assistant Secretary Lee Aurick, W1RDV, a member of the ARRL staff for three years. Lee is now engaged in general promotional and publicity work for the electron tube division of RCA, an opportunity he could not refuse; as sorry as we are to see him go, we wish him all the best. When he gets squared away at his New Jersey location, you'll undoubtedly be hearing him on the air with a new second district call.

The Hq. welcomes to its Ten-Year Club two new members: Leitha Phillips and Doreen Driscoll. Leitha's specialty is billing the hundreds of radio distributors and book stores for orders of thousands upon thousands of copies of various League publications. Credit status, a multiplicity of quantity trade prices, foreign rates, and transportation costs are some of the things that must constantly be at her fingertips. Doreen is an assistant section leader in the membership division, handling the breakdown of the mail as it relates to membership entries. After ten years at Hq. she is about ready for her LLB — Philadelphia law, that is — what with three basic classes of membership, plus Family and blind special cases, and generally keeping the membership records straight. Neither of the gals has been bitten by the ham bug; "after all," they say, "*somebody* around here has to stay sane." In the growing size and complexity of Circulation Department operations these days, continuity of skilled personnel — particularly in these specialized fields — is especially important to the

Doreen Driscoll and Leitha Phillips

League. No more loyal or conscientious workers ever graced the Hq. staff.

144-MC. POWER BOOST DENIED

A petition filed with the Commission something over a year ago by WØVTP, requesting a 5-kw. power limit for (General Class or higher) c.w. operation on the 2-meter band for purposes of experimenting with scatter propagation has now been denied by FCC, on the basis that "while recognizing that experiments of amateur radio station licensees have resulted in valuable contributions to the science of telecommunications, the Commission believes that the requested amendment would not significantly increase the potential for experimentation in the field of scatter propagation."

OHIO AMATEUR RADIO WEEK

Once again this year, Ohio has declared as Amateur Radio Week in that state the dates of June 16–22, culminating of course in the ARRL Field Day weekend. The Ohio Council of Radio Clubs, Ralph E. Crammer, W8VHO, chairman, was again the sparkplug. Governor O'Neill's proclamation includes the following phrases of commendation for the amateur service:

"The radio amateurs of Ohio have been given an important and vital role in planning and participating in matters of civil defense, both through the medium of radio and through their organizational and individual activities; radio station owners and operators in Ohio and throughout the nation provide and maintain at their own expense, a valuable potential "second line" communication system standing by and ready for duty in event of an emergency disaster; the radio amateurs of this country have shown a remarkable sense of responsibility and public devotion to our citizens, having in mind the pleasure and service of their fellowmen, and should receive the encouragement and interest of all our citizens in their objectives."

(DOCKET 11997)

APPENDIX B — SCOPE OF STATUTORY INQUIRY AFFECTING OVER-ALL ALLOCATION OF RADIO SPECTRUM BETWEEN 25 AND 890 MCS

1. To obtain specific data as to the utilization of the present allocations and assignments in the radio spectrum

between 25–890 mcs for the various radio services as follows:

(a) Broadcast and auxiliary Broadcast Services.
(b) International Fixed Public Radiocommunication Services.
(c) Maritime Radio Services on Land and Shipboard.
(d) Aeronautical Radio Services.
(e) Public Safety Radio Services.
(f) Industrial Radio Services.
(g) Amateur Radio Service.
(h) Radio Stations in Alaska.
(i) Restricted Radiation Devices (TV Receiver I. F. Frequencies, etc.).
(j) Land Transportation Radio Services.
(k) Industrial, Scientific and Medical.
(l) Citizens Radio Service.
(m) Disaster Communications Services.
(n) Domestic Public Radiocommunication Services.
(o) Non-word Communication Uses of Radio.
(1) Control of Devices.
(2) Telemetering.
(3) Signalling, etc.
(4) Radar.
(5) Radiolocation.
(6) Radionavigation.
(7) Others.

II. To evaluate the long range requirements of existing and potential users of the radio spectrum between 25-890 mcs, in terms of:

(a) Present and future needs of existing users in the above-described services.
(b) Needs of potential users of the radio spectrum in terms of class of service.

III. To obtain specific data with respect to the following, as it pertains to existing and potential users of the radio spectrum between 25–890 Mcs.

(a) Justification for the use of radio.
(b) Location in Radio Spectrum.
(c) Minimum amount of spectrum space required.
(1) Number of channels based on maximum channel loading (including consideration of maximum holding time per message), channel width and projected rate of growth, and also based upon use of spectrum conservation techniques; see IV *infra*.
(d) Feasibility of sharing frequencies with other classes of service.
(e) Possibility of transferring certain types of services or links of communication systems to frequencies above 890 mc.

IV. The feasibility of applying newly developed and potential future techniques and methods relating to efficient utilization of spectrum space, including, but not limited to:

(a) Most efficient type of modulation for the service involved.
(1) Type of emissions. (AM, FM, Pulse, Single Side Band, Multiplexing, New Methods.)
(2) Necessary Bandwidth.
(3) Occupied Bandwidth.
(4) Allocated Bandwidth.
(b) Frequency tolerance.
(c) Minimum power requirements.
(d) Maximum geographical and time sharing.
(e) Allocation of frequencies to services on the basis of achieving maximum benefits and minimum adverse effects of the propagation characteristics of frequencies.
(f) Maximum feasible suppression of spurious emissions from transmitters.
(g) Use of antenna system directivity to obtain as narrow a beam as feasible consistent with rendering the needed service and to obtain greater geographical sharing.
(h) Improved receiver design techniques.
(i) New propagation modes and techniques.
(j) System devices. E. g. Selective signalling.
(k) The desirability of adopting certain minimum engineering standards of allocations in those services which have no standards in order to limit the radiation of facilities to values necessary to render the desired service, and also to minimize interference. If so, in what services, in what portions of the spectrum, and to what extent.
(l) A reduction in the width and number of guard bands.
(m) Others.

V. The potentialities of a broad band common carrier system in terms of:

(a) Whether a system of this type can be more effectively exploited to conserve spectrum space through the rendition of service to a greater number of users than could a system consisting of a number of private users, utilizing the same amount of spectrum space. (In the evaluation of this question, consideration should be given to spectrum conservation techniques; see IV, *supra*.)
(b) Areas, geographical or otherwise characterized, where this type of system would be feasible.
(c) The classes of persons and types of service whose needs could or could not be substantially met by this type of system.
(d) The minimum amount of spectrum space needed and the location in the spectrum which would provide a feasible broad band common carrier system evaluated in terms of maximum channel loading (including consideration of maximum holding time per message), channel width, and projected rate of growth.

VI. To evaluate the impact, economic and otherwise, upon existing users of the factors covered in Sections II and IV above, in terms of:

(a) The implementation of presently available and potential future techniques in spectrum conservation.
(b) The possible reallocation of existing services to other portions of the spectrum in order to obtain more efficient utilization of the radio spectrum.
(c) What considerations, including a suitable amortization period, should be given to the effectuation of (a) and/or (b).

VII. To evaluate what system of allocations would best serve the public interest, such as:

(a) The present block system.
(b) A general pool system in which frequencies would not be reserved for specific services, but would be available generally for assignment to various types of services.
(c) A combination of the above.
(d) Some other system.

VIII. In addition to the above comment is also requested on the following specific points of inquiry:

1. Should the Commission continue its basic policy of not licensing domestic fixed circuits below 890 Mc. with the exception of those placed in bands now available for fixed service and those used as integral parts of mobile systems now operating secondarily in the mobile service bands?
2. To what extent should the VHF maritime mobile allocation in the 152–162 Mc. band conform to international maritime mobile allocations? Under what conditions, if any, can the frequencies in such an allocation be shared by the land mobile service?
3. Should the maritime mobile allocations in the 30–50 Mc. band be deleted in favor of a standardized VHF maritime mobile allocation in the 152 Mc. band?
4. Should frequencies allocated to ISM be shared with communications services? If so, what should be the conditions of such sharing?
5. Would better frequency utilization be achieved and the public interest be served by permitting the bands of frequencies between 25–890 Mc. allocated for private mobile systems to be used by communications cooperatives, specialized or general communications common carriers for the purpose of permitting the latter, as licensees, to use such frequencies solely for the purpose of rendering service to persons eligible to use such frequencies?
6. What changes in the International Table of Frequency Allocations (Atlantic City Radio Regulations, 1947) are required? National frequency problems soluble within the framework of the present international allocations are not included in this inquiry.

Strays

W9QMB, we are told, had a serious case of BCI lately. It seems that his voice came booming over the bedroom radio of an elderly lady, and she said in no uncertain terms that it was positively *indecent* for his voice to be in her bedroom like that.

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This must have been an intellectual QSO! K6PHD worked KN4LLB.

Operating News

F. E. HANDY, W1BDI, Communications Mgr.
GEORGE HART, W1NJM, Natl. Emerg. Coordinator
PHIL SIMMONS, W1ZDP, Asst. Comm. Mgr., C.W.

ROBERT L. WHITE, W1WPO, DXCC Awards
LILLIAN M. SALTER, W1ZJE, Administrative Aide
ELLEN WHITE, W1YYM, Asst. Comm. Mgr., Phone

Some Facts About our ARRL Field Organization. Following calls for nominations in *QST*, 21 new SCMs were named to office and 12 SCMs re-elected for another two-year term of office for their Sections in '56. The percent return in SCM elections ran 37.4% to 66%, those populous sections with the larger cities running the lower percentages. LO (League Official's) Parties, informal over-the-air get-togethers in which Directors, SCMs, SECs, ECs, RMs and PAMs relax and rag chew, putting forward organization and fraternalism in the group, take place the first Saturday-Sunday of each month throughout the year. In '56 there were some 987 different individuals reported taking part in this activity.

Your Section Communications Manager (see page six, this issue of *QST*) invites your monthly report of what you are doing with your amateur station. Also unless you hold such a post already, he solicits your application for official-station ARRL-appointment posts, along the lines of your natural interest. You do of course have to be active along appointment operating lines to rate an SCM appointment. SCMs in pursuing their duties are assisted by Board provisions for reimbursing some of the SCM and SEC travel in each sectional area. This helps expand radio-operating setups and emergency communication provisions under the auspices of ARRL. In '56 there were some 114 section-meetings or SCM-addressed meetings, officials of every ARRL division participating. The Section Emergency Coordinators likewise helped to assist and promote AREC-RACES communication plans and tests in 131 such SEC conferences or meetings. We continue to suggest to affiliated radio clubs that they invite the SCM, SEC or EC-ROs on timely occasions to be with their club and to talk specifically about Section operating organization and the furtherance of emergency communication planning and on-the-air activities.

Observer Activity. Cooperative notices numbering 10,348 originated by Official Observers were reported sent to amateurs in 1956. A very special commendation is rated by W1JNV, W3TFN, W7PQJ and WØPME whose efforts to help others in this department of effort have excelled in their licensing areas for two consecutive years. Their work was tops in the work totalled up from some 236 different observers. Over one-third of this observer effort was dedicated specifically toward helping curtail off-frequency radiations occasioned by harmonic emission falling outside the amateur bands, much of it from Novice operated stations. No telling how many FCC notices were beaten to the punch by an OO report . . . but the effort must have helped. Even more notices were sent if we go by the print orders adding up to 25,000 form cards ARRL supplied for this work!

Qualified members, accepted by SCMs for appointment to OO work will continue to receive forms and guidance material. ARRL will send information on specific duties and policy in reply to postal inquiries or radiograms from amateurs interested in this SCM-post in the U. S. A. and Canada. Only licensed amateurs holding a General or higher class license may apply. Applicants must have an experience background adequate enough to assure that their advices will not be based on any reports in which image reception, receiver overload or predominant effects of either the propagation medium or receiver itself have unduly colored the observed results. By means of ARRL's observer program our Amateur Service can continue to be known as a self-regulated facility for the most part. By our dedicated nets, notable traffic work with the Antarctic and for others, and our public service as accomplished in natural disasters and our self-alignment in the

A.R.R.L ACTIVITIES CALENDAR

June 5: CP Qualifying Run — W6OWP
June 8–9: V.H.F. QSO Party
June 20: CP Qualifying Run — W1AW
June 22–23: ARRL Field Day
July 3: CP Qualifying Run — W6OWP
July 19: CP Qualifying Run — W1AW
July 20–21: CD QSO Party (c.w.)
July 27–28: CD QSO Party (phone)
Aug. 7: CP Qualifying Run — W6OWP
Aug. 19: CP Qualifying Run — W1AW
Sept. 5: CP Qualifying Run — W6OWP
Sept. 17: CP Qualifying Run — W1AW
Sept. 18: Frequency Measuring Test
Sept. 21–22: V.H.F. QSO Party
Oct. 2: CP Qualifying Run — W6OWP
Oct. 12–13: Simulated Emergency Test
Oct. 16: CP Qualifying Run — W1AW
Oct. 19–20: CD QSO Party (c.w.)
Oct. 26–27: CD QSO Party (phone)

OTHER ACTIVITIES

The following lists date, name, sponsor, and page reference of *QST* issue in which more details appear.

July 8–19: Operation Alert, FCDA (next month's issue).

groupings for Emergency Communication organization, we maintain a respected amateur radio. We'll try to give you some interesting figures on the traffic and emergency aspects of our ARRL field organization at another time. Activity currently is summer and winter in our modern world of amateur accomplishment, not markedly seasonal as was once the case. So this is to say, if you can take part in net operations in your section, or be animated in the observer and notice-mailing field, we hope you will do so. Your participation will be heartily welcomed if you are qualified for and interested in these activities.

W1AW Summer Sked. Refer to the chart on page 86, May *QST*, if you wish to check on details of our W1AW summer schedule. The Monday-through-Friday visiting (and operating) hours start at 1:00 P.M. EDST instead of at three o'clock now that the daylight-time arrangement is effective. We still open at seven P.M. (EDST) Saturdays and three P.M. Sundays; drop a line for a copy of a map with local highway connections and information if you plan to drop in and haven't visited the station before.

There is no change in the designated hour for starting code practice and bulletins. However, W1AW is definitely on the eastern *daylight* time schedule, so if you are located in a place where you did *not* set the clock up an hour on April 28 you will need to look for us one hour earlier. Our code practice starts at 9:30 P.M. EDST daily.

June 22–23 ARRL Field Day — Last Call. How you spend the ARRL FD, '57 version, is up to you. A final injunction may be in order to every single licensed amateur in W-VE land not to let the dates pass without trying out some sort of emergency radio equipment . . . in practical operating. To put down some QSOs in the log book may not seem an important exercise in itself, if you are otherwise on the air. But to set up equipment and make it prove itself, establishing bona-fide communication from new places and demonstrating that this could be maintained reliably under emergency circumstances if need be, is an important knack.

It fully complies with the spirit of the FD just to work by yourself or with another ham or two. Heave your line over a tree limb to attach an antenna. Hook your batteries to a small rig, portable or converted for field purposes. Go to a place where there are no wires for communication. See how you make out. A two-hour tryout and a page full of called-and-worked and you can prove yourself in either the Saturday or Sunday afternoon of the Field Day. Or you can help form a larger group or go with a club, if you belong to one or can get invited in advance. The rules for Field Day are detailed elsewhere in this issue of *QST*. A careful reading of the reports in last December *QST* on the '56 FD will spell out the many ways and flexibility-of-approach possible in connection with the ARRL Field Day. But don't let the many club reports and the aspect of competing club-wise (with similar setups and last year's scores of your own group) obscure the *very basic purpose* to test out rigs and operators!

If you have done this you have had a successful Field Day. FDs are fun, fraternalism, competition (to some), and a challenge to technical and operating capability, which they invariably help to develop! As stated on our '46 FD-special QSL-card "There's Nothing Like an ARRL Field Day." So here's to a successful workout in the FD. See you there.

—*F. E. H.*

A.R.R.L. AFFILIATED CLUB HONOR ROLL

It is a pleasure to present the new 1957 Honor Roll of affiliated clubs whose *entire membership* consists of members of the League. These affiliates having 100 per cent ARRL membership are determined from data supplied in the 1957 Annual Report of Club Data. An *additional QST* Honor Roll will be published later this year. Clubs reporting the results of ARRL membership drives being conducted currently can then be included. Each listed club now will receive as a special recognition a 100% ARRL Club certificate. Appropriate for display in the club rooms, this certification makes a permanent record of the high standing and membership record of the society.

Aeronautical Center Amateur Radio Club, Inc., Oklahoma City, Okla.
Arrowhead Radio Amateur Club, Duluth, Minn.
Athens Amateur Radio Club, Athens, Ga.
The Bandhoppers Radio Club, Ferguson, Mo.
Bell Gardens Amateur Radio Association, Bell Gardens, Calif.
Blossomland Amateur Radio Association, Inc., St. Joseph, Mich.
Canal Zone Amateur Radio Association, Balboa, C. Z.
Central Illinois Radio Club of Bloomington, Ill., Inc.
Central Kansas Radio Club, Inc., Salina, Kans.
Coffee Dunkers of Detroit, Mich.
Davenport Radio Amateur Club, Davenport, Iowa
Edison Radio Amateurs' Association, Detroit Area, Mich.
Gratiot County Amateur Radio Association, Alma, Mich.
Helix Amateur Radio Club, La Mesa, Calif.
Iowa Great Lakes Amateur Radio Club, Spencer, Iowa
Jamestown Amateur Radio Club, Jamestown, No. Dak.
Keystone Amateur Radio Club, Springtown, Pa.
Larned Amateur Radio Club, Larned, Kans.
Maui Amateur Radio Club, Kahului, Maui, T.H.
Muskingum Amateur Radio Association, Zanesville, Ohio
Niles Amateur Radio Club, Niles, Mich.
North Shore Radio Club, Bayside, N. Y.
Northbridge High School Radio Club, Whitinsville, Mass.
Orange Amateur Radio Club, Orange, Tex.
Order of Boiled Owls, Levittown, N. Y.
Pacifico Radio Club, Los Angeles, Calif.
Par-Troy Amateur Radio Association, Parsippany, N. J.
Pickens County Amateur Radio Club, Easley, S. C.
Providence Radio Association, Inc., Providence, R. I.
Quebec Y's Radio Club, Quebec, P. Q., Canada
St. Louis Amateur Radio Club, Inc., Mo.
Scott County Amateur Radio Club, Scott City, Kans.
Sheridan Radio Amateur League, Inc., Sheridan, Wyo.
Soo Radio Club, Sidney, Nebr.
South Lyme Beer, Chowder and Propagation Society, South Lyme, Conn.
State Line Radio Club of New York and New Jersey, Allendale, N. J.
Tri-City Amateur Radio Club, Borger, Tex.
West Essex Amateur Radio Society, West Caldwell, N. J.
Western Illinois Radio Club, Quincy, Ill.
Westlake Amateur Radio Association, Rocky River, Ohio

NATIONAL RTTY CALLING AND WORKING FREQUENCIES

3620 kc. 7140 kc.

One of the questions frequently asked in correspondence received at headquarters is: "How do I get into RACES?" A good many amateurs seem to feel that all they need do is send in a form and that's it — they're in. Others confuse RACES with the AREC. Perhaps we have placed too much emphasis on the anatomy of organizational structures rather than in the simpler, more down-to-earth how-to-do-it items.

So how *do* you get into RACES? You get into RACES by signing up with your local (or state, if you prefer to work at that level and it is available) civil defense radio officer as a radio operator. It's that easy. Of course, to do this you have to sign up in your local civil defense first, which usually requires taking a loyalty oath and getting an identification card. Once you have been assigned to communications (radio) you get a certification card signed by the civil defense director indicating that you are a c.d. radio operator. This, along with your basic amateur operator license, be it novice, technician, conditional, general, advanced or extra, authorizes you to participate in RACES drills and activities, as well as be a part of the operation should we become embroiled in war.

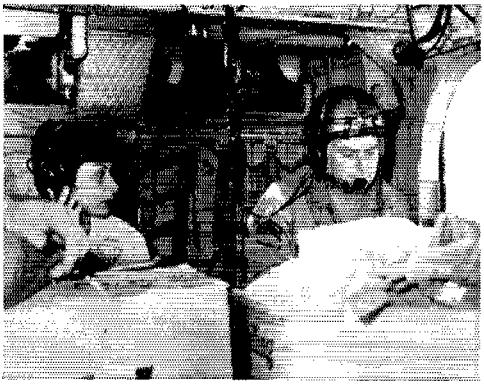
Suppose there is no local radio officer or, for that matter, no local civil defense? In that case, you *might* be able to sign up at state level, if RACES exists there, but these operators are usually hand picked by the state r.o. Or, you may be able to sign up in an adjoining community. But chances are you're just out of luck until or unless a local radio officer is appointed. Maybe your civil defense director doesn't even know about RACES or, for that matter, even about amateurs. There are such people. Tell him, get him to appoint a r.o. (you, if necessary), and get a RACES unit established. Maybe later you can get funds for some equipment. If you can't, use your own.

NATIONAL CALLING AND EMERGENCY FREQUENCIES

3550	3875	7100	7250
14,050	14,225	21,050	21,400
28,100	29,640	50,550	145,350

Meanwhile — and this is what we've been building up to — you can get organized without delay under the Amateur Radio Emergency Corps so that when the time comes to serve civil defense you will be in a position effectively to do so. Actually, you should *already* have been so organized. The AREC has been in existence since 1935. However, if you have not taken advantage of its availability, complete procedural details are given in our booklet entitled "*Operating an Amateur Radio Station.*" The extent to which your AREC organization can and should devote its energies to civil defense (RACES) depends on several factors, such as: (1) Whether or not your local civil defense embraces all local services during a disaster — Red Cross, police, fire, Salvation Army, etc. If it does, you can work through civil defense, under RACES, to serve them all. If it does not, you should closely maintain your liaison contact with others in addition to civil defense. (2) The attitude of civil defense officials toward local amateurs. If this attitude is negative, you may find it very difficult to serve them as you would like to; if it is positive, there is no limit to the extent of coordination that can be effected. (3) What you have to offer in the way of services. There is a big difference between saying "I am an amateur and there are other amateurs who can assist you with radio communications if you can supply us with money and equipment," and "I represent a group of amateurs already organized and actively prepared to provide whatever radio communications facilities you need." There is nothing like a "fait accompli" to dispel a negative attitude, particularly if the fact can be demonstrated. No civil defense director in his right mind will belittle the need for communications facilities. If you can show him that you can do a job, he will be likely to want you to do it; otherwise, he may be inclined to depend on that with which he is familiar — landline telephone, police radio or other existing commercial facilities.

Think it over, fellows. If RACES provides the impetus for organization, by all means go in for RACES. If it does not exist, give some thought to organizing an AREC unit as a prelude to, if not a substitute for, RACES.



Arlene Perez, WH6CFW (left), flew by helicopter into the tidal wave disaster area at Hanalei, Kauai, Hawaii, to help set up radio communication between Red Cross forward headquarters and 54 isolated people. Arlene is acting first lieutenant in the Lihue CAP cadet squadron. Equipment was used on 144 mc. and CAP frequencies for disaster operations. (*Photo by KH6ARL.*)

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Many of you will remember the tornado that hit Gans, Okla., on January 22, killing eight people. Amateurs figured heavily in emergency communications after this disaster, W5EJK, of Muskogee, after hearing of the damage done by the twister and that communications were knocked out, went immediately to Gans in his mobile unit, taking along a command transmitter and an emergency generator. Arriving at Gans shortly after 1000, he found W5UED from Fort Smith already on the scene with his mobile, but unable to establish communication. W5EJK established communication with K5WBA at Camp Chaffee, the army base handling relief needs. By noontime he had set up his fixed emergency unit and solid contact with K5WBA was maintained from then on. W5EUQ had set up a transmitter at Red Cross headquarters in Fort Smith, and considerable traffic was also handled with him and with W5GQG as well as with other stations in Oklahoma and Arkansas. W5UED remained in Gans to assist W5EJK in the operating chores throughout the day. Operation was entirely on emergency power until 1330, and at about 1600 Signal Corps men from Camp Chaffee strung a telephone line into Gans. W5EJK continued to operate until 2130, when other telephone lines were connected and his services were no longer needed. Altogether he handled 58 formal messages and some 35 "informals." W5EJK received a letter from Major Richard O. Riegler, in charge of communications operations from Camp Chaffee which said, in part: "At your own expense you entered the Gans area and demonstrated the willingness and outstanding work of amateur radio operators during emergencies of this nature."

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In late January a severe ice storm struck northeast Arkansas. All commercial lines were out of service in Jonesboro and power was not restored for five days. All toll and most city telephone lines were also down. W5VTZ began operation on the 27th, the first day of the storm, and K5EED started operating the following day, both on emergency power. Traffic was handled for the City Water and Light Plant, Associated Press, Southwestern Bell Telephone Co., R.E.A., truck lines and railroads. W5RWJ, operating K5EED, handled train orders and messages for the Frisco Railway with KØAKH in Springfield, Mo., and W4WCB in Memphis for three days; about 150 messages in all.

W5VTZ handled emergency calls for emergency medical supplies and doctors, among other types of traffic; assisting operators at W5VTZ were *W5s* EOJ VZC VZD and K5IPQ. W4WCB set up his station in the Frisco railroad station in Memphis and was assisted by W4BOR, handling approximately 50 messages. Operation was on 7290 in the daytime, on 3810 at night. The Memphis deputy c.d. director asked W4LVG to contact Jonesboro regarding a supply of dry ice for saving food in frozen food lockers which were without electricity; this was handled successfully with W5VTZ. W4DQH and W4AFB of Memphis were also known to have handled some emergency traffic. WØYKC, EC and radio officer for three counties in Missouri, served the railroad, telephone Company, and power company in Campbell, Mo., who were in need of supplementary communications during the storm.

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On the morning of April 1, the c.d. director of Etowah County, Ala., alerted the Gadsden Emergency Net (AENH) to obtain information from the storm area of Anniston, Jacksonville and Piedmont. With K4BWR acting as NCS using station K4JMC at the Gadsen Amateur Radio Club, mobiles were dispatched to each area. K4BTO/m covered Piedmont, contacting police, telephone and power departments. All modes of communication had been out in this area. K4AJK/m covered Anniston and Jacksonville, contacting the same departments in those areas. Contact was maintained with K4JMC in Gadsden. Reception was generally good, and all stations cooperated in keeping the frequency clear. — *K4BTO, EC & Radio Officer, Etowah Co., Ala.*

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KH6ARL suggests a one-tube converter set on one of the National Calling and Emergency Frequencies to go ahead of a conelrad receiver, equipped with a switch so that when you are transmitting, or about to transmit, the conelrad receiver performs as such. When not transmitting, the conelrad receiver monitors the NCEF. He says one d.p.d.t. switch would do it: on one position it flips on the speaker and the converter; on the other position the converter is off and the alarm circuit is on. Good idea?

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Amateurs in Mobile, Ala., donated their time, gas, autos and rigs to assist in the United Cerebral Palsy Telethon held on Feb. 2 and 3, as they have in previous years. The club station, W4QEE, was set up at telethon headquarters. At 1038, Feb. 2, W4QEE/4 was on the air to check out transmitter and antenna installations and let mobile stations check their rigs. At 1100, five mobile units participated in the parade of about 100 automobiles. At 2100 all the amateurs met at telethon headquarters for a briefing, and at 2230 the telethon got under way. Seventeen mobiles participated and W4QEE/4 was operated by 19 different amateurs before the net was closed at 1725 the next day, having handled 900 messages and collected $3,000 in seventeen hours of continuous operation. EC K4EEH, who spearheaded the amateurs' efforts, says this was an excellent test of equipment and personnel at the same time it provided a public service, and would be glad to give other ECs information on how it was set up.

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On Feb. 10, an emergency roll call of the AREC of the Springfield, Mo., area was held to find out how many stations could be rounded up on short notice. Net control was WØLQC, assistant EC. A total of 22 stations checked in within 15 minutes and six new members were added to the group. EC WØHUI admonished all that spur-of-the-moment drills would be called from time to time, so all concerned should hold themselves in readiness.

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SEC W4JSH of Kentucky reports a successful statewide c.d. exercise held on February 25. Five mobile support groups failed to report activity, although it was active during the drill. State headquarters was manned on 80 meter c.w. by W4HOJ and K4BVB. This activity was not conducted on RACES frequencies and was not under a RACES plan, although one is in the making. State officials expressed themselves as well pleased with the communications supplied.

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Amateurs of Dade County (Miami), Fla., assisted on March 3 in the "Crusade for Children" telethon. W4MVR and W4SDI set up their 2-meter station and beam atop telethon headquarters to work other 2-meter stations who in turn relayed on ten meters the names and addresses of contributors. These "area NCS" relayed to mobiles and fixed stations all necessary information from telethon headquarters. Each pledge was assigned a number, and after being picked up by a mobile the operator filed a message indicating which number had been picked up. Five stations served as "area NCSs" with stations on both 2 and 10 meters. Amateurs without mobiles would drop in at the fixed NCS point for information, then drive out to pick up the donation. Telethon headquarters reported over $5,000 picked up and 186 messages completed. — *W4IYT, SEC Eastern Fla.*

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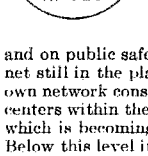
Twenty-two SECs reported February activities on Form 8, representing 6252 AREC members. This is an increase of one report over the same month last year, and almost a thousand AREC members represented; it also represents the highest number of SEC reports ever received for the month of February. Three new sections, Southern New Jersey, Montana and Arkansas are added to the 1957 list, making a total of 26 different sections heard from this year. Other sections reporting: Ga., Santa Clara Valley, New Mex., San Joaquin Valley, Colo., W. N. Y., Conn., Minn., N. C., E. Fla., Iowa, Maritime, Tenn., NYC-LI, Ore., E. Pa., Wis., Ala., Md.-Del.-D. C.

RACES News

With the appointment of a new state Radio Officer (also SEC) in Louisiana (one K5BES), RACES activities took a decided upswing. An amendment to the communications plan has been placed on file with FCC in which the state is divided into seven zones, four of which are designated "attack" zones and three "support" zones. Radio officers have been appointed for all six areas (all but one of them is also ARRL EC). Statewide command networks are conducted by s.s.b. on 3993, by c.w. on 3501.5, in the Disaster Communications Service band and on public safety frequencies, with an additional RTTY net still in the planning stages. Each area of course has its own network consisting of an area control station and report centers within the area, closely following the logical pattern which is becoming pretty standard throughout the nation. Below this level it is assumed local nets on v.h.f. will be or have been established. The RO and SEC, K5BES, puts out a monthly bulletin outlining progress within the state.



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News on North Carolina RACES: SCM W4RRH informs us that RACES authorization by AREC districts, as originally proposed, has been supplanted by authorization by counties. To that end, each district EC is being urged to file a communications plan for his own county, and as-

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This is W3FIQ, who operated during the Thanksgiving Day blizzard in Western Pennsylvania for three days relaying urgent requests for food, bedding and other supplies from Springfield (Pa.)to Erie. In recognition of his outstanding work, Sam was awarded a special citation in General Electric's Fifth Annual Edison Radio Amateur Award.

sistant ECs for other counties in this same district are being urged to do likewise for their counties. Seventeen county plans were thus filed from March 5 to March 22, with over fifty in the process. A state command and information net has been formed in which each EC has been made an authorized RACES station. Riley, W4RRH, says all it takes is someone interested plus some *work*.

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FCDA headquarters in Battle Creek, Mich., will henceforth be represented on the air by the call letters K8ERA, the club station of the Triangle Club, most of whose members are of the FCDA staff. Bear the call K8ERA in mind for FCDA contact.

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Operation Alert is scheduled to start on July 12 this year, and will last approximately five days. Full details in July *QST*.

General Robert M. Woodward, Ill. state civil defense director, makes a transmission during a RACES drill over K9CLW, state net control station in Chicago. The Illinois c.d. director said he is proud of the over-150 members of his RACES net who have cooperated in every state and local c.d. exercise during the past several years.

TRAFFIC TOPICS

This treatise is on the subject of the "service" message — when and how to use it. Before you read this, dig out your copy of "Operating an Amateur Radio Station" and read up on the subject (p. 12). That isn't too much to go on, so hear these supplementary comments:

Ordinarily, one doesn't originate a service message to tell the originator that a message *was* delivered. But it is always good manners, and often necessary, to tell him it was not. If you do this (and you should!) you should refer to the message clearly in the text of your service, state the reason why no delivery was effected, and conclude with your subsequent disposition — that is, whether the message has been cancelled or is being held pending further information. The form of the message (on c.w.) would go something like this: SVC NR 1 W1NJM CK 27 NEWINGTON CONN 1900 APR 15 to W6HC SAN JOSE CALIF BT REF UR MSG NR 7 APR 13 TO F E HANDY ARRL WEST HARTFORD CONN STOP ADDRESSEE UNKNOWN AT THIS ADDRESS STOP PSE GBA OR ADVISE DISPOSITION BT W1NJM. On phone: "Service message number one, W1NJM, check 29, Newington, Connecticut, nineteen hundred, April fifteen, to W6HC, W six Henry Charlie, San Jose California. The text: Reference your message number seven, April thirteen to F (as in Frank), E (as in Edward), Handy, ARRL, West Hartford Connecticut, period addressee unknown at address given period please give better address or advise disposition. Signed: W1NJM."

Note the three essential parts of the text: (1) identification of the message by number, date and addressee; (2) reason for the service message; (3) request for instructions. The latter, in some cases, may simply indicate the disposition you are making of the message, although in most instances it is advisable, if not courteous, to await the originating station's instructions. Obviously, if the addressee moved and left no address, or moved to another point some distance away, or is deceased, the originating station can simply be informed of cancellation; but never cancel a message arbitrarily or per-emptorily because the address is garbled, because the message is "too old," because the address can't be found, or because the text doesn't make sense (to you). Send a service message and await instructions. If no instructions are forthcoming, another service message after a reasonable time can indicate cancellation.

On MARS refiles, the service message should be addressed to the refiling station, which is in effect the originating station as far as we are concerned. Of course, if the refiling station is unknown, you've had it; you can't service the originating station if you don't know who he is. On traffic generated at fairs or exhibits, it is not likely that the originating station will be able to give you information, but originate a service message anyway. Go through the motions. What can you lose?

An undelivered message counts only as one *received*. A service message which you originate counts as one *originated*, its reply (if any) as one *received* and, if this makes delivery of the subject message possible, you can take an extra count as one *delivered*, the 48-hour stipulation in this case applying from the time you receive correct delivery information provided you originated the service message within 48 hours of the receipt of the subject message.

Subject of treatise next month: the "book" message.

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Miscellaneous March net reports: Early Bird Transcontinental net reports 31 sessions, traffic count 589. North Texas — Oklahoma Net reports 31 sessions, 223 messages, 1095 check-ins; K5AEX is the new manager. W9KOY reports Interstate Single Side Band Net with 57 messages, 49 average station attendance. Transcontinental Phone Net report: 1st Call Area — 1195; 2nd Call Area — 1150; 3rd, 4th, 8th, 9th and 0th Call Areas, 697; total — 3042.

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National Traffic System. In 1953 we wrote a letter to a prominent West Coast traffic man which said, in part: "It is desirable to decentralize as many . . . NTS matters as possible, looking even toward the ultimate where the system runs itself and looks to ARRL Headquarters only for supplies and general guidance." At the present, much of the administrative responsibility for NTS rests on the shoulders of one person at headquarters. It was back in 1953, in connection with just this letter which we quote above, that the Pacific Area Staff of NTS was formed — a group of prominent traffic and NTS men on the Pacific Area consisting of the TCC Director, the PAN, RN6 and RN7 managers and three "members at large," whose function was primarily concerned with cementing together the activities of NTS in that area by exchange of ideas, discussion of problems, contact with and between section net managers, and recommendation of amateurs to fill vacancies at regional, area or TCC managership levels as and when they occurred. This staff was formed on an experimental basis, as a big step toward self-administration of NTS. Slow in getting started, the Pacific Area Staff has in recent months performed admirably in fulfilling its functions.

We now wish to announce that PAS is being taken off the "experimental" list and shall henceforth be an integral part of the system. The headquarters, charged by the Board of Directors with sponsorship and administration of NTS, will look to this group, which elects its own chairman and its members-at-large, to make recommendations for the betterment of NTS in the Pacific Area, and will implement such recommendations to the extent practicable in consonance with the welfare of the rest of the system. Its members: W6HC, member-at-large and chairman; W6ZRJ, RN6 Manager; W7GMC, RN7 Manager; K6DYX, PAN

Manager; WØKQD, Pacific Area TCC Director; W6UTV and W7FIX, members-at-large.

Area staffs in the other two areas will be formed if this is indicated by the wishes of the NTS traffic men in those areas.

March reports:

Net	*Sessions*	*Traffic*	*Rate*	*Average*	*Representation*
EAN	22	943	1.28	43.0	93.9
CAN	31	1151	1.38	37.1	97.8
PAN	28	788	0.57	28.0	100
1RN	26	365	0.68	14.0	95.1[1]
2RN	51	377	0.52	7.4	97.6
3RN	42	244	0.41	5.9	88.8
RN6	47	356	....	7.6	47.7
RN7	52	260	0.16	5.0	....
8RN	43	255	....	5.9	92.2
9RN	62	814	0.87	13.1	87.5
TEN	93	2040	1.03	21.7	71.1
ECN	14	81	0.53	5.8	88.1
Sections[2]	672	5495	....	8.2	....
TCC (Central)		1895			
TCC (Pacific)	106[3]	760			
Summary	1183	15824	CAN	11.1	PAN
Record	1239	16369	1.72	13.9	100

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

[2] Section nets reporting: AENP, AENT & AENB (Ala.), KYN (Ky.), MDD (Md.-Del.-D.C.), GSN (Ga.), CPN (Conn.), Minn. Phone (Noon & Evening), QKN, QKS & QKS SS (Kans.), QMN (Mich.), NJN (N. J.), WSN (Wash.), TLCN (Iowa), OSN/PQN (Ont.-Que.), SCN (Calif.), WVN (W. Va.).

[3] TCC schedules kept, not counted as net sessions.

Lacking reports from two regions and one TCC Director, we failed this month to break any records. In all probability had they been received, we would have been over the top again. Let's try to get those reports here on time, fellas. The fifteenth of the month is the deadline.

W9DO says that an average of 18 stations QNI CAN each night, which is 12 more than the basic "cadre." K6DYX submits his first report as PAN manager, and it's a good 'un. *W1s* DZV ELJ JLZ and KKM have received 1RN certificates, and 17 others are eligible. W2BRC and W2HTH have received 2RN certificates. W7WAH reports for RN7 again while W7GMC is on vacation. The following stations have received 8RN certificates: *W8s* BWK ELW GBF HXB IBB ILP MVJ OPU PBO QQO SJF SZU VTP ZLK. W4ZDB earned his 9RN certificate the hard way, by serving as NCS on Saturdays. WØZWG has been awarded a TEN certificate with a letter of congratulations from net manager WØKJZ; TEN is harassed by lack of Manitoba contact. ECN certificates have been awarded to VE1DB and VE3DCX; only 14 ECN sessions were reported out of 21 scheduled in March.

Transcontinental Corps: WØKQD sends in her usual detailed report on TCC-Pacific. In March there were 17 stations performing TCC functions. Thirty-six supplementary schedules were held to clear TCC traffic, in addition to the 106 regular schedules reported. Only three of the regular schedules were unreported. In the Central Area, WØSCA's only comment is: "Everything still OK in Central Area TCC." But get a load of that traffic total! No report from Eastern Area TCC this month.

CLUB COUNCILS AND FEDERATIONS

The Cleveland Area Council of Amateur Radio Clubs, Henry Bormann, Secy., 4345 West 50th St., Cleveland 9, Ohio.

Federation of Eastern Massachusetts Amateur Radio Associations, Ernest A. Coons, W1JLN, Acting Chairman, 25 Atlantic Terrace, Lynn, Mass.

Indiana Radio Club Council, Inc., Joseph A. Chasey, W9EIV, Secy., 5613 E. 21st St., Indianapolis 18, Ind.

The Los Angeles Area Council of Amateur Radio Clubs, Inc., Dorothy E. Williams, W6QLM, Secy., 361 Marie Ave., Los Angeles 42, Calif.

Michigan Council of Clubs, Roland R. Beineman, W8QBA, Secy., 136 Guild St., N.E., Grand Rapids, Mich.

Ohio Council of Amateur Radio Clubs, Ralph E. Crammer, W8VHO, Secy., 3989 Indianola Ave., Columbus 14, Ohio.

Ontario Amateur Radio Federation, G. Moes, VE3BV, Secy., 226 North Shore Blvd., Burlington, Ont., Canada.

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.

Colorado	B. Eugene Spoonemore, WØDML	Feb. 11, 1957
Wisconsin	George Woida, W9KQB	May 12, 1957
Iowa	Russell B. Marquis, WØBDR	June 16, 1957

In the Sacramento Valley Section of the Pacific Division, Mr. LeVaughn Shipley, K6CFF, and Mr. Harold L. Lucero, W6JDN, were nominated. Mr. Shipley received 138 votes and Mr. Lucero received 82 votes. Mr. Shipley's term of office began Feb. 25, 1957.

In the Maryland-Delaware-District of Columbia Section of the Atlantic Division, Mr. Louis T. Croneberger, W3UCR, Mr. John W. Gore, W3PRL, and Mr. Raymond de Courcelle, W3DQZ, were nominated. Mr. Croneberger received 322 votes, Mr. Gore received 317 votes, and Mr. de Courcelle received 112 votes. Mr. Croneberger's term of office began Mar. 21, 1957.

In the Nebraska Section of the Midwest Division, Mr. Charles E. McNeel, WØEXP, and Mr. Floyd B. Campbell, WØCBH, were nominated. Mr. McNeel received 123 votes and Mr. Campbell received 108 votes. Mr. McNeel's term of office began April 15, 1957.

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

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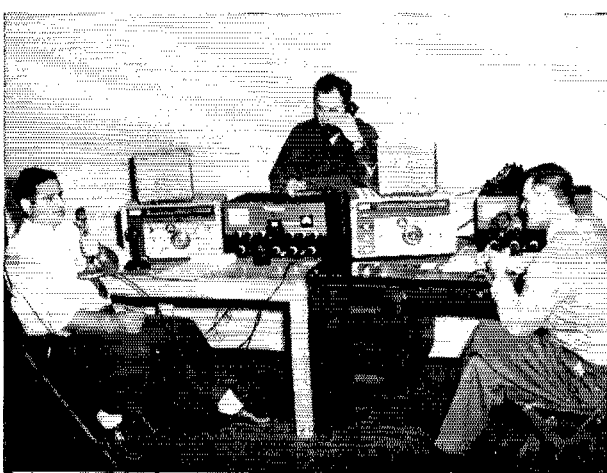


Norfolk County (Va.) recently opened its first civil defense control station. This installation employs three transmitters and receivers for local (10 meters) and long haul (75 meters) work. A separate receiver is used to monitor a local emergency calling frequency. Standing is W4YOO, Norfolk County radio officer. Seated, left to right, are W4PAK, Va. SEC, and W4NXK, alternate radio officer.

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 reason of expiring memberships, individual signers uncertain or ignorant of their membership status, etc.

The following nomination form is suggested: (Signers will please add city and street addresses to facilitate checking membership.)

Communications Manager, ARRL. [place and date]
38 La Salle Road, West Hartford, Conn.

We, the undersigned full members of the.....
..... ARRL Section of the .....
Division, hereby nominate.....
as candidate the Section Communications Manager for this Section for the next two-year term of office.

Elections will take place immediately after the closing dates specified for receipt of nominating petitions. The ballots mailed from Headquarters to full members will list in alphabetical sequence the names of all eligible candidates.

You are urged to take the initiative and file nominating petitions immediately. This is your opportunity to put the man of your choice in office.

— F. E. Handy, Communications Manager

Section	*Closing Date*	*SCM*	*Present Term Ends*
Yukon*	June 10, 1957	W. R. Williamson	Mar. 17, 1949
Manitoba*	June 10, 1957	John Polmark	Mar. 2, 1957
Saskatchewan*	June 10, 1957	Harold R. Horn	Apr. 15, 1957
Maine	June 10, 1957	Allan D. Duntley	May 16, 1957
Eastern Pennsylvania	June 10, 1957	Clarence Snyder	June 15, 1957
North Dakota	June 10, 1957	Elmer J. Gabel	June 15, 1957
San Joaquin Valley	June 10, 1957	Ralph Saroyan	June 15, 1957
Southern New Jersey	June 10, 1957	Herbert C. Brooks	Aug. 26, 1957
Indiana	Aug. 9, 1957	Seth L. Baker	Oct. 14, 1957
East Bay	Aug. 9, 1957	Roger L. Wixson	Oct. 14, 1957
San Diego	Aug. 9, 1957	Don Stansifer	Oct. 15, 1957

* In Canadian Sections nominating petitions for Section Managers must be addressed to Canadian Director Alex Reid, 169 Logan Ave., St. Lambert, Quebec. To be valid, petitions must be filed with him on or before closing dates named.

CODE PROFICIENCY PROGRAM

Twice each month special transmissions are made to enable you to qualify for the ARRL Code Proficiency Certificate. The next qualifying run from W1AW will be made on June 20 at 2130 EDST. Identical texts will be sent simultaneously by automatic transmitters on 1885, 3555, 7080, 14,100, 21,010, 50,900 and 145,600 kc. The next qualifying run from W6OWP only will be transmitted on June 5 at 2100 PDST on 3590 and 7128 kc.

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

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

Date Subject of Practice Text from April *QST*

June 3: *Grounded-Grid Tetrode Kilowatt*, p. 11
June 6: *A Three-Band Cubical Quad . . .*, p. 16
June 11: *V.H.F. Meteor Scatter Propagation*, p. 20
June 14: *Variable Band Width Q Multiplier*, p. 25
June 18: *A Compact All-Band Antenna*, p. 29
June 21: *The Governors-to-President Relay*, p. 45
June 24: *General Operating With Mike or Key*, p. 46
June 27: *Field Day Statistics*, p. 52

BRASS POUNDERS LEAGUE

Winners of BPL Certificates for March traffic:

Call	*Orig.*	*Recd.*	*Rel.*	*Del.*	*Total*
W2KEB	91	1083	899	125	2198
WØBDR	66	845	765	25	1701
W3WIQ	42	735	721	62	1560
WØPZO	4	738	721	8	1471
WØSCA	4	726	709	1	1440
W7BA	29	581	545	31	1186
WØCPI	5	550	511	39	1105
W3CUL	131	497	371	92	1091
WØLCX	17	515	500	15	1047
W9CXY	4	519	511	8	1042
W9JOZ	12	466	468	7	953
W4PL	5	447	376	54	882
WØLGG	33	397	356	22	808
W1LDE	15	434	351	5	805
W3UE	11	398	359	27	795
W8UPH	46	378	248	112	784
W6DDE	3	388	282	106	779
W8VTP	6	355	329	26	716
W7PGY	31	329	276	53	689
W2KFV	0	330	294	44	668
W8ELW	12	326	310	13	661
W9DO	21	301	41	281	644
W6GYH	457	81	68	18	624
W7VAZ	34	300	252	38	624
W5DRZ	37	303	264	18	622
WØZWL	7	339	7	264	617
W6GQY	232	72	224	33	561
K7WAT	52	254	226	28	560
W9EHZ	25	271	215	46	557
W7APF	8	273	269	4	554
W9EQO	4	270	266	4	544
WØGAR	3	264	260	7	534
W5ESB	16	256	243	13	528
W9TT	34	250	174	62	520
W9JYO	207	165	124	14	510
W4ZDB	74	222	201	8	505
VE3VP	6	251	244	3	504
W5UXE	96	203	171	32	502
Late Report:					
W7APF (Jan.)	6	283	258	28	575

More-Than-One-Operator Stations

K7FEA	148	987	949	8	2092
K5WAB	42	830	789	41	1702
W4DFU	675	60	50	10	795
K7FAE	52	217	269	92	630
VE3MRC	287	4	287	0	578

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

W9NZZ 237
W1YRZ/2 184
WØNIY 169
WØVPQ 150
KH6BQS 140
K2WAQ 126
W9HXR 126
KP6AK 125
WØKJZ 117
W1BPW 114
K6OZJ 114
W8GFE 110
W9DGA 110
K4DKA 107
K7FBN 107
KØBFS 107
W2MLW 105
WØFVG 101

Late Reports:
KH6BQS (Feb.) 207
K2LTI (Feb.) 133
KP6AK (Feb.) 101

More-Than-One-Operator Stations

K3WBJ 116 W4SKH/4 110

BPL medallions (see Aug. 1954 *QST*, p. 64) have been awarded to the following amateurs since last month's listing: K2IYP, W7WOK, W8VTP, KØBCQ.

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

CODE-PRACTICE STATIONS

The following is a partial listing of stations participating in the ARRL Code-Practice Program:

W1KKT, Frank Nutter, Mill St., P. O. Box 209, Milton, New Hampshire; 28.2 Mc.; Wednesdays, 2000–2030 EST; 6 w.p.m.

W1NQB, Frank Piatek, 384 Holyoke Rd., Westfield, Mass.; 29.6 Mc.; Mon. through Thurs., 1830 EST; 5–18 w.p.m.

W2EBZ, Clay Cool, (K2GMC alternating), 443 West 47th St., N. Y. 36, N. Y.; 144 and 50 Mc. on request.

W2NHG, Saul Schacket, 13530 232nd St., Jamaica, L. I., N. Y.; 145 Mc.; Mon., 1930 EST; 5–10 w.p.m.

W2MSK, Martin Heuvelmans, 62–07 Alderton St., Rego Park, N. Y.; 28.9 Mc.; Mon., 1930 EST; 8–10 w.p.m.

W2NNK, John Oberlies, 22 Sleepy Lane, Hicksville, L. I., N. Y.; 3580 kc.; Tues., Fri., and Sun., 2030 EST; Fri., 5–13 w.p.m., Sun. and Tues., 5–35 w.p.m.

W3NL, Ralph Anderson, 2509 32nd St. S.E., Washington 20, D. C.; 1813 kc.; Mon. through Fri., 2000 EST; Sat., 1000 EST; beginner's speeds.

W3UVD, Walter Downes, RD #2, Box 328, Jeannette, Penna.; 3700 kc.; Tues., 2000 EST; 5–15 w.p.m.; (Club Call, W3UYE).

W4IYT, Andrew Clark, 41 Lenape Dr., Miami Springs, Fla.; 28.7 Mc.; Mon. through Fri., 2100 EST; 5–18 w.p.m.

W4RUR, Edward Blatt, 536-16 Ave. South, St. Petersburg 5, Fla.; 7086 kc., 28050 kc.; Mon. and Wed., 1900 EST; 6–22 w.p.m.

W5DAG, Malcolm Hovis, 909 Ruby St., Osceola, Ark.; 3790 kc.; Mon., Wed., and Sat., 2030 CST; 5, 13, and 20 w.p.m.

W5USN, Naval Reserve Radio Station, Marconi Drive at Robert E. Lee Blvd., New Orleans 24, La.; 3750 kc., 7100 kc.; Fri. through Mon., 3750 kc., 1930 CST; Mon. through Fri., 7100 kc., 1230 CST; Fri. through Mon., 7100 kc., 1930 CST; 15 w.p.m.

W6ODX, Ronald Reed, 11671A San Vicente Blvd., West Los Angeles 49, Calif.; 3836 kc.; Mon., Wed., Fri., and Sat., 2000 PST; 13–15 and 20–25 w.p.m.

W7IY/7, William McKeeth, 2216 Madison, Boise, Idaho; 7162 kc.; Mon., 2030; Tues., 2000; Wed. and Thurs., 1945; 5–15 w.p.m.

W8STR, Meredith Barger, Box 446, Gnadenhutten, Ohio; 3670 kc.; Mon., Wed., Fri., 1900 EST; 5–20 w.p.m.

W8VYU, Perry Ballinger, 365–26th St. N.W., Massillon, Ohio; 7080 kc.; Wed., 2000 EST; 5–25 w.p.m.

W9UIN, Joseph Kadlec, 1148 Ashland Ave., Evanston, Ill.; 7240 kc.; Sat. and Sun., 0800 EST; 4–8 w.p.m.

(More Code-Practice stations next month.)

FEBRUARY FMT RESULTS

The Frequency Measuring Test of February 12, open to ARRL *Official Observers* and other amateurs, brought entries from 255 participants (110 Observers and 145 non-OOs) who made 1138 measurements in all. Everyone who took part has already received an individual report comparing the accuracy of his measurements of the W1AW FMT transmissions with those of a professional laboratory. The leaders' standings are listed below.

Observers	*Parts/ Million*	*Non-Observers*	*Parts/ Million*
W8CUJ	0.1	W8HB	0.0
W8GBF	0.1	W4JUI	0.1
WØOTR	0.1	W8GQ	0.1
W1MUN	0.2	W9TCJ	0.2
W4CVO	0.2	W9VZF	0.3
W4EWC	0.3	W1WPG	0.5
W8YCP	0.5	W3AHZ	1.5
W2FE	0.7	W2OUG	1.7
W1RLQ	2.0	W1BW	2.1
W2LS	2.4	W6MXQ	2.7
W7FU	2.7	W6AXV	3.2
W3TFN	3.4	W5JPM	4.8
W6GQA	3.7	W7FNS	5.0
VE6HM	4.4	W4QDY	5.4
W9DHT	5.4	W7PSO	5.4

DX CENTURY CLUB AWARDS

HONOR ROLL

W6AM....271
W1FH....271
W8HGW...269
W6ENV...269
W9NDA...268
W6MX....266
W3GHD...264
W8NBK...264
W6SYG...264
PY2CK....264

W6DZZ....264
W6CUQ...263
W5ASG...262
W8KIA....261
W3JTC....261
W6TT.....261
W3BES....261
W2AGW...261
W6RW....261

W8BRA...261
ZL2GX....260
W6SN.....260
W7AMX...260
W6VFR...259
W6MEK...259
LU6DJX...259
KV4AA....259
W3KT.....259
W2HUQ...259

Radiotelephone

PY2CK....259
VQ4ERR..252
W1FH....250
ZS6BW....244

W8HGW...244
CN8MM...243
W8GZ.....243
W9RBI....240
W9NDA...240

W3JNN...238
W8BF.....237
W6AM....235
W1NWO...234

From March 15 to April 15, 1957 DXCC certificates and endorsements based on postwar contacts with 100-or-more countries have been issued by the ARRL Communications Department to the amateurs listed below.

NEW MEMBERS

CO2BL....204
PY2BAU..146
G6XL.....133
K5ABW...132
W9PZT....128
ZS6WS....117
K4CTU....115
ZL1OA....115
W3EBG...112
G3GSZ....110
G5MN.....110
W9WJH...109
K6IYJ....108
W3DBX...107
WØYTL...107
K4GSS....106

W5GAI....106
F3IM.....106
JA7AD....105
W5QVZ....104
WØGNG...104
SM5BGS..104
VE3DIF...104
YV5BS....104
K5ADQ...102
K6EDE...102
W9DSO...102
WØOJW...102
CN8JX....102
GI3GAL...102
JA9AA....102
W1YYR...101

W6YC.....101
W8GB.....101
W8UED...101
W1ZFV....100
W2FXA....100
W2PDB....100
W4BEY....100
W4AFS....100
W4KN.....100
W4LZW....100
W5RHW...100
W8MFW...100
W9ROK....100
CR7CI....100
PAØBX....100
PAØLOU..100

Radiotelephone

PY7YS....111
W6ZEN....109
WØCXC...107
W8CYO...106
ZS6WS....105

W1JXM...104
W3DRD...104
W4KGR...104
DL4OR....103
W5MZP...100

WØWXJ...100
HC2BH....100
HR1LW...100
PAØZD....100
SM4BMX..100

ENDORSEMENTS

W6SAI....256
W7GUV...251
W5ADZ...249
W6GFE...249
W9HUZ...245
VK2DI....245
W7GBW...242
ON4AU....241
W3EPV...240
W6HX....240

W6YY.....233
W5FFW...232
W6DI.....230
W6UHA...230
W8KML..230
K4BB.....227
G3HLS....222
W5HNO...220
WØGRV...220
W8UDR...215

W5ABY...214
W6TXL...214
W6BVM...213
WØQVZ...212
W7AC.....211
W7ADS....211
W9GKL...210
W5FXN...206
W8YIN....204
W3VKD...203

W6YK....203
WØANF...203
W7GXA...202
W6GNA...201
W1TX.....200
W8PUD...200
W6ALQ...200
W6JK.....200
KH6PM...200
W8GLK...192
W5PZL....191
W9EU.....191
K4AIM....190
W6BUO...190
W7FB.....190
OZ7BG....190
W1WY.....185
W1BFT...184
W8OGV...180
W9KA.....180
W3LMM...175
W6UQQ...175
ZL2HP....173
W3JNM...172
W6QNA...172
W8HMI...172
W2HQL...171
W2IRV....170
W7IQI....170
PY1ADA..170
W7DAA...169

W3ZQ.....164
KZ5DG....163
DL4ZC....162
HB9AO....162
PAØZL....161
SM3EP....161
W2QKJ....160
W4NBV....160
W4TFB....160
W5RS.....160
VO1DX....160
II1CZE....156
K6EVR....155
W6ITH....155
WØUQV....154
W1WLW...153
W9YSX....153
LA2B.....152
W5TPC....151
W4JBQ....150
W5CEC....150
W7BGH....150
W7FBD....150
W8PXP....150
WØCPM...150
OK1KTI...150
OZ7SN....150
G3IDC....144
W4PVD....140
W6ETJ....140
W6OUN...140
K9BVR...140

EA4BH....140
VE1EX....136
W2OTC...131
W5VNL...131
K6DNH...131
TG9AD....131
VE1PA....131
ZE3JO....127
W1GKJ...123
W8ERA...122
JA1AG....122
W3KFQ...120
W3WPG...120
W4JZQ....120
W4UKA...120
W5DQK...120
SM5ARR..120
VE3IR....120
EA5AF....118
W6BAG...115
W6TKX...113
W9WYB...113
W6CBE...112
W2KTU...111
W8ESR...111
W8TTO...111
VE3TW...111
W2BWC...110
W3CDG...110
WØCXC...110
GM3EOJ..110

Radiotelephone

11SM.....210
KV4BB....207
W6YY.....206
W6GVM...200
CO2BL....200
KH6OR....200
CO2BK....193
W8VDJ....192
K4AIM....190
W9JJF....188
WØGKL...186
W4DCR...180
W9WHM..180
YV5EC....180
W4NYN...171
W6SYG...170

HB9LA....170
W3VKD...167
KZ5DG....160
W1EKU...160
W8NXF...160
WØVSK...160
DL4BY....160
W4ANE...157
W6ITH....155
W4FPS....150
F8XP.....150
WØIOS....146
W8MRC...140
W3JNM...135
WØGEK...135

K4BVQ....130
W4BA.....130
TG9AD....130
W4TPB....124
W8PUD....121
VK5LC....121
11BXK....120
SM3HP....115
W4EEO....113
W5DQK...113
W6SAI....113
W7DAA....112
W5ERY....111
W5ZUI....110
W8ZET....110
VK2DI....110

W/VE/VO Call Area and Continental Leaders

W4TO.....253
WØYXO...250
WØAIW...250
VE1HG....164
VE2WW...192

VE3QD....210
VE4XO....118
VE5QZ....140
VE6VK....164
VE7GI....224

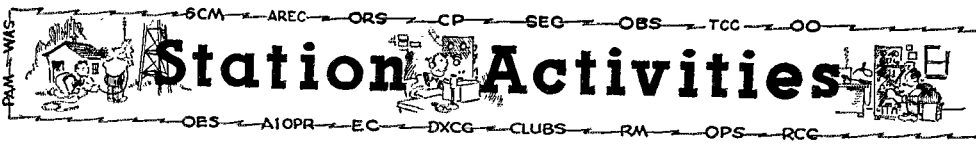
VE8AW....191
VO6EP....190
ZS6BW....249
4X4RE....222
G2PL.....258

Radiotelephone

W2BXA...207
W4HA.....207
W5BGP...222
W7HIA....188

WØAIW...223
VE1CR....120
VE2WW...122
VE3KF....163
VE6NX....101

VE7ZM....178
ZL2GX....226
OD5AB....180
EA2CQ....220



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

ATLANTIC DIVISION

EASTERN PENNSYLVANIA—SCM, Clarence Snyder, W3PYF—SEC: NNT. PAM: TEJ. RM: YAZ. EPA Nets: 3610, 3850 and 3997 kc. Reports on the ARRL Frequency Measuring Test for February show the best score with an average error of 1.5 parts per million was scored by AHZ. TFN was close behind with 3.4. The Harrisburg Amateur Radio Club, with VDA as chairman, will help in the Powder Puff Derby for Harrisburg. A Philadelphia group of XYLs, under AAU, will handle the Philadelphia Area. IW has the auto call monitor on 29,640 kc. 24 hours a day. The Carbon Amateur Radio Club held its third Annual Banquet May 4. DYL has resigned as EC for Philadelphia County and DVB is the new EC for that area. YWW continues to do a good job editing *North Penn Static* for his club. New officers of the Windsor Amateur Radio Club are WWG, pres.; KIK, vice-pres.; CXJ, secy.-treas.; and QHF, act. mgr. The Delaware-Lehigh Amateur Radio Club has been incorporated with NNT, PYF, RUY, FKE and GZR as incorporators. WHK now is signing into ESN and EPA. JNQ has recovered after a trip to the hospital. CUL is vacationing in Florida with her trailer, Valiant and PRO 310. Mae reports CCH as having excellent signals there. BUR now has MARS appointment. LS has been assigned to another project at Philco and SMC will take over as activities director for YDX. YAZ reports heavy activity on the EPA C.W. Net. NF has a new Y beam with 500 feet on the leg in operation. EBG, jr. operator of BES, has enough QSLs for DXCC. WQL is taking traffic from NYSEPN. ARK's activity has been low in OO work this month. He reports he put 2 Valiants together, only one for himself which he has been using for DX work. New officers of the Electric City Radio Club of Scranton and vicinity include LZD, pres.; SM, vice-pres.: MRQ, secy.; LJT, treas. TYQ reports that the ECRC was chartered in 1920 and has maintained ARRL affiliation ever since. QBF will be chairman of the FD committee for the DLARC. VWX is giving on-the-air code classes on 145.35 Mc. for the Bucks County Amateur RC. The Mt. Airy V.H.F. Radio Club is now affiliated with ARRL. The club will hold its annual picnic in Fort Washington State Park, Flourtown, Pa., on Aug. 11, according to SAO. Traffic: (Mar.) W3CUL 1091, BFF 361, TEJ 169, YDX 167, NF 148, BBM 115, WHK 95, BNR 82, QLZ 58, PDJ 49, ZRQ 37, FCI 35, YAZ 26, EPL 25, OGD 22, PYF 22, NQB 21, CSP 18, DJL 17, ADE 10, AXA 9, AMC 8, YVX 8, BUR 7, WQL 6, CNO 5, JNQ 5, PVY 5, UEU 3, BES 2, CMN 1. (Feb.) W3WHK 110.

MARYLAND-DELAWARE-DISTRICT OF COLUMBIA—SCM, Louis T. Croneberger, W3UCR—Section Nets: MDD, 3650 kc. 1900 M-F; MEPN, 3820 kc. MWF 1830, SS 1300. The HCARA and the Aero ARC held a joint meeting at the PGA clubhouse on Mar. 13 with QLG and QKC presiding. The WMRC meeting Mar. 17th was an election night. Officers are 4KMG, pres.; K4KCX, vice-pres.; IHY, secy.-treas.; and BPE, traffic mgr. Also at the meeting 4LCX showed a homemade hand-carried transmitter-receiver for 10 or 6 meters which, from the FB reports received from 6-meter mobiles en route to the club, seems to be doing very well. Welcome to the new National Capital V.H.F. Society. Its officers are DMS, pres.; KMV, vice-pres.; DWU, secy.-treas. Club nets: 50.7 Mc. Tue. 2030, Thurs. 2100, and Sun. 1000; 220.5 Tue. 2030 and Sun. 1100. MSK was elected pres. and PZW vice-pres. of the PVRC to fill the terms of EIV and K4KXV, who are transferring to other climes. Election results of the RCARA: OBR, pres.; MKS, sr. vice-pres.; QFS, jr. vice-pres.; TKE, secy.; FWP, treas. CDQ, Atlantic Div. Asst. Dir., was active on 20-meter c.w. during the DX Contest. AAY has a new jr. operator, his first. FWP has been appointed Region II FCDA RACES officer, with an FB group of assistants including AIR, AKB, BWT, GKP, NPQ, PYW and QAN, with OMN as consultant for the program. We are happy to see PG at home after a stay in the hospital. He is now on 2 meters with a Communicator and 5 half-waves in phase. NJT is doing an FB job with instruction for Novices and others at the shop. CKR and MLM, representing Montgomery County RACES on 2 and 6 meters, successfully participated in the Potomac River Naval Command Communications exercise. AXZ, Conowingo Village, received his original call after 20 years of inactivity. Bill is using a Viking I on 10- and 80-meter phone and c.w. and will be on all h.f. bands and 2 meters very soon. VFL is on 10 meters with a new 6146 transmitter and on 75-meter phone with a new tower and antenna. KH6BEA is attending school at Bainbridge and is on 10 meters near Conowingo. TUX is back on the air in Annapolis after a stay in Georgia. STI is on 2 meters with a Communicator. IHMP/3 formerly at Aberdeen, now is K6VZA near San Diego. WN3s IWR and KWQ are on 80-meter c.w. with modified Command transmitters. WN3s IXF and IXA (the brother of UAC and the brother's XYL) are working out on 40- and 80-meter c.w. with a homemade 6V6 rig. WN3s JXD, JWM, JZI, LKU and MNE are all heard on 2 meters using Communicators. WN3JWM also is on 40-meter c.w. and is the XYL of FWR. She is working very hard to get her General Class license by Field Day to be a member of Len's 40-meter c.w. crew. N3MNQ is on with a Viking Adventurer. N3JXJ is on 40 meters with a homemade 6AG7-6L6 transmitter. CKR is the new director of MEPN and K4DKG/3 is the new acting secretary. UE and WV advise the MDD is looking for Baltimore and Delaware stations so that traffic into those areas can be expedited. UE made BPL. Traffic: (Mar.) W3UE 795, K3WBJ 230, W3CKR 228, ZGN 152, TN 131, UCR 83, K4DKG/3 76, W3RV 72, PKC 60, WV 58, PQ 57, COK 52, SPL 26, FAP 6, BUD 5, BKE 4. (Feb.) W3WV 54.

SOUTHERN NEW JERSEY—SCM, Herbert C. Brooks, K2BG—SEC: YRW. PAM: ZI. Appointments for the month: QZE as OO and K2PTJ as OBS. EBW was top scorer in the section in the recent YL/OM Contest. Julie also won the award in 1956. K2INQ has received the 20-w.p.m. CP certificate. FB, Peg. SVV, Mercer County EC and Radio Officer, and his able assistants continue to increase in efficiency and county emergency communication planning. YRW, Delaware Valley (2 meter) Net Manager, has issued a very nice bulletin. K2PTJ is assistant manager. The N. J. Fone Net also has issued a fine bulletin. ZI is manager and VDE asst. mgr. The DVRA has elected the following officers: UAE, pres.; K2CDH, vice-pres.; TAM, secy.; and JWA, treas. FQ, Maple Shade, is recovering from a serious illness. BZJ is doing a fine job at the State c.d. headquarters. Gloucester County c.d. meetings are being held in Woodbury. We are looking forward to having an active organization and the appointment of an EC in that county. JKA, recently appointed OPS, also is active in MARS. *Harmonics*, the SJRA paper, continues to grow in size and interest. QBH and K2PTJ have new towers. K2KTS is doing a fine job instructing in code and theory at the Delaware Twp. High School, in addition to holding class for the would-be KNs at the SJRA. K2WAO/W1YRZ has earned BPL for the last eight months. BAY is celebrating his 36th year in amateur radio. All appointees are urged to send reports monthly on Form 1. No reports were received from Southern Counties or the Tri-Cities Clubs. Traffic: W1YRZ/2 239, W2HDW 233, K2WAO 156, W2RG 139, K2JGU 104, W2BZJ 54, ZI 43, K2JKA 31, PTJ 30, KN2THX 10, K2CPR 2, HPV 2.

WESTERN NEW YORK—SCM, Charles T. Hansen, K2HUK—SEC: UTH/FRL. RMs: RUF and ZRC. PAMs: TEP and NAI. NYS C.W. meets on 3615 kc. at 1800, ESS on 3590 kc. at 1800, NYS Phone on 3925 kc. at 1800, TAR on 3570 kc. at 1700, NYS C.D. on 3509.5 and 3993 kc. at 0900 Sun., TCPN 2nd call area on 3970 kc. at 1900, SRPN on 3980 kc. at 1000, LSN on 3970 at 1600. K2CEH has built a 500W for 6 meters. K2KNV got FS7NT for his 56th country. K2DG has

(Continued on page 96)

SINGLE SIDEBAND

SINGLE sideband in the last eight or nine years has gained a great deal of popularity with the amateur fraternity, and we feel that a further discussion of the subject may be helpful.

SPECTRUM conservation and efficient use of power are the main advantages usually claimed for SSB, though both are the subject of hot discussion these days. A little listening with a receiver such as the SX-101 will, we feel, show that compared to standard AM, several times as many SSB stations can occupy a given number of kilocycles. This is due partly to suppression of the "other sideband" and partly to the absence of heterodyne whistles and squeals due to carriers. The widespread use of voice operated break-in is an added advantage, permitting four and five stations to use the same channel with almost the convenience of face to face conversation.

AS FOR POWER, SSB almost realizes the old dream of voice communication with CW efficiency. Every watt put out by the transmitter is used to communicate; there is no unnecessary carrier or duplicate sideband. This very simplicity makes SSB useful over long hauls where AM fails because of selective fading. The absence of heterodynes allows the natural selectivity of the human ear to pick out the desired signal from heavy interference, again as in CW operation.

WE WENT on the air recently and took a sample survey of as many SSB operators as we could reach, asking them why they like single sideband and what caused them to change over from other types of operation. The answers were enlightening. Many stressed the reduced QRM, others the increased distance they could cover. A few mentioned WAC round tables. Practically all of them like the convenience of voice-operated break-in. After a few hours of asking, one thing became very clear — the underlying reason in every case was more and better QSO's, more fun from operating, and increased ability to render public service when necessary.

AND, after all — aren't these the basic reasons why we took up our hobby in the first place?

CY READ, W9AA

Bill Halligan Jr. W. J. Halligan W9AC for hallicrafters

Maximum legal power...a full 1000 watts CW, AM and SSB!

Yours for just **$159.50 down***

Imagine yourself at the controls of this exciting Viking Kilowatt. You'll marvel at the ease of selecting maximum legal input AM, CW or SSB with the flip of a single switch . . . you'll be delighted with the convenience of its desk-top controls . . . and you'll immediately sense the authority of its *full* kilowatt signal, placing the world at your finger tips.

Truly tomorrow's concept of electronic equipment design and operating convenience, the Viking Kilowatt provides continuous frequency coverage from 3.5 to 30 megacycles, wide range antenna matching and complete TVI suppression. The compact pedestal contains the complete Kilowatt—rolls out for adjustment or maintenance. Excitation requirements: 30 watts RF and 10 watts audio for AM; 2-3 watts peak for SSB. Completely wired and tested with tubes.

Cat. No. 240-1000 . . . . . Amateur Net $1595.00

Matching accessory desk top, back and three drawer pedestal.

Cat. No. 251-101 . . . . . FOB Corry, Pa. $123.50

Write today! Free 8 page descriptive brochure available.

VIKING "PACEMAKER"—This exciting transmitter is the perfect companion unit to the Viking Kilowatt. More than just a single sideband exciter, the "Pacemaker" is a completely self-contained transmitter as well. 90 watts CW and SSB (P.E.P.) . . . 35 watts AM. Extremely stable, temperature compensated built-in VFO. "Fool-proof" voice controlled operation . . . effectively TVI suppressed . . . instant bandswitching 80, 40, 20, 15 and 10 meters. Pi-network output matches antenna loads from 50 to 600 ohms. More than enough power to drive the Viking "Kilowatt" or grounded-grid amplifiers. With tubes and crystals, less key and microphone. Wired and tested.

Cat. No. 240-301-2 . . . . . Amateur Net $495.00

POWER DIVIDER—Provides up to 35 watts continuous dissipation. Designed to provide the proper output loading of the "Pacemaker" when used to drive the Viking Kilowatt Amplifier.

Cat. No. 250-34. . . . . Amateur Net $24.95

See your distributor

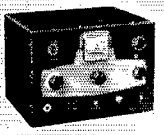
*See your distributor for a plan tailored to your budget. The 10% down payment price listed above is typical of the convenient terms offered by most authorized Johnson distributors.

E. F. Johnson Company

2903 SECOND AVENUE SOUTHWEST • WASECA, MINNESOTA

Punch your signal home ...with one of these 4 VIKING full power* amateur rigs!

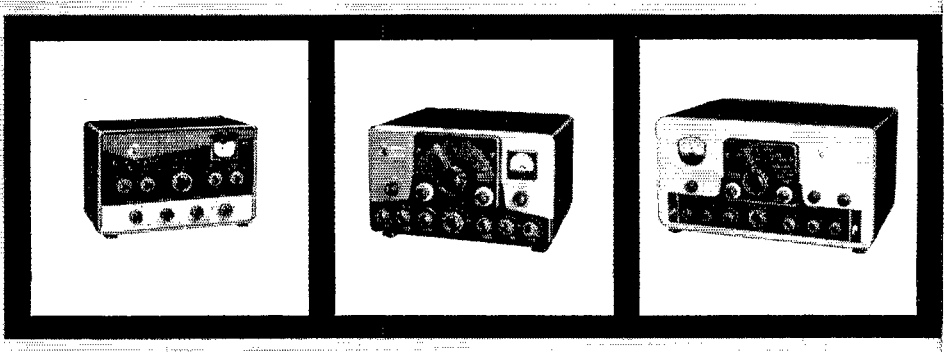
*Top performance isn't simply a matter of watts. Only carefully integrated equipment design can be counted on to develop effective power that punches your signal home, every time. That's what we call "communication power" . . . and your Viking transmitter delivers it in full measure! Viking transmitters are engineered for outstanding flexibility and performance. Integrated in design from their rugged, highly stable VFO through high effciency output circuits, Viking transmitters deliver *full* communication power!



"ADVENTURER"

VIKING "ADVENTURER"—Used to earn the first Novice WAC! (Worked all continents.) Self-contained, effectively TVI suppressed, rated at 50 watts CW. Instant bandswitching 80 thru 10 meters—operates by crystal or external VFO. Break-in keying is clean and crisp. Wide range pi-network output handles virtually any antenna without a separate antenna tuner. Designed for easy assembly. With tubes, less crystals and key.

Cat. No. 240-181-1 Kit . . . . . Amateur Net $54.95



VIKING "6N2"—Instant bandswitching on 6 and 2 meters, this compact VHF transmitter is rated at 150 watts CW and 100 watts phone. Effectively shielded and TVI suppressed—may be used with the Viking "Ranger", Viking I, Viking II or similar power supply/modulator combinations capable of at least 6.3 VAC at 3.5 amp., 300 VDC at 70 ma., 300 to 750 VDC at 200 ma. and 30 or more watts audio. May be operated by built-in crystal control or external VFO with 8-9 mc. output. With tubes, less crystals, key and microphone.

Cat. No.	Amateur Net
240-201-1 Kit	$119.50*
240-201-2 Wired	$159.50*

*Price subject to revision.

VIKING "RANGER"—This outstanding 75 watt CW or 65 watt phone transmitter also serves as an RF and audio exciter for high power equipment. As an exciter, it will drive any of the popular kilowatt level tubes—no internal changes necessary to switch from transmitter to exciter operation. Self-contained, instant bandswitching 160 through 10 meters—operates by extremely stable, built-in VFO or crystal control—effectively TVI suppressed. Easily assembled—with tubes, less crystals, key and microphone.

Cat. No.	Amateur Net
240-161-1 Kit	$214.50
240-161-2 Wired	$293.00

VIKING "VALIANT"—Designed for outstanding flexibility and performance. 275 watts input on CW and SSB (P.E.P. with auxiliary SSB exciter) 200 watts AM. Instant bandswitching 160 through 10 meters—operates by built-in VFO or crystal control. Pi-network tank circuit matches antenna loads from 50 to 600 ohms—final tank coil is silver-plated. TVI suppressed—timed sequence keying—high gain push-to-talk audio system—low level audio clipping—built-in low pass audio filter—self-contained power supplies. With tubes, less crystals, key and microphone.

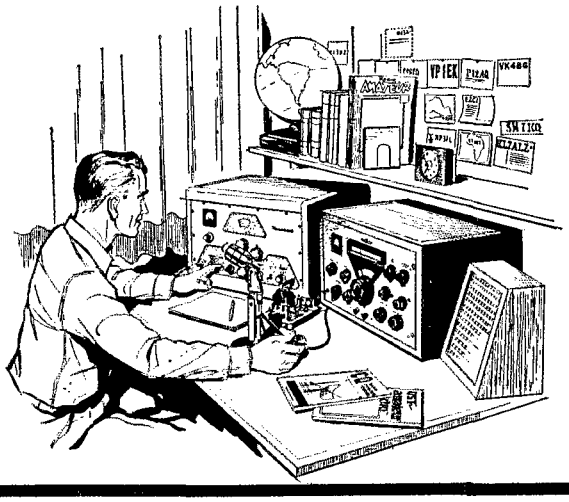
Cat. No.	Amateur Net
240-104-1 Kit	$349.50
240-104-2 Wired	$439.50

See your distributer
Most authorized Johnson distributors offer liberal terms. Often as little as 10% down puts you on the air, and your used equipment (especially if it's Johnson) is always worth top dollar in trade.

E. F. Johnson Company

2805 SECOND AVENUE SOUTHWEST • WASECA, MINNESOTA

HEATHKITS®



Top quality ham equipment in kit form . . . designed especially to meet your requirements!

Heath amateur radio gear is designed *by* hams—*for* hams, to insure maximum "on the air" enjoyment. Good design and top-quality components guarantee reliability. Heathkits are easy to build and are easy on your budget! You save by dealing direct, and you may use the Heath Time Payment Plan on orders totaling $90.00 or more. Write for complete details.

HEATHKIT DX-100 TRANSMITTER KIT

PHONE AND CW

- *Phone or CW—160 through 10 meters.*
- *100 watts RF on phone—120 watts CW —parallel 6146 final.*
- *Built-in VFO—pi network output circuit.*
- *Easy to build—TVI suppressed*

MODEL DX-100

$189.50

$18.95 dwn., $15.92 mo.

Shpg. Wt. 107 Lbs.

Shipped motor freight unless otherwise specified. $50.00 deposit required on c.o.d. orders.

The Heathkit DX-100 phone-CW transmitter offers features far beyond those normally received at this price level. It has a built-in VFO, built-in modulator, and built-in power supplies. It is TVI suppressed, and uses pi network interstage coupling and output coupling. Matches antenna impedances from approximately 50 to 600 ohms. Provides a clean strong signal on either phone or CW, with RF output in excess of 100 watts on phone, and 120 watts on CW. Completely bandswitching from 160 through 10 meters. A pair of 1625 tubes are used in push-pull for the modulator, and the final consists of a pair of 6146 tubes in parallel. VFO dial and meter face are illuminated. High-quality components throughout! The DX-100 is very easy to build, even for a beginner, and is a proven, trouble-free rig that will insure many hours of enjoyment in your ham shack.

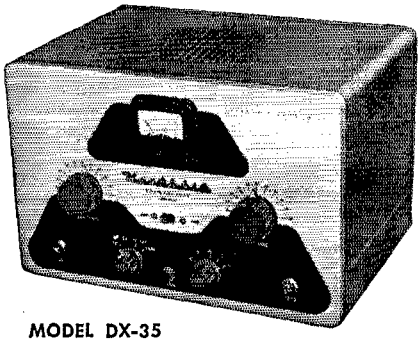
HEATH COMPANY BENTON HARBOR 9, MICHIGAN

A Subsidiary of Daystrom, Inc.

HEATHKIT DX-35
TRANSMITTER KIT

PHONE AND CW

This transmitter features a 6146 final amplifier to provide 65 watt plate power input on CW, with controlled-carrier modulation peaks up to 50 watts on phone. Modulater and power supplies are built in, and the rig covers 80, 40, 20, 15, 11 and 10 meters with a single band-change switch. Pi network output coupling provides for matching various antenna impedances. Employs 12BY7 oscillator, 12BY7 buffer and 6146 final. Speech amplifier is a 12AX7, and a 12AU7 is employed as modulater. Panel control provides switch selection of three different crystals, reached through access door at rear. Panel meter indicates final grid current or final plate current. A perfect low-power transmitter both for the novice or the more experienced amateur. A remarkable power package for the price. The price includes tubes, and all other parts necessary for construction. Comprehensive instruction manual insures successful assembly.



MODEL DX-35

$56.95

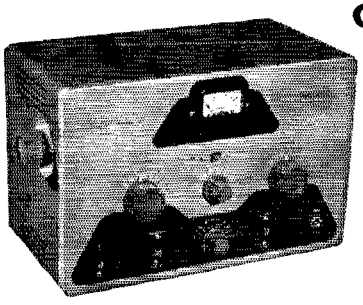
Shpg. Wt. 24 Lbs.

$5.70 dwn., $4.78 mo.

- *Phone or CW—80 through 10 meters.*
- *65 watts CW—50 watts peak on phone—6146 final amplifier.*
- *Pi network output to match various antenna impedances.*
- *Tremendous dollar value—easy to build.*

BRAND NEW

HEATHKIT DX-20
CW TRANSMITTER KIT



MODEL DX-20

$35.95

$3.60 dwn., $3.02 mo.
Shpg. Wt. 18 Lbs.

- *Designed exclusively for CW work.*
- *50 watts plate power input—80 through 10 meters.*
- *Pi network output circuit to match various antenna impedances.*
- *Attractive and functional styling—easy to build.*

Here is a straight-CW transmitter that is one of the most efficient rigs available today. It is ideal for the novice, and even for the advanced-class CW operator. This 50 watt transmitter employs a 6DQ6A final amplifier, a 6CL6 oscillator, a 5U4GB rectifier and features one-knob bandswitching to cover 80, 40, 20, 15, 11 and 10 meters. It is designed for crystal excitation, but may be excited by an external VFO. A pi network output circuit is employed to match antenna impedances between 50 and 1000 ohms. Employs top-quality parts throughout, including "potted" transformers, etc. If you appreciate a good signal on the CW bands, this is the transmitter for you!

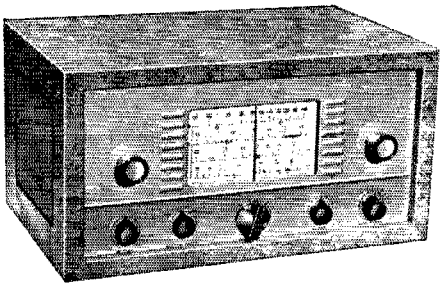
HEATH COMPANY BENTON HARBOR 9, MICHIGAN

A Subsidiary of Daystrom, Inc.

HEATHKIT

COMMUNICATIONS-TYPE, ALL BAND

RECEIVER KIT



This receiver covers 550 kc to 30 mc in four bands, and is ideal for the short wave listener or beginning amateur. It provides good sensitivity and selectivity, combined with fine image rejection. Amateur bands are clearly marked on the illuminated dial scale. Features transformer-type power supply—electrical band spread—antenna trimmer—separate RF and AF gain controls—noise limiter—headphone jack—and AGC. Has built-in BFO for CW reception. Shpg. Wt. 12 Lbs.

MODEL AR-3

$29.95

incl. excise tax (less cabinet)

$3.00 dwn., $2.52 mo.

CABINET: Fabric covered cabinet with aluminum panel as shown. Part 91-15A. Shipping Wt. .5 Lbs. $.50 dwn., $.42 mo. $4.95

Ⓐ HEATHKIT VFO KIT MODEL VF-1

Covers 160, 80, 40, 20, 15, 11 and 10 meters with three basic oscillator frequencies. Better than 10 volt average RF output on fundamentals. Requires 250 VDC at 15 to 20 ma, and 6.3 VAC at 0.45A. Incorporates regulator tube for stability and illuminated frequency dial. Shpg. wt. 7 lbs. $1.95 dwn., $1.64 mo. **$19.50**

Ⓑ HEATHKIT GRID DIP METER KIT MODEL GD-1B

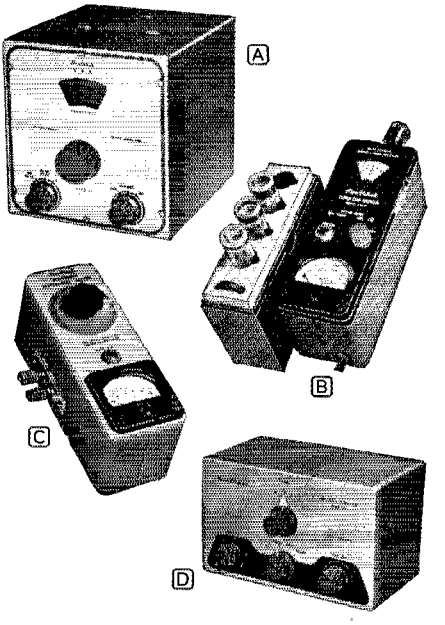
Continuous coverage from 2 mc to 250 mc with prewound coils. 500 ua panel meter for indication. Use to locate parasitics, for neutralizing, determining resonant frequencies, etc. Will double as absorption-type wavemeter. Shpg. wt. 4 lbs. $2.00 dwn., $1.68 mo. **$19.95**

Ⓒ HEATHKIT ANTENNA IMPEDANCE METER KIT MODEL AM-1

The AM-1 covers 0 to 600 ohms for RF tests. Functions up to 150 mc. Used in conjunction with a signal source, will determine antenna resistance and resonance, match transmission lines for minimum SWR, determine input impedance, etc. Shpg. wt. 2 lbs. $1.45 dwn., $1.22 mo. **$14.50**

Ⓓ HEATHKIT "Q" MULTIPLIER KIT MODEL QF-1

Functions with any receiver having IF frequency between 450 and 460 kc that is not AC DC type. Operates from receiver power supply, requiring only 6.3 volts AC at 300 ma (or 12.6 vac at 150 ma), and 150 to 250 vdc at 2 ma. Simple to connect with cable and plugs supplied. Provides extra selectivity for separating signals, or will reject one signal to eliminate heterodyne. Effective Q of approximately 4000. Shpg. wt. 3 lbs. $1.00 dwn., $.84 mo. **$9.95**



HOW TO ORDER...

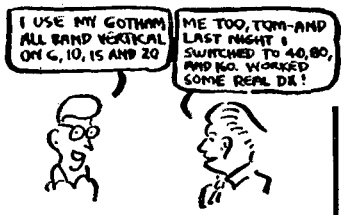
It's simple—just identify the kit you desire by its model number and send your order to the address listed below. Or, if you would rather budget your purchase, send for details of the Heath Time Payment Plan for orders totaling $90.00 or more.

HEATH COMPANY BENTON HARBOR 9, MICHIGAN

A Subsidiary of Daystrom, Inc.

"I am now using the Gotham V80 vertical antenna with only 55 watts, and I am getting fantastic reports from all over the world". VP1SD

ALL-BAND VERTICAL ANTENNAS



GOTHAM'S sensational new vertical antennas give unsurpassed multi-band performance. Each antenna can be assembled in less than two minutes, and requires no special tools or electronic equipment. In the V160, resonance in the 160, 80, 75, and 40 meter bands is secured through use of the proper portion of the loading coil. Yet, when the coil is eliminated or bypassed, the V160 will operate on 20, 15, 10 and 6 meters! The same idea applies to our V80 and V40 multi-band verticals. No guy wires needed; rugged, occupies little space, proven and tested.

●

Simple design and superior materials give all-band operation, and effective, omni-directional radiation. Gotham verticals are rugged, with low initial cost and no maintenance. Guaranteed Gotham quality at low Gotham prices. Perfect for the novice with five watts or the expert with a kilowatt.

QUALITY MATERIAL

Brand new mill stock aluminum alloy tubing with Aluminite finish for protection against corrosion. Loading coils made by Barker & Williamson.

ALL-BAND OPERATION

Switch from one band to another. Operate anywhere from 6 to 160 meters. Work the DX on whatever band is open.

EASY ASSEMBLY

Less than two minutes is all you need to put your vertical together. No special tools or electronic equipment required. Full instructions given.

SIMPLE INSTALLATION

Goes almost anywhere. On the ground, on the roof, or outside your window. No trick fittings or castings needed.

AMAZING PERFORMANCE

Hundreds of reports of exceptional DX operation on both low and high power. You will work wonders with a Gotham vertical.

NO GUY WIRES

Our design eliminates unsightly guy wires. You save time, trouble, space and money by avoiding guy wires.

PROVEN DESIGN

Over a thousand Gotham verticals are on the air — working the world and proving the superiority of Gotham design.

AND THE PRICE IS RIGHT!

"I worked LU3ZS on Half Moon Island in Antarctica on Dec. 26 at 21150 Kc. I was using my Gotham V80 vertical antenna and only 35 watts." KN5GLI

Airmail Order Today — We Ship Tomorrow

GOTHAM Dept. QST
1805 PURDY AVE., MIAMI BEACH, FLA.

Enclosed find check or money-order for:

V40 vertical for 40, 20, 15, 10, 6 meters.....$14.95 ☐
V80 vertical for 80, 75, 40, 20, 15, 10, 6 meters.....$16.95 ☐
V160 vertical for 160, 80, 75, 40, 20, 15, 10, 6 meters.....$18.95 ☐

Name.....

Address.....

City.....Zone.....State.....

How to order
Send check or money order directly to *Gotham* or visit your local distributor. Immediate shipment by Railway Express, charges collect. Foreign orders accepted.

GOTHAM 1805 PURDY AVENUE MIAMI BEACH 39, FLA.

YOU COULD WORK WONDERS IF YOU HAD A GOTHAM BEAM!

Study these specifications—compare them—and you too will agree, along with thousands of hams, that GOTHAM beams are best!

TYPE OF BEAM. All Gotham beams are of the full half-wave plumber's delight type; i.e., all metal and grounded at the center. No wood, tuning stubs, baluns, coils, or any other devices are used.

MORE DX CONTACTS

GAIN. Gotham beams give the maximum gain obtainable. Our 2-element beams give a power gain of four (equivalent to 6 db.); our 3-element beams give a power gain of seven (8.1 db.); and our 4-element beams give a power gain of nine (9.6 db.)

THE DESIGN IS PROVEN

FRONT-TO-BACK RATIO. We guarantee a minimum F/B Ratio of 19 db. for any of our 2-element beams; 29 db. for any of our 3-element beams; 35 db. for 4-element beams.

THOUSANDS IN DAILY USE

MATCHING. Matching of the transmission line to the beam is extremely simple and quick. No electronic equipment or measuring devices are required.

ALCOA QUALITY ALUMINUM

ASSEMBLY AND INSTALLATION. No special tools are required for assembly and installation. Entire job can be done by one man in less than an hour. Full instructions are included with each beam.

CONSISTENT PERFORMANCE

MAST. Any Gotham beam can be mounted on a simple pipe mast. Diameter of the pipe should be between ¾" and 1⅝".

QUICK INSURED DELIVERY

STANDING WAVE RATIO. A very low SWR of approximately 1.5 to 1 will result from following the instruction sheet, depending on the height above ground and the surrounding area. If an SWR indicator is available, Gotham beams can be quickly and easily adjusted to 1.1.

YOU WILL WORK THE WORLD

STANDARD AND DELUXE BEAMS. Standard beams in the 6, 10 and 15 meter bands use ⅝" and ¾" tubing elements; the deluxe models for these bands use ⅞" and 1". In 20 meter beams, the standard has a single boom, while the deluxe uses twin booms.

TRIBANDER BEAMS

Do not confuse these full-size tribander beams with so-called midgets. The Tribander has individually fed (52 or 72 ohm coax) elements and is not frequency sensitive, nor does it have baluns, coils, traps, or other devices intended to take the place of aluminum tubing. The way to work multi-band and get terrific gain is to use a Gotham Tribander Beam.

6–10–15 TRIBANDER.....$39.95

10–15–20 TRIBANDER..... 49.95

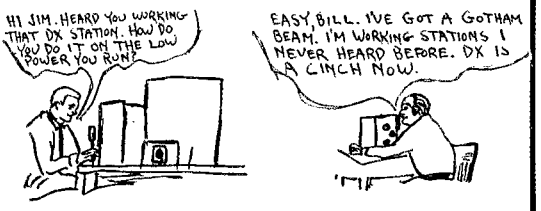
HOW TO ORDER: Send check or money order directly to GOTHAM or order from your local distributor. Immediate shipment by Railway Express, charges collect.

You could work KC4USA in the Antarctica with only 90 watts on 15 meters, as W4SK did.

You could work over 100 countries with a three element 10 meter beam, and be a top man on the frequency, like WØDEI.

You could work terrific skip and DX with reports of 20 over 9, with as little as 36 watts input on 20 meters, as W. E. Woods did.

You could work 29 states in three months on six meters, with low power, as K2LHP did.



Airmail Order Today — We Ship Tomorrow

GOTHAM Dept. QST

1805 PURDY AVE., MIAMI BEACH, FLA.

Enclosed find check or money-order for:

TRIBANDER			
☐ 6-10-15	$39.95	☐ 10-15-20	$49.95
6 METER BEAMS			
☐ Std. 3-El Gamma match	12.95	☐ T match	14.95
☐ Deluxe 3-El Gamma match	21.95	☐ T match	24.95
☐ Std. 4-El Gamma match	16.95	☐ T match	19.95
☐ Deluxe 4-El Gamma match	25.95	☐ T match	28.95
10 METER BEAMS			
☐ Std. 2-El Gamma match	11.95	☐ T match	14.95
☐ Deluxe 2-El Gamma match	18.95	☐ T match	21.95
☐ Std. 3-El Gamma match	16.95	☐ T match	18.95
☐ Deluxe 3-El Gamma match	22.95	☐ T match	25.95
☐ Std. 4-El Gamma match	21.95	☐ T match	24.95
☐ Deluxe 4-El Gamma match	27.95	☐ T match	30.95
15 METER BEAMS			
☐ Std. 2-El Gamma match	19.95	☐ T match	22.95
☐ Deluxe 2-El Gamma match	29.95	☐ T match	32.95
☐ Std. 3-El Gamma match	26.95	☐ T match	29.95
☐ Deluxe 3-El Gamma match	36.95	☐ T match	39.95
20 METER BEAMS			
☐ Std. 2-El Gamma match	21.95	☐ T match	24.95
☐ Deluxe 2-El Gamma match	31.95	☐ T match	34.95
☐ Std. 3-El Gamma match	34.95	☐ T match	37.95
☐ Deluxe 3-El Gamma match	46.95	☐ T match	49.95

(Note: Gamma-match beams use 52 or 72 ohm coax. T-match beams use 300 ohm line.)

NEW! RUGGEDIZED HI-GAIN 6, 10, 15 METER BEAMS

Each has a TWIN boom, extra heavy beam mount castings, extra hardware and everything needed. Guaranteed high gain, simple installation and all-weather resistant. For 52, 72 or 300 ohm transmission line. Specify which transmission line you will use.

☐ Beam #R6 (6 Meters, 4-El).....$38.95
☐ Beam #R10 (10 Meters, 4-El)..... 40.95
☐ Beam #R15 (15 Meters, 3-El)..... 49.95

Name.....

Address.....

City.....Zone....State.....

MODEL SX-101

$39.95 down
20 monthly payments of $19.50
CASH PRICE $395.00

Big, rugged, the SX-101 utilizes the heaviest chassis in the industry . . . an amazing marvel of stability . . . designed to out-perform any other model in the market today. Complete coverage of seven ham bands—160, 80, 40, 20, 15, 11 and 10 meters. Conforms to F.C.D.A. specifications.

hallicrafters

HT-32 AMATEUR BAND TRANSMITTER

$67.50 down
20 monthly payments of $33.36
CASH PRICE $675.00

Complete table top, high efficiency transmitter providing S.S.B. or CW output on 80, 40, 20, 15, 11 and 10 meter bands. Incorporates exclusive features in S.S.B. generation techniques: (1) Hallicrafter exclusive—piezo electric filter which cuts unwanted sideband 50 db or more; (2) extremely stable, newly developed bridged—tee modulator.

Write, wire, phone or visit either store today.

Butler 1, Missouri
Phone 395

Bob Henry,
WØARA
Butler, Mo.

Henry Radio Stores

GRanite 7-6701
11240 West Olympic Blvd. Los Angeles 64

Ted Henry,
W6UOU
Los Angeles

Do you need a degree for success in Electronics?

"Not necessarily," says Dick Brani, Instructor in Project Sage at IBM—Kingston, New York. "Oh, sure—I'm aware of my limitations to design electronic equipment—that's the big advantage of a formal degree. But I am qualified to maintain it. The point is . . . there are many management positions in IBM for men like myself, and I'm convinced that comparable positions elsewhere would probably require an engineering degree."

Some years ago, IBM took the initiative with respect to technical training within its own organization. It realized, even then, that a great number of intelligent and capable men were falling by the wayside because they lacked 4 years of college engineering. Statistics indicated that because of financial difficulty or improper high-school preparation, close to 50% of the potential engineers in the country became lost in the educational shuffle. While some people ignored or bemoaned the fact, IBM did something about it. Consequently, men like Dick Brani now enjoy satisfying, more rewarding work than ever before.

Great Interest in Mathematics. While Dick was attending high school, his principal academic interest was mathematics. And, like many other young men of that time, Dick was realistic about his future. He decided his best bet might be business accounting. When Dick graduated, he accepted a position with a New York banking firm. It was not until he entered the Army that he had the opportunity to pursue a more advanced form of mathematics—an A.S.T.P. training program at Lehigh University. This all-too-brief experience convinced

Dick trouble shooting Magnetic Drum Frame.

He studies computer pluggable unit.

Dick that he should make his career in a field related to electrical technology.

Postwar Education. Discharged with the rank of Staff Sergeant, Dick returned home to marry a girl he had met at Lehigh. During this period, he successfully supported his family selling various lines of food. In the evening, however, Dick continued his study of radio, TV, and electronics at the Allentown Branch of the Temple Institute. In two years' time, he graduated and secured an F.C.C. license —his technical career began to take shape.

IBM Looks Especially Good. Glancing through an issue of *Time Magazine* one evening, Dick happened to read an article about Thomas J. Watson, Jr., the president of IBM. The story emphasized Mr. Watson's great faith in the future of electronic computers . . . the wonderful promise it holds for the ambitious, intelligent young man. Later, Dick spotted a classified ad describing IBM's association with Project Sage. That was all Dick Brani needed.

Asked to Become an Instructor. Three-quarters of the way through his nine-month computer systems course, Dick was invited to remain at Kingston as an instructor. "It was like a bolt out of the blue," he recalls. "I knew I'd enjoy teaching, but I always thought it was out of the question. I accepted all right. I can't tell you how much I've enjoyed helping these fellows and watching them grow within the organization. Right now, there's a fellow in my class whose education is limited to correspondence school. He's in the top third of his class, and has a real future with IBM—all because he has the native talent and is willing to work."

What Does Dick Brani Teach? "Actually, I teach three separate courses in field engineering. One is computer systems testing, which is for the more advanced student. It lasts for 33 weeks—a long time, perhaps, but it's well worth it. Another is a program of 24 weeks' duration that deals with computer input-output units. Finally, I teach a course in computer units displays. This also lasts for 24 weeks. Each one of these courses is an education in itself." Experience has shown that IBM's educational programming is most successful. Men accepted receive their training with no strings attached. Upon graduation the road to success is wide open in *all* divisions of the corporation.

What About Dick's Future? "Well, right now, I'm doing work that most technicians couldn't touch with a ten-foot pole. I guess it's a matter of approach, but I know of few companies other than IBM where technicians are actually doing engineering work. Both kinds of companies will get the job done, but IBM prefers to think in terms of the man, encouraging him to grow into more responsibility. You might say that IBM gets more out of the man. In the final analysis, it seems a lot more efficient from the corporation's and employee's viewpoint. Personnel policy at all levels—management, engineering, or technical—is the same. The future is wide open."

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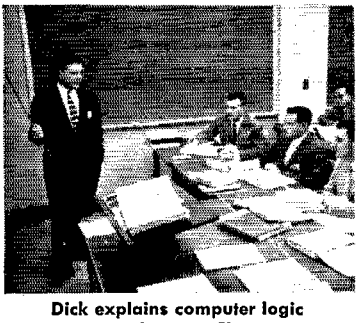

Dick explains computer logic to a Systems Class.

At the Operating Console.

At home Dick plays with one of his three children.

IBM MILITARY PRODUCTS

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(Continued from page 82)

built a p.p. 807 c.w. rig exclusively for net operation. BKC is building a 4-250A final as described in the '55 *Handbook*. 1LVQ, ARRL Asst. General Manager, spoke at the March meetings of both RAWNY, Inc., and RAGS. RAWNY's new officers are TAX, pres.; CUU, vice-pres.; ICZ, rec. secy.; JPE, corr. secy.; K2GBY, treas. New RAGS officers are HIL, pres.; K2LGA, 1st vice-pres.; and QAR, 2nd vice-pres. K2ORH is president of the newly-organized Marathon ARC. K2RKP is president of the Ithaca H.S. ARC. Congratulations to the North County Radio Club in Potsdam, which is now affiliated with ARRL. Your SCM and 3YA attended the Ithaca Mike and Key Club Hamfest attended by well over 100. K2GQU is president of the organization. K2SKB worked Texas with 5 watts and a 20-ft. piece of wire in the 40-meter Novice band. K2GUG is constructing a rig using p.p. 833As in the final. The ARATS had the FCC engineer give a talk on TVI at a recent meeting. KN2TCP is organizing a ham club at U. of R. and could use some expert advice. LXE is building a 106-element 2-meter beam. Glad to see Clara, RUF, back in the traffic department again. 1VLH visited the Niagara Frontier v.h.f. installations in conjunction with a talk on IGY-PRP to the gang in the Buffalo Area. The NYS C.W. Net needs stations in the counties of Allegheny, Cattaraugus and Steuben. UTH has a new NC-300. OZR is s.s.b. mobile with a homebrew crystal lattice filter. K2HUK has a pair of 417As for his 2-meter converter. The ARATS holds code practice on 6 meters Mon., Wed. and Fri. at 2100. The following have earned NYSPTEN Net certificates: K2BDR, TPB, UCF, PJU, PPK, HJP, PYM and LUM. The Central New York Council of Radio Clubs invites Field Day competition. K2MLT is on 6 meters. EMW also is going on 6 meters, but is not going to give up 20-meter DX. BBZ is on 6 meters with cathode modulation. The following are on 6 meters in the Syracuse Area: K2DBS, UIT, TET, SZM, TKJ, W2WZR, TBQ and SEB. The 13th annual Oneida Hamfest and Ladies Night will be held Sat., Sept. 28, 1957. Contact RXW for details. Traffic: K2IYP 404, KIR 137, W2ZRC 128, RUF 117, K2GWN 115, KNV 69, W2OE 46, K2QIW 43, DSR 40, W2EMW 39, K2DG 22, PJU 14, W2FEB 10, K2HUK 4.

WESTERN PENNSYLVANIA—SCM, John F. Wojtkiewicz, W3GJY—SEC: OMA. RMs: UHN, NUG, GEG and NRE. PAMs: AER and TOC. Thanks are in order to NCD and UHN for the very fine job done while they handled the SCM and Asst. SCM posts. Your SCM has been appointed Asst. Director to YA for WPA. RTB, with 145 worked and 128 confirmed on 14-Mc. c.w., is boosting his total. CRA is sporting a 60-ft. tower. WIQ does a nice job handling traffic, as does LXQ. A new DX society has sprung up for WPA DXers known as the Western Penna. DX Society and invites new memberships. Contact RTB or RBF for further information. The Steel City ARC has a new clubhouse planned. NKM has a new KWS-1 and 10- and 20-meter Telrex beams. OKU works rare DX with his s.s.b. sigs. New SCARC members are BEX, EOR and DQR. SIJ is back on with a new Globe Scout. The meeting of the Allegheny Kiski ARA featured a c.d. film as well as one on transistors. Crystals for the c.d. net have been donated by the New Kensington c.d. director and have been distributed to the club's mobileers. YA has a new 1-kw. rig on all bands but has TVI when it is used on A-3. UHN is recuperating after an operation. YOZ made WAC in the recent DX Test. BZR is the new EC for Fayette County. NVS and UGV are new OOs. YCG and TAS are new ORSs. Get "loose" ends taken up for upcoming FD Tests, June 22-23. BSN News: STB is a member of the hamfest committee. GEN contacted K4LIB/VQ. WHA and BCL are out of the hospital now. SPZ and SIR paid a visit to FBX who has a 120-ft.-high tower. ZQV is giving 40-meter mobile a whirl. ZCP and OPF are planning higher power. EUL runs 9 watts. MMF works 10 meters with a new DX-35 and Wonder Bar antenna. UJP reports ham radio favorably reported on by Ed Morgan of ABC Radio during a nationwide broadcast Mar. 8. KWL works DX on 14 Mc. with an indoor antenna. BSF soon will be operating from a new trailer. Erie ARC news: WJA purchased a new 60-ft. tower. JTF, ALD and JOQ are using the new "Halo" antenna for 6 meters. YWL is a proud father for the 6th time. KVB is thinking about going mobile. POS has a new Valiant. PIY reports that his XYL is recuperating from a recent illness. QPB is head man of the club's FD committee. LSS arranged for presentation of a fine movie illustrating mobile communications at the last meeting. TLA is putting out a strong signal from his mobile rig with increased power. QPP received a surprise recently while fooling around with his mobile supply. MS and LKJ are boosters of s.s.b. Novice news: WN3LPC is a new ham at Erie and has a new SX-100. KPM is building a transistor transmitter. IJD has a

(Continued on page 108)

How's DX?

(*Continued from page 65*)

VR2DB, c/o Broadcasting Svc., Suva, Fiji Islands
ex-VS1ET (to ZL1ANP)
VS2FM, P. J. McNicol, North Labis Estate, Labis, Johore, Malaya
W4DQA/KS4 (to W4DQA)
W9NTJ/KG6, R. R. Deitering, CTC USN, Nav. Comm. Sta., Navy 926, Box 130, FPO, San Francisco, Calif.
WG6AGY, Nav. Comm. Sta., Box 115, Navy 926, FPO, San Francisco, Calif.
WL7BWH, H. A. Williams, Box 311, AAC Hq. Sq., APO 942, Seattle, Wash.
XZ2AO, Box 611, Rangoon, Burma
YO5LC, Box 12, Baia Mare, Roumania
YU1OZ, S. Kalapis, Box 120, Pancevo, Yugoslavia
ZC4JX, P.O. Box 246, Famagusta, Cyprus
ZC5DA, c/o RAF, Labuan, Br. No. Borneo
ex-ZC5GN-VS4BD-VS5BS-VS1GN (to G3JFC)
ZC5RF, c/o RAF, Labuan, Br. No. Borneo
ZC5WT, c/o RAF, Labuan, Br. No. Borneo
ZD4BF, Dr. J. R. S. Innes, P.O. Box 36, Nsuta/Wassaw, Ghana
ZS7H (to ZS6ALZ)
5A3TH, T/Sgt. Thos. R. Howell, P.O. Box 372, 1950th AACS Sqdn., APO 231, New York, N. Y.

Whence:

Asia — By their skywires shall ye know them! W4HVU (ex-J8AAA-HL1AA-DL4LU) traipsed across the waters to visit numerous DX points and, "When I got to Burma I found it difficult to locate any hams. While driving along one of the main roads in Rangoon I noticed a cubical quad and, upon investigating, found XZ2AD, a Burmese who speaks English like the rest of us. He took me to a rather exclusive club for a grand lunch of Burmese food and excellent Mandalay beer. Incidentally, there were *no* flying fishes playing anywhere near Mandalay, Kipling to the contrary." Guy hopes to sign an 11 call after finishing his current Pentagon tour this month . . . . . W3VKD advises, "4S7WP has contacted 1050 U. S. A. stations in 42 states with confirmations from 40. He still needs Mont., Nev., N. Mex., N. Dak., Utah and Wyo." . . . . . From 4S7GE, now closing down in favor of home and G3JTG: "The W/K operating is good; in fact very good, and something a lot of other countries could well copy. One criticism regarding Novice stations: I answered dozens calling CQ DX only to hear them go back to other Novices! With conditions as good as they are, especially on 21 Mc., U. S. A. Novices ought to have a good look around for DX stations answering their calls before answering other Novices — or what's the use of their adding 'DX' to CQs?" Ted winds up his Ceylon DXperiences with a respectable 151/126 record on 50 watts to an 807 feeding a unidirectional phased array and he anticipates renewing ham friendships from his Sussex station soon . . . . . W1VG reports HZ1AB's KWS-1 very available on 20 meters these days . . . . . "I am close to DXCC now and you will hear KA3CY burning the midnight oil often. No KA ever has made it. It won't be too long before I'll be back in the States operating W3MDI/?." KA3CY is another quad fan . . . . . Tune, men, *tune*. "Every daybreak around 7050-7100 kc. JA phones call 'CQ America, tuning the U. S. phone band' but I never hear W/Ks answer them." This from K6DV who also reports that the Tokyo area's three TV stations regale Oriental audiences with such kinescopics as *District Attorney*, *Superman* and *Jungle Jim* . . . . . C3MH apparently has broken the drouth of Red China ham radio. W6YY reporting Shen still active around 14,199 kc. at 1600 GMT. John also comments on the dearth of Iwo activity; Chichi's KG6IG keeps Bonins-Volcanoes on the DXCC map singlehandedly . . . . . W6ITH confirms that Ceylon and Britain gingerly spar over military base rights in the Maldives while the Islands' sultanate takes a dim view of the whole idea . . . . . VS6DN tells W5FJE he's going home shortly but hopes to land Ark. and La. for his full 48. Appropriate W5s and K5s will find Art near 21,050 kc. at 0300-0400 GMT . . . . . Old Hong Kong hand VS6CG soon ships to Canada.

Africa — SARL, in view of bogus ZD9AF work, will request that licensing authorities not assign the call in the future. "So far there have been ZD9s AA AB AC AD AE and AX licensed, with only AC AE and AX now active." ZD9AX, XYL of ZD9AC, seldom hits the air, for she's plenty QRL with twin jr. ops . . . . . Since last fall W5TP has had 41 contacts with ZS5AM and 34 QSOs with ZS6IF . . . . . W7FBD informs that ZS7D QRTs for removal to ZS6-land . . . . . In QSO with W2HMJ EL2L mentioned need of 7-Mc. crystals . . . . . W4IYT, ARRL SEC, E. Fla., reports that W4HQW worked ZE5JA on his opening call in each of the 1956 and '57 ARRL DX Contests. And the ZE5's QSL confirming the first of these QSOs arrived just two days before the second . . . . . ZD4s are doing double duty in the QSL/QSO department right now. All the guys they worked before Gold Coast became Ghana are piling up again in pursuit of additional DXCC credit. W4IYC acquired one such two-country QSL from ZD4BF whose s.s.b. is a fixture on 20 . . . . . From K4EHA: ET3AF missed out on much of the ARRL DX Test this year because of illness but now puts finishing touches on his new 813s rig. "It is really astonishing what DX one can get from here. I have worked 58 countries in four months of effective operating and I hope I manage full DXCC before leaving Addis Ababa." Gunnar mentioned three uncles and an aunt living in the U. S. A.; he himself spent time on the East Coast in 1945-'46. ET3AF has worked at radio for twenty years with the Swedish Navy, United Nations (Palestine), and now Scandinavian Airlines. He'll go back to Sweden this fall on leave to visit his family and perform Navy service, and adds, "Ethiopia is a beautiful country but the lack of roads in such a high and wild terrain makes one wish for a helicopter!" . . . . . Of DUF awards significance, W6YY reports activity by FB8BX/NB on Nosy-Be isle in the Mozambique Channel . . . . . Former KT1s now sign CN2 calls, an official shuffle confirmed by K2QXG.

Oceania — Ws 1BIH 3AEV 8NGO 9QGI and VK6MK pool Netherlands New Guinea info, and Biak is a-bustling. JZ0PA returned to the air after bouts with malaria, tropical ulcers, broken ribs and equipment fire damage. Tony, a surveyor, runs 150 watts phone near 14,200 kc. around 1200-1300 GMT. He must rewind burned-out transformers and r.f. chokes by hand, and contemplates erecting a Vee. JZ0PC, formerly EI2E and VE2AQQ, is closing station . . . . . W8NGO reports VK9YT active from Manus after a move from New Ireland. Rev. Carl likes 20 phone work with the States near 14,125 kc. and 1300 GMT, running 85 watts to a dipole. A beam is in the works . . . . . Ex-PK4DA indicates that anyone who undertakes "unofficial" hamming in Indonesia these days is spunky, indeed . . . . . Struck with our February squib on the weird appearance of great-circle maps centering on VS2, KH6IJ writes W6YY to state that Hawaii-centered g.c. maps feature a South Africa border at all bearings. "Practically, however, signals always favor the night path — 240° in the mornings and 110° evenings." . . . . . VR2DB, a recent Fiji arrival using 14,125-kc. phone around 1300 GMT, is ex-ZK1BH-ZL2AVW-ZL4LB. W8NGO describes Nat's layout as 60 watts to the inevitable 807 screen-modulated, a homespun 12-tube superhet and long-wire . . . . . W6ZZ, gunning for the NZART (New Zealand) WANZ award, has worked 35 of the required 55 society branches, with 31 confirmed. A stiff one! . . . . . Navyman W9CCO visited pleasantly with ZL2s ANF ANR and DX while cruising Pacific waters. In ZL2ANR's shack Butch was confronted by a life-size mural of Jeeves . . . . . "Most of the gang here on Guam are die-hards for phone. Stations active include KG6s AFZ AGO AGS AGW FAE NAC. W9NTJ/KG6, K4EMH/KG6, K6ABM/KG6 and KH6AIK/KG6 (myself)." KH6AIK/KG6 who, with W9NTJ/KG6, turns out most contemporary Guam c.w. contacts, will be back in the U. S. next month . . . . . W6DZZ, in correspondence with W1WPO, reports hooking transpacific raft *Tahiti-Nui*, FO8AP/MM, whose one-watt 14-Mc. signal hits S7 in California. The craft and its crew of five were some 300 miles south of Easter Island . . . . . Oceanic items courtesy the MARTS *Malayan Radio Amateur*. FU8s AC and AD use the same 20-meter phone rig and bang through well around 0900 GMT. . . . VS4JT expects to keep Sarawak workable for two more years with a 120-watt 14-Mc. phone at Miri; neighbor VS4NW moved to Sibu but has no gear along; and VS4BO prefers 15-meter week-end work.

Europe — Hot-dog, soft-drink and radio-parts concessionaires in the Aland Islands must be making a killing. OHØ DXpeditions continue unabated and here's one announced in advance by OH2OJ: "My XYL, OH2QJ, and I will go to the Alands July 20th to operate s.s.b. (s.s.s.c.). The call used will probably be OH2OJ/OHØ and the band will be mainly 20 meters; also 15 if I can get the rig operating well on 21 Mc. . . . The gear will be the W2EWL unit [see 'Cheap and Easy S.S.B.,' March 1956 *QST*], BC-453 with product detector and converters, and more than likely a ground-plane antenna." If all goes well OH2OJ will be available in the islands well into August. At the home station Sam has been side-banding since November of '55 and needs only Ariz., Ky., N. Mex. and Vt. to confirm a neat two-way s.s.b. WAS . . . . . W1BDI reports another s.s.b. venture, this one by HB9FU to Liechtenstein. A station signing HB1HB/FL showed up around 14,300 kc. at the appointed time in early April and the Ducks were really squawkin'! . . . . . LA1K tells W1BIH he intends to visit Uncle Sam within a twelve-month . . . . . WASwise, W2HMJ hears that SM2BCS requires only N. Dak. and Miss.; W1JRC learns that GC2RS haunts the low edge of the W/K 28-Mc. phone band yearning for Nev.; and OM I1FT has but four states to go . . . . . SRAL secretary OH2YV informs us that OHØNB continues as the only amateur resident in the Aland Islands. OHØNA, though licensed for Alands work, lives in Turku. "No doubt there will be quite a lot of OH stations active in OHØ this year, especially in the summer, and they will use their own calls adding /Ø or /OHØ." John adds that Finnish amateurs are not permitted to use 160 meters . . . . . CT2BO, long our main source of Azores QSOs, especially on c.w., is particu-

(*Continued on page 156*)

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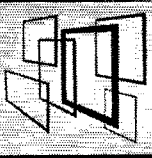

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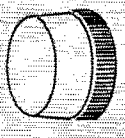

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Ham Radio Banned

Some Interesting Quotes on a Subject of Interest to DXers

BY D. REGINALD TIBBETTS,* W6ITH

FOR SOME TIME now there has existed a prohibition, issued by the FCC, against working certain prefixes.[1] It has caused a bit of unhappiness amongst some of the brethren, yet the FCC had no choice but to issue the prohibition, and *QST* had no choice but to publicize it. You see, Article 42 of the international treaty dealing with telecommunications reads as follows:

> "Radiocommunications between amateur stations of different countries shall be forbidden if the administration of one of the countries concerned has notified that it objects to such radiocommunications."

And the countries of Iran, Vietnam, Korea, Indonesia and Cambodia have all formally notified the ITU headquarters at Geneva that they do not permit amateur radio communications between their countries and the rest of the world.

Being rather interested in the subject, and through my professional connections which made it possible for me to get some direct quotations from responsible government officials in these various countries, I determined to make a personal investigation. Why, I asked myself, had these countries forbidden their amateurs to communicate with amateurs in other countries?

Well, as I dug into it, I soon found out that the whole story hadn't been told yet. The fact of the matter was that most of these countries didn't permit amateur radio at all. In other words, it wasn't a case of their not permitting their amateurs to work other countries — it was a case of not permitting *any* amateur radio.

I was able to talk personally with the representative of one government, and by telephone or teletype with three others, and from the representative of a fifth government I was able to get a statement through one of my on-the-spot business associates. You'll be interested in what I found out, and the quotes below will fill out the picture and make further comment unnecessary.

All of these five countries which prohibit amateur radio have one thing in common. All are "infant" countries — having existed in their present forms for only short periods. All have elements within and outside the country. In order to keep these subversive elements under control, they found it necessary to seal off all but limited means of easily-censored communications. To eliminate amateur transmitters is to remove a communication link between those who could misuse radio to disturb the uneasy peace.

Minister of Communications Kim in Seoul told me: "Amateur radio activity in Korea is not permitted because the government does not have adequate radio control facilities. Our radio control officers must watch all radio activities because of possible communications with the communists who are so close in North Korea. Permission for amateur radio means extra burdens to monitor frequencies." Kim added, "Nevertheless, requests for amateur permission are mounting and some stations are feared operating without permission." He expressed the opinion that it may be several years before the government of Korea can permit amateur radio.

It appears that numerous political elements in Indonesia are not satisfied with the present government. Numerous local regions have demanded local autonomy, some by frequent armed resistance. To deny these elements opportunities to consolidate through uncontrolled communications, and to communicate with external supply sources for arms and ammunition, amateur radio transmissions are not permitted. Suwito Kusumowisagdo, spokesman for the Director of the Ministry of Communications, Posts, Telegraphs and Telephones told me: "For the time being the government of the Republic of Indonesia bans amateur radio transmissions because of insecurity in Indonesia. However," he quickly added, "there is no law which forbids the issuance of licenses for amateur operators or stations."

Hohng Tieng, Minister of Communications in Saigon, Vietnam, in a most interesting interview said — "The sole reason for prohibiting amateur radio is 'national security.' The northern part of our country is under control of the communists, who by the terms of the Geneva Conference held in July, 1954, hold that portion until elections, scheduled for July, 1956, and not yet held, determine the future of Vietnam." He added, "Remnants of other rebel sects are known to possess radio transmitters." There are numerous undenied reports, some difficult to confirm, that anti-government radios are being operated in South Vietnam as well as jamming equipment being used against the government radios.

I was told that the government of Vietnam fears that radio transmitters could be used to communicate with the north and — probably more realistic — to confuse listeners in the south with distorted or false news. So taking no chances, the ban is on against amateurs in Vietnam.

It is difficult for me to predict when amateur operation might be permitted in Vietnam in the future. The government is still carrying on military and propaganda activities against remnant insurgents. So long as the need for such activities exists, it is unlikely that the ban will be relaxed.

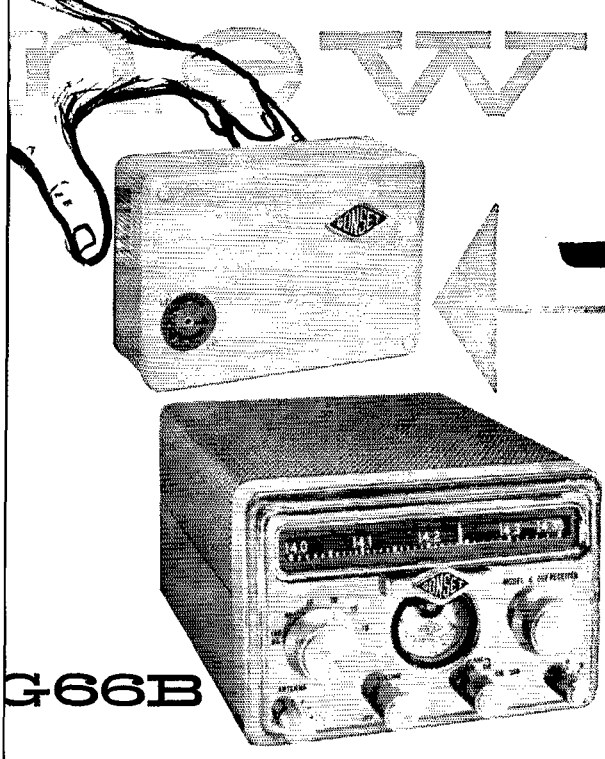
In Pnompenh, Capital of the Kingdom of Cambodia, the tiny Indochinese country carved

(Continued on page 162)

*P. O. Box 1000, Moraga, Calif.

[1] The present list of banned countries and prefixes, according to an FCC Notice dated Dec. 17, 1956, includes Cambodia (FI8, XU), Indonesia (PK, YB-YH), Iran (EP-EQ), Korea (HL-HM), and Vietnam (FI8, XV, 3W).

for Gonset G-66B receivers



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Dimensions same as G-66B panel, "Thin pack" is only 2½" deep. Plugs-in to become an extension of the receiver case or may be located wherever convenient and connected by patch cable. Pack is available only for 12 volt DC operation. No speaker.

Gonset's "Three-way" universal supply/speaker combination continues to be available for those who "double up" on their G-66B . . . use it as an excellent fixed station receiver as well as for mobile. This most happy combination offers real promise for vacation time . . . and on field day . . . actually, on *any* day.

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Specifically, precisely designed for mobile operation . . .

Operating flexibility that only a stable, calibrated VFO and five-band operation can give. (80-40-20-15-10 meters)

50-60 watts power input with full, crisp modulation. . . .

Final amplifier uses Type 6146, has pi network output. . .

Very low standby drain . . . no heavy-duty starting relay. . .

Modulator/power supply is separate, compact unit to facilitate installation. . . . (6 or 12V operation)

G-77 is now in stock at all Gonset distributors.

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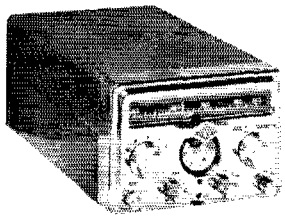

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I.A.R.U. News

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Bolivia: R.C.B., Casilla, 2111, La Paz
Brazil: L.A.B.R.E., Caixa Postal 2353, Rio de Janeiro
British Guiana: D. E. Yong, VP3YG, Box 325, Georgetown
British Honduras: D. Hunter, Box 178, Belize
Bulgaria: Box 830, Sofia
Burma: XZ2OM, P.O. Box 1490, Rangoon
Canton Island: H. B. Johnson, KB6BA, U.S.P.O. 06-50000, Canton Island, South Pacific
Ceylon: P.O. Box 907, Colombo
Chile: Radio Club de Chile, Box 761, Santiago
China: M. T. Young, P.O. Box 16, Taichung, Formosa
Colombia: L.C.R.A., P.O. Box 584, Bogotá
Cook Islands: Ray Holloway, P.O. Box 65, Rarotonga
Costa Rica: Radio Club of Costa Rica, **Box 2412,** San Jose
Cuba: Radio Club de Cuba, QSL Bureau, **Ayestaran 629, Altos Cerro, Habana**
Cyprus: Mrs. E. Barrett, P.O. Box 219, Limassol
Czechoslovakia: C.A.V., P.O. Box 69, Prague I
Denmark: P. Heinemann, OZ4H, Vanlose Alle 100, Copenhagen
Dominica: VP2DA, Box 64 Roseau, Dominica, Windward Islands
Dominican Republic: Calle Duarte #76, C. Trujillo
East Africa: (VQ1, VQ3, VQ4, VQ5): P.O. Box 1313, Nairobi, Kenya Colony
Ecuador: Guayaquil Radio Club, Casilla 784, Guayaquil
Eire: J. Corcoran, EI5M, 194 Collins Ave., Whitehall Co. Dublin
Fiji: S. H. Mayne, VR2AS, Victoria Paraed, Suva
Finland: SRAL, Box 306, Helsinki
France: R.E.F., BP 26, Versailles (S & O);
France (F7 calls only):
A/1C Thomas J. Shytle, F7EZ, Hq., US Eucom Mars Radio, APO 128, % P.M., New York, New York
Germany (DL2 calls only): Via Great Britain
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Germany (DL5 calls only): Via France
Germany (other than above): D.A.R.C., Box 99, Munich 27
Gibraltar: E. D. Wills, ZB2I, 9 Naval Hospital Road
Gold Coast: E. L. Lloyd, ZD4BL, P.O. Box 565, Kumasi, Ashanti
Great Britain (and British Empire): A. Milne, 29 Kechill Gardens, Hayes, Bromley, Kent
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Greenland: APO 858, % Postmaster, New York, N. Y.
Grenada: VP2GE, St. Georges
Guam: G.R.A.L., Box 145, Agana, Guam, Marianas Islands
Guantanamo Bay: Guantanamo Amateur Radio Club, Box 55, NAS, Navy 115, F.P.O., New York, N. Y.
Guatemala: Manuel Gomez de Leon, P.O. Box 12, Guatemala City
Haiti: Radio Club d'Haiti, Box 943, Port-au-Prince
Hong Kong: Hong Kong Amateur Radio Transmitting Society, P.O. Box 541, Hong Kong
Hungary: H.S.R.L., Postbox 185, Budapest 4
Iceland: Islenzkir Radio Amatorar, Box **1058,** Reykjavik
India: Box 1, Munnar, Travancore, S. India
Indonesia: P.A.R.I., P.O. Box 222, Surabaja, Java
Israel: I.A.R.C., P.O. Box 4099, Tel-Aviv
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Lebanon: R.A.L. B.P. 3245, Beyrouth
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Malta: R. F. Galea, ZB1E, "Casa Galea", Railway Road, Birkirkara
Mauritius: V. de Robillard, Box 155, Port Louis
Mexico: L.M.R.E., Liverpool 195-A, Mexico, D.F.
Montserrat: VP2MY, Plymouth
Morocco: A.A.E.M., P.O. Box 2060, Casablanca
Morocco: (Tangier International Zone only): Box 150, Tangier
Mozambique: Liga dos Radio-Emissores, P.O. Box 812, Lourenco Marques
Netherlands: V.E.R.O.N., Postbox 400, Rotterdam
Netherlands Antilles (Aruba): Postbox **392,** San Nicolas, Aruba
Netherlands Antilles (Curacao): Postbox 383, Willemstad, Curacao
Netherlands East Indies: Hr. C. Loze, PK1LZ, Burg. Kuhrweg, 47 Bandoeng, Java
New Zealand: N.Z.A.R.T., P.O. Box 489, Wellington C1
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Northern Rhodesia: N.R.A.R.S., P.O. Box 332, Kitwe
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Pakistan: Box **4074,** Karachi
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Paraguay: R.C.P., P.O. Box 512, Asuncion
Papua: P.O. Box 107, Port Moresby
Peru: R.C.P., Box 538, Lima
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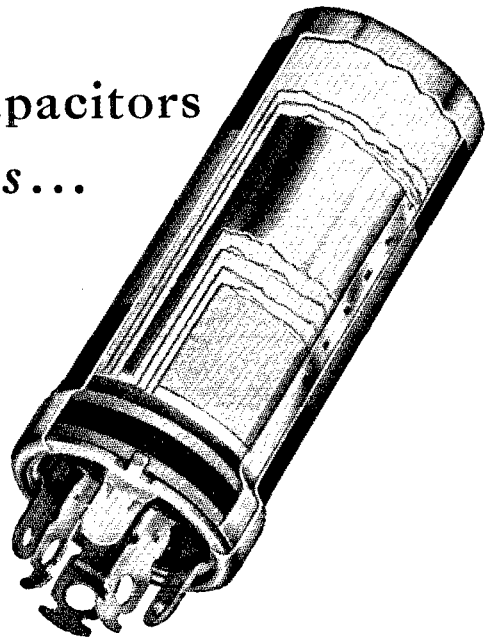
Poland: Polish QSL Bureau, P.O. Box 320, Warsaw 2
Portugal: Rua de D. Pedro V., 7-4, Lisbon
Roumania: A.R.E.R., P.O. Box 95, Bucharest
Saar: P.O. Box 310, Saarbrucken
Salvador: YS1O, Apartado 329, San Salvador
Singapore: P.O. Box 2394, Singapore, Malaya
South Africa: S.A.R.L., P.O. Box 3037, Capetown
Southern Rhodesia: R.S.S.R., Box 2377, Salisbury
Spain: U.R.E., P.O. Box 220, Madrid
St. Vincent: VP2SA, Kingstown
Sweden: S.S.A., Stockholm 4
Switzerland: U.S.K.A., Knutwil
Syria: P.O. Box 35, Damascus
Trieste: P.O. Box 301, Trieste, F.T.T.
Trinidad: John A. Hoford, VP4TT, Box 554, Port-of-Spain
Tripolitania: 5A2TZ, Box 372, Tripoli
Uganda: P.O. Box 1803, Kampala
Uruguay: R.C.U., P.O. Box 37, Montevideo
U.S.S.R.: Central Radio Club, Postbox N-88, Moscow
Venezuela: R.C.V., P.O. Box 2285, Caracas
Virgin Islands: Richard Spenceley, Box 403, St. Thomas
Yugoslavia: S.R.J., Postbox 48, Belgrade

MALLORY HAM BULLETIN

Why Mallory FP Capacitors ...with *etched cathodes*... won't develop "Middle Age Hum"



Ever notice how some electrolytic capacitors allow hum to develop after a few weeks of service? Even though they test out OK when installed, they let filter hum grow to an objectionable level in a relatively short time.

This is "middle age hum." It's caused not by capacitor leakage current, but by loss of capacitance. It's a common ailment of capacitors with plain foil cathodes. And it won't happen with Mallory FP capacitors, because they are made with *etched cathode* construction.

Here's the explanation. Maybe it's something you never realized goes on inside a capacitor. Actually there are *two* capacitors in series inside every electrolytic; one at the anode, and one at the cathode. The anode capacitor is the one that is formed electrically during manufacture. The cathode "parasitic" capacitor is due to the naturally formed oxide coating on the cathode foil. In a *new* capacitor, this cathode film is so thin, and capacitance thus so high, that the net microfarad value you measure at the capacitor terminals is hardly affected.

In a circuit having heavy ripple currents, the cathode can be driven positive with respect to the electrolyte during reverse peaks of the cycle. This action causes the oxide film to increase in thickness . . . *reducing* cathodic capacitance. The net series value goes down. And when the cathode capacitance gets comparable in size to the anode, the loss in filtering ability can be serious enough to cause considerable hum.

A capacitor with a plain cathode has no built-in "safety factor" to protect against capacitance loss, because its available cathode area is limited.

An etched cathode—as you'll find in Mallory FP's—eliminates this source of trouble. Because etching produces so much greater capacitance per unit area, the cathode capacitance is extremely high when the component is new. And build-up of the film during service doesn't reduce capacitance to a magnitude that will cause appreciable change.

Etched cathode is standard at *no extra cost* in Mallory FP capacitors and in popular Mallory metal and cardboard tubulars. It's another of the premium features that you're always sure of getting from Mallory, to assure the best in performance in your amateur rig or in repair jobs that you do in your shop.

See your Mallory distributor soon. He has Mallory capacitors with *etched cathodes* in the ratings you need.

P. R. MALLORY & CO. Inc.
Distributor Division
P. O. Box 1558
INDIANAPOLIS 6 INDIANA

P. R. MALLORY & CO. Inc.
MALLORY

A.R.R.L. QSL BUREAU

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

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

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

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

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

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

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

W7, K7 — Joseph P. Vogt, W7ASG, John Day, Oregon.

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

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

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

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

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

VE3 — Leslie A. Whetham, VE3QE, 32 Sylvia Crescent, Hamilton, Ont.

VE4 — Len Cuff, VE4LC, 286 Rutland St., St. James, Man.

VE5 — Fred Ward, VE5OP, 899 Connaught Ave., Moose Jaw, Sask.

VE6 — W. R. Savage, VE6EO, 883 10th St. N., North Lethbridge, Alta.

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

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

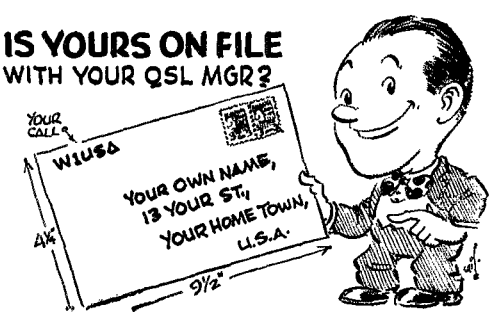
VO — Ernest Ash, VO1A, P.O. Box 8, St. John's, Newfoundland.

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

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

KL7 — KL7CP, 310—10th Ave., Anchorage, Alaska.

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



Strays

(See page 55)

Meet Charles W7VMO, Richard W7VMP, and Robert W7VMQ, the Fenwick *triplets*, recently very active in contest, DX and v.h.f. work from Phoenix, Arizona. They are now attending Purdue University at Lafayette, Indiana.

Silent Keys

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

W1UOS, John J. Bednarz, N. Grosvenordale, Conn.
W2CPQ, John C. Phipps, Sparta, N. J.
K2IYO, William J. Butler, jr., Salem, N. J.
KN2TJH, Alan F. Jensen, Princeton, N. J.
W3AJX, Anthony J. Berger, Baltimore, Md.
W3KIL, Mike Barbat, jr., Shanon, Pa.
W4LEP, Daniel L. Edwards, Tampa, Fla.
W5AYJ, Will G. Gammill, Fort Smith, Ark.
W5CVA, William E. Tomlin, Fort Worth, Texas
W6JTV, Paul A. Hodapp, Fullerton, Calif.
W6JYY, Kenneth V. Darbro, Los Angeles, Calif.
K6KTL, Fred W. Easton, Sacramento, Calif.
W6NBW, Earl W. Vance, Loomis, Calif.
W6NUY, Clarence E. Nalley, San Gabriel, Calif.
W6ON, Ora F. Martin, Baldwin Park, Calif.
W7PST, Rudolph R. Malo, Minden, Nev.
W8ULU, Richard H. Kincaid, Kincaid, W. Va.
8ZW, John C. Strobel, Wheeling, W. Va.
W9AZN, Albert D. Sanial, La Crosse, Wis.
W9IVP, Ronald S. Hart, Chicago, Ill.
W9LQB, William A. Morris, New Castle, Ind.
W9ZVX, George R. Whittaker, Hanover, Ind.
KNØEMD, Clifford D. Tresidder, Owatonna, Minn.
WØGRD, Milford H. Monson, Lignite, N. Dak.
WØHGT, Earl J. Davis, Stratton, Colo.
WØWCC, William D. Kanning, Audubon, Iowa
GW3CR, W. T. Rees, Gilfach Goch, Wales
KH6CT, George W. Spare, Lanikai, Hawaii
VE3HK, Rev. F. J. Williams, Kingsville, Ontario

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New

HAMMARLUND HQ-110

- DOUBLE CONVERSION!
- 6, 10, 15, 20, 40, 80 AND 160 METER BANDS!
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The **HQ-110** incorporates all the features you need at a price that's hard to believe. Only through **Hammarlund's** exclusive production techniques could so much receiver be offered at so low a price.

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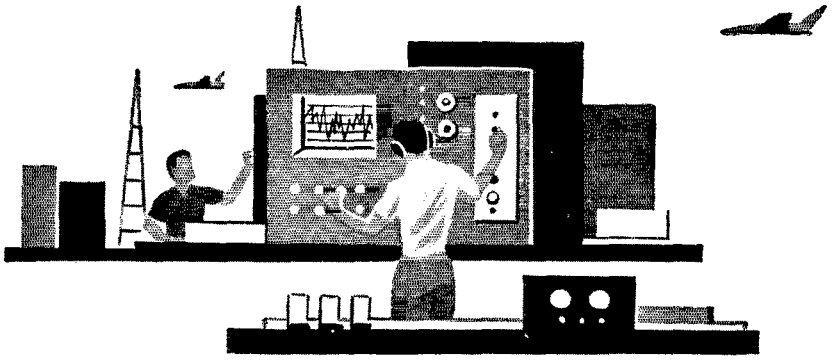

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July 9, 10—St. Louis
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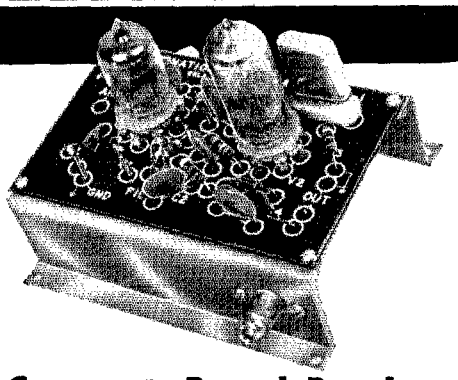

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● *No alignment* necessary . . . *Simple to assemble* . . . with *snap-on connectors* for power leads! Output IF frequency can be changed by merely changing the crystal (crystal *range* of 40 MC to 50 MC).

Specifications

Freq. Range	50-54 MC (51 MC design center)
Sensitivity	1 microvolt or better
Output IF*	(1) 600 KC to 1500 KC (2) 7 MC to 11 MC
Crystal Freq.	49.4 MC or 43 MC depending on IF desired (Oscillator range 40 MC to 50 MC).
Plate Power	150 volts to 250 volts DC @ 15 ma to 20 ma
Heater Power	6.3 volts @ 600 ma
Tubes	6AK5 RF Amplifier 6J6 Mixer Oscillator
Size	(overall) 4" x 3½" x 3½"
Weight	3 ounces

KIT (with crystal less tubes)..... **$10.95**

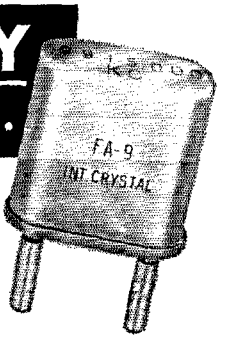
COMPLETE, wired and tested with tubes and crystal..... **$15.95**

**Specify IF when ordering*

HOW TO ORDER

For fastest possible service, crystals, oscillators and converters are sold direct. When cash accompanies order, International prepays postage. Otherwise, shipment made C.O.D.

ONE DAY *Processing!.*



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For AMATEURS— EXPERIMENTERS 1500 KC to 50 MC

Wire mounted, plated crystals for use by amateurs and experimenters where tolerances of .01% are permissible and wide range temperatures are not encountered.

CIRCUIT: Designed to operate into a load capacitance of 32 mmf on the fundamental between 1500 KC and 15 MC. Designed to operate at antiresonance on 3rd overtone modes into grid circuit without additional capacitance load. 5th overtone crystals designed to operate at series resonance. **(Write for recommended circuits)**

Prices Pin Diameter .093*
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(FA-9 Fits Same Socket as FT-243)

FREQUENCY RANGE	TOLERANCE	PRICE
1500-1799 KC	.01%	$ 4.50
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Overtone Crystals—3rd Overtone Operation		
15 MC-29.99 MC	.01%	$ 3.00
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PRECISION CRYSTALS
COMMERCIAL USE
F-6 SERIES
1500 KC — 50 MC

NOTE: The FA units will not necessarily have the correct correlation for Commercial use.
For commercial applications, the F-6 type unit should be used. Write for details!

One Day Service! Specify exact frequency and crystal will be calibrated to .01% or better of this frequency, when operated in the specified operating circuit.

International Crystal Mfg. Co. Inc.

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(Continued from page 96)

new Globe Chief. Members of the Cumberland Valley ARC advanced plans for the coming ARRL Field Day at the last meeting, coupled with the showing of several c.d. films. ZQU rebuilt his mobile rig. RIH works DX again with a rebuilt beam. ESV wants to work DX on 20 meters. QCU is planning a test for the mobiles in CVARC to check "dead" spots in the county. The Butler County Amateur Radio Assn., Inc. (UDX) now meets the 1st and 3rd Sun. of each month at 7:30 P.M. in the Veterans Administration Deshon Hospital. Officers are CUM, pres.; BMK, vice-pres.; ZIJ, secy.-treas. LAT is trustee. Traffic: (Mar.) W3WIQ 1560, BZR 110, YA 62, GJY 50, KUN 39, UHN 34, KNQ 9, SIJ 4. (Feb.) W3YA 27.

CENTRAL DIVISION

ILLINOIS—SCM, George T. Schreiber, W9YIX—Section Nets: ILN, 3515 kc. Mon. through Fri.; IEN 3940 kc. SEC: HOA. RMs: STZ and MAK. Cook County EC: HPG. Grace, GME, has been appointed Assistant SCM in charge of women's affairs. Additional appointments to the staff of the National Convention, scheduled for Chicago for the Labor Day week end, by Gen. Mgr. QKE are BKJ and PBM. Wouff-Hong initiation: BUK, traffic; SPB, AREC and RACES; FDX and FKC, DX and W9 DXCC; SPT and GRW, RTTY; WOK, v.h.f.; and ILS, mobile. Add FRX and FRZ to the family teams in the section. A new ORS is JZK. LNQ is the new editor of *Ham-Gab*, the official voice of Hamfesters, now observing the club's 25th anniversary. KQL, a former SCM, now is heard regularly from Springfield on ILN. Congrats to VVY, who has marriage plans. By the time you read this VSW should be close to getting out of the service. KLD now is signing /KL7. YH hopes to have the U. of I. station back on the air soon with a new receiver. The station's regular receiver was stolen from the club room. BQC, returned to 2 meters, reports the Rockford 6-Meter Emergency Net now has 15 stations on its roll. SES, OO, reports that three out of four stations to which he sent notices for chirpy signals cleaned up their notes. Congrats to the York High Radio Club and the Amateur Radio Club of Greenville College on their recent affiliation with ARRL. The Egyptian Radio Club station, AIU, now boasts a 100-ft. antenna pole with 2-, 6- and 10-meter antennas on top, and 80- and 40-meter doublets fanned out to other points. The SWANI held a series of interesting meetings and plans more in the future. New officers are OBY, K9ESQ, YUN, K9CCO and KN9DZF. Elections at the St. Clair Amateur Radio Club put the following in office: RQR, JMY, K9BIY, PAM, RSZ and BFS. The club is making convention plans. Montgomery County AREC members, their families and guests enjoyed a "ham scramble" on Mar. 24. ILN held 24 sessions in March and handled 236 messages. The North-Central Phone Net handled 210 in the same period. There still is no report from IEN, nor any news from that group for that matter. The North-Central plans to hold its hamfest Apr. 4 at St. John Sanatorium in Springfield. New ILN members are JXK and K9CNC, of Skokie and East St. Louis, respectively. ZWS has moved to Arizona. A new Conditional Class licensee in the section is K9DAG. The Chicago Area Radio Club Council's recent meeting was attended by TSN, president of ARRL, and GPI, Central Division Director. The Midwest V.H.F. Club now has more than 200 members, running a close race for the biggest Illinois Club with the Hamfesters, which took in 16 new members to boost its total to 275. Novice graduates are DKM and BJJ. Traffic: W9DO 644, MAK 348, YYG 344, YRH 154, PCQ 102, IDA 96, K9GJR 88, W9FAW 74, OYL 66, JZK 62, CTZ 57, VDH 50, YFO 48, YIX 41, STZ 34, K9AXL 29, W9YGG 22, K9CNC 16, W9EDH 14, KQL 11, DJG 8, K9BFI 7, AMD 6, W9DUA 4. (Feb.) K9BXL 8, W9YGG 7.

INDIANA—SCM, Seth Lew Baker, W9NTA—Asst. SCM: George H. Graue, 9BKJ. SEC: QYQ. RMs: DGA, TQC and TT. PAMs: CMT, KOY, SWD and UXK. More stations are needed in the c.w. net, QIN, which meets daily at 1900 EST on 3656 kc. The NCS will come back to you at your speed so don't let that stop you. FJI joined MARS. The TARS held an auction with 55 attending. The Bloomington ARC also had one with good attendance. K9AZU has a new DX-100 and 10-meter beam. IMI is mobile on 10 meters. AYP is moving to the West Coast. JVF has a Globe King. K9CQO is Tech. Class and operates on 6 meters. The Central Indiana Mobile RC assisted in the Heart Fund Drive in Indianapolis. Those taking part were MHP, BAQ, HPV, JND, SVC, UQW, NFL, IYI, FZW, YKI, RYQ, JIY, K9CBY and CRF. POF and JBQ have DX-100s. NTR has a phone patch working. New calls: KN9s HKI, HCE, HCG and HCK. K9GBL is Cond. Class. K9BEY is on s.s.b. FYM is back on with a pair

(Continued on page 110)

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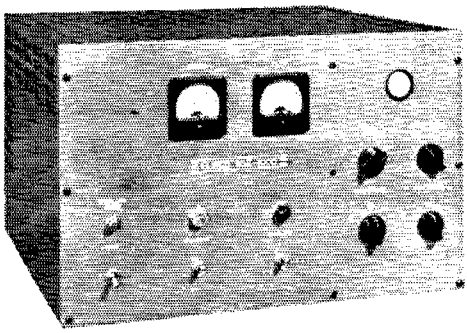
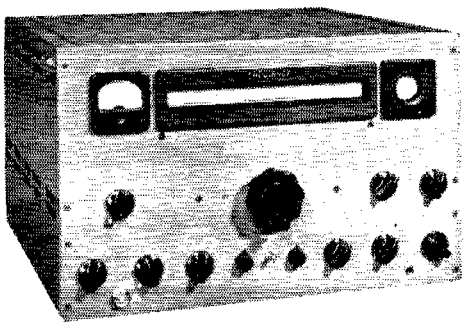


ELDICO SSB-1000



ELDICO SSB-100F

There's a lot of good commercial equipment on the market today. And some home-brew gear rivals the best of the factory built rigs. But if you stop and take a critical look at virtually all of these handsome packages you find they are the work of "specialists." Manufacturer "A," convinced that SSB is the panacea for ham work has virtually forgotten that a lot of us still like to pound brass or work AM. W2XXX, who never heard that you can modulate a rig, has a gorgeous c.w. station that can't be employed for anything else. And so it goes, making the selection of a well-rounded design more difficult than might appear at first.

Eldico, long-time pioneers in designing completeness into transmitters, spent a lot of time over the coffee pot and drawing boards to produce the newest and finest package, that's as much at home on the SSB frequencies as in the midst of trunk line A or a 75-meter AM roundtable. What does this mean to you? For one thing you'll get a chance to really enjoy ham radio at its fullest and richest . . . you can find out what the other man likes and you can compete on even terms. Price? For $795 you start with the 100-watt SSB-100F transmitter exciter. With it you drive ANY final amplifier; or you can add, for $745, the SSB-1000 kilowatt amplifier. Look over the specs, compare with anything on the market, and then get together with your Eldico distributor to find out what terms can be arranged to put this "Years ahead" gear in your shack.

ELDICO SSB-100F

Type of Emission: C.W. — A.M. — SSB
Power Ratings: DC average input SSB-100 watts; A.M. input (two tone test)—60 watts. Peak envelope power input SSB-144 watts. Peak envelope power output SSB-100 watts.
Keying: Grid block, full break-in.
Harmonics and Spurious Responses: Spurious mixer products—50 db or more down. Third order distortion products—35 db or more down. TV interference suppression—40 db or more second harmonic, 60 db or more higher harmonics.
Unwanted Sideband and Carrier Suppression: 50 db minimum attenuation, through low frequency crystallattice filter.
Frequency Stability: Control Oscillator—(800 to 1300 kc) ± 100 cycles after two minute warm up period. Output frequency—within 300 cycles after five minutes warm up period. Dial accuracy ± 2 kc after calibration.
Tube Lineup: 22 tubes, including two rectifiers, two voltage regulators, one oscilloscope and one 5894 power amplifier.

ELDICO SSB-1000

Low Drive Requirement: 3 watts P.E.P. will drive to full kilowatt. Pi-network Output: Single knob bandswitch. High-efficiency silver-plated Pi-network output circuit. Matches wide range of antenna impedances.
High Harmonic Attenuation: High-Q plate and grid circuits and Pi-network output circuit provide maximum harmonic-attenuation.
Power Rating: DC Input C.W. 1000 watts, A.M. 700 watts
Peak Envelope Power:
Input SSB-1000 watts
Output SSB-625 watts
Frequency Range: 10 thru 80 meters.
Tube Lineup: 9 tubes; two 866, two OA2, one OB2, one 6AU6, one 1CP1, two 4 x 250B.

ELDICO ELECTRONICS

Write W2BFY for additional details if your distributor can't assist you.

29-01 BORDEN AVENUE, LONG ISLAND CITY, NEW YORK

A Division of Dynamics Corporation of America

of 828s running 300 watts and a four-element beam on 10 meters. KLR put up a 60-ft. windmill tower for the 2-meter beam and is experimenting with a broadside beam. DPT reports 52 countries worked since Christmas. DFW made WAC Mar. 30. New appointment: SYM as OPS. K9GGC is active on 420 Mc. with a group of W4s. UNT is planning 420-Mc. MM operation on the river and is on 6 meters now. VZF has a new Tri-X tower and WRL beam. K9CFG reports 16 stations are reporting into the North Central Indiana 6-Meter Net, which meets on 50.5 Mc. Mon. and Fri. at 2030 CST. TT reports RFN traffic as 132. TQC gives QIN as 506. SWD reports IFN evening net as 236 and morning as 288, total 524. EHZ gives CAEN traffic as 433. Those making BPL were JOZ, EHZ, EQO, TT, JYO, NZZ, HXR and DGA. I hope all clubs and stations will participate on Field Day. Let's show the rest of the country that Hoosiers are the finest operators. The V.H.F. Picnic will be held July 28 at Turkey Run State Park. Date of the Evansville Hamfest is Aug. 25. Traffic: (Mar.) W9JOZ 953, EHZ 557, EQO 544, TT 520, JYO 510, K9BBO 399, W9NZZ 380, UXK 265, ZYK 234, SVL 227, HXR 225, TQC 163, BKJ 154, DGA 147, SWD 113, EJW 95, LDP 74, NTA 72, RTH 58, AB 52, UQP 49, SVZ 48, WUH 47, KTX 45, WBA 44, HRW 43, CYZ 42, VQP 37, VNV 34, K9GQB 30, AUE 29, W9WTY 29, DOK 26, NTR 26, CMT 25, PQZ 24, QYQ 24, HMW 21, WAU 17, WHL 17, BUQ 13, NH 13, URQ 13, DZC 12, YYX 12, CDW 11, EJC 11, ENU 11, ZSW 11, K9CFG 8, DWK 8, W9BDP 7, STC 6, EHY 5, YVS 5, CTF 3, EGQ 2, PPS 2, FYM 1, QR 1. (Feb.) W9KTX 119, CTF 4.

WISCONSIN—SCM, Reno W. Goetsch, W9RQM—SEC: EIZ. PAMs: NRP and AJU. RMs: KQB and KJJ. Nets: WIN, 3535 kc., 7:15 P.M. daily; BEN, 3950 kc., 6 P.M. daily. Wisconsin mobile and c.d. frequency: 29,620 kc. My sincere thanks and appreciation for a job well done go to OVO, who relinquishes his duties as SEC after completing his 5th term of office with a tremendous record of accomplishment in RACES and AREC. His successor, EIZ, takes over with a good background in the field as EC for Langlade County. TCC work helps the traffic count, comments CXY as he rolls up another BPL. KJJ picked up a few new countries in the DX Test. AKY received a QSL from UAL for a 28-Mc. phone QSO. FZC is toying with the idea of s.s.b. SQM is putting up a 28-Mc. beam. RQK reports a total of 4000 QSOs in 5 years of operation. A new club at the U. of W. is active with RQN, pres.; SDC, vice-pres.; ZQA secy.-treas.; VOO, trustee. After issuing several hundred Novice harmonic OO cards, GFL says: "Some days it sounds as though we have another Novice band between 7400 and 7500 kc.!" GAB has been keeping a nightly sked on 432 Mc. with DRN over a 70-mile path with 100 per cent copy every night. The DX status of RKP is 180 worked and 165 confirmed. RYV, BZU, RKT, HPC, DKH and GXD are Mancorad boys active on 144 Mc. QNO is DXing on 21 Mc. with a KWS-1 and a two-element beam. K9ERN, DGE and DUX are new General Class licensees. K9CAQ and W9NPX are building 2-meter rigs. Operations mgr. GXD reports new Mancorad Club officers are K9CAQ, pres.; K9DIN, vice-pres.; W9VAU, secy.-treas.; GXD and ZKB, directors, and RKT, EC. KXK put up a 60-ft. pole for the new antennas. *WIN News*, an FB bulletin by KQB, reflects the high level of activity on the c.w. net during the past year and a half. Net certificates (BEN) were issued to K9AEQ, BBT, BBU, CET, CKW, W9HSQ and QJW. CQR dropped the "N" from his call. KN9DCO has 36 states worked. K9DGM, HKX and DGL are new in the Janesville Area. Traffic: W9CXY 1042, KQB 124, KJJ 122, K9AEQ 108, W9AKY 36, FZC 24, SAA 18, SQM 17, OVO 13, EIZ 9, RQM 9, RQK 8, YZA 6, GIL 5, KWJ 5, SZR 2.

DAKOTA DIVISION

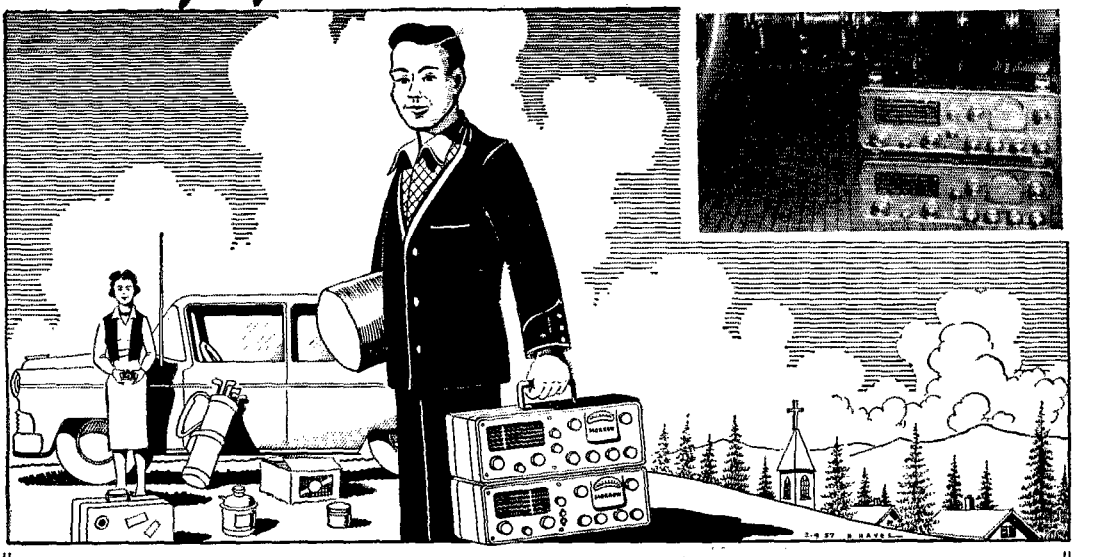
NORTH DAKOTA—SCM, Elmer J. Gabel, WØKTZ—Six hams in and around Napoleon, namely IAP, JEP, KLP, UBG, WIQ and KØEFH, have come up with a new idea in hamfests. They will sponsor the North Dakota Hamboree on July 14 at Beaver Lake State Park near Napoleon. There will be no registration fees, everything will be free. For further information and instructions on how to reach the park contact KLP, Napoleon. The North Dakota C.W. Net held 13 sessions and handled 93 messages. Traffic: KØCNC 327, WØFVG 152, KØADI 42, APX 19, WØIHM 14, HVA 13, YCL 12, KØATK 6, WØMQA 6, PHC 6, CAQ 2.

SOUTH DAKOTA—SCM, Les Price, WØFLP—Asst. SCM: Gerald F. Lee, ØYKY. SCM assistants: HOH, FKE, APL, GQH, NEO, TI, MZJ and GDE. SECs: YOB and GDE. PAM: ULV. RM: SMV. The S.D. C.W. Net, reports QTC 29; the S.D. WX Net, QTC 396; the S.D. 40-Meter Noon Phone Net, QTC 63; the S.D. 160-Meter Evening Phone Net, reports QNI 193 for March and 200 for Feb. The net closed Apr. 1 until the fall. The 75 meter S.D. Emergency Evening Phone Net reports QTC 70. RSP was heard in New Jersey three

(Continued on page 112)

THIS YEAR . . .

Enjoy a Morrow Vacation!



Take *Morrow* along, too, and have a wonderful vacation. Do your hamming enroute and also use as a portable station. Please the XYL by working the home QTH.

MB-560A:	**60-watt Transmitter,** built-in VFO and modulator	$214.50
MBR-5: or **FALCON:**	**Deluxe Receiver,** S meter, 100 KC crystal standard, noise balance squelch	224.50
	Receiver with Broadcast Tuner as an accessory, serves for Conelrad Monitor, selective bandpass: narrow 2.8 KC, broad 9.2KC; with BCT	189.00
	MBR-5 and Falcon have 1 microvolt sensitivity for 16db signal to noise ratio on 10 meters, excellent frequency stability.	
TV-600:	**High Voltage Vibrator Power Pack,** 600 volt, 200 ma, features silicon rectifiers	79.50
RVP-250:	**Vibrator Power Supply** for receiver and exciter of transmitter	39.95
CBM6 or 12:	**Cable** for interconnecting above units	9.95
MK-N1:	**Modern Cylindrical Microphone**	16.95
MLV-50:	**Remote Control Antenna Tuner**	24.95
SH-7:	**Speaker** for mobile installation	11.50
RTS-600S:	**AC Power Pack** with speaker for portable use of MB-560A and either MBR-5 or Falcon	107.50
CBF7-7 / **CBF8-8**	**AC Cable** for RTS-600S	9.95

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times during March. A new Novice is Richard Meador, KNØIRN, of Lead. He and Allen Larson will be ready for the General Class exam in May and Jimmie Myers is about ready for the Novice exam. DVB conducts classes for these boys Sat. mornings and Mon. nights. The Signal Hill Amateur Radio Club held its Feb. 4th meeting and Apr. 1st meeting at the home of George and Dorotha Adams. Plans are being started for Field Day. The Mitchell ARC, which meets the 1st and 3rd Thurs., elected GWW, pres.; GWS, vice-pres.; WCN, secy.; GWL, treas.; and GCP, act. mgr. New officers of the Redfield ARC are KØASQ, pres.; SEQ, vice-pres.; BNA, secy.-treas. The club's main yearly activity is Field Day. NWK was home in Deadwood for a few days before returning to the Navy in California. KNØDIH is very busy in Fr. Morococ but finds time to send a letter to his mother, DVB, about once a week. CSB and family are now living in Vermillion. Four of the 5 engineers on the KDLO-TV staff at Garden City are now licensed hams: KØCRY, GFS, KØIEI and KØAZD. IEI is operated largely s.s.b., a 10B with an 813 running about 600 watts, and a 4-1000A rig being built. YVF has received his WAS and reports that his wife Lois, KNØDHA, passed the General Class exam recently and at the same time his brother Burton, KNØJCD, took the Novice Class exam. RRN had his receiver re-aligned by the factory and has been heard after DX since. In the last 3½ years, Tony has talked about ham radio 17 times to various and sundry organizations and meetings. GWS writes that he is moving to Spokane, Wash., to study for the ministry in the Assembly of God Church. He expects to have about 20 watts on 80-, 40- and 20-meter c.w., looking for South Dakota, especially on 3645 kc. and other net frequencies with a 7 call. Bill's address: 1828 W. Bridge. GDE had a card from RMK and UAJ stating that Larry would be temporarily stationed in Chicago by Western Electric and by May or June will be permanently stationed at Rapid City. LTS has moved to Chamberlain from Bonesteel. A new licensee at Marvin is Ark Ericksen, KNØJCC, the Baptist Minister there. Newly licensed at Freeman College is Leland Voth, KNØIYJ, using an ARC-2 tank transmitter. KØHHM, who joined the 75-meter net and did a fine job with 15 watts output, is doing even better now with his 1625s up to about 25 watts output when under modulation. Another new licensee at Lennox is KNØHUM. A new net member is KØAIE, Edgemont. Also new to me are KØBMQ and KØBMP, of Millboro. Dick has participated in the Nebraska Slow-Speed C.W. Net and checked into the S.D. C.W. Net for the first time Mar. 25th. DDT, Waterbury, Nebr. is now using a Viking Ranger on 75, 80, 40, 20 and 15 meters, phone and c.w., using doublets on each band with results that compare favorably with what he used with the former Viking II. Coincidence: The Wheat Belt Net of the Wheat Belt ARC down in the corner where Nebraska, Kansas and Colorado join, which meets at 12:30 P.M. CST. Sat., found out that 75 meters was impossible and decided to move up to 40 meters, choosing 7225 kc. without knowing that the S.D. 40-Meter Net already was there. The first time the fellows showed up was Mar. 16 during traffic on the S.D. Net. After a few minutes discussion between EXX, mgr. of the S.D. Net, and QHE, NCS on the WB Net, the latter decided to wait while S.D. finished up then carry on that day and decide upon a new frequency for the future. RMK and UAJ requested that a place be kept available for them on the S.D. Nets when they get to Rapid City this summer. Larry checked into net, WØRMK/M9, from Waukegan, Ill. Mar. 23. His new address is 516 Prospect Rd., Round Lake Park, Ill. Approximately 61 RACES licenses have been received, according to announcement made Mar. 4th. If I've not errored, they are as follows: ADJ, APL, ARF, AQS, BAZ, BMM, BNA, BQS, BYD, CAS, CJS, CTZ, DEV, DKJ, DNV, DPD, DQK, DVB, DYR, ELV, EQV, EUJ, FFP, GQH, HHZ, HOH, ION, ILL, IYN, JLI, JLS, LBO, LXD, MMQ, NEO, NNX, OII, DOZ, ORE, QGZ, RRN RTD, SCT, SDK, SIR, SMV, SRX, TXK, UDI, VME VMM VQC, WUU, ZVV, ZWL, UVL, FLP, OXC, YOB, FKE, GDE. Traffic: WØZWL 617, SCT 318, ARF 103, DVB 88, NEO 57, FLP 31, CTZ 29, OII 20, YKY 20, ARE 13, GDE 13, BLZ 12, SMV 12, EXX 10, DKJ 9, NXX 9, BQS 8, QDV 8, BMQ 7, DIY 7, BNZ 6, RSP 6, BQR 4, OOZ 3.

MINNESOTA—SCM, Robert M. Nelson, WØKLG—Asst. SCM: Robert Schoening, ØTKX. SEC: GTX. RMs: DQL and RLQ. PAMs: JIE and LUX. The Minnesota Phone Net's special emergency session ran continuously for 43 hours and 35 minutes from 1800 Mar. 14 until 1335 Mar. 16. The session was called because several communities in Southwestern Minnesota were without commercial communications and the roads were blocked because of the sleet, ice and snow storm. A total of 383 formal messages was handled, plus approximately 255 messages not in standard form. Nearly all

(Continued on page 114)

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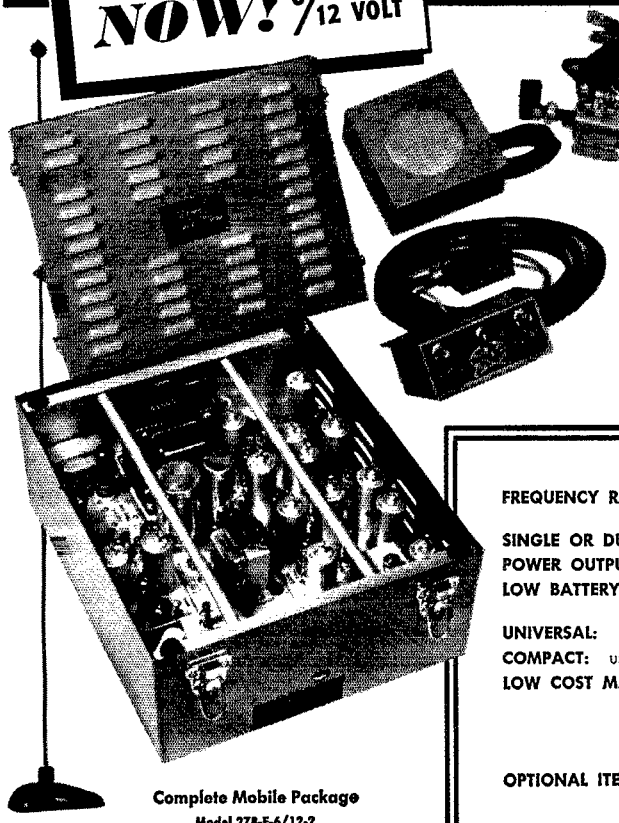
MODEL 278 6/12 SERIES

CONTROLLER

VHF-AM TWO-WAY RADIO

FOR AIRPORT VEHICLES AND GROUND STATIONS!

NOW! 6/12 VOLT



The CONTROLLER mobile unit was specifically designed for airport vehicles requiring two-way communication with control towers and other aeronautical services such as airlines, flying schools, C.A.P., etc.

For use in ramp, jeeps, electrician's trucks, crash trucks, tow tractors, snow plows, executive cars, police cars and at temporary locations such as construction sites.

Complete Mobile Package
Model 278-E-6/12-2

$398 F.O.B. Miami

FEATURES:

FREQUENCY RANGE: 118 to 152 MC. crystal controlled (CR-18/U crystals).

SINGLE OR DUAL CHANNEL: maximum spread 500 Kc.

POWER OUTPUT: 3 to 4 watts, more than enough for airport service.

LOW BATTERY DRAIN: total standby 10 amps. at 6 volts, 5 amps. at 12 volts.

UNIVERSAL: instantly changeable from 6 to 12 volt operation.

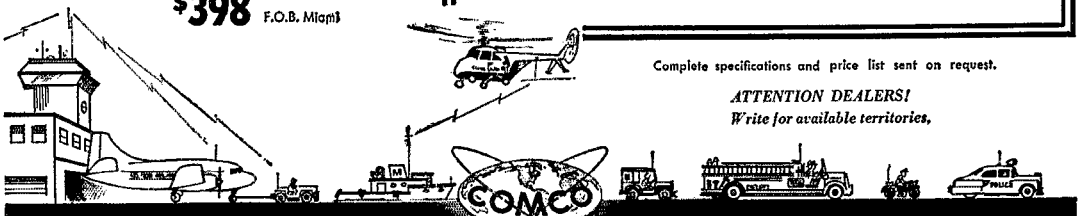
COMPACT: under dash or trunk mounting, case 5½" x 11" x 13".

LOW COST MAINTENANCE: the CONTROLLER has earned an excellent reputation for trouble-free operation. High quality standard manufacturers parts used and identified for easy replacement at your local supplier.

OPTIONAL ITEMS: √ AC adapter for operating mobile unit from 110 or 220 volt AC.
√ Hand carried case for portable use.
√ Weatherproof case and speaker.

Complete specifications and price list sent on request.

ATTENTION DEALERS!
Write for available territories.



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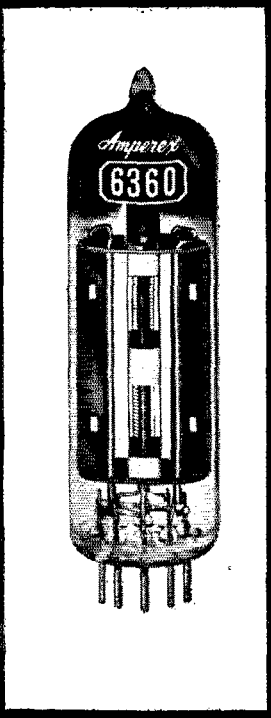
messages were of emergency nature. A sincere thanks to all who participated. The annual election of officers of the Mankato Area Radio Club was held with the following being elected: RAK, pres.; QKA, vice-pres.; KØALL, secy.-treas. OPA recently had his 25,000th QSO. KØBFS and KJZ made BPL this month. KNØIZD is a new ham in Brewster running 40 watts homebrew and receiving with a souped-up Echophone all-band receiver. BUO is now with Minnesota Mining and Manufacturing. KØBLD worked VQ2PL on 6-meter phone. The Minnesota Noon Phone Net has moved from 3825 to 7215 kc. until conditions improve on 75 meters. The time still is 1205 CST. VBD renewed his ORS appointment. Activities were hampered for MXC by a few days in the hospital. We heard that OJG worked England on 75 meters. New hams in St. Paul are KØERP and KNØIDA. PBY is NCS of a new RACES net, with stations from 20 counties in Southwestern Minnesota reporting in. It meets Sun. at 1330 CST on 3805 kc. ITQ is back in Minneapolis after spending the winter in Southern Texas. New ECs are QDZ for Nobles County and UOX for Redwood County. A new club in the Mound Area is the Triangle Radio Club, made up of hams from 3 counties. Officers are IRM, pres.; QQW, vice-pres.; WEA, secy.-treas. RQJ vacationed in New Orleans and Dallas. The Lake Region Amateur Radio Club had a booth at the Builders Show in Fergus Falls. KØBUF/Ø was set up in the booth taking messages and acquainting people with our wonderful hobby. Hope to see you all at the convention in St. Paul. Traffic: (Mar.) WØKJZ 400, KLG 255, KØBFS 119, WØALW 109, QDZ 109, KØDNM 104, WØRLQ 100, KØBUD 98, WØDQL 97, KFN 89, KØEPT 65, WØVBD 60, KØADI 42, WØUMX 42, OSJ 41, WMA 39, UNG 34, LUX 33, IYP 31, TCK 25, KØCAZ 22, HNN 20, WØOJG 20, QVR 20, JIE 19, EMZ 18, FGP 16, TQQ 14, KNØGQZ 12, WØPBY 12, KXW 11, KØAEE 10, CVD 9, WØZEL 9, HEN 7, VOA 7, KØHKK 5, WØLIG 5, NGA 4, TOK 4, ZMK 4, HW 3, KØDEI 2.

DELTA DIVISION

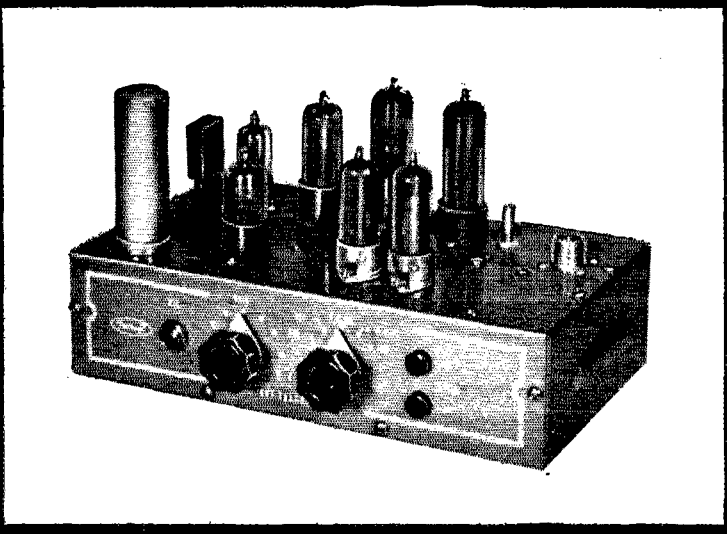
ARKANSAS—SCM, Ulmon M. Goings, W5ZZY—SEC: VKE. PAM: DYL. Activity reports for the month of March have been very light. CAM is holding skeds with son Jim in Florida on 15 meters. CRK has a new 10-meter beam up and is really giving it a workout. DAG now has worked up to 450 watts on his new linear amplifier. We are most happy to have ØJHY/5 join our section. VDQ finally has gone s.s.b. with a 20-A and a pair of 813s running a kw. GWB and KAN are very happy these days, having raised their rank from Technician to General Class. K5HOL now has a Viking II and it is said he never lets the filaments cool on it. The coverage of the Arkansas Emergency Phone Net has now been extended to operation from Mon. through Fri. on 3885 at 0600. This net previously was held on Mon. only. We invite traffic from all sections for this net. We want to encourage all Arkansas amateurs to support this net with their participation. I was very glad to meet so many on the band for the April LO Party. We are badly in need of more activities reports for this section. Won't you please send in your reports? Traffic: W5KRO 75, DAG 23, WSM 8, ZZY 3.

LOUISIANA—SCM, Thomas J. Morgavi, W5FMO—PAM CEW is now a member of RACES and is taking over one shift at Shreveport C.D. Hq. as radio operator. Al reports 68 contacts and 41 countries in the DX Contest. K5CME runs a Phasemaster II on s.s.b. and is a member of the Mid-Continent SB Net, which is managed and directed by DGB. The net meets each night on 7206 kc. at 6:30 P.M. CST. K5ANI is active on 10 through 40 meters. Chief Operator Bill Wyatt, AA5WBN, is due for a discharge and is heading back to Danville, Ill. K5DGI was erroneously reported on s.s.b. He now has a new 10-15-meter quad up that really works. UXE made BPL in March. MXQ still is having trouble with the new rig but manages to meet all nets and handle traffic. The Early Bird 6-Meter Net has been started by K5BWN with 5 stations reporting. K5GFB is now on 6 meters. SUA and K5BWZ have joined AF MARS. CYF is having speech amplifier trouble with the new rig. K5DDH now is operating in a new hamshack. EA has been appointed Alt. Radio Officer in Area 4 C.D. K5AGJ is active on 40 and 75 meters meeting nets and handling traffic. INL has been appointed Radio Officer for c.d. in Area 1-A. K5CWQ was appointed for Area 1-B; KU/SHF for Area 2; SKW for Area 3; HEJ for Area 4 and SQB for Area 6. Area 5 still is vacant. They will be responsible for communications in their own areas and from their areas to State Net Control. K5BES, who is SEC, also is Radio Officer for the Louisiana c.d. The Jefferson Amateur Radio Club is now affiliated with ARRL. Write the SCM for dope on ARRL appointments or check to see if your appointment needs endorsement. Traffic:

(Continued on page 116)



CIRCUIT BY... Tecraft



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The AMPEREX 6360 features high efficiency at low cost in a tube envelope measuring only 3" by ⅞", making it ideal for power amplifier and frequency multiplier applications in mobile equipment.

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AMPEREX

W5UXE 502, KRX 153, K5AGJ 149, W5NDV 71, MXQ 42, EA 9.

MISSISSIPPI—SCM, Julian G. Blakely, W5WZY—Congrats to CBW, pres.; and to YAA, secy., on getting the Two-Meter Net going on the Gulf Coast. VKV, the NCS, is looking for DX contacts from up-State with his rotatable dual array—power 100 watts, v.f.o. We are sorry to lose EDE from the section. We wish to welcome K5JLX to the section. Dave is ex-ØBQC/-8NSU/2YXL/8MZI/3MZI, and needless to say is a member of the Old Timers Club. VMC is active with 300 watts on all bands. K5IGV graduated from mobile to 300 watts phone. BEK is RTTY and looking for contacts. FPI, our RAI, reports some progress in the Section C.W. Net. Contact him on 3645, 3935 and 7108 kc. Traffic: W5FPI 191.

TENNESSEE—SCM, Harry C. Simpson, W4SCF—SEC: RRV. PAM: PQP. RM: IV. DCH, trying out his new 50-ft. tower and three-band two-element beam, worked 142 stations in 53 countries during *four* hours of operation! UVU is building a new kw. rig, also has a new 100-watt mobile, and reports NEG and EMY are new Athens 6-meter stations. HHK reports 6-meter auroral openings during three days in March. YRM has a new 60-ft. tower, works 200 miles consistently on 6 meters, and reports that OJL, KYO, JPF and EZG are now on 6 meters in his area. The Memphis 6-meter group formed the Tri-State Net, meeting on 50.1 Mc. at 0800 CST on Sun. EWC and SCF visited SJJ, HSK, ZNW and others in Atlanta and enjoyed meeting with ARW and the Marietta Club immensely. The Memphis Club was treated to a discussion of the Arends-Roland Comet. FCC's quarterly exams in Memphis, under the capable supervision of ARW, were held recently with 44 ham and 151 commercial exams being given in the 2-day session! Our thanks to K4ECW, secy.-treas. of the Oak Ridge Club, for her very fine detailed report on activities of this great organization. SKH/4, the club's station, won the blue ribbon at the Oak Ridge Hobby Show and handled 101 messages for the Women's State Bowling Tournament. SGI, VWT and HSH were panel members at the Oak Ridge meeting, capably discussing mobile operation. This club's meeting dates have been changed to the 2nd and 4th Tue. of each month. IFN reports that K4KBK has been ill. He introduces a new Milan ham, K4MEJ, and says farewell to another, 5ZKA/4, who is leaving for other parts. K4BKC, tired of conventional frequency multipliers, is now raising *rabbits!* IFN is the proud owner of a 75A-3. PQP says PHQ did a wonderful job on the new TPN rosters. WQW reports he has been handling traffic on 20 and 40 meters. VNE worked 52 countries on 10 meters, including his old friend ZE3JP. K4LPW, still chasing DX, now has 132/57. IGW, IPO, KJC, GMQ, OKT, ASL, HRE, JCC, EZS and WTP have applied for Army MARS. ZBQ, whose major activity is v.h.f., managed to handle 69 messages! K4HJN is a new TN member in Knoxville. His many friends will welcome 6EVC (ex-4Y1P) back to Tennessee permanently. PL comments that S5 signals and S9 static makes traffic-handling somewhat of a problem on 40 meters. K4DIZ's ankle, hurt while QLF, has mended. Traffic: (Jan.) W4PL 882, K4DIZ 268, W4SKH/4 110, PQP 102, VJ 101, ZBQ 69, SGI 52, UVL 52, EWC 47, OGG 44, VNE 42, SCF 41, WQW 40, YMB 29, K4GFL 27, W4UIO 24, K4BMC 16, W4IGW 16, DCH 10, K4LPW 10, W4HUT 4, CLM 2, HJN 2, CLQ 1, ECW 1, EVC 1, HHK 1, HSX 1, IFN 1, TIE 1, TIZ 1, UVU 1, YRM 1. (Feb.) W4PQP 141, IRI 94, UVU 2.

GREAT LAKES DIVISION

KENTUCKY—SCM, Albert M. Barnes, W4KKW—SEC: JSH. PAMs: VJV and SUD. RM: QCD. Heartiest congratulations to the two newest ARRL club affiliates, the Mammoth Cave Amateur Radio Club in Glasgow and the Warren County Radio Club in Bowling Green. That brings the total ARRL affiliated clubs in Kentucky to eight, including the Amateur Radio Transmitting Society in Louisville; the Hardin County Amateur Radio Assn. in Elizabethtown; the Audubon Amateur Radio Society in Henderson; the Owensboro Amateur Radio Club in Owensboro; the Blue Grass Amateur Radio Club in Lexington and the Paducah Amateur Radio Club in Paducah. This is enough to have a council of Kentucky clubs organized to really get the hams of Kentucky working together constructively. KPN is going strong with forty active members. PAM VJV and SUD recommend K4CJI, K4HCK, HJI, K4HTK and K4IAA for section Net certificates. RM QCD is lining up more NCSs for KYN. KKG went to the Dayton Hamvention and had a fine time. KZF has a new beam on 6 meters. HOJ is using a new electronic key now. JGN is active on 15 meters for WAC. CDA has his 100TH rebuilt for 40 meters. HJI has a new 20-meter beam looking for DX. Traffic: W4ZDB 505,

(Continued on page 118)

K4AIS 317, W4SUD 205, QCD 149, KKW 120, RPF 107, JSH 102, BAZ 96, K4JGN 93, AKD 60, W4HSI 56, KKG 38, NGN 37, NIZ 35, SBI 35, CDA 33, HOJ 24, K4BVB 15, W4MWR 15, K4BPX 8, W4OGP 8, K4HOE 7, W4HJI 6, K4KHE 5, W4SZL 5, JUI 4, SZD 4, BZY 2, KZF 1.

MICHIGAN—SCM, Thomas G. Mitchell, W8RAE—Asst. SCM (phone) Bob Cooper, 8AQA; Asst. SCM (c.w.) Joe Beljan, 8SCW. To those of you who may have not heard as yet, it was my duty this month to accept the resignation of GJH as our Section Emergency Coordinator. The press of personal business brought about the decision on Gary's part after nearly nine years of service in that office. Being aware of the countless hours that he devoted to service on our behalf, I feel that words cannot adequately express our appreciation for the many accomplishments that were brought about through his efforts. I take the liberty here to thank him for all members of the Michigan section and to wish him the "best in hamming" for the years to come. He has kindly offered to assist in any way and I am sure that we will find many occasions to call upon him for help in the months to come. The selection of a new SEC will necessarily take some time and the aid of several persons besides myself. In the interim, any correspondence normally involving the SEC may be directed to this office as I will do all possible to carry on as the Acting SEC. All ECs will be kept posted on the AREC situation via direct mail bulletins from this office. Speaking again for the members of the section, I should like to express our thanks to the Grand Rapids Amateur Radio Association for its efforts which resulted in another excellent convention again this year. The club's reward can best be found in the growth of the attendance figures and in the many compliments heard over the air. Section-wide activities such as this convention are very essential to maintaining the active organization we have in Michigan and we are most fortunate in having so active a club in that geographic location to sponsor the event. Traffic: (Mar.) W8ELW 661, ILP 198, YAN 122, NUL 118, DAP 111, K8NAW 103, W8FX 82, FWQ 65, ZLK 63, NOH 59, SCW 44, RTN 41, OCC 33, AUD 31, RVZ 29, TBP 27, OGY 24, WXO 23, QIX 22, RAE 17, HAV 10, DSE 7, HKT 6, EGI 5, MSK 4, FGB 1, QQO 1. (Feb.) W8QQO 101, TBP 25, OCU 6, MSK 2, SWN 2.

OHIO—SCM, Wilson E. Weckel, W8AL—Asst. SCMs: J. C. Erickson, 8DAE, and E. F. Bonnet, 8OVG. SEC: UPB. RMs: DAE and FYO. PAMs: HPP, HUX and HZJ. PLQ, FPZ, ILC and RXM helped in the Ky. Emergency Net. New appointments: STP as OO and HZJ as OO and PAM. *Ether Waves* reports the editor's daughter is now KN4MWC. JRB made the honor role of *CQ* magazine with 36 zones and 137 countries. LPD worked ZE2 and VQ2 on 6 meters. Springfield ARC's *Q-5* reports RWZ, OKB, OG and JRG hold WAC phone; BMC, OKB, OG and JRG hold WAC c.w.; VZE, QCU, KQW, OKB, OG and JRG hold WAS; JRG holds DXCC and EQN holds Worked All Ohio Counties (WAOC). The club also held a successful auction. K8CLS received his General Class license. KKU joined the Navy. JRG is running a full gallon using a pair of 4-250As. KN8CUY moved to Marion and has a 75-watt rig on the air. SQU received his first 50-Mc. confirmation from England. KN8BNB had FU8AO answer his CQ on 15 meters. QXW received a WAVE certificate. KN8DYW has a new antenna. 9VBV/8 is working DX on 15 meters. Toledo's ham of the month is JEX who is the principal of Waite High School and an IRE member. Toledo's 6-meter round table consists of BTN, EBR, RBQ, WTD and Ks ALK and DWY. BMA received his General Class license. INR is working DX on 40-meter c.w. PDY has a 32-element beam on 432 Mc. and can be heard on 2 meters and 220 Mc. Toledo RC's 1957 officers are BHL, pres.; MUK, vice-pres.; MQQ, rec. secy.; AAS, corr. secy.; and DN, treas. QIE vacationed three weeks in Florida and Cuba. HXB needs Delaware and Arkansas for WAS mobile. UPH has worked 21 countries. The Massillon YMCA RC's officers are VYU, pres.; KN8EKG, vice-pres.; KN8EJR, treas.; and KN8EJN, secy. STI's XYL presented him with a baby boy. We hope WPV has fully recovered from the accident to his left hand. The Fort Hamilton ARA operates a theory class. Columbus ARA's *Carascope* reports TOO spoke to the club on "Measurement by Means of Radioactivity." JND enlisted in the US Air Force. SJQ has a new 10-meter beam. More new appointments are AIVE as OBS; SGX and GEZ as ECs. The Governor of Ohio has set aside the week of June 16 to 23 as Radio Amateur Week. Traffic: (Mar.) W8UPH 784, VTP 716, SZU 265, GFE 188, DAE 110, HXB 100, W9VBV/8 51, W8IIR 50, AL 46, VYU 45, K8DDG 25, W8LZE 12, ARO 9, AQ 6, HZJ 5, LMB 5, EEQ 4, QIE 3. (Feb.) W8PBX 14, PLQ 5.

(Continued on page 120)

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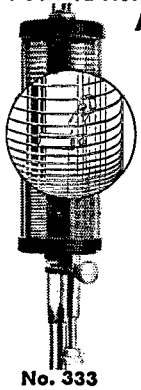

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.HY "Q" construction with wider spacing of turns for high frequency bands. Use as center or base loaded antenna with 60" whip.

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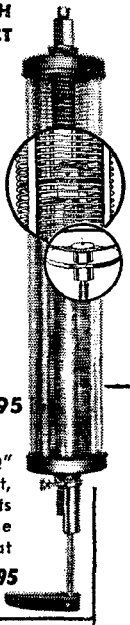

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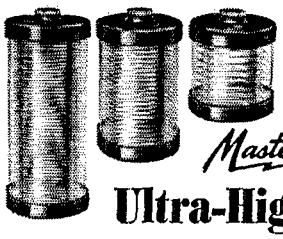
. . . engineered to provide the highest "Q" consistent with good design. Compact, extremely rugged, yet lightweight, its operation assures precision tuning with the new adjustable silver-plated roller that stays put! Perfect for 40-20-15-11-10 meters. "Get 5 Bands Plus on 1 Coil." **$9.95**



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THE NEW DIAGONAL SWIVEL BALL-JOINT LOCKS IN ALL POSITIONS

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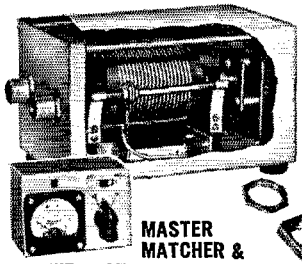

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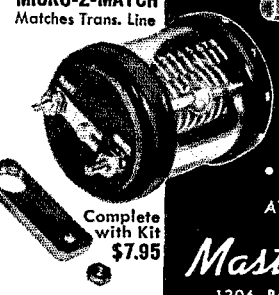
Automatically tunes the *entire* band from the driver's seat!
6 or 12 volt models **$24.95**



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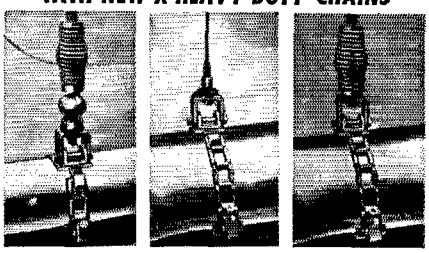

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GROUND PLANE
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FOR 6 METERS
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Aluminum alloy tubing, coax cable connector. For medium or low powered trans.

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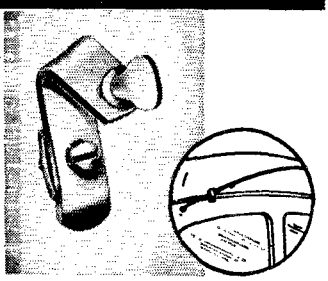

TENAHOLD No. 10H

Protects antenna, prevents whipping. Easily attaches to car. **$1.00**

HUDSON DIVISION

EASTERN NEW YORK—SCM, George W. Tracy, W2EFU—SEC: KGC. RM: BXP. PAMs: GDD, IJG and NOC. Section Nets: NYS on 3615 kc. at 1900, NYSPTEN on 3925 kc. at 1800, SRPN on 3980 at 1130, IPN on 3980 kc. at 1530, MHT on 3716 kc. Sat. at 1300. JZK was speaker Mar. 8 at the Albany Assn. NYSPTEN certificates were awarded to K2GCI and NZM for regular attendance. The Crystal Radio Club sponsors an "on-the-air" activity program each month. Members must work specified objectives and confirm with QSLs. If you want full particulars for your club, drop a line to EHZ. New appointment: K2TAZ as ORS. The Radio and Radiological Service topic for the March Schenectady Assn. meeting was presented by specialists at GE's Research Lab. A Spring Cleaning Auction brought a large ham group to the Apr. 5 meeting of the Harmonic Hill Radio League at Mount Kisco. SZ, the RPI Club, has finished a new 6-meter amplifier using p.p. 4-65As, which should put them on the map from their hilltop QTH. WQL is trying out 20-meter phone with a new vertical antenna. All E.N.Y. Novices are invited to join the Mohawk Hudson Training Net (MHT) listed at the beginning of this column. All appointees are reminded to check the expiration dates on certificates and send them to the SCM for endorsement. K2HPQ set up a rig to handle traffic at the Boy Scout Show in the Albany Armory. State Radio Officer BGO reports a communications exercise for the State RACES Command Nets on 3993 and 3509.5 kc. will be held on June 16. The fourth anniversary dinner of the Harmonic Hill Club was held recently. The club combined with the Westchester Club to witness a demonstration by AMJ, of Hammarlund Mfg. Co. Traffic: (Mar.) W2BXP 470, PHX 173, EFU 146, ATA 131, K2QVA 63, LKI 55, HPQ 52, CKG 23, HNW 6, W2BSH 5, TYC 3.

NEW YORK CITY AND LONG ISLAND—SCM, Harry J. Dannals, W2TUK—SEC: ADO. PAM: OBW. RM: WFL. Section Nets: NLI, 3630 kc. nightly at 1930 ESDT and Sat. at 1915 ESDT; NYC-LIPN, 3908 kc. Mon. through Sat. from 1730 to 1830 ESDT; NYC-LI AREC, 3908 kc. Sun. at 1400 EDST. Our section nets plan to continue full-time operation during the summer season. Check in on these nets as often as possible—you will find the welcome mat always out. OBW reports one of the best months on NYC-LIPN with 110 stations handling 382 messages. K2DEM made the WNH and W-Del certificates and also received his YLCC-150 endorsement. The gang at AEE has completed WAC and WAS on 75 meters. K2VXX has received his Novice and Tech. Class tickets. K2PGP now has 63 countries. K2KXZ is now using a Matchstick vertical. A new DX-100 and three-element 10-meter beam are in use at K2PHK. New members of the Tu-Boro RC are K2s DZO, OHK, QPP, VBH, VBI and HB9OI. K2RKL has a new VHF-152-A and 220-Mc. converter. He is soon to be heard on 50-Mc. s.s.b. A new antenna at K2AAW has improved his signal. K2EEK soon will be heard on 220 Mc. with 20 watts to a seven-element Yagi. New officers of the Frog Hollow RC are GFK, pres.; K2IEH, vice-pres; JU secy.; and K2QOP, treas. K2EOR has his new kw. ready to go. All MARS members interested in operation on a v.h.f. net should contact K2EQH for information. HQL received his DXCC-170 endorsement and added a Collins 310-B exciter to his shack. IN is operating on 50 Mc. from Staten Island. K2CCM is looking for 220-Mc. activity in the vicinity of his Massapequa Park QTH. K2DDK is returning to operation on 80 and 40 meters after many months of v.h.f. work. K2OUD has worked 32 states and now has an S-29 receiver. The Midwood HS ARC, Brooklyn, has the club station, YTU, back on the air. K2SNM dropped the "N" after finishing his Novice term with 36 states worked on 40 meters. K2KND is half way to DXCC with 56 countries. The new two-element 10-meter beam at K2UOY is increasing his DX total, with only Africa needed to complete WAC. K2PAY is now on 144 Mc. K2MYW and his Valiant need only Utah and Wyoming for WAS. KN2UBG worked a WH6 on 40 meters with his Adventurer and NC-300. KN2YKP is on 80 and 40 meters. The Hillcrest RC, with operators K2s LIO and QEP and KN2s UDT, UFS and YQL, worked portable with a Communicator on 2 meters from the Sanita Hills Boy Scout Camp at Holmes. New 6-meter stations on the 50.25-Mc. net are K2s KOH, PQY, QUH and SNW. K2UJT is working airborne mobile with a Gonset on 50 Mc. HAE has a new DX-100. MQB/4 sends an early warning from Tennessee that he'll be very active in this year's "SS" from East Hampton after retiring from 20 years of Navy service. KH6BPZ/2 is runinng a Viking I and SX-99 and is awaiting the return of his K2DDC call. HQD joined the married ranks. BQP is off to DL4-Land. K2LUR still is looking for Utah to complete her WAS. K2PWH built the *QST* "TVI Special" for 50 Mc. and reports

(Continued on page 122)

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Osc.-VFO	6AQ5	6AQ5
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Audio Preamp.	12AX7	12AX7
Audio Output	6BK5	12BK5
Voltage Reg.	OA2	OA2
CONVERTER		
RF Amp.	6AK5	6AK5
Osc.-Mix.	6U8	6U8

Power up to 4 watts using auto radio power supply—up to 12 watts using external supply.

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satisfactory operation. KN2YJC is looking for DX with his 25-watter. Your SCM's brother now signs 5ZRA/6 from the Golden State, while OM, GG, soon will be heard from the Sunshine State in W4-Land. Good luck on Field Day and remember your extra credit messages to the SEC or SCM. See you from YKQ/2. Traffic: (Mar.) W2KEB 2198, KFV 668, K2DEM 342, KND 253, PHF 189, AMP 185, ECY 138, W2AEE 134, K2QZS 100, W2BO 89, K2PSE 68, BH 64, W2TUK 43, DRD 39, K2CRK 36, PGP 35, W2GP 29, K2LUM 24, W2UGF 24, K2RJO 23, GLP 21, W2PF 17, K2KSP 16, UOY 16, KXZ 15, W2DID 11, JGV 11, K2JZR 10, W2IAG 8, EC 7, K2RKL 7, DQD 6, W2IVS 6, K2AAW 5, EEK 4, W2JBQ 4, K2EQH 3, GHS 2, KIX 2, W2LPJ 2. (Feb.) K2LTI 267, KND 30, KSP 30, EQH 15, UOY 14, PAY 13, MYW 7. (Jan.) K2EQH 76.

NORTHERN NEW JERSEY—SCM, Lloyd H. Manamon, W2VQR—SEC: HN. PAM: VDE. RMs: BRC, NKD and CGG. The Penn-Jersey Radio Club dinner was a huge success with 50 in attendance. K2QYI has increased power to 120 watts and is working out very well on 20, 15 and 10 meters. His rarest DX catch so far is IT1AGA on 40 meters. MLW made BPL for the third time and is eligible for a medallion. Frank is the first member in NNJ to receive this award. NJN report for the month of March: Sessions 31, attendance 467, traffic 232. New stations on NJN during March were WOJ, KFR and K2MUE. RG, ZI and BZJ are conducting operator training for RACES c.w. net operators. VDE took part in the New Hampshire QSO Party and worked all ten counties plus a score of 320 for a WNH certificate. EWZ is TVI-proofing the transmitter. BRC changed his QTH to 427 Rahway Ave., Elizabeth, on May 1. K2AFQ is looking forward to the coming summer vacation from college so that he may catch up on his OO activity. K2BHQ is building a new mobile rig for 10 meters which will be used for transmitter hunts. GVU is working on his s.s.b. rig. The Livingston Amateur Radio Club held its annual dinner in Cedar Grove with 28 members and their XYLs attending. K2JTU is a regular member of NJFN. K2OAM is NCS for TCPN on Thurs. nights. The Stevens Radio Club of Hoboken became an affiliated club in March. Good luck and let's hear from you monthly. AZL and CXY were recent speakers at the Central N. J. V.H.F. Society meeting. This group is very active in the Satellite Tracking Project and has obtained a field site in the western part of the State for future operations. The group needs information on antennas for this project and desires assistance from anyone who can help out on this subject. TTM is the motivating force behind this group. The members lay claim to being the hottest v.h.f. group in New Jersey and desire recognition in the respective columns of *QST*. CVW worked eight new countries in the DX Contest. K2MLN reports a new net in operation, the Forty NNJ Net. It meets on 7105 kc. at 1715 EST daily. New members are solicited. VMX reports that his XYL, KN2UXJ, is attending code classes at GSARA. K2RGS has his DX-100 back on the air with an assist from K2OCW. K2GBP was home on leave from the Naval Academy. K2SZO has a new 40-meter antenna. K2SKK is going RTTY with the home call, 1ZXA. The NJFN is having a special sticker made for QSL cards of net members. K2PIM received a new "Bug Key" on his 15th birthday and went right out and picked up seven new countries and a new continent with the new key. VCZ has a new Viking KW, greatly increasing his OBS range. K2GIF is MARS director for New Jersey. LRO has been appointed Field Day chairman for the Tri-County Club. K2KFE and K2BZX were hosts at a recent meeting of the RBRA. Guest speaker was VPL, who lectured on transistor circuitry. K2KFE has been appointed Field Day chairman of the RBRA. K2GE now is active on 40-meter c.w. New members of the Irvington Radio Amateur Club are K2TYC, VEY, KN2SOM and UGE. KN2YZD is a new ham in Northern New Jersey. DLS was a recent speaker at IRAC. K2ICE has worked OUS a total of 1000 times. This is quite a record for both of them. K2IPR has a new NC-300 complete with converters. YLS is madly at work on his new Viking 500 kit. K2DHE has a new Ranger and 6N2 rig. Traffic: W2MLW 489, VDE 147, K2EQP 130, W2BRC 119, K2AJV 63, MLN 58, BHQ 57, MMM 43, W2RXL 38, DRV 34, K2OAM 29, W2VMX 28, K2MFF 27, RGS 25, W2ZVW 18, K2GIF 16, W2OXL 12, K2BWQ 10, EMJ 10, W2KFR 10, CVW 9, K2GIQ 5, W2CJX 4, K2SKK 4, W2NIY 3 WOJ 3.

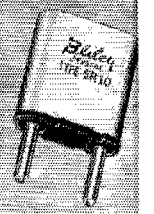
MIDWEST DIVISION

IOWA—SCM, Russell B. Marquis, WØBDR—One hundred stations of the 75-Meter Phone Net participated to furnish emergency communications for two railroads, A. P. and Western Union during the worst spring bliz-

(Continued on page 124)

BLILEY NOVICE BAND CRYSTALS

BAND	MULTIPLIER	CRYSTAL FREQ. RANGE	TYPE	PRICE
80 Meters	1	3700.0 to 3750.0 kc's	AX2	$2.95
40 Meters	2	3587.5 to 3600.0 kc's	AX2	2.95
40 Meters	1	7175.0 to 7200.0 kc's	AX2	2.95
15 Meters	1	21,100 to 21,250.0 kc's	SR10	8.50
15 Meters	3	7033.33 to 7083.33 kc's	AX2	2.95
15 Meters	6	3516.66 to 3541.66 kc's	AX2	2.95
2 Meters	6	24,166.66 to 24,500.0 kc's	SR10	8.50



AX2 SR10

Bliley CRYSTALS

BLILEY CRYSTALS FOR SPOT FREQUENCIES IN NET OPERATIONS

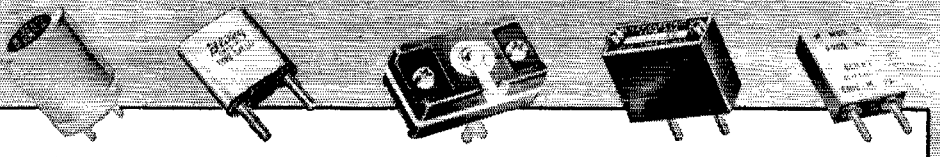
MC9

TYPE	APPLICATION	TOLERANCE	PRICE
MC9	3 mc-12 mc experimental frequencies	± .03%	$6.50
SR10	12 mc-27.5 mc experimental frequencies	± .03%	8.50

SR10

Bliley CRYSTALS

BLILEY CRYSTALS FOR AMATEUR • EXPERIMENTAL CITIZEN'S BAND • SINGLE SIGNAL FILTERS



KV3 SR10 CF6 AX2 MC9

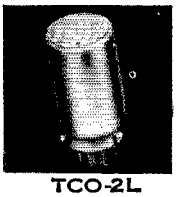
TYPE	APPLICATION	TOLERANCE	PRICE
KV3	Reference Frequency 100 kc	± .005%	$8.50
MC9	Marker Frequency 1000 kc	± .05%	8.00
MC9	13.6275 mc (Multiplier to 27.255 mc) CITIZEN'S RADIO SERVICE (CLASS "C")	± .04%	5.50
SR10	27.255 mc (3rd Overtone Crystal) CITIZEN'S RADIO SERVICE (CLASS "C")	± .04%	5.50
CF6	455 kc — 456 kc — 465 kc Single Signal Filters	± 5 kc	4.50
AX2	1800-1825 kc; 1875-1900 kc; 1900-1925 kc; 1975-2000 kc	See Note A	3.75
AX2	3500-4000 kc; 7000-7425 kc; 8000-9000 kc	See Note A	2.95
AX2	14-14.5 mc	± 10 kc	3.95

Note A: We will supply to integral spot frequencies (no fractions) as ordered; calibration ± 500 cycles in factory test oscillator.

NEW HIGH STABILITY PACKAGE WITH 100 kc AND 1000 kc CRYSTALS

This compact temperature controlled package provides a high stability reference source at both 100 kc and 1000 kc. Precision reference for general amateur use.

TYPE	DESCRIPTION	STABILITY	PRICE
TCO-2L	6.3V Oven	75°C ± 5°C	$ 9.00
BH6A Crystal	1000 kc	± .0002%	12.50
BH9A Crystal	100 kc	± .0005%	11.00



TCO-2L

Crystal units described are calibrated in recommended oscillator circuit—adjustable to zero beat (at 75°C) in this circuit.

BLILEY ELECTRIC CO. UNION STATION BUILDING ERIE, PA.

Major producers of crystal units, crystal ovens, oscillator assemblies and solid ultrasonic delay lines for commercial and military equipment.

zard in the Midwest in many years. The list of stations is too long to mention here but our thanks and congratulations for a good job. HWW and EFL were re-elected president and vice-president of the Central Iowa Radio Club, with GJT being elected vice-pres. New officers for the Des Moines Tech High School Club are YDI, pres.; SMS, vice-pres.; KØCLS, secy.; ZAQ, program chairman; KØAPS, publicity chairman. QVA reports the following new Tall Corn members: KØCYF, GBD, GXC, WØSLC and COD. YDV has received an OPS appointment. It is our sad duty to report that WCC and GAF have joined Silent Keys. The Hamilton County Radio Assn. is now ARRL affiliated. LGG reports that the annual TLCN Party will be held in Des Moines on June 1. The Cedar Valley Club has reached an all-time membership high of 115 members. CZ has received his traffic medallion. CXQ has received a 100 Club Traffickers certificate. UJC, Asst. SCM, has a new 75A-4. New Novices reported in Webster City are KNØIRW, JDK and JCS. Traffic: (Mar.) WØBDR 1701, PZO 1471, SCA 1440, LCX 1047, LGG 808, CZ 312, GXQ 287, BLH 142, YAL 139, UTD 122, KVJ 117, QVA 102, KØDZX 96, WØNGS 72, VWF 65, KØAAH 38, AIC 24, WØFMZ 24, LJW 23, UTX 23, KØCLS 22, WØGQ 17, KØWAD 15, WØWLT 15, AHZ 14, KØCYF 14, WØYI 14, KØBEC 8, WØCGL 8, REM 7, FDM 6, SEF 5, DJY 4, SLC 4, QQA 2, ZPM 2, HNE 1. (Feb.) WØGQ 8.

KANSAS—SCM, Earl N. Johnston, WØICV—SEC: PAH. PAM: FNS. RM: QGG. Handling storm traffic during the Great Plains Blizzard of Mar. 23-26 was the chief activity for most Kansas amateurs in March. The newly-organized Fort Hays QSO Club and its station, QML, got a good workout in the blizzard. Officers are WAY, pres.; KØCBN, vice-pres. and act. mgr.; and TSD, secy.-treas. Faculty sponsors are KØHIC and RBO. The Scott County Amateur Radio Club issues certificates to those working all its nine members—YLO, ROZ, MI, QNJ, EUP, ZUX, BYV, KØDIW and KØDZF. UOL, of Herndon, helped care for 57 stranded persons in the blizzard besides handling emergency traffic. VBQ is new president of the Lawrence ARC. The Smoky Valley Radio Club of Abilene has just become an ARRL affiliated club. YVM, of Chanute, is moving to Butler, Mo. NSH is going to high-power. QFQ has just completed a 600-watt rig. LQV is on RTTY. The KVRC, of Topeka, is getting ready for Field Day. The club has a new 5-kw. power plant. KXB, operating RTTY, is a new OBS. At Wichita LZJ is a new OBS on 10 meters. Here's a record-breaking traffic report, thanks to FNS and storm reporters. Traffic: (Mar.) WØBLI 439, TOL 348, NIY 317, FNS 296, QGG 261, OHJ 195, QML 185, KØBXF 122, WØIFR 101, VZM 93, QQQ 86, UOL 81, YLO 72, ONF 70, ABJ 66, OKH 60, BET 56, SAF 55, IHN 52, KNØHSF 46, WØFON 42, SYZ 41, FDJ 35, WWR 34, ICV 30, ROZ 30, TNA 30, LOW 25, JDX 22, KNØHVG 20, KØDIW 19, WØMXG 16, QNI 16, SZF 11, DEL 10, LIX 10, SKW 9, VGE 9, KØBJD 7, WØUTO 7, YVM 7, MI 6, MJF 5, ITO 4, KQC 4, QVO 4, KØAHW 3, BIX 3, WØYIP 3, DIP 2, OAQ 2, KØDZF 1, WØLQX 1, QNJ 1, UAT 1, WMV 1, ZUX 1. (Feb.) WØOAQ 50, QQQ 44, VZM 8, UAT 1.

MISSOURI—SCM, James W. Hoover, WØGEP—SEC: BUL. RMs: OUD and QXO. PAM: BVL. BUL has been appointed Section Emergency Coordinator. The Missouri School of Mines Radio Club has received ARRL affiliation and has just completed a new shack for the club station, EEE. KØDEY received a 20-w.p.m. Code Proficiency certificate. The St. Louis Amateur Radio Club held a Ham Hop, featuring an all-ham band, with 50 hams in attendance. OIV has a higher-powered final with push-pull T-55s. WFF has received a WAS certificate. The Three Rivers Ham Club, Appleton City, doubled its membership to 14 during the last year. JEG is the club president. KØAYI, age 13, has 34 countries confirmed. KØRIB has been elected president of the Harvard Wireless Club at Harvard University. The Cass County Civil Defense Net now operates on Tue. only, 3504 kc. 1930 CST. ZSL put up a 2-band quad, 45 feet high, which lasted through the DX Contest and then succumbed to the wind. The St. Louis Amateur Radio Club Net, 51.9 Mc., had a record attendance of 25 on Mar. 25. Traffic: (Mar.) WØCPI 1105, GAR 534, VPQ 355, BVL 216, UXT 208, OUD 96, GBJ 91, YVM 70, KIK 59, WAP 59, VJD 58, IIR 46, MHS 42, RTW 34, CKQ 31, EEE 29, HUI 27, EBE 24, YKC 22, WFF 21, KA 20, KØAQO 19, WØLQC 18, BUL 11, KØIHY 11, WØWYJ 11, EPI 10, OVV 10, KØCCL 6, WØGEP 6, KØHBC 6, DEX 5, WØVFP 3, KØDEY 2, WØOIV 2. (Feb.) KØAQO 32, WØWFF 22, VFP 7, EDA 5, KA 4.

NEBRASKA—SCM, Floyd B. Campbell WØCBH—SEC: JDJ. PAM: MAO. UJK and NHT maintained a communications link between Fairbury and Philipsburg, Kans., during the recent snow storm. Crews and trains

(Continued on page 126)

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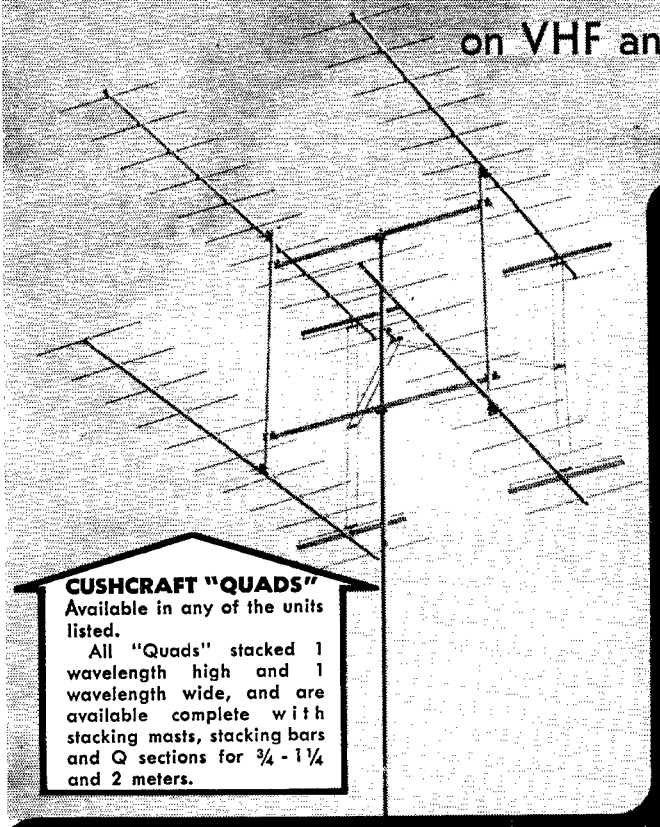
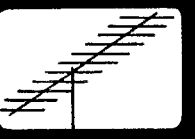


6 METER
A - 50 - 5
$19.50



¾ - 1 ¼ M.
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$8.50
A - 430 - 11
$6.50

2 METER
A - 144 - 7
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A - 144 - 11
$11.50

CUSHCRAFT "QUADS"
Available in any of the units listed.

All "Quads" stacked 1 wavelength high and 1 wavelength wide, and are available complete with stacking masts, stacking bars and Q sections for ¾ - 1¼ and 2 meters.

ANTENNA NO.	BOOM LENGTH	APPROX. D. B. GAIN
A-50-5	120"	9.0
A-144-7	98"	10.0
A-144-11	144"	13.0
A-220-11	102"	13.0
A-430-11	57"	13.0

GENERAL SPECIFICATIONS:

All Elements are spaced at .2 of wave length except A-144-11 which is .18 wave length. Directors tapered for better band width. S.W.R. at frequency 1.2 to 1 or better. Transformer type dipole for 300 ohm match. Elements of solid aluminum rod, boom and dipoles are made of 1" heavy wall aluminum tubing, brackets of aluminum alloy and insulators of XX grade "Phenolite." All fasteners cadmium plated. All elements are pre-assembled on the boom.

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were dispatched and train orders relayed. QHE, FTQ, FRV, FLF, YMU, AYS, ERM, HTA, HQN, ZSW/M, SPK, IXB, ZNI, PNV, YOS, TIP, AEM, EXP, FXH, LJO, MAO, NGZ, OOX, VGH, CC, NRT, ZXM, EUT, QMY, BOQ, EFV, HOP, HQE, KLB, LEF, SPV/M, NHS, PDJ, VZJ, ZJF, ZOU, VUO, NZ, NRJ, MKP, HXH, EGQ, VRE, DHH, LUS, VAU, KFY, DDP, CGF, LWK, FBY, CDG, BXY, AFD, WBF, BDF, FBD, EPI, NRL, EWX/M, DUU, BRS, DGW, BSG and EWU assisted during the storm. The Wheat Belt Net has changed from 3825 to 7240 kc. (1230 Sat.) for the summer. DX on 15 and 20 meters is booming at Scottsbluff. KØDFO needs information on XF1A. KDW is EC for Danbury and vicinity. The Falls City Amateur Radio club has a school of instruction for radio theory and code to train radio operators for civil defense. ORW/6 is looking for Nebraska on 10 meters mobile (28,950 kc.). YHN has the new exciter operating on 10, 15 and 20 meters. FLA has installed his rig in a nice cabinet in the living room. CSW is cutting a rug on 10, 20 and 40 meters. YUF is building "multitudinous" verticals in his back yard. KFE made a test run of his new transmitter and is now in full swing. KØBDF is keeping regular skeds with 6SOU (nephew) on 10- and 20-meter phone and c.w. KYM was elected vice-president of the Prairie Dog Club (S. Dak.). Traffic: (Mar.) KØDGW 193, WØZJF 138, MAO 106, NHT 84, UJK 60, NIK 58, KØDFO 51, WØIXB 41, ZWG 40, KØCDG 38, WØHQN 30, DQN 29, LJO 23, SPK 21, KØBDF 20, KNØHUF 20, WØOCU 19, TIP 16, KDW 15, BOQ 14, QKR 13, KØELU 12, WØEGQ 11, ZWF 11, KLB 8, ZOU 8, OOX 7, VGH 7, HOP 6, PQP 6, QHE 6, URC 6, NGZ 5, CBH 4, KØELQ 2, WØVRE 2. (Feb.) WØUJK 14.

NEW ENGLAND DIVISION

CONNECTICUT—Acting SCM, Victor L. Crawford, W1TYQ—SEC: EOR, RM: KYQ, PAM: YBH. Traffic Nets: MCN, Mon.-Fri. 0645 on 3640 kc.; CPN, Mon.-Sat. 1800, Sun. 1000 on 3880 kc.; CN, Mon.-Sat. 1845 and 2200 on 3640 kc.; CTN, Sun. 0900 on 3640 kc. EFW reports MCN met 20 times during March handling 91 pieces of traffic. High QNI went to BVB and IBE, 20; RFJ, 19; EFW and K2EQP 16. YBH advises CPN held 31 sessions handling 225 messages for an average of 7.3. Total QNI was 797. QNI honors go to FYF, VQH and YBH, 30; HID, 29; VIY, 28. KYQ reports the early session of CN handled 299 pieces of traffic in 26 sessions with an average attendance of 13.2. Late session CN also met 26 times handling 77 messages with an average attendance of 5.1. With more daylight and outdoor work here why not check in the late session of CN. KN1BFJ dropped the "N" and is on 6 meters with a Communicator. 1OV is mobile on 10 meters with a new Transcon. AW is s.s.b.ing with a B&W plus linear. BDI reports DX conditions good. CLH has 6N2 plus Tapetone converters. IUC has a new SX-100. KN1BKL is a new Technician Class licensee in Bridgeport. TYQ is on 2 meters with a Communicator and a six-element beam. EJH, assisted by RLD, GWW, FRN and JVQ, moved to a new QTH. WN1MDB is looking for QSOs on 21,225 kc. WZJ (ex-Mass.) is new in Manchester. KN1AVT and KN1BJU are new Novices in Winsted. ECH would like more stations to check in ESPN, 3840 kc. at 1530 daily. RFC and TD find little time for hamming because of work. HCZ enjoyed a trip to Florida. ETF reports the "Monimatch" from a recent *QST* works fine. KN1BIJ, BJK and BJL are new Novices in New Haven, thanks to WHL's code and theory classes. OO reports were received from BVB and DHP. CUT and FVV submitted OES reports. New appointment: ACR as ORS. Renewals: GVK and AVS as ORSs, TCW and AMJ as ECs, URC as OES. Traffic: W1FYF 411, KYQ 308, TYQ 296, AW 265, YBH 261, EFW 243, RGB 126, IUC 121, AMY 117, GVK 88, DHP 86, AVS 74, HID 65, BD1 63, NJM 52, RFJ 47, CUH 38, VIY 35, EKJ 32, FHP 30, BVB 27, ULY 21, WZJ/1 19, ECH 14, EBW 13, YU 13, ACR 10, EJH 7, GEA 6, GVJ 5, WN1MDB 3.

MAINE—SCM, Allan D. Duntley, W1BPI/VYA—As my term of office as SCM draws to a close, I want to take this opportunity to bring to your attention some of the highlights of my tenure. First, let me express my deepest sympathy to those of you who have lost loved ones during the past two years; there are several voids that can't be filled in our organization. Ours is a choice and honored group made up of people from every walk in life. I know of no other group or organization where everyone is known by his first name; a group that is ready at any time to help anyone regardless of the circumstances. Let me extend to all of you my thanks for your patience with me and appreciation of your untiring assistance. You have all been "swell." As I write this, my successor has not been selected. I sincerely hope someone will come forward to carry on

(Continued on page 128)

the duties of SCM. I hope you will all understand why it is impossible for me to continue for another term. My duties in the Town are growing more and more every day and need my attention. I have tried to serve you well for two years and feel I have done my duty. Please continue to support the League and accept the various appointments available to you. Let's not forget the hamfest in Augusta June 16. The Calumet Club is the place. Traffic: W1LKP 201, CEV 75, EFR 48, BCD 40, FZK 25, EPN 15, HYD 14, UDD 14, KFY 9, OTQ 9, FNU 8, FLV 5, GYJ 5, HGI 5, HZZ 2, HTD 1.

EASTERN MASSACHUSETTS—SCM, Frank L. Baker, jr., W1ALP—This section is made up of the following counties: Barnstable, Bristol, Dukes, Essex, Middlesex, Nantucket, Norfolk, Plymouth, Suffolk. If you live in any of the other five counties you are in the Western Massachusetts Section. New appointments: BCN, R.O. for Sector 2-C, as EC; SMO and FJJ as ORSs; BCN and FHJ as OBSs. Appointments endorsed: RCQ and AGX as ORSs; AUQ as OO; ABJ, AR and HIL as OPSs; BHD as OBS, KT Georgetown, VIN Carlisle, KEK Lynnfield, AR Belmont as ECs. Heard on 75 meters: KGU, ZBT, SON, LID, KSU, EUT, JSS, GAC, MA, WTY, GCU, GAX and K1AKX. On 2 meters: WHN, WC and K1BJG. MVM is new in Gloucester. K1AUP passed the General Class exam. GDJ has 250 watts on 10 and 15 meters. NF has a Mark 2 Monimatch. The GBARS had SX as a speaker. UNA bought a house in Marblehead. HIL gets on week ends on 75 meters. WJW now is at Raytheon. ATX has a DX-100 and is working DX on 80-meter c.w. BGW says the East Coast RTTY Net has between 12 and 15 stations reporting in each Wed. The Eastern Mass. Net is on 3660 kc. at 7 P.M. UE is on daily at 1300. DOF renewed as EC and OPS. HTU is on 50 Mc. with a TBS-50. BPW made BPL for the third time. FJJ was in the N. H. QSO Party. SMO is building up the ampilfier with a pair of 813s. WU built a ground-grid final with a 304-TL. RCQ is hitting the DX. The Pequossette Radio Society is now affiliated with ARRL. HUB is secy.-treas. EPE says 160 meters has been poor. AUQ lost the tree holding his antenna. LM is on the sick list. FHJ is on 10 and 15 meters with a DX-100. DDC is working all bands with an Elmac AF-67 and joined QCWA and OTC. Area 1 Radio Comm. met recently with ZYX, AR, TQP, KTG, ALP and IPA present. WZJ, who used to operate K1AIR, is on in Connecticut. ALP spoke at the GBARS Club. Everett has a 6-meter frequency for c.d. work. A general meeting of all members of the Central TVI Comm. of Greater Boston was called by Mr. Hallenstein of the FCC recently. SAD is now chairman of this committee. HDQ spoke at a meeting of the QRA. ALP attended and met a lot of the old gang. VRK took a trip to KP4-Land. AGX is helping out with code and theory. The Braintree Radio Club held a meeting. The South Shore Club is holding regular meetings twice a month. The T-9 Radio Club held its annual ladies' night at the Allenhurst in Danvers. ABJ is busy at school. ADX is R.O. for Truro. LRO is R.O. for Provincetown. CTZ is now R.O. for Sector 2-A. UIR is very active on the air on many bands and in several nets. THO, our 6-meter PAM, reports that AQJ, CFJ, CVD, EFV, EGE, ENS, EOA, EQW, EUI, FWP, GYZ, HFF, HVJ, IAA, ION, JGV, LJ, LOW, MDD, MEU, SAC, TCH, VXE, WAE, YEI, YDT, ZZS, JIG and ZMM are all active. THO bought a heavy-duty battery for his Buick. QOI has mobile on 2 meters going again. Look for him at noon-time. AKN is feeling better. The Framingham Radio Club has a 6-meter net on 51 Mc. at 1945 on Wed. NJM and ICP spoke at one meeting. WN1KSX is new. VWZ is on 2 meters. KN1ACM is PSG's XYL on 2 meters. DDC and AKN sent in EC certificates for endorsement, as did SPL as OBS. IWK has his Tech. Class license and will be on 6 meters. His brother is KN1BGJ and on 2 meters. BGW went to the IRE Show and the RTTY Dinner. TZ has a Luenberg beam for 2 and 6 meters. KTG, ALP, LLY, ZYX, DWY and TXZ were at the Area 1 Radio Comm. meeting. Radio Officers for Area 1 are as follows: Area 1 ZYX. Sector 1-A TQP, Sector 1-B ALP, Sector 1-C CQ, Sector 1-D KTG, Sector 1-E AWA, Sector 1-F QQL, Sector 1-G TXZ. For any information on c.d. work or RACES, contact your Sector Radio Officer. Braintree has a 6-meter frequency for its Gonsets. DWY is EC for Beverly. AHE is endorsed as OES for another year. K6YRK, ex-1TON, writes from California that he is on 10 meters and looking for the gang at 6 P.M. EST. Rockport has its RACES license, reports IBE. CXJ is back on 10 meters. AGR is on a trip to W4-Land. SXD has an inside antenna for 10 meters. TNA is back at school. QMU has the rig on 6 meters. JOW has a small boat. CGU is working on his boat. UKA is going on 6 meters. PIW is back on 10 meters with a vertical antenna. FRZ is teaching boating in Brockton. MJA is studying. NEM is working for Sylvania. NLL is re-

(Continued on page 130)

NEW SPORTSMAN SENIOR POWERCON*

supplies 110 volts AC from self-contained 12-volt car battery

$79.50

Amateur Net
Less Battery

Now 110 V.A-C...

Packaged Portable Power

For Mobile Rigs...Field Day...Civil Defense...Emergency Standby

The Sportsman Senior Powercon Inverter is a completely self-contained source of 110-volt AC power that may be used with any AC-operated equipment that draws up to 140 watts continuous, or 175 watts for not more than 15 minutes out of one hour. The unit includes a rapid charger, a heavy-duty vibrator inverter, and a compartment that will accommodate a standard 12-volt car battery. Battery can be recharged overnight from any 110-volt AC outlet. Overall size: 14" x 9½" x 9½".

With a fully charged battery, the "Sportsman" will provide the following services without battery recharge:

Intermittent: 4½ hours of operation (transmit 175 watts, 25% duty; receive 60 watts, 75% duty). *Continuous:* 3 hours, 140-watt load; 4 hours, 110-watt load; 7 hours, 60-watt load.

The following bulletins on the "Sportsman" and Standard Powercons are available from your local electronic distributor, or from Cornell-Dubilier Electric Corp., South Plainfield, N. J.: *Sportsman*, EB-3015; *Standard Powercons*, EB-3006; *Accessories*, EB-3013.

STANDARD POWERCONS: 6VDC - 110VAC, 20-150 WATTS; 12VDC - 110VAC, 20 - 250 WATTS. SELF - REGULATING SINE - WAVE MODELS AVAILABLE

CORNELL-DUBILIER POWERCONS

building. NSH is looking for a 6-ft. dish. LMU is trying pre-amp on 10 meters. NAV has a v.f.o. on 6 meters. AHE, HIX, HLQ/1 and ZAP are in Stowe, and they have RACES with two 6-meter Gonsets. AHE is helping out in the IGY program. The Winthrop group still is holding regular drills with a good turnout. BB and his XYL are going to Europe for 5 weeks. Traffic: (Mar.) W1EMG 291, BPW 266, EPE 254, IBE 195, EAE 97, AVY 84, GNX 59, FJJ 43, BY 32, TY 21, TZ 20, AUQ 14, SMO 12, AHE 11, BGW 9, AKN 8, WU 8, RCQ 7, LM 3. (Feb.) W1IBE 28, ATX 13, BGW 11, AHP 3, EAE 3, CZW 2, KLQ 2, NUP 2, IRV 1. (Jan.-Feb.) W1KBS 16.

WESTERN MASSACHUSETTS—SCM, Osborne R. McKeraghan, W1HRV—SEC: RRX. RM: BVR. PAM: MNG. This section is made up of the following counties: Berkshire, Franklin, Hampden, Hampshire, Worcester. If you live in any of the other 9 counties, you are in the Eastern Mass. section. The WMCW net is doing a fine job on 3560 kc. Mon. through Sat. at 1900 EST. The net needs more representation from the Worcester Area. The West. Mass. Phone Net on 3870 kc. Wed. at 1800 EST is developing into a fine net with very good coverage of the section and a dozen or more stations reporting in each session. Section Net certificates have been awarded to the following c.w. men who have been doing a good job on MMN: DGL, DLS, DZV, FZY, JAH, JDX, KGJ, MND and SVC. EC endorsement goes to SPF for the Worcester Area. AJX and DGA have been appointed OO. The Wachatinock Radio Club, Box 108, East Templeton, recently was affiliated with ARRL. The Chicopee High School radio class has turned out quite a few Novices, the latest being KN1BKD. Other new Novices are BBC and BBD, brothers in Holyoke. AYK in Cheshire and BGB in Pittsfield. Lanesboro has received RACES approval. LDE made BPL again. PHZ has worked KZ5, KL7 and KP4 with his mobile rig from the Berkshire Hills. The DX Contest helped AZW to raise his countries worked total to 112. EOB, RB, WEF, ICW and JYH worked up some good scores in the contest, I hear. HDM won first prize with his home-built rig at the Springfield Tech. High School Science Fair. JKD has a new Viking Valiant. NPL has a new rotator for his 10-meter beam. HRV is back on 10-meter mobile after acquiring a Gonset Super Six. ESA, HRV, LJQ, KFO, RFU, STR, WEL, WFL, VNH and several others from the Springfield Area enjoyed the v.h.f. dinner in West Hartford. JYH is keeping skeds with KFV, who recently moved to Florida. DXW has completed a TVI-proof 400-watt final. KN1ABS has a new Globe Scout. BYH has his 6-meter mobile ready to go. FZY is hooking some good DX on 20-meter c.w. Hams in the Worcester Area regret the passing of SWL G. Morton Esten of North Grafton who, although not a ham, was an avid listener and performed many services for his ham friends. Traffic: W1LDE 805, UKR 192, DLS 160, UEQ 135, BVR 93, FZY 47, DZV 46, AJX 31, TAY 24, DVW 19, JYH 18, HRV 8, DGL 7, AGM 3, KGJ 3.

NEW HAMPSHIRE—SCM, John A. Knapp, W1AIJ—SEC: BXU. RMs: CRW and COC. PAM: CDX. NHN Traffic Net is on 3685 kc., Mon. through Sat. at 1900. The Granite State Phone Net meets at 1900 Mon. through Fri. on 3842 kc., with an informal session Sun. at 0900. This net needs regulars in the Laconia, Durham and Nashua Areas. NHEN meeting time is Sun. at 1300 on 3850 kc. The Dover Mike and Key Club's new call is K1BFU, KKT trustee. BYS reports a new tri-band vertical ground-plane antenna for 10, 15 and 20 meters. In the antenna dept.: EVN is sporting a new three-element Gotham beam on 10 meters. New gear dept.: DYE has an electronic keyer. ASZ, U. of N. H., is on the air with an 813 to a Windom antenna. VGX has been appointed chief operator of the Harvard (College) Wireless Club, AF. Welcome home to TNO, back on the air after completing Armed Forces service. Certificates endorsed: VZS, WBM, BYS and HQ as OPSs; DYE, WBM, ARR and ASZ as ORSs; ARR as OO. Welcome to new hams K1s AMM and API and KN1s ANE, ANH, APQ, AYX and BKE. See you on the air on Field Day, gang! Traffic: (Mar.) W1DYE 43, ENM 39, GJM 35, CDX 29, BYS 10, EVN 9. (Feb.) W1DYE 161, FUA 129, FZ 22, EVN 15.

RHODE ISLAND—SCM, Mrs. June R. Burkett, W1VXC—SEC: PAZ. PAM: YNE. RMs: BBN and BTV. New appointees are KDS as ORS and JJW as OPS. UHE is participating in the IGY project. CEW and ZPG have been keeping several Rhode Islanders in contact with their relatives at KC4USN. Our SEC, PAZ, recently attended meetings of the CRA, NCRC and NAARO and is scheduling visits to other clubs. WN1LFX, the jr. operator of WPX and ULS, is studying electronics while stationed in Memphis, Tenn. CCN's daughter is KN1BDS. GR has been successful in working some choice DX on s.s.b. BBN was active in the

(Continued on page 132)

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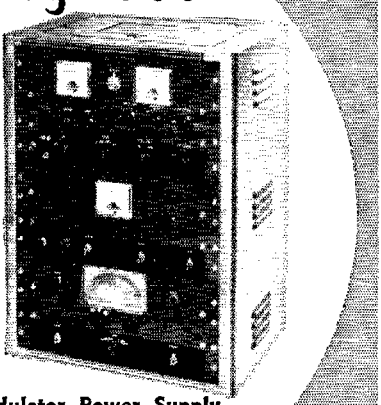

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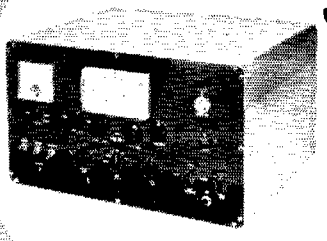

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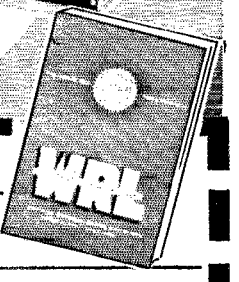

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DX Contest and managed to add some new countries to his postwar list. KDS and FII are building DX-100s. ZXA has a Model 26 on RTTY. KN1AAI is active on 40- and 15-meter c.w. K1ABR operates a DX-35 on low frequencies and is building an 829B final for his 2-meter rig. Ex-1DHX now is K6YRF and is on 2- and 75-meter mobile. The NAARO held an auction Mar. 29. YNE is on 144 Mc. Traffic: (Mar.) W1VXC 108, BTV 81, YKQ 69, BBN 44, KDS 39, TGD 11, ZXA 11, HLY 10, YRC 6. (Feb.) W1LUO 12.

VERMONT—SCM, Mrs. Ann L. Chandler, W1OAK—SEC: SIO. RM: BNV. PAM: SEO. Traffic nets: VTN, Mon.-Sat. at 6:30 P.M. on 3520 kc.; VTPN, Sun. mornings at 9 on 3860 kc. The GMN, as of Apr. 15, is operating at 1700 on 3860 kc., instead of at 1200. HRG and ZYZ assisted SEO with NCS of VTPN during March. The net welcomed APZ, IVT and WPK as new stations. VTN held 22 sessions in March handling 66 messages. Top QNI stations were JLZ (21) and ELJ (20). Appointments: ZJL as OPS. The Mike and Key Club of Middlebury, ZLH, held a dinner meeting Mar. 5 at the Dog Team to honor KN1BCU, KN1BCZ, KN1BDA and KN1BER as newly-licensed members. Guest speaker was FTF who showed colored slides and spoke on the Vermont State Police communications system. Guests were MMN and OAK. The March meeting of the BARC was held at WCAX-TV studios in Burlington with a feature presentation of live amateur television by W2GJR/VE2 from MARC (Montreal). The Burlington High Amateur Radio Club meets each Wed. at 3:30 in the electronics lab. Officers are: CTM, pres.; KN1ASB, vice-pres.; ETV, secy.-treas.; and Dave Steele, Student Council. Club operation is on 10- and 20-meter phone, and 7 members of the 19 are licensed. QQN is heard on 75-meter phone with 7 watts on s.s.b.! LYD and KN1AEY (XYL) are back from Florida. HGZ, IVT and JXO have dropped the "N." AC drove to Melrose, Mass., to bring his NC-300 back from factory overhaul. RHQ is heard on 75-meter phone. Speedy recovery is wished for GAE, RNA, QXU, EDM and JLZ. Congrats to HYK on a new YL harmonic. ZYZ has p.p. 813s in the new final. BNV has finished his kw. VZE is proud of his new granddaughter. UXS is attending UVM and received a second call, K1ATG. The University Club at UVM is on the air with club station MFL. WN1LMI keeps busy on the Novice bands with contacts ending with "UR FIRST VERMONT PSE QSL"! WN1NXB is getting a new slant on electricity from high school physics classes. FN has been operating a Viking Valiant. EIC built a modulator indicator and is making nice contacts on 15 meters. VZE flew to California and visited his daughter and also ex-W1NDB. SEO attended the Atlantic Dermatologic Conference in Boston and visited ZE in Mattapoisett, EJ and EX in Providence and PO in Hanover, Mass. NLO is looking for *QSTs* prior to Aug. 1925. Other new Vermont calls are K1s AAW, AKZ, AXO; W1s BYO, OJU and OJZ; Novices KN1s AER, AEY, AJL, APA, ARP, BGC, BIK, BJX, BKF and BKK. Traffic: (Mar.) W1JLZ 96, ZYZ 85, OAK 65, AVP 60, BNV 38, BXT 35, KRV 35, ZEW 35, ELJ 29, ZNM 21, KJG 19, VVP 2, ZJL 1. (Feb.) W1VZE 12.

NORTHWESTERN DIVISION

IDAHO—SCM, Rev. Francis A. Peterson, W7RKI—Plan your summer vacation so you can attend the Big Springs Hamfest Aug. 3-4-5. RCV and AOR have new DX-100s. IY and WN7GGV have new DX-35s. VQC reports he enjoys being OBS. IZM washed out the landing gear on his winged mobile. RKI learns fast and removed the mobile before crashing the car. NGU moved to California. JHY is taking on all comers to radio checkers. OA has a 2½-kw. generator now for emergency power. 1FML/7 is now 10-meter mobile in Pocatello. BQY has gone in to the Armed Services. The Pocatello Amateur Radio Club has a mountain top picked for Field Day and a 3-kw. generator ready. QIS and CKX are starting on 2 meters. AGO moved to Seattle and is "donating his time" to Boeings. Spring fever must have hit most of my news reporters. We need more OOs to help the Novices before the FCC does. Apply with your news. Traffic: W7VQC 37, IY 16.

MONTANA—SCM, Vernon L. Phillips, W7NPV/WXI—SEC: KUH. New officers of the Old Faithful Radio Club are YPN, pres.; LPL, vice-pres.; Pete Langdorf, act. mgr.; and RZY, secy.-treas. The Hellgate Radio Club is affiliated with RACES. Fifteen of the 19 students of the Hellgate Radio Club's radio classes passed the FCC exam and are awaiting their licenses. YXG and four mobiles participated in the Great Falls Red Cross Mop-up Campaign. HBT is conducting code and theory classes in Laurel. PXR moved from Billings to New Mexico. UOU moved from Billings to New York. YCQ moved from Havre to Kalispell. 5YVA moved from Oklahoma to Harlowton. WN7DXM received her

(Continued on page 134)

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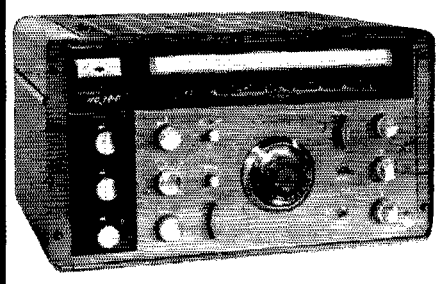

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WAS certificate. COH and his XYL returned from a Florida vacation. LBK's family had the mumps. New gear: AYG has a G-66 and a G-77 mobile; CRC has a 15-meter beam; HIW has a 20-watter for 20 and 40 meters; TQC has a tower and is getting a tri-band beam. Recent appointments: PYZ and TGU as Emergency Coordinators. Traffic: (Mar.) W7SFK 44, YPN 16, OIP 15, TNJ 11, TYN 11, OOG 10, TPE 8, EEO 7, MQI 7, NPV 6, WFV 6, YUB 6, SMY 5, ARJ 4, RLN 4, YQZ 4, FUB 3, ZUK 3, LBK 2. (Feb.) W7FIS 2.

OREGON—SCM, Edward F. Conyngham, W7ESJ—OMO reports progress in electing a new net manager for OSN. QWE reported the OARS Net, YYE, had 635 check-ins, 10 messages handled, 128 contacts, 12 bulletin readings and 84 different stations involved. The most active NCSs were RXO and PTJ. ABJ is working nights and having trouble meeting OSN and MARS schedules. JCJ is QRL printing a new *Oregon Amateur Radio Call Book*, which will be available very soon. DEM is a new reporter, being ex-6GFK. ZBO, using a Globe Scout and an S-38, has been on OSN, OEN, RN7 and MARS regularly. TAZ has dropped his OO activity because of his health, and is looking for a new QTH. KTG is working 2 meters nearly every day. TLC is working hard on AREC jobs around Corvallis. DSK loaned out his NC-300 receiver while he was in California. NGW has been keeping the equipment going at Snow Bunny Lodge, Mt. Hood, for next Field Day and also keeps 2 meters hot. FBW prints a news sheet for the PARC members, and keeps the big gear going on the USS *Pargo*, too. SDW advises that he is snowed under with work keeping up two places. SEZ is working up a conversion article on the ARC-4 transmitter. YUY has a new HQ-140XA receiver. ZHF, while new on the ham bands, is an old arc and spark operator from the 1920 Navy. SMR is rebuilding a Bendix TA-12C. LT is handling traffic and is on MARS. WHE is active in MARS and working out his modified GP7 rig. VLE had a vacation. QFY last reported in to VLE from North Borneo, en route home from Brisbane (VK-Land). RET is doing QYS's MARS work, and etsablishing a 2-meter NG net in the State. Traffic: (Mar.) W7APF 554, LT 93, OMO 54, BVH 40, HJU 34, QYS 20, ZBO 20, DEM 12, QWE 11, KTG 4, JCJ 2, ABJ 1. (Feb.) W7APF 395, QWE 11, KTG 4. (Jan.) W7APF 575.

WASHINGTON—SCM, Victor S. Gish, W7FIX—The Auto License Plate Bill was signed by the Governor Mar. 14. PUA is working on 1296-kc. and 432-Mc. gear. JC has QSOed 112 countries in addition to his nightly traffic work. HDT reports much activity in Clarkston on 220 Mc. The club is looking forward to a visit from Division Director CPY. LVB has a DX-35 and a Heathkit VFO on the air now. OE is in W6-Land for a few months. GVV and BXH renewed ORS appointments. AMC is bewailing the fact that spring outside work is interfering with hamming. EHH expects to spend a lot of time at the lakes this summer. ER reports the Quarter Century Wireless Association Nets meet on Sun., c.w. on 7125 kc. at 1500 PST, phone on 3950 kc. at 1600 PST. AIB still is looking for sources of power-line noise. The McChord AFB Radio Club's new licensees are HNO, HNQ, HNT and HSW. ØYGB has been assigned to K7FAE. KL7BFJ also is at McChord AFB. AVM has little time for hamming—a little 6-meter work and one test drill during March. USO is trying out a 20-meter bantam beam. PGY is monitoring 3920 kc. until 1900 PST each evening for traffic and is working on a new s.s.b. rig. K7FEA reports a new vertical ground-plane 90 feet high. CWN got two Russian QSL cards and had to take them to a friend to have them read. PXA reports the Valiant is being de-bugged and he is converting an ARC-5 for 160 meters. BXH sold his Adventurer-Heathkit VFO combination to ZIZ and now is using a 6146 90-watt traffic rig with 100 per cent QSK. Traffic: (Mar.) K7FEA 2092, W7BA 1186, PGY 689, VAZ 624, K7FAE 630, WAT 560, W7FRU 156, K7FBN 151, W7APS 93, JC 73, WQD 66, AIB 62, EHH 53, ER 38, AMC 37, USO 23, BXH 20, JEY 20, GVV 13, TH 8, OE 7, HDT 6, LVB 6. (Feb.) W7GVV 11.

PACIFIC DIVISION

HAWAII—SCM, Samuel H. Lewbel, KH6AED—Travel notes: KH6AXQ has returned to his home and shack in Hilo after months in Honolulu. EJ left for a two-month trip to the Mainland. W2DR, W6FDJ (SCM East Bay section) and W6SUE visited the Islands in time to attend the Sideband Dinner. Old-timer CI is back on the air after years of silence. He can be heard on 2 meters now. AGH has a new crank-up tower for the all-band beam. AED has a weekly sked with K6HA in Santa Rosa on the Civil Defense Net. C.w. now, RTTY soon. Traffic: (Mar.) KH6BQS 273, KP6AK 125. (Feb.) KH6-BQS 333, KP6AK 101.

(Continued on page 136)

PARADISE REGAINED (HAM SECTION) — Our April Fool photo in *QST* caused so much consternation and genuine dismay among our Ham friends that we felt obliged to run this one showing how the World-Famous Harrison Trade-In Center usually looks — chock-full with a tremendous assortment of like-new ham gear, all bargain-price tagged at a fraction of original cost.

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144-24 Hillside Ave., Jamaica, L. I.

NEVADA—SCM, Albert R. Chin, W7JLV—SEC: JU. ORSs: VIU and YNO. PC and JLV attended the Pacific Division Director's meeting at San Jose Mar. 30. VIU and YNO report SHY, ex-KL7BEA, now in Winnemucca, expects to return to KL7-Land. New hams in Winnemucca are HBW and HOP, ex-6ABE. YNO picked up 10 new DX countries to VIU's 2. Frank Johnson, of the *Nevada State Journal*, gave the Reno gang an FB spread on their hidden transmitter hunts. Competition really is getting keen with the transmitter harder to find each time out. MAH did an FB job at the fire station with only four reporting in, with TQE the winner. TQE hid his virtually over our heads on his time out. Please, no Helicopters! WANS certificates No. 42 and No. 43 went to RBV and TQE. Newcomers to Southern Nevada are BDB, RDE, 4ZUJ/7, WN7GZT and WN7HAG. YLO will fill in for VYC in the RACES program for Southern Nevada.

SANTA CLARA VALLEY—SCM, G. Donald Eberlein, W6YHM—Asst. SCM: Roy E. Pinkham, 6BPT. SEC: NVO. RM: ZRJ. PAMs: OFJ and WGO. The following appointments have been endorsed: EXX, OFJ, OIA, QEJ, VQK as ECs, ZRJ as ORS. Richard Ogg, EPJ, captain of the PAA Clipper *Sovereign of the Skies*, gave a talk on his experiences during ditching operations in the Pacific last October at the West Valley RC meeting. K6MPN is the new editor of *PAARAGRAPHS*. RLB gave a talk and ran slides showing activity during past Field Days before the PAARA. QYT has received the grade of Fellow in the IRE. K6IEE is trying to get the Redwood City Council interested in the county c.d. A new v.h.f. club is being formed in the San Mateo Area. If interested, contact BDO. GJZ has been skedding WEL/5 Wed. afternoons. UZV was first in the Salinas Area to try DSD. ZTX was active in the DX Contest. K6DYX expects to be operating /8 during June and July. PLG will take NCS Thurs. on PAN. YBV reports that whenever the P. O. Dept. finds a QSL with a bad address in Los Gatos it is left in his P. O. Box. K6QCI built a mobile 6-watter, converter and whip antenna. Hal is doing liaison from NCN to RN6 one night a week. K6BBD informs us that station UW is open at the San Jose Red Cross Chapter House on Thurs. evenings and visitors are welcome. WNI has the exciter on the air at last. HC attended a meeting of hams in Irvington and helped with the forming of a new club for that area. YHM gave a talk on traffic before the West Valley Radio Club. Any ham interested in getting into the traffic phase of amateur radio will find a spot for his services regardless of his code speed, so contact your SCM. Traffic: (Mar.) K6DYX 424, W6BPT 340, JCG 196, K6CGA 193, W6PLG 161, YHM 147, YBV 137, K6GID 107, GZ 103, W6OFJ 72, BMP 60, ZLO 56, AIT 40, OII 39, K6DHO 30, QCI 30, W6FON 18, HC 10, K6BBD 6. (Feb.) W6BMP 49.

EAST BAY—SCM, Roger L. Wixson, W6FDJ—Aboard the USS *Nickel* DE-587, 26 Deg. North Lat. 143 Deg. West Long.; en route to Pearl Harbor, T. H. SUE and FDJ are making their annual USNR cruise to Hawaii so thought it would be somewhat novel to write the SCM column from aboard ship. Once again I had the pleasure of visiting ARRL Headquarters in Hartford. While on a recent business trip I attended the IRE Show in New York and took the opportunity to go to Hartford and do a story on League operations. I hope to get around to the clubs and show the color slides and let you in on work that is being done on our behalf. As per usual Ed Handy acted as host and introduced me to every activity in the League. Around the East Bay section: CAN writes that he intends to continue with the job of SEC as the transfer he expected didn't pan out. The Mt. Diablo Club was honored by John Reinartz, who gave his talk on Antenna Measurements. I had the opportunity of hearing the talk at the Richmond Club recently and it is really worth while. K6IGJ and his son 6QCN are operating KA2CU these days. They are on 10 and 20 meters and can be found in the DX portion of the bands around 2 to 3 and 6 to 7 P.M. PST KN6RUF recently took his General Class exam and came through with flying colors. Good work, PIR, for the wonderful job your club is doing in putting out the *Carrier*. The East Bay Club officers for '57 are EDN, pres.; VSV, vice-pres.; K6MGM, secy.; K6PNC, treas; NBS, OJT and MXQ, directors: ERR, club station; EJY, CCRC; and K6KWP, TVI. The Sky Riders have a new crew with JOP, pres.; QJD, vice-pres.; TLM, secy.; ELP, treas.; ANK, net control. For those wishing to join, the Sky Riders Net can be found on 28.56 Mc. at 8 P.M. on Wed. The next meeting will be held at 1230—147th Ave. in San Leandro. V.h.f. activities (SUE reporting): VSV can be found busily turning out 432-Mc. tuned cavities. During the week 432-Mc. activity can be heard at 7:30 P.M. and on week ends at 10:00 A.M. DX, or at least an added incentive, is OJB, located in Orangevale in the Sacramento Valley, who is quite active on 432 Mc. Most of the gang are using the "Melvin

(Continued on page 138)

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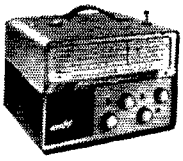

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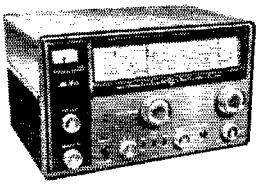
115 V. AC/DC or battery operation — use it as an SWL, Ham or Marine receiver. Covers 5 bands from 150 kc to 23 mc. Electrical bandspread with logging scale and fixed tuned CW oscillator. 2 antennas — ferrite loop for DF and BC bands, whip covering DF frequencies. Full-vue slide rule dial. Separate switch for standby operation. Provision for external marine direction finder. Furnished less batteries and RDF acc. loop.

$12.95 down.....$7.08 per month for 18 months

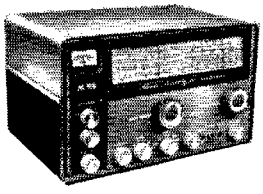


$159.50 Amateur Net

NEW NC-188 AMATEUR RECEIVER

A quality amateur receiver at a popular price. Directly calibrated for the 4 general coverage ranges and 5 bandspread ranges for amateur bands 80 to 10 meters. Also covers 540 kc to 40 mc. Voice or CW. Large, easy to read 11" slide rule dial. Built-in "S" meter on front panel.

$15.95 down.....$8.72 per month for 18 months



$199.50 Amateur Net

NEW NC-109 GENERAL COVERAGE RECEIVER

Low priced general coverage receiver—4-band coverage 540 kc to 40 mc—voice, CW or SSB reception. Bandspread is calibrated for all bands 10 through 80 meters. Separate crystal filter and product detector for CW and SSB. 11" slide rule dial—accessory socket for external adapters, etc. With built-in "S" meter on front panel.

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SW-54 — Excellent for SWL or beginning amateur. Top DX getter! 540 kc to 30 mc.
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50 Watter" crystal-controlled converters using a 416B r.f. and a trough-line tuner along with a 6U8/6AK5. Invection chain using 70-Mc. rocks seems to be all the rage. Six-meter activity is headed up by weekly skeds with Colorado using scatter propagation. SUE is currently designing and building a twenty-element broadside stacked array. K6RNQ is keeping cross-band skeds with VK2AB on 6 and 10 meters. The Bay Area 6-meter gang is keeping the first 50 kc. of the band open for DX listing and is using the higher frequencies for ragchewing. PNC is getting his 432-Mc. equipment ready. Please send me some news of your activities. I will bring back some movies and slides of Hawaii and a report of activities. I have been receiving RTTY signals all the way over. So far I have copied VPC DOU, NKP, ASJ, VVF, FLW, PHS and VMK. Copy has been good.

SAN FRANCISCO—SCM, Walter A. Buckley, W6GGC —The HAMS held its regular monthly meeting in the local Red Cross Bldg. and spent the evening making arrangements for Field Day. A family picnic was planned in conjunction with Field Day. The 29ers Club had a large turnout for the March 10-meter hunt. The 10-meter hunt is held the 1st Thurs. night of each month and the 6-meter club has its hunt on the 1st Fri. All interested are invited to join the fellows. The starting point is Twin Peaks at 8 P.M. About one hundred showed up for the 6-meter monthly luncheon in March. The San Francisco Radio Club held its annual auction Mar. 27 with a big turnout. The Cathay Radio Club has been turning out quite a few Tech. and Novice Class licensees through its classes which are held every week at the American Legion Hall in Chinatown. JWF and GGC have been taking in the Tamalpais Radio Club meetings. The Marin Amateur Radio Club has a real nice meeting hall now in the Red Cross Bldg. in San Rafael and has its rigs set up ready for any emergency. EQQ is back in Eureka again and SLX is stationed at Treasure Island for E.T. school. KZF, Bill Ray, accepted the post as area Section Emergency Coordinator for the San Francisco Area in time to put in some time for recent earthquake emergency traffic. As usual, CXO, with Frank Johnson at the rig, was right on the job at the Red Cross National Headquarters in San Francisco. People in this city have had more than their share of earthquakes lately and still are getting an average of one or two shakes per day as "after shocks" at this writing. Telephone service was out for couple of hours the day of the "main shakes" so local amateurs were busy assuring out-of-town contacts that San Francisco was badly shaken but not destroyed as rumors were quick to travel and out-of-town relatives were unable to check because of long-distance telephone jams. JDN had this station check with one of the local schools on the welfare of a "boarder-student" on Saturday night because mother had been unable to get a phone call into San Francisco all day and Saturday night. As the earthquake was Friday noon you can readily see how lines were tied up. One thing the earthquake did was to prove to the "city fathers" that telephone communications here are far from perfect. WJF has the 10-15-20-meter beam almost ready for action at his new QTH. CBE is trying to get a Delaware contact, and says he's been trying for the past 26 years. Listen in, Delaware, please. GQA is very happy with his "new second-hand 32V" (as he puts it in SAR). QMO now is liaison to RN6 Wed. nights and also is checking in on the Mission Trail Net and McAn 7. FEA reports a lack of hamming because of getting the new QTH in order and resting up after the recent move. The Central California Council meeting was held in Richmond April 3. I met quite a few of the ARRL officials at the Director's meeting in San Jose. Traffic: W6GQY 561, QMO 333, K6HWI 91, W6GGC 48, GCV 11, PCN 2, WJF 2.

SACRAMENTO VALLEY—SCM, LeVaughn Shipley, K6CFF—SEC: JEQ. I have been visiting various clubs in the section, outlining the organization of our section and speaking in behalf of ARRL. If I have not yet visited your club please bear with me: the section is 300 miles long and it takes time. In the meanwhile please let me know if I can be of assistance. My apologies to the new YL club in Sacramento for not giving them recognition last month. They are known as the Camellia Capital Chirps. The news I promised on our traffic nets is not very encouraging. I received only one traffic report this month and that was from a fellow who no longer is a League member. Although we are trying to revive it, the Central Valleys Net (CVN) is no more. We need traffic men in every part of the section. Most appointments are available. Some have let their ARRL membership expire, which automatically cancels their appointments. Others have failed to have their certificates endorsed. Some new appointments have been made but more are needed. Remember, you must be a League member to qualify for official appointments. We need a new EC for Chico. How about it, fellows? Our old friend, K6FR, after many years still is doing an FB

(Continued on page 140)

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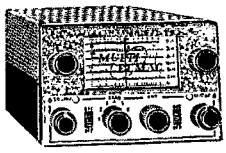

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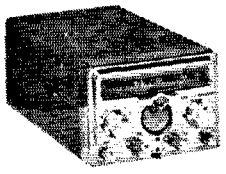

Gonset Model G-77 Mobile Transmitter

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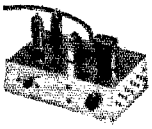

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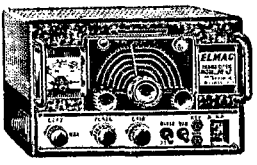
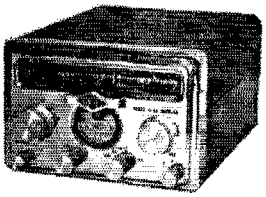


Elmac Model AF-67 Mobile Transmitter

160 thru 10 meters. VFO or crystal. 60 watts phone, CW, or NBFM. Less power supply.
Amateur Net $177.00



Gonset Model G-66B Mobile Receiver

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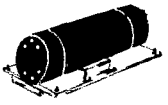

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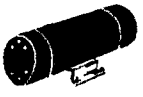

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public relations job on the TVI committee in Sacramento. All clubs and individuals are urged to submit monthly activities reports to the SCM before the 4th of each month.

SAN JOAQUIN VALLEY—SCM, Ralph Saroyan, W6JPU—The Turlock Amateur Radio Club has been very active. The club put on an impressive demonstration of amateur radio communications at the Scout Rendezvous and also put on a real demonstration before the Turlock Exchange Club. KN6UHP was program chairman and was assisted by GYN and KN6SNA. PSQ is heard on 2 meters. K6HTM worked 48 states on 6 meters for the 21st WAS. JPS is sighing a bit; he got rid of TVI. K6GTI is back on 75-meter mobile with an Elmac. ONK is active on 10, 15 and 20 meters. FSD has moved and has retired to Santa Cruz. BJI has a new QTH and is active on 6 meters. LOS has a 10-meter beam. PPO is heard on 2 meters with a Communicator. K6KLL is on 6 meters with a Communicator. SUV has a new SX-100 and likes it fine. WPV has a new HT-32. There is a 2-meter Novice net in Tulare County. KN6YDW is N.C. at 9:30 A.M. Sun. ZKH is working on a 20-meter rig using an 813. KN6YDW is on 40 meters with 60 watts. KN6VSK is on 40 meters with a Viking II. K6KOL has a 38-ft. tower with a 15-meter beam. RTL spends his week ends working on a DX-35. OSM is mobile on 75 meters. DBH is active on 2, 10 and 75 meters. The Stockton Radio Club is going to use the C.O.P. Stadium for its Field Day site. ILH has a Gonset 66 and 77. DVI is using his Viking as a linear on s.s.b. YEX is on 20-meter phone again. Thanks for the news; keep it rolling. Traffic: W6ADB 154, OUX 15, EBL 6.

ROANOKE DIVISION

NORTH CAROLINA—SCM, B. Riley Fowler, W4RRH—SEC: ZG. PAM: DRC. We are very pleased to announce that enough RACES plans have been filed in the State to say we very definitely have RACES in North Carolina. Sure, we want every amateur who desires to do so to become affiliated with the RACES program. This matter is left open to the individual. At the moment some 14 county plans have been filed and about 26 plans are in the process. If you desire further information, please write me your needs. The Command and Information Net, composed of the Official ARRL field forces, is being activated on 3997 kc. The informal business net will be held each Thurs. at 7:00 P.M. All ARRL Districts headed by the EC except two have AREC nets that meet at least once each week. At the present time we have 525 AREC members and the number is increasing all the time, thanks to the very efficient ECs in the State. The Winston-Salem Amateur Radio Club is considering a State Hamfest sometime in late May or early June. The Greensboro Club is cooperating. We very definitely need such a meeting. ZWF has a new 300-watt transmitter. K4AI is on the air. HKB has received the WAS certificate. K4IEX and K4KBA have dropped the "N" from their calls. K4-BVQ has DXCC and K4DRV has 90 countries to his credit. HUW is NCS for the THN for the next three months. The THN Net now has 106 members. TJA is the new net secretary. SGD was awarded the Certificate of Merit for her work as net secretary for over 5 years.

SOUTH CAROLINA—SCM, Bryson L. McGraw, W4HMG—Congrats to ZRH on the new jr. operator. AVU, with a new NC-300 plus a modified DX-100, is going great on 20 meters. K4ETB, new president of the Edisto Radio Club, is believed to be the first YL/XYL president in S. C. Thanks to Anna, GLV, for the fine reports on the club. GLT, now in St. George, has an FB signal on all bands. K4HUB dropped the "N" and is on 75-meter phone. K4GIF and the fine Shaw-Sumter Club had 2AAW/4 winning its WAS Contest with 46 confirmed. CJD was a close second. 2KGQ has left for Japan. EJR is running a Ranger and getting the good ones around 14,070 kc. GCB now has 92 confirmed toward DXCC. K4MTF is on in Dalzell with a fine signal via a DX-100. Congarts to K4GIE on his fine consistent efforts with the club bulletin. There is much excitement about the coming hidden transmitter hunt for the entire State. The Palmetto Club is vowing to hand some other club the Corn-Cob Trophy. HCD is proud of the new Viking. EAR is busting speaker cones with a new 500-watter. K4AII has been appointed Asst. C.D. Radio Officer to coordinate with ZRH. The Palmetto Amateur Radio Club RACES plan is in for approval, and Columbia will be NCS for RACES (State Net). Aiken and Charleston RACES approval is expected at any moment. SOF, our SEC, is very active in AREC and also is giving a big hand with RACES. K4GHT is the proud owner of the famous 6AQ5 final rig and doing a good job with the 3-watter via 75-meter phone and 80-meter c.w. Glad to have WA back after too long an absence. The XYL of FFH is recovering after a serious illness. Do your part, join the ARRL,

(Continued on page 142)

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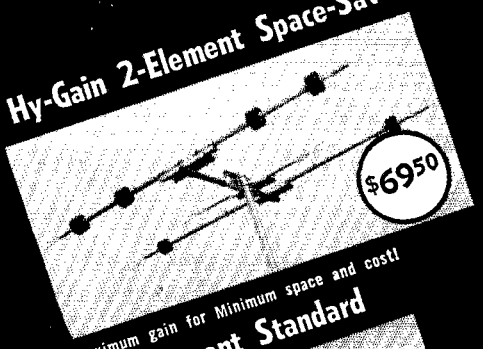

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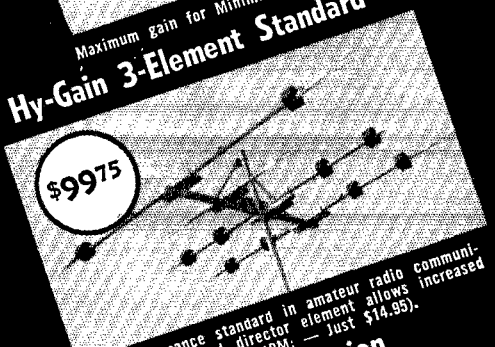

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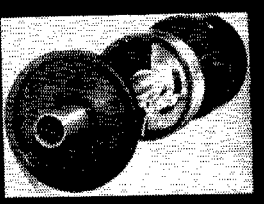

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now! Traffic: (Mar.) K4BVX 243, W4AKC 105, K4JFN 94, W4CHD 36, NTO 18. K4DFW 17, GLT 16, W4YAA 15. (Feb.) W4AKC 122.

VIRGINIA—SCM, John Carl Morgan, W4KX—SEC: PAK. (Rt. 1, Box 7-H, Fentress, Va.) AREC activity is picking up. PAK reports Virginia participation in the South Atlantic "Weather Net." The Richmond Club's VA-JF certificates are going apace, with PJ2AF being the first foreign recipient. The South Boston Club now has quarters and the rig in the Municipal Bldg. and has applied for a call. K4EAQ proves hamming and studies are not incompatible by becoming salutatorian of his high school graduation class. K4EZL is the new mgr. of ESN. Doug, together with 2OOG, plans to attend the National Boy Scout Jamboree with a ham rig. Welcome to K4OQR, ex-KØAZJ. K4DKA moved again. AAD also is in a new QTH and reports that MT is moving to Smithfield. ZM retired from the USCG, and says the new job with RETMA snafus traffic net activity. K4ELG bemoans being "stuck" at 40 states in quest of WAS. WBC reports the new 10- and 15-meter beams paid off in the DX Contest. BIJ succumbed to s.s.b., while FLX is setting up an s.s.b. rig. JUJ racked up the top phone score in the 4th call area in the YL-OM Party. KN2MJO, new on the air with 10 watts in Falls Church, reports his first piece of traffic! With K4LMB in the forefront, Arlington hams seem to be breaking up the log-jam over the ham antenna law in Arlington. Old 2CI, now in Alexandria, would like to hear from operators who worked with him as a ham operator and in the US Navy 1920 to 1922. Following announcement of the regular Va. QSO Party, many individuals suggested we have another one—an interstate one to give Virginians a better chance at WAS, and give out-of-staters a better opportunity to qualify for the VA-JF Award. Such an activity now is tentatively planned for September. Details will be forthcoming. Traffic: (Mar.) W4QDY 331, IA 329, K4DKA 225, EZL 154, KNP 106, W4MWH 92, FLX 84, K4AET 77, W4ZM 52, KX 50, K4ELG 47, W4AAD 23, K4JLO 15, W4JUJ 14, LW 12, K4BFW 11, DBC 9, W4PVA 9, K4IKF 5, BYS 4, W4VMC 4, K4BUI 3, KN4JMO 2. (Feb.) K4KNP 48.

WEST VIRGINIA—SCM, Albert H. Hix, jr., W8PQQ—Asst. SCM: Festus R. Greathouse, 8PZT. SEC: GEP. PAM: FGL. RMs: DFC, GBF, HZA and PBO. It gives me great pleasure to announce that PZT is now Asst. SCM for this section. Feel free to discuss any section matters with Fes. West Virginia was well represented at the Dayton Hamvention. The XYL of VOI, K8ARA, walked off with the GPR-90 communications receiver as one of the main prizes at the Hamvention. A new Novice in Fairmont is YL WN8ELG. JM is getting the bug again. KN8BIT has been working lots of DX on 15 meters. DEY is very active on WVN. K8AGA has a new BC-348 and will be on 20-meter c.w. soon. A new ham in Elkins is 3GWN/8. OSG is a new OO. He is well toward WAS and is working lots of DX. AVW, CHP and QWM are working 20 meters a lot. IRN is raising his DX total at a rapid rate. OIV also is doing a good DX job. Ex-VCT, now K6TEO, visited hams in Charleston recently. VMP has a Johnson 500-watt rig on order. KN8DZU is a new ham in South Charleston. MLX and ZJS are building new tri-band beams. We are sure sorry that the Governor vetoed the License Plate Bill. GBF, PBO and BWK received 8RN certificates. The Morgantown Club continues to hold meetings at the new club house. DDB is building a new vertical for 40 and will be on 75 meters soon. Traffic: W8PBO 145, BWK 63, HZA 44, KXD 33, SNP 30, GBF 28, CCR 22, PZT 20, NYH 13, GIU 5, K8CSG 3, W8PQQ 2.

ROCKY MOUNTAIN DIVISION

COLORADO—SCM, B. Eugene Spoonemore, WØDML—SEC: NIT. RM: KQD. PAM: IUF. Congratulations to KØCEN, who did a swell job as Acting SCM. We hope to carry on the work equally as efficient as Bill. At last the Call Letter License Plate Bill passed; only the untiring efforts of nearly all the twelve hundred amateurs in Colorado made this possible. Special thanks go to the Denver group, who sponsored the move with the able assistance of KØEBV, WØVYP, RX, BWJ, KVD, NIT, INT, PGX, KGD, OMN, YMP, TGD, NVX, GDC, IA, NVU, DXF, SUP, AEE, PGN, TX, OYG, BON, COC, TV, HGT and a host of others, including our sponsors in the Senate and House, Andy Kelly of Denver, Cheever of Colorado Springs, Johnson of Pueblo and many, many others. Now it behooves each and every one of us who display the call letter license plates to make a special effort to conduct ourselves in such a manner as to bring our fraternity the high esteem for which we are all striving. On Mar. 22 we had a terrific blizzard in Eastern Colorado and Western Kansas. On Apr. 2 the same thing happened on the eastern slope of the Rockies, centered in the

(Continued on page 144)

Colorado Springs, Pueblo and Canon City Area. Amateur radio again came through, furnishing the only communications in a number of cases. KØEDF/Ø, WØCVG, TV, NIT, BWJ and many others performed outstanding work on this. Remember Estes Park June 15-16. Traffic: WØIA 375, KQD 358, KØDXF 192, WØTVI 132, KØDCC 67.

UTAH—SCM, James L. Dixon, W7LQE—VHS, QDJ, DUK, CVX, SAZ, ABI, EIF, CWD, CWF, YDZ, RQA and LRP, as members of the Ogden Club, operated Mar. 29, 30 and 31 to furnish radio communications to report the progress of contestants in the National Collegiate Athletic Annual Ski Meet at Snow Basin Resort. 27 and 50.4 Mc. were used, with a 2-meter link to Ogden for the press and broadcast station through GPN. OSV is working 10 and 2 meters and has a new mobile on 10 meters. CCP has joined the Colorado Slow Speed Net. PKB is using a Viking I, a Viking VFO and a Windom. ZJI loaned a 6-meter Communicator to RNW to use from his hospital bed. VHS is trying out grounded-grid p.p. 807s on 6 meters. OCX has a new 25-w.p.m. certificate from MARS. WN7EHX (a 13-year-old-YL) worked 26 states in the Novice Roundup and is the jr. operator of POU. NIA has a new Morrow mobile installation with a master mobile whip. FYC is using a TBS-50, an NC-300 and a four-element beam on 6 meters. Traffic: W7CCP 5.

WYOMING—SCM, James A. Masterson, W7PSO—The Pony Express Net meets Sun. at 0830 on 3920 kc., PSO and MWS alternating as NCS. The YO C.W. Net meets on Mon., Wed. and Fri. at 1830 on 3610 kc., BHH, DXV and NMW alternating as NCS. IDO/ACG and CQI participated in the emergency caused by the heavy spring snows in Eastern Colorado. BXS and TQO have new beams. ØIKE/7 is now in Casper. KFV has moved to California. UFB is now mobile on 6 meters. The Central Wyoming gang is reading up on TVI as Casper's first TV station starts programming. UZR is now s.s.b. Activity is increasing on the YO Net but more check-ins still are needed. There will be no organized Wyoming Hamfest this summer. Neither Sheridan nor Casper, which have sponsored the hamfest the past three years, feel they can handle it this year. No other group will assume the responsibility. Traffic: W7DXV 130, BHH 62, NMW 5, PSO 4.

SOUTHEASTERN DIVISION

ALABAMA—SCM, Joe A. Shannon, W4MI—K4DDC was elected outstanding NCS for AENP for the first quarter of '57. Newcomers: Fairfax, K4KZQ, Tuscaloosa KN4OQQ, Huntsville K4OCV. The Tri-Cities Club is busy with code classes once per week, with YRO and MEM doing the brass-pounding. The Mobile Club is pushing 2 meters for local work and 4 members now have rigs on that band. The Gadsden Club, working with K4BTO (EC), has perfected a local emergency set-up tying in AREC with RACES. DDT is settled in Mobile and kicking up a large fuss with the gallon. WHW reports a new code class in Mobile with room for fifteen students. RLG is meeting Dragnet. K4EOG was elected new net manager for AENT, our section teen-age net, with K4HMI as activities manager. ZSQ is outfitting the shack with new furniture. K4CXC has 58 countries with his fifty watter, and HON finally removed the bugs from the Ranger. WAZ needs more material for the *Section Bulletin* so clubs and individuals should take advantage of the opportunity to publicize activities through the bulletin. It needs your support. YFN is new manager for the Tenn. Valley 6-Meter Emergency Net. Traffic: (Mar.) W4RLG 364, K4AOZ 173, W4KIX 136, K4EOG 120, ANB 83, W4ZSQ 43, K4EOH 40, BFL 39, W4YRO 38, CIU 37, K4CXC 37, W4HON 35, K4AJG 31, BRS 31, W4WAZ 28, K4DDC 14, W4MI 14, YFN 13, DEQ 12, RTQ 12, WHW 9, ZSH 9, K4AAQ 8, W4HPE 8, WJE 5, CRY 4, DGH 4, K4KJD 3, W4TKL 2, USM 2. (Feb.) W4EJZ 32, DEQ 8, K4AAQ 3.

EASTERN FLORIDA—SCM, John F. Porter, W4KGJ—SEC: IYT, RM: LAP. PAMs: TAS and JQ. Section Nets: FPTN, 3945 kc. 0700 Mon. through Sat.; FMTN, 7225 kc. 12 noon Mon. through Sat.; TPTN, 3945 kc. 1730 Mon. through Sat.; FN, 3675 kc. 1900 Mon. through Sat. Join the net of your choice as there is a place for everyone. We are sorry to report the sudden passing of LEP, Tampa. New hams are KN4OEP, OJD, OII, OET and OES. K4CXW has two new power units for emergency use. BWR reports Satellite, AREC and C.D. Nets are holding weekly drills. DUG cleared 4211 messages from the Tampa Fair. IWM suffered a second heart attack. Drop him a card. DQA is now on Swan Island with CAA. LZL has a new DX-100 on 10-meter phone. PZT snagged JA8AE on 7005 kc. 3CUL/4 is QRL Florida traffic nets. BJI reports 75 students signed for code classes in Lakeland. K4HNC is Asst. EC in Polk County. K4BNE and the Florida Midday Traffic Net helped track down a missing beauty queen. She had

(Continued on page 146)

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upped and eloped. The DBARA handled traffic at its City Hobby Show. Cocoa: K6HWB/4 is a new OBS and OPS. Welcome to K4MDX, ex-JA2CR; K4OQS, ex-W5YQP; and K4OBP, ex-W3OQL. HCG is the new c.d. RO for Brevard. K4BNL is NCS for the C.D. Net. BJP is operating from a new QTH with a vertical and homebrewed 6146 rig. K4GCC has a new Valiant. K4IMM is back on the air after a long illness. The PAFB MARS Club is growing like a weed and meets the 2nd and 4th Tue. at 7:30 P.M. Officers are K4OMM, pres.; K4BND, vice-pres.; YQC, secy.-treas. BWR is a new Asst. Director. Dade: K4CEJ is rebuilding the shack. ZXL/ZXK have new 6N2s. K4DAS has a new DX-100. K4KEG has a new Globe Scout. The Flamingo and Dade Emergency Nets now operate on 145.260 Mc. Traffic: (Mar.) W4DFU 795, FPC 312, EHW 214, PZT 211, K4KDN 200, W4IYT 151, K4BNE 139, W4DVR 139, K4ENW 122, W4LAP 117, TAS 115, WS 107, W3CUL/4 98, W4BNM 92, ZIR 78, AHZ 67, K4ABV 57, W4DTV 51, K6HWB/4 46, W4DUE 45, LMT 41, K4AEE 33, AHW 28, W4BKC 22, TRN 20, HCQ 15, RWM 11, K4CXW 9, W4BWR 8, K4MTP 8, W4AZK 7, BJI 7, K4DRO 7. (Feb.) W4YFT 30.

WESTERN FLORIDA—SCM, Edward J. Collins, W4MS/RE—SEC: HIZ, EC: MFY, RMs: AXP Escambia, BVE Okaloosa. WKQ ran up 33,300 points in the DX Contest. K4HYL has a new DX-100. K4LQC has a new NC-300. K4RDL is giving the s.s.b. gang a run for their money. WKO, KWM and RKH are away from the section on business. UXW and MTZ are looking for 2-meter contacts. ZYL and CSS represent Ft. Walton on 6 meters. MFY now has a 12-volt system. Plans for forming a new club in the Ft. Walton Area are underway. There are 115 licensees in the Eglin Field-Ft. Walton Area. UXW and MTZ did an FB job covering a Sports Car Race for the Eglin Field group. The EARS group is getting ready for Field Day. PQW pushes the hidden transmitter hunts in the Pensy Area. GMS is handling lots of phone patches from KC4-Land. PAA is busy fighting TVI and CQing DX. AXP keeps traveling around the area. K4KIF has a new HQ-150 and is busy on 6 meters. K4IYQ has a new four-element beam on a tower for 6 meters. K4AGM has three countries and 25 states on 6 meters. K4IVD now has the audio up. The Pensy gang meets Mon. at 8 P.M. CST on 50.7 Mc. UUF has about deserted 2 for 6 meters. UCY was heard on 6 meters. CCY is QRL work. QK is studying DX-100 ads. K4EHI has ordered a DX-35 for 6-meter work. MS is hunting 6-meter openings. ODO has a new B&W 5100. EQR keeps improving the 6-meter rig. HBK still knocks off the DX but is building a big final. CDE has the big signal on 75 meters. K4DDD is QRL work. VR is loyal to 7 Mc. MUX is helping beginners. K4KCY is planning more power. The Radio Club at Saufley Field is being revived by OKB.

GEORGIA—SCM, William F. Kennedy, W4CFJ—SEC: K4AUM. PAMs: LXE and ACH. RM: PIM. GCEN meets on 3995 kc. at 1830 EST on Tue. and Thurs., 0800 EST on Sun.; ATLCW on 7150 kc. at 2100 EST Sun.; GSN Mon. through Fri. at 1900 EST on 3595 kc.; PIM as NC; 75-Meter Mobile Phone Net each Sun. at 1330 EST on 3995 kc., UUH as NC.; Atlanta Ten-Meter Phone Net each Sun. at 2200 EST on 29.6 Mc., VHW as NC. W4DBM has been reissued his old call of GN. We are sorry to add the name of another very nice guy, OTG, to Silent Keys. PLD, received his BA degree and is now taking graduate work. K4LOZ is out of the hospital and doing fine. ACH's XYL is back in the hospital. We wish her a speedy recovery. A new ham in Quitman is KN4OCI. K4DAP has worked 90 countries, but wonders who is XF1A. TOS has a new Viking Valiant, also a new HQ-100. K4DKM is in Navy radio school in Norman, Okla. K4HOU sure has been having a time with his antenna; he pulls too hard to tighten it so it gets even with him by falling down completely. Juanita Robinson, of Atlanta, now is KN4ODA and soon will be able to work OVS all she wants to. The Confederate Signal Corps is happy to say its membership is growing. TJS put his 75-meter antenna up a few more feet and is getting out much better. YC has a new 600-L amplifier and also an all-band beam. K4DNH is back in mobile business again after his receiver finally came back from the factory. K4AUM, Georgia's SEC, has just revised the whole State with many new ECs. All appointees, please check your certificates for renewal dates. Don't let them expire. The Georgia Cracker Radio Club will hold its regular meeting July 28 at Dublin, Ga., picnic style. Traffic: W4PIM 166, K4LVE 136, HMI 54, W4DDY 50, PBK 40, K4BAI 31, W4ETD 30, BXV 26, K4CSL 26, CZR 18, CZO 13, HMJ 13, W4CFJ 10, MVZ 9, PDP 6, BWD 4.

CANAL ZONE—SCM, P. A. White, KZ5WA—We have just receive the sad news of the death in Baytown, Tex., of John Whittredge, W5UID, ex-KZ5FJ. Our deepest sympathy to his XYL, Bess, W5VDH, ex-KZ5CN. KJ

(Continued on page 148)

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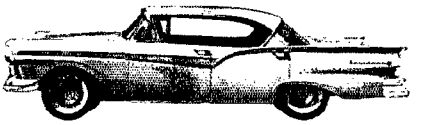

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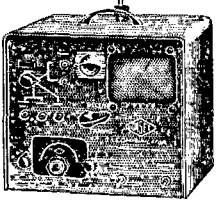

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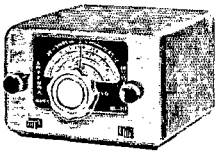

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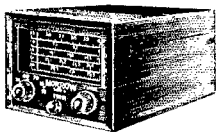

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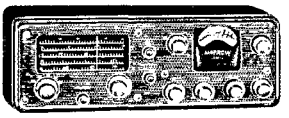

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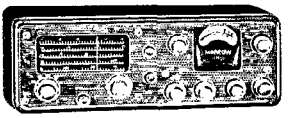

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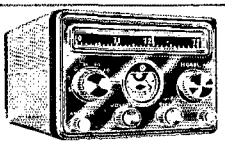

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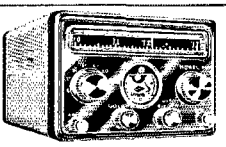

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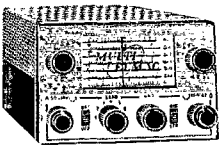

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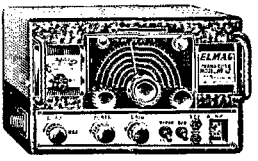

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has resigned the post of secretary of CZARA and MC has been "elected" to replace him. MJ and WA are both Stateside on business. We understand that DG and GD are leaving these shores for keeps in June. We wish Grace and George the best of luck and hope to work them soon from their new home in Texas. W9MDC and his XYL visited KA and RM for a week. BE, the old brasspounder, has finally done it. He is on phone with a DX-35. EL, ex-KP4ML, also is on the air at last with a DX-100 and a WRL Tri-bander. DH is looking for some 52-ohm coax for his 10-meter beam. The CZARA has resumed publication of its bulletin under the name *Crossroads QRM*, thanks to the efforts of VR. Traffic: KZ5HA 117, VR 92, RM 6, RV 3.

SOUTHWESTERN DIVISION

ARIZONA—SCM, Cameron A. Allen, W7OIF—SEC: YWF. The Grand Canyon Net meets on 7210 kc. at 9 A.M. Sun., LUJ as PAM. The Arizona Emergency Net meets on 3865 kc. at 7:30 P.M. Mon. through Fri., ASI as PAM. The c.w. nets meet on 3690 kc. at 8:00 P.M. Mon. through Fri. and on 7115 kc. at 4 P.M. Mon. through Fri. The Arizona Amateur Radio Club supplied communications for the yearly trip to Superstition Mountain. There were 1200 people on the trip with more than 300 on the long hike. They used 6 pack sets, 3 mobiles and 2 base stations on emergency power. Operators were BAD, CAF, ZMH, UCA, OUE, PMQ, UXZ, WKM, RIJ, OIF, JYH and WN7FMZ. Operators in Phoenix were CPY, WYY, RBA, UXJ, NFL, DWT, EBI and K7WBA. The AEN is now operating on a five-night-a-week schedule. If you have been dropped from the net list and want to get back on send a post card to Lt. Col. Robert Jackson, ASI, P. O. Box 596, Fort Huachuca, with your call, name and address on it. Traffic: W7OIF 22, CAF 12, YWF 12, WN7FMZ 2.

LOS ANGELES—SCM, William J. Schuch, W6CMN—Asst. SCM: Albert F. Hill, 6JQB. SEC: LIP. RMs: BHG and GJP. PAMs: PIB and K6BWD. Thanks to all for the help given me during the past two years. GYH still schedules Japan, Korea and MARS traffic. DDE, GYH and K6OZJ made BPL. K6MION turned in a nice traffic total again. BHG still wants help on SCN, 3600 kc. 7:30-10:00 P.M. Check with him. K6COP is QRL on two nets. HJY is working three nets, NCS on two, SCN and Frugle. K6LVL is working hard in school but still has a good traffic count. INH is QRL traffic and MARS. The Long Beach Club is busy planning for Field Day and the Convention. New officers of the Lockheed Club are OON, pres.; Bill Berbholdt, vice-pres.; HE, secy.-treas.; Al Cannells, sgt. at arms. K6EA has a new set of antennas. K6QZZ is NCS of the Valley 6-Meter C.D. Net. ORS is handling traffic and working n.h.f.; K6ICS is QRL college. BUK is skedding the KC4 boys. K6BTU now is in Manhattan Beach. K6PLW has a new shack. K6UYK has been tripping around the States. K6GTG has a kw. on 144 Mc. RW had a goodly crowd operating in the DX Test and ran up a winning score. The West Valley Club is holding code classes. Au revoir, gang, and thanks. Traffic: (Mar.) W6DDE 779, GYH 624, K6OZJ 253, MON 180, W6BHG 173, K6COP 149, W6HJY 142, ZJB 134, K6LVL 116, W6INH 99, K6EA 98, QZZ 64, HOV 42, GUZ 32, W6ORS 29, YSK 29, CMN 26, USY 18, K6ICS 14, W6CK 8, BUK 6, K6DDO 5, BTU/6 4, PLW 2. (Feb.) K6QLG 5, BEQ 2.

SAN DIEGO—SCM, Don Stansifer, W6LRU—The Ryan Amateur Radio Club held its first anniversary meeting at the home of FWF. LRU, the SCM, gave a talk on the ARRL and the history of amateur radio. YXU demonstrated standing wave ratio devices. K6BX (ex-W4CY, JD, GZA, K6HLP and W7HGW) now is located in Bonita running a Viking Valiant with beams on 10, 15 and 20 meters. He has been licensed since 1924. K6PFP has resigned as treasurer of the San Diego Council of Amateur Radio Organizations because of working nights. ATZ is Field Day chairman for the Helix Club this year. The North Shores and Clairemont Clubs have merged. New officers are K6KIJ, pres.; K6UKG, vice-pres.; INI, secy.-treas.; EWU, trustee. LWT and KUG demonstrated ham TV for the Upper Ten Club recently. Ex-1DHX is now K6YRF in San Diego. K6LDO is in boot camp at the Naval Training Center and will attend radio school there. New appointees this month include K6AXV as EC for the 6-meter group; FVA, in San Marcos, as EC for Northern San Diego County, and K6OWV, in Imperial Beach, as OES. The San Diego DX Club made slightly over a million points in the c.w. portion of the ARRL DX Contest. The top five scorers in order were KSM, LRU, BZE, CHV and KYG. K6RWM needs only Delaware for his WAS. HTN is now s.s.b. with a 20A. With the coming of summer all readers of this column are reminded to send in news and traffic totals prior to the 7th of each month for publication. Traffic: W6EOT 424, K6BPI 86, W6HTN 13.

(Continued on page 150)

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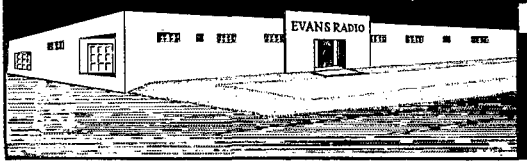

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WEST GULF DIVISION

NORTHERN TEXAS—SCM, Ray A. Thacker, W5TFP—SEC: BNG. PAMs: K5AEX and IWQ. RM: KPB, LGY advises that the East Texas State College ARC has been reorganized with PTZ as sponsor; BBN, pres.; LGY, vice-pres. AUJ reports he is getting very good QSL response from the Soviet Union. BKH was the leading OO in the 5th district. The Tyler ARC and Oil Belt ARC in Albany are now ARRL affiliated clubs. FIY is doing FB on 10 meters with his new Wonder Bar. The Texoma ARC has obtained a trailer and is rigging it up for emergency work on a fast basis, complete with a 3½-kw. generator. The various storm warning nets in the section certainly are getting a workout this spring. The Panhandle Area hams did a tremendous job of communications during the blizzard. The reports we have received contain so many calls that it is impossible to list each and every one. I am sure that none involved will mind. Think this over—isn't it amazing the job that can be done when it doesn't matter who gets the credit! We had rather a "hair-raising" experience here in Dallas with the "twister" that raged through the western part of town. The hams here did themselves proud; activity was heard on all bands as well as Army and Air Force MARS frequencies. May I remind you again, the sixth of the month is my deadline for your activity reports! Traffic: K5WAB 1702, W5KYM 197, UBW 182, K5FFB 150, W5FCX 105, OWV 95, BOO 79, K5EMR 64, W5ASA 37, KN5HTH 36, K5BKH 32, W5ZKT 10, OCV 9, K5CSM 3.

OKLAHOMA—SCM, Ewing Canaday, W5GIQ—Asst. SCM: James R. Booker, 5ADC. SEC: LXH. PAMs: MFX and KY. RM: JXM. We all miss MGH, who died of a heart attack while operating his rig. New Official Phone Station certificates were issued in March to K5DVE, K5HIV and KY. DPJ and DYL are proud possessors of 20-w.p.m. Code Proficiency certificates. OLZ and SSZ Net certificates went to 17 stations which had a record of at least ten check-ins a month for three consecutive months. All nets are continuing to render a valuable public service in the State. The new Sooner Nooner Net had an average of over 15 check-ins per day with a total of 410 for the month and handled better than 5 messages a day with 134 for the month. The Edison High School Club of Tulsa has installed a new Johnson Ranger and HQ-140 while waiting for the new call. Dick Francis, one of the youngest members of the Bartlesville Club, won a prize at the local science fair on the transmitter he built while waiting for his Novice call. New Novices this month include KN5JJE. KN5PBV has passed his General Class exam and is building a new 100-watt home-brew rig. K5ETH is another new General Class licensee. 7OER is now K5JSM and ØLXU is K5JEA. K5EJC is on the air with a new KW-S1. Our congratulations to DRZ on making his third BPL. Traffic: (Mar.) W5DRZ 622, ESB 528, K5CAY 222, HZF 153, AOV 122, JXM 114, W5CCK 101 MRK 96, ADC 74, VNC 65, KY 64, GIQ 55, K5DVE 51, W5MQI 49, LXH 47, FEC 42, VAX 39, MFX 38, K5HIV 22, W5PNG 21, K5CBA 11, DJA 11, DLH/5 10, W5EHC 9, GOL 9, OOI 9, BBA 8, K5EQX 5. (Feb.) K5AOV 130.

SOUTHERN TEXAS—SCM, Roy K. Eggleston, W5QEM—SEC: QKF. LUU has a new Buick. LVE is now 2-meter mobile. LUU has made DXCC. DKK is a new member of the NTO and 7200 Nets. PM has a new Valiant. QKF has a new 6N2. BRZ is working DX with a new 10-meter beam. CRA is the new EC at Raymondville. AQK is mobile with a new Elmac and Oldsmobile 98. GMT is the only amateur I know who traded cars and got a completely-installed mobile rig with it. PPC has a new QTH. Wonder where the rig will land? K5APJ is working traffic over PXZ, the club station at Lamar State College of Technology at Beaumont, while attending school. ETA, Director of the West Gulf Division, visited the Corpus Christi Amateur Radio Club. Welcome to the new Harlingen Radio Club. DSY has a new mobile converter. AQK has a new Regency transistor mobile converter. It was good to hear the boys on the Central Texas Storm Warning Net keeping watch recently. DTJ is doing a nice job as OO in San Antonio. Traffic: W5DTJ 82, PXZ 17, DKK 9, K5GEM 8.

NEW MEXICO—SCM, Einar H. Morterud, W5FPB—SEC: K5DAA. PAM: DVA. The NMEPN meets on 3838 kc. Tue. and Thurs. at 1800 MST, Sun. at 0730; the NM Breakfast Club meets on 3838 kc. daily except Sun. at 0700. 7TCN was in California tutoring a Navajo in translating and transcribing the Bible on tape in Navajo; he was later hospitalized in Albuquerque. FED has a cubical quad for 15 and 10 meters. K5DAO is attending school in Washington, D. C. WKW is an Asst. EC. POI is mobile on 420 Mc. BCG has 15 watts on 75 meters. SB and POI have been busy with TV microwave system. SGC and NSV have been working on a TV translator. KN5JLU is a new amateur in San Juan Co. CIN, KWR, UAR and ZU have been ap-

(Continued on page 152)

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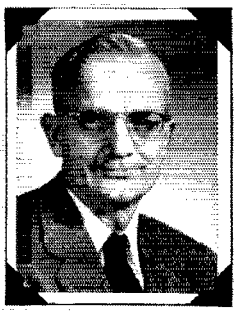

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pointed Asst. Directors. TBP has a 500B Globe King. Alamogordo amateurs furnished communications for a Sport Car Hill Climb. KWP converted the mobile to a 12-volt system. As this may be my last report as SCM, I wish to thank all those who have spent so much of their time and effort in promoting the ARRL program. Traffic: (Mar.) K5FHU 262, W5CIN 35, UAR 19, TBP 18, K5CEV 17, W5GEM 16, NQG 11, ZU 7, K5DAA 5, W5FPB 4, IGC 4, RKS 3, LEF 2. (Feb.) W5DVA 6.

CANADIAN DIVISION

MARITIME—SCM, D. E. Weeks, VE1WB—Asst. SCM: Aaron Solomon, 10C. SEC: FH. EK has received word that he is the first North American amateur to win the WAGM (Scotland) Award. Amateurs aboard HMCS *Bonaventure* operate under the call VEØNE and on HMCS *Huron* under VEØNA. PF has returned from the C.D. College at Arnprior, Ont., where he attended a communication course. YQ reports that MB is operating from the Yarmouth County Vocational High School. PZ is now using an FT-200 trap antenna and a high-level speech clipper. PQ, ZR, OM and WL have a 6-meter net operating nightly at 2000. GC and IB will be joining them shortly. AO has accepted an EC appointment for Cape Breton. ZL is active again and working the rare DX. Cmdr. John Roue has been successful in getting his old call, VE1FB, reassigned to him. VO2NA reports that the Labrador Net still meets nightly on 3780 kc. at 2130 GMT. Other active Goose Bay amateurs include VO2s AA, AH, AB, AD, DA, EA, JA, IA, QA and UA. Don't forget the Convention to be held at Charlottetown over the Labor Day week end. Brit Fader, FQ, was invited by KW and VEØND to dine on HMCS *Magnificent*; a surprise was the presentation to him of a plaque with the ship's crest, inscribed for his services while they were in Egypt and the British Isles. Traffic: (Mar.) VE1PQ 120, FQ 96, AV 78, OM 27, PZ 13, DB 9, AEB 5, VU 2. (Feb.) VE1PQ 61.

ONTARIO—SCM, Richard W. Roberts, VE3NG—The Scarboro Radio Club held a successful dinner and celebrated the 76th birthday of IB, "Ontario's oldest ham." A severe loss to our ranks was the passing of HK. Father Williams will be missed by all. DU has transmitter trouble. CP is portable VE2 for a spell. NF will be heard on 2 meters. NW has gone hi-fi. The West Side Club was presented with the Field Day Trophy for its fine efforts in '56. The St. Thomas Radio Club publishes a neat monthly bulletin edited by OT. The Quinte RC presents its new bulletin under CAB. The Skywide RC of Toronto issues a five-page club paper called *Skyhook*. The Nortown Radio Club held a very excellent dinner which was well attended. The SCM was guest speaker at the Ryerson Institute of Technology recently. The SEC and the SCM also attended the Scarboro dinner. Also seen there were NO, DEX, GH, DFA, DFC, DZA, AMT, RG, QO, GK, AYL and many others. DPO is ORS and will take Ontario Phone Net traffic for c.w. nets. AML received an engraved lighter from C.O. HMCS *Magnificent*. He also worked into Cocos Island. AJR and KM visited the Dayton Hamvention. The YLs are doing well on their Ten-Meter Net. The North Bay gang has a new meeting place, the Sibbett Bldg. Congrats to VP on making his first BPL. The Metro, Nortown, Sky Wide and West Side Radio Clubs, all of which have almost 70 per cent members in the AREC Toronto Area, were active in the Sportsman Show held in Toronto in March. The Metro Radio Club made BPL with its score at the Sportsman Show. Details of the Ontario Provincial ARRL Convention soon will be forthcoming. BUT has a new vertical antenna. The Muskeg Net meets on 3755 kc. Traffic: VE3MRC 578, VP 504, BJV 137, BUR 115, NO 110, EAM 100, GI 90, NG 89, AUU 87, EAU 61, DPO 40, CJM 24, DH 24, AJR 16, IU 11, KM 11, OT 9, AML 7, DPL 5, AVS 4.

ALBERTA—SCM Sydney T. Jones, VE6MJ—We are sorry to have to report our popular radio inspector, S. A. Dhatford, XD, is confined to the hospital after a serious heart attack. At the time of writing (Apr. 7) Shaddy is showing signs of improvement. His many friends wish him a very speedy recovery. UB has taken over the appointment as EC for the Calgary Area. As reported in this column several months ago the Calgary Club has undertaken the task of publishing *RF*, formerly published by the Lethbridge gang. Material for publication should be forwarded to P.O. Box 196, Calgary, not later then the 15th of each month. SX reports he will be busy with spring work on the farm from now on. YE says he is having trouble with the proposed new gallon rig. NO r.i. KC, CE and YG have returned from a communications course in C.D. at Arnprior. MJ has taken off on a visit to his old stamping grounds in Southern British Columbia. TG

(Continued on page 154)

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has decided on an early vacation. NA has joined the Edmonton gang on 144 Mc. Several of the gang are going for beams in an effort to increase the range. Traffic: VE6HM 152, TT 27, OD 16, MJ 8, SP 6, SX 2.

BRITISH COLUMBIA—SCM, Peter M. McIntyre, VE7JT—We have heard no word regarding the call sign auto license plates but this is not through the lack of work put in on the project by FB. KX is on RTTY as OBS each Tue. and Fri. at 2015 PST on 7144 kc. and 144 Mc. HR dropped an epistle about the 2-meter activities on the Island mentioning the following gang on 2 meters: AOG, GR (he always liked 2-meter insulators), DH, JG, AKN, AKV, MT, ZD, ZW, AIV and HR. They get together Sun. and Tue. at 9:00 P.M. PST. No frequency has been mentioned. One point I would like to mention is that when you are working W8s near the band edge do not entice them down into the Canadian phone band. You can QSY to get in the clear but it might mean a "pink ticket" for them if they follow you without realizing they are going out of their phone band limitations. We understand we have a DX club in Vancouver but no word of activity has ever reached this column. It's spring and antenna time again, so clean up the insulators, resolder the connections and renew the halyards or start climbing those slender poles to replace them. I wouldn't dare. I had to take the 45-ft. pole down and this time I put two pulleys and ropes up.

SASKATCHEWAN—SCM, Harold R. Horn, VE5HR—As this may be my last report I wish to thank you for the cooperation received during my three terms as SCM and wish the best of luck to my successor. Please give him your support as these reports and other activities cannot be carried on without it. MZ and HM are now on with a DX-100. NL now works phone, having made the grade. EN, MZ and BZ provided a 3-way hookup for district Boy Scout officials to plan a scoutmaster training camp. DF has been transferred to Saskatoon with the D.O.T. OC has been promoted to assistant chief operator with C.P. Communications at Regina. XX and YY are moving to Weyburn, where XX will manage the new broadcasting station. We are sorry to record the passing of BO at Swift Current. Augge will be missed by many of the fraternity. 2QJ is now located at Regina and hopes for a VE5 call soon. A welcome back also is extended to 6AL, who is in Moose Jaw again. The Annual Saskatchewan Hamfest will be held at Lake Waskesiu June 29 and 30. The Prince Albert Club is host and a good time is assured all. Come one and all; a good time is a certainty. You also may win the DX-100 which is the grand prize. Watch for further Bulletins.

V.H.F. QSO Party

(Continued from page 50)

v.h.f. bands. The sum of these points will be multiplied by the number of *different* ARRL sections worked per band; i.e., those with which at least one point has been earned. Reworking sections on additional bands for extra section credits is permitted. Cross-band work does not count. Contacts with aircraft mobile stations cannot be counted for section multipliers.

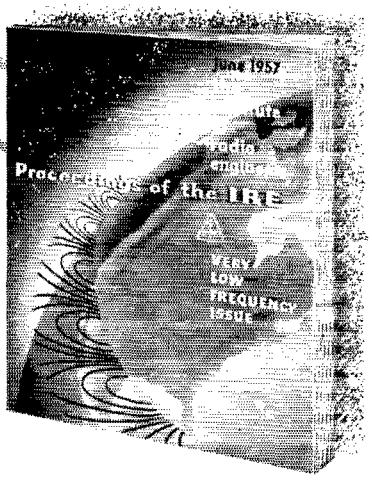
5) A contact *per band* may be counted for each station worked. Example: W2TBD (S.N.J.) works W1PHR (Conn.) on 50, 144 and 220 Mc. for complete exchanges. This gives W2TBD 4 points (1 + 1 + 2) and also 3 section-multiplier credits. (If W2TBD contacts other Connecticut stations on these bands, they do not add to his section multiplier but they do pay off in additional contact points.)

6) Each section multiplier requires completed exchanges with *at least* one station. The same section can provide another multiplier point only when contacted on a new v.h.f. band.

7) Awards: A certificate will be awarded to the high-scoring single-operator station in each ARRL section. In addition, the high-scoring multiple-operator station will receive a certificate in each section from which three or more valid multiple-operator entries are received. Certificates will also be given to the top Novice and Technician in each section where three or more such licensees submit logs. Award Committee decisions will be final.

8) Reports must be postmarked no later than June 26, 1957, to be eligible for awards. See the sample log accompanying this announcement for correct form, or a message to Headquarters will bring printed blanks for your convenience.

NEWS!



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This year, the Boulder Laboratories of the National Bureau of Standards and the IRE Professional Group on Antennas and Propagation co-sponsored a Symposium at Boulder, Colorado, on the propagation of very low frequency radio waves. From the papers given at this important meeting the editors of *Proceedings* have chosen those of broadest interest for publication in the June, 1957, issue.

Typical of the service offered members of IRE is this VLF report — to be used now and referred to for years to come. If you are not a member of *The Institute of Radio Engineers* be sure to reserve a copy of the June *Proceedings of the IRE*, today!

Partial Contents of this VLF issue:

"A Technique for the Rapid Analysis of Whistlers," by J. K. Grierson, Defense Reserve Board, Ottawa, Ontario, Canada.

"VLF Radiation from Lightning Strokes," by E. L. Hill, School of Physics, University of Minnesota.

"Some Recent Measurements of Atmospheric Noise in Canada," by C. A. McKerrow, Defense Reserve Board, Ottawa, Ontario, Canada.

"Intercontinental Frequency Comparison by Very Low Frequency Radio Transmission," by J. A. Pierce, Croft Laboratory, Harvard.

"The Mode Theory of VLF Ionospheric Propagation for Finite Ground Conductivity," by James R. Wait, National Bureau of Standards, Boulder, Colorado.

"The Geometrical Optics of VLF Sky Wave Propagation," by J. R. Wait & A. Murphy, National Bureau of Standards, Boulder, Colorado.

"Characteristics of Atmospheric Noise from 1 to 100 Kc/s," by A. D. Watt & E. L. Maxwell, National Bureau of Standards, Boulder, Colorado.

"The Present State of Knowledge Concerning the Lower Ionosphere," by A. H. Waynick, The Pennsylvania State University.

"Noise Investigation at VLF by the National Bureau of Standards," by W. Q. Crichlow, National Bureau of Standards, Boulder, Colorado.

"Reflection at a Shapely-Bounded Ionosphere," by I. W. Yebroff, Stanford University.

"The Attenuation Versus Frequency Characteristics of VLF Radio Waves," by J. R. Wait, National Bureau of Standards, Boulder, Colorado.

"The Waveguide Mode Theory of the Propagation of VLF Radio Waves," by K. G. Budden, University of Cambridge, England.

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How's DX?

(*Continued from page 98*)

larly hungry for W7/K7 contacts near 14,010 kc. around zero hours GMT. This from W2NCI . . . . . W1ANU worked UA3DQ/MM on 15 who claimed to be returning from a visit to the Antarctic and UA1KAE, Russia's ham station at Pt. Mirny. Let's hope his holds were crammed with UA1KAE logs and/or QSLs . . . . . SP6BZ, after giving the proposition much study, writes ZA1KUN off as strictly spurious in lines to W6ZEN . . . . . K2ORR (ex-W2JFE-W5QXH-DL4FH) is stationed in Portugal without prospect of hamming authorization. So Pete and family have embraced a hobby almost as rugged as DXing — bullfighting.

Hereabouts — Typical ham triumph over adversity is no better exemplified than by K9EAB. W6ZZ discloses that Cliff, confined to an iron lung since stricken with polio in 1949, became a Novice last summer, obtained his Conditional license in November and now has a DX record of 81/51 on 15 meters. "I can do about 15-18 w.p.m. and control the rig with key and relay arrangement. Dad helps by tuning and doing my secretarial work." Verily, the higher some fellows do bounce . . . . . W7DJU overheard KC4USH comment on antarctic ham (and wild) life: "Cape Adare is a rookery supporting 150,000 penguins and their young. They've left for the winter but will return around October to raise 150,000 more little ones. Winter night is coming now and days rapidly get shorter. Night brings elaborate displays of aurora enjoyed by all. The family atmosphere of this 14-man base keeps morale high." . . . . . W2DGW finds PJ2ME seeking an FS7 license and 160-meter permit . . . . . W6CFK, scribe with the San Jose *Evening News*, gave our DX game fine publicity in one of his recent columns. We all know how difficult it is to describe ham radio in lay terms and we join K6DV in applauding a very neat DXposition . . . . . KL7CAW knocks off in August and despairs of completing his Alaskan DXCC by then, for prop conditions in KL7 are steadily grim . . . . . According to W6YY, LU5KH visited Los Angeles in April . . . . . Cocos Island and TI9CR were briefly activated by TI2s CMH and LA in early April. Cocos, you know, is where billions in pirated bullion are presumed to repose. TI9CR wasn't as active as expected but who can blame the lads for taking time off the air to dig an occasional hole or two? . . . . . W8NGO wonders if spacing ARRL Test week ends three weeks apart wouldn't help chances for better average conditions. 'Twould still be a toss-up, as we see it . . . . . Height-hungry W3WPG wonders how to go about swiping the 120-foot tree thriving in ex-W3DGM's (K4LPW's) Chester, Penna., back yard . . . . . LUØDAB, dabbling with 7 watts on 10 phone, shipped a fast airmail QSL to W9NOH . . . . . W9DSO calls attention to a newspaper clipping which declares ex-HI8WL's 15-year-old son to be a guitar-plunking sensation on Dominican Republic television. D. R. televiewers hope he'll return with pop next fall, and so do we . . . . . W8YIN, now 222/206, is giving s.s.b. a whirl and reports a fast 21 countries via that medium . . . . . From W4AUL, 170/150: "I have installed a 'Gentleman' and 'Hawg' switch on my Konfederate Kilowatt (500 watts). In the 'Gent' position she drops down to a nice comfortable 50 watts input; in the 'Hawg' position she stands up and groans with the full 500." Well, there are many piggies running around with QRP, and many square-shooters wheeling kilowatts around, too. It is true, however, that a boorish DXer with QRO is more noisome than the QRP type . . . . . YN4CB visited W6s QJA SUP, K6IXU and others in California's Roseville area . . . . . CO2HB is within an ace of DXCC as a result of 15-meter phone and c.w. efforts . . . . . W7ENW, 215/201, laboriously checked his voluminous QSL files only to find himself shy of "DXCC 2" by about a dozen cards . . . . . W4VNE, four times DXCC under various calls, found enough abandoned TV-antenna scraps around his Dyersburg, Tenn., neighborhood to lash up a 28-Mc. beam that scored 54 swift 10-c.w. countries . . . . . Now what was *your* countries total ten years ago? . . .

Ten Years Ago in "How's DX?" — Column emcee W1CH reports in prefatory remarks that the new ending-signal, KN, introduced by ARRL's Communications Department in April '47 *QST*, is catching on with a *bang* . . . . . Bandwise, 20 c.w. is boss with **CP1AL, CR7VAL, EK1s AS AZ, FT4AN, GC8NO, HS1AL, Js 2AAO 2AGA 4AAC, LI2BO, LX1JW, OE9AA, OY3IGO, PKs 1AW 2AA 4OO 6AX 6EE 6HR, SP3DO, SU1RX, TA1DB, UA9CA, UAØKTU, UB5s AC BB HO, UD6KAB, UD6WD, UI8-KFQ, UO5VW, UQ2AB, VR5PL, VS4VR, VS7s AP IT MB, W3EKK/VK9, XZ2AN, YI2s AM JJ, YJ1AB, ZC6DD and ZP4A.** On 14-Mc. A3 we note **J9KC, K6ETF/-KC6, KP6AT, SV1AH, UA1AB, VS7ES** and **W6ONP/-KW6.** Ten meters provides **LX1SI, PK1MJ, PZ1A, SU1WS, VS9AB, W6VKV/I6, XU6GRL, YI2s AT CA, YR5V** and **ZC6WP,** all mostly on voice. The 3.5-Mc. gang chases **PK2OL, ZLs 1DI 2QM** and numerous Europeans. Our 40-meter men manage **CT2XD, OX1G, SU3GM,**

(*Continued on page 158*)

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TG9JK, VR2AN, VU2AC, W3EKK/J2, YU7KX, ZC6AA and ZM6AC . . . . Ex-W5AYR, on duty with the Fourth Byrd Antarctic Expedition, submits an impressive list of Ws heard in the far south . . . . The XA prefix is to be shelved in favor of SV0, and it is also reported that "political difficulties" have curtailed amateur activity in Roumania.

Lighthouse Tube Circuits

(Continued from page 31)

tripling, or 50 per cent running straight through on 432 Mc.

In coupling to the plate lines it was found that over-coupling made the plate dip appear at a point somewhat away from the setting that gave maximum output. This is a good check on proper setting of the coupling loop. There should be a good dip at resonance, either as an amplifier or a tripler. In fact, the user should check carefully to see that he has the desired harmonic, as it is very easy to be misled by the considerable dip that can be seen on a wrong one.

When amplitude modulation is to be used it should be applied to the driver stage as well as to the amplifier. This is characteristic of grounded-grid stages, of course. Some of the drive appears in the output. For this reason it is not advisable to operate a grounded-grid frequency multiplier in a final stage that is feeding an antenna. This should be kept in mind particularly by holders of Technician licenses. The frequency of the driver stage, in this instance, is in a band that is not open to holders of this class of ticket. And radiation of a strong signal on 144 Mc. when we are working on 432 is not to be recommended for anyone.

At only 250 to 300 volts on the plates either amplifier may be run without forced-air cooling. The 2C39A *job can be run at considerably higher* input if an airflow is directed through the tube's plate-cooling fins.

One final word of caution: Both types of tubes are fragile. If you intend to do any work on either unit, or if you are going to carry or ship it anywhere, *remove the tubes*. W4ECL is not the only one who learned this lesson the hard way!

— *E.P.T.*

Six-Meter Converter

(Continued from page 23)

set at zero resistance, for maximum gain in the second stage.

The overtone crystal oscillator uses a tuned "plate" circuit with the screen grid of the 6BA7 acting as the oscillator plate. With some overtone crystals extra feedback is needed. This is shown in the form of a single turn of hook-up wire wrapped around the tuned circuit in the correct winding direction, and connected in series with the crystal to ground. The correct winding direction is such that the two coils are, in effect, a continuous winding from plate to the crystal. The oscillator screen voltage resistor can be set to give about 10 volts of r.f. on grid pin 2 of the 6BA7, or about ½-ma. d.c. through the grid leak. Some experimenting with the cathode and screen grid resistors is advisable with a given

(Continued on page 160)

NEW!

FREE! LAFAYETTE CATALOG

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Write for your free copy of this big, 164-page catalog of radio, TV and audio equipment, transistor kits, parts and components, test equipment, tools, books, microscopes, binoculars, drafting equipment and ham gear—ALL AT TYPICAL LAFAYETTE SAVINGS!

NATIONAL NC-66 PORTABLE HAM & SWL RECEIVER

5-band coverage from 150 KC to 23 MC, and operation on 115V AC-DC or batteries briefly sums up this new, versatile 4-way receiver. Use it as a 3-way portable, SWL, Ham, or Marine receiver . . . indoors or out. It has electrical bandspread with logging scale, fixed tuned CW oscillator, two built-in antennas (ferrite loop for DF and BC bands, whip for SW), phone jack, 5" PM speaker, and special marine band from 150 kc to 400 kc. Housed in sturdy, two-tone metal cabinet, chrome trimmed, and with carrying handle. 12-5/16" W, 9-11/16" H, 10" D. Wt., 16 lbs., less batteries.

National NC-66 Receiver..Net **129.95**

HAMMARLUND HQ-100 RECEIVER

Dollar for dollar the most remarkable communications receiver ever produced. Sensitivity and selectivity place it in the really "hot" class. Continuously tunable from 540KC to 30MC. Electrical bandspread tuning with unequalled direct dial calibration. Q-multiplier permits continuously variable selectivity for all operating conditions. Sensitivity: 1.75 microvolts produce 10 to 1 signal-to-noise ratio. Voltage regulated and temperature compensated. Auto-Response automatically adjusts audio response to fit receiving conditions. 10-tube circuit with automatic noise limiter. Seven tuned circuits in two stages of IF. BFO variable from zero to ±4kc. With "S" meter. 16¼" L, 9-7/16" H, 9½" D. Wt., 30 lbs.

HQ-100—Receiver .....Net **169.00**
PL-38888-G1—
6x9" Matching Speaker..Net **14.95**

YES—WE HAVE THEM IN STOCK!

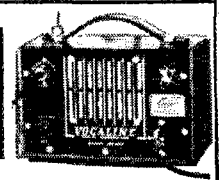
NATIONAL NC-300

- **THE NEWEST LOOK IN HAM RECEIVERS!**

National NC-300 features exceptional sensitivity (3–6 db noise figure on all amateur bands). Has 10 dial scales for coverage of 160 to 1¼ meters; 3 position IF selector provides super selectivity, gives optimum band width for CW, phone, phone net or VHF; separate linear detector for single sideband; giant, easy to read "S" meter. Muting provision for CW break-in operation, and a host of other outstanding features that make the NC-300 the "dream receiver" of every ham.

NATIONAL NC-300 — Complete..399.95

VOCALINE RADIO TRANSCEIVER Model JRC-400



First really low-priced 2-way radio available. Provides satisfactory communication at a distance of 10 miles or more—depending on location and terrain. Amplitude modulated radio telephone operates on fixed frequency of 465 megacycles (Citizens Radio Band). RF power input is 2 watts; power output is ½ watt. Power supply operates on any 115 volt AC *outlet or a 6 volt DC power source. Tubes:* 6AV6, 6AF4, 6AS5. Weight: 4 lbs. Dimensions: 9" x 6" x 5". FCC approved. With mike and line cord.

Model JRC-400.....Net **68.36**
As Above.....Pair **136.71**

Model JRC-425—Same as JRC-400 except with stainless steel mike, push-button control and earphone jack

Pair **195.51**

Also available for 12-volt DC and 115-volt AC at the same price.

VOCALINE GROUND PLANE TYPE ANTENNAS

Supplied with brackets and "U" bolts.

GP4-10 with 10 ft. RG/58U lead-in Net **7.79**
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GP5-50 with 50 ft. RG/58U lead-in Net **24.45**
GP5-50 with 50 ft. RG/8U lead-in Net **24.45**

HALLICRAFTERS MODELS S-102 and S-106

- **COMPLETE RECEIVERS FOR 2 and 6 METER BANDS**

Excellent for VHF operation by novice, technician or CAP. Supersensitive, low frequency drift, built-in 5" PM speaker, 7 tubes plus rectifier, coax and twin-lead antenna input, standby terminals.

MODEL S-102—143-149 MC 2 Meter band and CAP (148.14 MC).....**59.95**
MODEL S-106—49-55 MC 6 Meter band **59.95**

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We carry a complete line of all the famous Communications Transmitters, Receivers and Accessories.

ASK FOR W2EGI

HALLICRAFTERS SX-101 AMATEUR BAND RECEIVER

NEW! **7 Bands: 160, 80, 40, 20, 15, 11-10 Meters**

Rugged and extremely stable receiver provides excellent coverage of amateur bands and most M.A.R.S. frequencies. Dual conversion, selectable sideband receiver with 1 microvolt sensitivity. 5 steps of selectivity from 500 to 5000 cycles. Special 10 Mc position for W.W.V. Other features include crystal controlled 2nd conversion oscillators, tee-notch filter, full gear drive tuning knob with 50:1 ratio, built-in precision 100 kc evacuated marker crystal. Illuminated, dual-scale "S" meter. Direct coupled series noise limiter. 14 tubes plus VR and rectifier. Conforms to FCDA specs. 20" W, 10½" H, 16" D. Wt., 74 lbs.

SX-101 Receiver.....Net **395.00**

TRANSISTOR CODE PRACTICE OSCILLATOR KIT

For those interested in mastering the international code, an audio tone oscillator is essential. The circuit of this transistorized feedback oscillator has the simplicity of the neon glow, the signal strength of the vacuum tube, and requires only two penlite cells for weeks of service. It may be used for solo practice, or two may send and receive with the same unit. Kit comes complete with Transistor, Telegraph Key, Resistors, Condensers, Masonite Board, etc., and Schematic Diagram.

KT-72 ..... Net **2.99**
Cannon ECI—Single Headset ..... Net **1.13**

NEW VIKING! JOHNSON 6N2 TRANSMITTER

A compact VHF transmitter with instant bandswitching coverage of 6 and 2 meters. Completely shielded and TVI suppressed. Capable of 6.3V. AC at 3.5 Amps., 300V. DC at 70 Ma, 300 to 750V. DC at 200 Ma, and 30 watts audio. Input 150 watts CW and 100 watts AM phone. Cathode keying. Can be operated by external VFO or built-in crystal control. 8 to 9 Mc crystals used in pentode oscillator. Dual band tank circuit. Flexible output coupling system. Tubes: 2-6U8, 6360, 5894, 6AQ5. Wired and tested. 13½ x 8⅝ x 8½". Shpg. wt., 14 lbs.

No. 240-201-2—Less crystals, key and mike .....Net **159.50**
No. 240-201—As above in kit form..Net **119.50**

Lafayette Radio

DEPT VF

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BRONX 58, N. Y., 542 E. Fordham Rd.

overtone crystal, in order to arrive at good sensitivity and minimum cross-modulation effects.

The r.f. circuits can be set individually to about 52 Mc. with a grid-dip oscillator, shorting out the other coils not being adjusted. The tubes should be in place, but no power should be applied to the converter. Then a crystal noise generator can be used to tune up all the circuits for minimum noise figure at several places in the 50-Mc. band, with the converter in operation connected to a communication receiver. With a few minutes' work on this nearly uniform sensitivity and low over-all noise figure can be obtained.

Transmit-Receive Switch

(Continued from page 25)

ricated from RG-8/U coaxial cable. This cable has a rating of approximately 6000 peak r.f. volts, and in the laboratory it withstands in excess of 20,000 volts of d.c. Actually, in normal use it is usually limited by current rather than voltage. The capacitance of the cable is 30 $\mu\mu$f. per foot, so that one may measure off the required capacitance by the inch, and end up with a really low-loss and practical unit.

Examination of the circuit will show that the t.r. switch input is a high impedance for low frequencies. It is advantageous, therefore, to have the tank circuit at d.c. ground potential so that crosstalk at power-line frequencies will be eliminated. Fortunately, this is the case in practically all modern transmitters. A type of noise customarily picked up with electronic t.r. switches is that caused by plate current flowing in the power amplifier. It is necessary, therefore, to bias the tubes beyond cutoff when receiving.

The output of the 6AH6 feeds 75-ohm coax cable by means of a carefully designed broad-band transformer utilizing a selected core. The frequency characteristic of the t.r. switch is flat within 1 db. from 3.5 to 30 Mc. with essentially unity gain. The actual gain, therefore, is that due to the combination of the plate tank circuit and the capacitive voltage divider.

The increase in the receiver noise (of an SP-600) due to the t.r. switch made no practical difference in received signals when the t.r. switch was operated as a unity-gain device. When operating with any gain in the plate tank circuit, however, the signals seemed to jump right out of the background. With transmitters of 150 watts or less, where the gain is of the order of 15 db. or more, ambient noise is almost always the limiting factor in receiving when using the t.r. switch. This advantage decreases, of course, with higher powers.

Considering the t.r. switch as part of the transmitter also solves the TVI problem that has plagued some t.r. switches heretofore. The TVI generated in the t.r. switch is generally minute when compared to that generated in the transmitter tubes so that it will have practically no effect when compared to the overall TVI picture of a particular transmitter. This means that there is little chance for the t.r. switch to cause

(Continued on page 162)

NOW! RESTYLED! COMPLETELY NEW!

THE

Globe Scout 680

COMPLETELY BANDSWITCHING XMTTR.

FOR 6 THRU 80 METERS

KIT FORM: Cash Price: $89.95 — Only $7.29 per mo. Pay $9.00 Down

WIRED: Cash Price: $99.95 — Only $8.10 per mo. Pay $10.00 Down

Also available as shown above except for frequency range:
Globe Scout 66 for 10-160M, wired only, $10.00 down, $8.10 per mo.

★ Built-In Power Supply ★ Pi-Network Output (except 6 meters)

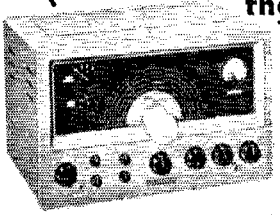
★ High Level Modulation ★ Full Modulation of Final

★ TVI-Screened Cabinet ★ 65 Watts on CW; 55 Watts on Fone ★ Adaptable for Mobile Operation

Only 10% Down

Easy Terms on These Top-Notch Receivers!

the RME 4350



Only $12.83 per mo.

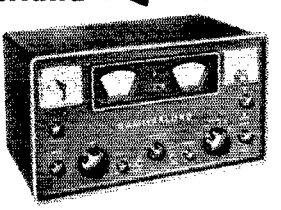
CASH PRICE: $229.00

Crystal controlled dual-conversion. High selectivity and rejectivity. Easy pinpoint-precision tuning with two-speed tuning control. High degree of mechanical and thermal stability; very low frequency shift or drift. Sensitivity; - between 1 & 2 mv through tuning range. Betwen 3.5 & 6 DB low noise factor. 1750 KC - 30 MC. 7 multipurpose tubes.

the Hammarlund HQ-110

Only $12.83 per mo.

CASH PRICE: $299.00



Here's a new double conversion receiver for 6, 10, 15, 20, 40, 80 and 160 meter bands. Separate SSB Linear Detector. Q-Multiplier. Dual dials. Crystal calibrator and crystal control. Separate stabilized BFO. Dial Scale Reset. It's brand new and really a dandy. Write for complete information.

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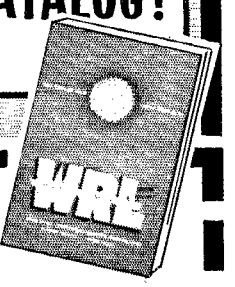

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ELECTRONIC HEADQUARTERS

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TVI if the transmitter is normally TVI free.

A word now to those who might wish to construct a t.r. switch similar to the one described above. Other than the r.f. output transformer, its construction is quite straightforward. It must be remembered, however, that it is actually an r.f. stage and deserves the shielding, bypassing and careful layout demanded by such a device.

Banned

(*Continued from page 100*)

from the former French Indo China, Prince Norodom Sihanouk, former boy-king and ex-premier and now leader of the Sangkum (popular socialists party) pointed out that his country is a "neutral country and forebears to make any ideological alliances with other countries." Since the Prince is head of the political party which controls each and every seat on the Cambodian National Assembly, he is nominal head of the country under King Norodom Sihanouk. Apparently Cambodia just wants to tight-rope it in view of the world situation and remain as isolated as possible by just sitting on the fence.

Iran, the modern Persia, has a common border with the Soviet Union of nearly 2,000 miles. There is continuous concern in government circles over political infiltration that could affect the independence of the country. Osan Eghbal, spokesman for the Ministry of Foreign Affairs, told me — "It is because of these 'left-elements' of which there are many in my country, that Iran is unable to permit operation of amateur radio stations. If we permitted amateurs to transmit, it would mean our limited security facilities would have to listen all the time to observe if communications were taking place between left elements inside and to beyond the country. Our government is a constitutional monarchy and it is the policy of the government to give as much personal freedom as we can. However, we must protect our independence against those who would overthrow the government."

Field Day Rules

(*Continued from page 47*)

many stations as possible; for home stations to work as many portable and mobile stations as possible.

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

4. Entry Classification: All entries will be classified according to number of transmitters in simultaneous operation. They will be further classified as follows: "A," club or nonclub group portable stations; "B," unit or individual portable stations; "C," mobile stations; "D," home stations operating from emergency power; "E," home stations operating from commercial power sources. Thus a club or group running three transmitters simultaneously will be in the 3A classification, or a mobile station with one transmitter will be in the 1C classification.

Portable stations are those installed temporarily, for FD purposes, at sites away from customary fixed-station locations. Portable equipment or units must be placed under one call and the control of one licensee, for one entry. All control locations for equipment operating under one call must lie within a 1000-foot diameter circle.

Group participation is that portable-station work accomplished by three or more licensed operators.

Unit or individual participation is that portable-station

(*Continued on page 164*)

RADIO SHACK HOLDS THE LINE

Consumer Approved

REALISTIC FM TUNER

SAME LOW PRICE

$39.95

the fm tuner

■ "... the Radio Shack Realist is a good moderate-priced FM tuner."
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■ "The Realist FM tuner is an intriguing little device, for in spite of its small size and low cost, it is sensitive and capable of putting out a high-fidelity signal."
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■ "... the designers have been able to get sensitivity surprisingly close to that of tuners which sell for three to four times its (Realist FM tuner) cost."
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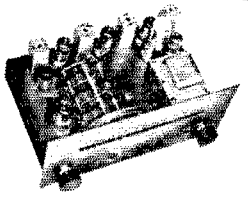
★ ARMSTRONG AND AFC FM CIRCUIT
★ TUNED RF STAGE ON FM
★ SUPERHETERODYNE AM CIRCUIT
★ WITH BUILT-IN AC SUPPLY

FM TUNER: 88-108 mc. Five microvolt sensitivity for 30 db quieting, Armstrong circuit, double-tuned limiter and triode mixer, balanced AFC, tuned RF stage. 20-20,000 cps ±0.5 db. 180 kc bandwidth. 6 tubes (2 dual) plus rectifier and pilot lamp. Solid 1-piece gold-tone panel escutcheon; built-in function switch, tape recorder jack, phono input. Controls: tuning, power. AC power supply built-in. Ultra-compact: 4¼ x 9½ x 6⅜" deep. Ship. wt. 6¼ lbs. Use with any amplifier, sound system or TV set. Standard RETMA guarantee.

Order No. 36-888F ..... Exclusive at $39.95



Realist-ic!

FM tuner **$39.29**
AM tuner **$29.95**
Amplifier **$29.95**

Mail orders: add postage for 7 lbs. per unit.

RADIO SHACK CORP.

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work accomplished by either one or two licensed operators.

Mobile stations are complete installations including power source and antenna, mounted in or on vehicles and capable of being used while in normal motion. If they utilize antenna supports not normal or suitable for use during motion, installations must be classified as portable instead of mobile. Each mobile entry call must be different from any other FD station participating.

Home-station participation is that work by fixed amateur stations not operating portable or mobile.

A transmitter used to contact one or more stations may not subsequently be used under more than one other station call during the Field Day period.

5. Field Day Period: All contacts must be made during the period indicated elsewhere in this announcement. An entry may be operated no more than 24 consecutive hours of the 27 hours available.

6. Bands: Each phone and c.w. band is regarded as a separate band. The following (and additional u.h.f.-s.h.f. bands) constitute separate bands: *A1*: 1.800-1.825 1.875-1.900 "east" or 1.900-1.925 1.975-2.00 "west," 3.5-4.0, 7.0-7.3, 14.0-14.35, 21.0-21.45, 26.96-27.23, 28.0-29.7, 50-54 and 144-148 Mc. *A2*: radioteletype and frequency-shift keying are grouped with A1, in the bands where they are allowed. *A3*: 1.800-1.825 1.875-1.900 "east" or 1.900-1.925 1.975-2.000 "west," 3.8-4.0, 7.2-7.3, 14.2-14.3, 21.25-21.45, 26.96-27.23, 28.5-29.7, 50-54, and 144-148 Mc. All forms of voice transmission will be grouped with A3, in the bands where they are allowed. (In Canada and Cuba, their respective phone bands apply.)

The use of more than one transmitter at one time in the same band is not allowed.

7. Exchanges: Signal reports and ARRL section (or specific location) must be exchanged in proof of contact.

8. Valid Contacts: In Class A, B and C, a valid contact is a completed exchange with any amateur station. In Classes D and E, a valid contact is a completed exchange with any station in Class A, B or C. Cross-band contacts are not allowed. Contacts by mobile stations may be made in motion or from any location(s). A station may be worked more than once only if the additional contacts are made on different bands.

9. Field Day Message: A Field Day Message is one originated by a Class A, B, or C station and addressed to the SEC or SCM (see address in *QST*, p. 6) stating the number of operators, the field location, and the number of AREC members at the Field Day station. Only one Field Day Message may be originated.

10. Scoring:

Points: Each valid contact counts 1 point.

Message Credit: Credit for handling messages may be obtained only as follows: 25 points for originating one Field Day Message to SEC or SCM. In addition, each Field Day Message received for relay will score 1 point when received by radio and 1 point when sent onward by radio. No FD Message may pass through the same station twice. There will be a deduction of 10 points for omission of handling data or for defects in form. Copies of all messages originated and relayed must accompany Field Day reports.

Multipliers:

Power: Output-stage plate input under 30 watts: 3. Output-stage plate input over 30 and under 150 watts: 2. Output-stage plate input over 150 and under 1000 watts: 1. The plate input of a grounded-grid amplifier is its plate input plus the plate input to the driver stage.

Independence-of-Mains: All radio equipment independent of commercial power source: 3. All radio equipment not independent of commercial power: 1.

Battery Power (applies to Class B and C only): 1.5. The battery capacity or size shall in all cases be adequate to permit one hour's continuous operation of the station. Charging batteries from commercial mains while batteries are connected to transmitter or receiver voids the "independence-of-mains" and "battery power" multipliers.

Multipliers do not apply to Class D and E entries.

Final Score: The final score equals the total "points" multiplied by the "power multiplier" multiplied by the "independence-of-mains" multiplier (multiplied by the "battery power" multiplier, if applicable). Where different multipliers apply during the Field Day period, points are multiplied by the multiplier in effect at the time the points were earned.

11. Club Aggregate-Mobile Scores: Entries under Class C may be combined to form a "Club Aggregate-Mobile Score." The club name must be noted on the in-

(*Continued on page 166*)

Now In Stock For Immediate Delivery!

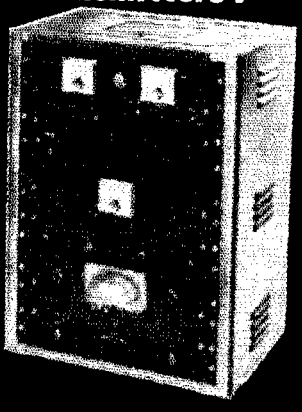
THE WORLD FAMOUS, WRL ELECTRONICS . . . **Globe transmitters!**

Guaranteed for One Full Year!

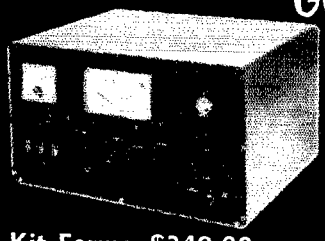
Only $699.00 Globe King 500B

$70.00 down
$30.40 a month

New, commercial-type compression circuit allows three times the "audio punch". Completely bandswitching, 160-10M. Built-in stable VFO, 540 watts on fone, CW and SSB (P.E.P.), with external exciter. Transmitter relay controlled, and including built-in antenna relay. Pi-Net matches most antennas from 52-600 ohms. Electronic Grid-Block Keying for maximum clarity of signal (time-sequence operation). New audio compression circuit holds modulation at high level without usual clipping distortion. RF section enclosed with complete shielding for TVI-suppression. Separate power supply for modulator, allowing better overall voltage regulation. Many other top features including provisions for crystal operation, push-to-talk, etc. Table-top size: 31x22x14¾



Globe Champion 300



Kit Form: $349.00

Completely bandswitching, 160-10 Meters; 350 watts on CW, 275 watts on fone and 300 watts SSB (P.E.P.), with external exciter. Built-in VFO, push-to-talk, antenna changeover relay, provisions for crystal operation. Improved time-sequence keying. Pi-Net output circuit, 48-700 ohms. Extensively TVI-shielded, filtered and bypassed. High level Class B Modulation with splatter suppression; new audio compression circuit holds modulation at high level without usual clipping distortion. Ready to go on SSB with any external exciter. Two Amperex 9909 Final tubes (1000 V on plates) allow 33⅓% safety factor.

Only $449.00

$45.00 down
$19.58 a month

Globe Scout 680

KIT FORM: $84.95

Compact, completely bandswitching transmitter for 6-80 Meters; allows operation of 6 M band by technicians, novice CW bands, or use by advanced ham without becoming obsolete. Completely self-contained with built-in power supply, for 65 watts CW, 50 watts phone. High level modulation. TVI-shielded cabinet. Pi-Net output on 10-80M; link-coupled output on 6 M, matching into low impedance beams. New-type shielded, full-range plastic meter for better readability. Adaptable for Mobile Operation.

Only $99.95

$10.00 down
$10.05 a month

Globe Chief 90

Only $64.95

$6.50 down
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Handsome 90 watt Xmttr. with meter indication at 75 watts, allowing the Novice all the power he can legally use. Self contained, completely bandswitching, 160-10M. Combination Pi-Net, with provisions for antenna changeover relay, speech modulator input, VFO input and operation. Modified Grid-Block Keying for max. safety. Has complete, well-filtered power supply. Kit contains pre-punched chassis, all parts and detailed assembly instructions.

KIT FORM: $49.95

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dividual reports, and the club secretary must submit a claimed aggregate score. Credits to the extent supported by the reports submitted to ARRL will be allowed. Only bona fide members of the club, residing in the club territory, may contribute to the aggregate-mobile club listing.

12. Reporting: Mail reports or entries on or before July 20. Reports must show starting and ending time of FD operating period, bands used, dates and contact times, calls of stations worked, signal reports set and received, and ARRL sections or locations of stations worked. Reports must also show power inputs and sources of power, number of transmitters in simultaneous operation, location of station, number of persons participating, class of entry, and score computations.

World Above 50 Mc.

(*Continued from page 60*)

on 220 Mc. during March, K6EPT and K6LXU being new ones. 220 picking up.

W7PUA, Eatonville, Wash. — Completed 2C39A tripler for 1296 Mc.; now working on xtal converter using two 416B r.f. stages. Anyone have info on straight-through amplifiers for this frequency?

W9GAB, Beloit, Wis. — Aurora observed on 144 Mc. 11 times in March. Keeping 432-Mc. skeds with W9DRN, 70 miles, at 2100 CST, except Tuesday. 432-Mc. transmitter with 4X150A delivers 35 watts output with 50 in. 416B preamplifier at antenna improving reception.

W9MHP, Ravenswood, Ind. — W9ULH, Portland, Ind., worked W8IJG on 220, 209 miles. W9HLY, Decatur, also worked him.

WØMNP/5, State College, N. Mex. — Experimenting with 6AF4 oscillator using circuit described by W3MLN and W3HFW in April, 1948, *QST* and in *Handbooks* up to 1954, developed oscillation up to 1260 Mc. or more. Plate and grid lines $2\frac{3}{16}$ inch long operate on $\frac{3}{4}$-wave mode.

YL News and Views

(*Continued from page 68*)

W8KLZ	16	9	180*
W8OGY	19	5	119*
W9MPX	176	49	10,780*
W9UON	222	26	7,215*
W9VNG	156	29	5,655*
K9CQF	119	35	5,206*
K9AMD	30	10	375*
K9DBD	16	9	180*
KØBFS	379	59	27,951*
KØBMS	322	42	16,905*
WØNIQ	313	40	15,650*
WØPSP	238	45	13,388*
WØBFW	85	21	2,231*
WØZWL	65	24	1,950*
KØBTV	50	18	1,125*
KL7BHE	376	56	26,320*
KL7ALZ	261	56	18,470*
KL7BJD	278	45	15,638
KZ5VR	273	48	13,104
VE3DMX	209	49	12,781*
VE3AJR	131	36	5,895*
VE3DDA	15	8	150*

OM C.W.

Call	*No. of Contacts*	*Sections Worked*	*Score*
W1BNS	42	25	1,313*
W1AJZ	39	26	1,268*
W1LQQ	25	16	500*
W1DPB	22	14	385*
W1LNM	8	6	60*
W1VBR	3	2	8*
K2DSW	52	27	1,755*
K2KDW	47	27	1,586*
W2NIY	36	22	990*
W2EMW	34	22	935*
K2DEM	34	19	808*
K2GLQ	28	20	700*
K2HXR	25	15	469*
W2SAW	20	17	340
K2OPJ	18	15	338*
W2LRO	16	13	260*
W2DMU	17	13	221
K2GTC	16	11	220*
W2BWW	17	9	195*
K2PPV	15	10	150
W2LGK	8	6	60*
K2UOY	7	5	44*
K2OEG	6	5	38*

(*Continued from page 168*)

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9	J SA6603		X	50-100 Kc
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26	AA SA6623		X	27.5-301 mc
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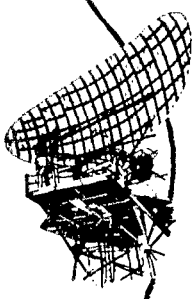

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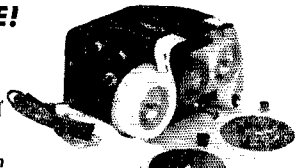

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WANTED: All types aircraft & ground transmitters, receivers ART-13, RT18/ARC1, R5/ARN7, BC610E, ARN6, BC788C, ARC3, BC342. Highest prices possible paid. Dames, W2KUW, 308 Hickory St., Arlington, N. J.

ATTENTION Mobilcers! Leece-Neville 6 volt 100 amp. system alternator, regulator & rectifier, $45.00. Also Leece-Neville 12-volt 100 amp. system, alternator, regulator & rectifier, $85.00. Good condition. H. A. Zimmerman Jr., K2PAT, 115 Willow St., Brooklyn 1, N. Y. Ulster 2-3472.

CASH for your gear. We buy as well as sell. Write for cash offer or trade. We stock Elmac, Gonset, Hallicrafters, Hammarlund, Johnson, Lysco Master Mobile, Morrow, National and other ham gear. H & H Electronic Supply, Inc., 506 Kishwaukee St., Rockford, Ill.

WANTED: Receiver R5/ARN-7, MN-62A transceivers, RT18/ARC-1, AN/ARC-3, BC-788C, 1-152C, Collins, Bendix equipment, test ests, dynamotors, inverters. We pay highest prices. Advise quantity, condition, price in first letter. Aircraft Radio Industries, Inc., 15 East 40th St., New York City. Tel. LExington 2-6254.

DX'ERS Notice! Save money? Save Time? Free info. DX QSL Coop, Box 5938, Kansas City 11, Mo.

MULTI-BRAND Antenna, 80-40-20-15-10, $19.95. Patented. Send stamp for information. Lattin Radio Laboratories, Owensboro, Ky.

SAN FRANCISCO and vicinity. Communication receivers repaired and realigned. Guaranteed work. Factory methods. Special problems invited any equipment. Associated Electronics, 167 So. Livermore, Livermore, Calif. W6KF, Skipper.

RECEIVERS: Repaired and aligned by competent engineers, using factory standard instruments. Authorized Factory Service Station for Collins, Hallicrafters, Hammarlund, National. Our twenty-first year. Douglas Instrument Laboratory, 176 Norfolk Ave., Boston 19, Mass.

VACATIONS. Ham with my equipment, modern housekeeping cabins, American plan. Big McKenzie Lake, Spooner, Wis. Tony Martorano, W9HZC.

WANTED: ARC-3, ARC-1, ART-13, BC-312, BC-342, BC-610, BC-788, O-17/ART13 LFO and other surplus. Advise what you have and price. Ritter, W4VHG, Box 5878, Bethesda, Md.

SCHEMATIC diagrams ARC-5 80-40 meter rcvrs and xmitters, 25¢ each or trade. S. Consalvo, 4905 Roanne Drive, Washington 21, D. C.

RADIO magazines. Buy, sell or trade. Bob Farmer, Plainview, Texas.

CASH Paid! Sell your surplus electronic tubes. Want unused, clean transmitting, special purpose, receiving, TV types, magnetrons, klystrons, broadcast, etc. Also want military, and commercial lab test and communications gear. We swap, too, for tubes or choice equipment. Send specific details in first letter. For a fair deal write, wire or telephone: Barry Electronics, 512 Broadway, New York 12, N. Y. Tel. WAlker 5-7000.

QSLS? SWLS? Finest and largest variety samples, 25¢ (refunded). Callbooks (Summer issue), $4.50. "Rus" Sakkers, W8DED, P.O. Box 218, Holland, Mich.

QSLS-SWLS. Meade WØKXL, 1507 Central Avenue, Kansas City, Kans.

QSLS-SWLS. 100, $2.85 up. Samples 10¢. Griffeth, W3FSW, 1042 Pine Heights Ave., Baltimore, Md.

DELUXE QSLS — Petty, W2HAZ, Box 27, Trenton, N. J. Samples 10¢.

QSLS "Brownie," W3CJI, 3110 Lehigh, Allentown, Penna. Samples 10¢; with catalogue, 25¢.

QSLS-SWLS. Samples 10¢. Malgo Press, 1937 Glendale Ave., Toledo 14, Ohio.

QSLS. Twenty exclusive designs in 3 colors. Rush $3 for 100 or $5 for 200 and get surprise of your life. 48 hour service. Satisfaction guaranteed. Constantine Press, Bladensburg, Md.

QSLS — All kinds and prices, samples 10¢ fast service. DX Card Co., Kulik St., Clifton, N. J. GR 3-4779.

QSLS that bring returns! Samples 25¢ (deductible). C. Fritz, 1213 Briargate, Joliet, Ill.

QSL Samples. Dime, refundable. Roy Gale, W1BD, Box 154, Waterford, Conn.

QSLS. Neat, Attractive. Samples 10¢. Woody's. Box 164, Asher Sta., Little Rock, Ark.

QSLS. Taprint, Union, Miss.

QSLS. Samples 10¢. H. J. Snyder, 398 Washington, Peru, Ind.

QSLS. Reasonable. 3 weeks delivery. Samples 10 cents (coin) Dick, K6GJM, 10558 E. Olive, Temple City, Calif.

QSLS, Sharp! 200 one color, glossy, $4.75; Multi-color samples dime. K9DAS QSL Factory, Edward Green & Sons, Box 197, Frankfort, Ind.

QSLS, SWLS. Samples dime. Backus, 703 Cumberland St., Richmond, Va.

QSLS: Cartoons, colors, something different. Samples 15¢. Chris, W9PPA, 365 Terra Cotta, Crystal Lake, Ill.

FINEST QSLS! Lowest prices. Samples. WAT, Box 128, Brecksville, Ohio.

QSLS Glossy, two colors, samples 10¢ (refunded). 200 cards $3.75. WIGKH Press, Candleview Ridge, Danbury 18, Conn.

INDIVIDUALLY Designed QSLS. Send idea. Sketches, prices, returned for approval. Also stock samples, dime. St. Louis Amateur Radio Club, 1123 Washington Ave., St. Louis, Mo.

QSLS. Reasonable. 3 Week Delivery. Samples dime (coin). Dick, K6GJM, Box 294, Temple City, Calif.

QSLS. Samples, dime. Printer, Corwith, Iowa.

NOVICES! Generals! QSLS, SWLS, VHFs, XYL-OMS, (samples approximately .09¾ ¢) reasonably priced "tacked-up-kind" different, comic, sedate, diversified, glorious, prototypal, infrequent, unparagoned, extraordinary, unprecedented, dissimilar (wow!). Rogers, KØAAB, 737 Lincoln Ave., Saint Paul 5, Minn.

QSLS, California only. Dauph, K6JCN, Box 66009, Mar Vista 66, Calif.

QSLS. High gloss. Free samples. K2VOB Press, 62 Midland Blvd., Maplewood, N. J.

QSLS of distinction! Three colors & up. 10¢ brings you samples of distinction. Uncle Fred, Box 86, Lynn, Penna.

QSLS. Glossy. Samples 10¢. W1OLU Press. 30 Magoun, Medford, Mass.

SEND $1.00 for 50 QSLS-SWLS. Glossy cards. Samples free. Bolles, Box 9007, Austin 17, Texas.

QSLS samples, dime. Gay Krenz, Fall Creek, Wis.

RUBBER Stamps for QSLS: sample imprints. C. W. Hamm, W9UNY, 542 N. 93rd St., Milwaukee, Wis.

QSLS: Cartoons, colors, something different. Samples 15¢. Chris, W9PPA, 365 Terra Cotta, Crystal Lake, Ill.

QSL Special. Free Sample. Nat Stinnette, W4AYV, P. O. Box 155, Umatilla, Fla.

QSLS, SWLS. Samples dime. Backus, 703 Cumberland St., Richmond, Va.

RUSPRINT QSLS-SWLS. 1¢ each. Samples 10¢. Box 7507, Kansas City 16, Mo.

SEND for this month's standout listings of Reconditioned Equipment. Also request our new "1957" Amateur Catalog. We feature all leading brands and promise you an attractive deal always regardless of your needs or budget. Check our offer first. We deal quickly, easily and always on a personal basis. Stan Burghardt, WØBJV, Burghardt Radio Supply, Watertown, S. Dak.

MEDICAL Hams! Trade Beck-Lee Model E electrocardiograph for a good Collins receiver. T. R. Jacobson, M.D., WØSLG, Hot Springs, S. Dak.

SALE: QSL metal file boxes with State and DX index. Initialed with call letters. $3.00 each. Gerold Kaminski, W8OQR, 2814 Albion St., Toledo, Ohio.

TECHNICAL Manuals TM11-273, 120 pages covering BC-312 receivers and BC-191 transmitters, $2.50. ID-60/APA-10 Panadaptor manuals, $2.75. Both postpaid in U.S.A. Electronicraft, Bronxville, N. Y.

FOR Sale: Harvey-Wells TBS50D Bandmaster Deluxe transmitter, never used, plus schematic, $110. Robert Hildebrand, 501 Washington Ave., Greensville, Ohio.

TO 75% discount. Brand name parts, new. Meters, switches, relays, tubes, resistors, condensers, others. For complete listing send 50¢ coin, refundable. Ensall, 1134 Bingham Ave., Warren, Ohio.

HALLICRAFTERS, Central Electronics ham gear — others. Swartzlander Radio Limited. Fremont, Ohio. Call Jerry, W8EPI or write.

RUBBER Stamps of all kinds. Special, Nickel-plated self-inking pocket stamp, $1.40. Name QTH and Call. Howard Rapple, WØVRB, 401 N. 2nd St., Humboldt, Iowa.

COLLINS 75A1 in perfect condition, $260, including speaker. Walter A. Duke, Radio Station WDBL, Springfield, Tenn.

HAMFEST June 9th Southwest from Ottawa, Ill. on Illinois Route 71 at the La Salle County 4-H Home and Picnic Area. Advance registrations may be mailed not later than June 1 to Starved Rock Radio Club, RFD 2, Utica, Illinois. Advance registration $1.00; $1.50 at the gate. A nice all-day affair for Midwest Hams and their families.

FOR Sale: Hallicrafters S-85 with Heath Q multiplier and Hallicrafters S-meter, $100; Homebrew xmitter AM/CW 90 watt ($140 in parts) $90; Kw. xmitter, will sell cheap Chas. Anderson, 710 West Oak, Dodge City, Kans.

QST September 1937 thru December 1950, complete run except March 1944. Best offer takes. WØCAW, K. H. Stanger 1840 South Milwaukee St., Denver, Col.

SELL: Adventurer. Make offer. W5KKB.

WANTED: BC-221, BC-348, BC-312, BC-342, BC-610-E, ARN-7, BC-788, ARN-6, APR-4, ARC-1, ARC-3, ART-13. All types surplus or amateur transmitters, receivers, test equipment taken in trade for New Johnson Viking Ranger, Pacemaker, Valiant, Hallicrafters, Hammarlund, National B&W, Gonset, Elmac, Telrex, Fisher Hi-Fi, etc. Write Tom, W1AFN, Alltronics-Howard Co., Box 19, Boston 1, Mass. Tel. Richmond 2-0048. Stores: 60 Spring St., Newport, R. I.; 44 Canal, Boston, Mass.

WANTED: Your new, used and unused equipment! Get all the cash when you sell to Harry, W6ATC! We pay most for BC-348, BC-224, R-5/ARN-7, ART-13, BC-788C, APN-9, all types of Test and Communication Equipment. Alvaradio Industries, Box 151-QS, North Hollywood, Calif.

HALLICRAFTERS SC-40A modified for 25/60 cycle operation with jack for tape recorder pickup, in A-1 condx, $100. Write J. Ralph, 112 Marquette Ave., Downsview, Ont., Can., or Phone Toronto ST 8-8589.

FOR Sale: 450 watt rig, open 6 ft. Bud rack, screened and TVI suppressed; PP 812A's, mod. 125 watts; 1800/1500/1250 p.s. — 800/600 p.s. — 400/300 p.s. Worth in parts: $300. Price: $125. Take it away. 459A with p.s., $30; Sonar XE10, $15. Many parts and xfrmrs. Phone or write: W. Ulrich, 76-19 Caldwell Ave., Elmhurst 73, L. I., N. Y. Tel. DE 5-3185 after 7 P.M.

SELL: Trade-Camera: Super Iconta B, rf., Tessar f:2.8 coated, sync. compur, case, shade, filters, like new. Want: Viking Ranger. Carl Rainbolt, W9VZF, Cordon, Ind.

FOR Sale: Johnson Adventurer, $50. Bell model 225G Hi-Fi amp., $70; Harmon-Kardon Hi-Fi FM tuner, $65; two and six meter conv., $50; H.W. TBS50C Hi Z imp. VFO and pwr supp. $150; Hallicrafters S-51A, $60; Heath V-72 VTVM new w. & t., $35; $450 takes all. Write: W3BFC, 334 Lambeth Rd., Balto. 28, Md.

WANTED: Power transiormer 2600 volts at 300 to 500 Ma. with center tap connection. K4CLE, Charlotte, Tenn.

FOR Sale: Three (3) Vocaline Transceivers, Citizen Band, used very little. Complete with outside and inside antennas, microphones, etc. $150.

COLLINS 30K-1, complete, in new condx. Manual for SSB conversion, $800 F.o.b. Pittsfield, N. H. W1THM, RFD #1, A. J. Brizzolari.

SELL: New AF-67 unused, $150. W1HNB, 614 W. Shaft, North Adams, Mass.

WANTED: Collins PTO unit. State condition and price in your reply. Ray Feeney, W6CMY, 6719 Main Ave., Orangevale, Calif.

FOR Sale: Onan power plant, 115 V. AC, 60 cycle, 500 watts, in original crate, $50; "Matchbox" 250 watt, new $35; power supply, 2500 V. DC at 350 Ma., new parts, $50; Super Six converter, in exc. condx, $30; PE103, $10; Super Pro pwr supply, excl, $25; Heath Q multiplier, $8; Heath VFO, $18. W5VRO, Jas. W. Craig, Jr., 2121 17th St., Lake Charles, La.

SELL: Knight 50 watt xmitter, excellent condx, de-bugged. Only $35. Write to Dough MacPherson, 10 Brookside Dr., Apt. 2F, Greenwich, Conn.

GONSET Communicator I, in exc. condx, cash & carry, $130. K2BBC, Ray Kreisman, 37 Nagle Ave., N. Y., N. Y.

SELL: DX-35, late one, like new condx. Local sale. Pick up, $50. W. Trotter, KN5ITX, 1502 Nearn St., Blytheville, Ark.

AMATEUR Paradise Vacation Spot! Livingstone Lodge and log cabins, Mascoma Lake, Enfield, N. H. 100 acres, eleven buildings. Main Dining Lodge, swimming, boats, sports, skiing, Dartmouth Golf, churches, LaSallette shrine, fishing, 28th year. Family groups, 75 & 40 meter rig in lobby. American Plan, $40 per week. Children half price. Booklet on request. Al Livingstone, W2QPN, 12-01 Ellis Ave., Fair Lawn, N. J.

MASTER Mechanic 1200 watt generator, 2½ H.P.; Briggs Stratton gas engine, 115 V. AC, at 60 cycles output, $150; 100 watt, 2 meter xmitter, panel mounted, mastered, built-in V.F.O., bias and fila. supply AX9903 final, enclosed plate lines, $75; Gonset 6 Meter beam, $12. Quick assembly, 6M beam for portable use, $25. S. Savage, W6ABN, 414 E. 55th St., Long Beach, Calif.

WANTED: 15 Meter coil for HRO-60, in gud condx. State price. W2LAP.

SELL Collins KWS-1, complete, and 75A4, used 2 hours; Johnson rotator 10-15-20. Best bid. W2MWV.

VIKING Ranger: In brand new condx, push-to-talk, $195; two (2) ARC-4 transceivers with schematic for 2-meter conversion, complete with 2 power supply kits, $65. Harold Franta, KØGCP, Wabasso Minn.

QUAD Builders: Bambo poles 15 ft. x 1¼" to 1½". $1.25 each. Cash with order. Shipped express collect. Wholesale inquiries invited. Redrum Fabrics, 64 Stanhope St., Boston 16, Mass., W1WTF.

SELL: Signal Sentry. Never used. With tubes. $10.00. O. H. Ketchum, 10125 Flora Vista Blvd., Bellflower, Calif.

MOBILE SSB Transmitter, built by W2EWL per March 1956 QST; input 12 volts, in exc. condx: $60. Art Johnson, K2POA, 29 Boone St., Bethpage, L. I., N. Y.

CLEANING House! Sell complete ham transmitter ½ KW. Whole or separate units, enclosed steel relay rack, tubes, etc. Tell me what you need and how much you think it's worth. All letters answered. W. F. Asbury, W2GPO, 61 E. Main St., Huntington, N. Y.

GONSET Communicator II (deluxe) and linear amplifier for sale. In excellent condx. Must sell to go back to school. Write Buck Marler, K4BBA, 2701 Reynolda Rd., Winston-Salem, N. C.

SALE: SX28A, in perf. condx, $150 or best offer. All letters answered. WN7GXC, 1656 Downington Ave., Salt Lake City 5, Utah.

WANTED: Instruction manual for National HRO F/197 rcvr. G. R. Payson, 73 Temont St., Boston 8, Mass.

20 Meter Subraco mobile transmitter 30-40 watts Class B modulated with Gonset bandspread rcvr, mike and antenna. Best offer F.O.B. Detroit accepted. W8BP, 3156 Weathervane Lane, Birmingham, Mich.

ETCHED-Circuit material, supplies, instructions, free catalog. Etched circuits. P.O. Box 2582, South Bend 14, Ind.

SURPLUS BC654A xmitter/rcvr, complete with PC-103 dynamotor, cables and spare tubes, $49.50; 5 Marker beacon recvrs, 75 Mc., $2.95 ea. W7KPO, 1945 N. E. 113th Ave., Portland, Ore.

SALE Or swap: Have Sams Photofact folders #297 thru 338, few assorted 239 thru 295. Total of 51 folders. Also Eico model 944 Flyback and yoke tester. All in mint condition. Want Ham gear or parts of any type. Jack Nichols, 1403 Mt. Washington Rd., Ardmore, Okla.

FOR Sale: Pair Navy walkie-talkies, new batteries 3725 Kc, $65 both; Johnson Viking Mobile xmittr with Johnson VFO, factory-wired, A-1, $105; Biddle megger insulation tester 0-100 megs type Scintilla, $35; Tecraft 2 meter converter, $25 with pwr supp. 5-6 VDC 600 volt 155 mils $6; 1 Telrad freq. std., $10; 1-454B 3-6 Mc. 6 volt tubes, $6; 3" 'scope with X, Y, Z axis control, same as Waterman S14. Best offer 1-LM13 with modulation, chart and pwr supp. chart not cal. $30; 15-50,000 ohm 200 watt bleeders $2.00 each. Send for list tubes, relays small parts. Nelson Stover, W3BBV, 1357 Hill St., York, Pa.

SELL: Viking II, Viking VFO, NC-125, best offer over $300. WØRIB, 2123 Birch Ave., Rapid City, So. Dakota.

FOR Sale: Four 6AG7-807 xmitters, only need one. Write for info. No reasonable offer refused. With or without power supply. Anderson, 8356 Curzon Ave., Cincinnati 16, Ohio. Locals fone PO 1-6935.

WANT Low-powered 10-meter mobile rig for 12-volt operation. Dave Smith, 54 Butler Rd., Scarsdale, N. Y. Tel SC 3-4083.

WANTED: Choke 20 Henries smoothing 800 Ma 5000v. insulation. W1BB.

RANGER $175, Matchbox $35, Signal Sentry, $12.50; Johnson LP filter, $10; Dow 115 VAC coax relay, $10; Tecraft 2 meter converter $32.50; 2 meter Communicator II 6 volt with crystals, $175. All in excellent condition. W2KIT, 29 Wynmor Rd., Scarsdale, N. Y.

MOBILE Elmac transmitter AF67 and PS-2V Elmac 110 volt power supply for fixed station operation including push-to-talk mike: $145.00. Elmac PMR6A rcvr w/pwr supp., $85.00 and 32V3 for sale plus shipping. H. M. Riddle, 3106 Sherbrooke, Toledo 6, Ohio.

SELL: Brand new pair of 4X150's and pair of new 4X150G's, $30 per pair, also 600 volt 265 mil. 6 volt dynamotor, $10. George Tate, W4AIS, Artillery Rd., Taylors, S. C.

CADILLAC 1938, Worth $150. Will trade for xmitter or recvr. Jim Windeck, K9CQQ, 228 W. Marshall, Belvidere, Ill.

SELL: 6BA6 preselector, LO-40 ant. tuner, Johnson 100 Kc xtal calibr., 5V3GT, 300V DC 50 Ma. access. supp., all on 7 x 12 chassis. $45; dual pwr. supp.—450V@DC. 3A, 125OV DC .2A, $70; push-to-talk grid modulator, $18. Ramon Britt, W4GIM, 819 East 5th, Lumberton, N. C.

SIGNAL Generators wanted: TS-403, TS-497, TS-621, SG-3/U, TS-437, TS-510, TS-588, TS-608, etc. TS-186 frequency meters, AN/APR-4 tuning units, other "APR-" receivers, ARC-3, other surplus; also Hewlett-Packard and other laboratory quality equipment, Weston, etc., instruments; technical manuals, for quick cash or swap for Zenith transistor portables, etc. New TG-34A Photoelectric tape code practice sets with manual, $24.95; new BC-645's with original and Citizen's Band conversion schematics, data, $24.95. Engineering Associates, 426 Patterson Rd., Dayton 9, Ohio.

TRADE HQ-29X w/spkr and BC-221 complete for nice KW final, pi-network, shielded, TVI suppressed. K4HXF, H. L. Parrish, Jr., RFD 4, Box 102, Hickory, N. C.

SELL: 75A4 receiver with vernier knob, 3 Kc filter, latest factory modifications and matching speaker, $530; Johnson Valiant xmitter, factory-wired, with Johnson low-pass TV filter, $360; B&W Mod. 650 Matchmaster, $35; CDR Mod. AR22 rotator, $22. All less than six months old and used less than 25 hours. F.o.b. Phoenix, Ariz. Allan Moser, W7DEI, 365 N. 6th Ave., Phoenix, Ariz.

SWAP or sell: Dumont 208, 2 new RCA-WO88A, cost $179.50; 2 new RCA WO56A, cost $289.50; 'scopes and an Argus C-4 camera Want ham equipment: DX-100, Viking, etc. Send offers to: T. F. Waters, 140 West Gilpin Ave., Norfolk 3, Va.

WANTED: Highest prices paid for ART-13, ARC-1, BC788, BC610, BC348, ARC-3, BC312, BC342 and other military or aeronautical surplus. Name your price. We pay freight and C.O.D. James S. Spivey, Inc., 4908 Hampden Lane, Bethesda, Md.

WANTED: Hallicrafters Sky Buddy. State condition and price. All letters answered. K4BNI.

FOR Sale or Trade: NC183D, w/spkr, $295; RME VHF211, $80; BC221H, w/a.c. supply, $40; RME DB-23 preselector (1 yr. old, works vy fb), $35; Heath WAP-2 pre-amp. in original carton, $17.50; Heath Q Multiplier, $9; Hallicrafters R-46 spkr, $15; 2 meter walkie-talkie $5; w/batteries, $7; Johnson SWR bridge, w/0-1 Ma. meter, $7; International Crystals 6M converter w/t, $10. Or swap for 75A3 or GPR-90. Dick Wilson, K6LRN, 1259 15th Ave., San Francisco 22, Calif.

VIKING II For sale, factory-wired, no changes. $225. Charles Horn, WØHIJ, Hillcrest W-321, Iowa City, Iowa.

FOR Sale: Globe Scout 65A, $85. WRL Mod. 611 VFO, $35; both factory wired and in excellent condx; Health Q multiplier, $5. K. S. Bowron, Box 866, Umatilla, Fla.

TWO BC-611 handie-talkies, in gud condx. Both for $100. W6FBH.

VTVM, NRI, gud condx, a.c. operated, ac-dcv. 3-600, 15-150 Ma., 10 ohms-100 meg., with instruction, experiment books. First $18 takes. M. Windolph, 4920 S. Parkway, Chicago 15, Ill.

WANTED: Used receivers and transmitters. Will pay cash or trade. 10% down with up to 24 months to pay. In stock: New 75A4's, KWS-1's, KWM-1 SSB mobile transceiver, Johnson, B&W, National, Hallicrafters, Elmac, Hammarlund, Gonset, Central Electronics, Mosley, Hi-Gain and Gotham Beams. Write for list of bargains in reconditioned receivers and transmitters with new guarantee. Shipped on approval. Write Ken, WØZCN, or Glen, WØZKD for your best deal. Ken-ElsRadio Supply Co., 428 Central Ave., Ft. Dodge, Iowa.

VIKING Pacemaker, $395; also ATC 1 Autotune transmitter using 813 final 811's modulator, ganged VFO and exciter stages, $175 complete, or $150 less 110 VAC power supply. PE103, $18. Will not ship. William Trepak, W3TXX, 7224 Schoyer Ave., Pittsburgh 18, Pa.

S38, $35; VHF152A, $40, 7 in. T.V., $20; 807's, $1; 829B, $7; 810, $5; 813, $5. Will send list on other gear. Vic Miller, VE3AJT, Box 88, Bowmanville, Ont., Can.

FOR Sale: BC-474A portable xmitter, rcvr. National NC183D, 100 watt homemade xmitter. Write to W5DTQ, Box 1050, Alice, Texas.

FOR Sale: House and complete knotty pine hamshack, 3 bedrooms 35 ft. steel tower, 20 meter beam and all Collins equipment on ¼ acre lot. W2MRZ, W. Kaufman, 11 Farm Lane, Hicksville, L. I., N. Y.

FOR Sale: Kilowatt phone transmitter, 84" deluxe cabinet VFO PP 810s, 5 power supplies, 'scope HDVL coils, separate speech or public address amp, antenna tuner, no junk. Complete, $275. W2AOV, McGrew, R.F.D. 1, Huntington, N. Y. Tel. HAmilton 7-7184.

CASH & Carry! Globe King 500 perect, $450, with Heath VFO; Teletype Mod. 26, table, paper, $75; F.R.A. converter 455 Kc. IF $40. W2PAT converter, $20; BC223AX with 12/24 volt. p.s. $20. W2DVD, 20 Poplar Ave., Deal, N. J.

HRO-60 Deluxe receiver in rack with compartment for 10 coils. Speaker in top center, first class working condx and shape. A, B, C, D coils, xtal calibrator, $335. Buyer must come and get it. K2EAF, Drexler, 3 Lee Dr., So. Farmingdale, L. I., N. Y. Tel. CHapel 9-8206.

REGENCY ATC-1 converter wanted, used. K2DQD, LO 7-0986. Box 27, New York 5, N. Y.

FOR Sale: Beautiful Harvey-Wells TBS50D, with matching APS50 supply, antenna relay, crystals, selector, antenna tuner and mike. Like new condx, $99.50. KN2VZN/0, 4948 Evans Street, Omaha, Nebraska. PR 4738.

SELL or swap: BC224 receiver, no power supply: $45; Gonset 3-30 converter, $25; Mobile whip with 40 M. coil, $10. W9RMZ, 4 E. 113th St., Chicago 28, Ill.

TWO 4D32 tubes, guaranteed new, $14 each. W9ARI.

WANTED: BC-221 frequency meter with calibration charts, instruction booklet. Preferably AC converted. W8GAS, 1821 North Park Boulevard, Cleveland Heights 6, Ohio.

"PIG-In-A-Poke"? Not if you visit Ham Headquarters, USA, and take your choice from the hundreds of "Like New" bargains in the world-famous Harrison Trade-In Center! (SS photographs, pp 137, March *QST* and p. 133 April *QST*). Greater values, because tremendous turnover means lower overhead! Terms, Trades BCNU. Bil Harrison, W2AVA, 225 Greenwich St., New York City.

CASH & Carry: Globe King 500A $450; WRL vfo $40; B&W low pass filter $8; Harvey-Wells Z-match antenna coupler $60; Johnson signal sentry $12; Bug $10; xtal mike $6; NC300 receiver $300; xtal calibrator for NC300 $12; speaker $10; Heath AM1 impedance bridge $10; 3 element triband beam $45, with prop pitch rotator, xmfr, 100 ft. six conductor cable $20 more, and with 90 ft. RG8/U another $8; a pair of unused selsyns $5. All excellent condition, 20% discount if you buy it all. W3YPU — Wendell Turner, 742 Hickory Ave., Bel Air, Maryland. Phone Bel Air 1075-J

COLLINS 32V3 transmitter, one owner $525. Just completely overhauled by Collins, never used since. F.o.b. Johnny Fearon, W4WKP, 4165 Club Drive, N.E., Atlanta, Ga.

FOR Sale: Two receivers in perfect condition. SX-43 with 8" speaker in housing, $98 and BC-348R with built-in power supply, $85, F.o.b. Chicago. W9RIF, A. F. D'Orio, 7917 Cortland Parkway, Elmwood Park, Ill.

WANTED: Gonset "Monitone", perfect condx. Rowles, W1UDA, R.F.D. 2, Pittsfield, N. H.

MULTIBAND Antenna traps 80 thru 10. Weather-sealed. 52 or 72 ohm feed, 1 Kw. $8.00 plus postage. Send stamp for literature. S&W Electronics, 293 N. Evergreen, Kankakee, Ill.

FOR Sale: Tubes, brand new RCA 813's, $7.50; 810's, $8.00; 832A's, $3.50; 829B's, $7.00; 203A's, $2.00; 5692, $3.50; 5654/6AK5W, $1.00; 3C33, $3.50; 3B28, $3.50; 2C39, $5.00; 5R4WGY, $1.00; 6BA6, 50¢; Bendix TA-12 transmitter, unmodified, makes swell all-band rig, $35; transformer input 120, output 24 volts at 80 amps, $25. Step-down transformer 110 volts down to 12 volts at 4 amps, $15; plate transformer 115 volts, secondary 7500 volt c.t. at 89 Ma.; matching transformer 10,000 ohms to 600 ohms, $3.50; All guaranteed. Can ship C.o.d. Bill Slep, W4FHY, Ellenton, Fla.

WIFE Sez Clean 'Em Out! Leece-Neville 6 volt 80 amp. alternator, regulator, rectifier slightly used $40; 522 rcevr, $10; 1 Kw. Thordarson 500 Ma. 200 v. xfrmr $20; 3-30 Gonset converter, $20; used 813 pair $15; 100TH pair $12; 205 pair, $10; VT127A pair $8.00; HD203A pair, $10.00. QST run, 1937 to 1956, $2.40 per year; 6 ft. steel xmitter cabinet, used, with shelves and panels, terrific buy, $25! Stancor mobile 30-watt xmitter less modulator transformer, works 75 and 10 meters, $15; 6 volt Eicor 600 volt dynamotor, 200 Ma. factory warranty, $30. Write to B. H. Standley, W5FQQ, 303 Franklin, Houston, Texas.

SWAP: Brand new Signal Corps transmitter-receiver #669-D, never used, for HQ100 Hammarlund rcvr or equal. C. H. Schueler, 318 Riebeling St., Columbia, Ill.

KWS-1 and 75A-4 with mike output meter and matching speaker, $2195. GPR-90 receiver, $345. W9NHF.

SELL: DX-35 xmittr, $52 and S-86 rcvr, $79. Both are in excellent condx. A real bargain! Louis Van Leeuwen, K2VNR, 99-32 66th Road, Forest Hills, L. I., N. Y.

TRADE Pair Devry 35 mm motion picture projectors complete with arc lamps and rectifiers in first class condition, original cost: *$500.00* for Collins or Johnson Kilowatt. W4AKG, J. S. Yerby, 1621 S. Parkway East, Memphis, Tenn.

FOR Sale: B&W 5100B, Millen grid dip meter, Millen SWR bridge, E-V mobile mike, Master Mobile Micro-Z match, Sinar LP filter, mobile power supply complete, Collins speaker, Drake L.P. 300 ohm, R-175A choke, Drake bandpass filter, DZZ antenna traps, HI-Q Davis 500 mobile coil, 75M, fibreglass antenna base section, 500 w., Johnson & B&W coils; twin noise squelch wired, B&W — T.R. switch; Gonset Communicator II, G.I. tape-disc recording unit, *UTC*, S54, 62, 46, Merit *P3146*, Regency TV voltage booster. Everything in a like-new condx. Make reasonable offers. R. R. Lamb, 1219 Yardley Rd., Morrisville, Penna.

DON'T Cry if you're having code trouble. Shortcut methods are pure fantasy. We teach the association method, approved the world over, but unavailable elsewhere. Novice course, basic instruction plus practice material to 8 WPM. $5.95. Advanced course, practice material 9 to 18 WPM, $4.95. Combined $9.95. Magnetic recording tape, 7" dual track, 3¾ IPS. Tapedcode, Box 31-E, Langhorne, Penna.

FOR Sale: SX96 with matching speaker. Receiver can not be told from new one. Will deliver within 100 miles upon receipt of small deposit. K2JVL, 1 Lizette St., Auburn, N. Y.

FOR Sale: Complete mobile station. Multi-Elmac AF-67 Transciter; James C-1050 mobile power supply; Morrow 5BR-2 converter; relay, heavy duty multi-band antenna; microphone. All in excellent condx. Write for details. W9PWV, 821 Waveland Rd., Lake Forest, Ill.

WANTED: HR060 and DX100. Jim Del Guercio, W2URJ, 9 Curve St., Bedford, Mass.

LIKE New 25 watt 75 meter phone mobile transmitter, 6v. dual Vibrapack, new mike and coaxial cable, everything $40; 6v. -425v /375 Ma., dynamotor, $10; dual Vibrapack, 6v. 400v/120 Ma., $12; Single: 6 v. 400v/80 Ma., $7; following gear new or like-new: AT-1 modulator, $8.00; 40 and 25 watt modulators with speech, $18 and $15 respectively. 1000v./200 Ma. supply, $15; 750v./200 Ma., $12; SCR-522 xmitter supply, $17; Johnson Adventurer modulator, $18; 1500-0-1500v./200 Ma. unshielded transformer, $12. W8QKU, 2748 Meade St., Detroit 12, Mich.

BARGAINS: With new guarantee: HT-9 $99.00; HT-20 xmttr. $275.00; Collins 32V1 $275.00; Collins 32V $495.00; Collins 32RA8- $79.00; Elmac PMR-6A $79.00 Morrow FTR & P.S. $49.00 Morrow *3BR* $24.95; Morrow 5BR $49.50; Lysco 600 $69.00; Eldico TR-1 $139.00; Eldico TR-75TV $25.00; Collins 75A1 $275.00; Viking II $199.00; S & W Mobileciver $59.00; Elmac A54 $99.00; Gonset 3-30 $29.95; Gonset Tri-band $24.50; *3024* VFO Preamp $45.00; Sonar SRT-120 $99.00; Globe Trotter $34.50; Scout 40A $59.00; Globe Champ 165 $149.00; Globe King 275 $199.00; Globe King 400B $275.00; new HRO coils $16.00. Free trial. Terms financed by Leo, W9GFQ. Write for catalog and best deals to World Radio Laboratories, 3415 West Broadway, Council Bluffs, Iowa.

SALE: New Pacemaker. Will take in trade a good Ranger, or Valiant 2-meter equipment, or late mobile gear. Want: Millen G.D.O., pr. 4-250A's, 4-400A's and a variable vacuum capacitor. Write Milo Adamson, 4060 So. Penn St., Englewood, Colo.

FOR Sale: Lysco 382 VFO-$25; Globe Scout 40A, $50; 3-element Omega 15m. beam, $25–$30. Will sell for best offer over $85. W7VJM, 1500 Fisk St., Pullman, Wash.

WANTED: For cash, Kenyon surplus transformers No. S-13483, 115v. AC pri. 3200v. AC sec. W4MDQ.

COLLINS 310B-3 exciter, complete. Like new, spare tubes, instruction book, antenna tuner, etc. $150. Walter Babcock, W2RXW, 405 Sayles St., Oneida, N. Y.

HI-Powered final p.p. 4E27 in 38 in. enclosed relay rack with dolly B&W TVL coils and Thordarson HV power supply 1500V. at .3A with relay. No surplus. $120. F.o.b. Paramus, N. J. $110 cash & carry deal. Viking I with 866A in pwr supp. and Heathkit VFO, $165. Pyryt, W20DH, 192 Norman Way, Paramus, N. J., Tel. COlfax 1-8655.

WANTED: Shortwave & Communications receivers. New or used. All types electronic tubes. Highest cash prices paid. Write or phone: North Radio Co., 62 Cortlandt St., N. Y. 7, N. Y.

TRADE: VM Binaural tape recorder with staggered heads. Two amplifiers and additional matching speaker cabinet. (4 speakers total), $100 worth of prerecorded binaural tapes and VM recording mike. Want 32V xmitter or 75A receiver *or?* Camera Baldalux (Germany), 120 film, Schneider Kreuznech Radionar 1:4/105 MM *lens, with case, nearly new condx. For what have you in commercial* and ham gear? All inquiries answered. W8VMG, C. L'Esperance, 826 Lane Blvd., Kalamazoo, Mich.

SELL: 250 watt mod. xfrmr, $12; 11 hy., 500 Ma. choke, $10; 8 *µfd* 2500V DC new G-E capacitor, $6; Heath 5" oscilloscope, $20; *Johnson* SWR bridge, $4; Baluns (pr.), $4; TVI *coils, 80–40*, $2 each. K2HPC, Robert Goldstein, 38 Forest Ave. Saratoga Springs, N. Y.

SALE: Elmac A54H. 12 volt filaments, 40 meter coil installed; in gud condx, $70; 30 ft. steel tower. Windmill type. Brand new, disassembled. Rugged. Weight 404 lbs. $80. K. B. Crowell, W3AJO, 4203 Rosemont Ave., Drexel Hill, Pa.

WANTED: "Calling CQ" by Clinton DeSoto. Will pay well for copy in good condition. Contact W9TCJ, Yerkes Observatory, Williams Bay, Wisconsin.

FOR Sale: Collins 75A3 mechanical filter type F455B-08. Price: *$15.* W1DBS, John Savonis, 11 Dwight Court, New Britain, Conn.

CANADIANS: For sale BC-348J converted with power supply and S-meter, $65. VE3BSJ, Box 45, Parry Sound, Ont., Can.

COLLINS 51J-2 with factory installed 3 and 6 Kc. mechanical filters. Has new Collins tuning knob. Excellent condx. Serviced and realigned at factory past month. Will not ship because of possible damage. Must be picked up. S. P. Sutton, 83 Lookout Circle, Larchmont, N. Y.

WANTED: A good used DX100. State price and condition. E. R. Arms, W9PBL, RR #1, Harrisburg, Ill.

WANTED: Late Model 75A3 or 75A4 in gud condx. Give lowest price. Full particulars and serial number in your first letter please. W3KA, 10406 Insley, Silver Spring, Md.

GETTING out of radio. Test equipment, receiving tubes and components for sale. Send stamp for list. Cecil Baumgartner, Box 343, Milton, Pa.

VIKING II push-to-talk factory wired in excellent condx. First $200; Viking VFO, first $30; push-to-talk stand with D-104 mike, $14; Sonar low pass filter, $10; 52 or 72 ohm Bud 100 Kc. osc. self-powered, $12; 10 meter R9er 30 db gain, $14. Pair baluns mounted with fittings, $5. All letters answered. W2DRD, F. Greenbaum, 2125 Cruger Ave., Bronx 62, N. Y.

SELL: Johnson Ranger, used less than 50 hours with E-V 664 mike and stand, $250; three *Elmac* 4-250-A at $15 each; KW *power supply* components $25; Garrard RC80 with base and G-E cartridge with .001 diamond stylus used less than 10 hours, $60. Molyneux, W4MVM, 2101 Oakmont Ave., Anniston, Ala.

SALE Or Swap: Elmac PMR6A receiver, PSRG power supply, $85; Elmac A54 *transmitter, $75; PE103 $18; Vaaro variable coil, $10;* want tabletop allband rig or cash. F.o.b. W2FHD, Kenneth Block, 491 Woodfield Rd. West Hempstead, L. I., N. Y

COLLINS 75A1 receiver with spkr, $250; 32V1 xmittr, $275. Both in like-new condx. W6JXW, Schneider, 11126 La Maida St., North Hollywood, Calif.

SELL: Brand new KWS-1, exciter & final, $1500 cash. This is strictly a pick-up deal. Never hooked up. In original crate. Absolutely no phone calls. Write for appointment, details. W1UAR.

FOR Sale: The following Johnson equipment: Viking Ranger xmitter, Signal Sentry, low pass filter, S.W.R. bridge, plus Mosley 3-el. Vest Pocket beam for 20 meters; Turner 80 mike with C4 stand, all in excellent condition, used less than 6 months. All instruction books. Take the lot for $300. Other misc. tubes, parts and equipment, send self-addressed envelope for list and price. D. W. Langston, W4WVH/9, T-365 Camp Green Bay, Great Lakes, Ill.

WANTED: Collins 75A4 receiver, in top condx. W2BXV, 218 Connecticut Rd., Union, N. J.

SELL: HQ-140-X, 10 weeks old, unused, $245 or best offer. W8TIZ, 715 Quarry, Marietta, Ohio.

KW Linear amplifier, pair 304TL's, Class C c.w.; takes low drive of 25 watts output; utilizes 110V. AC relay, antenna change-over, receiver mute, "B" plus on, electric bias, metering circuits, cabled, silver power supply (3000V) enclosed in gray 36" Bud rack; A "Bute" for 10, 15, 20 M. Factory wired "Ranger" used as driver; 5 months old. 3 section crankup tower; new Alliance rotor; Telrex 10M beam. Rec'd best signal on band reports. Going away to college. Sell for $675 or best offer. Pictures on request. John Markovich, K6HTG, 4490 Van Ness Blvd., Fresno, Calif.

FL8 audio filters, 2 for $2.00 prepaid in USA; SCR522 xmitter only with tubes, $10; 110V DC to 110V AC, 60 cyc. 250 watt converter, $10; BC779B with heavy duty power supply and matching cabinet, excellent condx, $125; BC221T, exc. condx; BC1031A Panadaptor, gud condx w/instrx mnl & xtra C.R.T.
WANTED: gud mobile rcvr. and hi-fi gear. M. D. Haines, W5QCB, 1316 S.W. Military Drive, San Antonio 21, Texas.

COMPLETE Station: Globe King 500 (modified to 500A); HQ129X, Heathkit VFO, also Q multiplier; Millen R9'er. All PC's in exc. operating condx and in appearance. Will sell individual pcs. or complete station. $575. Will consider and answer all inquiries. F.o.b. KØAKE, 1085 Grenoble, Florissant, Mo.

WANTED: Back numbers of CQ: 1946, 1950, 1952, 1953 and 1954. QST: 1919 to 1930 run inclusive, also 1952, 1953 and 1954. Quote prices. W. L. Runzel, Jr., W9OGA, 4727 Montrose Ave., Chicago 41, Ill.

TRADE General Radio UHF signal generator, type 804-A (9 to 330 Mc.) in gud condx for lab type generator in low freq. range. G. S. Nupp, K6HUJ, 13440 Lakewood Blvd, Paramount, Calif.

SELL: Viking II with built-in VFO and touch-to-talk Turner mike. In gud condx. $225. Will deliver within 150 miles. F. G. Maxson, k4GJO, 1851 Winston Rd., Charlottesville, Va.

CASH for RA-63, BC-939, JB-70, BC-610-E, BC-614, BC-221, BC-312, BC-342 and late type test equipment, receivers, etc. Amber Industrial Corporation, 75 Varick St., N. Y. 13, N. Y. We pay freight charges. Write.

FOR Sale: Hallicrafters S53A. Brand new condx, and in orig. carton. Price $60. Charles W. Ehrlers, 319 Union St., Jersey City 4, N. J.

ILLUMINATED "S" Meters for Gonset Communicators. Just plugs in to attach. Also new and used Gonset Communicators, converters, G-66's, G-77's, V.F.O.'s, etc. All types Elmac, Morrow, Babcock gear. Special: Six meter 12v. Communicator, $140. Graham Co., (Bob, W1KTJ) P. O. Box 24, Stoneham, Mass. Tel. ST 6-1966.

SELLING all low frequency equipment. 20-A multiphase with QT-1 anti-trip, used one month, $150. B&W 850 1 Ka 80-10 tank coil, $20; Presentation Vibroplex, $15; Lambda MM-2 monitor 'scope, $10; BC-221-J freq. meter with reg. power supply and original calibration, $50; National MB 40-L allband tank, $9; exactly 50% net price for: Johnson 52 ohm SWR bridge, B&W 52 low-pass filter, National AMT 6000 volt 100μfd split stator condenser, R-175 choke and many other parts. Prefer pick-up but will ship F.o.b. H. H. Richardson, W1AXW, 17 Whittier St., Dover, New Hampshire.

COLOR, new, RCA 21-in. full warranty. Swap for 75A4, 32V3, etc. W6UTV, 1176 Lincoln, San Jose, Calif.

SWAP: 300 w. mod. & speech amp. parts for new Elmac 4-400A or pr. of 4-250A's. K6OKY, 248 Monte Vista, Costa Mesa, Calif.

FOR Sale: Best cash offer F.o.b. Jacksonville, Fla.: Globe King 400C like new, with twenty-meter coils and tubes, Meissner EX, new wired Johnson VFO, CX49A, new 10HVDL, 20HVDL, HDV base. Powerstats, type 20, 1126, New 3-in. square meters 150, 250, 300, 500 Ma, 3000V DC. New Weston 507-0-8 ARF. Panadapter PR1, used only 1 month. Any item or all must go pronto. W4LF.

SELL: BC348N with power supply in excellent condx., $50. KN4-MUP, Box 504, Pickens, S. C.

KW-1. Best cash offer. Perfect condx. Final modified by Collins for use with SSB exciter on 75, 40, 20 with just two switches. AM unchanged. W4JUR, Rt. 3, Box 170, Fredericksburg, Va.

BARGAINS: Reconditioned with new guarantee. Shipped on approval. Hallicrafters S38 $29.00; S40A $69.00; SX99 $119.00; SX71 $149.00; SX96 $189.00; SX100 $229.00; Viking Adventurer $39.00; Viking II $199.00; S40B; S85; SX88; SW54; NC98; NC183D; HRO5; NC300; HQ129X; HQ140X; HQ140XA; GPR90; AS4; AF67; PMR6; PMR7; HT9; Collins 75A-2; 75A3, 75A4; 32V3; many other items. Easy terms. Write for list. Henry Radio, Butler, Missouri.

FOR Sale: Hammarlund BC779 SuperPro rcvr w/pwr supply. Recently aligned by Collins, Radio, Seattle. Best offer over $60 takes it, crated. F.o.b. Los Angeles, Calif. David Porter, W7WEE/6, 515 So. Kingsley Dr., L. A.

HT30, HT31, SX100, excellent condition, pair BC611 handie-talkies, best offer. W8EPI, Jerry Swartzlander. 1220 Stilwell Ave., Fremont, Ohio. Tel. FE 2-6132.

WANTED: Mobile or home station equipment. Will buy for cash or accept on trade for new equipment. Sell for cash only: BC221AK, $75; BC221T, $75; RA63A, $14.95; RA62C, $39.95. Ladd Electronics, 111 North 41, Omaha, Nebraska.

CANADIANS! Viking Ranger, $200; Johnson Matchbox, $55; Johnson low-pass filter, $15; B&W T-R switch, $20; Hallicrafters SC-38C, $50. Kenneth Dixon, 635 Armour Rd., Peterboro, Ont., Can.
SELL: SX-28 with a speaker, in fine condx: $110. N. Vilensky 4730 17th N.E., Seattle 5, Wash.

XFRMR, input 115V, 60 cps, output, 1120V C.T./500 Ma; 6.3V/3 & 0.3 amp; 5V/6 & 2 amp., $7.50. S. S. Brody, 211-10 73rd Ave., Flushing 64, L.I., N. Y.

WANTED: Complete or partial set of Everyday Mechanics and Everyday Engineering magazines published 1915 to 1920; also Signal Corps World War 1 complete propeller driven aircraft spark transmitter consisting of alternator, HV transformer condenser gap, etc. T. L. Mayes, 2208 Dean St., Schenectady, N. Y.

SELLING Out! Harvey-Wells TBS50D with power supply and Heathkit VFO, in excellent condx: $85; Hallicrafters S76, also exc. condx, $85; Viking Matchbox, like new condx, $30; B&W Matchmaster, like new condx, $25; D-104 microphone, like new, $8; Vibroplex Champion bug, like new, $8. W1ZQT, 99 Hellstrom Rd. East Haven 12, Conn.

SELL: Surplus parts — all pft condx. 304TL, $5; Two 832's, $5 each; 300 mil, 8 hy. choke, $4; two 115V, 60 cyc. selsyns, $6; 28μfd, 1500V conds, $3 each; Dynamotor 6/12 V. 340/680–210 mil., $10; UTC S46 trans. $12; RCA 4-65A used 100 hrs., $10; Four 808's, $1 each; Kenyon T3 trans. mult. line to grid, $3; TB-35, $3; Merit P4158 trans., $8. F.o.b. Harrisburg, Penna. D. A. Klingler, W3KBR, 801 S. 60th St.

SELL: Complete station, Viking II and VFO, $255; HQ129X and spkr., $135; pair mounted balun coils, $7; Eldico low pass filter, $5; D-104 mike, $10. Spare parts, etc. All for $400. Will deliver in N. Y. C. area only. Roger Kapp, W2EEL, 111-09 76 Rd., Forest Hills, L. I., N. Y.

GONSET Communicator, 2-meter like-new in original carton, price including 2 meter Skyswooper, 5 over 5 beam, $169.50. K1AHO, 101 Woodchester Dr., Weston, Mass.

SUBSCRIBE Now! West's leading amateur publication, $1.00 year. Free sample copy for 6¢ in stamps. West Coast Ham Ads, 10517 Haverly St., El Monte, Calif., Don Williamson, W6JRE.

SELL: Subject to prior sale, complete station for best offer over $500. All used very little, in excellent condition. Would consider sale of items and would ship insured collect. No trades: SX-100 rcvr. with matching spkr; 20A exciter w/QT1, factory wired and tested, practically new; BC458 VFO, practically new; modified 1625 grounded grid 400 watt peak linear amplifier. Glenn E. Shipps, WØVVJ, R.R. #2, St. Joseph, Mo.

HALLICRAFTERS SX-100, used only a few hours, in perf. condx, w/National spkr, $225; Eico Model 232 VTVM, $25; EMC Model 205 tube tester, $20; Heath OL1 'scope, $25; Heath SG7 signal generator, $15; Hallicrafters R42 bass reflex spkr, $20. All above like new. Philip Schwebler, Jr., W2ZHE, Alcove, N. Y.

SELL: One 3-element Telrex 15-meter beam, new condx, used three months, $60; one 3-element Telrex 20 meter beam, gud shape, but elements cut off about ½ way, and must be spliced: $35. N. K. Thompson, 99 Water, Millinocket, Me.

WANT SSB linear amplifier such as Lakeshore P400GG. Also interested in a good SSB receiver. WØZHJ, 2444 D, Lincoln, Nebr.

20A, new condx, and Central Electronics 458 conversion VFO, $175. A. L. Turner, 117 W. Wright St., Pleasantville, N. J.

FOR Sale: Prop pitch motor converted, xfrmr, and spare motor, $30; 2000VA Sola constant voltage xfrmr, $35; PE103, $17; 6 volt Leece-Neville alternator, $40; 12 volt Leece-Neville alternator, $60; dual AC blower, $7. Want: Collins 35C2 filter. J. Szabat, 16 Pearl Ave., Oil City, Penna.

SELL: Viking II, has latest factory modifications, $199; Collins 75A-2 converted to A-3, calibrator and product detector. Make offer. Central Electronics 10A with 80, 40 coils, $99; BC-458 used with 10A, $10; Mon-Key, $19.95; Five 80-meter Billey Novice xtals, $9; TT-7 TA six meter rig, $10; Heathkit GDO with low freq. coils, $12. Charles Vangsgard, W9QCH, RFD 1, Box 33, Luck, Wis.

WANTED: Coils or forms for National SW-3, TV antenna rotor; 2 and 15 meter beams; 2 meter rig, preferably transceiver; also transmitter covering Novice bands. Please write: John Whitehouse, 312 First St., Scotia, N. Y.

FOR Sale: HRO 15 meter coil set, as per QST July 1956; aligned in my HRO-5, excellent performance. Make an offer. K2CW, 69 Ashland Rd., Summit, N. J.

WEBSTER Chicago Mod. 178-1 wire recorder in excellent condition, with 20 spools of wire; also Astatic D-104 mike with G stand; used less than 10 hours. Make offer. Earl Cowden, 132 N. Columbus, Galion, Ohio.

SELL: Globe-Scout 65A, $60; Bug, $10, Knight VFO, $20. John Morgan, K9BCX, 5443 Marilyn Rd., Indianapolis, Ind.

SELL: Harvey-Wells TBS50D with APS50 power supply and manual, in gud condx. $100. W7YOA, Box 95, Whitetail, Mont.

SALE: QSTS complete run for years 1932, 1933, 1935, 1936, 1938, 1939, 1941, 1943, 1944, 1945, 1946, 1947, 1949, 1950 at $2.50 per year. Single issues, 20¢; 6 for $1.00; Radio and CQ issues, 10¢. Add postage. Henry Mohr, KL7AQC/3, 1005 Wyoming, Allentown, Pa.

CENTRAL "A" Slicer-"special" $39.95, "B"-Slicer $74.95, Collins 32V2 $450.00, 32V3 $550.00, Eldico TR 75TV $49.95, VFO-2 $19.95, VFO 10/20A $38.95, Elmac AF67 $139.95, AS4 $99.95, A54F $110.00, Gonset 3008-2mtr. converter $24.95, 3–30 $29.95; Hallicrafters-SX24 $69.95, SX43 $99.95, Hammarlund SP400X $229.95, Johnson VFO $39.95; Lettine 240 $59.95, Lysco 600 $79.95; Hammarlund 420 $44.95, 411 $29.95; Millen 90810-VHF $89.50; Morrow MBR5 $194.95; National HRO-9 set coils-50KC to 30MC-Rack mount $139.95, HRO50T1-6 coils & spk $325.00; PE-103 $19.95, 348N $59.95; RME 45 with spk $99.95; Collins 310-B-1 $195.00. Evans Radio, Box 312, Concord, N. H.

NEW Western Electric 8 volt filament equivalents of 4-400A, $6 each, $11 pair, plus postage. S. Tucker, W2HLT, 51–10 Little Neck Pkwy, Little Neck 62, N. Y.

SSB transformers, newly manufactured for 10A, 10B, 20A and W2EWL exciters $12.45 per set of three, postpaid USA. Electronics Associated, P. O. Box 206, Montclair, N. J.

4 x 5 CROWN Graphic camera outfit, new condx, latest model, 162 mm f 4.5 optar lens, holders, flashgun trays, etc, cost $500. Will trade for an excellent used highgrade receiver such as NC-183D, HRO-60, NC-300, etc. Robert Parrish, Box 2251, Corpus Christi, Texas.

PHASEMASTER II SSB exciter and BC458 VFO for sale. Need cash. Any reasonable offer considered. May accept small receiver as part. K6EYB, 760 Via Marin, San Lorenzo, Calif.

WANTED: transmitting micas .01 μfd 5000V or more. Also 304TH and 304TL tubes, for experimental purposes. Ed Kucharski, 39 Aqueduct St., Ossining, N. Y.

WIRED Q Multiplier for Communicator. Details write: Communi Q Products, Box 114, Baldwin, N. Y.

FOR Sale: Heathkit AT-1, AC-1, VF-1 and cathode modulator; four Novice band crystals. All for $35. Stanley Krawiec, K2RKH, 300 Jeffries St., Perth Amboy, N. J.

2 AND 6 Meter KW amplifier using new ceramic 4X250B's. Operators Class C and linear. Dual band coaxial grid, interchangeable plate tanks. Model KW-62 amplifier plus tubes, less plate tanks, $176.50. 6 and 2 meter plate tanks, $33 each. Literature available. Amplex Radio Products, 1195 Westlake Dr., Walled Lake, Mich.

NOVICE Call List published bi-monthly. Send $1.50 for yearly subscription. Post card for free listing. Phil Bartling, W3IFO, 212 Washington, Towson, Md.

FOR Sale: In new or like-new condx: Heath AT-1, QF-1, Viking VFO, NC-98, SW-54, 6 volt dynamotor, Gonset Tri-band conv., Gonset Super Six conv., DB-23 preselector, Johnson Matchbox (250 watt); Knight Little Giant 8 watt amplifier, Eico 5" 'scope, BC-645A, Heath V-4 VTVM, Globe Scout Mod. 65, complete set of Supreme Radio Diagram year books, Vol. 1 thru Vol. 16; 1500 volt at 300 Ma. rack-mounted power supply; Bud LF-601 lo-pass filter. Any reasonable offer will be accepted. Details for a stamp. All F.o.b. Jacksonville, W4FXQ, 5208 Birkenhead Rd., Jacksonville 10, Fla.

TRANSFORMERS commercial grade multi-match modulation 300 watt $26.94; 500 watt $41.20 plate transformers, 2000/2500 volts DC 500 Ma., $48.16. Catalog, also rewinding. Frampton Transformer, Box 109, Blackwell, Okla.

WANTED: Collins KW-1, 30K, Johnson Kilowatt. Write W9PTN, 3020 Taylor Ave., Racine, Wis.

LEAVING Country. Must sell two element Telrex Minibeam TR-2 rotator $60; Viking II and VFO $250; S-40B rcvr with Q multiplier, $70; Mon-Key, $20; Marmax mobile xmitr, $40; PE-103, $25; 50 watt fixed station power supply, $5; BC-696 xmittr, $5, 20 code records 8-20 wpm, $5. All equipment very gud to excellent condx. D. A. McClead, K2ORQ, 37 Tinder Lane, Levittown, N. Y. WE 5-0685.

BUG Code Key, $10; Ten Station intercom Master, $15; Heath electronic switch, $15; Simpson 330 mutual conductance tube tester, oak case, latest chart, $50; plate xfrmr, 900–750–0–750–900V, $10; two heavy-duty Thordarson chokes, $5; all in excellent condition, priced F.o.b. V. R. Hein, 418 Gregory, Rockford, Ill.

MUST Sell: New, HT-32, $550; SX-101, $325. No trades! You pay shipping. Don Goodrum, K4DBH, 2819 Plantation Dr., East Point, Ga.

FOR Sale: KW-1, 75A4 in operation. C. H. Buchanan, 1210 White Oak Dr., Springfield, Ohio. FA 4–1219.

FOR Sale: NC-300 with xtal calibrator and spkr, $300; DX-.00, $175; Heath grid dip meter, $12; Telrex 56 model 10 meter beam with AR-22 rotor, $60. Joe Scialfa, W2TZH, 707 Broadway, Long Branch, N. J.

SELL: BC-779B Super-pro. Excellent, $90. K2ECY, Bethpage, L. I., N. Y.

COLLINS 75A-4, late serial number with all modifications, 3 Kc. filter, used only one month. In original packing. Will ship. $475. Leonard, W4EPS, 2644 Avenel Ave., S.W., Roanoke, Va.

SELL: Hallicrafters S-38C. Like new condx. Make me an offer. Joel Levy, KN2VNS, 1675 W. Ninth St., Brooklyn, N. Y.

NIKON SI F2, case and unused flash attachment. Will swap for gud rcvr or commercial xmittr, W2HAE, 85 Franklin, Northport, L. I., N. Y. Tel. NOrthport 3-0501 J.

EXCELLENT NC-125 receiver, complete with speaker, $135. L. B. Converse, 132 Keith Dr., Clarksville, Tenn.

HQ129X, vy clean rcvr, $150; also Lysco 600 xmittr, $75. Will trade for small rcvr. Charles Arwood, W5VZM, 304 E. Hill St., Forrest City, Ark.

WANTED: Gonset FM tuner, 152–162 megacycle, with squelch. Also could use 40–50 megacycle with squelch. Quote best price. Cash. Harvey Gordon, 1120 Cooper St., Lansing, Mich. Tel. IVanhoe 5–3360.

SELL 32V2, $325; Pacemaker $400; 75A2, $300. Converted mobile Link xmitter, $35 complete. W2ADD.

SELL: Globe King 400 xmitter, like new condx; Heathkit VFO, RME-45 recvr, new tubes realigned; Carter converter 6VDC to 110VAC.Bestoffers.Glenn Toppenberg,NewEng.San.,Stoneham,Mass.

COLLINS 32V3 xmitter with B&W low pass filter, $495; Hallicrafters HT17 xmitter, $18; Shure Dispatcher reluctance mike, $18.50; Turner xtal mike, $12; Collins plug-in 100 Kc xtal calibrator, $13.50. Alfred Bein, K2BWQ, 26 Lenox Ave., Clifton, N. J.

TRADE: APT-5 xmitter 300 to 1600 Mc., 100 watts unmodified for BC348. W9WMR, 113 So. Elmwood Dr., Aurora, Ill.

WANTED: Johnson KW Matchbox, antenna coupler. W1CPI.

FOR Sale: following new items: 1.87 Kw and 9.3 Ka 120V 60 cycle 1800 rpm generator with exciter; 6 tube farm radio less battery, six 5VCT 30A 20 KC insulation fil. xfrmr; also: prop pitch motor 50 ft. 8 PC 1¼" alum. masts, miscellaneous smittg tubes and meters, BC-458, 6V dual Vibrapack, 500V DC. W2PUK, Glen Ridge, N. J.

TRADE: Speed Graphic camera 2¼ x 3¼, 3.5 lens, filmpack adapter, cut film holders, flashbun, filters, carrying case. Will trade for DX100 or some comparable commercially built xmitter. W8JAY.

MAKE Best offer for 6M 12v. Gonset II Communicator, used ninety days with two Saturn halos, complete with two coax baluns for fixed and mobile, two mikes, four xtals. List price $295. G. M. Golden, W1OZ, 920 Cambridge St., Cambridge, Mass.

FOR Sale: Collins 310B xmitter, bandswitching 80 to 10 meters; in excellent condition. Completely TVI suppressed, $190; 32V3 Collins, in excellent condx, $475; new B&W generator single sideband, $250; Amertran 2 KW xfrmr, 5000v ct, $40; Two B&W KW butterfly condensers 40-60 μμf $10 each; Vaaro 250 Va. 0 to 136 volts, $8; National MB3OL, $8; National MB 150, new, $15; Gonset G66 rcvr, like new condx, w/pwr supp., $175. J. E. Shutt, W4JBN, Sturgis, Ky.

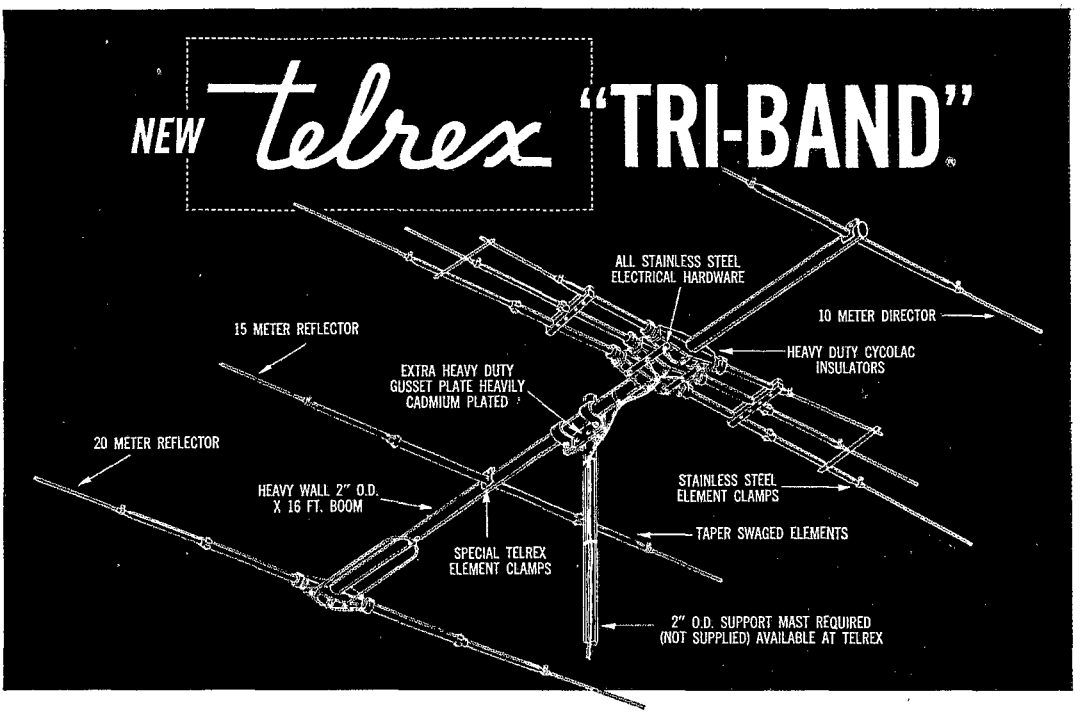
WANTED: Any good used receiver for far less than $100. Ric Lightfoot, 89 Carruthers, Kingston, Ont., Can.

FOR Sale: Heathkit BE-4 Battery Eliminator, 0–6 ⅛ 15 amps, or 0–12 ⅛ 7.5 amps (DC volts). Assembled and tested. Never was used! Guaranteed brand new and working properly. $31.50. W5LCB, 3112 N.W. 13th St., Oklahoma City, Okla.

SELL: R148 Communications receiver, 11 tubes, originally designed for Coast Guard, frequency 200 to 400 Kc and .49 to 19 Mc. in 6 bands. $55. F.o.b. Millen 90700 VFO; output frequency 3.5 to 3.65 Mc. or 7 to 7.3 Mc. $22 postpaid. P. H. Barnes, W3MTK, 5313 White Oak Drive, Verona, Pa.

Index of Advertisers

NEW Telrex "TRI-BAND"



3-BAND, 1-TRANSMISSION LINE SYSTEM WITH 2 WIDE-SPACED ELEMENTS ON EACH BAND PROVIDING

Genuine 3-Band Results Without Compromise!

Destined to become the "Standard of Comparison"! Tri-band one transmission line system, totalling 40 lbs. of educated aluminum, is calibrated for easy assembly to our specifications at your site, without fuss or bother. No condensers to breakdown, or fuss or fume with. No formulas! Simply assemble to our calibration chart, for outstanding performance per element, per dollar at your site! And . . . each band can be set to the portion of the band you desire without affecting the performance of the other two bands!

MECHANICAL AND ELECTRICAL SPECIFICATIONS

Special Telrex Tri-Band "fanned" dipole resonated and matched for single line 52-ohm feed, with wide-spaced director on 10 meters (forward of the 15 and 20 meter sections); wide-spaced reflector on 15 meters; wide-spaced reflector on 20 meters. 2-elements full size on the 3-bands for full size performance on the 3 bands. One-boom, no interlacing, no compromise and 5.5. db gain or better, on each band! F/B ratio 19 db or better, on each band! V/S/W/R 1.2/1 or better, on each band! Rugged, all-aluminum, 75 mph hurricane force construction! Boom, dural—2" O.D. x 16 ft. Elements taper swaged 1", ⅞" and ½" O.D. Stainless-steel airplane element clamps. Borg-Warner Cycolac insulators. Special heavy-duty gusset plate mounting provided for attachment to 2" O.D. mast support! Antenna will handle 2.5 KW, or better, on the 3 bands! Can be rotated by Telrex R-100S rotator (price $158.75) in winds up to 65 mph—and will not pinwheel or breakdown at any wind velocities. Telrex R-200S rotator will handle in any wind velocity!

Approx. weight	**40 lbs.**
Longest element length	**32' 10"**
Turning radius	**18 ft.**
Wind area at 100 mph	**4.91 sq. ft.**
Wind load at 100 mph	**151 lbs.**

NOTE: For the amateur who wants to use a "balun" at the antenna, a broad-band "balun" will be available shortly at $27.50, f.o.b. Asbury Park, New Jersey.

SPECIAL NOTE: A heavy duty TV rotator should handle up to 30 mph—probably will pinwheel and may become inoperative at higher wind velocities!

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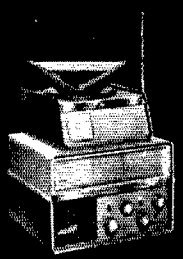

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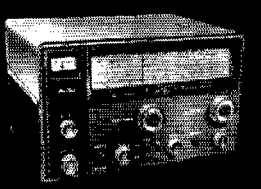

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National's exclusive new "Microtome" crystal filter provides six degrees of constant gain selectivity from 5.2 kc to 200 cycles! Sharp phasing notch, over 60 db down, insures exceptional image rejection on phone and CW. Separate product detector gives you effortless CW and SSB tuning. Additional features include: "S" meter, 12-inch slide rule dial, 1-2 μv sensitivity and the NC-109 is temperature compensated and voltage regulated for extreme stability. Smart new styling and many other exciting new features make it the "buy of the year!"

COVERAGE:

Band	General Coverage	Bandspread	
A	.54-1.6 mc		
B	1.0- 4.7 mc	3.5-4.0 mc	(80 meters)
C	4.7-15 mc	6.9-7.30 mc	(40 meters)
D	14.0-40 mc	14.0-14.35 mc	(20 meters)
		20.4-21.5 mc	(15 meters)
		27.0-30 mc	(10/11 meters)

16-13/16" wide x 10" high x 10⅞" deep; weight: 35 lbs.

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New Globe Scout 680 —uses an RCA-6146

The WRL Electronics' Globe Scout 680 pictured here is just one more instance where RCA power tubes are being specified by professional transmitter designers.

Built for CW and 'phone operation on all bands, 6 through 80 meters, it is logical that this transmitter should use an RCA-6146 beam power tube in the final. And here's why.

First, an RCA-6146 needs very little driving power. Second, this outstanding beam power type delivers full output with relatively low plate voltage. Third, the tube is a natural for compact equipments and bandswitching circuits.

For more watts per "transmitter dollar", it pays to design around RCA high-perveance power tubes. They're available from your RCA Tube Distributor—to provide powers up to 1 KW. For technical data on the RCA-6146, write RCA Commercial Engineering, Sec. F37M, Harrison, N. J.

WRL Electronics' bandswitching Globe Scout. Model 680 operates all bands, 6 to 80 meters. Model 66 operates all bands, 10 to 160 meters.

TUBES FOR AMATEURS

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