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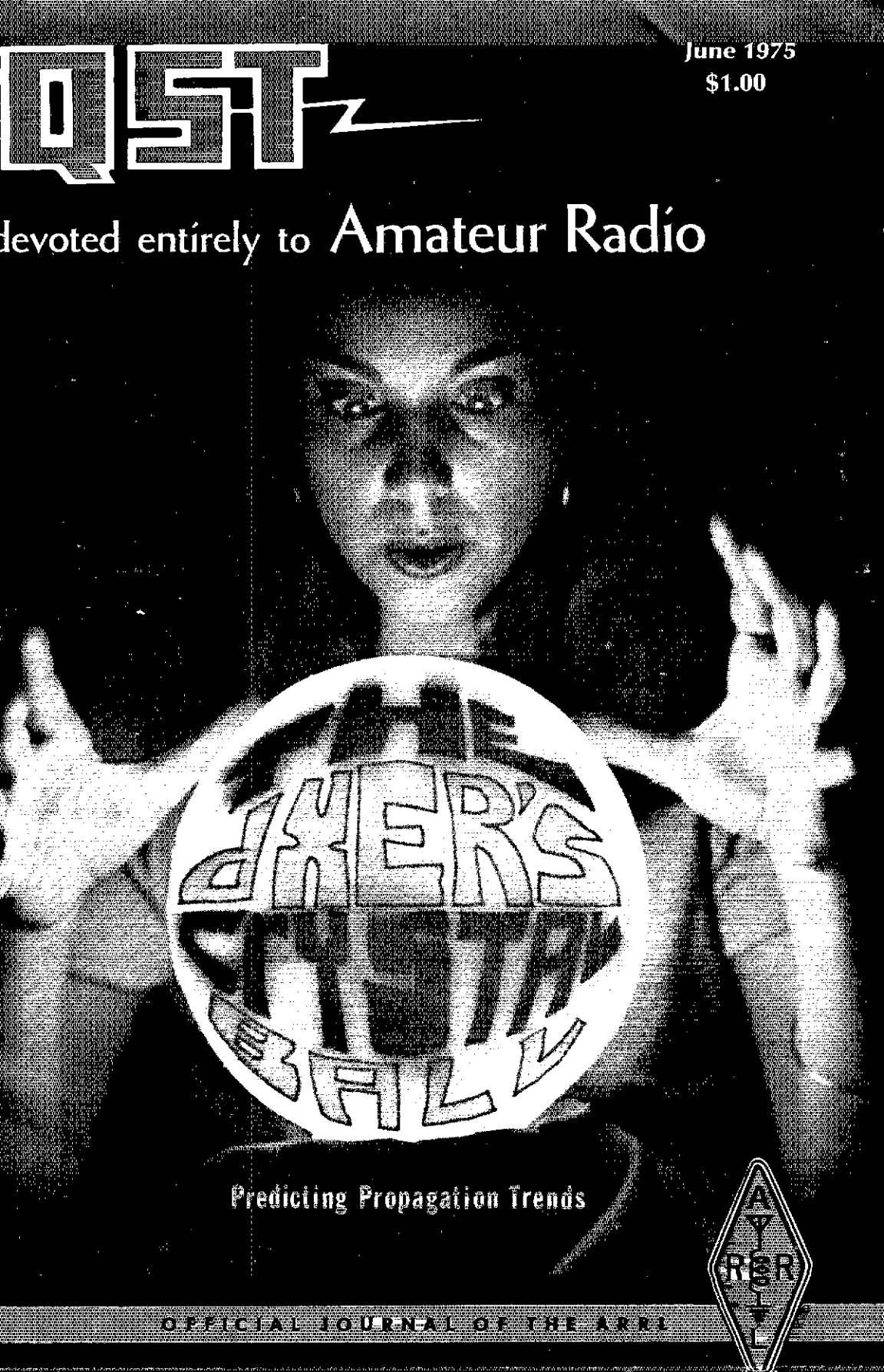

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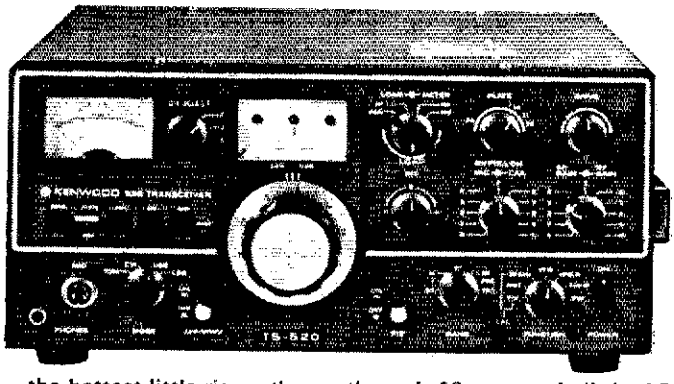

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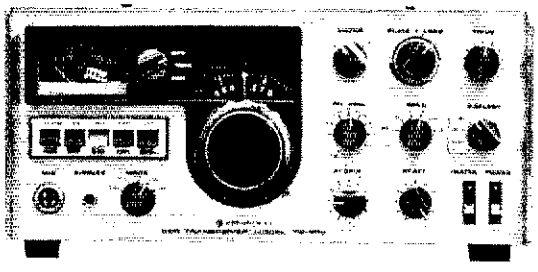

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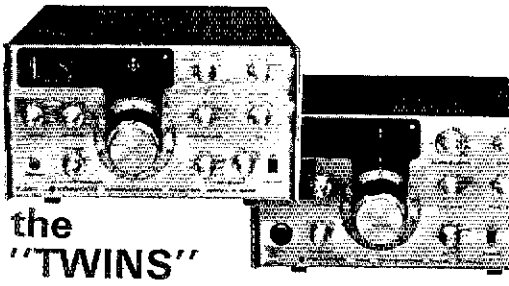

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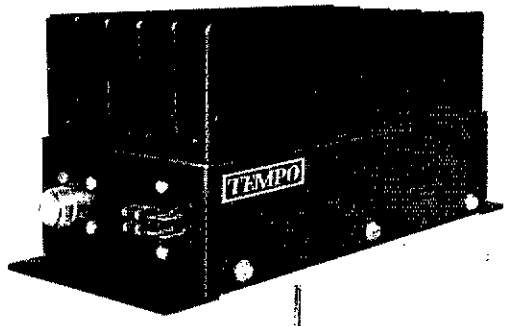

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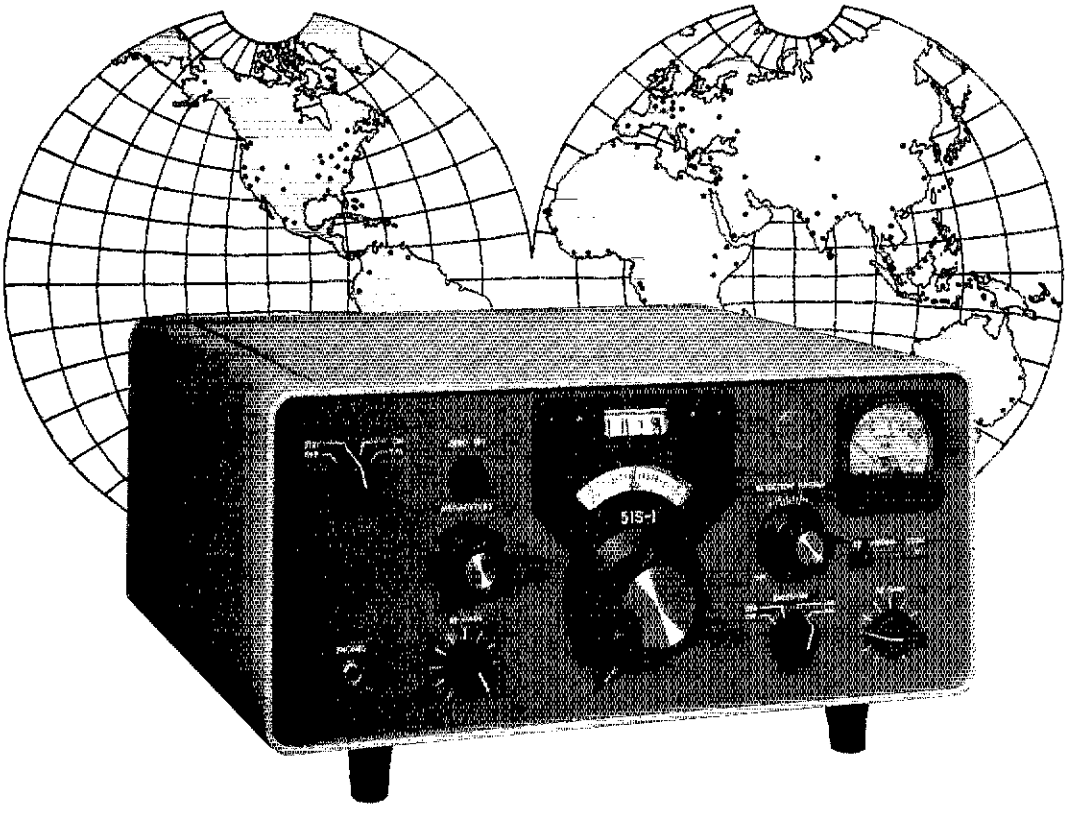

The word for Collins' 51S-1 is the same today as it's been for every one of its 12 years: outstanding.

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The 51S-1 is available now, at a price that makes it very appealing for this class of receiver. See your Collins distributor, or contact Amateur Radio Marketing, Collins Radio Group, Rockwell International, Cedar Rapids, Iowa 52406. Telephone 319/395-4507.

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QST

June 1975

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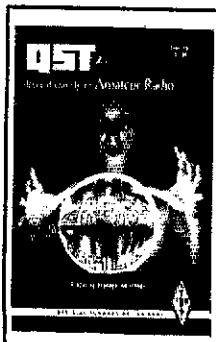
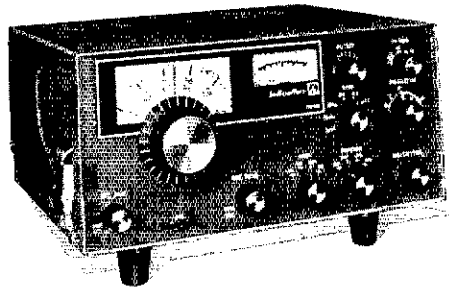


OUR COVER

She won't tell you when DX is going to get better--but turn to page 23 for hints on making the best of the sunspot minimum.

— CONTENTS —

Hallicrafters' all-american made FPM-300, Mark II "Safari" SSB/CW transceiver is Q5... from the Mauritania solar eclipse expeditions to a famous raft adventure in the Atlantic.



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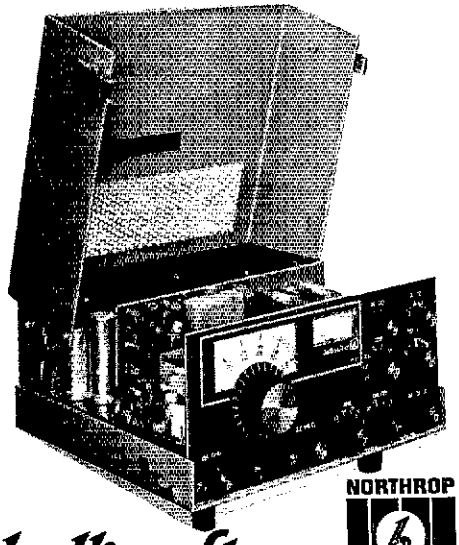

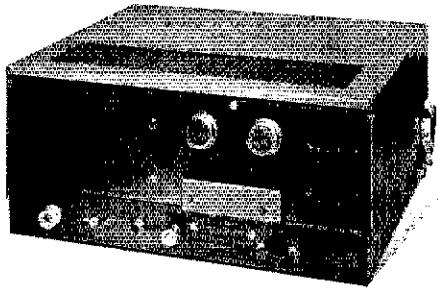

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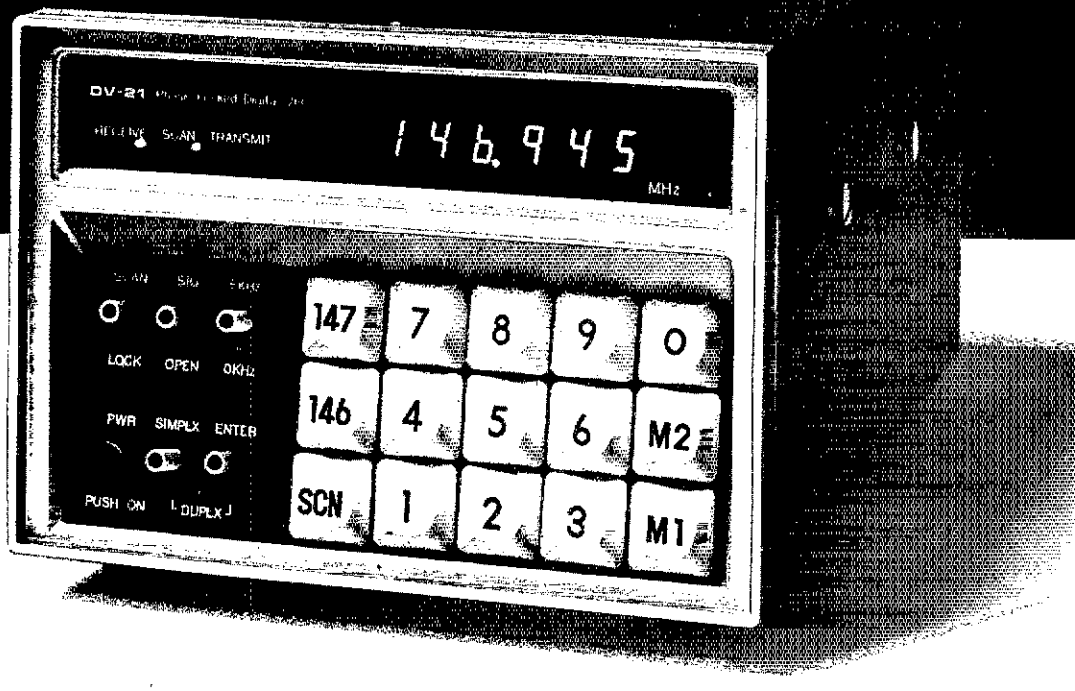

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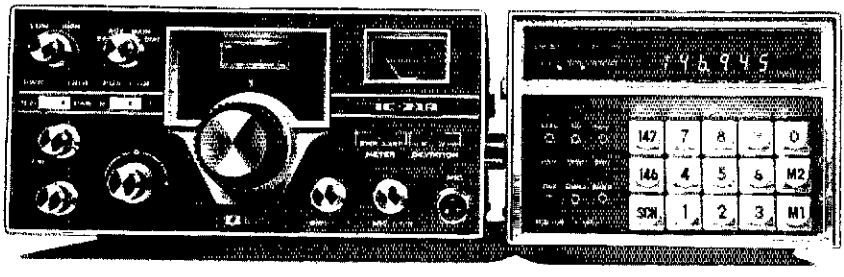

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Reports Invited. All amateurs, especially League members, are invited to report station activities on the first of each month (for preceding month) direct to the SCM, the administrative ARRL official elected by members in each Section. Radio club reports are also desired by SCMs for inclusion in *QST*. ARRL Field Organization station appointments are available in areas shown to qualified League members. General or Conditional Class licensees or higher may be appointed ORS, OVS, OPS, OO and OBS. Technicians may be appointed OVS, OBS, or VHF PAM. SCMs desire application leadership posts of SEC, EC, RM and PAM where vacancies exist.

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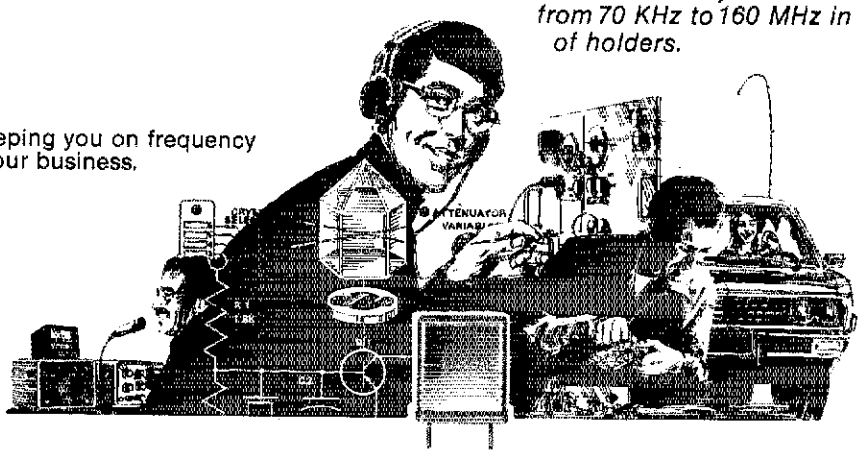

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It is an incorporated association without capital stock, chartered under the laws of Connecticut, its affairs are governed by a Board of Directors, elected every two years by the general membership. The officers are elected or appointed by the Directors.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

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

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

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Vice-Director: John H. Sanders . . . WB4ANX
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CA 93402
Vice-Director: Jay A. Holladay . . . W6EJJ
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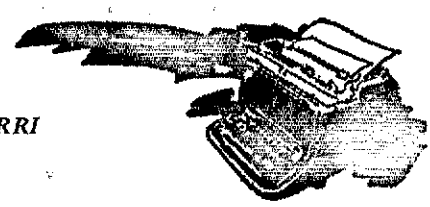
521 Monroe, N.W., Ardmore, OK 73401

* Member Executive Committee

"It Seems to Us..."



FIELD DAY – AN AMATEUR RADIO POTPOURRI

A LOT OF DIFFERENT kinds of on-the-air operating activities coexist under the umbrella labeled "amateur radio." Most of us devote ourselves to one, or a small handful, of them at any one time. It's only natural that we also tend to seek out other amateurs with similar interests rather than spend much time in cooperative kinds of ventures with those pursuing other specialties. Last month we talked about fragmentation, one of the unfortunate side-effects of this circumstance.

This month we would like to call to your attention a major exception to this general pattern of self-imposed isolation. It happens to be an activity where the "umbrella" analogy we started out with is appropriate more often than most of us would like: Field Day. On this one weekend every year, we find all kinds of hams working together at the local level in pursuit of a common goal: to beat last year's score, to place higher in the *QST* listings than the club in the next county, to check out the group's emergency operating capabilities, or simply to show non-ham friends and neighbors in the community what amateur radio is all about with an open-air demonstration. It's one time when those diverse talents gained from separate activities during the year can be turned to common advantage.

Field Day has the most universal appeal of any of the dozens of activities the League sponsors. Last year, which wasn't exceptional in terms of statistics, reports were received which detailed the participation of 12,000 people, and untold thousands of others who took part didn't bother to file formal reports. We're inclined to believe that a major reason for this overwhelming popularity is that Field Day means different things to different people. To some it's a contest, pure and simple. To others it's a chance to gain experience in operating under emergency conditions. To still others the main attraction is that a good Field Day effort cements the bonds that hold a local club together, creating an *esprit de corps* that carries through the rest of the year. To a handful – and they're the ones who seem to enjoy FD the most – it's all three, and then some.

As the operating interests of League members have become more and more diffuse we've had to hustle to keep the Field Day rules in phase. Lately, the most effective vehicle for rules changes has been the awarding of bonus points to groups who succeeded in efforts such as making a contact through an Oscar satellite, or making a contact using "natural" (non-fossil-fuel) power. This year, as a trial, cw contacts will be given double points in an attempt to bolster cw activity and to equalize the advantage which ssb now has over cw in terms of the average time it takes to complete a contact. Groups which previously put all their eggs in the ssb basket will have to be more versatile this year if they want to maintain their place in the standings!

The encouragement of versatility brings us back to our opening statement about different kinds of activities and the fragmentation which can result from them. It seems to us that Field Day provides an excellent opportunity for cross-fertilization – for exposing our fellow amateurs, and ourselves, to what's happening in those other corners of the wide world of amateur radio. Can there be a more painless way of finding out how to work through the Oscar satellites than to help with that part of the club's FD effort? Can there be a better way of bringing your Technician or Novice members (or even unlicensed members) into contact with high-frequency operation than to let them "participate in amateur radiocommunication" as third parties under the watchful eye of a properly-licensed control operator? Field Day provides these and other opportunities to expand the horizons of your club members. Why not take advantage of them?

This year's Field Day rules are on page 74 of May *QST*. Headquarters can send you forms to aid in reporting your participation; all that's required is a self-addressed, stamped envelope. If you haven't taken part lately in the most popular operating event on the amateur's calendar, why not give it a try this year? If you're a regular participant, why not shoot for more bonus points than you made last year? We're willing to bet you'll gain more from the experience than just a higher score. – *K1ZND*

League Lines . . .

Switch to Safety! We recently lost a W7 amateur, who somehow ended up by being part of a 2400-volt series circuit through microphone, body, and final amplifier. Send an s.a.s.e. for a copy of the League's Safety Code.

The U.S. Book Exchange, 3335 V. Street, N.E., Washington, D.C. 20018, is a non-profit organization devoted to the exchange of publications, which has some back issues of QST. They charge a flat fee of $3.00 per issue to cover handling expenses, plus a $1.00 per title search fee, and postage.

The Woods Hole Oceanographic Institution, Woods Hole, Mass. 02543, is looking for people to help them in a tracking project of current-sensing buoys on about 6 MHz. No pay, but Woods Hole will supply the necessary equipment. If you live along the Eastern seaboard, contact Charles Parker at Woods Hole. It's a twice-a-day, 15 minutes per session, daytime operation.

At the January Board meeting the Headquarters was directed to provide a package of League publications at a reduced price. That package, (which includes the following 13 titles: the Handbook, Course in Radio Fundamentals, Antenna Book, VHF Manual, How to Become a Radio Amateur, License Manual, Learning the Radiotelegraph Code, Single Sideband, FM and Repeaters, Hints & Kinks, Understanding Amateur Radio, the Operating Manual, and Specialized Communications Techniques) will be available for a five dollar saving -- $30.00, postpaid.

Let's try that NY City address of FCC again. Really the same place that we reported here in May, but the official address is 201 Varick Street.

As we hinted last month, the current edition of the ARRL License Manual is now available to the blind on 15/16 inches-per-second cassette tapes. These can be obtained on request through the regional libraries of the Library of Congress. Ask for CBA-4058.

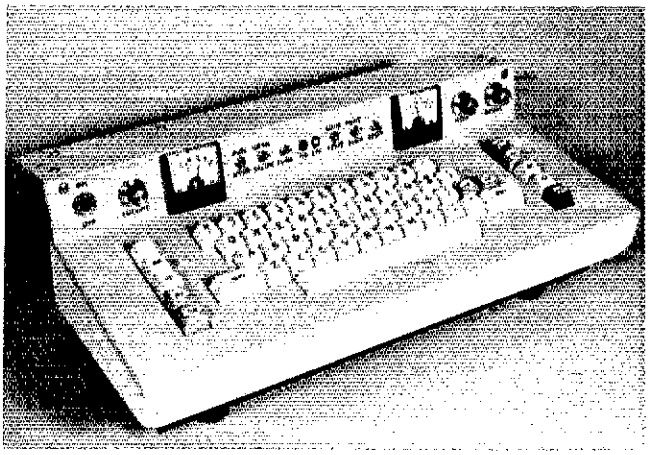
The Federal Aviation Administration has withdrawn a Notice of Proposed Rulemaking which would have exempted electronic pocket calculators from the general restrictions on the use of electronic devices in aircraft. There were enough reports of interference to navigational aids and the like by some models of calculator aboard some aircraft, particularly light planes and helicopters, to make a blanket exemption unwise, the agency said. Nevertheless, specific instruments may be cleared for use on specific aircraft after adequate tests.

There has been some discussion about a proposed standard of the Occupational Safety and Health Administration which would appear to require a separate ladder for towers -- which if applied to amateur antenna structures would be costly. New safety regulations for the telecommunications industry, printed in the Federal Register for March 26 and effective April 30, 1975, specify the dimensions of steps or rungs permanently installed on poles or towers. These rules do apply to any ladders which may be permanently installed; but do not require that ladders be furnished for all towers.

When renewing your membership-subscription, don't wait until a few days before expiration and then expect that QST will reach you without interruption. The computer labels for the regular mailing of the last QST before membership expiration are produced at least six weeks before expiration, and we need a couple of weeks additional to do the necessary paperwork. If you renew within two or three weeks after receiving your first notice of expiration, prompt QST service will be continuous. Overseas members can insure similar continuity by renewing promptly via airmail.

An intriguing thought. In order to expose would-be amateurs to the fraternalism and excitement of a hamfest or convention, what if a sponsoring group decided to provide free registration for a licensed amateur if he could show that he had paid the registration fees for two would-be hams?

COMPUCODER



The keyer is constructed around a surplus computer-terminal keyboard.

A Buffered Morse/RTTY Keyboard Keyer with Advanced Features

BY PAUL HOROWITZ,* W1HFA

THE RECENT AVAILABILITY of inexpensive integrated circuits of high complexity has made it possible for the amateur to design and construct ambitious projects which would have been unthinkably expensive and elaborate only five years ago. For instance, small-scale TTL integrated circuits (gates, flip-flops) cost about 25 cents, and even MSI devices (counters, shift registers, monostables, decoders, etc.) and a number of useful linear circuits are near a dollar. This is far less than even the economy RTL circuits cost in their heyday, and frequently leads to the peculiar situation in which the panel controls and other trimmings of typical devices built with ICs cost more than the electronics which they control.

Operational Features

Typical of what can be done is the advanced keyer shown in the photographs. This keyer resulted from the author's dissatisfaction with shortcomings of an earlier, transistorized keyer,[1] as well as from the helpful collaboration of Paul Cram, K4IO. This keyer can generate Morse code or the 5-unit teleprinter code. In either mode it has a 64-character buffer, so you can "get ahead" of the output by a whole sentence or two. On the left, a meter labeled "% FULL" indicates the status of this buffer and, like any good sports car, has a "red line" region (from 90% to 100%)! As you type ahead of the keyer output, the meter gradually creeps up; when you stop typing, the meter drops steadily back as the keyer catches up. Of course, with such a buffer there must be a word-space key; in this keyer it's the space bar, which results in a 7-dot-length space (code) or a standard teleprinter space (TTY). The keyboard, incidentally, has "N-key rollover," the same feature you find on good office typewriters: depressing a second key while the first is still down simply generates the first character followed by the second character, with perfect spacing. Furthermore, with this keyer you can depress the n^{th} key when $n - 1$ keys are held down, and it still does the right sequence of characters.

The switch marked RUN/HOLD is used to inhibit output; while in HOLD you may type in, but nothing comes out. Thus you can load a message into the buffer for later transmission.

A unique feature of this keyer is the recirculating mode. When the NORM/RECIRC switch is set to RECIRC, the content of the buffer is sent repeatedly. Thus you've got an identifier, or a machine to bore other people with incessant CQs. Because of the special buffer (first-in, first out, or FIFO) used in the keyer, the message need not be the maximum 64 characters long; shorter messages will be re-

* Professor of Physics, Lyman Laboratories, Harvard University, Cambridge, MA 02138.

[1] This and all subsequent references are listed at the end of the article.

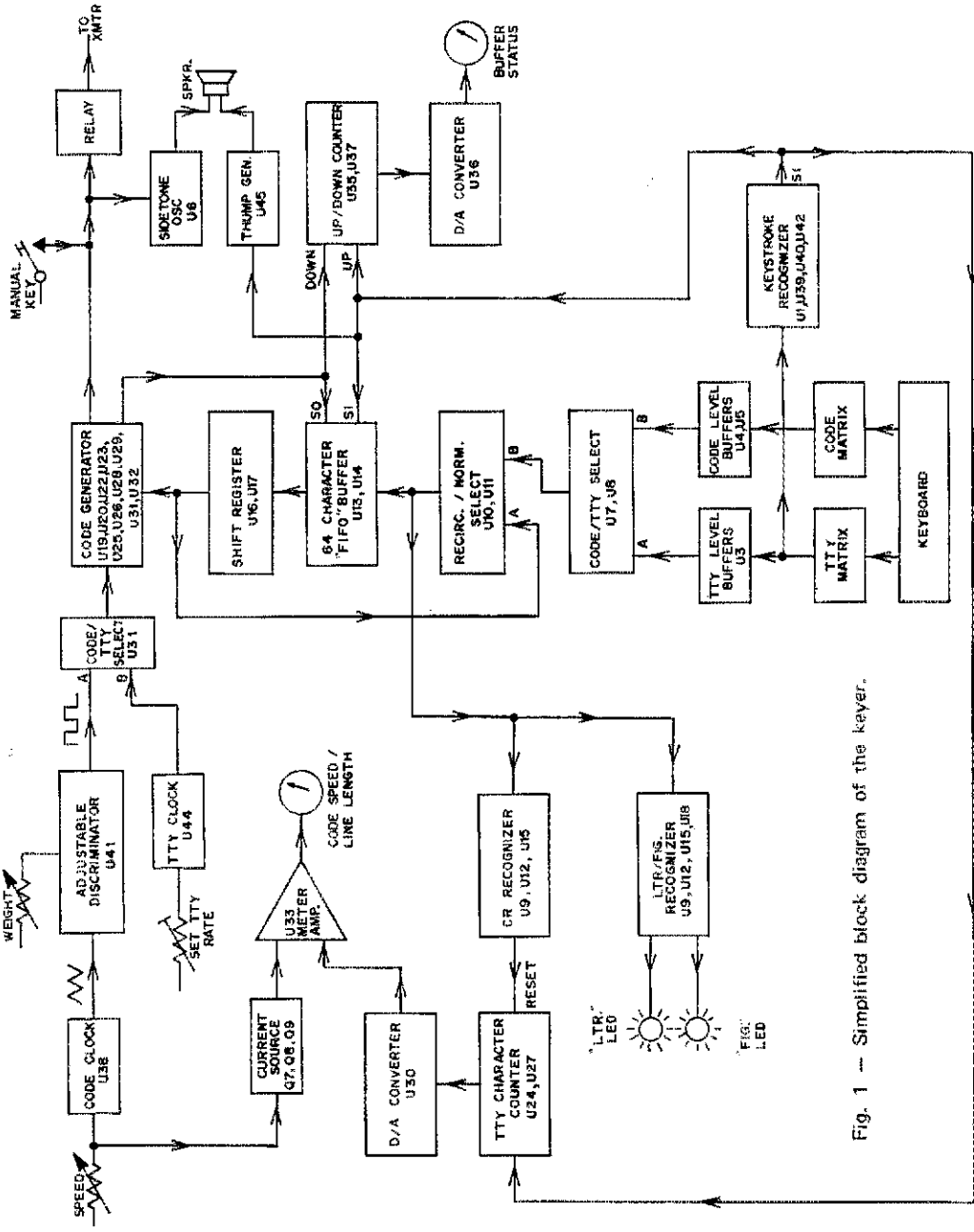


Fig. 1 — Simplified block diagram of the keyer.

peated without a long pause. (Of course, you can load in a pause by hitting the space bar several times in succession.) Switching back to NORM causes the buffer contents to be sent one last time; alternatively, you can hit the RESET button, which produces instantaneous and total keyer amnesia by clearing the buffer.

An additional feature is the TONE/CLICK switch. In TONE position the output is monitored with an internal sidetone oscillator and speaker (controlled by the VOLUME knob). In CLICK position a solid *thump* sounds each time you hit a key, a particularly useful aid when you're keying ahead of the output. The switch has a middle position, which gives both TONE and CLICK. There are a number of special characters (SK, AR, ERROR, etc.) on the keyboard, as well as a KEY button which behaves like a manual key. When sending automatic code, the right-hand meter reads code speed, on a scale of 0-50 wpm. At the right

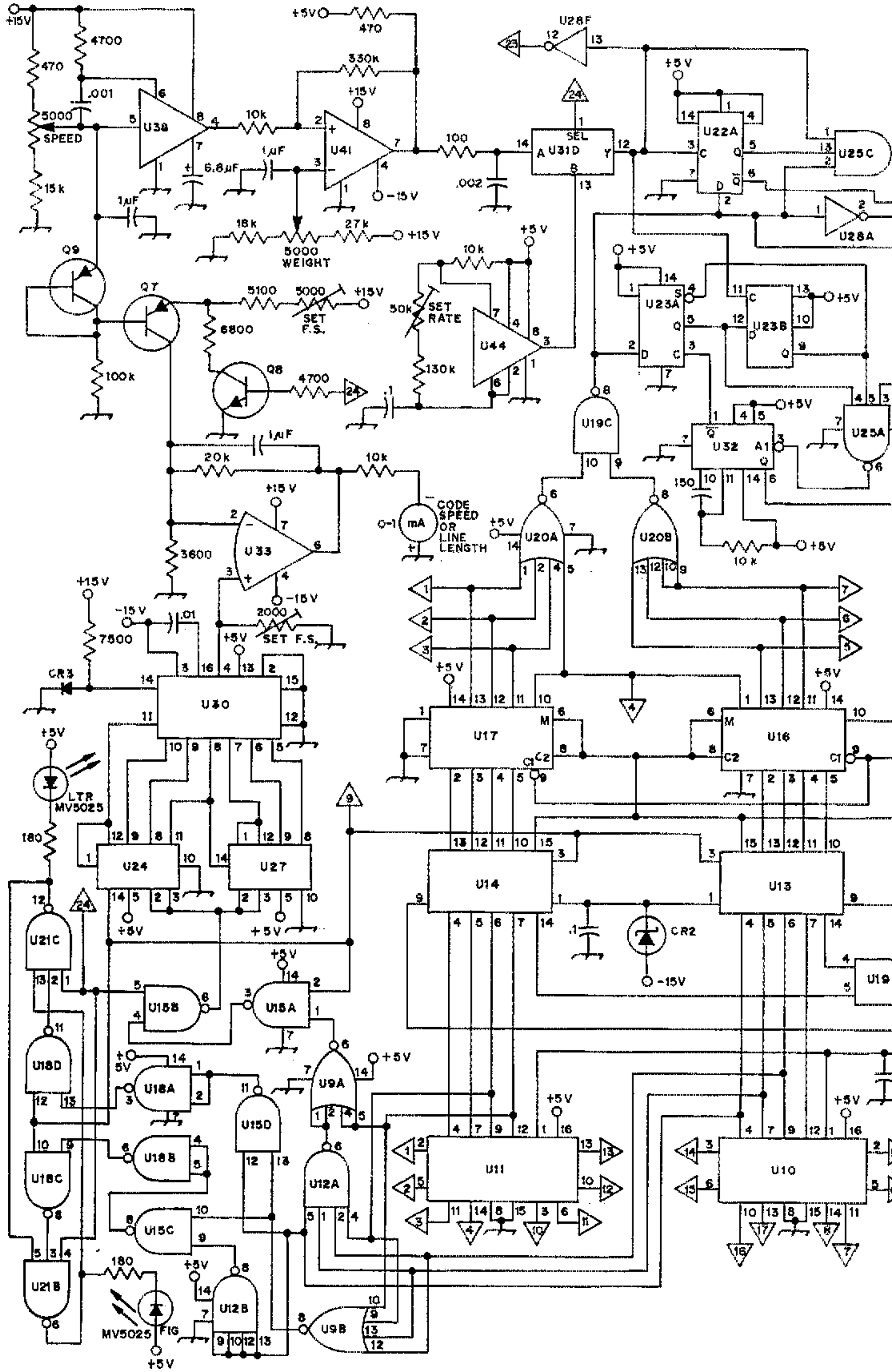
TABLE I -- Diode Matrix Connections

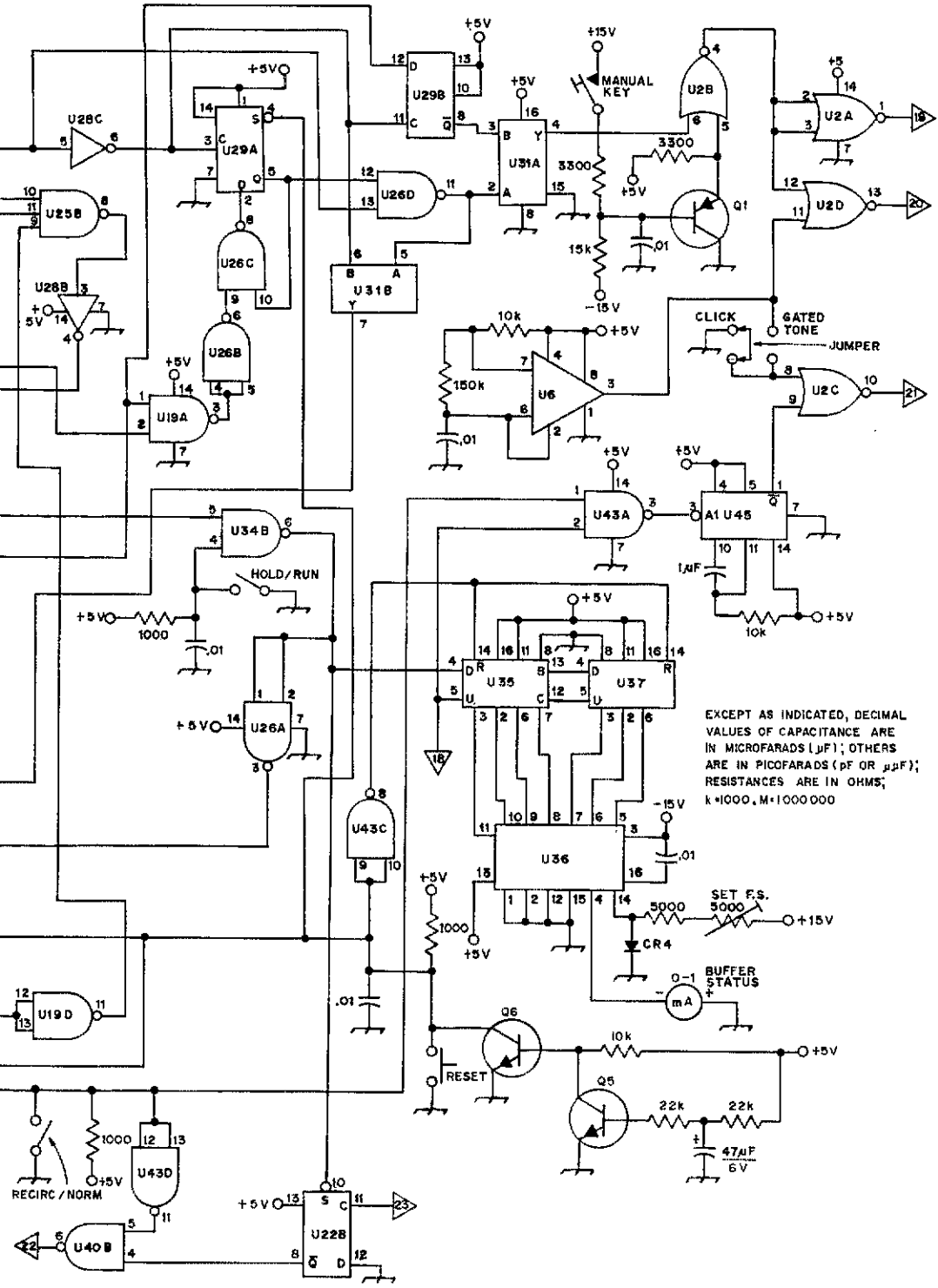
	R1	R2	R3	R4	R5	M1	M2	M3	M4	M5	M6	M7	M8
A			X	X	X		X	X					
B		X	X			X				X			
C	X				X	X		X		X			
D		X	X		X	X			X				
E		X	X	X	X		X						
F		X			X			X		X			
G	X		X			X	X		X				
H	X	X		X						X			
I	X			X	X			X					
J			X		X		X	X	X	X			
K					X	X		X	X				
L	X		X	X			X			X			
M	X	X				X	X	X					
N	X	X			X	X		X					
O	X	X	X			X	X	X	X				
P	X			X			X	X		X			
Q				X		X	X		X	X			
R	X		X		X		X		X				
S		X		X	X				X				
T	X	X	X	X		X	X						
U				X	X			X	X				
V	X								X	X			
W			X	X			X	X	X				
X		X				X			X	X			
Y		X		X		X		X	X	X			
Z		X	X	X		X	X			X			
1				X			X	X	X	X	X		
2			X	X				X	X	X	X		
3		X	X	X	X				X	X	X		
4	X		X		X					X	X		
5	X	X	X	X							X		
6		X		X		X					X		
7				X	X	X	X				X		
8	X			X	X	X	X	X			X		
9	X	X	X			X	X	X	X		X		
Ø	X			X		X	X	X	X	X	X		
.	X	X					X		X		X	X	
,	X	X			X	X	X			X	X	X	
?		X	X					X	X			X	
/		X				X			X		X		
AR			X				X		X		X		
BK			X			X				X		X	X
SN			X						X		X		
BT			X			X					X	X	
KA			X			X		X		X	X		
SK			X						X		X	X	
AS			X				X				X		
ERR			X										X
SPACE	X	X		X	X	X							
CR	X	X	X		X								
LF	X		X	X	X								
FIG			X										
LTR	SEE NOTE BELOW												
BLANK	X	X	X	X	X								

An X indicates a 1N914 or equivalent diode present, with polarity as shown in Fig. 2. The *R* columns indicate connections used in the TTYPE mode (RTTY), and the *M* columns indicate connections used in the CODE (Morse) mode of keyer operation. The *R*6 output consists of a diode from the LTR/TTY key, and diodes from each of the outputs *R1* through *R5*, as shown in Fig. 2.

are the code SPEED and WEIGHT controls, which are completely independent of each other.

Switching the CODE/TTYPE switch to TTYPE causes 5-unit Baudot code to be generated. All the features of the buffer (e.g., the RECIRC mode) are retained. In addition, the right-hand meter (also labeled LINE LENGTH) now reads the number of characters sent since the last CR (carriage return)


+15V
4700
470
.001
5000
SPEED
15 k
U38
1µF
6.8µF
+5V
470
330k
10k
+15V
U41
-15 V
100
.002
18k
5000
WEIGHT
27k
U28F
SEL
U31D
U22A
U25C
U28A
Q9
Q7
5100
5000
SET F.S.
6800
Q8
4700
50k
SET RATE
130k
U44
U23A
U23B
U32
U25A
U19C
150
10 k
1µF
20k
10k
CODE SPEED OR LINE LENGTH
0-1 mA
U33
3600
-15 V
.01
2000
SET F.S.
7500
CR3
U30
LTR MV5025
180
U24
U27
U20A
U20B
U17
U16
U14
U13
CR2
U19
U21C
U15B
U15A
U18D
U18A
U9A
U15D
U18B
U18C
U12A
U11
U10
U15C
U21B
180
MV5025
FIG
U12B
U9B



Part of Fig. 2 (continued on next page).

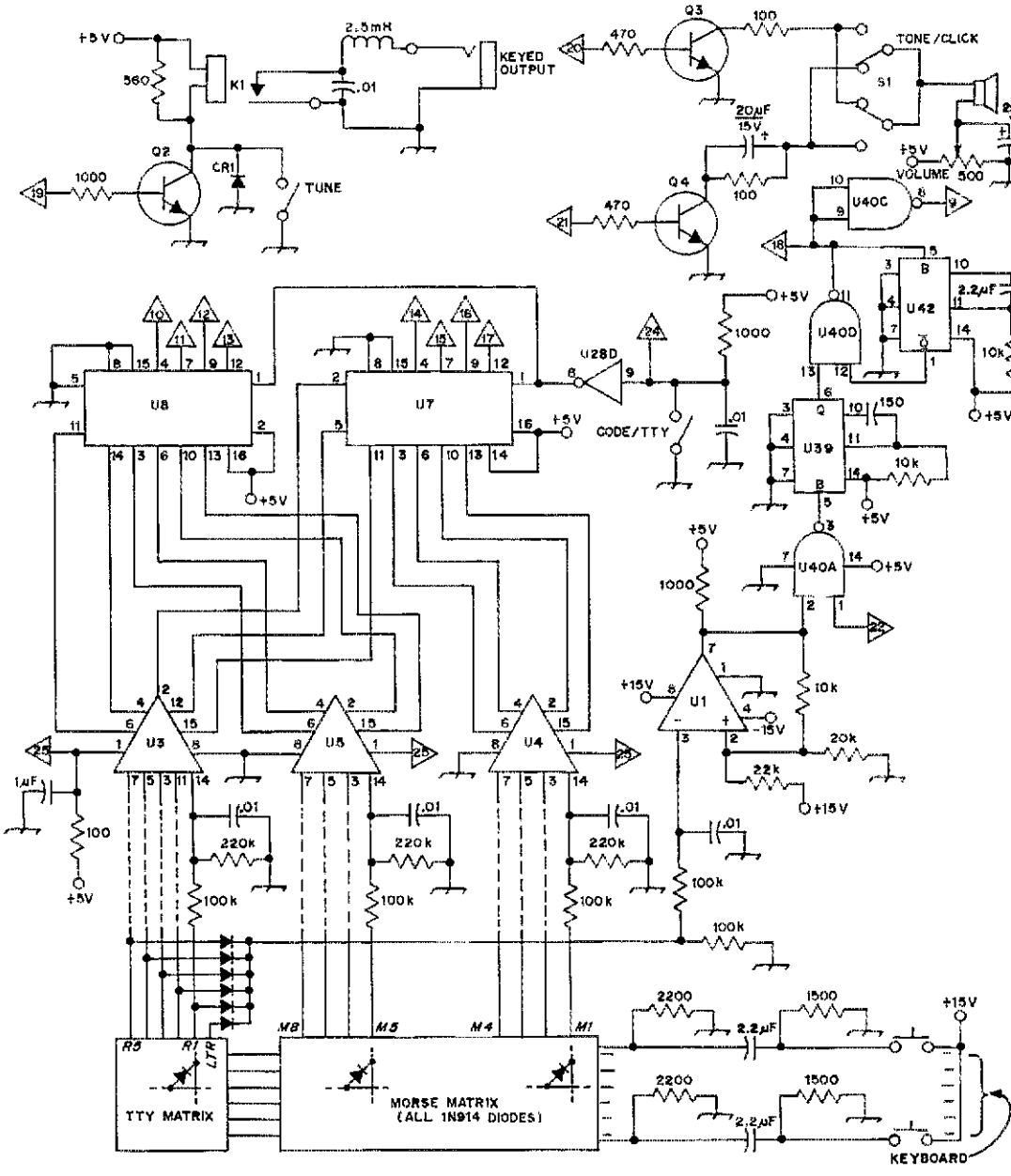
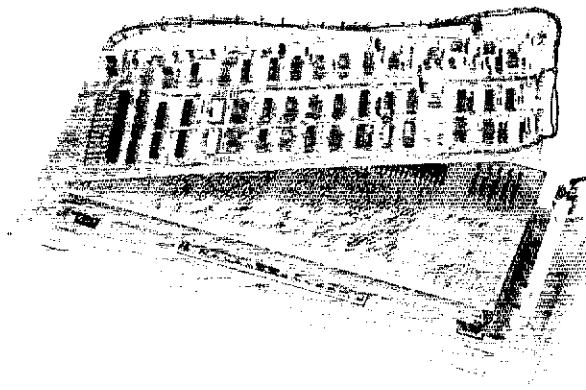


Fig. 2, continued — Logic diagram of Compucoder. IC numbering corresponds to the particular parts locations used in the author's printed-circuit board unit (see text for availability). IC pin numbers not shown are left unconnected. See Table II for shopping list of parts. Diodes, shown with a CR prefix here, are given a D prefix on the assembly drawings provided with the circuit boards (see ref. 4).

character, on a scale of 0-100 characters. (The "red line" here extends from 60 characters up to full scale.) The meter reads what has been put *into* the buffer, rather than what has been *sent*, in order to remind the operator to insert CR and LF (line feed) characters at appropriate times, even when he's far ahead of the keyer. Finally, the two LED indicators (LTR/FIG shift) in the center of the panel indicate which keyboard shift has been sent last, in case you have a tendency toward forgetfulness.



Bottom view of Compucoder keyboard removed from case. The matrix and logic pc boards are housed immediately under the keyboard, while the power supplies, relay, and speaker are mounted in the rear portion of the enclosure. In this view the logic board has been swung away from its mounting position to show part of the matrix board. Four square trimmer potentiometers, upper right portion of the logic board, provide for calibration of the three meter functions (% FULL, CODE SPEED, and LINE LENGTH) and set the TTY rate. There are no other setup adjustments required in the keyer.

Circuit Highlights

Fig. 1 is a simplified block diagram of the keyer logic. Fig. 2 is the complete schematic diagram.

Keystrokes are encoded into an internal 8-bit representation in the code matrix or the TTY matrix, an array of diodes on a printed circuit board. This matrix is the part of the keyer that "knows" Morse (and TTY) code, converting each keystroke into a representation that is easy to translate into the dots and dashes of actual code. Table 1 shows the matrix connections. For Morse code it's the same scheme as used by Bryant, W4UX[2] – a diode for dash, no diode for dot, and a final diode to end the character; for TTY it's just the complement of the 5-unit Baudot code – a diode for space, no diode for mark. After *RC* shaping, the matrix outputs are converted to TTL levels with CMOS buffers U3 through U5. Now we must select either the Morse code or TTY character, depending on which we wish to send. This could be done with an 8-pole, 2-position switch, but, in order to keep panel controls simple and increase reliability, all logic switching is done with gates. Only dc levels are provided by the panel controls, a technique known as "cold switching." Beside the obvious advantage of using only spst switches (with one side connected to ground!), this avoids the problems of signal crosstalk and capacitive loading, and allows heavy bypassing (if needed) to eliminate rf interference. Therefore the CODE/TTY selection is done by multiplexers U7/U8. A second selection, NORM/RECIRC, is provided by multiplexers U10/U11, choosing either the keyboard character just typed (NORM) or the character then being sent (RECIRC) for reloading into the buffer.

Whichever the source, an 8-bit character code is loaded into U13/U14, the 64-character FIFO buffer. This remarkable device accepts input data whenever you give it some, and, if it's empty, causes that data to "fall through" to the output. If the buffer already contains data, the input falls through to the lowest unoccupied position, to emerge in the same order it was entered. The FIFO is a natural for buffering keyboards to any data user, especially since its input and output are completely "asynchronous" – you can be entering data (as signaled by a "shift-in" command, SI) and removing data (by a "shift-out," SO) at arbitrary times, as long as you don't add to a full FIFO, or try to remove data from one that's empty.

Each keystroke results in a shift-in pulse, generated by discriminator U1 and monostable U39. (U42 desensitizes the keyboard for 20 ms, to avoid false read-in from contact bounce.) The code-generation circuitry, U19, U20, U22, U23, U25, U26, U28, U29, U31, and U32, in turn generates a shift-out command to load the master shift register, U16/U17, from the FIFO. The code generator is standard, though somewhat complicated to understand in detail. It's basically the same as Bryant's,[2] with the addition of U23 and some related circuitry to handle the word-space character.

The time-base clock for Morse code generation consists of U38/U41, a voltage-controlled oscillator (VCO) followed by an adjustable discriminator (WEIGHT). Both panel adjustments here (SPEED and WEIGHT) provide dc levels to control their respective circuits (VCO, discriminator), i.e., cold switching. U31 does the routing of signals and clocks for the CODE/TTY choice, including selecting the time base from either U38/U41 (code) or U44 (TTY), a free-running oscillator set to the TTY rate (22 ms period for 60 wpm). The output of the code generator drives the relay and enables the sidetone oscillator signal to drive the speaker, via U2/Q3. "Thumps" are added by stretching SIs with monostable U45 and applying them to the speaker via U2/Q4. The thump can be either a pulse or a tone burst, as selected by a jumper from pin 8 of U2C.

The buffer-status meter is driven by an up/down counter and digital-to-analog converter (DAC) consisting of U35, U36, and U37. It counts up for each SI and down for each SO. Since this counter, like the FIFO, is cleared via Q5/Q6 at initial turn-on (and whenever the RESET button is pushed), its count always corresponds to the number of characters remaining in the FIFO.

The CODE SPEED/LINE LENGTH meter is driven by one of two independent circuits. The CODE SPEED indication is derived from the VCO frequency-control voltage (pin 5 of U38, referenced to +15 volts) via code-speed current source Q7, with Q9 compensating the V_{BE} offset. In the CODE mode, the TTY character counter U24/U27 is cleared, so the output of U30 is at ground; and

TABLE II – Parts for Logic Diagram

U1, U41	National LM311TN (minidip)	or equiv.
U2	Tex. Insts. SN7402N	"
U3, U4, U5	RCA CD4050AE	"
U6, U44	Signetics NE555V (minidip)	"
U7, U8, U10, U11, U31	Tex. Insts. SN74157N	"
U9, U20	Tex. Insts. SN7425N	"
U12	Tex. Insts. SN7420N	"
U13, U14	Fairchild 3341DC	"
U15, U18, U19, U26, U34, U40, U43	Tex. Insts. SN7400N	"
U16, U17	Tex. Insts. SN7495N	"
U21, U25	Tex. Insts. SN7410N	"
U22, U23, U29	Tex. Insts. SN7474N	"
U24, U27	Tex. Insts. SN7493N	"
U28	Tex. Insts. SN7404N	"
U30, U36	Motorola MC1408L7	"
U32, U39, U42, U45	Tex. Insts. SN74121N	
U33	Fairchild μA741TC (minidip)	"
U35, U37	Tex. Insts. SN74193N	"
U38	Signetics NE566V (minidip)	"
Q1	Motorola 2N3906	"
Q2, Q3, Q4	Motorola 2N3904	
Q5, Q6, Q8	Fairchild 2N3565	"
Q7, Q9	Fairchild 2N4250	"
CR2	Motorola 1N4372	"
K1	Clare HGJM 5111 KO or PRB 3510	"
S1	Alco NIST-205PA	"
Panel LEDs	Monsanto MV5025	"
All other diodes	1N914, 1N4148, or equiv.	

U33 becomes a transresistance amplifier (it converts current to voltage) which drives the meter with an indication linearly proportional to code speed. In the TTY mode Q8 shuts off the code-speed current source, and U33 becomes a noninverting voltage amplifier of the LINE LENGTH signal, the output of DAC U30 driven by a seven-bit up-counter, U24/U27. Since the counter is incremented at each SI and reset by CR-recognizer gates U9, U12, and U15, its count, and therefore the meter indication, is the number of characters typed since the last carriage return.

Finally, the LTR/FIG LEDs are driven from U21, a flip-flop set by LTR/FIG recognizer gates U9, U12, U15 and U18. The LEDs are disabled in the CODE mode.

Construction

The keyer is constructed around a reed-switch keyboard, originally part of a computer terminal, obtained from a surplus dealer. Such keyboards are generally available for about $40,[3] and usually contain electronics for the generation of ASCII code, as mine did. Since all the keyer circuit requires is a set of spst normally open switches with one common lead, the ASCII code-conversion board was replaced by the diode matrix board. The electronics (except for the power supply and controls) was constructed on a single printed circuit board, mounted under the matrix pc board, as shown in the photo. Table II is a list of these parts. The power supply must provide +5 volts at 750 mA and ±15 volts at 50 mA; the particular circuit used for the author's keyer is shown in Fig. 3. The MC7805CP is a monolithic 3-terminal (in, out, ground) regulator, and the RC4195TK is a monolithic ±15-volt regulator. Both feature short-circuit protection and internal shutdown in the event of overheating. With a digital system of this magnitude (approximately 5000 transistors equivalent complexity) it's wise to include an overvoltage crowbar circuit, as shown.

Arrangements have been made to supply the two printed circuit boards, for those wishing to construct this keyer.[4] With the matrix and logic on pc boards, construction is relatively straightforward: 58 connections from keyboard to matrix, 17 connections from matrix to the logic board, and 17 connections from the logic board to the controls, power supply, and outputs. Except for the outputs (sidetone and relay drive), all connections to the logic board are dc levels, and can be heavily bypassed for effective RFI suppression. As a result, code generation while keying a kilowatt has been faultless – the only errors are caused by having too many left thumbs! As another test for errors, a message loaded into the keyer and recirculated all night was still going around fine the next morning!

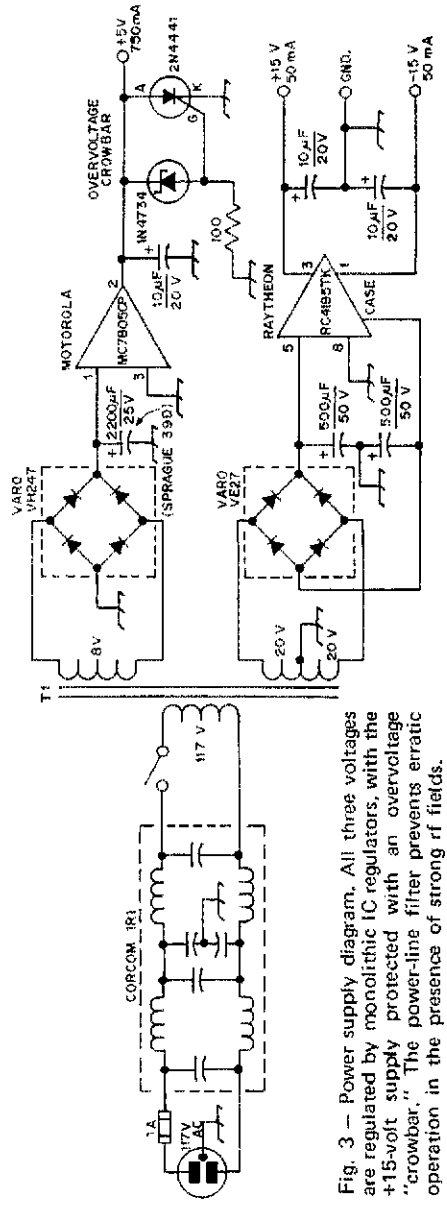


Fig. 3 — Power supply diagram. All three voltages are regulated by monolithic IC regulators, with the +15-volt supply protected with an overvoltage "crowbar." The power-line filter prevents erratic operation in the presence of strong rf fields.

Operation

The keyer is a delight to use. Because of forgiving features like rollover and a large memory, any adequate typist can send perfect code, even if he doesn't *know* code! A key held down produces the character just once (unlike some previous keyers which generated repeated characters), a particularly important characteristic for typists not acquainted with code, and essential when a buffer is included. Thus, among the offbeat applications of this keyer, one could include code practice generated by someone not knowledgable with code. Just be sure to tell him (or her) to glance at the "gas gauge" (% FULL meter) occasionally!

Acknowledgments

My thanks to Paul Cram, K4IO, for many valuable suggestions and help with construction of an earlier version of this keyer; without him this keyer would never have been built. Winfield Hill's wise and wonderful circuit ideas were often invaluable. Ralph Stanley, who will undertake to provide pc boards to those wishing them, kindly made the prototype boards.

References

1. Horowitz, "Perfect Code at your Fingertips," *QST*, August 1965.

2. Bryant, "Touchcoder II," *QST*, July, 1969.

3. Keyboards similar to that used by the author have been available, for example, from: B&F Enterprises, 119 Foster St., Peabody, MA 01960; Herbach and Fademan, Inc., 401 East Erie Ave., Philadelphia, PA 19134; Meshna Surplus, P.O. Box 62, East Lynn, MA 01904; or Southwest Technical Products Corp., 219 W. Rhapsody, San Antonio, TX 78216.

4. The two printed circuit boards are double sided, measure 4.9 × 14 inches (12.4 × 35.6 cm), and are available for $20 apiece (drilled) or $15 apiece (undrilled) by writing to the author. Assembly drawings and parts lists are included with the boards. QST

Strays

MASSACHUSETTS BICENTENNIAL AWARD

The Massachusetts Bicentennial Award is issued for contact with Massachusetts amateurs during the United States Bicentennial years 1975-1976. All contacts must be between the dates January 1, 1975 and December 31, 1976. Contacts made through repeaters are acceptable. Massachusetts amateurs need 200 points. The rest of the U.S. need 100 points. DX (including KH6 and KL7) and vhf outside first U.S. call area need 50 points. Each contact with a Massachusetts station is *two* points. Contacts with Massachusetts stations in cities and towns having historical significance or bearing the name of an American Revolution era important person are *four* points. Such cities and towns are Adams, Boston, Cambridge, Clinton, Concord, Franklin, Hamilton, Hancock, Huntington, Lee, Lexington, Marion, Middleton, Montgomery, Mount Washington, North Adams, Otis, Revere, Warren and Washington. Double points may be claimed for contacts on any of the four Massachusetts historical holidays of March 17 (Evacuation Day), April 19 (Patriots Day), June 17 (Bunker Hill Day), and July 4 (Independence Day).

Massachusetts stations may be worked only once except that a station may be worked a second time if mobile, and the stations may be worked again on any of the bonus holidays listed above. QSL cards are *not* required. Send log data only showing station worked, time, date, band and mode, and city or town. If bonus points claimed for a contact, so indicate. Certificates will be endorsed for band and mode if requested. There is no charge for a certificate, but application must be accompanied by a sase (DX include one IRC). Submit application to: William Holliday, WA1EZA, 22 Trudy Terrace, Canton, Mass. 02021.

The Meaning of SENSITIVITY

Applying the System Noise Figure Concept to VHF and UHF Reception

BY STEVE MAAS,* K3WJQ

SENSITIVITY is a major concern in the selection or design of a communications receiver, yet there are factors external to the receiver itself which seriously influence its sensitivity. It is therefore worthwhile to consider the matter of sensitivity in a broad sense, to include the antenna, transmission line, and any converter and low-noise preamplifier used for the higher frequencies.

Sensitivity is limited by noise. A noiseless receiver could copy an infinitesimal signal; it would merely be necessary to amplify it sufficiently. When the power of the desired signal is roughly equal to or less than that of the noise accompanying it, the signal usually cannot be copied easily. When the signal-to-noise power ratio (or simply, signal-to-noise ratio) is approximately 10 dB or more, the signal can be copied with little difficulty. In order to optimize the sensitivity of a receiver, it is necessary to reduce the noise, or, if the noise can not be reduced, its effects must be minimized. This can be done by suitable choice and design of the antenna, transmission line, and receiver electronics.

Sources and Description of Noise

Noise can be defined as any unwanted sound or signal. Although this definition includes QRM, distortion products and the neighbor's stereo, we will be concerned here with the background hiss heard in the speaker when no signal is present. This is a randomly varying voltage, the sum of noise voltages generated in the tubes or transistors and those picked up by the antenna system.

Noise from the antenna is of two general kinds, natural and man-made. Natural noise includes atmospherics generated by thunderstorms and static charges in the atmosphere, solar and galactic noise, and possibly noise from sources not yet identified. Man-made noise needs little explanation. Everyone is familiar with industrial noise, power-line noises, and the staccato effects of auto ignition. Even when its components are not recognizable as individual phenomena, the overall increase in noise in urban areas is unmistakable. Curiously, this tends to be vertically polarized, and often it can be minimized by using a horizontal dipole or beam, instead of a vertical antenna.

Radiation by galactic and extragalactic radio sources led to the science of radio astronomy, and the recognition of galactic radiation as a source of vhf and uhf noise. The galactic center (Milky Way) radiates strongly throughout the electromagnetic spectrum. Jupiter is known to radiate strongly and sporadically around 20 MHz. The sun radiates constantly, with especially intense radiation at times of great sunspot activity. Even radiation from the earth, caused by random charge motion (called *thermal radiation*), is easily detected by sensitive receivers.

Noise can be generated in the electronics of the receiver. The motion of charges through semiconductors or vacuum tubes generates what is called *shot noise*. The random motion of charge in resistors also generates noise, which can be amplified by transistors and tubes associated with these components. Unlike the previously mentioned noise sources, electronic noise can be controlled to some extent. Some transistors are noisier than others; some receiver stages such as mixers are notoriously noisy, while others are relatively quiet.

It is important to recognize that different noise sources dominate at different frequencies. Fig. 1 shows external noise compared to electronic noise for frequencies up to 1000 MHz. Below about 20 MHz, external sources invariably dominate reception. Between 20 and 50 MHz or so man-made, galactic, and sky-background noise are major

* 1220A Holmes Avenue, Charlottesville, VA 22901.

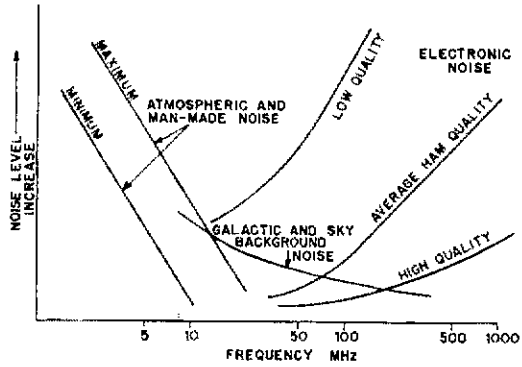


Fig. 1 — Noise sources at various receiving frequencies. Above about 30 MHz receiver noise figure becomes a critical factor in reception of weak signals, whereas in the hf range external noise tends to dominate reception.

factors, but electronic noise begins to be a design consideration. Above 50 MHz internal (electronic) noise usually dominates.

This graph illustrates a very important point: there is no sense in attempting to reduce the noise generated in the hf receiver beyond a certain easily obtainable point. To prove this to yourself, tune your receiver to any unused frequency in the hf range, and remove the antenna. Virtually all noise will be eliminated. You may barely hear the receiver noise, even at high gain levels, because it is so slight compared to that picked up by the antenna. This condition changes rapidly with increasing frequency above 50 MHz. At 144 MHz only the best receivers enable one to hear external noise in a location where there is little man-made interference.

At frequencies where internal electronic noise is a major factor, antenna and transmission-line design become increasingly important. A good rf amplifier, properly used, may improve the performance of a mediocre vhf or uhf receiver dramatically, but a poor antenna or transmission-line choice can ruin the performance of even the best receiver. Clearly, it is important to know how to arrange an *overall* receiving system for best signal-to-noise performance. We must, therefore, consider the concept of *system* noise figure.

Noise Figure

At frequencies where noise generated by the receiver electronics is important, it is necessary to have a measure of the "noisiness" of the receiver or of any receiver stage. The amount of receiver noise generated is indicated by the degradation of the signal-to-noise ratio as the signal passes through the receiver. The noise figure, F, is a measure of this degradation. It is defined as follows:

$$F = 10 \log_{10} \left(\frac{\text{S/N at input}}{\text{S/N at output}} \right) \qquad (1)$$

The noise figure can be measured for any stage or network with an input and an output. Amplifiers, mixers, and attenuators all have noise figures. The noise performance of a detector is more complex; hence a noise figure is seldom defined for a detector. A noise figure is expressed in decibels. However, decibels are usually inconvenient for use in calculations. For calculations the noise *factor* f is used, where:

$$f = \frac{\text{S/N at input}}{\text{S/N at output}} \qquad (2)$$

therefore,

$$F = 10 \log_{10} f \qquad (3)$$

The noise factor is simply the noise figure expressed in numerical units instead of decibels. When the noise factor is calculated, it may then be converted to decibels as a noise figure.

Noise Figure of the Receiver System

A communications receiver consists of an interconnection of individual stages, some noisier than others. The noise figure of the mixers and i-f amplifier stages is usually relatively high. Preamplifiers and front-end rf amplifier stages are intentionally designed for low noise figures. The transmission line from the antenna to the first amplifier stage is extremely important in determining the receiving system noise figure for the higher frequencies.

Ultimately we have a receiving system consisting of an antenna, transmission line, and the stages of the receiver itself (rf, mixers, i-f, etc). We know the noise figure of each stage, or perhaps the receiver. We wish to know (1) the noise figure of the entire receiver system, or (2) how to use all the components of the receiver most efficiently, for lowest noise figure.

Consider the cascade connection of several stages. These may by any stages; they need not be stages of the receiver proper. For example, stage 1 could be an rf amplifier, stage 2 a mixer, and stage 3 the i-f amplifier string and the rest of the receiver. In this case, we would be considering only the complete receiver. Alternatively, stage 1 might be the transmission line from the antenna, and stage 2 could be the entire receiver. There would be only two stages considered in this system. All we need to know are the noise factors of each stage and the gains of all but the last stage.

The noise factor of the system is given by the following equation:

$$f = f_1 + \frac{f_2 - 1}{G_1} + \frac{f_3 - 1}{G_2 G_1} + \ldots \quad (4)$$

where

$$f_n = \text{noise factor of the } n^{th} \text{ stage}$$
$$G_n = \text{gain of the } n^{th} \text{ stage} \quad (5)$$

The system noise figure, F, is simply

$$F = 10 \log_{10} f$$

Example, find the noise figure of the following receiver:

stage 1 – rf stage, 3 dB noise figure, 10 dB gain

stage 2 – mixer, 10 dB noise figure, 6 dB conversion gain

stage 3 – i-f string, 8 dB noise figure, 60 dB gain

stage 4 – the rest of the receiver. We will see that its noise figure and gain are negligible, even if they are quite large.

Convert noise figures to noise factors, gains from dB to factors:

$$F_1 = 3 \text{ dB}, f_1 = \text{antilog}(3/10) = 2.0; G_1 = 10$$

$$F_2 = 10 \text{ dB}, f_2 = 10; G_2 = 4$$

$$F_3 = 8 \text{ dB}, f_3 = 7.5; G_3 = 10^6 \ (= 1{,}000{,}000)$$

$$f = 2 + \frac{10 - 1}{10} + \frac{7.5 - 1}{10 \cdot 4} + \frac{\text{noise factor of rest of receiver} - 1}{4 \cdot 10^7}$$

Because of the large denominator, the fourth term is negligibly small. Hence,

$$f = 3.0$$
$$F = 4.6 \text{ dB}$$

Equation 4 can be used to illustrate certain properties of the noise performance of receivers. Generally, the first receiver stage is an rf amplifier. The second is a mixer, the third an i-f amplifier. Since the gain of these stages is greater than unity, the denominator of each successive term of equation 4 will become greater. Hence the first term, representing the first-stage noise contribution, will be greatest. If the gains are all greater than one and the values of noise figures are reasonable, as will be the case in well-designed equipment, only the first two or three terms are significant. The rest are so small as to be negligible.

It is therefore necessary, in order to achieve maximum sensitivity, that the first stage be designed for minimum noise figure. The gain of this stage must be fairly good, but not optimum, since it is rarely possible to optimize both gain and noise figure in a practical amplifier. Front-end design is indeed an art, because the amplifier should be designed to handle very strong signals without distortion (i.e. it should have wide dynamic range) and to have a low noise figure for receiving weak signals. Unfortunately, opposite design techniques are used for achieving these two objectives. Age and rf gain controls, which change the amplifier tube or transistor bias according to the level of the received signal, are the usual solutions to this problem.

Suppose that the first stage were a lossy transmission line, followed by an amplifier, mixer, and i-f amplifier, as before. Using the fact that the noise figure of a transmission line (or any passive attenuator) is equal to its loss in decibels, and using equation 4, we can determine the following.

1) The noise figure of the entire receiver system is always greater than the transmission-line loss, expressed in dB.

2) Because the transmission-line gain is less than one, the noise contributions of all the receiver stages will be greater than they would be if no transmission line were needed.

3) The use of a low-noise preamplifier following a bad transmission line will not significantly improve the noise figure of the entire system.

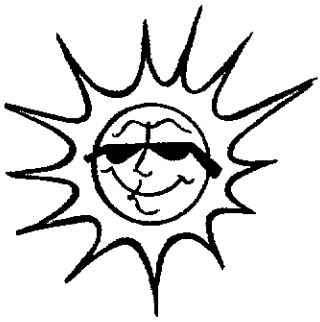
The antenna must often be located far from the receiver (on top of a fifty foot tower, for example) and often low-noise operation is a necessity. It would be futile to use a transmission line with 6-dB loss, followed by a receiver with a 3-dB noise figure, as the noise figure of the combination would be 9 dB – which is quite poor compared to the 3-dB noise figure of the receiver alone. The first stage of the system makes the major contribution to its noise figure. It is desirable that this stage be a low-noise amplifier. It should never be a lossy, hence noisy, transmission line.

The solution to this problem is to use a low-noise preamplifier mounted at the antenna, followed by the transmission line, and finally the rest of the receiver. This arrangement has the practical disadvantages of weatherproofing the amplifier, designing it to be stable enough so that it does not require frequent retuning, using a relay at the antenna, and two transmission lines. Nevertheless, the improvement in sensitivity is enormous. Consider the situation mentioned above, concerning the transmission line with 6-dB loss and the receiver with a 3-dB noise figure. If we preceded the transmission line with a preamp having a 3-dB noise figure and 12-dB gain, equation 4 shows that the overall noise figure of the system would be 3.9 dB.

A second solution is the brute-force technique of finding a new transmission line with less loss. In order to get the same results as the above example, the transmission line loss must be 0.9 dB. Reducing uhf transmission-line loss from 6 dB to 0.9 dB might be completely impossible.

Good receiving sensitivity depends on preserving the signal-to-noise ratio of the signal received by the antenna. This is equivalent to keeping the noise figure of the receiver sufficiently low. At frequencies below 30 MHz or so this

(Continued on page 33)



The DXer's Crystal Ball

Part I — A Look at the Tools of the Trade

BY EDWARD P. TILTON,* W1HDQ

ANYONE WHO SPENDS much time on 10 meters these days can expect to hear something like, "I sure was surprised to find Ten open this morning. I haven't heard anything on this band for months!" Ten-meter regulars tend to bridle at this oft-repeated comment, knowing that it represents a commonly held but inaccurate view of radio propagation during the low years of the solar cycle. Similar remarks are now being heard on 15 as well, and it is obvious to amateurs who like the two highest hf bands that interesting opportunities are going to be missed for lack of activity, as more people get the idea that the useful DX frequency range ends at 14.35 MHz.

So, it is probably time to stress the fact that the effects of declining *average* solar activity are not that simple. The sunspot curve is no smooth sine wave. As late as the closing months of 1974, there were peaks of solar activity that brought 10-meter DX as exciting as any in recent years. There will be good days on 10 and 15 in the coming months, despite our wallowing in the low period between sunspot cycles 20 and 21. (The cycle numbers show our position in the recorded history of sunspot observation.)

Admittedly nobody expects to work 300 countries on 10 or 15 meters in the next two years or so, and even 20 may not be too good at times. Loss of propagation through the polar and near-polar regions, a characteristic of low-sunspot years, will keep us from working a considerable portion of the world, with only rare exceptions, but there should be interesting opportunities in other directions for amateurs who have some idea of when and where to look.

To make the best of the smaller number and shorter duration of openings, we must beware the dead-band syndrome, a persistent legacy from the days of insensitive receivers, inefficient transmitters, and antennas that were often haywire adaptations of systems intended for lower frequencies. Early DX stations on 10, especially, were often rudimentary in the extreme, and many Americans were not much better equipped. It is not surprising, therefore, that the potential of the band was underestimated.

Too often, then and now, a band is judged "dead," merely because nobody is *transmitting* in the right places at the right times. We should not have to be reminded, at this late date, that "everybody listening" never launched a day's DX. Only one condition could be worse: "*nobody* listening." Though well-known activity deterrents on the vhf bands, these situations should not be allowed to develop on choice DX frequencies like 21 or 28 MHz, at any level of solar activity.

Propagation Predictions

Some DX-oriented amateurs feel that we could save time and have more fun if we had some magic band interrogator, to tell immediately if it is worthwhile to go on the air. Others, perhaps a majority, think this would be rather like having tonight's scores in this morning's paper. For them, the game's the thing, and finding one's own way through the DX maze is part of it. There are good aids available, some of them quite new.

Predicting optimum times and frequencies in a general way is within the capabilities of anyone who can read. You don't have to pay anyone to do it for you, if you make the one-shot investment in information available from the U.S. Government Printing Office. See any recent edition of *The Radio Amateur's Handbook*, propagation chapter, for details. Much more on the NBS *Ionospheric Predictions* and their use in amateur communications planning is given in *QST* for March, 1972.[1]

* Technical Department, ARRL.

[1] Hall, "High-Frequency Propagation Estimations for the Radio Amateur," March, 1972, *QST*.

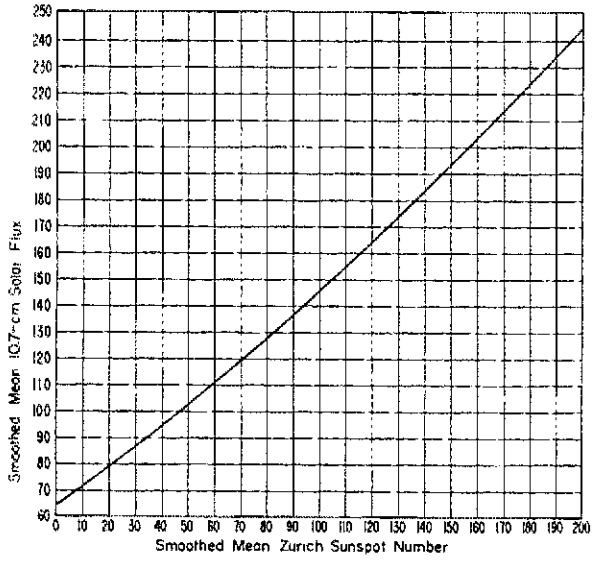


Fig. 1 — Relationship between smoothed mean Zurich sunspot number and the 2800-MHz solar flux. Highest solar flux recorded in 1974, Oct. 12, was 145, the equivalent of a sunspot number of 100. Lowest flux value thus far in 1975 (late April) was 67, equating with a sunspot number of about 5.

A quick glance at the OT-TRER-13 series may tend to scare you off, but using the NBS information is by no means as formidable a task as it looks at first. Once you get the basic idea of the control-point method and its use on a Mercator-projection flat map, you can make pretty fair guesses as to optimum times, frequencies, and paths almost intuitively. This is true particularly for the two highest bands, and conditions on the lower amateur frequencies are more or less an open book anyway, thanks to continuously high levels of occupancy almost everywhere.

It should be stressed that the NBS *Predictions* are for average conditions in the forecast period, and mainly for the ionospheric *F* layer. The maximum usable frequency (muf) may go well above or lag below the figure arrived at through use of the charts. These are based on predicted values of solar activity (sunspot number) which are smoothed running averages – so the propagation predictions derived are averages, as well. This writer has reason to remember that the first transatlantic 50-MHz contact (November 24, 1946) was made when the NBS charts for the month pointed to an average muf just over 40 MHz!

When an ARRL DX Contest, Sweepstakes, or Ten-Meter Party happens to coincide with a short-

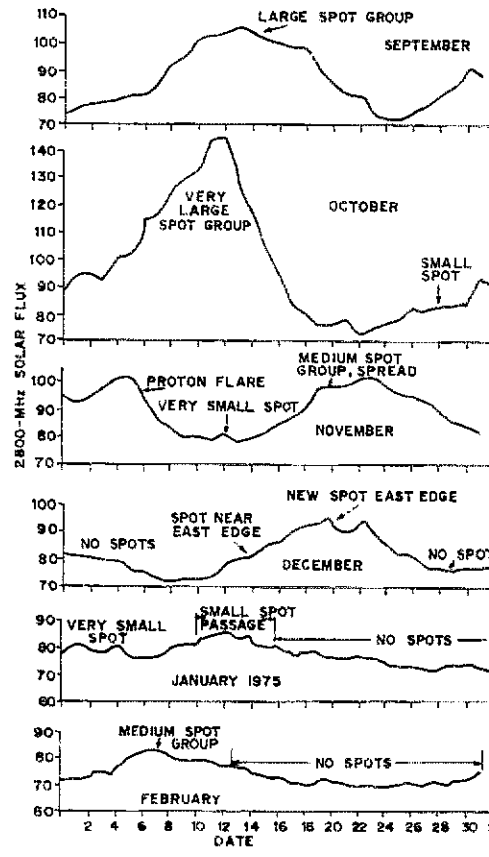


Fig. 2 — Solar flux curves, September, 1974, through February, 1975. Information through Nov. 22 is based on bulletins via WWV at 18 minutes after the hour. After that date the curves are more detailed, the data coming mostly from the OTS 14-after transmissions, which are changed four times daily. Recurrences at roughly 27-day intervals are apparent, as are the changes in solar phenomena as to size and shape of recurring peaks.

term peak of solar activity, we see what our bands at the high end of the hf spectrum are good for, simply because everybody gets in there and makes things happen. But what of an ordinary weekday, when solar activity may be exceptionally high, but amateur activity is low? Then we need *short-term* predictions. Fortunately we are beginning to see that there are do-it-yourself answers to this problem.

Using WWV Information

The condition of the earth's ionosphere and geomagnetic field, and consequently the "propagation quality figure" for a given time are directly related to conditions on the sun. Brief summaries of solar, magnetic-field, and propagation conditions are provided hourly on the National Bureau of Standards stations WWV and WWVH. With some practice and observation, amateurs can make good use of these bits of data in planning their air time for maximum return. The bulletins are in two segments, at 14 and 18 minutes after each hour. A typical 14-after text follows:

> The radio propagation quality forecast for 0700 coordinated universal time is fair. Current geomagnetic activity is quiet. The coded forecast is November five – repeat, November five. The K-index at 0600 coordinated universal time is three – repeat, three, tending to decrease. The 2800-MHz solar flux index is seventy-eight – repeat, seventy-eight, tending to increase slowly.

Portions underlined in this bulletin (broadcast the morning of Feb. 5) are changed to fit observed or predicted conditions. These items are discussed below in the order in which they appear in the bulletin.

The forecasts are for a six-hour period beginning about one hour after the time of issue, 0700 in the example, and are for the North Atlantic path, such as Washington to Paris, New York to London, or Washington To Reykjavik. Issue times are generally 0100, 0700, 1300, and 1900 UTC.

The descriptive term (fair) could also be excellent, very good, good, fair to good, fair, poor to fair, poor, very poor, or useless. In practice, which tends to cautious forecasting, the extremes of this scale are seldom, if ever, used. In some five months of daily recording, this writer has heard mainly the three middle terms. One upswing has reached "good," and two dips have gone as far down as "poor."

Current geomagnetic activity is stated as quiet, unsettled, or active, with occasional modifying words such as "mildly unsettled," or "variable." The difference between unsettled and variable has not yet become entirely clear to this observer.

The coded forecast (N5 above) identifies propagation conditions at the time of issue (N for normal, or quiet) and gives an expected quality figure (5, for fair) for the forecast interval. The quality is given on a scale of 9, to match the descriptions two paragraphs above, with 1 being "useless," and 9 "excellent." We recommend that the reader not wait around to hear any 7, 8, 9, or 3, 2, 1 ratings however. You will hear an occasional W (disturbed), and quite often U (unsettled). N (quiet) is also common. Poorest thus far recorded: W4, heard perhaps twice a month; best so far: N6. U5 and N5 are most often used, in our experience to date. Perhaps that is as good a commentary on recent DX conditions as any – "just fair." Generally "quiet" will mean relatively low absorption on all frequencies up to the muf, with no severe selective fading. "Unsettled" portends lower signal levels and more fading and distortion, especially on the lower frequencies. "Disturbed"

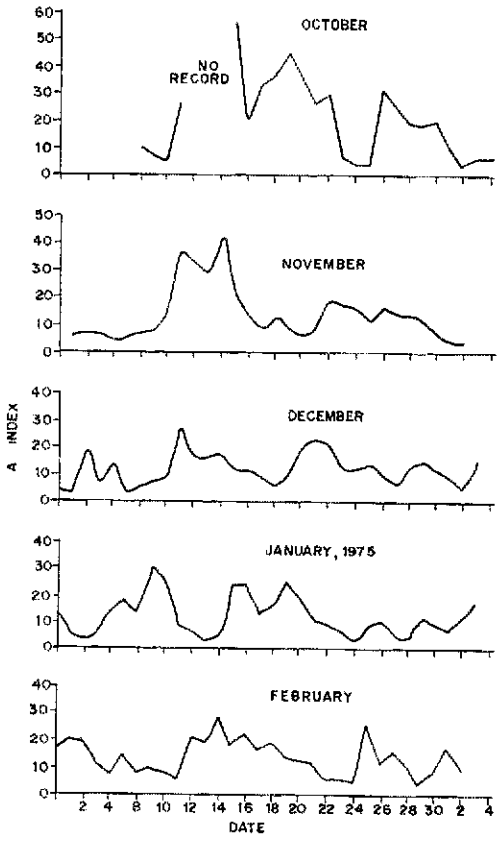


Fig. 3 – Geomagnetic A-index information, obtained from the NOAA bulletins on WWV, 18 minutes after each hour. The numbers transmitted are for the previous day, but have been corrected to the actual date of observation here. High A-indices mean high absorption of the lower amateur frequencies, but may be associated with better than normal conditions on 21 and 28 MHz. Auroral propagation on the vhf bands is common at A-index peaks, and on the start of the downslopes. F-layer propagation through auroral zones is generally poor in times of high geomagnetic activity, especially on the lower amateur frequencies. As with the solar flux, Fig. 2, recurrence phenomena are plainly apparent.

(Continued on page 144)

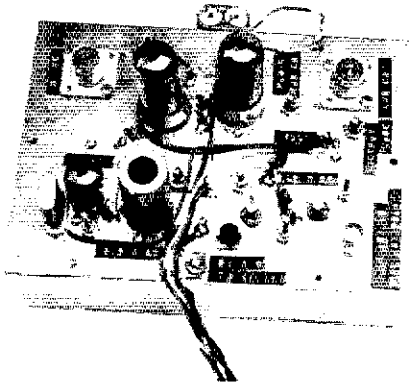
A HYBRID TEN-TO-TWO

BY J. F. STERNER,* W2GQK

THIS TRANSVERTER DESIGN derives optimum performance from the combined advantages of MOSFET devices and tubes. The low noise and high gain of the MOSFET devices provide the receiving conversion function; the tubes, in turn, provide the power gain desired for transmission. The resulting power output from the transmitting portion of this transverter is in the range of 5- to 10-watt peak envelope power (PEP). This range is more than adequate for driving high-power linear amplifiers such as those described in the ARRL *Handbook* and other publications. Spurious beats in this circuit are reduced or eliminated by use of a crystal oscillator operating at 116 MHz as the common heterodyning source for the receive and transmit modes. Crystals for this frequency are usually 9th overtone and are available from several manufacturers.

The connection and switching circuit of Fig. 3 requires no changes in the 10-meter driving transceiver. If the full transceiver output is used in combination with this transverter, it will be necessary to "dump" most of its power into a dummy load and sample a small portion of this signal to drive the transverter. There are two reasons for this approach. First, it has been noted that some stations produce spurious signals when they operate at 145 MHz. These signals are apparently generated from the 4th harmonic of 29 MHz when the 10-meter final is disabled for the sampling of the grid-driving signal for the transverter. In this case, the filtering of the final-amplifier tuned circuits is lost; hence, any harmonics produced at this grid appear at the transverter mixer grid and develop spurious signals. Although this problem could be eliminated by use of a low-pass filter between the transceiver and transverter, this method adds to the system complexity. The second reason for sampling is that it provides a simplified switching system. In this case, a good double-pole double-throw (dpdt) coaxial relay should be used for signal switching between the two units. Before this factor was realized, two MOSFET mixer devices (Fig. 1) were destroyed as a result of one sticking relay which dumped the full output of the transceiver into the transistor drain circuit. As an additional precaution, therefore, two diodes were added across the mixer-output circuit, similar to those used in the antenna circuit, and a new dpdt relay was installed.

The circuit construction techniques for the transverter are shown in Fig. 2. All operating components are mounted on a 5 × 7-inch sheet of .020-inch-thick brass. One long shield is placed between the mixer and the power-amplifier section. The smaller shields are located between the 3N152 transistor input and output circuits, between the 6AK5 amplifier plate and grid circuits, between the 6AK5 amplifier and the 3N141 transistor, and across the 6360 socket to separate its input and output circuits. With the shields placed as shown, both the 116-MHz amplifier and the 145-MHz power amplifier are quite stable and do not require neutralization.



Filament and plate voltages are applied to the circuits by means of feed through capacitors on the top of the chassis. The crystal oscillator is located at the lower left, with the 28-MHz input jack immediately above it.

Two fixed-value 5-pF capacitors are used across the 6360 grid coil. The coil is pruned during initial adjustments in conjunction with L10 and C9 for maximum output at 145 MHz. No additional tuning is necessary once these circuit elements are

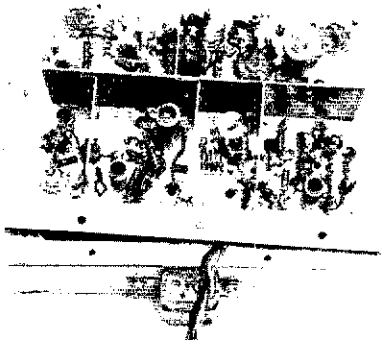
* 322 Perrine Ave., Piscataway, NJ 08854.

TRANSVERTER

set. An adequate drive level from 144 to 146 MHz is provided to the 6360 grids.

After assembly and test, the unit is mounted in a 5 × 7 × 2-inch aluminum chassis as shown in the photograph. The 15-volt bias battery is strapped to the side of this chassis.

Before construction of this transverter, it is recommended that the photographs be studied so that the parts layout can be duplicated as closely as possible. Particular attention should be paid to the location of grounds for all bypass and feedthrough capacitors as well as the other components. Obviously, all capacitor and resistor leads must be kept as short as possible. All the shields have a 3/16-inch bend and are drilled and tapped for No. 4-40 screws to hold them in place. These shields should be tack-soldered in place after the unit is completed and tested.



This bottom view of the transverter shows the shield partitions in place. The large lateral shield isolates the transmitting portion (above) from the receiving part (below). The 6360 output stage is at the upper left, and the 144-MHz input jack is at the lower left. Small vertical shields isolate input and output circuitry of each section.

Fig. 1 — The receiving portion of the hybrid transverter consists of an rf amplifier and a mixer. An RCA 40673 may be used instead of the 3N152, as shown at B. The diodes connected across L4 are to protect the mixer against burnout from 28-MHz energy in the event of relay failure.

L1a — 1 turn insulated hookup wire over cold end of L1b.

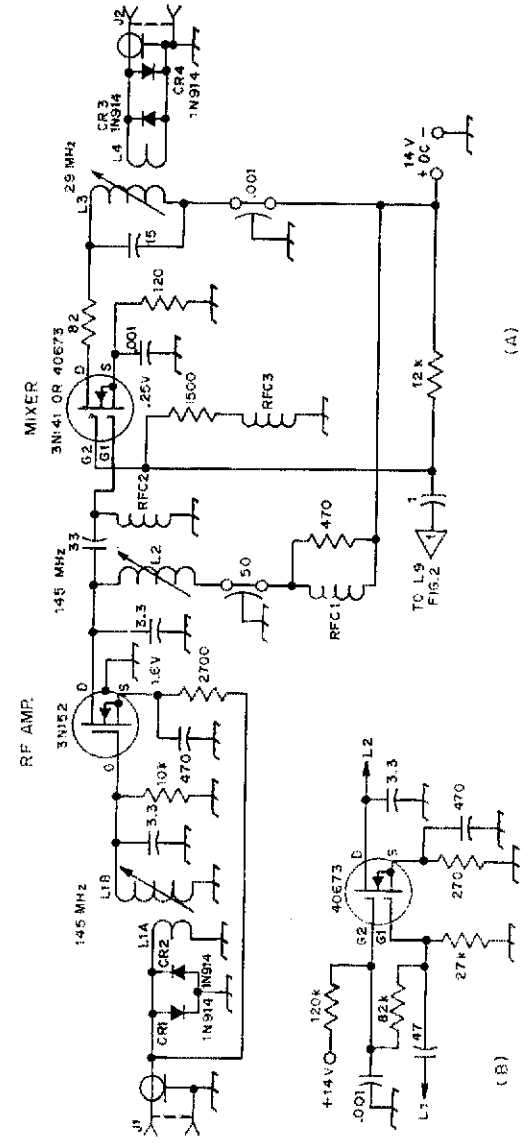
L1b — 4 turns No. 18 tinned, 5/16-inch long on 1/4-inch dia. slug-tuned form.

L2 — Same as L1b.

L3 — 12 turns No. 24 enam., close-wound on 3/8-inch dia. slug-tuned form.

L4 — 1 turn insulated hookup wire over cold end of L3.

RFC1, RFC2, RFC3 — approx. 1.5 μH; 36 turns No. 34 enam. closewound on a 1-MΩ, 1/2-watt resistor.



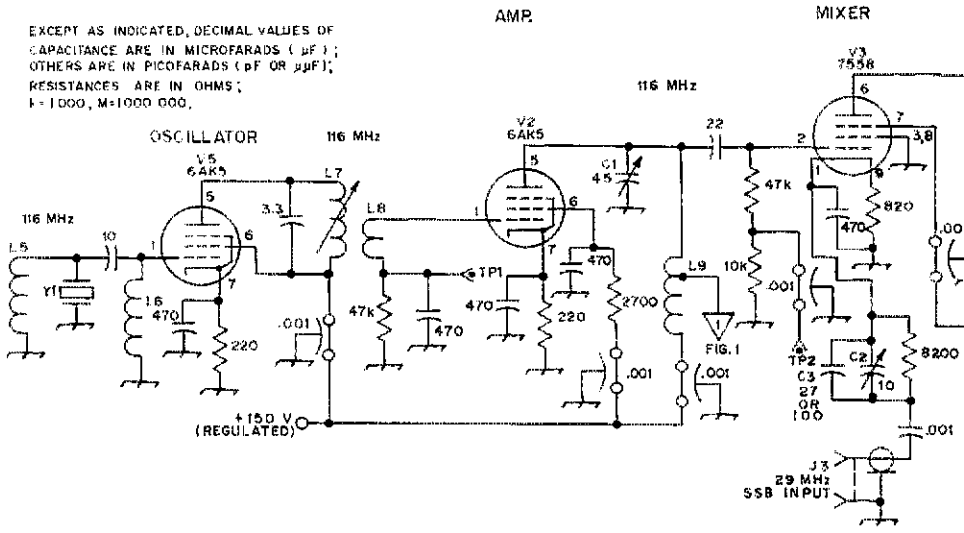


Fig. 2 — Schematic diagram of the transmitting section of the hybrid transverter.

C1 — 7 to 45-pF trimmer; compression mica or ceramic may be used.

C2 — 2 to 10-pF air variable; E. F. Johnson 160-0107-001.

C3 — Ceramic disk capacitor; 27 pF for 29-MHz transmitters of more than 100 watts output, 100 pF for those of less than 100 watts.

C4 — 1 to 8-pF tubular ceramic or glass piston trimmer; Centralab 829-7 or equiv.

C5 — 2 to 10-pF air variable, butterfly type; E.F. Johnson 160-0211-001.

C6 — 2 to 20-pF air variable; Hammarlund MAC-20, E.F. Johnson 160-0110-001, or equiv.

L5 — 6 turns No. 24 enam., 3/16-in. ID, 1/8-in. long.

L66 — 8 turns No. 24 enam., 7/32-in. ID, 3/16-in. long.

L7 — 4 turns No. 18 tinned, 3/8-in. long on 1/4-in. dia. slug-tuned form.

L8 — 1 turn insulated hookup wire over cold end of L7.

L9 — 5 turns No. 16 tinned, 5/8-in. ID, 7/16-in. long; tap 1/2 turn from plate end.

L10 — 2 turns No. 16 tinned, 7/16-in. ID, 1/4-in. long.

L11 — 5 turns No. 18 tinned, 7/16-in. ID, 5/8-in. long, center tapped.

L12 — 7 turns No. 18 tinned, 3/8-in. ID, 3/4-in. long.

L13 — 1 turn insulated hookup wire around center of L12.

Alignment

An alignment procedure for the circuit components is outlined below:

1) Crystal Oscillator — Apply power to the unit. Connect a vacuum-tube voltmeter (VTVM) to TP-1, the junction R2 and C4, as shown in Fig. 2. Adjust L7 for a reading on the −15-V scale of the VTVM. Alternately adjust L5 and L6 so that the crystal goes in and out of oscillation when L7 is tuned. Now set the L7 so that the oscillator starts readily each time the B+ is turned off and on.

2) Buffer Amplifier — Connect the VTVM to test point TP-2 as before and tune C7 for maximum voltage.

3) Receiving Converter Portion — Connect the transverter to the transceiver and tune the transceiver to 29 MHz (receive position only). Connect a signal generator, tuned to 29 MHz, to the 3N141 transistor gate No. 1. Now adjust L3 for maximum signal by listening to the transceiver. Remove the previous connection and connect the signal generator to the transverter antenna input. Tune the generator to 36.25 MHz (the 4th harmonic of this signal is 145 MHz). Tune the transceiver to 29 MHz and "rock" the generator tuning for maximum signal. Align L1 and L2. In addition to this initial adjustment, it may be desirable to slightly "stagger tune" these two circuits when the transverter is connected to an antenna to equalize the gain from 144 to 146 MHz. (Do not use a 29-MHz signal from the generator for the 5th harmonic, as this is the frequency of the transceiver. As a result, it may be difficult to peak the rf coils because of direct feedthrough to the 29-MHz input of the transceiver.)

4) Transmitter adjustment — Set C8 to approximately the half-open position. Connect the 145-MHz output to a 50-ohm dummy load with some form of metering across it, as shown in Fig. 4. Turn your transceiver on and insert a carrier to provide continuous-wave (cw) drive to the transverter.

5) Tune C9, C10, and C11 for maximum output. Then adjust L11 for maximum output by squeezing or spreading the turns; then readjust C9. Adjust L13 and C11 for maximum output.

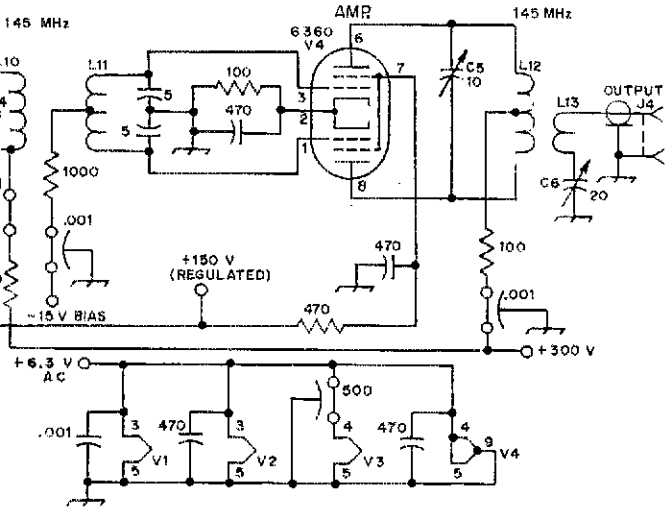
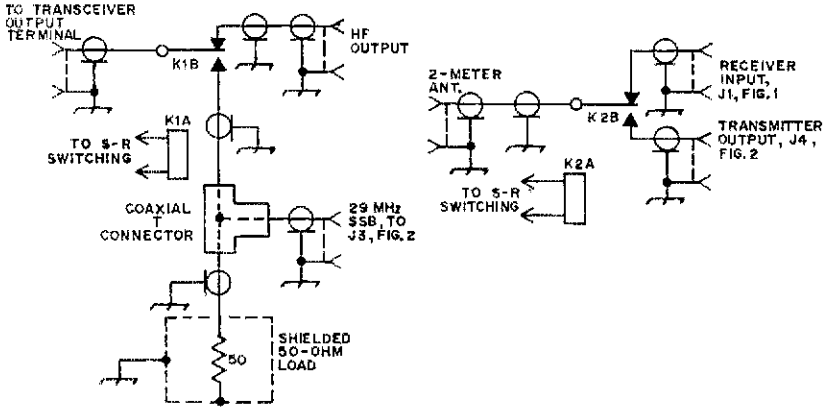


Fig. 3 — A suggested switching system for the transverter, utilizing two coaxial relays. Although dpdt coaxial relays are available, they may be quite high in cost. The 50-ohm load should be capable of dissipating the full output of the hf-band transceiver. A Heath Cantenna should be adequate.



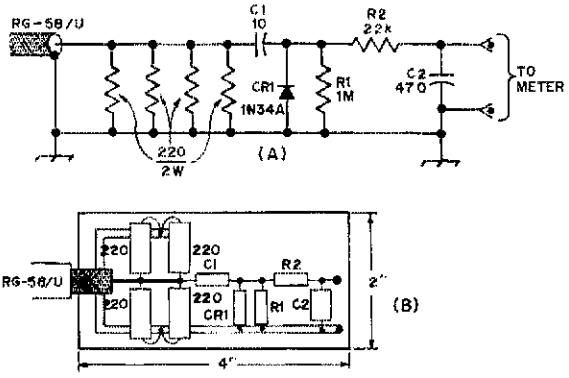


Fig. 4 — A schematic diagram of a vhf load and output detector at A, and suggested parts placement, B. A small piece of Vectorboard or thin Bakelite will serve as a mounting base to hold the resistors and detector parts. Either a VTVM or a 20kΩ/volt multimeter may be used as an output indicator.

Momentarily set the transceiver to "tune-up" condition, and readjust C8 to the point where maximum 145-MHz output occurs. At this point the alignment is complete and the unit should be ready for use after connection to an antenna or a 145-MHz linear amplifier. QST

A Four Element Vertical Beam for 40/15 Meters

BY J. G. "BUNKY" BOTTS,* K4EJQ

THE ANTENNA described in this article is a modified version of one that appeared in the March, 1965, issue of *QST*.[1] For the sake of brevity, I suggest you obtain that issue and keep it handy for reference. The operation and relay switching system for the proper phasing are similar for this version. This array features:

1) Reasonable gain with controllable directivity for both 40 and 15 meters.

2) Antenna structures that, in many instances, require no guying because of the shorter vertical radiator.

3) Ease of tuning, using only an SWR meter.

4) Buried feeder and ground system which pleases the wife and neighbors.

5) Last, but certainly not least, low cost as compared to a large horizontal Yagi and the required tower and rotator needed to handle same.

Changes Required for 40- and 15-Meter Use

The changes required are the lengths of coaxial cable used for the phasing lines, four feeder lines, power divider, the length of the radials, the height of the vertical radiators and the spacing between them. Actually, the spacing is probably the least critical of all, ±10 percent of given value being acceptable. However you should make the coaxial lines (feeder, phasing and power divider) as close to the specified values as possible, although a slight error should not degrade performance noticeably.

The length of each of the four feeder cables is changed to 78 feet, 11 inches (24 meters). One end of each line is stripped back two inches to allow connection to the vertical radiator (center conductor) and ground system (braid). The lengths for the coaxial phasing lines are as follows:

The 90° line – 26 feet, 3 inches (8 m); the 180° line – 52 feet, 6 inches (16 m); the 270° line – 78 feet, 9 inches (24 m).

The length of each of the two coaxial lines that make up the power divider now becomes 26 feet 3, inches. The height of each vertical radiator is approximately 33 feet (10 m), but can be adjusted to resonate in the desired portion of the band. The spacing between antennas is changed to 33 feet (10 m) (plus or minus 10% if needed) and all radials are 34 feet long (10.3 m).

Vertical Radiator Construction

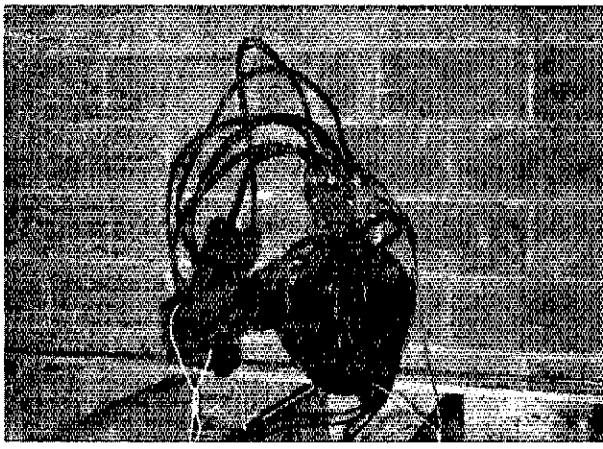
Each vertical radiator is constructed from sections of aluminum tubing ranging from approximately 1 inch down to 1/4 inch diameter.[2] These sections are telescoped together to a length of 33 feet (10 m), allowing enough overlap of sections to make the vertical sufficiently rigid to withstand raising and moderate winds. In areas where icing and high winds are common I recommend the use of double-wall thickness aluminum for the bottom 15 feet (4.5 m) or so of each antenna for added strength without guying. In the event you decide guying is required, one set of three lines per radiator attached at the 20-foot (6.1 m) level should be sufficient. These can be made from any lightweight nonmetallic line. The telescoped sections are secured by means of radiator hose clamps as shown in Fig. 1A.

The vertical radiators are mounted, using homemade aluminum clamps and 2-inch cone-type insulators, on creosote-treated 2 × 4s 8 feet long

* Rt. 5, Box 267-A, Blountville, TN 37617.

[1] Atchley, "A Switchable Four-Element 80-Meter Phased Array," *QST*, March, 1965.

[2] Available at most hardware and do-it-yourself stores. Some electrical supply houses may also have it in stock, and it comes in various lengths and diameters. Thin-wall steel conduit could be substituted, but weight of each vertical would increase considerably, requiring guying and the use of larger mounting hardware.



The relay switchbox along with the three coaxial phasing lines and "excess" lengths of the main feeder cables are located *in* the basement. *Do not* cut off "excess" feeder cable, they must all be the same length. The relay switching system described in W1HKK's article is contained in the small chassis pictured.

(2.4 m), as shown in Fig. 1. I stress the use of treated wood and several coats of white exterior house paint to retard rapid deterioration of the wooden support structures. The white paint also helps the unsuspecting visitor spot them in the dark, and makes them more eye appealing to the XYL.

Choosing the Site

Many hams pass up a design such as this assuming it requires extensive real estate. If you've got an average size suburban lot, you should be able to wedge this array in. The ground does not have to be level. In fact, the original location for my array was down the side of a small hill with the top of one antenna several feet higher than the tops of the other three.

At the original location a triband beam on a 30-foot slip-up mast with several sets of wire guys was located "smack-dab" in the middle and very nearly in line with the four elements in the array. One of the four elements couldn't "see" the other three since a row of trees and part of the house were between them. Not an ideal location to be sure, but one which proved the array was not overly affected by its close proximity to other antennas, guy wires, trees, etc. However, in no instance should you place this or any other antenna so close to *any* power lines that it could fall into them or vice versa.

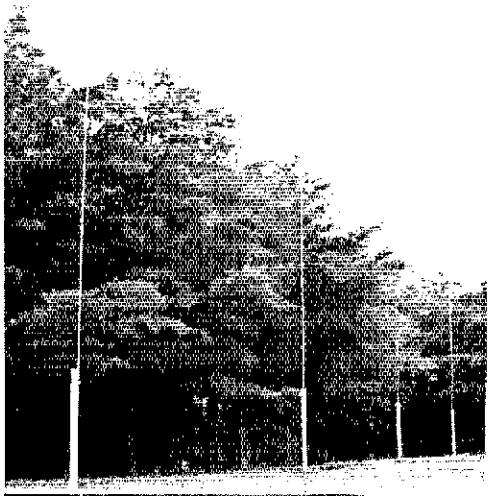
The Ground System

Probably one of the most frequently asked questions about this array concerns the ground system: How many radials are needed? Much has been written of late concerning image planes, radials, ground losses, and so forth. Being a broadcast technician by trade, I can vouch for the effectiveness of a large, well-constructed radial system. To put it simply: the more radials, the better. However, this array will work well with as few as four radials per vertical, a total of 16. Of course, if you can and want to put down more than this — fine, but don't expect the gain or front-to-back ratio to increase drastically by doubling the size of the radial system.

The radials can be made from any size wire. I used No. 16 "TW" for all radials since it is strong and the insulation helps prevent deterioration to some degree. The radials, each 34 feet long, are buried a few inches underground, with any radials that overlap bonded together. Radials may be bent to fit the antenna site if necessary. Burying radials can be made considerably easier if you will wait for a good soaking rain. Then slit the earth with a spade the length of the radial. Push the wire down into this slit, then push the earth together by walking over it several times. In a few days you won't be able to see where the radial was buried.

What Type Coax?

As W1HKK pointed out in his article, RG-58 could be substituted for RG-8 for all but the power



The four-element 40- and 15-meter vertical beam antenna in use at K4EJQ. Note its close proximity to an adjacent pine forest. A concrete patio is located between the two "middle" elements.

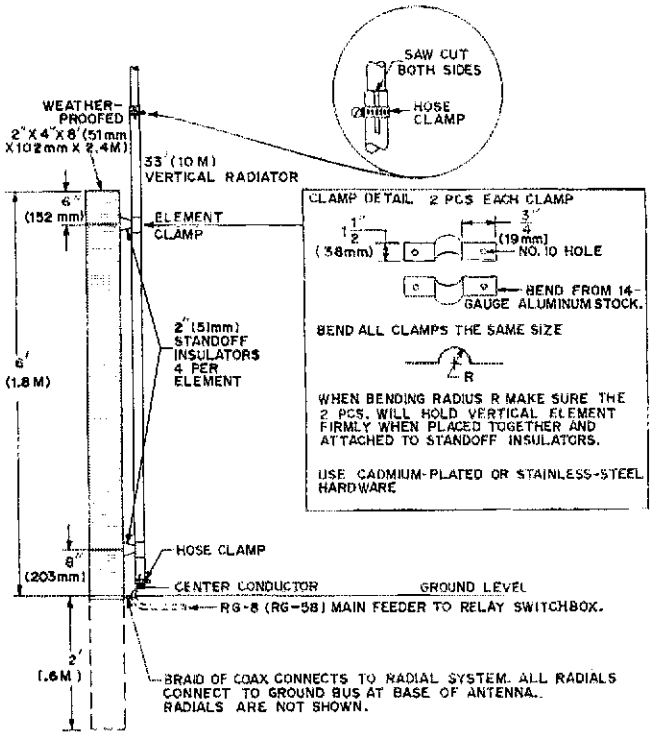


Fig. 1 — Construction details of the elements and supports.

divider and main feed line. This of course would lower the overall cost of construction. However, if high-power operation is planned at a later date, and you do as I did and bury the four feeder lines, I recommend you stick with the RG-8. The use of foam dielectric coaxial line for all applications will reduce line losses slightly. The lengths given for the coaxial lines used for the phasing feeder, and power divider were based on the use of foam-dielectric cable. If you use the solid-dielectric type, you must reduce these lengths by 18.5 percent to offset the differences in the velocity factor of the two types of coaxial lines. The main transmission line, also RG-8, can be any length needed to connect the transmitter to the power divider. In my array I let the power divider lines act as a part of the main transmission line connecting the transmitter to the relay switch box, which is located at the point where the four feeder cables enter the basement.

Tune-Up and Troubleshooting

To tune the array first remove the relay switchbox and power divider from the circuit. Insert an SWR meter between the main transmission line and any one of th four feeder lines. Adjust the vertic element on that leg of the circuit fo minimum SWR at 7050 kHz. Follo the same procedure for each of th four elements. When all four hav been resonated, reconnect the feed lines to their respective outputs o the switchbox. Remove the SW meter and reconnect the pow divider network to the switchbo Now insert the SWR meter betwee the power-divider network input an the main transmission line. Check th SWR in both modes of operatio end-fire and broadside. The SW readings on either end-fire patter should be nearly the same, and th SWR in the broadside mode slightl higher than that of the endfi patterns. The SWR in either th end-fire or broadside direction shoul not exceed 2:1 over the entire 4 and 15-meter bands. If an abnormall high SWR occurs when the array switched from one pattern to anothe check for one or more of th following causes:

1) Feeder cables not connecte to the proper output fitting on th switchbox. Numbering of the cable and their corresponding antenna du ing initial installation should prever this from happening.

2) Wiring error in relay switc box.

3) Phasing lines connected out o sequence at switchbox.

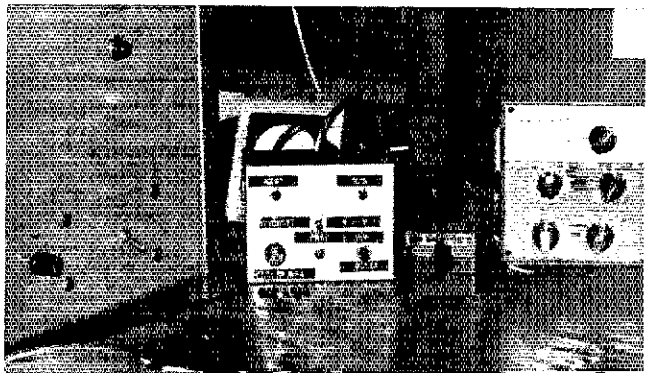
4) Open or shorted coaxial lin anywhere in the system.

5) Feeder cables, phasing lin power divider line not cut to spec fications.

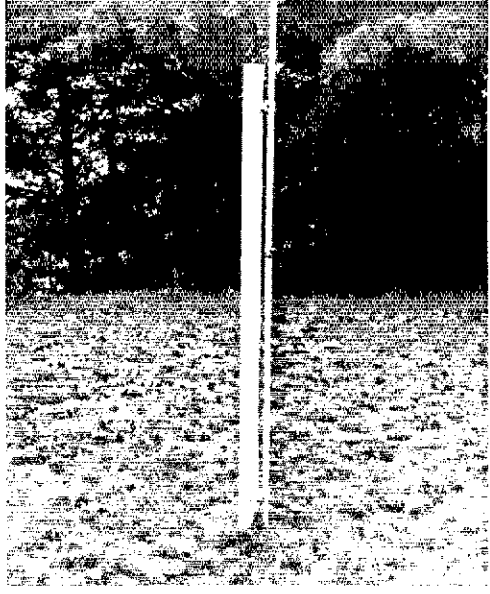
If the SWR readings are erratic check for one of the following:

1) During windy periods, chec for loose antenna hardware and poo electrical connections.

2) During periods of high mois ure levels check for water in rela switchbox (if located outside).



The control box for the array. Sma neon pilot lamps indicate bea heading selected. Unit it built is small Minibox. For added safety, th control voltage power supply fused. *(Photos by WA4CBX)*



Close-up of one of the vertical radiators showing how it is mounted, using four standoff insulators, to the 2 × 4 post. Use of weather-proofed and painted 2 × 4s is recommended.

3) Relay contacts not making good electrical connection.

4) Insulation breaking down on relays.

5) Intermittent open or short in any coaxial line in the system.

Using a very short patch cable, the SWR indicator can be connected in various points of the system to help pinpoint the malfunction. A VOM can be used to check for leakage, shorts, or opens in the buried coaxial lines.

Performance

When quoting gain figures, front-to-back ratios and the like, I tend to be a bit conservative. Oft times S meters (and just as often, the operator on the other end) tend to be rather liberal when comparing performance of antennas. This array has been used extensively for the past two years, day and night, and under all band and weather conditions. Tests have been conducted with local as well as DX stations. After disregarding the reports from stations that were located in areas that fell on a line midway between the major lobes I came up with the following figures. For what they are worth, see Table I.

TABLE I

40 meters – referenced to a single one-quarter wavelength (33') vertical with a ground system consisting of four 34-foot radials

Gain: Endfire patterns, 5 dB; broadside pattern, 5 dB.

Front-to-back ratio (only applicable to the end-fire patterns as the broadside pattern is bidirectional): 20 dB (average). as the broadside pattern is bidirectional) – 20 dB (average).

Front-to-side null: 25 dB (average).

SWR: Endfire patterns, less than 1.5:1 over entire band; broadside pattern, less than 2:1 over the entire band.

Gain vs. bandwidth: Did not measure, but *suspect* less than 2 dB roll-off at 7300 kHz with antenna resonated at 7100 kHz.

15 meters-referenced to a single 3/4-wavelength (33-foot) vertical with a ground system consisting of four 34-foot radials

Gain (both endfire and broadside patterns): 6 dB.

Front-to-back ratio (only applicable to end-fire patterns): 20 dB.

Front-to-side null: 20 dB.

SWR: Endfire patterns, less than 1.5:1 over the entire band; broadside pattern, less than 2:1 over the entire band.

Gain vs. bandwidth: Did not measure, but *suspect* uniform over entire band.

What It All Means

Enough figures! If I keep quoting them, pretty soon I'll get to believing them, and that's bad for a skeptical fellow like myself. To put it simply, this array, when properly installed, should produce results equal to or better than a large 3-element 40-meter horizontal beam. On 15 meters this antenna should equal or out-perform any of the smaller triband beams on the market today. QST

Sensitivity

(Continued from page 22)

requires little effort, because the noise received by the antenna is very great compared to that generated by even a mediocre receiver. Above about 50 MHz, however, noise generated by the receiver electronics becomes a significant factor. By understanding how the noise of various receiver stages, *including the antenna*, contributes to the noise figure of the entire receiver system, one can arrange his vhf or uhf receiving system for its best possible performance. This may help avoid the pitfalls of investing in expensive components and high power when a simple rearrangement of existing components may provide better performance. QST

The Post Office Department promises fast mail service with the new Zip codes. Use yours when you write League Headquarters. Use ours, too. It's 06111.

50 Years Ago this month

June, 1925

. . . The International Amateur Radio Union is created at a conference in Paris attended by amateurs from 23 nations. Membership is open to individuals, and a section will be formed in each country having 25 or more members. ARRL Prexy Maxim and Secretary Warner serve in similar posts with the Union.

. . . Technical Editor Kruse says too much attention is being paid coils and condensers (tuners) in receivers in the name of "low-loss," and so takes a hard look at other areas for improvement – such as dials, cushioned sockets, grid leak construction. But the issue nevertheless includes an extensive analysis of optimum wire size for coil construction, and a sort of "New Ap" review of some forms developed by Bruno for helical coils.

. . . Responding to membership technical queries, John Clayton says there is no reason why a Colpitts circuit will work on 80 meters in Dallas while a Hartley won't; and just the opposite problem arises in Wyoming or Maine. He explains the fault is certainly improper adaptation of circuits to specific bands, as well as inadequate adjustment.

. . . NRRL, the amateur installation with the Navy's Pacific cruise (with recent Silent Key W4CF as operator), is running rings around the fleet's bulky, long-wave gear and is establishing the superiority of high frequencies. And the *Bowdoin* will take off for the Arctic again this summer with of course ham radio aboard.

. . . Hi-fi is years in the future, but pioneering Prof. Kennelley outlines some of the principles of loud speaker impedances.

25 years ago

June, 1950

. . . "Getting the Most" out of ham radio is the theme of a new series of articles scheduled for coming *QST*s. The series is to be written by experts on basic procedures, working DX, traffic handling, contests and awards, emergency communication – and just plain general operating.

. . . W1HDQ brings us up to date on developments in amateur TV. Seems our west coast is the scene of major activity on 420 Mc, with this mode, but PAs and Gs are also making substantial progress.

. . . W1BB shares with us his design of a 2-to-160 meter mobile antenna installation, basically a center-loaded whip for lower frequencies, and plain quarter-waves for vhf.

. . . The National HRO receiver design gets another compliment with W8GZ's description of coils to tune it way down to 6 meters. And GM6LS shows us a noise limiter which can be added to update pre-war and war surplus models.

. . . W6APQ gives us extensive tips on rotators and control units, using the reliable prop-pitch motor.

. . . June is a month of heavy operating activity, and both Field Day and VHF QSO Party rules are certain to receive plenty of attention.

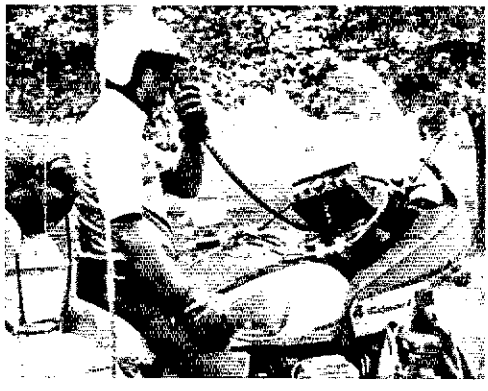
. . . W9LHF has constructed a mobile rig with 18 watts of phone, bandswitching – but the heavy components for a-m relegate the transmitter to the trunk, with only controls at the dashboard.

. . . Bev Dudley describes an impedance bridge he assembled at a cost under ten dollars, which provides economical *R*, *L*, and *C* measurements.

. . . Sideband is gathering momentum worldwide and WAC is in the offing – *WIRW*

Strays

ARRL Hq. hosts many visitors through the year, but few come as well equipped as WA7JUX: 160-20 meters using an Atlas rig. Newington was just one of Dan's many stops on a 20,000 mile, 3-month tour of 41 states on his Moto-Guzzi bike/shack.



FEEDBACK

In addition to the corrections supplied by the author (May, *QST*, page 110) the following diagram correction and suggestion for improvement will be of interest to prospective builders of the W7BBX "Ultramountaineer" 7-MHz miniature transciever, described in April, *QST*.

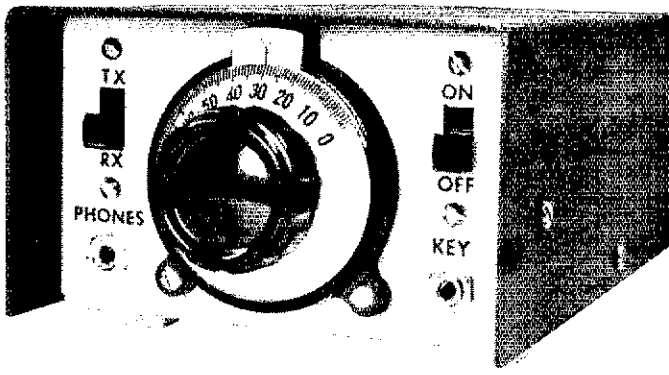
WA2CEJ relates experience with the pi-network output circuit of the transmitter portion, Fig. 2, page 31, and with the similar circuit in an earlier transceiver, reference 4 in the *QST* article. The 1000-pF capacitor, C9, connected between the tap on L3 and ground, makes for tight coupling between the two halves of the toroid, with resultant low rejection of harmonics. WA2CEJ says that he removed C9, improving the rejection of second harmonic output to 45 dB, and all higher harmonics to at least 60 dB.

W1MWH, who likes to build QRP gear and plans an Ultramountaineer for 3.5 MHz, calls attention to mislabeling of the terminals of S1C, in Fig. 3, page 32. The "R" and "T" markings should be interchanged.

– – – –

The Field Day log of WA4ECY was erroneously listed as a check log instead of being listed with the 1D stations. They had 1118 QSOs and a final score of 2236 points.

• *Beginner and Novice*



The Mavti-40

Part I

BY D. K. SIEMER,* KØJYD

We have had many requests for a simple transceiver that is within the building capabilities of most beginners. The MAVTI-40 described here is the ideal answer to these requests. As the author points out, this is not *a one of a kind unit, as several have been built by his students, and they all work.*

THE 7-MHz TRANSCEIVER described in this article is the result of a desire to have a small, portable station for personal use. Also, since many of the students here at the Mankato Area Vocational-Technical Institute are interested in ham radio and are usually short of extra cash, it seemed like a good idea to make an inexpensive station available to them on an "installment" basis. They can build the receiver section first for code practice; then they can build the transmitter later when they get their tickets.

The project makes use of new components rather than surplus ones to make parts procurement easier and to avoid the pitfalls and disappointments often associated with the latter. The components, though new, are not expensive, and the whole unit can be built for $40 or so – key, cabinet, and earphones included. Several of these stations are now in operation and have produced many satisfied-operator reports.

Because economy was a byword, the transceiver was built with a minimum number of components consistent with good design and satisfactory operation. None of the units built have exhibited unusual problems in construction or operation making the station a good candidate for a first homemade project.

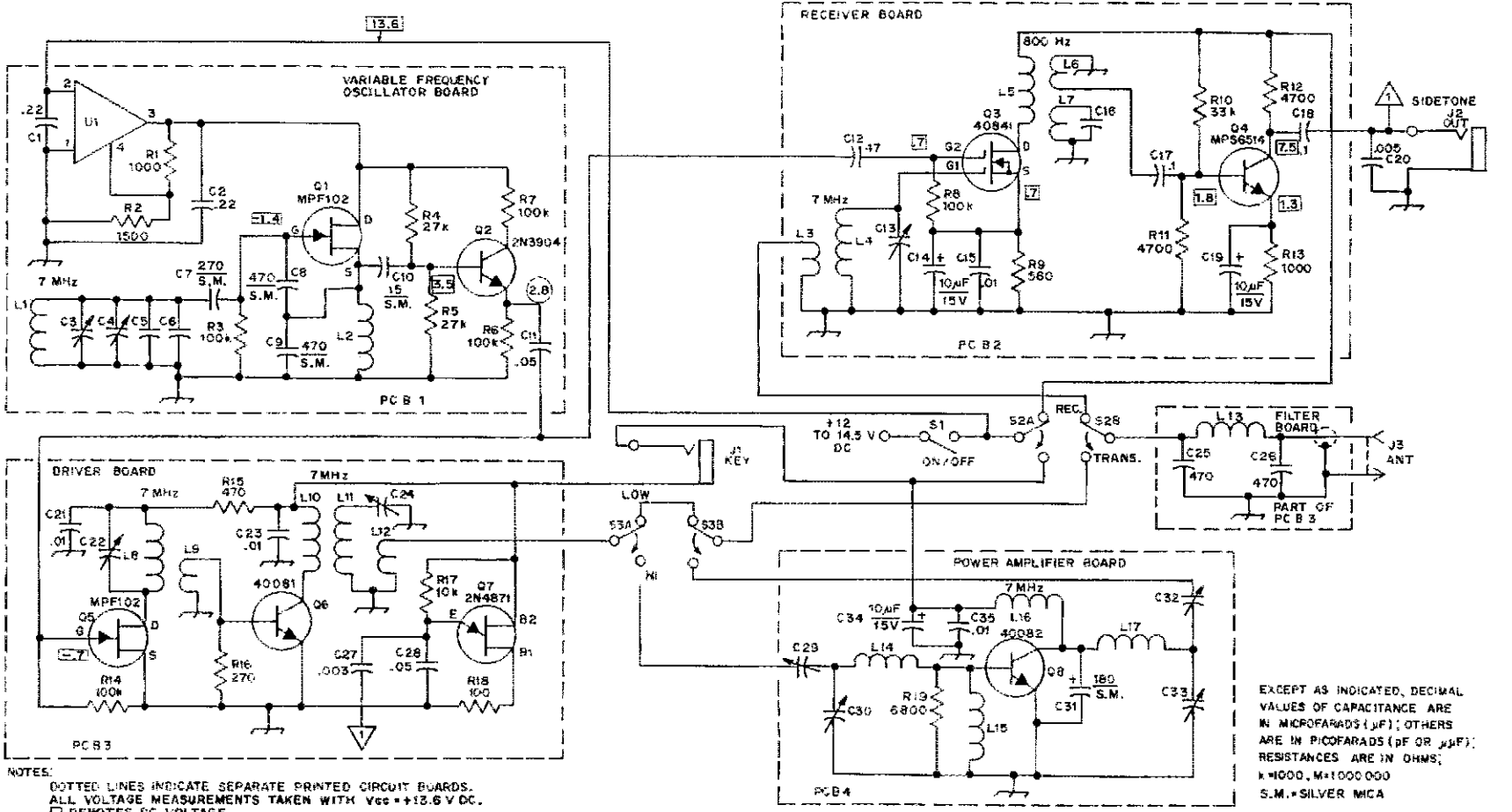
* Mankato Area Vocational-Technical Inst., 1920 Lee Boulevard, North Mankato, MN 56001.

The VFO

The VFO is a variation of one used in a number of projects here. Q1, Fig. 1, performs as a Colpitts oscillator and Q2 as a source-follower buffer. To keep parts to a minimum and still have good mechanical stability with high output voltage, a toroid core was used with L1 instead of the usual slug-tuned ceramic one. C5 is a compensating capacitor to reduce oscillator drift.

When checked in an environmental chamber, the output frequency shifted less than 2 kHz with a temperature variation between 50°*F* and 100°*F*. Below 50°*F* the frequency shifted quite rapidly however, typically 100 Hz/°*F* which would be of concern if low-temperature operation is anticipated. Frequency shift between transmit and receive is less than 200 Hz and warm-up drift is less than 150 Hz in the two-minute period immediately after turn-on. After the two-minute period the oscillator drift is so slight as to be unnoticeable.

The tuned-circuit component values were chosen so that the tuning capacitor, C4, will just



NOTES:

DOTTED LINES INDICATE SEPARATE PRINTED CIRCUIT BOARDS.
ALL VOLTAGE MEASUREMENTS TAKEN WITH Vcc = +13.6 V DC.
□ DENOTES DC VOLTAGE.
○ DENOTES PEAK-TO-PEAK VOLTAGE.

EXCEPT AS INDICATED, DECIMAL VALUES OF CAPACITANCE ARE IN MICROFARADS (μF); OTHERS ARE IN PICOFARADS (pF OR μμF); RESISTANCES ARE IN OHMS; k = 1000, M = 1 000 000
S.M. = SILVER MICA

cover the 150-kHz cw portion of the 40-meter band with a few kHz to spare. C3 is a trimmer capacitor to adjust the oscillator frequency to 7000 kHz with C4 fully meshed. The 5 to 25-pF value given in the parts list would be more satisfactory than the 3 to 12-pF value shown in Fig. 5. C3 is mounted directly on the solder lugs of C4.

The MFC4060A voltage-regulator chip offers superior performance when compared to a Zener diode. Line regulation is typically .03% per volt. Good oscillator supply voltage regulation was an important consideration when designing the unit.

The VFO circuit board was laid out so that a Micronta 2-inch vernier dial could be bolted

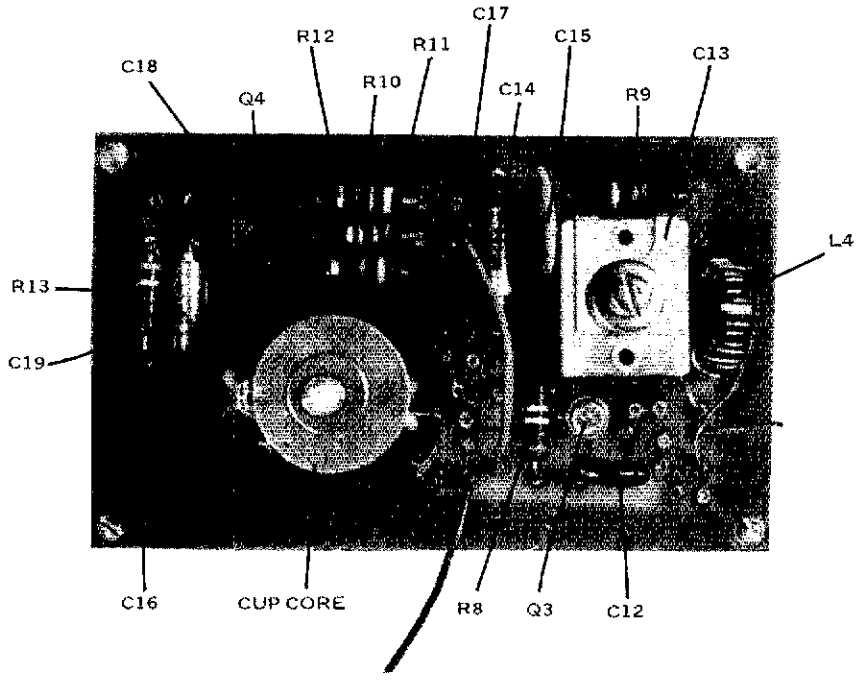
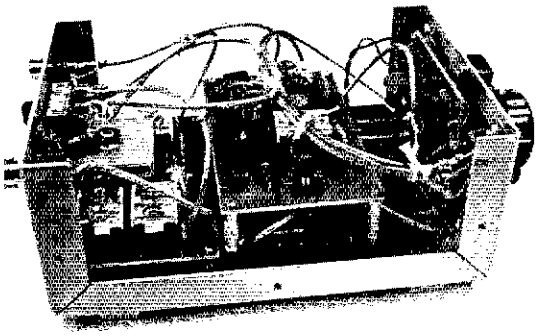


Fig. 2 — Parts placement for the receiver board.

Fig. 1 — Circuit diagram of the MAVTI 40-meter portable. Resistances are in ohms, all resistors are 1/2 watt.

C3 — 5- to 25-pF ceramic.
C4 — 2.7- to 19.6-pF variable (E.F. Johnson 160-110-51 or equiv.).
C5 — 47 pF, N750 ceramic.
C13, C22 — 10- to 180-pF mica compression type (ARCO 463).
C24, C29, C30, C32, C33 — 75- to 480-pF mica compression type (ARCO 466).
J1, J2 — Open-circuit jack.
J3 — Phono jack.
L1 — 18 turns No. 24 enam. wound on Amidon T37-2 toroid core.
L2 — 56-μH molded rf choke.
L3 — 4 turns No. 24 enam. wound over L4.
L4 — 34 turns No. 26 enam. wound on T50-2 toroid core.
L5 — 365 turns No. 32 enam. wound on cup core, see note below.
L6 — 162 turns No. 32 enam. wound over L5.
L7 — 50 turns No. 32 enam. wound over L5 and L6.
L8 — 34 turns No. 26 enam. wound on T50-2 toroid core.
L9 — 3 turns No. 24 enam. wound over L8.
L10 — 7 turns No. 24 enam. wound over L11.
L11 — 22 turns No. 22 enam. wound on T50-2 toroid core.
L12 — 4 turns No. 26 enam. wound over L11.
L13 — 14 turns No. 20 enam. wound on T50-2 toroid core.
L14, L17 — 20 turns No. 24 enam. wound on T37-2 toroid core.
L15,L16 — 65 turns No. 32 enam. wound on T37-2 toroid core.
U1 — MFC4060A.

(Note: L5 is wound on a Ferroxcube 3019P3B; ungapped cup core. See text for winding details. This device is available from Elna Ferrite Laboratories, Inc., P.O. Box 395, Woodstock, NY 12498. The T50-2 and T37-2 toroid cores are available from Amidon Assoc., 12033 Otsego St., North Hollywood, CA 91607.)



This shows the inside of the transceiver. Shielded leads are used for all interconnections and to the various terminals on the rear of the enclosure.

directly to it. The two hex nuts are on No. 4-40 × 1-inch mounting screws that hold the dial to the front panel. Two 5/8-inch long standoffs hold the board away from the front panel the proper distance for connecting the capacitor shaft to the vernier dial. A small 1/4-inch long bushing, 1/4-inch OD and 3/16-inch ID is used between the capacitor shaft and the vernier drive shaft. The bushing was made by drilling a 3/13-inch hole through a 1/4-inch brass shaft and cutting it to length. It was then slotted along one side to allow the bushing to compress against the shaft of C4 when the dial drive setscrew was tightened against it. To insure mechanical stability, L1 was glued to the pc board by means of silicone rubber adhesive.

The Receiver

The receiver section (Fig. 1) makes use of a MOSFET, Q3, in a straight forward direct-conversion scheme as described in numerous technical articles as well as the ARRL *Handbook*. The unusual component is the resonant af transformer consisting of L5, L6, L7, and C16.

Windings L5 and L6 make up a 2.25:1 step-down impedance matched transformer between the drain of Q3 and the base circuit of af amplifier, Q4. L7 and its associated capacitor C16, a 2.2 μF, 3-volt disk ceramic in this case, provides a transformer resonance to a center frequency of approximately 800 Hz with a bandwidth of 200 Hz. This transformer is wound on a cup-core assembly consisting of two cup-shaped pieces of ferrite material that surround a nylon bobbin.

While the cup-core transformer is not very common in amateur work, it is widely applied in industry where high *Q*, compact, self-shielding inductors are required. The parts needed for this assembly may be obtained from Elna Ferrite Laboratories, whose address is given in this article (see Fig. 1). Be sure to order two of the cup cores and one bobbin as they are not sold as an assembly.

The bandwidth of the transformer can be varied by changing the reactance of L7 and selecting another value of C16. In the first unit built, L7 was 70 turns of No. 30 AWG and C16 was 0.68 μF. These values provided a bandwidth of about 400 Hz centered on 800 Hz. C16 should be a low-loss type with ceramic, mylar, or polystyrene dielectric.

For individuals interested in experimenting with the cup-core transformer, the 3B7-L00-3019P

(Continued on page 56)

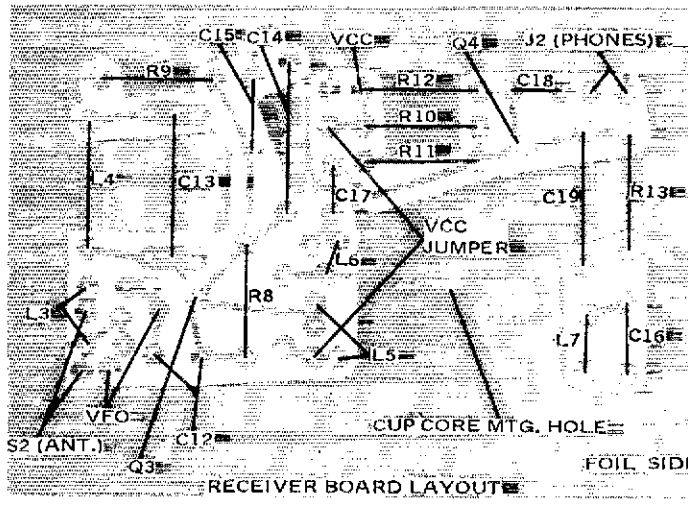
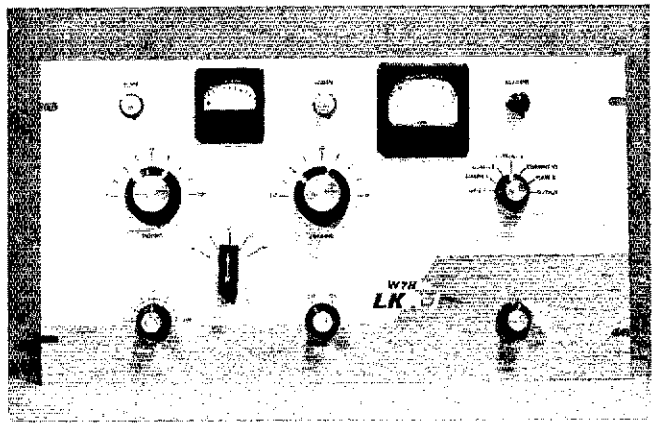


Fig. 3 — Full-size template for the receiver board.

The LKA-1



Linear Amplifier

BY CECIL C. COPE,* W7HHF

DURING RECENT YEARS, a number of transistorized transceivers and transmitters of various types have made their debut. These units are designed to operate QRP, and usually deliver from five to ten watts output. If one intends only to operate at low power, he need read no further. However, there are times when band conditions dictate the use of higher power.

The amplifier to be described, which covers 80 through 10 meters, should fill the bill nicely for those who wish to run higher power and use the low-power transmitter for an exciter. This amplifier uses 4CX250B tubes (which are more commonly used at vhf). It is capable of a full kilowatt input on ssb, cw and RTTY, provided the power supply has the capability for operation under the higher duty cycle encountered on RTTY. Drive requirements are very modest for this amplifier. In fact, drive conditions approach those of the venerable 6146. The author has been able to obtain very satisfactory results using a transceiver delivering only five watts.

Included in the design is provision for Class-C operation of the amplifier, thereby achieving maximum efficiency on cw and RTTY. Drive requirements for this mode are in the neighborhood of ten watts. Output efficiency is very high. According to the *RCA tube manual* rf-output ranges from 650 watts in Class AB1 to over 800 watts when operated Class C. While these figures may be a bit optimistic, experiments conducted by the author indicate that if tank circuit conditions are approximately correct, efficiency is very good. The prospective builder may note several unique features in this amplifier as shown in Fig. 1. The first is the screen supply. The second feature is the method of metering the various functions, and the third is the thermal time-delay relay circuit. Screen voltage for the amplifier is obtained from an electronically regulated supply. This was done primarily for two reasons. First, during normal operation the screens draw 60 mA which is more than the usual VR-tube string is capable of handling. Secondly, by using this type of supply, it is much easier to alter the screen voltage when changing from Class AB1 to Class C. An added advantage is that the screen voltage can be set to the exact voltage desired. The electronically regulated supply provides excellent voltage stability over its dynamic range.

Metering is rather unconventional in that the instrument is used as a voltmeter which measures the drop across the series resistors located in the various circuits. This was done to eliminate the need for winding meter shunts, a rather time consuming task. Accuracy is good using this method and no problems have developed. The series resistances are of sufficiently low value to cause no effect in operating conditions. In this amplifier, M1 is connected in the B– return (see Fig. 1) from the high-voltage supply and con-

* 2713 Dill Dr., Boise, ID 83705.

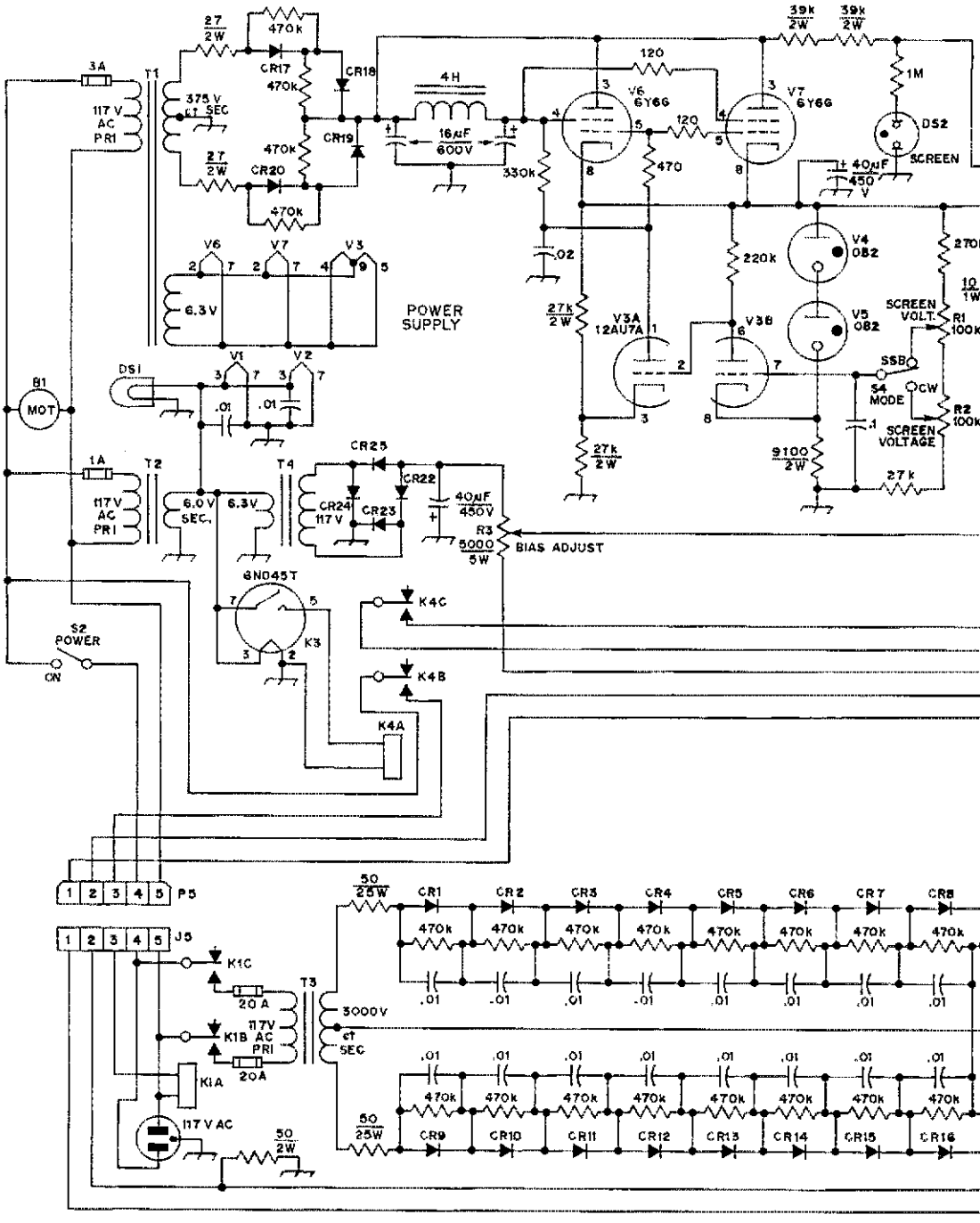


Fig. 1 — Schematic diagram of the amplifier. Unless otherwise specified, resistors are 1/2-watt composition and capacitors are disk ceramic.

C1-C6, incl. — Electrolytic (Mallory CG241T450DI).

C7, C8 — Four .01 disk ceramic capacitors connected to each of the cathode terminals (4) of each tube.

C9, C10 — See text.

C11 — Variable capacitor, 450 pF, 3 kV.

C12 — See text.

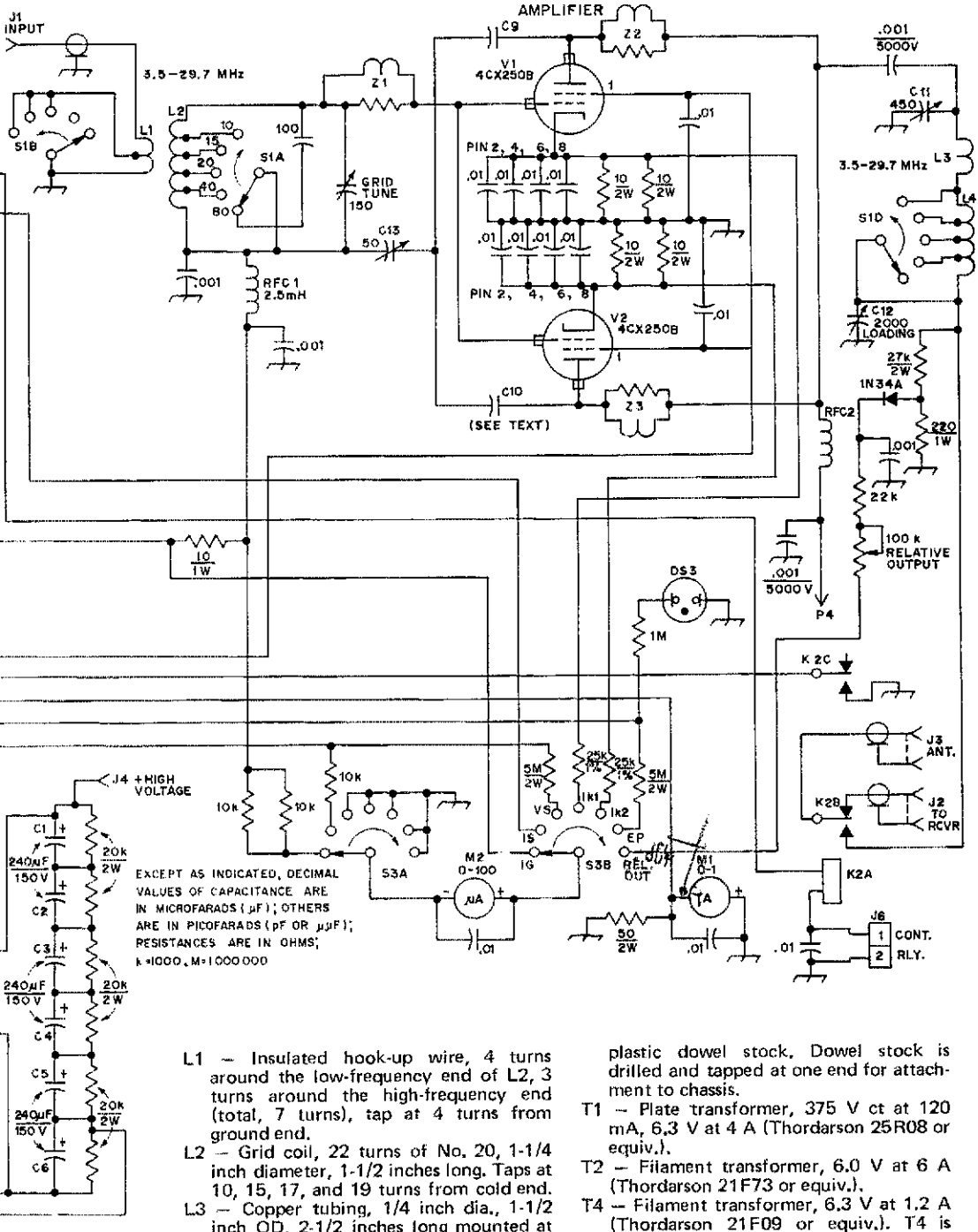
C13 — Small air variable, 50-pF.

CR1-CR23, incl. — Silicon diode, 1 A, 800 PRV.

K1 —Power relay, 20-A contacts, 117-V ac coil.

K2 — Antenna relay, 10-kΩ coil, dpdt, 5-A contacts (Potter and Brumfield GB11D).

K4 — Dpdt relay, 6.3-V ac coil, 5-A contacts (Potter and Brumfield KT11A).



L1 — Insulated hook-up wire, 4 turns around the low-frequency end of L2, 3 turns around the high-frequency end (total, 7 turns), tap at 4 turns from ground end.

L2 — Grid coil, 22 turns of No. 20, 1-1/4 inch diameter, 1-1/2 inches long. Taps at 10, 15, 17, and 19 turns from cold end.

L3 — Copper tubing, 1/4 inch dia., 1-1/2 inch OD, 2-1/2 inches long mounted at right angles to L4.

L4 — (See text) 10 turns of No. 8 copper wire and 4 turns 1/4-inch copper tubing, 3-3/8 inch dia., total length 5 inches. Taps at 7-1/2 9-1/2, and 10-1/2 turns from loading capacitor end. Ten-meter tap is made at the junction of L3 and L4.

RFC2 — Plate choke, 60 turns of No. 24 enam. wire close-wound on 3/4 inch plastic dowel stock. Dowel stock is drilled and tapped at one end for attachment to chassis.

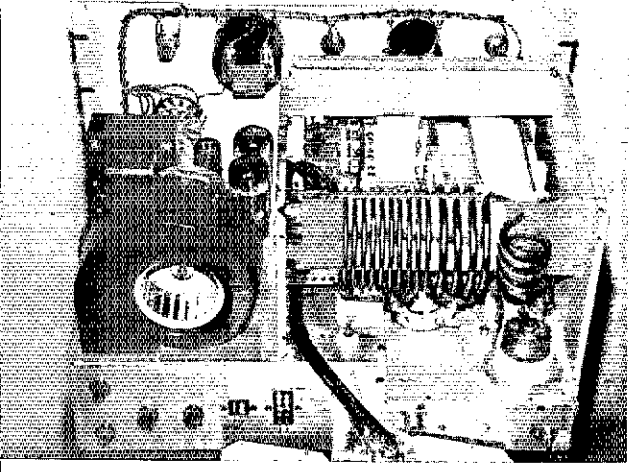
T1 — Plate transformer, 375 V ct at 120 mA, 6.3 V at 4 A (Thordarson 25R08 or equiv.).

T2 — Filament transformer, 6.0 V at 6 A (Thordarson 21F73 or equiv.).

T4 — Filament transformer, 6.3 V at 1.2 A (Thordarson 21F09 or equiv.). T4 is connected in reverse. That is the 117-V winding supplies voltage for the bias supply.

Z1 — Five turns of No. 20 enam. wire over length of 220-ohm 1-W composition resistor.

Z2, Z3 — Four turns of No. 14 solid copper wire, 3/4 inch diameter, 3/4 inches long, wound over 2 paralleled 220-ohm, 2-W composition resistors.



Rear view of the amplifier. Note that the shield compartment does not extend to the front panel. This allows the meters and control-lead wiring to be placed externally to the PA compartment.

tinuously monitors plate current. M2 is used as a "multimeter" and measures the following: grid current, screen current, screen voltage, cathode current of V1, cathode current of V2, plate voltage and relative rf voltage across the output line.

The time-delay circuit is included to prevent application of screen and plate voltages before the cathodes of the tubes have reached operating temperature. This prevents damage to the tube cathodes should high voltage be applied before operating temperatures are reached. A separate switch could be used to serve the same function, however, the foregoing arrangement makes the operation automatic.

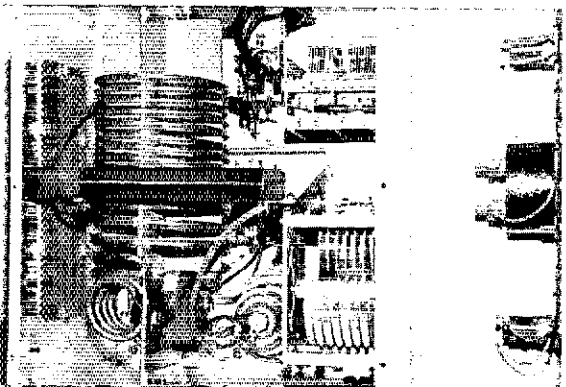
The tank coil consists of ten turns of No. 8 copper wire, and four turns of 1/4-inch diameter copper tubing. Both coils are 3-3/8 inches in diameter. The ten-meter coil is also fashioned from 1/4-inch diameter copper tubing and consists of four turns (1-3/8 inches in diameter). The tank-coil assembly is supported on 1/8-inch thick phenolic board which is drilled to accept the coil material.

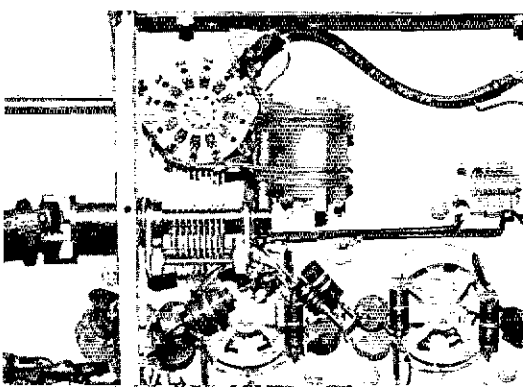
The plate-circuit band switch is a heavy-duty, 5-position, single-pole, ceramic rotary switch salvaged from a surplus transmitter. This switch is rotated from the front panel by means of a length of 1/4-inch shaft stock. The grid-circuit band switch is a standard 2-pole, 5-position rotary switch and it is driven from the main band switch by means of a gear-type right-angle drive. Perhaps the only nonstandard part in the amplifier is the plate output-loading capacitor (C12). It was obtained from a surplus direction-finding receiver and has five sections with about 400 pF per section. It is doubtful that the home constructor will have access to this type of unit. However, a capacitor consisting of approximately 1200 pF total capacitance could be constructed by paralleling a small-value variable type with fixed-value capacitors. The latter could be switched by means of the unused contact on S1D. This should be necessary only on 80 meters.

The amplifier is constructed on a 4 × 13 × 17-inch aluminum chassis and can be installed in a 10-1/2-inch standard relay-rack panel. No real effort was made to miniaturize the amplifier as can be seen from the photographs. If the builder desires to change the layout, one thing must be kept in mind. This amplifier is extremely sensitive to adverse feedback conditions. Proper shielding is of the utmost importance if stability of operation is to be achieved. Grid and plate circuits must be kept separate as much as possible in order to prevent spurious oscillation. The subchassis on which the final tubes are mounted consists of a small plate mounted 1-3/4-inch below the top of the main chassis. This was done to allow more room above the tubes to mount the tank circuit. The builder may wish to do things differently, so details on exact dimensions will be omitted.

The entire under-chassis area is pressurized. That is, the cooling fan is placed at one end of the chassis near the screen-regulator circuit and a bottom plate is fastened to the chassis to prevent the escape of cooling air. Screened cutouts are provided in the grid compartment to allow the air to pass and still maintain shielding. The bottom plate serves the dual function of completing the grid compartment as well as an air seal. Large

Left Photo: Close-up view of the PA compartment. Right Photo: Close-up view of the grid compartment. C14 is seen at the right in the photograph. Connection to the grids of the tubes is made to the center terminal on the tube socket using copper strap material. The tube sockets shown are E. F. Johnson 124-107-1 with 124-111-1 chimneys.





screened openings are provided also in the tank-circuit compartment.

A circuit board located near the grid compartment supports the various resistors associated with the metering circuits. Another circuit board is used to mount the diodes, resistors, and other components used in the screen and grid-bias supplies. The transformers used in these supplies are mounted directly on the main chassis.

Controls which are mounted on the rear apron are as follows: the output voltmeter adjust and the grid-bias control. The neutralizing capacitor, C13, is accessible through a capped hole at the rear of the chassis. Connectors on the rear of the chassis include control connectors to the high-voltage supply, input/antenna/receiver coaxial-cable fittings, and the high-voltage connector. Front panel controls are as follows: plate tuning, plate loading, ac power, multimeter switch, mode switch and band switch. The screen-voltage adjust controls are located near the front panel, just below the multimeter on the main chassis. These are "set-and-forget" type controls, so ready access is not needed.

It should be pointed out that the grid-tuning capacitor must be isolated from ground, as bias voltage is present on the rotor. An insulated shaft with universal joints is used to connect this capacitor to its control knob on the front panel. All leads entering the grid and plate compartments, with the exception of rf carrying leads, are bypassed at the point of entry. This is accomplished best by the use of ceramic feedthrough capacitors.

Neutralization of the amplifier is acheived by the voltage-dividing network composed of C13, C9 and C10. C9 and C10 are aluminum plates, 1 × 4 inches long, fitted with a small bracket which is attached to a ceramic feedthrough bushing terminating in the grid compartment. C13 is connected in series with C9 and C10 which provides a means of adjusting the feedback to the proper amount. C9 and C10 are located 3/8 inch from the radiators of the 4CX250B-tubes.

The plate-circuit rf choke (RFC2) is home-made. Plastic dowel stock is used for the coil form and is drilled and tapped for attachment to the chassis. A cutout is made in the chassis which is used to conduct the output of the blower to the chassis compartment. Brackets for the blower are formed from aluminum stock, and exact dimensions will depend on the blower model used.

The blower on this amplifier is a 110 cubic-foot-per-minute "squirrel-cage" type. Blowers of smaller capacity may be used, but it must be kept in mind that this type of device normally loses efficiency because of back pressure. The tubes present considerable resistance to air flow and using a blower with a rather high output ensures that adequate cooling is accomplished under all conditions.

Operation

After construction is complete and a check performed for wiring errors, disable the high-voltage and screen supplies by removing the appropriate fuses. Be sure that no high-voltage is present before proceeding. One word of caution: *under no circumstances should the amplifier be operated with the bottom plate removed.* The 4CX250Bs require a flow of cooling air at all times to maintain tube seal temperatures within specified limits. Be sure that the blower is operating and that the tubes are receiving adequate air flow before high voltage is applied.

Apply filament voltage. Using the bias-adjust control, set the grid bias to −50 volts. The amplifier may now be neutralized. Procedures for accomplishing this are covered thoroughly in *The Radio Amateur's Handbook* and other sources, so further details will be omitted here. After neutralization is complete, screen and plate voltages may be connected to the amplifier. Using the multimeter in the screen-voltage position and with the mode switch set for AB1, adjust R1 for a reading of 350 volts. Switch to the Class-C mode and adjust R2 for 250 volts. The amplifier is now ready for operation.

When used as a Class AB1 amplifier, the proper amount of drive occurs at the point which almost produces a flow of grid current. Current flow indicates that the amplifier is being overdriven – a condition which is to be avoided. Quickly load the amplifier until screen current is at an indicated 60 mA. When this has been done, operation is close to optimum. Avoid running the amplifier under maximum drive and minimum loading conditions for more than a short time, as screen dissipation is excessive during these periods.

Class-C operation is accomplished in the following manner: switch the MODE switch to the Class-C position. Apply drive to the amplifier until an indicated 25 mA of current flows in the grid circuit. Load the amplifier for 60 mA screen current. As with the Class AB1 mode, conditions approach optimum at this point. No adjustment is made to the grid-bias control for Class-C operation. The bias voltage is raised to the proper level by the flow of grid current through the bias-control potentiometers.

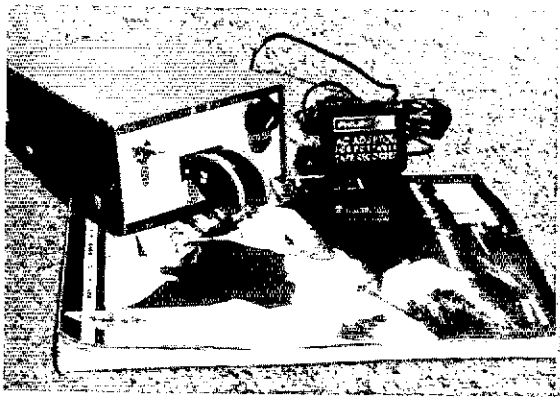
Conclusion

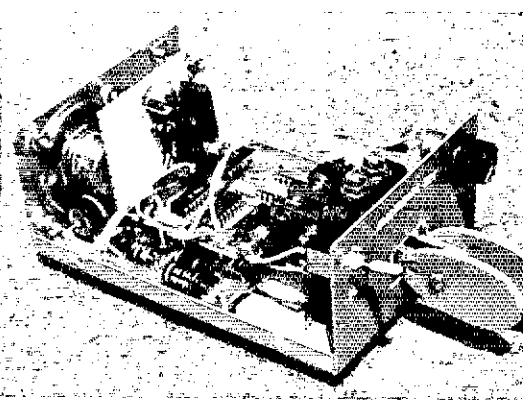
The amplifier seems to function well over a wide range of plate voltages. In fact, it was operated for a period of time with only 500 volts on the plates. It has provided many hours of operation with a supply delivering 1100 volts. Of course, maximum output and efficiency will be achieved when the power supply produces a full 2000 volts at approximately 500 mA.

This amplifier has proven to be a very stable and efficient one. No problems of any sort have been encountered with parasitic oscillations, and TVI has been almost nonexistent. The only known case of TVI has occurred due to overloading of the front end of the author's TV set — a condition caused mainly by the close proximity of the TV antenna to the "antenna farm."

(Continued on page 158)

Hints and Kinks For the Experimenter





PACKAGING THE ACCU-KEYER

"Cw is dead!" cry the prophets of doom. Ask Jim, WB4VVF, about this statement. Since his original keyer article appeared in August 1973 *QST*, Jim has shipped more than 1500 printed-circuit boards, and reports that approximately 150 additional requests are received each month. This indicates a healthy interest in cw.

This is not meant to be a how-to-do-it article, but rather a source of ideas. The power supply for the Accu-Keyer is a commercially available ac adaptor, the type used to power portable tape recorders, radios and calculators. It measures 1-3/4 × 2 × 1-3/8 inches and furnishes 7.5 V dc at 130 mA. After several hours of operation the power supply package gets warm, but not hot, to the touch.

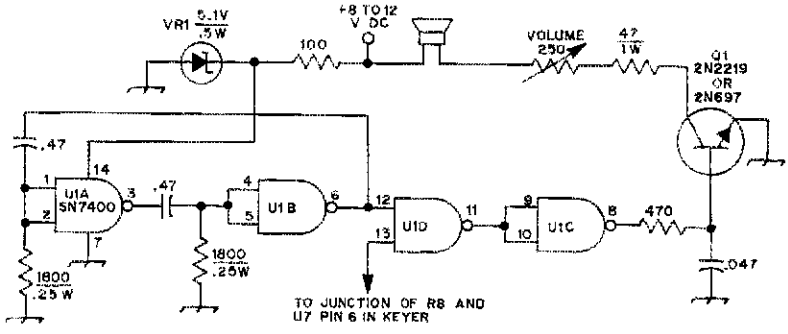
As can be seen in the photograph, the main circuit board, Brown Brothers key assembly, and monitor subassembly fit neatly inside a "mini" utility box which is available from Radio Shack. The box measures 7-3/4 × 4-3/8 × 2-3/8 inches and is rugged, attractive and priced reasonably. The gray hammertone finish and rubber feet help give the completed Accu-Keyer a professional appearance.

The schematic diagram shown in Fig. 1 was provided with the drilled circuit board obtained from WB4VVF. My monitor-oscillator was built on a 1-3/4 × 2-inch scrap of "perf" board, and was then epoxied to the rear of a two-inch round speaker. The speaker was mounted to the rear panel by using a scrap of copper window screening as a protective grill. Also located on the rear apron are two miniature phone jacks, one providing a connection for keyer output and the other for dc input.

The Accu-Keyer has an automatic character-space feature. After briefly disabling it during the pre-packaging stage of this project, I decided to use it without provisions to switch it in and out of the

Radio Shack catalog part numbers.

Item	Catalog No.
IC 7400, Quad NAND Gate	276 - 1801
Two Inch Speaker, 8 ohms	40 - 245
"Perf" board assortment,	276 - 1391
Toggle switch, subminiature,	275 - 324
"Mini" utility box.	270 - 232
Miniature jack and plug assortment.	274 - 335



circuit. However, if one is interested in retaining the in-out feature of automatic character spacing, there is ample room for a switch on either the front or rear panel. The front panel switch labelled TONE is the monitor disable switch. If your rig has a built-in sidetone oscillator, it will not be necessary to use the keyer monitor.

Included on the schematic diagram is a listing of the components with Radio Shack part numbers. It is given for those interested in duplicating this packaging scheme. – *Hal Morris, W4VUO/3*

NPN OR PNP WITH A VOM

A simple outline is offered below to determine the base configuration and type (npn or pnp) of a transistor. The only test equipment required is a VOM.

The first step is to set the VOM in the proper mode. Place the meter in the R × 100 position. The black meter lead is connected to the COMM. meter terminal, and the red lead is connected to the VΩA meter terminal (on some VOMs it is just Ω).†

The next step is to find the lead on the transistor that shows about the same resistance to each of the other two terminals. This is the base. Note the color of the meter lead. If red, the device is npn, if black, it is pnp. At this point, the base lead is known and the type is known.

Now set the meter to the high-ohms scale (R × 100K). Place the meter leads across the other two leads on the transistor. Reverse the meter leads to locate the lowest meter reading. Note the polarity of the meter leads. If the device is npn, then the black lead is on the collector and if it is a pnp type, then the red lead is on the collector.

The last terminal on the transistor, by the process of elimination, is the emitter. In a power transistor the case is generally the collector. It should be noted that although these tests are quite helpful in locating the different elements and types of transistors and will work 95% of the time, not all transistors can be identified in this manner. – *G. D. McKechnie, W4IKB*

[EDITOR's NOTE: Not all ohmmeters have the same polarity (red +, black –) when in the ohms position. In some instances, black may be the positive terminal. Confirmation of the test lead polarity may be found by placing a milliammeter across the leads while in the R × 1000 position. Proper meter movement will determine the ohmmeter polarity.]

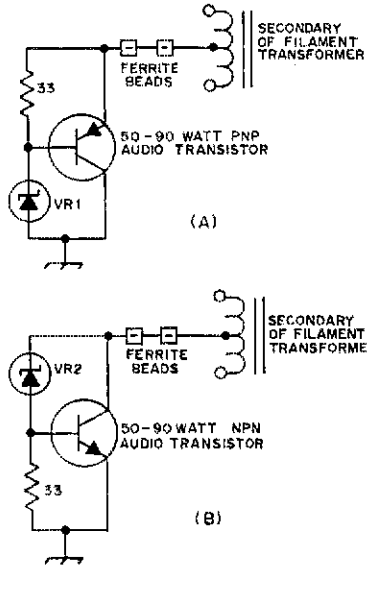
OVERCURRENT RELAY MODIFICATION FOR THE HENRY RADIO 2K4 AMPLIFIER

In the present arrangement of the 2K4 amplifier there exists a possible danger. If for some reason the overcurrent relay engages, causing the amplifier to shut off, there is a chance of damaging the tubes. When the amplifier has been shut off, the exciter can still feed power to the grids, making it possible to destroy the tubes. A simple change in the wiring of one terminal strip will eliminate the possibility. In the power supply upper deck, on terminal-barrier TB101, remove the yellow wire from terminal No. 2 that goes to pin 4 of socket SK-1. Remove enough yellow wire from the cable harness so that it will reach the unused, normally closed terminal of relay RY101A. Connect a new wire from the unused common terminal of RY101A back to terminal No. 2 of TB101. This change provides automatic disabling of the antenna relay when the overcurrent relay is activated; thus the exciter rf bypasses the amplifier, going directly to the antenna when this overcurrent condition exists. – *Dave Porter, K2BPP*

AN ALTERNATIVE TO HIGH-WATTAGE ZENER DIODES'

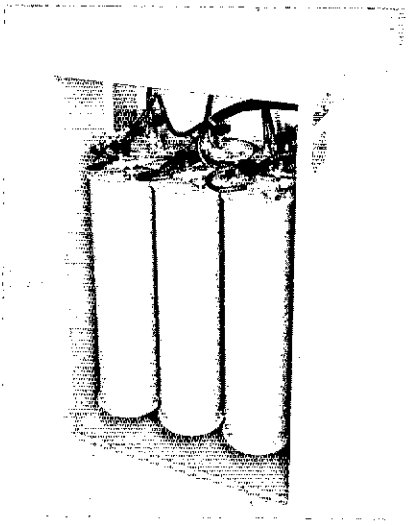
High-wattage Zener diodes, the type used to develop bias in some linear amplifiers, are often hard to find. While they are not terribly expensive, not many distributors stock Zener diodes of the 50-watt variety. The accompanying diagram shows how a 1-watt Zener diode, an inexpensive 50- to 90-watt audio transistor along with a half-watt resistor, can be connected to perform the same function. Circuit A uses a silicon or germanium pnp transistor. The voltage rating of the Zener diode should be approximately 0.3 volt less than the desired bias voltage for a germanium transistor and approximately 0.7 volt less for a silicon unit. The circuit at B uses an npn transistor. Again either a germanium or silicon transistor may be used, and the Zener-diode voltage rating is the same as that for circuit A. The transistor should be bolted to the chassis, using the chassis as a heat sink. In circuit A the transistor can be bolted directly to the chassis, but the circuit at B will require a mica insulating washer because the collector (case) is above ground. Ferrite beads are placed on the transformer center-tap lead to discourage parasitic oscillations – adapted from a circuit in the article "The Amplified Zener," which appeared in the September, 1970 issue of *Electronics World*, copyright 1970 by Ziff-Davis Publishing Company. (All rights reserved.)

[EDITOR'S NOTE: Many thanks to J.F. Dunten, K5DQT, for calling this circuit to our attention.]



Recent Equipment

To acquaint you with the technical features of current amateur gear.



The Decibel Products Model DB-4048 Duplexer

DECIBEL Products, Inc. is marketing a 2-meter duplexer, listed as their Model DB-4048. This unit consists of six rf cavities, three on receive and three on transmit. They rate the duplexer isolation as better than 80 dB on both transmit and receive. Our checks in the ARRL lab (Figs. 1 and 2), showed 85-dB isolation at 600 kHz separation, which can be considered excellent performance. The insertion loss on transmit is −1.2 dB and on receive, −1.3 dB.

The duplexer we had for review was set up at the factory in Texas on our specified frequency, 146.22/146.82. With all the rough treatment that items get in shipment, we expected the duplexer to need readjustment. However, no adjustment was required, which speaks well for the mechanical construction employed. Detailed retuning instructions are provided in the event that the user wishes to adjust the device himself.

We field tested the unit on a local repeater for several months. There was some desensing in our

The Decibel Products DB-4048 Duplexer

Frequency coverage: 146 to 174 MHz.
Frequency separation: 500 kHz minimum to more than 2 MHz.
Isolation: Better than 80 dB for receive and transmit channels.*
Dimensions with case (HWD): 33 × 19 × 14 inches.
Price class: $550 without cabinet.
Manufacturer: Decibel Products, Inc., 3148 Quebec, Dallas, TX 75247.

* Measured in ARRL lab.

Fig. 1 — This is the rejection curve for 146.220 MHz as measured with an HP8554B spectrum analyzer with 10-dB pad in use.

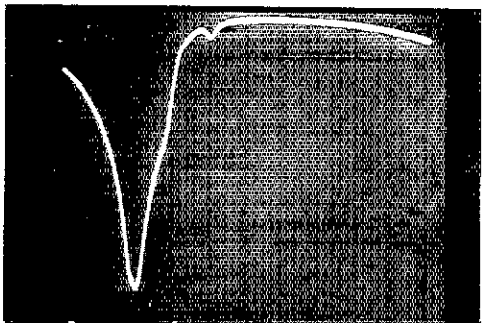
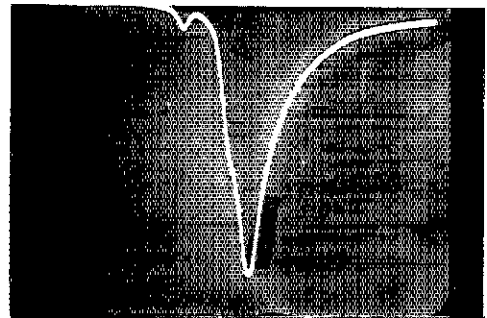


Fig. 2 — Rejection curve for 146.820 MHz with 10-dB pad in use.

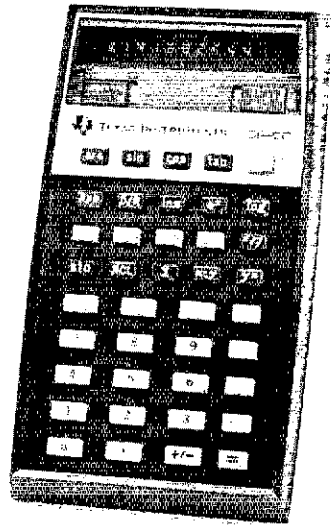


installation, but we found that it was not the fault of the duplexer. As Decibel Products points out in its instructions, double-shielded or solid-sheath coaxial cable must be used to feed the antenna; otherwise the maximum possible attenuation of the duplexer cannot be achieved. This is an important point that many repeater owners fail to realize. You must use double-shielded or solid-sheath coaxial cable in your installation to obtain the desired isolation between receive and transmit. When we switched to solid-sheath coaxial cable, our desensing vanished.

The price class shown is without the case (which isn't necessary). Also, there is a discount available to amateur radio clubs and groups. – *W1ICP/WR1ABH*

QST —— QST —— QST

The Texas Instruments SR-50 Electronic Slide Rule Calculator



THE MARKET abounds with electronic calculators nowadays. In a time of prevalent inflation, these devices run counter to the trend: their prices have plummeted downward. Some professionals predict that a hand-held electronic device that can perform all the functions of a scientist's slide rule will sell for 25 dollars by the mid 80s. Well and good if you want to wait that long, but for the amateur with more than a casual interest in the technical side of the hobby, an electronic calculator can be an immense help.

The Texas Instruments SR-50 is designed primarily for scientific applications. However, since it utilizes the algebraic method of entering data into the calculator, even those unskilled in the higher mathematical functions can learn to use it easily. The algebraic method means that, for the simpler problems, numbers and operations are entered in the same order as one would write them down on paper.

In addition to the four basic operations (addition, subtraction, multiplication, division), the SR-50 is complete with function keys for sine, cosine, and tangent. The "1/x" key in conjunction with the latter functions provides cosecant, secant, and cotangent. The SR-50 also has an "arc" key, which enables the user to compute the inverse of each trigonometric function. For example, if you know the tangent of an angle, the SR-50 will compute the angle. This feature is handy since most formulas concerning antenna bearings involve the tangent of an angle with no way to figure out the angle itself except to look it up in a table. With the SR-50 all you have to do is enter the tangent, and then push the "arc" and "tan" buttons.

Other SR-50 functions include common and natural-base logarithms, hyperbolic functions, the exponential function, squaring, extracting square roots, extracting the xth root of y, and raising y to the xth power. All these operations can be performed by pushing one function key with the exception of the hyperbolic functions, which require two function keys.

The SR-50 has several other useful features which add to its versatility. It calculates and retains answers to thirteen significant digits and uses all these digits in subsequent calculations (although only 10 digits are displayed on the readout). This calculator utilizes floating-decimal-point or scientific notation, and automatically converts to scientific notation whenever too large or too small a number is encountered. Scientific notation may be also used directly via the "EE" key. There is a special key for the mathematical constant "pi" and overflow or underflow (large magnitude negative exponents) is indicated by a flashing display.

Finally, the user may perform calculations using either degrees or radians and may convert from one to the other.

An 84-page instruction manual comes with the SR-50 and included are several sample problems performed step by step. There is a section detailing the internal logic structure of the calculator to give the user some insight into how the problems are solved. There is also a toll-free number to call if you require assistance with the calculator in some way.

All told, the SR-50 is a useful item for the technically minded amateur, and at the same time it can be used as a "family" calculator for more earthly calculations. This reviewer could find only one disadvantage: the lack of any printout. True, the SR-50 does have provision for the storage and recall of previous results, but this feature is rather limited. One still does need pencil and paper to keep track of a string of calculations, whereas an automatic printout would alleviate this chore. Of course, such a printing mechanism would add considerably to the price tag, and the calculator would no longer be portable or pocket sized.

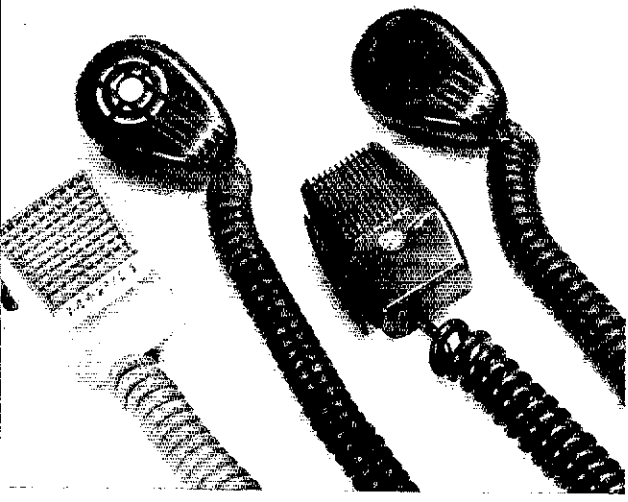
In conclusion, if you're looking for a calculator that combines portability with the ability to perform a wide range of both simple and complicated computations, the SR-50 will fill the bill. – *K1FHN*

Texas Instruments SR-50
Electronic Slide Rule Calculator

Dimensions (HWD) and Weight:
5.8 × 3.2 × 1.25 inches, 8.3 ounces.
Power requirements: Internal battery or 115/230 volts ac with battery charger.
Price class: $110.
Readout: Red LED approx. 3/16 inch high.
Manufacturer: Texas Instruments Inc., Dallas, TX 75222.

• New Apparatus

TURNER M+2U, +350, 355C, AND NC350C MOBILE MICROPHONES



The boys at Turner must have had the mobile operator in mind when they sat down at the drawing board to design the collection of microphones shown in the accompanying photograph. Each is tailor-made for a different type of service and input impedance. All are built for rugged operation, and made from high-impact plastic. The cords on these units when compressed are about 11 inches long. In the fully extended-to-maximum state, the cords are approximately five feet long. Each microphone weighs one pound or less.

At the left is the M+2U, which is called their "universal microphone," and rightly so. With built-in preamplifier and adjustable gain control (0 to 15 dB), it can replace the crystal, ceramic, or high-impedance dynamic microphones. A battery powers the two-transistor amplifier. This power source is included with the microphone by the manufacturer. The generating element is ceramic, which tends to be stable in wide temperature ranges, such as in a mobile system. The M+2U is blue in color.

The +350 is a dynamic microphone with a built-in amplifier that has a low output impedance. This characteristic makes an ideal replacement for those old carbon-type microphones. It requires an external power source (8 to 13 V dc) and load. The instruction sheet covers in full detail the installation for most communications systems. Its color is dark gray.

The 355C microphone has the greatest frequency response of those shown, 80 to 7000 Hz. It has a ceramic element with a full grip-to-talk lever for comfortable control. The bar depresses easily during left- or right-handed operation. The former requires that the palm of the hand be used to actuate the bar.

The noise-cancelling microphone, NC355C, is a high-impedance ceramic type designed for close talking and acoustical noise reduction. A rubber lip is positioned on the front to maintain the proper distance between the microphone and the user's mouth. This is ideal for those situations where the noise from passing automobiles or road noise is objectionable. On-the-air tests indicated to these writers that the audio quality was very good, even

(Continued on page 75)

New Novice-itis

BY HOMER T. FORT,* WN5IKK

BECAUSE I HAVE the terrible habit of awaking at 2 A.M. and needed something to do, I enrolled in the Novice course given by the Midland (Texas) Amateur Radio Club, MARC, I found, has a sense of duty.

While struggling to master 5 wpm, I got lectures on courtesy.

"Listen first," I was told.

"Lay off long CQs. Give your own call just three times."

"If you can't hear him well, don't answer his call."

"Ten seconds for load up – no more." And so on.

So in due course came the license. Ed White, who has his Advanced Class License, helped with an obstinate dipole. Howard Bentley, an unfailingly helpful old-timer, checked my used, crystal-throttled 60-watter for harmonics and frequencies.

Shaking and alone one morning, I loaded up and sent a wavering CQ. Before I had a chance to pick up my pencil and a pad, a rapid-fire bunch of cw unloaded. I gathered that he, whoever he was, was somewhere in the United States. Overcome, I pulled the plug, leaving him to his key and breaking MARC's commandments all over the place.

The next morning – it takes a while to get your nerve up again – I pushed out some more shaky CQs. This time, darn it, I also got an answer. It was from a station out in Beverly Hills, California. Before he could send much of anything, I sent: "I am a new Novice. This is my first QSO. I am nervous."

Now good old WN6XXX – not his real call – must have sensed a crisis (he happens to be a doctor, I found out). The code was ultra-slow. It had a first-class bedside manner, and I needed it. His name, as I had written it, was Lukiu.

"Strange," I told my wife, "but my first QSO was with a Chinese person out in Beverly Hills."

"Probably an actor," she guessed, "from off that Hawaii show."

Lukiu turned out to be Lucius, and wherever you are, Lucius, you are a healer of new-Novice wounds. There are, I found out, some things MARC doesn't teach, and neither does *QST*.

For example, if you simply can't read the other's speed or his awful code, complain about the QRM even when your receiver is delivering him at a pure 599.

For another, 40 meters is no place for the timid. At rush hour there is no blue sky any place. After having your own ears ripped off by some interferer, you shortly learn to shop for a place that's only slightly messy, if your crystals permit, and wade in. You will be called a "lid" a few times, and maybe worse.

The new Novice, struggling with the experienced sharks around him, sometimes falls back on a strange motor mechanism. His muscles and brain can send CQ and his own call twice as fast as he can copy, at least. If he sends slowly, he will be scorned by some of the more experienced brethren. So he sends his invitation at fast speed, waits for a 13-wpm-man to answer, and then gives him a polite QRS. There's no way to throw rocks on Hertzian waves.

He also becomes aware that the great big hunk of band open to him really isn't. Come the foreign broadcasters. Come the ssb hams from other countries. Come all the WA and WB men, and other seniors, who are slumming around with the Novices.

I asked Ed White why the upperclassmen were using the Novice bands when they had all those wonderful cloudless frequencies of their own (sort of).

"Some of those Novices are pretty sharp," he said. "Better practice."

Maybe so. He wasn't talking about us new ones.

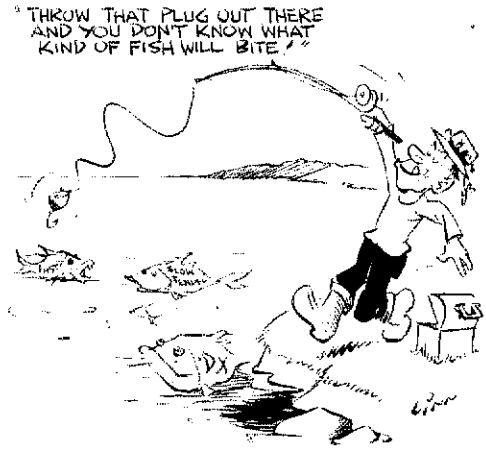
I went through a short period when I fished around for the long sl-o-o-w senders. It's comforting to copy everything perfectly and pat yourself on the back. But you shortly realize this is like taking tranquilizers. Getting your speed up requires taking on the guys who are faster than you want them to be. And I'm still a trifle nervous when this happens.

My daughter, who is an artist, asked if I'd like for her to design me a QSL card. "Sure," I said. "What do you want on it?" she asked.

"Well," I said, "maybe a hog, for hams, would be a good idea, but since this is cattle country, how about a longhorn steer?"

(Continued on page 52)

* 9 Fairfax Court, Midland, Texas 79701.



A Content Analysis: Amateur Radio Conversations

BY RALPH R. BEHNKE,* WØDWP AND LARRY W. CARLILE,* WBØIVC

THERE IS no doubt that every licensed amateur radio operator, or ham-band shortwave listener has formed some general impressions of what hams talk about on the air. Most amateurs accept the challenge and responsibility of serving others, but beyond this the individual amateur owes it to himself to optimize the value and satisfaction which he derives from his operation. Certainly, considerable enjoyment results simply from establishing a contact, but there is no reason why such enjoyment shouldn't be enhanced further by having conversations about interesting and important topics.

In our opinion, occasional or casual listening on the ham bands is not likely to produce accurate generalizations about amateur conversations. Therefore, we decided to carry out an empirical analysis of everyday conversations in an effort to go beyond our general impressions regarding the content of these conversations.

Method

Because of the wide range of topics discussed on the amateur bands, we set out to devise a set of categories that would account for most of these topics and into which various conversational segments could be placed. The range of categories had to be wide enough to include most of what was said, and at the same time small enough to be functional. During a pilot study, we listened intensively and extensively, pencil in hand, to a great many regional, national and international QSOs in an effort to build a comprehensive list of topics. The original list, assembled by several radio amateurs, contained numerous repetitious and overlapping categories. This extensive list was distilled, and a final check list was constructed (see table). Each QSO was tape recorded and studied to determine if our judges could reliably place segments of conversations into their appropriate categories. The results showed that after a two-hour training session, two independent listeners, listening to the same QSOs, agreed on the categorical placement of conversational segments 85% of the time. Having completed these preliminary investigations, we proceeded to the actual study.

A monitoring system which took into account the diversified operating schedules of radio amateurs was devised. Over a period of three months (August, September, and October, 1973), a total of 100 hours of conversation was analyzed by two listeners. The hours were well distributed to include all 24 hours of the day and all 7 days of the week. Listening was restricted to the phone section of the forty-meter band, but was distributed equally across its segments. A QSO could qualify for inclusion in the analysis only if it was longer than five minutes in duration. For conversations extending beyond ten minutes, the analysis was terminated at the ten minute point. Using the check list, each conversation was classified according to topic every 15 seconds. The total number of 15-second segments during which a topic was discussed was established and converted to a percentage figure. Phone-patch conversations, net operations, and equipment tests were excluded from the analysis. All material was tape recorded so that the pressures of on-line analysis were greatly reduced or eliminated.

* Northwest Missouri State University, Maryville, MO 64468.

Results and Discussions

A summary of the findings is reported in the table

Table of Percentages of QSO Time Spent Discussing Selected Topics

I. *Discussions Directly Related to Amateur Radio*

1. Wave Propagation (Solar Cycles, Types of Propagation)	2%
2. Electronic Theory & Troubleshooting	3%
3. Organized Activities (ARRL, MARS, c.d., Local Clubs)	5%
4. Special Operating Interests (DX, uhf, SSTV, fm, Oscar)	7%
5. Home-Brew Equipment (Characteristics, Design, Construction)	4%
6. Commercial Equipment	6%
7. Rules and Regulations	5%
8. Problems of Operating (TVI, QRN, QRM, Poor Operators, etc.)	5%
9. General Signal Reports	12%
Percentage of Comments Relating to Amateur Radio	49%

II. *Discussions Not Directly Related to Amateur Radio*

1. Family and Family Activities	4%
2. Health (Illness, Medical Care, Diet, Exercise)	1%
3. Current Events (Social, Governmental, Cultural, World Events, etc.)	5%
4. Personal Interests and Activities (Occupation, Hobbies, Sports, Travel)	5%
5. Real or Personal Property (Non-Amateur Radio)	3%
6. Geographical & Weather Discussions	6%
7. Common Acquaintances or Public Figures	3%
8. Social Amenities (Greetings, Farewells, General Compliments)	19%
Percentage of Time Not Relating to Amateur Radio	46%
Unclassified	5%
Total	100%

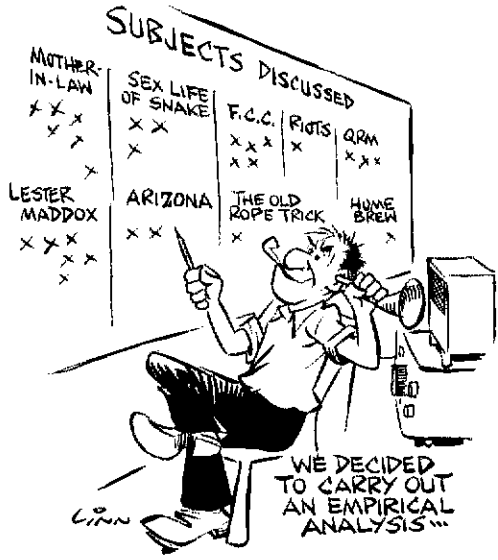
It should be pointed out that some of the initial design restrictions placed upon this study limit the generalizations which may be drawn from the findings. For example, we listened only to conversations on the 40-meter band. It is certainly possible that conversational analyses of the 20-meter band would show a slightly different set of proportions. Moreover, the conversations which take place on the vhf and uhf bands may have their own unique characteristics. It may even be that the operating mode (ssb, a-m, cw, RTTY, SSTV, fm, etc.) exerts some control over the content of interpersonal communication. It is probably reasonable to suggest that there are content differences between conversations which take place through a repeater and those which result from direct contact. Finally, it would be *very* interesting to compare the content of conversations which take place on the amateur bands with those which take place on the Citizen's Band.

A quick examination of the Table indicates there is a reasonably good balance between the amount of time spent discussing amateur radio and the time devoted to other topics. Overall, the results do not indicate a dramatic emphasis on any one category at the expense or near exclusion of the others. However, some categories do show what might be considered relatively heavy activity. A case in point is the category which we have labeled *Social Amenities*. Although it is not our purpose to make value judgments about these conversations, the proportion of time spent exchanging greetings, compliments, farewells, and "by gollies" might be a bit high in comparison to other types of interpersonal communication. The hams who previewed our findings agreed that nearly one-fifth of our subjects' time spend in this category is probably somewhat excessive. These same previewers, however, were divided in their evaluation of the second largest category, *General Signal Reports*. Some felt that getting feedback from other amateurs about the quality and strength of signals is of sufficient importance to warrant 12% of the total time. Others felt this was excessive in light of the fact that a very substantial portion of the equipment being used on 40 meters today is commercially manufactured rather than homebrewed.

The 5% figure reported for discussion of *Rules and Regulations* was viewed by our respondents as being a little low. Given the amount of space which this subject has received in various amateur radio journals during the period covered by this study, the feeling was that more conversational time should have been devoted to these subjects. One respondent, however, felt that this figure would in fact have been much lower during periods of our history when fewer rules and regulations were being enacted and written about.

Occasionally, *QST* is criticized for "giving over" too much space to operating activities. Our study lends no support to this criticism. The category *Special Operating Interests* was found to be a popular one, second only to the discussion of *Signal Reports*. The response in this category suggests substantial amateur involvement in a variety of activities which are in the public interest as well as in the best interests of the amateur radio service (i.e., Field Day, Sweepstakes, local club activities, MARS, and CD).

(Continued on page 52)



July CD Parties··all ARRL Members

CW

Starts: 2300 UTC July 12

Ends: 0500 UTC July 14

PHONE

Starts: 2300 UTC July 19

Ends: 0500 UTC July 21

(You may operate any 20 hours out of the 30-hour period. Times out must be 15 minutes or more to count as off-time.)

One of the 4 quarterly CD (Communications Department) Parties is open to all ARRL members. In this July event, the same station may be worked on each of the bands but section multipliers count just once. (Maximum multiplier is 75.) Transmit your "status" plus ARRL section. Non-appointees transmit: Member (MBR), Life Member (LM) or Charter Life Member (CLM) – whichever is applicable; plus ARRL section. Appointees, officials, and advisory committees send usual designation. Score 5 points per QSO. To this figure add your highest ARRL code proficiency credit; multiply by the total number of sections worked.

Suggested frequencies are: cw, 35 kHz up from the bottom edge of each band; phone, 3870-3900, 7200-7235, 14265-14285, 21340-21360, 28600-28630. Try 10 on the half hour and 15 on the hour from 1500-2100 UTC. Try 160 at 0530 UTC and again during the last 5 minutes of the party. Don't forget 6 and 2 *and* the novice bands. Report on ARRL CD Party report forms. Send an s.a.s.e. *now* for your logs. Entries must be received at headquarters by August 11. All participants will receive copies of the CD bulletin containing the results. High-claimed scores scheduled for October *QST*.

MULTIPLIER CHECK-OFF LIST

1	2	3	4	5	6	7	8	9	0	VE
Conn	LNY	Del	Ala	Ark	EBay	Ariz	Mich	Ill	Colo	Mar
EMass	NLI	EPa	Ga	La	LA	Ida	Ohio	Ind	Iowa	Que
Me	NNJ	MDC	Ky	Miss	Org	Mont	WVa	Wisc	Kans	Ont
NH	SNJ	WPa	NC	NMex	SBar	Nev			Minn	Man
RI	WNY		NFla	NTex	SCV	Oreg			Mo	Sask
Vt			SC	Okla	SDgo	Utah			Nebr	Alta
WMass			SFla	STex	SF	Wash			NDak	BC
			Tenn	CZ	SJV	Wyo			SDak	YT-8
			Va		SV	KL7				
			WI		KH6					

Novice-itis

(Continued from page 49)

"Are you still shaking?" she wanted to know. Embarrassing. "Well," I admitted, "not much, but sometimes."

My QSL card has a vibrating steer on it.

My speed seems to be stuck at around 8 wpm, and I'm not sure it will ever get up to the 15 I'll need to sign up for the General. If it doesn't, I will still have had pleasure from the Novice experience.

Another wise old ham stopped me not long ago.

"How's it going?" he wanted to know.

"Having fun," I said. "Been thinking about a VFO."

He sighed a little. "Y'know," he said, "I kinda wish I was a Novice again. It's like fishing. You throw that plug out there, and you don't know what kind of fish will bite. I like fishing."

So, all together now . . . CQ CQ CY CQ.

QST

Content Analysis

(Continued from page 51)

The relatively large (6%) block of conversational time given to *Geographical and Weather Discussions* was attributed by some of our previewers to the increasing utility of amateur communications during natural disasters such as floods, tornados, and hurricanes. Since we know that we are able to provide considerable help under these conditions, we apparently talk more about them in preparation for rendering service. Some of our respondents simply felt that weather and geography are subjects which have a natural appeal for amateurs and that this category would show a strong response even without the need for emergency communications.

We have attempted to analyze the content of amateur radio conversations in a systematic manner. This report has described the range of topics discussed and their frequency of occurrence. In addition, some general reactions to the findings have been included. QST

Results, 5th ARRL 160-Meter Contest

New SW Division multi-op record belongs to WA6LXN/6, operated by WB6ZVC (left) and WB6VZI.

REPORTED BY JIM CAIN,* WA1STN

I HAD THIS adding machine, see? Just a few extra numbers on the 160 contest would be nice, in addition to the sterile listing-by-section at the end. A few numbers wouldn't constitute an editorial cop-out, even in the "lead." Contest results are, after all, numbers; the man with the most wins. So, we press onward into the land of statistics, records, and champions.

The 1974 ARRL 160-meter contest, Dec. 7 and 8, was the fifth edition; certainly techniques and operators could not change dramatically in a mere five years, especially with amateur radio at today's level of technology. 160 meters is for people with land, lots of it, and land gets more expensive by the day. Only a handful of commercial rigs cover 160. There's a power limitation for most of the U.S.; many European countries aren't even allowed on 1.8 MHz, and the evil LORAN lurks around every corner and is manifested in strange sounds at the wrong spots on our receiver dials. W9BRD's tips and information in "How's DX?" and *QST* articles on 160-meter postage-stamp sized antennas are bound to help, but do really very many people set foot on the lowest of our amateur frequencies? Read on.

In the first ARRL 160 contest, December, 1970, the average score of the top-ten stations (single operator) was 43,140; in the fourth running in 1973, the same average was 67,326. That amounted to an increase of about 50% in three years, or about 17% per year. Could it continue? It could and it did – 1974 average for top-ten dweller was 84,827, an increase of 26% over 1973! Had enough? Well, there's more.

The 1973 write-up included a box showing all-time division records; in the single-op category only two were left over from 1971 and four from 1972; none of the 1970 division-high scores survived the onslaught of three subsequent contests. Ten of the records from the first four contests were set in 1973, leaving only six standing from previous years (at that time). We're not going to re-print the box this year, although conceivably we should; new division single-op records were set in *twelve* of sixteen divisions. Incidentally, new multi-op records were set in nine of the sixteen. In the single-op list, one '73 record stands, two '72 records, and the '71 Dakota Division record of WØAIH remains to be broken. At this rate, they'll be lucky to make it through next year.

For the record, 354 entries in 1974 was a handful more than 1973's 338; the previous high score by a single op, 82,871 by K1PBW in 1973, was surpassed by no less than seven operators in 1974; WB8APH attained the top spot, and the new record, with PBW breathing down his neck. What's in store for next year? With new equipment on the market for Top Band and the sunspots all but non-existent now, our crystal ball says the winner will have to make 100K in 1975. Anybody taking bets? – *WA1STN*

Soapbox

Ain't had so much fun since they brought beer back in the early '30s. - (W3CDZ). Conditions

(Continued on page 55)

* Asst. Communications Manager, ARRL.

VE

Maritime

VE1CD 34,860-264-60-22
VE1MX 13,200-121-48-
W6BYB/VE1 11,086-104-46-19
VE1KE 4394- 59-26-
VE1AXT (+VE1RCZ)
15,885-163-45-20

Quebec

VE2WA 24,062-221-53-15
VE2BYR 10,290-147-35-
VE2GS 5220- 90-29- 8

Ontario

VE3BMV 85,941-511-81-
VE3DWX 16,176-167-48-
VE3EKS 14,061-159-43-
VE3CUI 12,456-173-36-19
VE3IR 10,575-116-45-14
VE3SLC (VE3DXY, opr.)
7144- 94-38- 8
VE3DDP 4176- 72-28-10
VE3ECP (+VE3ARD)
20,539-217-47-

Saskatchewan

VE5XU 28,608-222-64-10

British Columbia

VE7AKI 10,148-118-43-

USA

1

Connecticut

K1PBW 93,052-481-86-32
WA1LNQ* 30,000-250-60-13
W1TX 27,000-204-60-18
WA1PID* 26,334-216-57-
WA1STN* 23,760-246-48- 9
W1SG 21,518-194-53-12
WA1STO* 18,000-200-45- 6
W1BIH 17,888-208-43- 9
W1QV 17,484-186-47- 8
W1CER* 13,248-138-46- 7
WA1SCV 1258- 37-17- 6
WA1RDN (WA1S1N, opr.)*
180- 10- 9- 1
W4WFL/1* 45- 3- 3-
WA1TXZ (WA1s ODX QXM QZX)
22,095-244-45-20

Eastern Massachusetts

K1DIR 42,411-285-67-18
W1FH 36,772-302-58-17
W1BB 36,720-213-68-26
W1MX (W2QHQ, opr.)
24,837-239-51-24
K1CZH 19,236-229-42-
W1PL 13,936-104-52- 6
W1GDB 6496-100-32- 7
W1AAI 3304- 59-28-
W1DDC 1440- 40-18- 6
W1BVL 640- 20-16- 2
WA1RGA 506- 23-11-
WA1MSK (+WA1OML)
4450-135-35- 9

Maine

K1RQE 51,552-331-72-
WA1IOG 11,700-150-39-11
WA1NMW 98- 7- 7- 2

New Hampshire

W6MZW/1 18,096-168-52-12
W1HDI 15,662-191-41-20
W1FZ 11,398-139-41-
W1BPW 2856- 58-24- 8
K1HZN/1 (+K1GDS)
10,800-150-36-

Rhode Island

K1ZFN 11,200-160-35- 8
W1OP (WA1POJ, opr.)
6660-111-30- 9
W1KMV (WA1RFT, opr.)
676- 26-13-

Vermont

K1HK 26,208-243-52-12
W1EBW 1152- 32-18- 2

2

Eastern New York

W2PV (WB2OEU, opr.)
76,506-435-82-
WA2SPL 75,816-435-81-
WA2EAH 44,919-343-63-21
W2DXL 41,958-318-63-
W2HHC 29,328-276-52-18

N.Y.C.-L.I.

W2KTU 12,802-173-37-22
WA2YJN 12,341-142-43- 9
W2GP 9360-130-36-

Northern New Jersey

WA2SRQ 73,391-442-79-28
WB2IYM 70,547-424-79-31
W2HUG 18,262-197-46-15
WB2URU 17,052-203-42-33
W2GBY 13,112-140-44-12
W2DFN 4200- 84-25- 5
WA2CCF 96- 8- 6- 1

Southern New Jersey

K2JOC 3276- 57-28- 3
W2BP 528- 12-11-

Western New York

K2KTK 59,256-401-72-19
W2FHU 36,698-308-59-19
W2QIP 13,158-150-43- 9
W2MTA 8160-120-34- 5
WB2ABD 864- 24-18- 1
K2JQ 8- 2- 2- 1

3

Delaware

W3GL 13,968-132-48- 9

Eastern Pennsylvania

W3GM 84,162-489-83-30
W3ISX 69,125-424-79-
W3QOR 26,871-252-53- 9
WA3HMM 25,002-227-54-
W3CNS 20,257-214-47-14
K3DED 8896-139-32-12

Maryland-D.C.

W3UN 86,652-495-83-22
WA3PIE (K4JSI, opr.)
27,610-248-55-28
W3IRE 25,542-235-54-23
W3CDZ 11,685-141-41-22
W9SZR/3 11,310-145-39-
K3DI 9635-116-41-
W3FA 6552- 84-39-
W3MSN 100- 10- 5-

Western Pennsylvania

W1FCC/3 35,973-281-63-13
W3UHP 14,994-177-42-13
W3HDH 14,580-162-45-10
W3SN 6460- 95-34- 9
WA3FOO/3 1140- 27-20- 3
W3LQD 50- 5- 5-

4

Alabama

K4GTO 8170- 95-43-10
W4AP (W4AUP, opr.)
1120- 35-16-
WB4UDF (+K4ZGB)
13,432-146-46-15

Georgia

W4YWX 69,520-412-80-
K4QMO 51,129-363-69-27
W4VRO 18,518-197-47-13
WA4APG 16,830-162-51-17
WB4RUA 9306- 96-47- 3
W4WRY 1160- 26-20-
K4KZP 100- 10- 5-

Kentucky

K4GSU 89,934-557-78-26
K4FU 44,890-329-67-17
W4KFB 4500- 75-30-10
WA4CTC 3944- 68-29-
W4KVK/4 (W4s IBU YOK WB4ZSA WA9ZIM)
29,456-260-56-

North Carolina

W4TMR 44,574-314-69-29
WB4SXX 11,760-147-40-10
W4HHN 2726- 47-29- 4
K4YFH 2090- 55-19-

Northern Florida

W4WHK 23,305-190-59-

South Carolina

WA4LDM 27,480-220-60-16
WA4YZC 18,020-164-53-
WB4SJG 15,686-169-46-13
WA4OSM 8092- 58-38-10

Southern Florida

K4IRQ 49,654-317-74-20
W4BRB 45,068-274-76-18
W4DOS 30,555-232-63-16
W4OZF 17,524-161-52-11
W4ZTB/4 8146- 86-26-18

Tennessee

K4PUZ 60,580-460-68-16
W4HYY 16,218-156-51-29
W4UD 5148- 78-33-11
WA4EDR 756- 21-18- 1
K4KIU (+K8KAJ)
52,224-402-64-17

Virginia

W4QCW 70,308-401-81-31
WB4URW 43,214-344-62-18
K4RDU 42,273-330-63-33
K4VV 29,583-258-57-23
W4WSF 29,362-271-53-11
K4JM 28,296-262-54-10
W4IHK 21,573-210-51-12
W4ZSH 14,490-161-45- 9
W4KXV 14,016-143-48- 7
W4KFC 9009-114-39- 3
W4EZW 4232- 92-23-13
WB4WVC 1080- 30-18-

West Indies

KV4FZ 85,976-406-88-

5

Arkansas

WA5RTG 54,457-379-71-20
W5MYZ 6120- 90-34- 6

Louisiana

W5WMU/5 5344- 82-32- 7
K5LXZ 3840- 60-32- 6

Mississippi

W5RUB 25,812-236-54-12
W5PWW 11,826-105-54-19
K5REJ 10,100- 98-50-10
WA5NYG/5 8140-110-37-
W5GWD 2400- 60-24-20
W5AO 1178- 25-19-13
WB5DCY 600- 20-15-
W5MUG 160- 10- 8- 1

New Mexico

W5DO 27,720-217-63-
W5RE 6240- 80-39-
WB5MVA 3248- 56-29-10
K5MAT 828- 23-18-

Northern Texas

W5LUJ 60,152-403-73-26
K5ABV 26,867-190-67-15
WA5KYY 21,112-176-58-28
W5QUZ 10,710-126-42-10
W5FIX 7831- 94-41-14
W5QF 6903- 87-39-
WB5CKM/5 (+K5s LZJ SOR WB5GJD)
33,835-245-67-29

Oklahoma

K5VF 32,550-228-70-17
WA5ZKN 23,320-212-55-30
K5QNM (+WB5JFR)
16,744-158-52-24

Southern Texas

K5RLW/5 48,990-333-71-21
W5RPI 11,352-129-44-17
W5EVL/5 2781- 50-27-
WA5WQF 2568- 52-24- 6
W5RTQ (+WA5ZNY)
71,442-420-81-29
K5DEG (+WB5HOD)
32,240-242-65-31

Canal Zone

KZ5AA 15,785-130-55-17

6

East Bay

K6HIH 32,825-251-
K6LLG 17,250-171-
W6ROZ 144- 12-
K6BE 24- 4-

Los Angeles

W6RW (W2IWC, opr.)
45,144-324-
W6PAJ 15,022-203-
W6RTT 14,740-166-
WA6VCZ 4779- 87-
WA6MBP 4480- 70-
WA6ILV 1600- 50-
W6AM 504- 18-
W6DQX 264- 12-
K5MHG/6 4- 2-

Orange

WB6ENI 28,800-240-
W6AMO 4160- 80-
W6BQA 1014- 39-
WA6LXN/6 (WB6s VZI ZV
55,584-371-

Santa Barbara

W6JEO 3024- 72-
WA6LBP 2992- 68-
W6TYR 256- 16-

Santa Clara Valley

WA6PGB 29,323-232-
WB6NSF 13,156-143-
W6GBY 1050- 35-
W6CLM 40- 5-

San Diego

W6PLH 51,282-318-
K6UA 46,029-321-
K6NY 14,592-152-
W6MAR 7348- 79-
WA6DNM 1472- 46-
K6KDE 624- 24-

San Francisco

W6KQG 26,137-217-
W6ZT 10,400-130-

San Joaquin Valley

W6GWO/6 10,080-120-
W6MUV 1404- 39-
K6TG 1394- 41-
K6GPB 108- 9-

Sacramento Valley

W6ZGM 27,553-232-
WA6JVD 26,901-216-

Hawaii

KH6CHC 10,528-106-
KH6IJ 10,350- 99-

7

Arizona

W7IR 54,166-362-
W7TB 27,820-205-
W7YS 7800-100-

Idaho

WA9RAT/7 5110- 73-
W7IWU 1088- 32-

Montana

W7YB (W7LR, opr.)
7566- 97-
W7MKB 3480- 60-

Nevada

W7ABX 13,373-154-

Oregon

WA7TDZ 25,512-217-
K7WWR 13,524-147-
W7LNG 4553- 77-
W7IMP 1120- 28-

Utah

W7CYH 20,072-193-
WA7SLG (WA7GWU, opr.)
14,040-127-
K1PKQ/7 1520- 40-

Washington

W7DG/7 (WA7ILC, opr.)
18,921-178-
WA7OFH 18,391-172-

K3MNT/7 10,080-112-45-11
WJNP 7956-102-39- 7
W7WMY 6080- 80-38- 8
W7MCU 4970- 71-35- 8
W7DAZ 4550- 65-35- 5
W7LEU 4488- 66-34-16
WØPSF/7 1976- 52-19-
W7APN 1088- 34-16-
K7GGD 858- 33-13- 2
WA7NUY 16- 4- 2-
K7IDX (+W7DZO)
25,200-197-63-28
K7JCA (+W7FXM Auggie)
9360-117-40-20

8

Michigan

K8VOP 46,848-363-64-20
K8LIQ 35,670-306-58-33
WB8RGN 25,636-245-52-18
WA8EDY 20,904-198-52-12
W8OOR 18,144-189-48-14
K8HWW 15,604-166-47-13
WA8MOA 13,724-146-47-12
W8LHE 5495- 77-35- 2
WB8DSG 3120- 60-26- 4
WA8SIX (+WA8WCZ WB8DMC)
38,454-330-58-20
W8KAZ (+WB8LZV)
33,002-283-58-28
W8YDK/8 (K8s NTK SWW W8s JWQ VPD SWD WA8s TMP YET YUZ WB8s AKH CKW LCN MWR ex K8IQY)
12,200-151-40-23

Ohio

K8CCV/8 77,077-481-77-32
W8DB 55,944-366-74-21
WA8PLZ (WB8AYC, opr.)
51,545-395-65-29
K8CVJ 20,784-215-48-13
WB8LDI 18,001-190-47-25
W8EX 8151-100-39-
K8NIA 7560-105-36-16
W8VZb 6534- 99-33- 6
W8PMJ 3190- 55-29- 2
W8BDO 1472- 29-23-
W8LI (WA1LKU W8ERD WB8s FWQ IBZ JXS)
54,599-377-71-25
WB8QMC (+WB8GMN)
51,405-365-69-32
WA8YEE (+WB2IGA)
48,008-347-68-
WA8YWX (+W8IDM)
33,002-283-57-20
K8KXK (+K8GZQ)
23,406-249-47-23
WB8GUJ (+WB8s GOH JJI MVR RIB RQO)
16,940-191-44-16

West Virginia

WB8APH 93,156-520-84-36
W8GIO 46,920-339-68-
K8QYG 24- 4- 3-

9

Illinois

W9FIU/9 66,000-402-80-
W9OHH 35,406-275-63-
W9PNF 32,192-247-64-21
K9HWL 25,854-207-62-16
WB9BMY 21,840-210-52-18
W9ABA 10,686-137-39-11
WA9WMK 10,480-131-40-18
W9WYB 10,168-121-41- 9
W9UDK 8280-115-36- 5
W9HPG 5478- 83-33- 7
K9IWR 5214- 79-33- 8
K9UKM 5180- 74-35- 2
W9UC 1596- 38-21- 5
WA9LVJ 1080- 36-18- 5

Indiana

W9LI 24,030-221-54-11
W9SIVR 21,400-211-50-12
W9NEC 19,947-150-61-18
WA9BWY (+WA9MXG)
58,030-413-70-31
W9FI (+W9NHD)
24,960-240-52-22
K9UIH (+W3YWI WB9MDJ)
22,540-245-46-18
WA9EUD (+W9VNE WB9LTY)
8100-111-36-13

Wisconsin

WA9MCC/9 63,764-412-76-24
WB9ZVN 25,810-221-58-20
W9GIL 16,320-164-48-
WA9HED 12,400-155-40-10
WB9ITD 6882-111-31-13
K9DAI 6480- 90-36- 5
WB9HZT 2438- 53-23-13
W9GP 616- 22-14-

Ø

Colorado

KØZCM (WØLBP, opr.)
65,817-459-71-29
WAØCVS 53,410-377-70-
WA2WMT/Ø 13,923-135-51-10
WØMS (+WBØs CMM HBS)
53,868-399-67-

Iowa

WAØVDX 51,204-372-68-21
WØNEL 43,056-309-68-23
WØII 7298- 83-41- 7
WAØYRX/Ø 1344- 42-16-
WØIS/Ø (+K9IDA WB9s FGN JWH WAØs JEK NLI ODK UIB WGL WNE)
30,250-275-55-

Kansas

KØKU (WBØIGV, opr.)
67,221-429-77-27
WØODT 8400-100-42-
WAØRFF (+WØs AWB PSN WAØVCE WBØBCU)
38,976-303-64-32

Minnesota

WØPFV 55,296-378-72-26
WØOAW 54,316-358-74-
WBØANT 37,554-283-66-14
WØIYP 22,605-204- 5- 7
KØEJP 19,980-185-54-10
WBØHLC 12,936-147-44-10
WØHW 12,095-146-41- 7
WØIII 5680- 71-40- 5
WØRHI 2574- 48-26- 6
WBØLJH 408- 17-12-
ØAW (+KØIEA WAØYLN)
44,170-311-70-24

Missouri

WØGK 12,936-147-44-11
WØBV 3660- 61-30- 6

Nebraska

WØAIH 69,560-455-74-18
WØMSC 17,368-167-52-14

North Dakota

WØZTL 20,020-182-55-11
KØIRP/Ø 10,080-126-40-12

DX

Republic of Ireland

EI9J 1404- 39-18-

Isle of Man

GD4BEG 2024- 44-23-

Wales

GW3UCB (G4BRK, opr.)
2392- 52-23- 9

Ecuador

HC1CW (+HC1XG)
16,224-169-48-

Haiti

HH2WF 9996-119-42-16

Japan

JA2GQO 728- 26-14-
JA2UEO 468- 18-13-
JA5EZI 8- 2- 2- 1
JR6CF 8- 2- 2-

Finland

OH2BO 100- 10- 5-

Czechoslovakia

OK1ATP 672- 24-14-

Netherlands

PAØHIP 2070- 45-23-

Costa Rica

TI2CF 2646- 49-27-
TI2BFV 2052- 38-27-

Venezuela

YV5CKR 3696- 56-33-

Cayman Islands

ZF1II 26,630-242-55-

Check Logs

W1HGT W4REZ W5LWG W6DGH W8BHD G3RWL G3UBR

TOP TEN

Single		*Multi*	
WB8APH	93,156	W5RTQ	71,442
K1PBW	93,052	WA9BWY	58,030
K4GSU	89,934	WA6LXN/6	55,584
W3IN	86,652	W8LT	54,599
KV4FZ	85,976	WØMS	53,868
VE3BMV	85,941	K4KIU	52,224
W3GM	84,162	WB8QMC	51,405
K8CCV/8	77,077	WA8YEE	48,008
W2PV	76,506	WØAW	44,170
WA2SPL	75,816	WAØRFF	38,976

DIVISION LEADERS

Single Op.	*Division*	*Multiop.*
W3IN	Atlantic	. . . .
W9FIU/9	Central	WA9BWY
WØPFV	Dakota	WØAW
K4PUZ	Delta	K4KIU
K4GSU	Gr. Lakes	W8LT
W2PV	Hudson	. . . .
WØAIH	Midwest	WAØRFF
K1PBW	New England	WA1TXZ
WA7TDZ	Northwestern	K7IDX
K6HIH	Pacific	. . . .
WB8APH	Roanoke	. . . .
KØZCM	Rocky Mt.	WØMS
KV4FZ	Southeastern	WB4UDE
W7IR	Southwestern	WA6LXN/6
W5LUJ	West Gulf	W5RTQ
VE3BMV	Canadian	VE3ECP

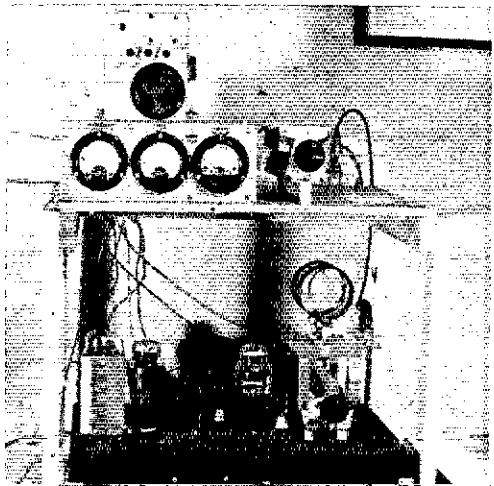
(Continued from page 53)

good; noise dropped just for the weekend. Need a better skyhook to cross the pond. - (VE3DWX). This is the first time in 42 years that I have worked 160 and it sure sounds different than it did then. - (WØGK). I can see Western Mass from my shack door but, for the fourth year in a row, no WM QSO. - (WA2SPL). Band conditions seemed better

One of *eight* operators putting Mississippi in logs this year - W5GWD.

HC1CW — a fine job from Ecuador. Those who have operated from that part of the world know that Top Band is anything but cooperative.

than in past years. Maybe the rock salt that I dumped around the vertical to kill weeds helped. - (W6ZGM). Antenna tuner box was half full of water Friday night. Matching capacitor was completely submerged. - (K3MNT/7). Spent too much time listening on the 1200-foot beverage I put up for the occasion, so my QSO total was reduced, but working OH2BO sure sold me on beverages! - (W4QCW). If anyone had told me that I would work 36 states in 45 sections on my 40-meter dipole I would have said they were crazy. - (W3HDH). I found it of interest that some 37% of my QSOs were made in the 1830-1850 kHz part of the band. I felt it really helped the QRM problem to spread out a little. - (W4TMR). A fun band plus exceptionally good conditions is equal to a fantastic weekend. Really enjoyed it. - (WB6NSF). I live on a 38 X 90 lot so antenna was a 66-foot Windom about 25 feet high. Very poor antenna, but did work ZF1TT in Cayman. - (WØODT). All the work spent on my antenna certainly paid off. - (W5LUJ). Thanks to my wife for all her understanding. - (K4RDU). My antenna didn't fit in my lot so used the bushes to hold up the extra wire. - (KØFRP/Ø). Had to use a frequency counter for the whole contest because neither receiver I used had 160 calibration. - (WA1RFT, opr. of W1KMV). Think that I ran the lowest power this year . . . 1.2 watts. - (W4EZW). Heard a couple of Europeans here but no luck working them. In general the operators seemed to be more well mannered than in past contests. The DX window was clear most of the time. - (WAØVDX). The first night seemed to be the best at this QTH. - (HH2WF). QST



Here's the W2KTU transmitter, good for 173 QSOs from N.L.I.

Matvi-40 *(Continued from page 38)*

material used here has an incremental inductance value of A_L of 7580 mH/1000 turns. Different values of inductance may be calculated using the following equation:

$$\frac{L_1}{(N_1)^2} = \frac{L_2}{(N_2)^2}$$

L_1 = Known A_L.
N_1 = 1000 turns.
L_2 = Inductance (known or unknown).
N_2 = Number of turns (known or unknown).

Where L_1 = 7580 mH and N_1 = 1000 turns. The equation is the same as that used with the Amidon cores used in rf circuitry.

Although it does not have the steep skirt selectivity that a more elaborate passive or active filter may have, the tuned transformer approach yields excellent results for a minimum number of components and cash outlay.

The transformer assembly is held down on the pc board with a No. 4-40 × 1-inch screw and washer through its center mounting hole. Be careful not to apply excessive torque to the screw when assembling the unit because the ferrite material is extremely brittle and may crack.

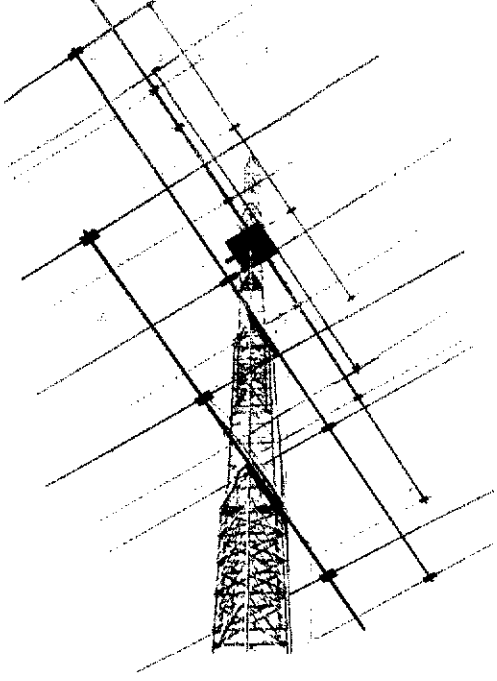
The detected audio is amplified by Q4 and then applied to 2000-ohm headphones via J2. When constructing the unit, don't forget C20 on J2; it prevents rf from being transferred to the headphone cord and being reradiated into the front end of the receiver. This was a source of spurious oscillations which caused considerable grief when the circuit was being developed. The problem also showed up on a completed unit from which C20 was omitted.

The receiver has a comfortable listening level with three or four microvolts input. Af output is "controlled" by positioning the headset for a comfortable audio level. For strong signals they may be laid on the table and used as a loudspeaker.

The receiver board is quite versatile and can be used as a product-detector/af-preamplifier stage in a superheterodyne circuit by changing L3, L4, and C3 to resonate at the intermediate frequency and replacing the VFO input with a BFO of the proper frequency to produce a beat note. The board requires a Vcc jumper to operate. The jumper location on the board may be observed in Fig. 3.

In Part II of this article, we'll describe the driver and amplifier stages, plus tune-up procedures. Meanwhile, readers interested in constructing the station can begin accumulating the parts shown in Fig. 1 and in the parts list. QST

10-METER CONTEST RESULTS



Can *you* find the W91Y ten-meter antenna? No, we aren't sure, either!

REPORTED BY JIM CAIN * WA1STN

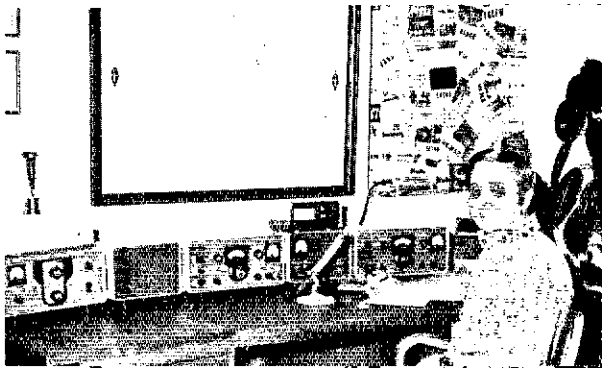
LIKE YOU WERE saying, boss, these contest write-ups are soo . . . easy when the scores are big and records are set. Was somebody lamenting recently that contesting is a dying art? No, couldn't be. When you've dug yourself out from under that stack of 886 logs for the Second ARRL Ten-Meter Contest held last December 14 and 15, you'll be able to crawl to your calculator and verify that we received seven-and-a-half logs for every six we received for the 1973 affair. Considering that the Ten-Meter Contest is a one-shot affair, with cw and phone all in the same log, the number of individual station entries is rapidly approaching the November Sweepstakes. Not bad for a fledgling contest on a "dead" band, huh chief?

Yeah, you're right about the conditions being better in '74; the usual N/S skip was there plus that fair E/W opening on Saturday and then the really good opening between the U.S. coasts on Sunday. Certainly didn't have anything like that in '73, and the scores show it. I guess we were just living right, seeing as how conditions like that don't show so often these dismal days of no sunspots. We won't complain if you won't. Get your specs on and work up that Division Leader box for both single and multi operator, boss; you'll see that new records were set in all but three of 32 spots.

Everything was up this year. The top W/VE score jumped from just short of 80K points to nearly 189K points and changed hands from east to west coast. No, we wouldn't kid you. The average score of Top Ten W/VE inhabitants in 1973 was 58K; in 1974 it leaped to 133K! We're getting a twitch in the little finger from hitting the exclamation mark key so many times already, but there's more. In 1973, the average Top Ten DX entry was 35,209, whilst 1974 saw that same calculation soar to 126K points. It doesn't take any Ph.D. in math to figure that's nearly four times higher.

The Contest Desk tried hard for a Clean Sweep this time but couldn't find Alaska or VE8; in a way it stands to reason, though, because those Northern regions suffer most from the vagaries of propagation. As far as we know there were none of those near-Arctic cats on for the 'test. In addition to accounting for 73 of 75 ARRL sections, logs

*Asst. Communications Manager, ARRL.



W7MPZ/HK3 turned in the fifth-highest score this year, using the omnipresent N/S skip to advantage.

WBØIKW captions his own picture "the insomniac operator."

TOP TEN — SINGLE OPERATOR

W/VE		*DX*	
W6RR	188,760	TI2BEV	228,468
K6SVL	166,650	KZ5JM	182,860
WA5LES	153,000	W7MPZ/HK3	158,096
W7SFA	140,432	KZ5WA	150,516
W5RTQ	129,600	YV4AGP	106,624
WA6PGB	119,140	LU8AJG	102,240
K7GWE	117,240	VP1PF	99,876
WA8ZDF	109,340	PJ2VD	84,608
W9LT	108,000	HH2WF	75,600
W5QQQ/7	99,978	PJ2RR	70,184

arrived in Newington by pack train and other modes of transport from a total of 32 DXCC countries and from all continents but Africa, about the same as in '73. It is probably safe to assume that when real intercontinental communication possibilities return to 28 MHz, returns will easily top 1000 logs and close to a DXCC full of countries. Things can only get better and better! Twitch.

Our optimistic outlook must include present-day Novices who are getting their feet wet in the Ten-Meter Contest; over a hundred of the neophites turned in logs this year, an amazing showing considering that some popular Novice equipment does not include the band and that most of the relatively inexpensive rigs in Novice shacks are, at best, poor performers at the high end of their frequency coverage. Add to this the fact that the primary mode of operation among participants is ssb, with brief sojourns to the *very* bottom of the band for a few cw contacts and the Novice scores illustrate truly outstanding efforts. 1973's top WN score of 8850 was surpassed only by a handful this year, but the winning Novice total of 23,920 represents something for even many higher-class ops to shoot for. The fact that the Novice winner, WNØMNK, resides in Nebraska is even more gratifying to all those who have noticed the lack of contest action of any kind from that state lately. Oh, yeah, boss, almost forgot. WNØMNK was the over-all Nebraska section winner (partially because a large percentage of his contacts were with other Novices, at double points).

Log-sheet comments showed that many contestants read the 1973 write-up, wherein we asked a question and solicited replies. Should the Ten-Meter Contest be moved to August or left in December? A few said yes, move it, but many said they'd prefer *two* annual events, one in December and one in August. Now *that* would set some kind of precedent. For 1975 the contest remains in December and everybody keep his fingers crossed for miraculous conditions again.

Opining that only such response would keep the infant in good health, the former grinder of this mill exhorted one and all to keep the activity and log returns high during the '74 Ten-Meter Contest. It appears that not only is the kid healthy, but that he also shows signs of growing into a strapping adolescent in no time. If we can control the growing pains and keep him thinking "Sunspots" for a while, he's going to be a winner for sure.

Soapbox

Spent 9 hours operating and the rest dozing to the lullaby of receiver buzz on a dead band. — (WB2FUH). Why not have *all* cw activity in the Novice band, to stir up more WN-types? — (WA2LJM). First time I ever heard a signal on ten meters. — (WN2MBM). Despite the hiss, hash, and hush, it was a FB contest. — (W2KHT). Please remove the 50-kHz gap between Novice and other suggested frequencies on cw. — (WN2ZYR). Couldn't operate Sunday because airplane had maintenance problems at KZ5. This was the first time I've been at the "DX" end and it's an unbelievable experience. — (W2BQF/am R2). Had to make my own Op. Aid form 6; 1975 New Year resolution: Never again will I procrastinate in ordering correct contest forms. — (K4MG). Heard

NOVICE LEADERS

WNØMNK	23,920	WN6DCF	6136
WN3WUI	10,032	WN5LMJ	3780
WN4CTA	7952	WN6EMR	3726
WN8OOE	6250	WN7YON	3000
WN6CZV	6188	WN7ZNL	2684

Two of the Top Ten scores overall came from the Canal Zone. This is Jim, KZ5JM, with the number three score in 1974.

WB6PXP/6 –
This is the L.A. section?

DIVISION LEADERS

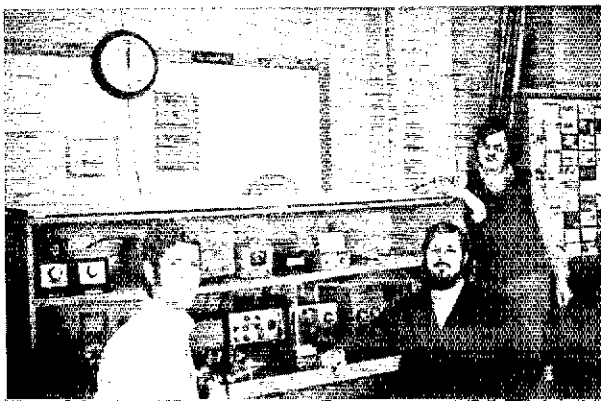
Single Op.	*Division*	*Multi-op*
W3KDD*	Atlantic	WA3UTA*
W9YT*	Central	WA9AXE*
WAØCPX*	Dakota	. . . .
W5WMU*	Delta	WB4ZOQ*
WA8ZDF*	Great Lakes	W4JHE*
		W8UNB*
K2GBC	Hudson	WA2CCF
WØLGW*	Midwest	WBØCEI*
K1JHX*	New England	W1AW*
W7SFA*	Northwestern	K7IDX*
WA6PGB*	Pacific	W6BIP*
W4WSF*	Roanoke	WB4TBO*
WØMS*	Rocky Mt.	WA5FLG*
WB4TVU*	Southeastern	W4AQL*
W6RR*	Southwestern	W6YRA*
WA5LES*	West Gulf	WB5IQG*
VE3BMV*	Canadian	VE3MCH*

* New Record

need for five band WAS. – (K4GRD). Murphy lives in the body of my OM, who had unhooked the receiver from the antenna. I spent all day Saturday listening to what I thought was a dead band. – (WB4NDX). [Sally submitted the neatest hand-written log ever seen in these parts – Ed.] How about serial numbers to help keep track of the competition? – (WB4BUL). Had to work on Saturday and was told I missed the opening to Europe. – (WB8RFB/4). [What opening? – Ed.] We went through a dipole, which fell down, a beam that got sick, a vertical that wouldn't work at ground level and had to be changed in the middle of a pileup, and a xmtr that developed soft tubes in the last hour. After all that we didn't mind the sand storm Saturday afternoon . . . (WA5FLG and second op WB5KPN). Wife had several choice comments regarding scheduling a contest during Christmas shopping time, by next year she will have her license, too. – (K2GKK/5). With an hour of 130-plus and nearly working WAS in one weekend, it would be safe to assume that "TEN IS ALIVE." – (WA5LES). Too many schools have final exams during the week before and after the 10-Meter Contest weekend; I vote for August or September. – (WA5ZBN). This was more than a contest; it was an experience with propagation: first, the silence, punctuated only by a few locals; then the sudden eruption of signals, first by areas, then from all directions. Soon, they were gone, only to be followed by booming short skip signals. Then, silence accentuated by a few whispering signals struggling to be heard. – (W6EYY). This is more fun than a DX contest; let's have two! – (W6CLM). [In a couple of years it will *be* a DX contest – Ed.] Heard more DX stations in the Novice band than Novices. – (WA8NAZ/8). Sounded like the largest concentration of operating in a given time on ten meters in the history of amateur radio. – (WB9MOG). I didn't know Santa Clara Valley was a state. – (WB9JLJ). Suggest making all contest formats simple like this one. – (WØIUB). Condx: BLAH. Worked everything I heard. – (SVØWGG/K2UOP). I wasted 3 minutes trying to get my 589th contact on cw to understand his report: 599589. – (TI2BEV). One Novice asked me when I would go for a General. Told him I got this call in 1932 and didn't want to drop the "N." – (YN1AA). Where were all the Novices? – (WN6CZV, WB4TBO, WB2TNC/3, WB2DQP, others). Hope the "10 meters is dead after dark" myth has finally been put to rest. – (WB5KCM). I think the meteor shower and eclipse helped – please have them again next year. – (WBØGGO). Move the Ten-Meter Contest to 15 for even higher scores. – (WA1LKU, op. at W8LT). Had a short opening to Europe Saturday. – (HH2WF). [Sob – Ed.]

Second Annual 10-Meter Contest

Scores are listed by section within call area and by country within continent. The highest single operator in each section or country receives a certificate. The highest multiple operator station in each section or country and the highest Novice in each section will receive a certificate if there are 3 or more entries listed in that classification or if, in the opinion of the Awards Committee, the entrant displays exceptional effort. Read the listings (from left to right) call, score, QSOs, multiplier, hours of operation.



New SW Division multi-op record is held by the UCLA club, W6YRA. Operators are (l to r) WA6DPQ, WA7DAC and WB6JAN.

VE

Maritime

VE1ANH 8844-134-33-
VE1VI 6724- 81-41-
VX1KE 5022- 85-27-
VO2AG 2848- 72-16-
VE1MX 700- 25-14- 2

Quebec

VE2BYR 11,322-151-37-
VE2XL 7448- 98-38-
VE2WA 6624- 90-36-
VE2DNM 868- 31-14-
VE2AHE 744- 31-12-

Ontario

VE3BMV 64,500-430-75-
VE3EKS 28,784-257-56-
VE3BVD 21,360-266-40-14
VE3HGN 19,710-219-45-
VE3BWX 7992-111-36-
VE3DAC 7560-135-28- 9
VE3UOT (VE3EIQ, opr.) 2850- 75-19- 7
VE3ECP 2668- 55-23-
VE3BOK 1887-111-17-
VE3EXA 1700- 50-17-
VE3EZU 792- 36-11-11
VE3SLC (VE3DXY, opr.) 726- 26-11-
VE3CKU 660- 22-15-
VE3GFW 520- 26-10- 3
VE3MCH (VE3s EFD ESH) 69,948-522-67-23
VE3GXZ (+VE3EJF) 10,430-147-35-

Manitoba

VA4VV 1176- 48-12-

Saskatchewan

VE5RA 4000- 80-25-

Alberta

VE6AXD 12,122-209-29-
VE6BCC 4392-122-18- 8

British Columbia

VE7WJ 56,112-501-56-20
VE7FI 38,400-400-48-
VE7ACZ 15,120-213-35- 6
VE7CB 8118-119-33- 5
VE7AAM 3828- 84-22-
VE7CEX 3432- 75-22-10
VE7BBD 3200- 60-25- 5

U.S.A.

1

Connecticut

K1JHX 84,720-706-60-
W1SG 73,904-593-62-17
WA1STN* 39,500-390-50-10
K1BCG 24,062-227-53-24
WA1KOC 18,480-208-44- 8
W1VV 13,158-153-43- 6
K1CPJ 8580-130-33-15
W1PRT 5136-105-24- 7
WA1QNF 5082-118-21- 6
W1VH 5000- 88-25-14
WA1RZA 4788-113-21-
W1GRE 4784-100-23-
K1WJB 4428- 82-27-
WA1NGI 3276- 63-26- 9
W1FTX 2090- 55-19-
W1TX 1504- 46-16- 3
WA1HOX (K1ZND, opr.)* 1484-105- 7- 3
WA1NKZ 1260- 42-12- 4
WA1NLD 924- 33-14- 2
W1UVB 720- 38- 9- 3
WN1TDN 720- 38- 8-17
WA1FCN 432- 18-12-
WN1SDX/1 216- 18- 6-
WN1UAW 120- 8- 5- 3
WA1SHU 28- 6- 2-
W1AW (K1ZND WA3JSU)* 20,884-224-46- 7

Eastern Massachusetts

WA1HFN 75,072-552-68-28
K1PHJ 34,980-265-66-21
WA1LZA 18,444-174-53-11
W1BV 17,550-195-45-16
W1DAL 13,416-155-43- 6
K1HRV 9940-140-35-
W1AQE 9282-115-39-
W1FJJ 8208-113-36- 4
W1CRL 2356-112-19-
W1GDB 1596- 37-21-
WA1EOT 1224- 51-12- 1
W1DDO 624- 26-12-
WA1EZB 460- 23-10- 3
WN1UAF 210- 14- 7- 4

Maine

K1GAX 4234- 73-29-
W1SD 2430- 45-27-
WA1SDO 1232- 44-14- 5
WA1NMW 1140- 38-15- 4

New Hampshire

WA1DLW 31,360-280-56-27
W1FZ 22,880-207-55-
K1CSJ 13,432-146-46- 5
W1DXB 2650- 53-25- 6
W1BPW 1014- 39-13- 2
VE3FCH/W1 806- 31-13- 9

Rhode Island

K1IKN 38,500-348-55-13
K1EGH 32,034-281-57-11
K1LPA 20,502-200-51-19
K1HMO 18,564-182-51-13

Vermont

K1IIK 18,126-171-53- 9
WB2CKS/1 9744-115-42-

Western Massachusetts

WA1RWU 22,356-239-47-20
W1DSK 2852- 46-31- 5
WN1TAI 1080- 28-15-15
WA1PZM 880- 39-11- 4
W1YK (WN1TUH, opr.) 700- 29-10-13
WN1TCQ 320- 12-10- 7
WA1ECR 24- 6- 2- 1
WA1FKF 4- 2- 1- 1

2

Eastern New York

K2GBC 78,142-439-89-27
K2ARO 22,344-228-49-20
W2AZO 11,648-178-32- 6
WB2FUH 3600- 90-20- 9
WB2SHE 2576- 56-23-
WA2LJM 2244- 48-22-
WA2ZHF 900- 45-10-
WN2QDP 744- 25-12- 4
K2RES 440- 20-11-
W2IP 112- 12- 4-
WN2WZV 30- 4- 3- 2

N.Y.C.-L.I.

WA2VEN 38,160-354-53-29
K2QVS 28,184-268-52-25
W2KDI 27,166-283-47-24
WB2NDR 27,048-286-46-24
WA2DLV 25,608-288-44-17
W2FVS 21,730-259-41-11
WB2GXW 18,360-203-45-20
W2LEJ 15,510-235-33-17
WB2MAN 15,096-202-37-10
WA2YHK 8112-154-26-10
WA2SUH/2 8050-166-23-22
WA2JOR 5408-104-26-22
WB2TLD 5356-103-26-15
WB2JSJ 5104-114-22- 5
W2ILP 4992-104-24-
WA2IDS 3030- 99-15-16
WB2CHY 2432- 75-16- 6
WB2TSB 2040- 51-20- 5
W2MCB 1960- 64-14- 9
WA2OQO 1920- 80-12- 9
WB2HZH 1854-100- 9-
WN2TVU 1608- 54-12-
WB2JRY 1298- 58-11- 5
WB2DQP 1224- 63- 9-
K2HTO 480- 30- 8-
WA2UAJ 360- 35- 5- 7
WB2NXF 294- 21- 7- 4
WB2AMU 280- 20- 7-
WB2EHM 246- 39- 3- 2
WA2PKL 240- 24- 5-
WB2MBM 138- 23- 3- 2

Northern New Jersey

WB2FIT 46,482-379-61-15
W2GXD 38,164-326-58-
WB2LDN 29,274-284-51-25
WA2MFM 19,266-237-39-25
WA2IFS 17,848-194-46-
W2EOK 13,858-163-41-
WB2HYO 12,312-171-36-19
WB2VFT 10,070-131-41- 9
W2KHT 5720-103-26-
WA2SLF 3792- 79-24- 7
K2OQJ (WA2DVE, opr.) 1300- 50-13-
W2MB 480- 30- 8-
WA2EJZ 418- 18-11- 3
WN2ZYR 288- 16- 8-
WN2UAN 264- 42- 3- 8
WA2CCF (+WA2SZW) 90- 15- 3-

Southern New Jersey

K2JOC 32,384-347-46-13
W2FGY 10,922-127-43-17
WA2CZI 5656-101-28-11
WB2JJN 2880- 72-20- 8
WN2WXI/2 1008- 34-12-17
WN2YDQ 920- 37-10-16

Western New York

W2EOS 16,468-179-46-18
WA2BYJ 15,910-215-37- 7
WB2LOF 13,860-165-42-17
WB2TKY 12,690-142-45-
WB2LEI 4930- 85-29- 9
WB2RJR 4410-105-44- 7
W2HLF 1344- 48-14- 8
K2JQ 12- 2- 2- 1
K2IGW (+WA2AOG) 25,092-300-41-12
WA2NPQ (WA2ICU WB2KUN) 1360- 40-17- 3

3

Delaware

K3HBP 3770- 65-29-

Eastern Pennsylvania

K3OIO (WA3WIM, opr.) 52,824-422-62-
WA3RBN 26,214-253-51-17
WA3NW 23,092-249-46-18
W3NM 11,476-144-38-
WN3WUI 10,032-100-33-18
W3ARK 9916-126-37-
WA3GJA 8120-130-29-14
W3ETB 7980-114-35-
WA3VRR 7254-114-31-14
WA3RID 5200-100-26-
WA3LVR 4806- 89-27- 7
WA3RCA (WN3YYZ, opr.) 4692- 99-23-
WA3SZI 4600- 92-25-
W3YXO 2360- 58-20- 4
W3LC 1650- 54-15- 4
W3NID 1368- 36-19- 5
WN3WMF 740- 28-10- 4
WN3UDS 504- 24- 7-
WA3TMP 110- 11- 5- 1
WA3RPG 96- 24- 2-20
W3HMR 72- 12- 3- 3
K3TVT (+WN3YNC) 5040-112-21-18
WN3WSB (+WN3YLP) 90- 8- 5-

Maryland-D.C.

W3KDD 80,454-581-69-20
WA3EPT (WB2MZF, opr.) 48,240-358-67-
K3IVO 39,690-398-49-
WA3TZT 38,556-304-63-24
WA3ELE 28,404-263-54-19
W3HVM 18,468-239-38-12
W3PWO 16,800-175-48-17
W9SZR/3 13,104-181-36-
K3ZAW 12,036-177-34- 4
WA3WAE 8410-145-29-19
W3CDG 7488-102-36-18
WA3WAD 7224-129-28-
W3LVC 4356- 99-22-
WA3THD 4094- 86-23-
WBØFTK/3 3800- 94-19-
K3UMV 3300- 55-30-
K3IXD 3024- 84-18-12
W3GZP 2622- 57-23- 8
W3JPT 2550- 85-15- 6
WA3VSG 2280- 95-12- 7
W3TOS 2240- 66-16- 9
W1FLM/3 1900- 93-10-
W3HII 1872- 52-18
W3DBA 1320- 59-10
WB2TNC/3 1008- 52- 9
K3DI 940- 41-10
WN3UJE 814- 29-11
WN3WIQ 432- 30- 6
WN3UHO 416- 24- 8
W3KS 320- 20- 8
WN3VLA 130- 9- 5
WA3WWR 72- 12- 3
WA3UTA (+K3EST) 175,056-1033-
W3ZH (W3TUX WN3UUO) 512- 32- 8

Western Pennsylvania

K3DE 29,036-233-61
W3GNR 8758-149-29
WA3SZX 5220-143-18
WA3MYI 676- 26-13
WA3SWP 448- 32- 7
WA3TRE 306- 17- 9
W3SN 120- 10- 6
K3CHD 2- 1- 1

4

Alabama

K4MG 20,696-195-52
WB4OXX 14,700-164-42
WB4VKW 9044-133-34
K4ZGB 7888-132-29
W4RAL 7482-115-29
K4JYO 7248-148-24
W4DZZ 2080- 52-20
W4MVM 700- 25-14

Georgia

WB4TVU 62,376-452-69
W4GIW 57,132-414-69
WB4RBJ 44,600-446-50
WB4RUA 30,996-286-54
W4KNW 30,184-303-49
K4EZ 27,878-258-53
K4TWK 13,040-163-40
W4DXI 12,616-166-38
WA4APG 11,232-133-39
K4HQI 9300-150-31
WB4WDI 7080-118-30
W4DQD 2728- 62-22
K4KZP 1800- 50-18
W4WRY 1224- 36-17
K4BAI 160- 10- 8
WN4KXY 84- 6- 6
W4AQL (WA4s HXV UFT) 17,572-191-46

Kentucky

WB4OSS 63,420-451-70
WB4WDV 37,544-358-52
WA4JOS 28,620-265-54
WA4CTC 9176-114-37
W4TBU 7280- 91-40
WN4HTM 2652- 58-17
W4YOK 1892- 43-22
W4KFB 1632- 57-12
WB4FOT 504- 34- 7
W4JHE (+WB4ASW) 57,070-422-65

North Carolina

W4REZ 19,548-181-54
K4YR 11,610-258-45
WA4MDW 9520-140-34
WB4YJP 5208- 84-31
WA4DEQ 3304- 59-28
W4ACY 2478- 59-21
WA4MWP 1224- 35-17

Northern Florida

K4LAN 35,156-374-47
WB4JCV 34,006-347-49
W4OZF (WA4GAJ, opr.) 29,700-270-55
W4WKQ 22,264-253-44
WA4BTC 2508- 57-22
K4WP 2268- 51-21
WA4GAJ (W4OZF, opr.) 540- 27-10

South Carolina

K4GRD 41,202-319-63
K4II 31,930-214-51
WA4ULL 17,700-177-50
WA4EWX 10,872-151-36
K4ICX 10,406-116-43
WA4DLY/4 10,208-116-44

WB4OQL 8664-113-38-
WA4LBO 8092-111-34-19

Southern Florida

WB4OSN 57,900-380-75-
WB4OGW 23,920-180-65-
K4UTE 9592-109-44-
W4BYT 7458-113-33-16
K4HTU 6552- 90-36-20
K4FRG 4588- 74-31-13
W4JIK 4368- 91-24- 6
WA4FYZ 3036- 66-23-15
K4HWW 2420- 55-22-
WB4QFH 2392- 46-26- 2
WN4HWH 1088- 29-16-14
K4BZH 952- 27-17-10
W4ZTB 552- 22-12- 8
W4EEO 450- 15-15-
WN4IKG 180- 12- 6- 5

Tennessee

W4DUP 24,840-230-54-19
WB4ASA 16,334-227-36-18
WB4NDX 10,360-140-37-11
WB4WKE 8896-139-32- 6
W4PHW 8880-110-37-
WN4CTA 7952-117-28- 8
WA4FDR 330- 15-11- 1
W4OGG 230- 23- 5-
K4KTX 48- 6- 4-
WB4ZOQ (+WA4AVB)
3108- 73-21-12

Virginia

W4WSF 94,864-616-77-24
W4IWZ 58,212-439-66-32
K3IGA/4 48,510-385-63-30
WB4BUL 41,310-405-51-
W4KFC 31,136-278-56-
K4JWD 23,544-217-42-
K4EBY 16,340-214-38-
W4IML 13,200-165-40-20
WA4CJT 10,224-142-36- 9
K4EZL 8568-152-28-
K4EJG 7208-106-34-16
WA4BIX 5644- 83-34-14
K4LDR 5544-126-22- 4
K4JM 4420- 81-26- 5
W4MYA 4118- 71-29-
W4DSW 3024- 63-24-
WB4TEL 1632- 51-16-
WA5KNC/4 1296- 36-18-15
K4RDU 1184- 36-16- 4
WB8RFB/4 572- 22-13- 5
WB4AXL 392- 28- 7- 6
W4TMN 340- 17-10- 7
W4YZC 340- 17-10-
WB4WVC 140- 10- 7-
WA4UXQ 120- 12- 5-
W4ZRJ 2- 1- 1-
WB4TBO (+WA4s BFY BKQ)
57,084-423-67-26
W A 4 Y B V (+ W B 4 K J F W A 6 C X K)
41,076-318-63-

5

Arkansas

WB5IPT 39,192-341-56-
WB5ANK 35,476-362-49-21
W5PBZ 26,936-259-52-21
WB5ANK 1376- 43-16- 6
W5QFW 792- 33-12- 3
K5CTW 690- 23-15- 2

Louisiana

W5WMU 98,280-627-78-18
W5UDK 60,268-488-61-
K5RNM 36,512-316-56-27
WB5CMI 19,500-250-39-21
W5WG 18,040-200-44-20
K5LXZ 16,058-217-37- 9
K5LVZ 10,260-135-38-14
W5GHT (WB5GVE, opr.)
10,244-197-26-13
WB5KIA 6050-121-25- 9
W5OB 2640- 57-22-

Mississippi

W5MUG 22,686-199-57-12
W5PWW 20,200-200-50-21
WB5HVY 15,120-212-35-12
W5AO 4592- 56-41-20
WB5FHA 880- 44-10-

New Mexico

K5EFW 58,080-484-60-22
K5VYT 53,028-491-54-11
WB5DKQ 33,934-342-47-15
WB5LZC 29,900-325-46-19
K5MAT 16,008-174-46- 5
K5LRY 7168-112-32- 9
W5QNQ 5340- 89-30- 6
WB5HAE 3264- 68-24-
W5TIL 2496- 52-24-
W5RE 1408- 38-16-
WA5FLG (+WB5KPN)
14,000-175-40-20

Northern Texas

WB5HIH 74,550-525-71-16
W5SZV 44,756-334-67-20
W5LUJ 25,200-247-50-
W5QGZ 24,640-308-40-10
K5VTA 10,872-150-36- 9
K5CSM 10,440-139-36- 8
W5QF 1944- 31-27-
K5WIQ 1080- 30-18- 2
W4GXW/5 30- 5- 3- 1
WB5JBP (+WAØLPK)
45,248-404-56-18

Oklahoma

K2GKK/5 52,608-411-64-22
WA5OFA 39,904-342-58-
W5LW 10,492-112-43-
WN5LMJ 3780- 72-21-33
K5JVF 3480- 60-29-12
K5DEC 702- 27-13- 4
W5KS (WB5LOZ WA7LKI)
9730-139-35- 7

Southern Texas

WA5LES 153,000-900-85-25
W5RTQ 129,600-804-80-20
K5SAK 74,880-576-65-
WB5FVT 28,336-308-46-15
WA5ZBN 24,900-232-50-10
WA1POZ/5 21,522-211-51-24
K5VVV 17,820-197-45-21
WB5DDI 16,456-187-44-10
WA5TPO 14,800-182-40-12
WB5KCM 14,256-162-44-11
WA5WQF 10,560-176-30-
WB5HGS 7326-111-33-
WB5NDQ 4350- 86-25-11
WA5LTQ 4150- 83-25-10
W5RBB 3976- 68-28-
WB5HOD 2688- 64-21-
W5ELN 1232- 44-14- 5
WB5FKC 1008- 32-14-20
W5QCL 1000- 25-20- 6
WA5FOE 858- 33-13- 4
W5EDX 144- 16- 9-
K5LZJ 40- 5- 4- 1
WB5IQG (+WN5LMZ)
68,556-590-58-11

6

East Bay

WA6ZPL 18,800-200-47-16
WA6WVH 13,320-174-37-13
WB6WFZ 10,744-158-34-13
W6IQT 10,260-135-38-
W6RQZ 8448-132-32- 1
WB6YBN 8400-140-30- 7
WB6FZG 5940-110-27- 8
WA6NOC 5712-102-28-12
W6RGG 1512- 61-12- 3

Los Angeles

W6RR 188,760-1205-78-27
K6SVL 166,650-1111-75-22
W6KNC 56,624-505-52-10
K6VNX 56,492-480-58-
WA6YOF 51,516-476-54-20
WB6ZVC 26,488-298-44- 6
WA6WVO/6
23,406-241-47-21
WA6BDB 22,532-256-43-29
W6EJJ 20,492-210-47-11
WA6TLV 18,900-269-35- 4
W6RTT 17,136-202-42- 3
W6LUL 16,946-225-37-10
WA6IYK 14,184-190-36-11
WA6OWM 11,424-167-34- 6
WA6EGJ 8990-145-31-18
WB6RAB 8892-117-38-20
WA6WWU 7920-121-30-
WA6GSV 5600-100-28-
W6FW 3906- 63-31- 8
K6YYQ 3864- 68-28- 8
K5MHG/6 1332- 36-18- 4
WB6DFA 684- 36- 9-
WA6EGB 580- 29-10-
WA6ZKI 504- 21-12-
WA6HXF 192- 31- 3- 7
W6YRA (WA6DPQ WB6JAN W A 7 D A C)
121,824-845-72-20
WB6PXP/6 (+WB6s CEI DAW)
91,648-699-64-
K6ELX (+W6ABP)
55,620-511-54-20
WB6UCC (+WB6UFW)
7656-112-33-10

Orange

WA6FIT 88,968-674-66-16
WA6WZO 75,852-602-63-18
WB6ARK 28,518-283-49-27
W6OOH 13,542-167-37-18
K6CID 10,336-136-38-
WA8WDZ/6 7062-107-33-11
WA6DBX 520- 26-10- 1

Santa Barbara

W6RP 80,484-706-57-
K6QPH 60,480-500-60-14
W6PRP 11,398-138-41- 2
WB6HTK 8024-114-34- 6
WN6CZV 6188-100-26-16

Santa Clara Valley

WA6PGB 119,140-841-70-
W6EYY 71,572-617-58-
WA6GFY (WB6EXW, opr.)
51,200-511-50-
W6OCP 47,594-444-54-19
WA6HCI 28,608-285-48-
WB6KAP 26,950-274-49-12
W6SC 20,982-254-39-
W6CLM 19,624-223-44-16
K6WD 15,244-197-37-
WA6TKT 13,752-190-36-
WA6NDN 11,880-164-36- 9
W6YVK 11,764-173-34-
K6ZX 10,668-124-42-
WN6EMR 3726- 64-23-
WA6HAD 700- 29-10-
WN6BYO 152- 15- 4- 5
WB6WSL (K6ODK WA6ROM WB6s AAJ UOC WN6GSZ)
33,370-352-47-

San Diego

W6RCD 76,066-521-73-
W6AXX 40,424-326-62-15
W6ZMX 32,832-304-54-14
K6QWZ 21,384-198-54-20
W6PQF 17,100-171-50-15
K6SK 11,972-140-41-
K6GKU 7480-108-34- 7
W6WBK 6204- 94-33-13
WA6UFY 5642- 89-31-
WB6RMG 5460-105-26- 5
W6MAR 836- 38-11- 1
WA6UGU 96- 9- 4- 2

San Francisco

WB6ZHD 42,824-402-53-13
W6ZT 20,240-214-44-20
W6JZZ 14,620-170-43- 9
W6KHI 12,996-168-38-
K6ZXS 10,212-138-37-11
K6SRM 6496-109-29-
WB6AGP 5888- 92-32- 6
WA6VPB 5100- 85-30- 5
WB6QBJ 3172- 61-26- 5
W6BIP (+WA6DJI)
86,400-671-64-

San Joaquin Valley

W6PXG 41,644-359-58-12
W6YKS 19,260-214-45- 8
WA6CPP 13,260-170-39- 6
WA6ALA 11,960-130-46-20
W6MJP 9120-112-40-
WA6UXA 7210-103-35-
WA6JDB 3300- 66-25- 5
WN6VFN/6 552- 18-12- 3
K6TG 210- 13- 7-

Sacramento Valley

WA6GHH 36,002-382-47-
K5SHQ/6 35,966-366-49-
WB6POQ 20,768-235-44-
WA6EHM/6
15,824-184-43-12
W6KYA 10,434-134-37-
WB6HNX 6256- 92-34-
WN6DCF 6136- 99-26-12
W6LOI 3588- 77-23- 7
WN6BRV 552- 18-12- 2
W6TEE/6 20- 5- 2-

7

Arizona

K7PXI 72,704-568-64-
W7YS 71,040-551-64-
WA7YRP 37,312-349-53-21
K7AL 29,344-262-56-16
K7JVR 22,932-234-49-
K7BR 15,498-188-41-10
K9DKW/7 9620-130-37-
WA7VTM 6800- 90-34- 7
W7AFG 5208- 83-28- 3
WN7YON 3000- 59-20- 4
WN7ZNL 2684- 49-22-10
K7KFE 2576- 53-23-
W7FCD 1332- 30-18- 1
WN7ZGY 6- 2- 1- 1
WA8NSH/7 (+WA7TCJ)
67,284-534-63-25

Idaho

W7GHT 16,798-226-37-
W7IWU 638- 25-11- 2
W7UQ (W7UFQ WA9RAT W B Ø D H U)
8832-138-32-

Montana

WA7IJN 9200-175-25- 6
W7GKF 8910-164-27-
K7CPC 2288- 51-22-
W7LR 1904- 55-17- 1
WA7TZD 684- 38- 9-

Nevada

K6MQX/7 62,620-505-62-12
WA7KNX 60,928-544-56-16
W7WE 33,762-331-51-
W7ABX 12,180-174-35- 4
W7MWF (+K6HIT)
60,000-500-60-18

Oregon

WA7SJV 68,688-610-54-
WA7PEZ 67,650-601-55-21
WB7ABK 63,012-529-59-13
WA7TDZ/7
51,700-510-50-26
K7IWD 15,334-187-41- 7
WA7USX 11,520-169-30-
W7NFC 7350-105-35-20
W7ZI 5320- 76-35- 6
W7AHZ 5022- 81-31- 9
WN7AAN 3776- 61-21-

Utah

K1PKQ/7 52,192-466-56-10
WA7UZU 29,484-351-42-11

Washington

W7SFA (K7JCA, opr.)
140,432-1028-67-30
K7GWE 117,240-977-60-27
WSQQQ/7 99,978-877-57-
VE7ZZ/W7
93,296-828-56-24
WA7UQG 63,180-584-54-23
WB7UQV 59,972-606-47-
W7NP 40,608-423-48-15
W7BUN 33,884-394-43-10
W7WMY 33,702-411-41-
K7YRQ 23,902-323-37-11
K7MKS 13,568-201-32-
W7GLS 11,914-161-37-
WA7JCB 10,230-155-33- 8
W7MCU 9990-135-37-13
K7MOK 9982-160-31-11
K7GGD 8832-138-32- 5
WA7PVE 7616-136-28-14
W7DFO 5832-107-27-
W7GYF 4320- 90-24- 2
WA7WMB 3652- 83-22- 4
WA7UVS 2664- 65-18-
W7JEG 1586- 61-13- 3
W7WRT 1120- 35-16-
K7UWT 448- 32- 7-

WA7IOF 300- 14-10- 3
WA7IBD (K7UWT, opr.)
192- 16- 6-
WA7ZSJ/7 (K7UWT, opr.)
152- 19- 4-
K7IDX (+K7HTZ W7DZO)
76,002-710-41-
W7DG (WA7s ILC QWG SHN VKE,WB7AGW)
14,350- 192- 36- 17

Wyoming

WA7WLT 13,464-198-34-
W7QPV 3400- 84-20- 7

8

Michigan

K8NWD 49,796-415-59-28
W8CNL 38,988-341-57-13
WB8SIB 35,032-322-54-
WB8FUO 34,870-314-55-20
W8CQN 19,968-205-48-
W8KPL 19,136-193-46-15
W8AP 17,114-199-43-
WB8BGY 15,680-191-40-
WB8QXR 14,080-176-40-13
WB8SJS 13,120-158-41-13
W8JWN 12,388-159-38-
K8NGR 11,890-145-41-
W8VPD 10,184-134-38-18
W8HNI 10,100-202-25-13
K8ZVF 9940-141-35- 8
WB8NVD 7830-144-27-11
W8DSO 7772-134-29- 9
K8NTK 7560-135-28-19
W8SS 4928- 87-28- 6
K8LJO 4402- 63-31- 4
K4FW/8 2592- 79-16-
WB8MFI 2346- 51-23-13
WB8PFA 2304- 72-16- 7
WN8RXD 1824- 42-16-
WA8NAZ/8 936- 37-12- 5
W8TZZ 372- 30- 6- 3
WA8AWU 108- 18- 3- 1
WN8RUQ 10- 3- 1-
K8PAO (+WB8CKW)
26,790-285-47-

Ohio

WA8ZDF 109,340-683-77-28
WB8IAY 31,104-323-48-21
WA8ZAN 29,044-272-53-
W8KEL 26,730-243-55-20
W8JAQ 25,872-227-56-15
K8QGC 25,480-243-52-
K8RMK 24,910-260-47-16
WB8AYC 24,640-305-40-10
W8IMZ 21,412-202-53-16
WB8JBR 13,776-164-42-
W8ICY 11,988-153-37-
W8NPF 8128-113-32-15
W8UMD (WA8TGX, opr.)
7728-138-28- 6
WB8MMF 7728-181-21-14
WN8OOE 6250- 99-25-13
WB8KQJ 6060- 84-30-11
W8MH 5500-120-22- 9
WB8PHI 5208- 87-28-
K8MLO 4424- 73-28- 6
WN8QED 4320- 83-20-20
WA8JXE/8 1230- 38-15-
W8KAJ 1180- 51-10- 6
K8KSN 760- 38-10-
WN8PJR 308- 17- 7-
WB8HLI 208- 13- 8- 4
W8UNH (+WN8RWF)
57,070-439-65-
WB8JBM/8 (WB8s DQP JUI OUE)
42,224-359-58-25
W8LT (WA1LKU WB8s IRZ JXS)
39,786-328-57-21
WB8IZS (+WB2FGA WA8YEE)
36,516-357-51-18
WB8ILW (+WB8s JKY OFR WN8RDO)
10,726-170-31-27

West Virginia

WB8MOI 47,212-404-58-18
W8CUL (WB8IJW, opr.)
36,936-322-57-26
WB8HEY 30,012-242-61-12
WB8TKH 4968-103-23-19
W8JWX 440- 22-10-

9

Illinois

W9LY 96,832-712-68-23
K9HMB 83,804-574-73-19
WB9IUL 52,576-414-62-27
K9EGA 51,584-386-64-
W9OFQ 35,256-334-52-21
WB9HAD 33,936-301-56-10
K9ARZ 33,904-326-52-18
K9BGL 33,060-288-57-16
WA9IXF 22,088249-44-14
W9DL 18,560-221-40-10
WA9LVJ 18,130-241-37-11
W9YYG 17,572-189-46-10
W9VBV 15,580-181-41- 6
WA9LFY 13,884-178-39-
WA9SVZ 8880-120-37- 7
W9OHH 8160- 99-40-
W9KDR 7548-222-34-
W9QWM 6612-112-29-
K9GHR 6150-123-25-
W9RHF 5612-115-23-16
W9UDK 4150- 81-25- 4
W9DJZ 4000-100-20-18
WN9OLF 2772- 62-18-11
W9ATF 2600- 65-20- 7
W9BPJ 2408- 86-14-
W9LBQ 2200- 51-20- 8
W9IPT 1886- 39-23-
WN9NLO 1500- 59-10-
WB9NKO 1456- 80- 8-
WN9NEY 1170- 36-13-16
W9REC 1008- 33-14-
K9FEH 980- 33-14- 6
WB9KLB 900- 45-10-
WB9DNR 864- 33-12-
W9HPG 780- 33-10-
W9IVI 770- 55- 7-
K9KKX 564- 47- 6-10
K9DTB 504- 28- 9-
W9NJZ 396- 33- 6- 5
WN9NHV 368- 34- 4-
W9HOT 256- 14- 8-
W9ALI 200- 18- 5-
W2UJ/9 198- 11- 9-
K9UYK (+K9AKS)
10,430-149-35-12

Indiana

W9LT 69,546-503-67-24
WB9CFP 38,862-381-51-
W9LXV 25,272-243-52-18
W9LKI 22,684-214-53-
WB9MDB 10,360-146-35-
WA9YZD 9216-144-32-10
K9IZH 6440-115-28- 3
WB9LUG 5518- 87-31- 7
WA9FUD 4400-110-20- 6
WA9GFR 4256- 76-28- 7
W9MDW 3404- 74-23-
WB9IWN 2550- 74-17-
WN9NEU 1118- 33-13-
WN9PNP 400- 14-10- 5
W9JGH 384- 16-12-
WA9WMK 48- 6- 4-
WA9AXE (+K9JCR)
31,620-308-51-32
WA9BWY (+WA9MXG)
24,420-221-55- 8
W9YB (WB9s 8WB KP1)
17,384-212-41-15

Wisconsin

W9LT (K9LBQ, opr.)
108,000-716-75-26
WA9HFU 64,820-452-70-19
WB9EUN 23,870-217-55-
WB9MOG 15,640-227 34-14
WB9JLJ 5324-121-22-10
K9DAF 2156- 49-22- 4
WB9IHG 1144- 44-13- 7
WB9NMF 360- 18- 9- 4
WB9JWO 342- 19- 9- 1
WB9KZI 70- 6- 5-
WB9LSS 54- 9- 3- 1
WN9OWJ 36- 5- 3- 1
WN9PTX 4- 1- 1- 2
WN9OEC/9 (+WN9EHK)
1872- 56-13-

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Colorado

WØMS (WBØCMM, opr.)
84,534-579-73-
K4ANW/Ø 69,888-546-64-24
WBØDJY (WBØIWL, opr.)
57,000-472-60-18
WØVNP 39,786-349-57-
WØTPO 32,280-269-60-10
WBØLVR 22,842-243-47-15
WØOOW 16,036-211-38-17
WØETT 15,656-196-38- 7
WØMVR 10,912-176-31-14
WAØYNQ 10,750-125-43-18
KØYDO 10,132-149-34-12
WBØCGJ 1406- 33-19-10
WBØLFN 930- 31-15- 5
WBØLFO 858- 33-13- 5
WØLOI 272- 17- 8-

Iowa

WAØVKF 24,174-237-51- 9
WØMHK 23,400-260-45-10
WA3PWL/Ø
18,540-201-45- 9
WBØEJL 9310-133-35- 4
WØII 8774-103-41- 6
WØEGI 6408- 89-36- 6
WAØHIK 2544- 53-24-
WBØLNF 832- 32-13- 6
WAØVBW 352- 16-11- 6

Kansas

WØIUB 40,932-379-54- 8
WBØGZR 32,108-349-46-17
WAØPBO 18,800-200-47-12
KØIFW 7616-119-32-12
WØDEP 4756- 81-29-
WAØDOZ 2700- 54-25- 6
WØODT 280- 14-10- 2

Minnesota

KØIEA 39,416-375-52-
WBØAZD 16,318-199-41-
WØUY1 14,104-164-43-
WBØIKW 10,406-121-43-33
WAØYLN 9600-147-32-
KØMPH 7392-112-33-
WAØOOS 6848-107-32- 5
WBØFKW 5656-101-28- 8
WBØGKH 4800- 80-30-
WØDGS 3132- 58-27- 5
WBØHSN 2860- 65-22-10
WØKMH 2576- 53-23-
WBØHIJ 2250- 73-15- 6
WAØUCU 1768- 61-14- 3
WØHW 1548- 43-18- 2
WØOWY 792- 44- 9- 7
WBØEMI 104- 26- 4- 1
WBØCQL 84- 14- 3- 1

Missouri

WØLGW 58,098-421-69-
WAØPAO 32,376-284-57-18
WBØGGO 26,100-260-50-18
WBØCCF 13,520-169-40-13
WØOHY 10,988-134-41-19
WBØLTD 5886-100-27- 6
WAØNVZ 4392- 74-29-10
WAØCNS 3680- 80-23- 8
WØCDC 3216- 67-24- 8
WBØIEY 2240- 70-16- 9
WBØJQA 1440- 48-15-
WBØITF 868- 31-14- 6
WØMQL 576- 32- 9- 4
KØBQI 462- 42-11- 9
WBØCFI (+R. Neu)
39,884-338-59-28

Nebraska

WNØMNK 23,920-169-46-11
KØGCJ 19,548-181-54-13
KØETA 11,132-121-46-13
WBØJDS 4234- 73-29- 6
WAØLLO 3996- 74-27-
WAØLRO 2816- 64-22- 6
WØOYW 2562- 51-21-
WNØLYU 2556- 53-18- 3

North Dakota

KØERP/Ø 5880-102-28-
WAØMLE 576- 22-12-
KØRDF/Ø 50- 5- 5-
WNØMKR 20- 4- 2-

South Dakota

WAØCPX 53,720-395-68-
WBØHHM 960- 39-12-
WBØLJM 858- 32-13-

DX

ASIA

Thailand

HS2AIG 420- 42- 5-

Japan

JA6UBK 4676-167-14-
JA2DYI 2486-113-11-
JA1YJF (WA3VWJ, opr.)
256- 32- 4-
JA1OP 248- 31- 4-
JA8GO 160- 16- 5-
JA5BLF 154- 11- 7-
JAØRQQ 128- 16- 4-
JR1INZ/JD1 48- 6- 4-
JA3OEA 32- 8- 2-

EUROPE

Azores

CT2BN 7344-108-34-

England

G3EXB 3312-138-12-
G3MXJ 3136-112-14-
G4BUE/G4 930- 93- 5-
G3CWL 60- 30- 1-
G3RCV (G3s VIX SMD ZA G4DCV)
880-110- 4-

Scotland

GM3OLK 24- 12- 1-

Greece

SVØWGG 60- 6- 5-

NORTH AMERICA

Haiti

HH2WI 75,600-691-54-

Dominican Republic

HI8LC 1794- 39-23-

Honduras

HR1AT 10,064-148-34-

Guantanamo Bay

KG4NY 8712-132-33-

Puerto Rico

KP4AXM (K1OTI, opr.)
11,022-167-33-
KP4DSO 10,008-138-36-

Canal Zone

KZ5JM 182,860-1115-8
KZ5WA 150,516-1011-7

Greenland

OX3AB 2940- 70-21-

Costa Rica

TI2BEV 228,468-1411-7

Belize

VP1EF 99,876-609-82-

St. Lucia

VP2LAW 8680-140-31-

Mexico

XG1J 24,966-219-59-

Nicaragua

YN1AA 32,340-303-49-

Cayman Islands

ZF1AG 29,808-324-46-

OCEANIA

Hawaii

KH6IJ 36,570-345-53-

(Continued on page 75)

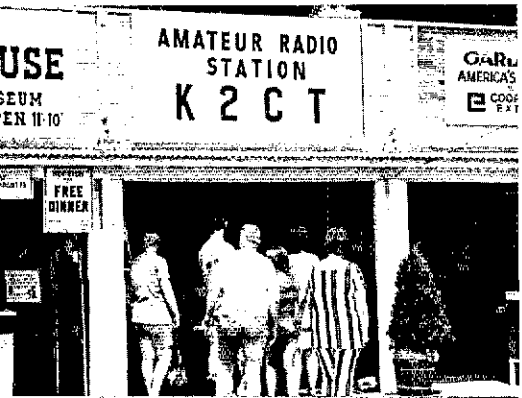
Silent Keys

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

WA1NZW, George A. Anderson, E. Sandwich, MA
W1PRC, William E. Gill, Marlboro, MA
W2BA, Fullerton D. Webster, Mountain Lakes, NJ
K2JG, John O. Archibald, E. Aurora, NY
W2RGJ, Albert E. Witt, Jr., Tonawanda, NY
W2WJ, William Hollis Hoffman, Cherry Hill, NJ
W2YIA, John W. Johnson, Dumont, NJ
W3HFD, Frank F.M. Fenimore, Doylestown PA
W3NRE, Silvester J. Kanzius, Washington, PA
W3OCW, Maurice DeClercq, Washington, DC
W3ROZ, Roger L. Howell, Halifax, PA
Ex-KN3YGQ, Joseph Feldman, Baltimore, MD
W3ZRR, Raymond S. Whitehead, Philadelphia, PA
W4AFV, Harold K. Berry, Tampa, FL
W4AMC, J. Gilbert Smith, Robersonville, NC
W4CF, Frederick H. Schnell, Bradenton, FL
W4CPJ, Maynard A. Sayles, Knoxville, TN
W4DFG, Horace E. Gregory, Zephyr Hills, FL
WA4FBV, Don R. Cornell, Lake Panasoffkee, FL
W4FPC, Morgan T. McSheehy, St. Petersburg, FL
W4FZY, Anthony "Tim" Steckel, New Port Richey, FL
W4HUL, Elbert H. Petree, Jr., Winston-Salem, NC
W4HYI, James B. McKinstry, Jr., Montgomery, AL
K4IVX, Victor F. Stokes, New Port Richey, FL
W4KF, Chester H. Young, Sheffield, AL
W4KUP, Raymond E. Nordin, Athens, AL
W4MLD, Allen R. Thompson, Norfolk, VA
K4MRH, Raymond E. McCurry, Huntsville, AL
Ex-4OB, Rev. Guy L. Carter, Jacksonville, FL
K4OIH, John L. Barnes, Miami, FL
W4RSK, Richard W. Speer, Anderson, SC
W4RTQ, Robert L. Segers, Albertville, AL
W4RXE, Louis W. Buckalew, Jr., Orlando, FL
W4TV, Frank O. Button, Stuart, FL
WB4TXL, Jesse A. Warren, Indian Harbour Beach, FL
W4UJR, H.R. Hunnicutt, Kings Mountain, NC
K4UZT, Howard A. Lovingood, Buford, GA
W4VV, Luke W. Seignious, Sr., Lake Placid, FL
WA4WTC, Roland B. "Pappy" Wallace, Jacksonville, FL
W5AO, Robert E. Shank, Jackson, MS
W5BHB, B. L. Cornwell, Jr., Sourlake, TX
W5BMM, Dr. George S. Acton, Plain Dealing, LA
Ex-W5CQQ, Raimunt J. Machu, Waco, TX
W5HXC, Ronald S. Frampton, Blackwell, OK
K5IIA, Clifford A. Moore, Dallas, TX
W5NWA, Dr. Thomas M. Nash, Dallas, TX
W5QFP, Payson M. Fillotson, Pearsall, TX
W5TLG, Freeman O. Matatall, Dallas, TX
KH6CU, Charles F. Felstead, Honolulu, HI
W6FA, Donald B. Champion, Corona, CA
W6FDH, Charles G. Ross, Oakland, CA
W6JBX, Harry A. Potter, Pasadena, CA
W6JLS, Clifford C. Buttschardt, Sr., Berkeley, CA
WA6LMA, John A. Naughton, Jr., Encino, CA
WB6NGN, Russell E. Mefford, Red Bluff, CA
WA6WMY, Noriss A. "Pop" Trafton, Salinas, CA
K7RPH, Letha M. Buchanan, Tucson, AZ
Ex-WN7RYH, Ralph N. Kirkham, Salt Lake City, UT
W8CEQ, William A. Manfrass, Kent, OH
W8EUJ, Charles E. Quick, Mill Creek, WV
W8ICQ, Raymond T. Lange, Piqua, OH
W8LMU, Forrest O. Miller, Dayton, OH
W8TM, Ervin P. Stephenson, Vienna, WV
WA8TSL, T. Earl Cormany, Chillicothe, OH
WA8WHE, Harry H. Wilson, Toledo, OH
W9DOQ, Fred W. Kinsey, McLean, IL
W9EKU/KH6EVX, Eugene A. Wille, Milwaukee, WI
W9GIK, Robert L. Hendren, Indianapolis, IN
WA9HJE, Marion Wheeler, Albany, WI
W9KRO, Donald B. Smith, Ashland, WI
W9KXT, Billy J. Albany, Wentzville, MO
WN9NEP, Henry P. Fisher, Chesterton, IN
W9PDS, Arthur R. O'Neil, S. Bend, IN
K9TNU, Clyde S. Van Gorden, Eau Claire, WI
K9UUB, Leo Hoy, Sr., Hobart, IN
Ex-9XI C.M. Jansky, Jr., Washington, DC
KØCNI, Roy F. Welter, Olivia, MN
WBØCWD, Dr. Richard W. Carlin, Columbus, NE
WØFOE, Myron A. Holley, Caledonia, MO
KØHNE, Charles M. Anderson, Mexico, MO
WØIF, John A. Wanek, Giltner, NE
WØKNR, Willis A. Walker, Duluth, MN
WØRAC, Vaughn K. Rising, Algona, IA
WAØRKU, Floyd K. Himmel, Lincoln, NE
WØSBV, Frank J. Bukacek, Cedar Rapids, IA
WØSU, Charles H. Siegfried, Wichita, KS
WØWKO, Caryl C. Force, Minneapolis, MN
VE1AWF, Daniel Joseph Deveant, Glace Bay, NS Canada
VE3LB, F. I. Collins, Chatham, ON Canada
DL1FF, Armin Drasdo, Budelsdorf, Germany
KP4ZK, Richard Schell, Jr., Ponce, PR
OZ5B, P. Bilberg Jensen, Soborg, Denmark
VP9K, Jim Kite, Warwick, Bermuda

Strays

Amateur teletype was one of the main attractions at this booth, manned by the Albany (NY) ARA at the Altamont Fair in August. The crowds were sizable, even though the station had to compete with the "Largest Alligator in Captivity" (also at the fair). We take this opportunity to remind you that ARRL has a number of "hand-outs" available for clubs to offer at such amateur radio demonstrations.



STOLEN EQUIPMENT

Icom IC-230 2 meter UHF-FM rig. No. 2403224, WA6BEJ inscribed on circuit boards. Ted Benson, WA6BEJ, 1440 Deerhill Court, La Jolla, CA 92037.

Regency HR 2, No. 03-1752. (WA4CAH on mic.) Dymo tape covering channels 1-6 and A, B, and C. R.J. Pinkerton, W4VMQ, 2500 O'Neal Circle, Birmingham, AL 35226.

Two Motorola HT220 handie talkies, Nos. FJ-4742 and FJ-4752, with crystals for 151.865 MHz. Stolen from Northwestern University (Medical campus), Evanston, IL 60201.

Swan FM 2XA, No. 12242, 14 crystals. Duane E. Gardner, WA3TPN, 467 Lois Drive, Pittsburgh PA 15236.

Icom IC-22, No. 8768, with microphone (less mount and cables). C.L. Nichols, WB5BKL, 1136 Cinderella, Pampa TX or Amarillo Detective Bureau.

AMATEUR RADIO PUBLIC SERVICE

NTS RACES AREC

In the Public Interest, Convenience, Necessity HRH

CONDUCTED BY BILL MANN,* WA1FCM

Traffic counting changes effective July 1. Modified traffic counting procedures and redefined categories were announced in this column in the February '75 issue (pages 64-65). June will be the last month we count traffic as "originated – received – relayed – delivered" as presently defined.

Revised definitions of the traffic counting categories are as follows:

Originated – Any message originated by someone other than yourself, filed with your station for initial transmission.

Received – Any message received at your station by radio, whether received for delivery or for relay to another station.

Sent – Any message transmitted from your station by radio to another station, whether such a message was initially transmitted from your station or was received from another station.

Delivered – Any message delivered by you to the addressee, provided that the message was received at your station by radio and that the addressee is someone other than yourself.

What's new about that? Well, originations are being made a parallel concept to deliveries. That is, both originations and deliveries will be off-the-air functions and deal only with third party traffic, messages handled on behalf of someone other than the station operator. The "relay" category is changed to "sent" and will include all messages originated by the station operator (traffic formerly included as originated) as well as messages being relayed.

Remember, we count message handlings, rather than actual messages. For example, a message received and later relayed by your station counts as one message *received* and one message *sent*. A message originated by someone other than yourself and initially sent from your station counts as one *originated* and one *sent*. A message that you receive and deliver (but not "delivery" by radio!) to a third party counts as one *received* and one *delivered*. A third party can be another ham, as long as he is not the operator of the station counting the traffic.

This discussion deals only with an individual's or multioperator station's traffic count as reported to the Section Communications Manager each month. (It will be a while before the monthly Station Activity Report cards are revised to reflect the new category. Use the "Relayed" line in the traffic box on the report card to indicate traffic "Sent" for the month.) This has no effect on counting net traffic as would be reported by the NCS to the net manager.

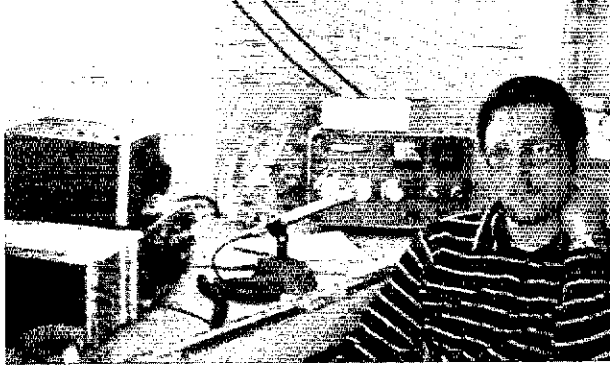
Only written traffic (no "informals" or phone patches) handled in standard ARRL form (including complete preamble, etc) on amateur frequencies should be reported to the SCM. Properly sent book traffic still counts one for every three messages in the book.

Messages refiled from MARS to amateur will be counted as messages "sent" by the refiling amateur station. Although the refiling station uses his own message number and call in the preamble of the refiled message, he does not take additional message credit for "originated" since he was not the person who made the off-the-air contact with the third party originating the message.

Under the new counting procedures, no one *loses* "points" for originating amateur-to-amateur traffic. The difference is that he *gains* "points" for sending traffic on behalf of third parties. Let's "get movin'" and let more of the public know of the public service ventures of amateur radio.

* Assistant Communications Manager, ARRL.

Shown at their operating position are (l. to r.) WB2EIR, WA2RXQ, and WB2EIK. They provided autopatch facilities for NYPD after a fire cut normal phone service. Story in Public Service Diary.



Hawaii's Section Emergency Coordinator is KH6IKB. He's pictured here operating on a DXpedition at KA2CO (Iwo Jima).

W1AW carries scoop on emergency communications. One of the recent actions of the Emergency Communications Advisory Committee was to suggest guidelines for providing pertinent data on major emergencies via W1AW bulletins. The study was in response to the question of whether or not to establish a group of frequencies to be used in time of national or international emergencies. In Minute 29 of the 1975 Annual Meeting of the Board of Directors, formal action was taken on the committee recommendations.

During widespread disaster situations, W1AW will transmit emergency bulletins which will include: (a) a listing of names and frequencies of nets known to be operating in the disaster area, for the purpose of requesting amateurs to avoid using such frequencies for casual operating; (b) general guidance to amateurs regarding participation in the emergency action; and (c) information on the advisability of accepting health-and-welfare traffic going into the disaster area and, if such inquiry traffic can be facilitated, suggested routing of the traffic via standard National Traffic System channels or via stations designated to stand by on W1AW frequencies following emergency bulletins to accept traffic. Content of the W1AW emergency bulletins will be based upon information supplied by appropriate Section Emergency Coordinators. Thus, it should be the duty of each ARRL SEC to ascertain the details of any *major* disaster affecting his section and to advise ARRL Hq. by telephone whenever national coordination or dissemination of information via W1AW seems indicated or desirable.

An important adjunct is the desirability of having Official Bulletins Stations make a special effort to copy and retransmit all W1AW emergency bulletins on frequencies not in use for emergency purposes. Other amateurs should also assist in spreading the word.

So . . . during a widespread emergency, tune to W1AW frequencies (the frequencies used for simultaneous transmission of Official Bulletins – listed each month in *QST*). Phone bulletins are transmitted on the hour, RTTY at 15 minutes past the hour and cw on the half hour. As leadership officials provide Hq. with the latest data on emergency operations, current information will be carried in W1AW bulletins.

Field Day Traffic. Yep, Field Day is upon us again, June 28-29. FD groups get bonus points for originating a message in standard ARRL form to their SCM or SEC (and also for up to 10 messages received and relayed during the FD period). Some groups just peddle their message to any station who will take it. A much more meaningful and effective way to send the traffic is to report into the appropriate section net (phone, cw, or whatever) and list the message. If the FD station was operating as a real emergency station, its success would be hindered if traffic was handled haphazardly, without relying on organized traffic nets. Frequencies and times of nets can be determined by consulting the Net Directory.

If you're a net control during the Field Day period, be on the watch for FD stations reporting in with traffic. Dispatch their traffic promptly. If the SCM or SEC isn't immediately available to receive traffic, have the message(s) sent to a station who will hold the traffic for the SCM or SEC. Let's accomodate the traffic efficiently so FD stations won't be tempted to peddle their traffic.

Ah, what's the use! You take the time to assist new amateurs in traffic handling techniques and emergency preparedness. They're all fired up for a while and become rather proficient. Then they take up DXing, contesting, repeater operation, or some other activity. Is it worth the effort?

Sure it is. In an emergency situation, a person who has been exposed to, and is familiar with, public service communications will be in a better position to assist than one who has no prior experience. Also, these previously-experienced ops are more likely to be the ones who drop by occasionally when special assistance is needed or just to keep themselves "up" on procedures. They're the ones who "come out of the woodwork" for the Simulated Emergency Test. And, of course, a certain percentage will stick with public service work as a main part of their amateur operating. It's up to the seasoned hams to guide all prospects toward public service proficiency. – *WA1FCM*

On Emergency Communications

A recent copy of *The Virginia Ham* included an emergency-preparedness quiz for vhf operators. The quiz was part of an editorial in the Lynchburg ARC *Bulletin* written by WB4WVC. Here's an adapted version of the quiz:

1) Do you have a portable rig on 146.52 MHz or other appropriate simplex frequency?
2) Do you have a charged, spare battery for it?
3) Is the portable always charged and set to go?
4) Do you have a working flashlight?
5) Do you know who to call to coordinate any amateur participation in an emergency?

6) Do you have a mobile rig on 146.34/146.94 or other appropriate repeater frequencies?

7) Do you have all-weather clothing available for rain, snow, heat, etc.?

8) Is your AREC card current?

Score one point for each "yes" and nothing if you can't answer "yes." If your score is eight, then you're in fine shape. If it's less, then you should think about making it eight. Let's see if next time the need arises for communications, that everyone can check in with ready-to-go equipment. The above is intended for vhf oriented hams, but the same is also true of hf operations. – *WB4WVC*

■ SEC reports received in April totaled 40 covering 14,386 AREC members. At this time last year 40 reports were sent showing a total AREC membership of 12,855. Those sections reporting were: Ala, Alask, Ariz, Ark, Colo, Conn, Del, ENY, Hawaii, Ill, Ind, Kans, Ky, Mar, Mich, Miss, Mo, NLI, NC, NFla, NNJ, NTex, Ohio, Okla, Org, Oreg, SV, SDgo, SCV, Sask, SFla, SNJ, STex, Utah, Va, Wash, WVa, WMass, WNY, WPa.

Traffic Talk

The mail brings in an occasional complaint on apparent non-delivery of some messages these days. What can be more discouraging than to explain amateur radio to someone, offer to handle a greeting message for them and later find out it was never received at the other end . . . and no one ever advised you that it wasn't delivered? Sure, we tell them that we can't guarantee the message will be delivered. But can't we expect that our fellow amateurs will do their best or at least let us know why delivery cannot be effected?

Once a person accepts a message, he accepts a responsibility to relay or deliver that message expeditiously. If the addressee cannot be located with the information given in the address, send a service message to the originator requesting more information. If the addressee doesn't answer the phone after several tries, mail it. If you're the nearest amateur, but not within toll-free calling, take the message and mail it. Don't prop your feet up on the operating bench and try to judge whether or not you feel the message is "worth" 10 cents postage; you don't know the facts, it may be very meaningful to the recipient.

In short, relay or deliver messages promptly. Mail when necessary. Advise the originator of any delays, need for additional information or reasons for non-delivery. To do anything less is to let down your fellow amateurs who are anticipating your cooperation.

■ 'Tis the season for fair stations, exhibit stations and summer-camp stations. These are great ways to expose non-hams to the exciting world of the Amateur Radio Service and traffic handling. There'll be lots of third party traffic. But a request to special stations who handle many originations: Please make every effort possible to be actively on the air during and after a bunch of originations. Recipients may send return messages – especially to summer camps. If the camp station is not on, it necessitates deliveries by stations outside the camp who often have trouble reaching people at the camp by telephone, or even by mail.

■ *National Traffic System.* It's been some time since the terms in the NTS tabulations below have been explained, so here goes.

Only net abbreviations are given. In each case, the "D" refers to the Daytime NTS segment. EAN, CAN and PAN refer to the Eastern, Central and Pacific Area Nets. Region nets are listed next: First Region Net – 1RN, Second Region Net – 2RN, . . . Eastern Canada Net – ECN, Twelfth Region Net – TWN and Daytime Twelfth Region Net – DTWN. Then comes the transcontinental level with the Continental Traffic Net and Eastern, Central and Pacific Areas of the Transcontinental Corps. Statistics for section and local nets are grouped together, with the net abbreviations and states they're in footnoted. Under "Sessions," the number of sessions reported is listed (with number of successful TCC functions reported being listed for TCC). The "Traffic" column indicates the actual amount of traffic handled while in directed session (with amount of TCC traffic handled outside of nets for TCC listing). "Avg." is simply the average traffic handled per session, i.e. "Traffic" divided by "Sessions." "Rate" is the number of messages handled per minute, i.e. "Traffic" divided by total number of minutes in directed session. The "%Rep." figure indicates the percentage of the time section nets were represented in region nets or region nets in area nets or CTN. If all sections are represented in each session of a region net all month, then "% Rep." is 100 for that region net. The more times reps fail to show, the lower the "% Rep." figure. "% Rep." is based upon the number of sessions that should have been held.

The total number of sessions and traffic for all NTS nets reported for the month is indicated by "Summary." "Record" is the highest totals in the past for the month being reported. If "Summary" numbers exceed "record" numbers, we've had a record-breaking month!

In the tabulations under "Transcontinental Corps," "Function" indicates the number of TCC functions there should have been. The percentage of these that were successful (i.e. all traffic the TCC station received was relayed on schedule to the counterpart TCC station or appropriate nets) is shown under "% Successful." Total TCC traffic handled for each area is listed under "Traffic," while only traffic handled out of nets is shown in the last column.

Totals for all three areas appear as "Summary." Stations who performed TCC functions during the month are listed in the TCC roster.

KV4EY receives the Defense Department commendation for his outstanding service to the Office of Civil Defense during last October's floods. The award is the second highest civilian award. Pictured (l. to r.): Defense Dir. Penn; KV4EY; Dr. Zenowitz, U.S. Regional Director for Civil Preparedness; and 1st Lt. Leerdam.

Pat Carlson exchanges Christmas greetings with her parents in Peru courtesy of WA7BBJ (right). Details in the Public Service Diary.

While we're at it, we'll add that nets listed under "Independent Nets" are those nets reported which are not affiliated with NTS and whose primary coverage area includes at least several states. (Net name should not indicate coverage of only one or two states.)

■ *March Reports.* A Daytime Third Region Net certificate was issued to WA2PLP with special commendation to WA3s ATQ PZO UYB VDQ WRN and ZAS. Liaison spots to and from DEAN are nearly filled, WB2FWW/3, D3RN manager reports. W5HWY, manager of DRN5 passed away March 31 and his former duties are now being assumed by W5KLV. He will be missed in traffic circles. W6LRU, manager of RN6, had the misfortune of having his gear, home, and net records destroyed in a house fire. WA6DMB is relaying all net information to him until his house is rebuilt. W3NRE, the manager of 3RN in the mid-fifties, recently became a Silent Key. 3RN will not be the same without him to those who remember his contributions to NTS.

Net	*Sessions*	*Traffic*	*Avg.*	*Rate*	*%Rep.*
EAN	31	2082	67.2	1.427	98.9
DEAN	31	402	12.9	.402	87.6
CAN	31	1231	39.7	1.004	99.5
PAN	31	1267	40.9	1.052	97.3
1RN	61	798	13.0	.67	85.5
D1RN	30	180	6.0	.341	77.0
2RN	59	634	10.8	.926	94.5
3RN	62	605	9.8	.458	94.8
D3RN	31	179	5.8	.346	99.2
4RN	57	635	11.1	.387	87.1
RN5	57	613	10.8	.359	80.8
DRN5	27	147	5.4	.195	56.0
RN6	62	793	12.79	.479	100.0
DRN6	62	593	9.7	.236	30.0
RN7	61	375	6.2	.424	79.0
DRN7	53	50	0.9	.109	58.0
8RN	54	428	7.9	.360	81.2
D8RN	26	124	4.8	.492	79.0
9RN	59	540	9.2	.351	89.8
9RND	31	89	2.9	.221	91.1
DTRN	35	64	1.8	.162	28.9
TWN	61	360	5.9	.264	71.0
DTWN	21	63	3.0	.129	49.0
ECN	62	318	5.1	.429	86.5
CTN	31	517	16.5	.299	93.3
TCC Eastern	115[1]	710			
TCC Central	83[1]	599			
TCC Pacific	108[1]	848			
Sections[2]	4439	18845	4.2		
Summary	*5565*	*34089*	*6.1*		
Record	*5346*	*33737*	*18.1*		

[1] TCC functions not counted as net sessions.

[2] Section and local nets reporting (121): APSN (AB), MTN (MB), APN (Mar.) GBN ODN OPN OQN WOEN (ON), W-QV/UHF (PQ), AENB AEND AENR (AL), ASN (AK), OZK (AR), ATEN HARC (AZ), NCN SCN (CA), SSN (CO), CN CPN CSN NVHFTN (CT), DEPN DTN (DE), FAST FMTN FPTN GN NFPN QFN QFTN VEN (FL), TLCN (IA), QMN (ID), ILN (IL), INN ITN QIN (IN), KPN KSBN KWN QKS QKS-SS (KS), KNTN KSN KTN KYN (KY), LAN LSN LTN (LA), WMN WMPN (MA), MDCPN, MDCTN MDD MEPN (MD), MACS MNN QMN (MI), MSN MSPN PAW(MN), ACE JC2AN MON MoSSB MSN SCEN WEN (MO), MSN MSBN MTN (MS), MTN (MT), NCSSBN THEN VHFTN (NC), NMN TCAREC (NE), NHVTN (NH), NJN NJPN NJSN (NJ), NLI NLIPN NYS (NY), BN OSSBN O6MN (OH), OFON OPEN OTWN STN (OK), BSN OSN PAAREC (OR), FPAEP&TN PTTN WPA (PA). CN (SC), TN TNN (TN), TEX TEX-SS TTN (TX), BUN UCN (UT), VNTN VSN VSBN (VA), NSN WSN (WA), BEN BWN WIN WNN WSBN WSSN WRN (WI), WEN WVN (WV).

Transcontinental Corps

TCC Eastern Dir. W2FR writes that although traffic was up from March, there were twelve more functions, so the volume of traffic remained stable. TCC Pacific Dir. K5MAT is still hoping for the impossible dream, 100% success for a month.

Area	*Function*	*%Successful*	*Traffic*	*Out-of-Net Traffic*
Eastern	124	92.7	2038	710
Central	93	98.2	1264	599
Pacific	124	87.1	1766	848
Summary	*341*	*89.7*	*5068*	*2157*

The TCC roster (March): Eastern Area (W2FR, Dir.) – W1s NJM, QYY, K1GMW, WA1s MSK POJ, W2s FR GKZ KAT/3, WA2s PJL UWA WB2s FLF PYM FKK W3EMI. K3s CB DZB MVO, W4UQ, K4KNP, WB4SGV WA8HGH WB8ITT VE3s AWE SB. Central Area (KØAEM, Dir.) – W4OGG, WB4FXN, W5s GHP MI QU UGE UJJ, WA5IQU, W9s CXY DND NXG WA9EED, WB9KPX, WØs HI INH LCX QMY XHN, WAØTNM. Pacific Area (K5MAT, Dir.) – W5RE, K5MAT, WB5KSS, W6s BGF BVB EOT MLF QAE RSY UE VZT, K6HW, WA6DEI WB6OYN, W7s BQ GHT KZ LCF, K7s IWD NYL NHV QFG WØs LQ LRN, KØDRL, WBØHCK.

Independent Net Reports (March)

Net	*Sessions*	*Traffic*	*Check-ins*
Early Eighty Free	31	231	315
Central Gulf Coast Hurricane	31	228	1790
Hit & Bounce	31	1036	337
IMRA	26	468	1085
Hit & Bounce Slow	18	84	199
Mike Farad	20	25	106
Ohio Valley Teenage	31	75	368
Mission Trail	31	254	1400
North American Traffic	31	303	352
Northeast Traffic	21	159	201
NYSPT&EN	90	551	3840
7290 Traffic	42	542	1670
75 Meter ISSB	31	679	1420
20 Meter ISSB	21	1010	253

Public Service Diary

■ Holly Springs, MS – May 12. While enroute from Memphis, TN, to Oxford, MS, WB4TNY witnessed a one-car accident in which the woman driver was seriously injured. He broke the Co. Hunters Net to try to obtain assistance. His call was heard by WA3TUC and WB5GRI. The latter called the MS highway patrol and the woman was taken to the hospital. – (WB4TNY)

■ River Grove, IL – Jan. 29. WB9FLZ heard a distress call from a Liberian freighter that had apparently run aground. He relayed the details to a New Orleans salvage company. A salvage team picked up the ship's crew. – (WB9FZT)

■ Maumee, OH – Jan. 29. A chemical plant fire caused WA8HGH to activate an emergency net on the local repeater. Constant liaison was maintained between the Red Cross and the Mayor's Office. Shelters were set up for those having to leave their homes and WA8EWW of the U.S. Weather Bureau kept Red Cross officials informed as to changes in the wind direction in the event other portions of the city had to be evacuated. – (WA8HGH, EC Ottawa, Fulton, Wood & Lucas Cos.)

■ New York, NY – Feb. 27. After a five-alarm fire all but gutted a 12-story switching center for the NY Telephone Co., several amateurs utilized autopatch facilities to provide phone service for three police precincts whose service had been disrupted. – (K2AHP)

■ Salton Sea Area, CA – Mar. 1-2. While amateurs were supplying information about disabled vehicles during the Four-Wheel Drive Safari Race, one vehicle overturned injuring the driver. K6OWU, sporting a hand-held, 2 meter fm rig, called WB6TQF at the starting area who then summoned an ambulance. – (W6GBF, SCM SDgo)

■ Lockeport, NE – Mar. 3. When a fire engulfed several business establishments and communications was disrupted throughout much of the town, seven amateurs provided the necessary links to the affected areas. – (VE1SH, SEC Maritime)

Public Service Honor Roll March 1975

This listing is available to amateurs whose public service performance during the month indicated qualifies for 40 or more total points in the following nine categories (as reported to their SCM). Please note maximum points for each category: (1) Checking into cw nets, 1 point each, max. 10; (2) Checking into phone/RTTY nets, 1 point each, max. 10; (3) NCS cw nets, 3 points each, max. 12; (4) NCS phone/RTTY nets, 3 points each, max. 12; (5) Performing assigned liaison, 3 points each, max. 12; (6) Phone patches, 1 point each, max. 20; (7) Making BPL, 3 points regardless of traffic total; (8) Handling emergency traffic directly with a disaster area, 1 point each message; (9) Serving as net manager for entire month, 5 points.

W4OGG	76	WA9OVT	51	W2MEC	44
WB5AMN	70	WB2UTT	50	WA2PCT	44
WA1MHJ	66	WAØLMD	50	WB2OCT	44
WA1QMF	64	K1PNB	49	K3KAJ	44
WA2DSA	64	WA2DIW	49	WB4LDT	44
WA1TGI	63	W5GSN	49	WA4HUB	44
WBØHOX	63	W7GHT	49	K4VND	44
WB4FCB	62	WB8KKT	49	WB5DXB	44
WA1MSK	61	W8QCU	49	WB5UIA	44
WA1QJU	61	K9ZTV	49	WB6AKR	44
WA1SHO	61	KØBIX	49	KØCVD	44
WB2PYM	61	KØMRI	49	WAØKRR	44
WA3DUM	61	WØQII	49	WØOE	44
W3GHP	61	WØQYH	49	VE3DVE	44
WA5IQU	61	VE3GEN	49	VE3GJG	44
WA5ZZA	61	W5UGT	48	VE3NB	44
WA8HGH	61	WA9KRT	48	VE4PG	44
WA8ZNC	61	WA4LBI	47	WA1MDE	43
WBØCYR	61	WB4GHU	47	WA1PAZ	43
WBØHBM	61	WB2GAV	47	W2MTA	43
WA6DMB	58	WA3VBM	47	WA3LOP	43
VE3URG	58	K6GMI	47	W5UJI	43
WB2IRX	56	WB6PVH	47	WB4LKT	42
WB2RKK	56	WBØHHC	47	WA5VBM	42
WB2UEG	56	VE3ASZ	47	K7QHJ	42
VE3GQZ	56	K3CR*	46	W5LIJ	41
WA6IVA	55	WA1WRN	46	WB5UDS	41
WB8PAV	55	WB4DXN	46	WØNO	41
W5RIB	54	W4YSC	46	W2IR	40
WB5LBR	53	WB8VR	44	WB2EZN	40
WB8IGW	53	W1UBI	44	WA2PIL	40
W4LON	52	K1PAD	44	WB9KPX	40
WB5BFW	52	WA1OQK	44	WB9MDS	40
W8IBX	52	WA2BSU	44	W9MEG	40
WB5JZQ	51	WB2JJD	44	VE3GOL	40

* Denotes Multioperator station.

■ Columbia, MD – Mar. 7. While mobiling in a remote area, W3DKS's car battery went dead. He put out a call over the WR3ADZ repeater. WA3SWS answered and organized a search party. WA3VZW was a fixed-station liaison to land lines and supplied area maps. After two hours, W3DKS was located and his car started. – (WA3SWS, EC Howard Co.)

■ Miami, FL – Mar. 8. A surgeon in Lima, Peru, needed a brain-to-heart plastic shunt in the hopes of saving the life of a woman patient. OA4SS called several U.S. amateurs on 15 meters. When no one could locate such a device, WA5VBM broke in and said WB4EZZ in Miami could get it. A call to Miami brought the response of K4JTT who promptly called WB4EZZ at his pharmacy. The shunt was located and sent to the airport for special delivery to Lima. – (W4RFA)

■ Vancouver, BC – Mar. 9. Thirteen members of the Penticton ARC and an Outward Bound group, aided in the search for a skier reported lost. The skier was found after 27 hours of being exposed to the harsh elements. – (VE7FB, SCM BC)

■ Imperial Valley, CA – Mar. 9. The San Diego Mountain Rescue Team was providing communications during a motorcycle race when a 16 year-old boy broke his wrist. WA6ODQ utilized WR6AJL to inform the boy's mother about the accident. The boy was transported to a hospital. WA6UOU informed the mother later that her son would be taken home. – (W6GBF, SCM SDgo)

■ Tuscaloosa, AL – Mar. 12-19. When the Tuscaloosa area was ravaged by tornadoes and floods during the entire week, the Western AL Emergency Net was activated with several amateurs providing communications into and around the Tuscaloosa area. – (WB4SVH, EC Tuscaloosa Co.)

■ Mansfield, OH – Mar. 16. When a young glider pilot crashed into a remote area, W8EJX/8 called for assistance via 146.94 MHz simplex. WB8GGR answered and an ambulance was called. – (WB8GGR, EC Richland Co.)

■ Madison Co., AL – Mar. 17. At 1530Z, WA4GQO received a tornado alert from C.D. Hq. The C.D. station was activated as the weather worsened and tornado touchdowns were reported in New Market and surrounding areas. As weather conditions again became bleak at around 0055Z, c.d. and Red Cross stations were again activated. Flooding in low-lying areas was becoming apparent. Operations secured at 0400Z. – (WB4YKH, EC Madison Co.)

■ North Tonawanda, NY – Mar. 17. While returning from a local radio club auction, K2EQB witnessed a vehicle strike a young girl and leave the scene. He called police through WR2ABU autopatch. – (WB2YEM, EC Niagara & Erie Cos.)

■ Muskegon Heights, MI – Mar. 23. While returning home with W8LKR, a patrolman, W9MN, spotted a vehicle believed to have been involved in a robbery and shooting earlier in the day. W8LKR put the description of the car on 146.94 MHz simplex which WB8JIX had been monitoring. WB8JIX phoned local authorities. – (W8NXD)

■ Washington, DC – Mar. 25. After a kidnapping, amateurs were asked via WR4ABQ to keep a lookout for the suspect vehicle and inform police upon any sighting. As various reports came in, a net was formed on the repeater and frequent announcements and updates made. – (WA3WQF)

■ Omaha, NE – Mar. 27. At 1800 a small tornado struck two areas in southwestern Omaha. Almost immediately the Douglas Co. AREC was activated on 2 meters and mobiles were dispatched to the emergency areas. In all, some 31 amateurs took part until all operations were secured at 2105. – (WØOXT)

■ Baja, Lower CA., Mex. – Mar. 27-28. The DeAnza rescue team was called to assist in a search for five lost fishermen. WA6EQX went to San Felipe, Mexico, to set up a base camp as XE2NR.

(Continued on page 94)

IARU News

INTERNATIONAL AMATEUR RADIO UNION, THE GLOBAL FEDERATION OF NATIONAL NON-COMMERCIAL AMATEUR RADIO SOCIETIES FOR THE PROMOTION AND CO-ORDINATION OF TWO-WAY AMATEUR RADIO COMMUNICATION

PRESIDENT EATON VISITS THAILAND

Following his attendance at the IARU Region III Conference in Hong Kong in March, IARU president VE3CJ visited several amateur societies in the area. Few amateur groups anywhere are more enthusiastic than those making up the *Radio Amateur Society of Thailand*, some of whose members are pictured on this page. A dinner meeting was hosted by the *RAST* president, Col. Kamchai Chotikul, HS1WR, in honor of Noel's visit. Photos are courtesy of HS1AHR/WA4FWM.

For the information of those visiting Bangkok, the *RAST* holds a luncheon meeting the first Sunday of each month at the Erawan Hotel.

SRJ SPECIAL MEETING ANNOUNCED

The *Savez Radio-Amatera Jugoslavije*, P.O. Box 48, 11001 Beograd, IARU member-society representing YU amateurs, announces a special Memorial Meeting on July 2-6, 1975, at the Olympic settlement, Skopje, Macedonia. The meeting is being held on the occasion of the 30th anniversary of the liberation of Yugoslavia. The program includes a high-speed code competition, fox hunting, and other competitions for young members. Details may be requested from the above address.

In conjunction with the same anniversary, YU amateurs will be using the special prefix YZ for the remainder of 1975. An award for working 30 YZ stations will be available.

QSL BUREAUS OF THE WORLD

The following changes have occurred in the list of QSL bureaus of the world which appeared on page 73 of December, 1974, *QST*.

Australia (VK8 only): VK8HA, Box 1418, Darwin, N.T. 5794.

Bahrain (MP4B and A9X only): ARAB, P.O. Box 472, Awali.

Chagos (U.S. personnel/Diego Garcia only): Communications Officer, U.S. NAVCOMMSTA, FPO San Francisco 96685.

Japan (KA6 only): Radio Society of Okinawa, P.O. Box 653, Fort Buckner, APO San Francisco 96331.

Korea (HL9 only): Amateur Radio Bureau, Headquarters, Eighth Army, Office of the AC of S, J6, APO San Francisco 96301.

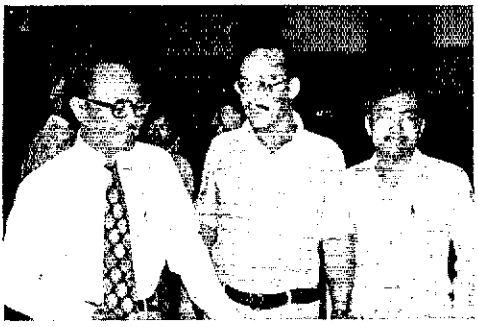
Papua New Guinea: Box 204, Port Moresby.

Puerto Rico: Juan S. Sepulveda, KP4QM, Cereipo 99, Alturas de Santa Maria, Guaynabo, PR 00731.

Sweden: SSA, Ostmarksgatan 43, S-123 42 Farsta.

Western Samoa: WS ARC, P.O. Box 1069, Apia.

QST



RAST members: top, HS1WR, HS1BG, and HS1BD; bottom right, HS1YL (wife of HS1WR) and HS1BE (wife of HS1AIP); bottom left, HS1AIT, Mrs. VE3CJ, HS1WR, Mrs. HS1AIT, VE3CJ, and HS1YL.

Happenings of the Month

RADIO AT THE OLYMPICS

The summer Olympic Games are scheduled to be held in Montreal, Canada, during the period of July 17 to August 3, 1976. In support of the Olympics, a group of long-standing radio amateurs have formed a registered association known as "Radio Amateurs Serving the Olympics" – RASO. With the support of local amateur radio clubs and ARRL, RASO has offered a full amateur radio service during the training and competition periods to the Organizing Committee of the Olympic Games – COJO – which has been accepted.

The Olympic station, CZ2O, will operate from an area in the stadium where it can be seen by the public. RASO has already started locating ham gear from major manufacturers to equip the station.

Albert G. Daemen, VE2IJ, (ARRL VE2 QSL Manager), is president of RASO. Inquiries about amateur participation in the project can be sent to him at 2960 Douglas Avenue, Montreal PQ H3R 2E3.

SPECIAL EVENTS STATIONS

Last summer FCC issued a Notice of Proposed Rulemaking to formalize the issuance of special licenses for amateur stations at events of public or amateur interest. It now has adopted these rules pretty much as proposed, except to change the name of the new class from "Commemorative" to "Special Events" stations, which has been the customary term.

Only Extra Class and Advanced Class licensees are eligible. Application for a special events station license, normally to be limited to 30 days or less, will be made by letter addressed to the Amateur and Citizens Division, FCC, Washington, DC 20554, setting forth the information required in new paragraph 97.41(f). Normal filing fees will henceforth be required, totaling $29 if the application requests a specific call sign. The special events licenses will not be issued for contests.

The amateur rules are changed, effective May 27, 1975 as follows:

1. 97.3(i) is amended to add a new definition "*Special Event Station*" immediately after *Repeater Station* to read as follows:

97.3 *Definitions.*

(i)

Repeater Station,

Special Event Station. Station licensed at a specific land location for operation related to the celebration of an event, past or present, which is unique, distinct, and of general interest to either the public or to amateur radio operators, for the purpose of bringing public notice to the Amateur Radio Service.

2. 97.40(c) is amended to read as follows:

97.40 *Station license required.*

(c) An amateur radio operator may be issued one or more additional station licenses, each for a different land location, except that repeater station, control station, auxiliary link station, and special event station licenses may be issued to an amateur radio operator for land locations where another station license had been issued to the applicant.

3. 97.41(a) and 97.41(g) are amended and 97.41(f) is added to read as follows:

During an FCC luncheon in Washington, DC, the matter of RFI was a main topic. Seated left to right in the immediate foreground are: ARRL General Counsel Booth, W3PS; John Johnston, K3BNS, Deputy Chief, Spectrum Management Task Force, Office of Chief Engineer; Charles Higginbotham, Chief, Safety and Special Radio Services Bureau; ARRL Technical Editor DeMaw, W1CER; Raymond E. Spence, Jr., W4QAW, FCC Chief Engineer; and ARRL Hq. Staff Member McCoy, W1ICP. During the luncheon Mr. Higginbotham revealed his plans to become a radio amateur – good news, indeed!

97.41 *Application for station license.*

(a) Each application for a club or military recreation station license in the Amateur Radio Service shall be made on the FCC Form 610-B. Each application for any other amateur radio license, except a special event station, shall be made on the FCC Form 610.

(f) An application by letter to the Amateur and Citizens Division, Federal Communications Commission, Washington DC 20554, may be made by an Advanced Class or Amateur Extra Class licensee for a license to operate one special event station for the period of the celebration, but not to exceed 30 days unless extraordinary circumstances are shown. The application shall contain the following:

(1) The name, mailing address, photocopy of amateur operator license, and signature of applicant.

(2) The name and description of the celebration, its significance to the public or to amateur radio operators, and the justification for the proposed special event station.

(3) The location of the proposed station.

(4) The dates the station will be operated, and justification.

(5) Specific call sign requested, if desired.

(g) One application and all papers incorporated therein and made a part thereof shall be submitted for each amateur station license. If the application is only for a station license, other than a special event station, it shall be filed directly with the Commission at its Gettysburg, Pennsylvania office. If the application also contains application for any class of amateur operator license, it shall be filed in accordance with the provisions of 97.11.

4. 97.51(a)(4) is amended to read as follows:

97.51 *Assignment of Call Signs.*

(a)

(4) A specific unassigned call sign may be temporarily assigned to a special event station.

5. In 97.95 the headnote is revised and 97.95(a)(i) is amended to read as follows:

97.95 *Operation away from the authorized fixed operation station location.*

(a)

(1) When there is no change in the authorized fixed operation station location, an amateur radio station other than a military, recreation, auxiliary link, or special event station, may be operated under its station license anywhere in the United States, its territories or possessions, as a portable or mobile operation, subject to 97.61.

EXAMINATION SCHEDULES

The Federal Communications Commission has delegated to the Chief, Field Operations Bureau, the function of changing, deleting or modifying the location of amateur and commercial operator examination points, and of issuing appropriate notice of these changes. Appendix 1 of the amateur rules has been amended to read:

Examination Points

Examinations for amateur radio operator licenses are conducted at the Commission's office in Washington, DC and at each field office of the Commission on the days designated by the Engineer in Charge of each office. Specific dates should be obtained from the Engineer in Charge of the nearest field office of the Commission.

Examinations are also given at prescribed intervals in the cities listed in the Commission's current Examination Schedule, copies of which are available from the Federal Communications Commission Regional Services Division, Washington, DC 20554, or from any one of the Commission's field offices listed in 0.121.

Two changes have been made in the schedule which appeared on page 70 of March *QST* and on the inside back cover of the 73rd *License Manual*: The New York office is now at 201 Varick Street (IRT 7th Avenue local to Houston Street) and exams are Wednesday at 9 A.M. The Seattle office is at 3256 Federal Office Building, 915 Second Avenue, and the tests are on Friday at 8:45 A.M.

ELECTRICAL INTERFERENCE

FCC recently issued a Public Notice pointing out that aquarium thermostats are yet another source of interference to radio reception. Undesirable radiation may come from the thermostat itself, from the power lines supplying the house or store, or from power lines supplying other buildings from the same transformer. So far, commercially available power line filters have not been effective in eliminating thermostat QRM. Some new units have been worse offenders than older ones.

The principal tool for dealing with such problems, beyond neighborhood cooperation, is Section 15.15 of the FCC's rules:

Section 15.15 **Operating Requirements: Incidental radiation device**

An incidental radiation device shall be operated so that the radio frequency energy that is radiated does not cause harmful interference. In the event that harmful interference is caused, the operator of the device shall promptly take steps to eliminate the harmful interference.

The Notice concludes with the warning that if voluntary efforts by industry are not effective in clearing up the interfering radiation, the Commission may have to initiate a rulemaking proceeding to establish legal controls.

RULEMAKING REQUESTED

Bruce J. Brown, WB4YTU, of Alexandria, Virginia, has filed a petition for rulemaking, RM-2507, to permit operation of a reduced-bandwidth fast-scan amateur television repeater using an input frequency of 439.25 MHz and an output of 427.25 MHz. Bandwidth would not exceed 4 MHz with a picture carrier 1.25 MHz above the lower channel boundary. Two types of format for the audio are proposed: one with the fm audio subcarrier at the same frequency as the video carrier; the other with the subcarrier 4.5 MHz above video. In either case, the audio subcarrier deviation would not exceed 25 kHz. The first method would conserve frequency spectrum but require a separate audio receiver; the second would be compatable with a commercial TV receiver.

Frederick H. Schnell, W4CF.

Though the technical time limit for commenting on this request is past, as a practical matter one may still register opinions with the Amateur and Citizens Division, FCC, Washington, DC, 20554, mentioning RM-2507. Such expressions will help the Commission decide whether to initiate rulemaking.

THREE FORMER DIRECTORS, SILENT KEYS

Frederick H. Schnell, W4CF, of Bradenton Florida, died Friday, April 11, after a long illness. Fred was one of the architects of League history. Hired in September 1920 as the League's first paid traffic (now communications) manager, and simultaneously elected to the Board of Direction, he was soon organizing the ARRL Transatlantic tests, capping this by being one of the three operators (with Reinartz, 1XAM, and Deloy, French 8AB) involved in the first actual QSO "across the pond." This took place on November 27, 1923. The Board of Direction on which he served was notable too: in 1924 it voted itself out of business in favor of a Board composed of Division Directors, elected on a representative basis. But these were neither the first nor the last pioneering works by Fred – he copied the German peace acceptance message in 1918, and went with President Wilson's party to the peace talks, as radio operator. In 1925, Fred took ham gear aboard the *USS Seattle* on its Pacific cruise, contacting amateurs throughout the trip under the special call NRRL, even at times when the big Navy transmitters, operating on long waves, were not able to contact their bases. He kept up his work in the Naval Reserve, eventually retiring as a captain after 31 years' service. Fred was also a radio engineer for the Chicago Police Department and for years was service manager for Motorola – a post now occupied by Fred's son Richard, K9HPD. After retirement to Florida, Fred talked each morning with a wide circle of friends, many of them Chicagoans en route to work. Baseball was a favorite topic for these 14 Mc. "kaffee klatches." Fred was 82 years old last November 22. He leaves his wife, Pauline, son Dick, and grandson Timothy – and some niches on amateur radio's Hall of Fame marked 9AOG, 9AH, 1MO, W9UZ and W4CF!

C.M. Jansky, ex-9XI, of Washington, DC, died in March at the age of 79. He had been the first director of the Dakota Division, from 1924 to 1930. After serving as a professor at the University of Minnesota, Mr. Jansky moved to Washington where the engineering firm of Jansky and Bailey was organized in 1930. Mr. Jansky served on the four Hoover Radio Conferences in the 1920s, which regulated U.S. radio unofficially until the Radio Act of 1927 was adopted. He was a founder of the National Association of Broadcasters and a past president of the Institute of Radio Engineers, now IEEE. He had not been personally involved in amateur radio after his move to Washington, but had maintained continuous membership in the ARRL right up to the end.

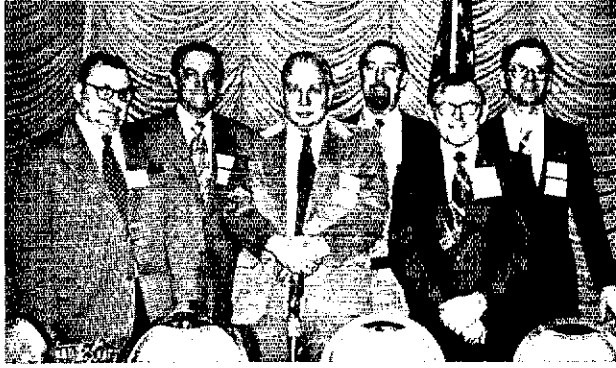
Dr. George S. Acton, W5BMM, of Plain Dealing, Louisiana, director from the Delta Division in 1946-1947 and vice director, 1950-1955, died March 4. A dentist, George remained active on the air – 2 meters to 160, a-m, fm, cw and ssb – until January this year; one friend, W4NBS, reports having had 791 QSOs with W5BMM! He was a member of the A-1 Operator Club, QCWA, Old Timers Club, the old Army Amateur Radio Service, RACES and Caldo-Bossier Civil Defense. W5BMM had served in the past as Official Relay Station and Official Observer.

AMATEUR PAPERS AT IEEE

For the second consecutive year, the Institute of Electrical and Electronic Engineers has recognized the contributions of amateurs to the electronics field by providing us a spot on the program at Intercon-75 in New York City.

This year's event was held on Monday, April 7, and was entitled Session L. Hudson Division Vice

Senator Barry Goldwater, K7UGA, delivers the keynote address officially opening IEEE Intercon-75.



Participants for Session L, Intercon-75 (left to right): W2IHA, W2FMI, W1YNC, W1CER, K1PLP and K2RIW.

Director Diehl, W2IHA, opened the session on behalf of Division Director Zak, who was away on a business trip. Mr. Diehl introduced Technical Editor DeMaw, the Session Organizer, who served also as moderator for the symposium.

The papers for Session L treated mf and hf antennas of physically short characteristics. The exception was a lecture given by Richard Knadle, K2RIW, which dealt with vhf/uhf antenna test-range radiometry techniques. The remaining speakers were Jerry Sevick, W2FMI; Jerry Hall, K1PLP (*QST* Associate Technical Editor), and Tony Dorbuck, W1YNC (*QST* Assistant Technical Editor). Tom McMullen, W1SL (*QST* Assistant Technical Editor), stood by as a back-up speaker.

Senator Goldwater, K7UGA, delivered the keynote address for INTERCON-75 on Tuesday morning, April 8, before a packed audience in the Grand Ballroom of the Americana Hotel. His message concerned the faltering economy versus electronics engineering and production.

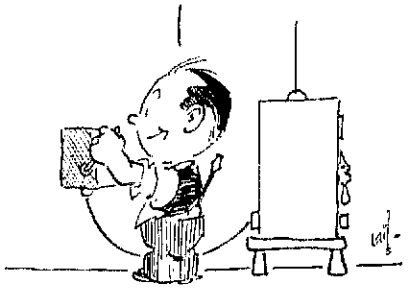
INTERCON moves next year to Boston, where it will have a new name – ELECTRA-76. We have been assured that amateur radio will be a part of that program.

WISCONSIN CLLP THREAT

The call letter license plate privilege in Wisconsin seems threatened by proposals of Governor Patrick J. Lucey. A schedule of new charges for license plates by weight and efficiency of the engine also calls for a $25 fee for "special or vanity license plates, bearing special letters requested by motorists." Wisconsin amateurs will do well to keep informed on this plan and to stay in touch with their representatives in the legislature. Thanks to the Sheboygan County DX Association, who spotted this item in the paper and wrote to their own representative at Madison.

SIDEBANDS, Etc. – FEEDBACK

In April *QST* we ran a letter from FCC interpreting the rules governing sidebands, etc, with respect to band edges. The formula from Section 81.140(a)(3) was reproduced incorrectly; it should read: Suppression in dB = $43 + 10 \log_{10}$ (mean power in watts). (Thanks to WA6KZI for catching this!) QST—



DO YOU KILL ALL TRANSMITTER CIRCUITS COMPLETELY BEFORE TOUCHING ANYTHING BEHIND THE PANEL?

An enthusiastic crowd attended the ARRL Maritime Amateur Radio Convention (the only official ARRL convention in Canada in 1974) at Fredericton, New Brunswick, over the Labor Day weekend. At front center in the photo are Assistant Director Ron Hesler, VE1SH; Canadian Director George Spencer, VE2MS; ARRL Associate Technical Editor Gerald Hall, K1PLP, and Fredericton ARC President Leo Doucet, VE1TC.

Hamfest Calendar

Arkansas – The Independent County Hunters/Mobile Amateur Radio Awards Club joint meeting and annual convention is July 4-6 at Marble Falls Resort and Convention Center, Dogpatch AR. For further info send large s.a.s.e. to KØAYO, Rt. 1 Box 230M, DeSoto KS 66018.

California – The Mission Trail Net's 38th annual roundup is June 14, 15 at Bakersfield Inn, Bakersfield. Contact WA6JFB for info and reservations.

Florida – The Orlando Hamfest is June 14, 15 at Orlando Exposition Park, West Livingston at I-4, downtown Orlando. ARRL Forum, DX Forum conducted by Gus Browning, commercial exhibits, transmitter hunt and flea market. Admission $3 per family. $15.50 single, $18.50 double at Howard Johnsons downtown. Write to Herb Roland, W4LSR, 8024 Charlin Pkwy., Orlando FL 32809.

Hawaii – The SAROC Hawaiian Convention is July 18, 19 at the Sheraton-Waikiki Hotel, Honolulu. Exhibits, technical sessions, ARRL forum, cocktail party and banquet. Special airfares from west coast, and selected midwest and east coast cities. Inquiries to SAROC, PO Box 945, Boulder City NV 89005.

Illinois – The annual hamfest of the Egyptian Radio Club, Inc., W9AIU, is Sunday, June 8, at the Club House, north of Granite City, Illinois, near Hwy 270. Swap row, games for the children, white elephant sale, and games for the ladies. Lunch available. Talk-in on 16/76.

Illinois – The Six Meter Club of Chicago, Inc. announces the 18th annual picnic and hamfest on Sunday June 8 at Santa Fe Park, 91st St. and Wolf Rd. in Willow Springs. Food and drinks available and a swap n' shop section is provided (manufacturers also invited). Advance registration $1.50; admission at gate $2. For further info and advance tickets, contact Val Hellwig, K9ZWV, 3420 S. 60th Ct., Cicero IL 60650.

Illinois – The Jacksonville Area Amateur Radio Club's 11th annual hamfest is Sunday June 29 at the Morgan County Fairgrounds. A large trading area is available rain or shine. Talk-in via WR9ACS, 16/76 and 146.94 direct.

Indiana – The Madison County Amateur Radio Club hamfest is June 8. Free flea market, auction, displays. The hamfest is at the Old Linwood School, north of Anderson on S. Road 9 and 600 N. Time: 9 AM-4 PM. Call-in 22/82, WR9ACI.

Iowa – The Des Moines Radio Amateur Asso. Hawkeye hamfest at the Iowa State Fairgrounds in Des Moines is Sunday June 8 from 8 AM to 6 PM CDST. Extra tables available to $2.50 each. Set-up after 4 PM Saturday is permitted, with overnight security provided. Camping facilities available on grounds at a small charge. Contact WBØIBK.

Kentucky – The Blue Grass Amateur Radio Club Inc. hamfest is located at the 175 and Georgetown, KY interchange, June 15. Indoor hamfest, flea market, refreshments, entertainment, and large outdoor general interest flea market for the XYLs. Doors open at 8 AM EDT. Talk-in on 16/76 and 146.52 simplex. For additional info, contact Bob Lunsford, WB4DPG, Rt. 4, Georgetown KY 40324.

Maryland – Eastern Shore of Maryland hamfest is sponsored by the Easton Amateur Radio Club on June 8 from 10 AM-4 PM, rain or shine. 35 minutes south of the Bay Bridge, one block off Rt. 50, in Trappe MD, between Easton and Cambridge at the Trappe Elementary School on Main St. Talk-in on 146.52 and .94 and 146.445/147.045 repeat in Cambridge. Tables, food, drinks, ladies program, prizes and plenty of tailgating and parking room. $2 at the gate and $4. Contact K3RUQ.

Maryland – The Maryland Mobileers Amateur Radio Club, Inc. 5th annual hamfest, rain or shine, is June 15 at Anne Arundel Community College, approximately 12 miles south of Baltimore just off of Rt. 2. Registration $2, tailgating $2. Talk-in 10/70, 16/76, 146.94, .52 and others.

Missouri – The Missouri Single Sideband Net annual picnic is at the shelter house at Memorial Park in Jefferson City MO on June 8. Activities begin at 8 AM, swap tables, dinner (carry in) refreshments provided, all hams welcome. Direct inquiries to any MOSSB net control 3.963 MHz. Talk-in on 146.94 and 3.963.

Missouri – The Annual Hambutcher's picnic is in Harley Park at Boonville on Father's Day, June 15. Jamboree Saturday night, June 14. Talk-in on 3963 and 146.94. For further info write: Glen Amick, KØDSQ, New Franklin MO 65274.

New Jersey – The Fourth Annual Electronic Flea market/hamfest of the Raritan Valley Radio Club, the W2QW group, is Saturday June 21; rain date Sunday June 22 at Columbia Park, Dunellen NJ. For info write: RVRC, RD 3, Box 317, Somerset NJ 08873.

New York – Friday evening, June 6, auction sponsored by the Radio Society of Greater Brooklyn and Brooklyn College Amateur Radio Society at Brooklyn College, Bedford Avenue between Campus Rd. and Avenue I. Doors open 7:30 PM starts 8 PM. Admission $1.50 for sellers, $1 others. No commission charged.

New York – The Rome Radio Club "Ham Family Day" is Sunday June 22 at Beck's Grove, 10 miles west of Rome NY. Programs for all ages. Technical talks, meetings, contests, equipment displays, ladies and children's fun programs. Flea market with plenty of space for goodies from your vehicle. Registration starts at 11 AM and ends with the famous "chicken and steak" dinner served at 5 PM. Advance reservations: Adults $7.25; children under 12, $4; under 6, free. At gate 50 cents higher. Tickets at the gate without dinner: Adults $2.50, children free. Send your reservations to the Rome Radio Club, Box 721, Rome NY 13440.

New York – The Second Annual Hall of Science Amateur Radio Club's flea market and auction is Saturday June 7; rain date June 8 from 10 AM to 4 PM. Admission $2 to all. No commission on non auction sales. Hourly service at 10% on selling price. Snack bar services. Zoo, art museum, children's farm, science center, pitch and putt adjacent. Free parking. The old World's Fair Grounds. Located: Hall of Science parking lot, 111th St. and 48th Ave. Corona (west) side of the park. IRT Flushing Line 111th St. station. B58 and Q23 buses. Info – 212-699-9400.

Ohio – The Goodyear Amateur Radio Club's annual Father's Day hamfest picnic is June 15th at Goodyear Wingfoot Lake Park, located east of Akron (1 mi. west of Suffield in Summit County on county Rd. 87 near O Rt. 43). Entertainment, swap n' shop and fellowship. Refreshments, displays, flea market, picnic tables and children's games available. Hours 10 AM to 6 PM. Family admission $2 prepaid; $2.50 at gate. For details, tickets, map and program, write to Floyd T. Gilbert, WB8ALK, 1976 Newdale Ave., Akron OH 44320.

Pennsylvania – The Harrisburg Radio Amateurs Club hamfest is Sunday July 7, at the Indian Echo Caverns between Harrisburg and Hershey, off Rt. 422-322. Entire pavilion reserved 10 AM to 4 PM. Registration $2 at the door. Tables and tailgaters free.

Virginia – The Ole Virginia Hams ARC, Inc., hamfest is in Manassas on Sunday June 8 at the Prince William County Fairground, 1/2 mile south of Manassas on Rt. 234. Refreshments, parking, talk-in 37/97, 146.94 simplex, 3.955 MHz. Special activities: YL programs, fm clinic, ECARS, others. Tailgating $2 per space.

Washington – The Northwestern Chapter, Quarter Century Wireless Asso. is holding its

annual meeting in Tacoma at the Holiday Motor Inn on June 14, 15.

Washington – The YLISSB, Inc. is having a convention on Orcas Island, June 20-26. QST

WEST VIRGINIA STATE CONVENTION

Jackson's Mill July 5-6

The 17th annual West Virginia State Radio Convention, sponsored by the West Virginia State Radio Council, will be held at Jackson's Mill State 4H Camp the weekend of July 5-6. Preliminary program highlights include a technical forum conducted by Lew McCoy, W1ICP; an ARRL forum featuring a discussion of restructuring by Perry Williams, W1UED; MARS, phone and cw net meetings; emergency preparedness forum; a pizza party; code copying contest; free swimming in the newly installed Olympic-sized swimming pool; plenty of good West Virginia food and friendship and much, much more.

This convention is truly a fun-filled family weekend in the beautiful mountains of West Virginia. You won't want to miss it!! Registration: tickets are $3 each or 2 for $5. This fee entitles you to participate in the many activities of the convention, but does not include any food or lodging. Full registration tickets (include meals, lodging and all activities of the convention): Pre-registration – $12. At the Mill – $14. Children (under 8) $8. Full registration tickets available from Dorothy Morris, WB8LAI, 1136 Morningstar Lane, Fairmont, WV 26554. $3 tickets from G.W. Puzzuole, K8QEW, 3616 Morgan Drive, Weirton, WV 26062. Friendship free!! Brochures were mailed in early May by the Tri-State Amateur Radio Association, and if you are not on their mailing list, write to West Virginia State Radio Council, 182 Monterey Drive, St. Albans, WV. 25177 for further details. See you there!

GEORGIA STATE CONVENTION

Atlanta July 5-6

Spend a fabulous Fourth of July weekend at the 47th Annual Atlanta Ham Radio Festival and ARRL Georgia State Convention. The center of activity will be the Royal Coach Motor Inn, I-75 North, for two big days, July 5 and 6. Highlight of the Festival will be the Saturday night banquet with keynote speaker FCC's A. Prose Walker, whose topic will be "Docket 20282 – Restructuring." Activities cover every phase of amateur radio including ARRL Forum, FCC examinations, biggest flea market and manufacturers' display in the South, special events for XYLs and Junior Ops, Sunday afternoon awards presentation, MARS meetings, technical programs – something of interest to every ham and his family. Plus, special hamfest low admission prices for amusement parks and attractions around Atlanta.

Pre-registration is $2 per person or $4 per family ($3 or $5 at hamfest). Special hamfest motel rates are $16 single and $21 double (children under 13 free). For additional information write: Atlanta Ham Radio Festival, P.O. Box 76553, Atlanta, Georgia 30328. QST

COMING ARRL CONVENTIONS

July 5-6 – Georgia State, Atlanta.
July 5-6 – West Virginia State, Jackson's Mill.
August 1-3 – Canadian Division, Calgary, Alberta.
August 29-September 1 – Atlantic Provinces, Moncton, New Brunswick, Canada.
September 12-14 – NATIONAL, Reston, Virginia
October 10-11 – Great Lakes Division, Columbus, Ohio.
October 17-19 – Midwest Division, Lincoln, Nebraska.
October 24-26 – Southwestern Division, Ventura, California.
November 1-2 – New England Division, Hartford, Connecticut.

NOTE: Sponsors of large ham gatherings should check with League Headquarters for an advisory on possible date conflicts before contracting for meeting space. Dates may be recorded at ARRL Hq. for up to two years in advance.

Mobile Microphones

(Continued from page 48)

with the noise-reduction capability. The color is black.

All of the microphones gathered here, except the 355C, have frequency responses of approximately 300 to 3000 Hz. The price class for the M+2U, +350, 355C, and NC350C are, respectively, $50, $50, $20 and $21. The manufacturer's address is Turner, Div. of Conrac Corporation, 909 17th Street, N. E., Cedar Rapids, IA 52402. – *W1CER and WA1ABV*

10 Meter Contest *(Continued from page 62)*

KH6IGC	20,300-203-50-
KH6GMP	14,444-157-46-
Marshall Islands	
KX6GS	5376-112-24-10
Australia	
VK2QM	264- 22- 6-
New Zealand	
ZL1WN	2360- 59-20- 4
ZL2HE	460- 23-10-
Western Samoa	
SW1AU	36,712-353-52-

SOUTH AMERICA

Bolivia	
CP1EU	15,930-177-45- 5
Ecuador	
HC1EE/HC5	35,504-307-56-
Colombia	
W7MPZ/HK3	158,096-964-82-21
Argentina	
LU8AJG	102,240-710-72-
LU2AFH	37,932-327-58-
LU6EAM	27,432-254-54-
LU3HAK	19,448-187-52-
Netherland Antilles	
PJ2VD	84,608-658-64-
PJ2RR	70,184-566-62-
PJ9BN	9306-141-33- 5
Brazil	
PY7AOR	36- 6- 3-
Surinam	
PZ5FB	20,184-174-58-
Venezuela	
YV4AGP	106,624-833-64-
YV5EED	52,334-317-51-14

AERONAUTICAL MOBILE

W2BQF/am2	35,226-309-57- 6

Check Logs

W1FK WA2WUD WN3WSS W4MML WB4WDH K6JFY W6OAL WØERZ JH1LKH.

Correspondence From Members-

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

RESTRUCTURING SURVEY

● I strongly compliment the League management and directors on implementing the survey sheet on Docket 20282! – *James Linke, W8GHN.* Thank you for the questionnaire on the restructuring docket. . . . Enclosed is a dollar to help cover my questionnaire cost. – *Will Lambdin, WB9OTF.* I've been related to you by membership for many years now and never felt critical of you. I think you blew it, though, on the questionnaire. It impressed me as being done by some clever group with the objective of trapping and confusing. Those may be excellent objectives for a psychological examination or a job interview, but seem inappropriate here. One gripe in 29 or 30 years of membership is a good batting average for you, but for the sake of amateur radio, I am sorry this had to be the occasion. – *Gene Farley, W7TF.* Please accept this $2 to help with the cost of presenting our views to the FCC. I don't know what the League's official position will be, but I'll support it whatever it is. – *Gene A. Nailon, K5DLE.* Apparently you forgot all the exhortations in *QST* for a person to use s.a.s.e. if a reply is expected. That applies to the ARRL as well! – *Paul Schuett, WA6CPP.* I am somewhat disappointed in the nature of the questions on the membership survey concerning restructuring, and have therefore declined to answer. . . . What purports to be a survey looks more like an examination. . . . I hold my membership in the League in high regard and regret the disenchantment of some members over the stand it took on incentive licensing in the early part of the last decade. Perhaps the "survey" was an attempt to avoid similar repercussions by determining the members' opinions beforehand, but the nature of the questions leave doubt as to the motive of those who asked them. – *Thor H. Bahrman, WB4FWP.* Thank you to all involved in this survey. It's the best and most democratic poll I believe that could be devised. My congratulations to a well-planned survey devised by the ARRL. – *Ralph O.R. Schubert, WA6HJY.* . . . This appears to me to be an excellent way to gain objective feedback from the membership concerning a matter where emotional aspects are highly involved. I hope the same kind of care that went into preparing the survey will be used in analyzing the return and drafting the ARRL response so that it will truly be that of the members of the ARRL. – *Bob Gerzoff, WA2CYU.* I am happy to see the League taking a poll of the "silent majority" instead of responding to only the noisy members. Although there is expense involved in such a survey, I believe we should exercise this tool more often for the benefit of us all. – *George Anderson, K4LHQ/WB7AFU*

PHANTOM IDEALS?

● It is rare that I get really upset by anything in *QST*, but the letter in April *QST* from WA6JRA was just too absurd to be overlooked. He states, in all seriousness, that W1CER and W1YNC "be immediately fired" for designing a rig using 807 tubes. He points out quite correctly that they could just as well have used transistors. But for all his flak about the state of the art, he never once even tries to argue that a transistor version of this rig would work one whit better than the 807s.

Recycling and conservation must now be considered part of the "state of the art," and solid-state printed-circuit gear must be reexamined in light of these criteria, since the parts are far harder to recycle than gear made with the older wiring techniques. What we need are circuits which work better, are simpler to construct, or overcome other real problems. Miniaturization and solid state are phantom ideals which actually result in the improvement of absolutely nothing.

W1CER and W1YNC overcame a real problem by avoiding the need for transmitting variable capacitors. By doing so, they deserve our congratulations for producing an article which, for a rare change, actually solves some real problems. – *Mike Muench, VO1KE, Witless Bay, Newfoundland, Canada*

SPACE CENTER RECRUIT

● Just recently I toured Cape Kennedy and saw the ARRL exhibit on the Oscar satellites. I am interested in becoming an amateur ham radio operator. I am also interested in any information you have on the Oscar satellites. Could you send me this information immediately? Because of my interest in this field, I plan to present it to my science class. I am a junior at Davie High School in Mocksville, N.C. I would appreciate it if you could send me any information that might help me with this project. – *Walter Scott, Advance, NC.*

[EDITOR'S NOTE: A photo of the exhibit appears on page 76, February, 1975, *QST*.]

LOSSLESS RADIATOR

● Re article on page 37, recently received *QST* (The Lossless Radiator): Alek Trahn, huh? Tropical downpours in the Bering Strait, hmmm? Cheechako Fair on Little Diomede in Alaska? Uh huh. And a KLØ? Oh geez. Took one look at the article and checked the cover. I was afraid of this. April again. And I thought nothing could surpass the organic radiator and suppressed sideband a-m.

Incidentally, it should work. I kid you not. See "50 Years Ago" column, same issue *QST*. But "new, highly efficient, and readily adaptable"?

And a merry April to you too. – *Ron Notarius, WN3VAW/WN2FQN, New Hope, PA*

● Ah, me! Although Alek Trahn may not be as well-known as good ol' Larsen E. Rapp, W1OU, I do welcome seeing the April *QST* tradition being continued and – hopefully – perpetuated! – *Jack Wichels, W7YF, Lynnwood, WA*

● Such an antenna, with an extremely sharp resonance curve, would be ideally suited for use with suppressed sideband a-m transmissions, which have no bandwidth. This revolutionary method of voice transmission on a modulated carrier without sidebands was introduced in the glorious article "SSA-M Telephony" by N.G. Attaway in *QST* for April, 1974.

Articles such as these set a high standard which all amateurs should aim for. Unfortunately, such gems do not appear often; I personally suspect that it will be a year before we see another article of this quality! – *Joseph M. Schachner, WB2FUL, Forest Hills, NY*

● KLØOGE's thoughtful, creative and undoubtedly controversial article describing the lossless radiator suggests a solution to the problem faced by the ham who lives in a restricted building and must disguise his antenna. In place of the large visible single-loop radiator, an equivalent one can be designed using standard inductor formulae, to produce a much more compact assembly of single turns connected in series. This radiator, along with the final amplifier and rotator, can now be clearly concealed in the base of an innocent-looking birdhouse.

A small heating unit, ostensibly installed to provide further comfort to the feathered inhabitants, will serve to explain the cable leading to the shack. Should suspicious TVI troubled neighbors question him about the purpose of the project, our resourceful ham can quite truthfully reply that it's strictly for the birds. – *F.S. Wardwell, WA1GFH, Stamford, CT*

BARGAIN HUNTER'S DREAM

● I have just completed the task of taking and passing the Advanced test. I am not embarrassed to say that I had to try twice to pass. The first time I went I used an Ameco study guide. I flopped. This time I purchased the 72nd edition of your *License Manual*. It was perfect.

Furthermore, I find the *License Manual* to be very economical. For $1.50 you get a separate section for each grade of amateur license *plus* you get a complete section on national and international rules and regulations. All in all, your book is a bargain hunter's dream. – *David Berger, WB2UAL, Kew Gardens, NY*

NOT WITHOUT FAULT

● What we need more than new regulations is a respect for the ones that now exist. The abuses by the CBers are beyond belief. The amateur bands are not without fault. Some of the things I have observed are:

Obscene and foul language
Intentional interference
Excessive power
Over-modulation
Improper adjustment
Prolonged tuning and testing.

An influx of more amateurs will not mean an automatic increase in these abuses because many of them are committed by long-time amateurs.

A few roving mobile FCC monitors who could enforce the regulations by stiff penalties might turn this situation around. The good amateur has nothing to fear. – *I.L. McNally, K6WX, Sun City, CA*

RFI TASK GROUP

● A friend of mine has given me a copy of the material the RFI Task Group has prepared for radio amateurs. I am pleased to see how well put together that document is and I am sure it will be beneficial to amateur radio. *Richard Pitzeruse, K2KTK.* We could not have solved a difficult RFI problem effectively without the RFI Task Group's valuable assistance and help. That group should have been created a long time ago. – *Tony P. Smaker, Jr., KL7JDO.* I received the information you sent on the Radio Frequency Interference Task Group and wish to express my thanks and support. I know the public must be enlightened to the causes and cures of RFI, but at the same time I feel that we must do more than we have to inform the amateur radio operator about the ills of RFI. – *John J. Engh, WAØWPN.* After having carefully examined my recently received copy of the "RFI TASK GROUP ACTION PLAN," I would like to offer a word of appreciation and encouragement; the steps being taken by the Group are sorely needed, and are being effectively executed. – *J. W. Sandberg, K6HE*

JOLTED

● We have an auto-patch on our repeater here in Jackson. You quickly get used to listening in while someone calls for the auto-patch, dials the number, and has a telephone conversation.

But . . . it was a slight jolt the other day when I went out to the shack, turned on the rig . . . and got a busy signal. – *John R. Gregory, W5RCO, Jackson, MS*

SOMETHING TO REMEMBER

● A long time ago – longer than I care to remember – 1926 or there abouts, I received my amateur license, W7OQ. Raw ac on a 210. Later a slop rectifier (my mother about done me in when she made a count of her jelly glasses). About that same time I joined Hiram Percy Maxim's gang. I stayed with ham radio and the League until after World War II. A family and its ensuing expenses caused me to drop ham radio as a hobby, but I still kept enough of a station to keep my license alive.

The war experience was something else. In my section, artillery engineers of Seacoast Artillery, three of the four master sargeants were licensed hams. Without our general knowledge of electronics – the radios, telephones, power plants and later radar – the army would have been hard put to function on Pearl Day and for four years thereafter. When Congress and the FCC gets to putting the squeeze on hams, it might be well to point out this fact. I am sure my experience was repeated many times over in every phase of the military.

At one time an entire battalion of 155 artillery was made functional only because I remembered from ham radio that a buzzer tone could be impressed on telephone circuits. Thus was born a time interval system that functioned until the regular equipment arrived. – *Vardell Nelson, W7OQ, Junction City, OR*

Remember the "Let's Talk Transistors" series by Robert E. Stoffels, WB9ESH? We've put together a reprint booklet of this 9-part transistor primer, and it is available from ARRL for $1 including postage.

CONDUCTED BY LOUISE RAMSEY MOREAU,* W3WRE

"Can You Help?"

THE YL MOTTO, QRV, goes far beyond participation in emergency or announcing readiness to receive traffic. There is a second definition that we learn almost as soon as we receive our call. It applies to our off-the-air time as well as when we are operating, for QRV is another way of asking "can you help?"

We become ambassadors for our hobby as we are asked to speak at civic or social organizations telling the story of amateur radio – of our far-flung friendships, public service record, and contributions to communications.

In answer to the question, "can you help?", we find that we have become a friendly shoulder for the younger members of the local radio club who seem to feel that we won't laugh at their not knowing some technical things at first. We reassure them when the gear they are building won't work properly, or lend sympathetic understanding when they find that they were working DX out of the band. We are often in the spot one YL found herself in when a worried mother called to ask if her son's station was too dangerous for her to touch when she cleaned his room.

For YL clubs, our off-the-air readiness includes a willingness to help plan not only the program for YL operators who will be attending a convention or hamfest, but also for the wives of the OMs who will be there. We must make sure that there will be a SWOOP initiation for the ladies, and that they will be well entertained.

Internationally that extra helping hand is found in the YLRC Italiano's sponsorship of taped lessons in English and Italian (with an accompanying manual) so that members who are not fluent in English are able to follow various types of contacts with this country. In New Zealand, Australia and India, YL operators have on-the-air informal meetings to assist newcomers in their YL groups to get on the air. Through the sponsorship of DX women by CLARA and YLRL, we are able to maintain world-wide association of women for greater fellowship and understanding.

We have stated that the second definition of QRV is code classes set up and taught by YL clubs all over this country and Canada. We do it initially because we enjoy doing it – we love helping. Our second reason is because it is our unspoken way of paying a debt, of returning the kindness and assistance that someone once gave us. This is the one way that we can say "thank you."

1975 YLRL Standing Committees

Christine Haycock, WB2YBA, 1975 president, has announced the following standing committee chairmen for the year 1975: contest custodian, Myrtle Cunningham, WA6ISY, YLRL vice president; budget and finance, Barbie Houston, WØPCD; membership chairman, Beth Taylor, W7NJS; eastern membership, Marge Campbell, K4RNS; international membership, Ione O'Donnel, WA2DMK; supplies, Patti Weiner, WA2RRI; publicity, Pat Sanner, WAØKVL; librarian historian, Marcia Rast, K6DLL; "tape topics" librarians, Dot Baumgardener, WA8IJW and Raj Cauthersm, K7NZO; *YL Harmonics* editor-publisher, Carrie Lynch, WA4BVD; certificate chairmen – continuous membership, Jackie van de Kamp, W6YKU; WAS-YL, Agnes Helinski, WA3GBJ; WAC-YL, Miriam Blackburn, W3UUG; DX-YL, Emma Berg, WØJUV; YLCC, Onie Woodward, W1ZEN and DX-YLCC, Phyllis Shanks, W2GLB.

"Powder Puff Derby" Stations

Carolyn Currens, W3GTC, chairman of communications for the Powder Puff Derby, has announced the stations that will provide the communications links for the annual AWTAR activity. The 1975 chairmen of communications will be Riverside, California, Myrtle Cunningham, WA6ISY; Phoenix, Arizona, WA7UGA, the Bash-Hal-NE-Ae ARC, with W7FCQ in charge of this activity; El Paso, Texas, W5URT; Plainview, Texas, WA5MIQ; Tulsa, Oklahoma, K5OVT; Lincoln, Nebraska, KØGMD; Moline, Illinois will be working from the Rock Island Arsenal with K9MVJ as chairman; Toledo, Ohio has three co-chairmen for

* YL Editor, *QST*. Please send all news notes to W3WRE's home address: 305 N. Llanwellyn Ave., Glenolden, PA 19036.

Moona, SU1MI, the first and only YL of Egypt, adds another country to the DX YL certificates available from CLARA and YLRL.

Presentation of the 1974 YLRL President's Plaque to Eila Russell, WA8EBS. L-r: Elaine Simon, WA8QFL, Eila Russell, WA8EBS, Anita Bien, WA8TAY. The plaque was created by Viola Grossman, W2JZX, and is given to each YLRL president after she completes her term of office.

the communications, WA8EWW, WA8CGN and W8TKS. The station at the terminal point, Boyne Mountain, Michigan, has not yet been announced.

There is a great need for operators at each stopping point, and all chairmen will appreciate any help that they are given from amateur operators in their particular area.

DX-YLs

The interest of women in amateur radio is increasing, and more feminine calls are appearing on the list of DX YLs. The list of countries with YL amateur radio operators has now increased to 117 with Egypt, SU1MI, Moona, and Timor, Teresa Gominho, CR8AL. YL News and Views is grateful to W3HNK, QSL manager of SU1MI, and to PY7YS, QSL manager for CR8AL for this information of the first YLs in those countries.

While OD5CH and OD5KS both are licensed in Lebanon, the only native YL of that country is OD5JJ, Arax Calinian, wife of OD5CS. In Jordan the list of known licensed woman amateur radio operators has increased with JY5HC, Princess Rood. Last year WA3HUP, Mary Ann Crider, was given the call JY9AA and a permanent license from that country.

This brings to 117 the countries that qualify for the three major DX YL Awards. Canada's DXCC-YL sponsored by CLARA and awarded for working 100 DX YLs in 100 different DX countries. The YLRL DX-YLCC is awarded for working 100 DX women, not more than two from any one country. The YLRL DX-YL certificate is issued to women amateur radio operators only.

1975 Buckeye Belles Officers

The Buckeye Belles, Ohio's statewide YL club, has elected the following women to serve as officers for the club year 1975-1976:

President, Carol Iams, W8WRJ; vice president, Eva Karnatz, WA8AHU; secretary, Donna Klosterman, WB8IPQ; treasurer, Jackie Depizol, W8WRH; editor, *Buckeye Burr*, Lillian Abbott, K8CKI.

Membership in the club is open to all women amateur radio operators living in the state of Ohio. The club sponsors two nets each week. Monday at 8:00 A.M. Eastern Time on 3950 MHz, net control station Beulah, WA8EKO. Tuesday at 8:00 P.M. Eastern Time on 3972 MHz, net control, Edie, WA8MBI/WA8KMT.

Meet the Club, Maritime Sparkettes

The call letters VE1YL are not merely a YL call – they are assigned to the Maritime Sparkettes, the amateur radio club of woman operators of all three of the Maritime Provinces.

These women were organized in 1966, and they have been busy in about every facet of amateur radio operation including such a deep interest in traffic that the club awards the "Sparkette Plaque" to the amateur in the Maritime Province with the highest traffic total each year.

These gals are active in Field Day each June, sponsor the "Lola" contest annually, and have introduced a new way of presenting amateur radio to the public through their "A Brownie on the Air" Day.

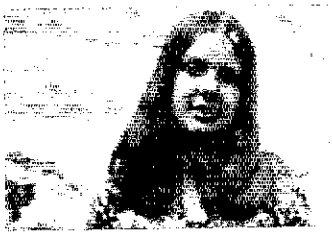
Their interest in helping other people everywhere has included assistance to sightless amateurs, aid to Korean people, sponsorship of code classes for those who wish to acquire a license and, of course, participation in all YL contests.

The Sparkettes meet each Wednesday at 9:30 A.M. eastern time on 3770 MHz. They are a group whose motto is "Friendship" and they encourage any and all YLs who are able to meet with them on their net to do so.

WB8PAV, Joni Bryner

Joni was introduced to ham radio by her mother, WB8NWT, and her cousin, W8EUE. Her interest in it has resulted in her receiving the call WB8PAV.

CW and the Continental Code weren't enough for Joni when she listened to some of the WVN gang working Morse. She dug up a copy of the old code, learned it as it was printed, and is now working with the American Morse net trying to build up her speed.



A member of ARRL, YLRL, RCC, and Amateur Radio Telegraph Society, Joni is active in traffic with an ORS appointment, and she has earned BPL. She is also manager of the West Virginia Novice Net.

As WN8PAV she received the YLRL Novice High Score Award in the 1974 YL-OM contest. She enjoys contests, particularly those sponsored by YLRL because, as she puts it, it is the easiest way to meet the other women in amateur radio outside of the nets. Contest contacts and net participation are helping her work towards the five certificates offered by the club. Most of all Joni enjoys meeting other people on the air. She says "I've met very few hams who weren't courteous, warm, likable people. It's really nice in this busy world to be able to find people who can be so relaxed and wonderful." QST

The World Above 50 Mc.

BY BILL TYNAN,* W3KMV

VHF ACTIVITY; how can it be increased? This is a question that is asked almost every time vhf people get together. It certainly is a key question to our enjoyment of our higher frequency bands. Indeed, it is a vital question involving retention of these valuable assignments.

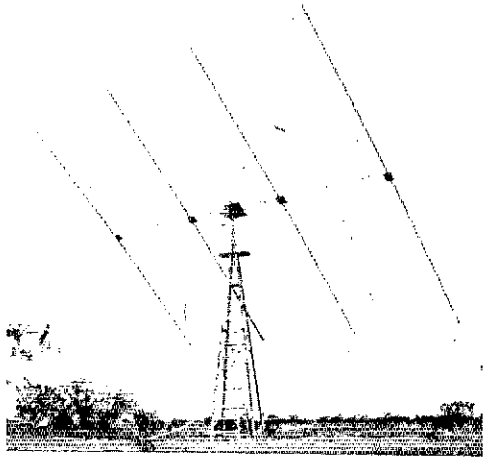
There is one particularly good activity builder, and this is an appropriate month to stress it. It is the contest. There are three ARRL-run vhf/uhf contests each year. They are held in January, June and September. The June affair probably offers the most interesting propagation conditions of any of the three. Six meters can almost always be counted upon to provide some varied contacts. Tropo can be quite good, so 2 meters and up are usually anything but dull. This year's JuneVHF QSO Party is on the 14th and 15th. The official announcement and rules were carried on page 73 of last month's issue of *QST*. It is important that everyone who has vhf/uhf capability get on for these contests, even if for only an hour or so. It is also important that everyone participating submit a log, no matter how small the score. If prospective vhf operators see a sparce listing of participants from their area of the country in the results of the last contest, they may be disposed to decide not to make the leap. Another important point, if contests are to fulfill the role of activity builders which they should, we shouldn't go away after the fray is over never to return until the next one.

With regard to vhf contests, are the rules about the way they should be or are changes in order? The Contest Advisory Committee is charged with the responsibility of making suggestions to the Communications Department concerning rules for all League sponsored contests. If you think that modifications to the rules would stimulate participation in vhf contests and increase activity in general, pass along your ideas to the CAC. You may address such correspondence to 225 Main St., Newington, CT 06111. Make sure to note that your remarks are intended for the CAC and that they apply to vhf contests. Along with all of the CAC members, W1HDQ and I will also receive copies and you can be certain that your suggestions will receive careful consideration. Aside from contests, what other inducements to greater vhf activity can be implemented? How about a certificate for consistent year-round operation? What form should such an award take, and what rules should be established for its issuance? Your views on this, or any other ideas for increasing activity, will be welcome.

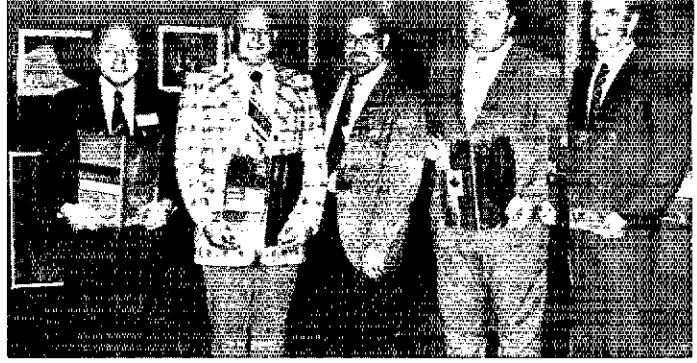
Docket 20282 Comments Due

Don't forget that June 16 is the deadline for submission of comments on Docket 20282, the restructuring proposal released by FCC last January. Vhf/uhf operators have a particular stake in the outcome of this rule-making, so all of us should file our own comments. The ARRL will, of course, be submitting a comprehensive set of comments. The questionnaire distributed in March was aimed at getting the views of the League's membership for formulation of these comments. Nevertheless, it is vital that as many well-thought-out comments as possible be filed prior to the deadline. Send yours in right away. Don't forget to mail the original along with 14 copies. That's important if you want your views known to all the commission people involved. Single copy comments may be read, but only by the staff members in the Amateur and Citizens Division. The additional copies are used for distribution to various other offices including the seven commissioners.

* Send reports and correspondence to Bill Tynan, W3KMV, Box 97, Burtonsville, MD 20730, or call (301) 384-6736 and record your message.



The 144-MHz EME antenna at K7NII consisting of 16 homebrew, 8 EL Yagis. When completed, the array will be fully steerable in both Az and El.



Some of the attendees of the Satellite Experimenters Conference holding souvenir Oscar 7 solar panel covers. Left to right are Karl Meinzer, DJ4ZC, Chuck Swedblom, WA6EXV, Dick Kolby, K6HIJ, Larry Kayser, VE3QB, and Dave Hull, VK3ZDH. *(WB4IWF photo)*

Satellite Experimenters' Conference

March 20 through 24, 1975, were days important to the future of Amateur Radio. They marked the convening of the International Amsat/Oscar Experimenters Conference. This conference, held in the Washington, D.C. area, was attended by those individuals who have in the past contributed most to the design and construction of the Oscar 6 and 7 satellites, as well as by several who have signaled their intention and capability to contribute to future amateur space projects. From Germany, representing Amsat, Deutschland Karl Meinzer, DJ4ZC, was in attendance. Karl's group had a great deal to do with the success of Oscar 7. They designed and built the 70-cm to 2-meter transponder aboard this latest amateur satellite. Dave Hull, VK3ZDH, of the WIA Project Australia organization, was also present. Amsat Canada had three of its members at the conference. They were Larry Kayser, VE3QB, Bob Pepper, VE2AO, and Ernie Welling, VE3HD. From the San Bernadino Microwave Association, the contributors of the 2304 MHz beacon still awaiting FCC activation authority, came Dick Kolbly, K6HIJ, and Chuck Swedblom, WA6EXV. Jan King, W3GEY, Perry Klein, K3JTE, and Tom Clark, WA3LND, from here in the Washington, D.C. area, rounded out the attendance. Unfortunately, due to funding limitations and professional commitments, others, such as those representing recently formed Amsat Mexico and Jamsat (the Japanese wing), were not able to be present.

The four days of meetings were devoted to discussions related to the spacecraft configuration and types of orbits most desirable for the next series of amateur satellites. In general, it was established that the primary emphasis will be placed on development of a spacecraft designed for a much higher orbit than the 900-mile orbit of the presently operating Oscars. Sound reasons as to why synchronous or near-synchronous orbits are not optimum for amateur satellites were presented. These had to do with the fact that, because such orbits must lie over the equator, their coverage of the parts of the earth where the highest percentage of the world's hams live is poorer than with other types of orbits. The conference recommended that a highly eliptical polar orbit be the objective. In such an orbit the satellite would reach an altitude of approximately twenty thousand miles at apogee and a few hundred miles at perigee. Apogee would be over the North Pole, and perigee would occur over the South Pole. The period of the orbit would be somewhere in the vicinity of 12 hours. About 80% of the time the satellite would be in the Northern Hemisphere, which is where the preponderance of the world's people reside, and hence where most of the hams are located.

The power output of the satellite's transponder for such a high orbit would have to be in the 10 to 40 watt range. In addition, a directional antenna would be necessary on the spacecraft. This requires some sort of stabilization system to keep the antenna pointed in the direction of the earth. In order to get to such a high orbit, it will probably be necessary to use a solid propellant rocket on the satellite. All of these considerations involve problems of a magnitude not previously faced by builders of amateur satellites. But then, until Oscar 6, no amateur satellites were able to last longer than a few weeks. Extending the life to years was a problem that was faced and solved. There is confidence that the difficulties associated with this Phase III part of the amateur satellite program, as it has been dubbed, will also be met and overcome.

The question of what the Phase III satellite will carry in the way of equipment received much consideration from the conference. It was quite firmly established that on-board control will be handled by a microprocessor. Data transmission from the satellite will be via a relatively high speed link rather than relying on the Morse or RTTY systems used in Oscars 6 and 7. This is because the need for more data in nearer to real-time have been very apparent on the presently operating satellites. As to communications transponders and what bands they will employ, there was no final resolution. A 10-meter downlink seems out of the question for such a high orbit. The signal level on the ground would be far too low. The only other appropriate bands, which can be legally used for amateur satellites are 2 meters and the 435 to 438-MHz portion of the 70-cm band. Thus, the Phase III spacecraft will employ these two bands. A decision on which of these should be used for the uplink and which for the downlink was deferred. Good arguments, both technical and political, were presented for both approaches and Amsat is interested in hearing from the readers of this column on this question. Address your ideas to Amsat, P.O. Box 27, Washington, D C 20044.

OVS and Operating News

50 MHz. March is known as a pretty sparce month when it comes to vhf propagation, and March, 1975, was apparently no exception. The grim DX situation is usually alleviated somewhat by aurora, however. The "buzz stuff" was noted on the night of March 10 by WA4MMP near Norfolk, VA. Bill reports that signals on 6 were typically S-7 while 2-meter signals ran about S-4. He was able to raise several 1st district stations on 6 with signals peaking at about 10 degrees east of north. No contacts were made on 2 meters, possibly because Bill was operating at 145.025. At WA4MMP's Tidewater Virginia QTH, the opening lasted from about 1800 to 2100 EDT. WA5IYX of San Antonio, Texas agrees that March was a dismal month for vhf DX. Pat does mention, however, that E_s propagation was observed on the low TV

220- and 420-MHz STANDING

WA1MUG	15	5	450	W2DWJ	16	4	570
K1PXE	13	6	700	K2OVS	15	5	734
W1HDQ	13	5	450	K2LGJ	14	7	650
K1JIX	12	4	600	K2YCO	14	6	675
W1AZK	10	3	375	W2CNS	14	6	525
K1BFA	10	3	225	WA2EUS	10	4	280
K2CBA	19	7	2650	W3RUE	20	7	850
W2DWJ	15	5	740	K3IUV	18	5	720
W2CRS	14	5	600	W3HMU	16	5	700
K2RTH	13	5	960	W3OMY	11	7	850
K2DNR	13	5	600	W3CJK	10	5	450
W2SEU	13	5	325	W3UJG	9	4	400
W3UJG	14	5	460	K4QIF	23	7	1065
W3RUE	11	6	480	W4FJ	22	7	995
K3IUV	11	4	340	K4EJQ	20	7	800
W4UCH	9	5	543	W4HJZ	15	5	560
K4IXC	5	3	1115	K4SUM	15	5	462
K4GL	4	2	485	W4VHH	15	4	750
W5RCI	10	5	910	K4GL	11	5	720
W5ORH	6	4	1178	K4NTD	9	2	963
W5AJG	4	2	1050	K4IXC	5	2	800
WA5MFZ	3	3	1100	W4AWS	4	2	750
WB6NMT	10	6	2650	W5RCI	19	6	880
W6WSQ	6	4	1178	W5ORH	15	5	1200
W7CNK	6	3	923	W5AJG	9	3	1010
W7JRG	5	3	959	W5LDV	7	2	950
K7ICW	4	2	250	W5GVE	7	3	963
K7HSJ	3	2	400	K5LLL	6	2	860
W8PT	11	6	660	W5UKQ	6	2	590
K8HWW	11	6	550	K5UGM	5	2	956
K9HMB	20	9	1785	W5SXD	5	2	850
WØPW	14	6	1600	WA6HXW	6	4	7500
WAØQLP	4	2	923	W6DQJ	4	2	360
VE2YU	8	3	300	K7ICW	4	2	225
VE2HW	5	2	325	W7JRG	3	2	420
VE3AIB	7	4	450	K8DEO	24	8	775
420 MHz				K8UQA	24	8	2138
				W8YIO	22	7	650
K1PXE	18	7	1210	W8HVX	19	7	660
K1HTV	17	5	610	W8CVQ	13	7	625
W1AJR	16	5	680	W8MNT	13	7	600
W1SL	15	7	2600	W8RQI	10	6	425
WA1MUG	15	5	740	WA8VHG	10	6	625
K3EAV/1	14	6	700	W8QOB	8	5	500
K1BFA	13	5	710	W8FWF	8	5	450
K1JIX	13	5	620	W9WCD	22	9	1725
W1JAA	11	5	2670	K9HMB	21	8	836
WA1JTK	11	4	715	WA9HUV	19	7	780
W1HDQ	11	4	380	W9JIY	15	6	550
K2UYH	24	9	2500	W9AAG	15	5	800
K2ACQ	24	8	925	K9AAJ	12	5	425
W2AZL	21	7	1000	WØDRL	24	9	1425
K2CBA	20	8	2670	KØTLM	19	6	1250
W2CLL	20	6	790	WØLER	18	6	1000
K2RIW	19	6	812	WØPW	15	5	1700
K2VDK	18	6	750	WØLCN	13	4	700
W2OMS	18	6	725	WØYZS	9	4	8000
WA2EMB	18	6	720	VE2HW	6	3	750
WA2FGK	17	6	745	VE3DKW	19	7	940
K2ARO	17	6	740	VE3AIB	9	5	600
W2BLV	17	6	732	VE3EVW	9	5	520
				VE3EZC	7	5	510

Figures are states, call areas, and best DX in miles.

channels on March 10 — interesting, as it was the same day as the aurora reported by WA4MMP and others. If March was bad, WA5IYX notes that February was better than many Decembers he has experienced. Six meter openings were logged at San Antonio on 11 days of the month for a total time of 1,405 minutes. Pat also keeps track of F2 and E_s propagation in the 30- to 50-MHz range, particularly to the south. During February and March very little of an F2 nature was noted above about 35 MHz.

K5ZMS passes along some fascinating information concerning 6-meter, and other vhf activity, in the Far East and the Australia/New Zealand area. One of those from whom Ray receives regular reports is Peter Jackson, VK6ZDY, of Perth, on the west coast of Australia. From Peter's QTH, Transequatorial Propagation (TE) is not as easily worked as it is in other parts of Australia. Nevertheless, VK6ZDY has managed to become the first Aussie to qualify for membership in the Six-Meter International Radio Klub. He did it by working JA1LZK, JA1RJU, and HL9WI, all of whom are members. By this fete of completing these TE contacts of approximately 5000 miles, Peter received SMIRK Certificate Number 722. Other 6-meter DX exploits accomplished by VK6ZDY include contacts with allVK districts and ZL. This was done, despite the fact that Perth is over 1300 miles from eastern Australia. Some of our W7s think that they have it rough! We must also bear in mind that the VKs can only use 52 to 54 MHz and that their power is limited to 400 watts PEP input.

Another interesting letter was received from Hatsuo Yoshida, JA1VOK. Hat passes along an extensive list of 6-meter ssb nets which operate regularly throughout Japan. He laments the fact that conditions this year aren't what they were in past years, when it was not uncommon to work many VK stations. He does report that the JD1YAA beacon on Marcus Island was heard on February 22, and that March 16 brought a QSO with DU1FG in the Philippines and an Australian TV sound carrier was heard at 51.75 MHz. March 19 produced an exchange with HM1GO in Korea. Sounds pretty good for the bottom of the sun spot cycle, and better times are coming.

From the same part of the world, K2IRT/KG6 on Guam writes that he monitors 50.4 looking for

(Continued on page 152)

1215-MHz STANDING

W1ALP	9	4	500
K1PXE	7	4	500
K9AQP/1	7	3	300
WA2LTM	16	6	770
K2UYH	10	5	520
K2JNG	10	4	305
W2OMS	8	5	537
WA2VTR	6	4	330
K2YCO	5	3	525
K2OVS	3	2	135
W3HMU	10	5	260
K3IUV	7	4	320
W4VHH	2	1	350
W4LDV	1	1	290
K4QIF	12	5	551
K4NTD	2	1	350
W5LDV	2	2	838
K5PUF	1	1	290
W5AJG	1	1	235
K5LLL	1	1	235
W5HPT	1	1	235
K8UQA	6	3	448
W8YIO	5	4	551
WA9HUV	5	3	525
W9JIY	5	3	300
W9WCD	3	3	770
W9JTP	3	2	165
VE3HW	1	1	260

How's DX?

CONDUCTED BY ROD NEWKIRK,* W9BRD

W h o :

Few subjects have stirred so much steady "How's" audience participation as Proposition Elmer. Years have passed since we first invited comment on the kindly ham who helped *you* up the ladder into the thrilling world of DX. And still the salutes roll in. Now we account for another batch of benevolent fathers (no mothers so far!) of amateur radio. . . .

Just this week I made good use of a radio part my Elmer gave me back in '34. He was the original W9AD, now a Silent Key, and he held forth on a farm near Plymouth, Illinois, "out in the country away from sin and QRM" as he always put it. He was big and delightfully ugly, had a wonderful sense of humor and dextrous hands that worked on miniaturized stuff even back in the '20s. After logging his share of DX, W9AD settled down in comfort on 160 phone to enjoy visiting and helping his nearer comrades. He became the great white father to many neophyte hams in western Illinois. OM Lawton's greatest joy was providing encouragement and assistance to struggling beginners, supplying components, instruction and occasional razzberry therapy. If the pilgrim had no money, as in my case, he would consult his file of junkbox goodies, assemble his "Conglomeration No. 348" and present him with enough gear to get ON THE AIR. W9AD would have approved of the Novice ticket. It was his tenet that the main license requirements were a sincere and burning desire to join the game, and support of ARRL – learning came with 'em. I can still hear him laughing as he suddenly tossed a precious meter at me across the shack with a sharp "Don't drop it!" It was a big Westinghouse from an old car and read 25 mA each side of zero with shunt removed. I used that relic in all my homebrew as long as I could, till size became a factor, and you can bet I'll always keep it. Another ham friend told me of W9AD once repairing a meter for him and returning it with "W9?" engraved on it. He was, you see, still breathlessly awaiting his ticket. Many of Mr. Lawton's early proteges went on to become good citizens, engineers, etc., so don't hold it against him that he got *me* into the ranks. You can't win 'em all, they say. If you gained favor with W9AD, he would give you the Don Rickles treatment. I was very proud when my license arrived and he immediately christened me "W9 Radio's Punkest Lid." He didn't give up easily, kept trying to QSO a few friends by watching oscilloscope cw even after he went deaf before passing away in 1962. That, to make a long story short, was Elmer Lawton, W9AD. (W9RPL) . . . Don't know for sure, but I think I just passed my Novice exam and feel rather confident that in a few short weeks I'll proudly be able to include myself in the ham ranks. Four factors were important in my making the grade: (1) ARRL literature. (2) If you want to learn *good* code, W1AW is the way to go. All the various "teaching aids" on the market can be confusing, but the League's *License Manual* and on-the-air code practice are really where it's at. (3) Patiently helpful neighbor WB8HPY who is my idea of what a good amateur radioman should be. (4) Back issues of *QST* that supplied a wealth of background information on what it's all about. Thanks, ARRL! Now how do I join? (Robert A. Harlow, Fairport, Ohio) . . . Here's an Elmer switcheroo for you. I recently passed my Extra and thought I knew practically all there was to know about amateur radio. Then I met WN9PRE and discovered how wrong I was. Rich sat down with me and patiently explained the basics of ICs, a branch of electronics in which I was green as grass. No real excuse for such ignorance, either, as I'm seventeen and was brought up in state-of-the-art. I knew you bought ICs, hooked them up and they worked (usually). Thanks to WN9PRE, I now know *how* they work. Moral: Just because somebody has a lower class of ham license than yours, don't count out the possibility that he may be able to teach you something! (WB9IMV) . . . My Elmer was one of the greatest, W2AM, now very active as W4ZM. Twenty-one years later we're still in touch, although I'm no longer a twelve-year-old and Red's not exactly a spring chicken either! (W3JZJ at I3FIN) . . . Mysterious dit-dit-dahs were emanating from the garage of my neighbor. Curious, I went over to investigate – wham! The ham bug bit deep and hard. He was WNØIZF, my first Elmer. Others who helped me reach General status in an enjoyable six months are KØAHL, WAØYTU, WBØs IVU IXS and JAE. (WBØLRH) . . . After the radio bug nipped me a few months ago, I wrote ARRL for the address of some near-by ham who would administer the Novice exam. The League suggested WA5NWZ. I gave Ronnie a call, and he's been a wonderful Elmer ever since. He wouldn't let me give up after failing my first written test. Now I think I've got the Novice made and, with continued generous help from Ronnie, I'll be out for General. (Tom Sargent) . . . I chose my Elmer from the *Callbook* because I knew no hams in this area. It was a lucky choice. At last, thanks to W3IBW, I'm on the air! (WN3YKK) . . . As a young teenager I lived next to WA2CFA, but Sel moved away before I caught radio fever. Got involved in short-wave listening a few years later. One night I heard a familiar voice on 20-meter groundwave. My long lost friend and neighbor,

* c/o ARRL, 225 Main St., Newington, CT 06111.

W5VOM/CEØZ, also active shoreside last autumn as YN6VOM and W5VOM/CE2, offers a unique QTH of the Month, Navy's submarine *Tang*. Bill's gear includes a URT23 sender, R1051 receiver and vertical radiator. Just the thing for those who really want to get away from it all on this month's gala ARRL Field Day.

USS TANG (SS563)

W5VOM

5Z4PI (WA2RUD) rolls around Kenya in a Land Rover working DX and snapping wildlife movies on animal reserves near the Tanzania border. Bill unlimbers an FPM, dipole or 500-foot long-wire at campsites along the way. *(Photo via W2OVC)*

WA2CFA! In response to my quickly mailed SWL report, Sel invited me to visit his Clifton, New Jersey, hamshack. A Novice license eventually resulted. I'd probably still be just listening to the fun if it weren't for WA2CFA. (WB2IWH) . . . WAØYXG put in more hours than I care to think about while helping me with code practice, theory, and all sorts of beginners' problems. Al was never too busy to give me a hand. Three cheers for a great Elmer! (WBØMHU) . . . Thanks to WØTXK for getting me started with a Conditional license back in Huron, South Dakota, sixteen years ago. Irv helped several others make the grade. Now I'm an Extra nearing the 250-country mark. Here's to Irv, WØTXK, Elmer extraordinary. (W7GYP) . . . Please add WB2OGS to the Elmer list for all the assistance he has given to many new hams now enjoying the hobby in Scarsdale, New York. (WB2HTJ) . . . Perhaps I'm the first to nominate our Federal Communications Commission as a first-class Elmer. Already had a good one in K4TXL, but my code couldn't seem to get past eight wpm. Fred and I felt that I had finally made Novice at last, and we had my station all set to go. After what seemed like years, an envelope did arrive from FCC – notifying me that I had passed the exam okay but had filled out the application improperly. No ticket yet! That made me mad enough to exterminate the whole Commission with my bare hands. Hard to believe, but I was so outraged that I found myself copying *eighteen* wpm in no time at all. If the Friendly Candy Company hadn't shook me up so much I'm sure I wouldn't now be preparing for my Extra. (WA4KDC)

As Elmer goes, so goes amateur radio. Sometimes he concentrates his friendly welcome on one or two eager newcomers. Or you may find him turning out a quantity of starry-eyed freshman candidates. But quality, his forte, is almost always there. How about yours?

W h e r e :

A few statistics noted here while qualifying for a cw-only Five-Band DXCC, data gathered four or five years after sending out the last card: (1) Total number of QSLs sent was 894, most via bureaus and a considerable number direct. Over-all returns reached about 70 percent. (2) 135 QSLs sent to specified managers got me 126 back, or 93 percent; FB! (3) 86 cards sent out via a QSL forwarding service brought a 67-percent return counting 22 QSLs from DX stations who sent theirs before receiving mine. (4) Poorest response came from the U.S.S.R., about 25 percent. (5) Replies still straggle in via the ARRL Bureau although my last card for 5BDXCC went out in 1971. (6) This mountain of paperwork must have cost several hundred dollars in printing, postage and International Reply Coupons. (7) Never again! (W2HUG) . . . My first envelope from the Zero ARRL QSL Bureau branch brought only EA8 and KL7 cards, but in these times I'll take what I can get on an indoor dipole. Things were better when I was WA9BGK. (WBØNOU) . . . I'm collecting foreign language phrases with which I hope to improve QSL returns. Any source recommendations by the readership? (WA6ZKI) . . . For my DX activity from September, 1972, to this March I still await 866 QSLs. Some will stray and some never will be sent, but it's interesting to see what develops. (W1OPJ) . . . I hold all logs for Navy club station KZ5NG, now QRT. I'm a few kiloQSLs behind, but I hope to have all KZ5NG and KZ5BP cards en route by the time this appears in *QST*. Requests not accompanied by self-addressed stamped envelopes, or s.a.e. plus International Reply Coupons, will be answered via bureaus. (WA4UAZ) . . . Some 6500 PJ9JT picture QSLs went out via bureaus about a month ago, a 100-percent effort. (WA1s STN STO) . . . For QSOs of January '75 only, the confirmations of VP2s LBX VZ and VP5AA are handled by WA5QYR. Contacts with these stations on all other dates can be confirmed via my Florida address, Apt. 305, 8850 Fontainbleau Blvd., Miami 33126. WA5QYR also manages QSLing for my guest activity at VP2DE. (W1WQC/4) . . . VP2DX contacts, only those made during the '75 ARRL DX Contest, will be confirmed by visiting operator K2FJ. Ken also signed VP2D/K2FJ down that way. (WØHBH) . . . Can any QSL manager with five or more clients claim issuance of 100-percent photo-QSLs? That's what you receive from me for QSOs with HT4IM, TA1HY, YN4JAB, YS1WPE and ZS6ME. (W5QPX) . . . Be advised that I no longer manage QSLs for OX3s MB and WQ. They may be reached at their home OY4M and OZ5WQ addresses. (OZ6MI) . . . Along with his ARRL Test entry, TI2WX specifies W4MYA as QSL manager for QSOs after the first of this year. (WA1PID-WA7WXY) . . . Intended to complete QSLing for February PJ8KI QSOs by early April. (W8KI) . . . VE1AHV puts another Canadian prefix to work as CH1AHV, and CIs are also radiating. (DXNS) . . . We're available as QSL managers for needful ops at the DX end, the rarer the better. (WA3PRW, WBØLTD, WNØONN) . . . 'Alp! These parenthesized brethren need nudging toward QSLs from holdouts mentioned: (WA6ZKI) FY7AA; (KH6BZF) KJ7BSA; (OZ5KF) HR1KAS, VS9AJC; (DL8WX) CN8ZZ, KP4s DFA DKX, PJ1AA, SV1SV, ZS6KM, all '71 contacts. Any succor? . . . "QSLers of the Month" galore this month, all applauded in *QST* mail from Ws 1OPJ 1SWK 7HPI, KØCVD, WAs 2JZX 3SWF, WBs 2HTJ 4IUX 9NME ØNOU ØLTD and DL8WX for outstanding attention to QSL obligations: A2s CAB CCY, CP1EU, CRs 4BS 6SW, CTs 2BP 3WA, EAs 2JD 8CG 9EO, ELØP/mm, Fs 8FC 9EP, FM7WH, FO8DR, FR7AI/t, FWØAA, Gs 3ZDW 5RH, GC8AT, GW3NNF, HI8RHM, Is 1NUC 3FIN, IZ2ZGP, JH1WIX, K9EGA/6W8, KC4s AAC NI, KH6IJ, KL7HRP, KM6EA, KP4EAK, KX6s BU GS, LA2HN, LX1CF, LZ1FI, MP4TEE, OA4AMM, ON6BB, PAØINA, PQØARM, TR8SS, TU2s EI FN, UAØs FGM KAR, VEs 2JQ 3UD, VKs 3AID/mm 9RH, VPs 1FF 2AB 2E 2EY 2GMB 2KF 2SAH 5AA 7DF 9AD 9GD, VR1AA, VU2DX, WØOIR/C6, XE2MX, YBØABK, ZD7PS, ZEs 1JV 6JJ, ZF1JH, ZL2s AS BEN, ZM7AH, 5V7WT, 5X5NK, 5Z4PP, 6W8s DY FP, 6Y5BF, 8R1s AG CB, 9J2BL, 9L1JT and 9X5PT, together

with QSL aides DJ5IO, DL1YW, F5ST, G3LQP, I2YDX, JA1VE, Ks 2BPP 2FT 4VMA 6ADL, VE4SK, Ws 2MIG 3HNK 4GSM 5ZF, WAs 2LOW 3NCP 5QYR 6VNR, WBs 4EYX 6LTJ and ZL2AQO. Any other potent Pasteboard pushers we overlooked? . . . For originality, color, etc., I nominate these *QSLs* of the Month: EA6CK, F6AEV, HH2JT, HV3SJ, IP1GLM, JH1DEV, KC4AAD, KX6BU, M1B, VP9GE, WA2ZDF/CP1, YN9GL, YS1MGC, 4Z4EC and 9X5KE. (WB2HTJ) . . . For that "etc." business there was nothing wrong with WA6DFH's old FO8AX Tahiti QSLs. (W9BRD)

AFRICA – Talk about QSLers of the Month – along with prompt response CR6SW included "change" from my IRCs in the form of mint Angola postage. (WB4IUX) . . . Research reveals that the 5Z4RT active late last year was not legally licensed by Kenyan authorities. (5Z4PI) . . . My QSL managership for TY6ATE begins with QSOs of January 1, 1975. I also handle cards for 5A1LT and 5X5SS. (W2AIM) . . . Anyone who QSOd CR6DN between October 25, 1974, and this January 11th should send his QSL to my address, reply assured. I operated Carlos' Lobito station during that period. (W5FGO) . . . 9G1BAA was a Ghana commemorative appearing in March. (NNRC) . . . OH2BH uncorked some seven ZD3X kiloQSLs at the end of March. Martin passed the 100,000-mark in confirming QSOs for his DX-peditionary stops. Computer printouts facilitate the output. (WCDXB) . . . VQ9RK closed down last July, but I have Bob's logs should anyone still need a deserved QSL. Requests for his ZD8RK cards occasionally drift in, too, although he left Ascension in September of '69. At the moment we have things all caught up. (W9VNG) . . . My QSLs may be obtained from manager K4QKW on the usual s.a.s.e. or s.a.e. plus IRCs basis. (TJ1AD-WB4WHE) . . . Liberia's 5L label was pressed into springtime commemorative service, suffixes same as the EL variety. (DXNS) . . . CR6s become XX6s now and then with suffixes unchanged. (LIDXA)

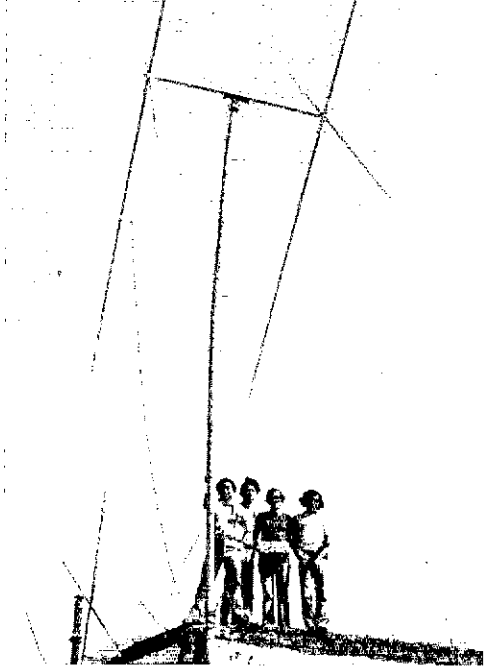
ASIA – What gives? My QSL sent to KA2AD via the bureau address listed in *QST* came back marked "returned to writer – APO receives official mail only." Along the same line, a card sent to the *QST*-listed Cuban QSL Bureau, Apartado 1, Havana, was returned stamped "return to sender – prohibited mail." (W6DTY) . . . Please note that I can confirm 4X4JS contacts made only after February 1, 1975. Logs also are on hand for QSOs by 4Z4s AI IB NNK and HK4CYX, self-addressed stamped envelopes required. (WA2KWP) . . . WA2KGY/4X indicates that W5TXK has taken over his QSL chores from WB2ZHM. (K4KCK) . . . W6DQX, retaining all logs, indicates the probability of recent bogus HS5ABD emanations. W9SZR last used that call in the spring of '72. (WCDXB) . . . SM1CNS gives up the ghost as AP2KS QSL tender, no logs in more than a year, and second-op Heinz of HZ1SH will accept QSLs via his DJ6ET address. (DXNS) . . . JA0CUV intended to clean up all QSLing for S21CW, 8Q6s AG and AH by the end of April. (WCDXB) . . . UM8FM, QTH in the roster to follow, offers to assist in running down errant QSLers in the Kirghiz region. (DXNS)

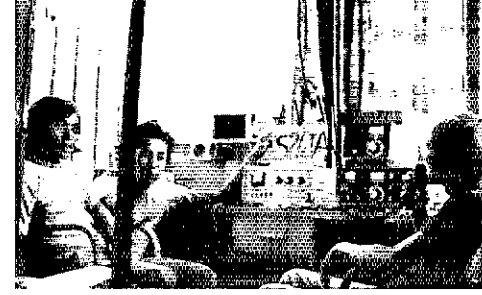
EUROPE – French amateurs signed the TK prefix, numerals and suffixes unchanged, while celebrating the REF's golden anniversary last month. (F9OE) . . . My GM5AXO QSO records for February, 1972, to June of '73, are available for interested parties. (WA4UAZ) . . . Apparently some Gibraltar stations, ZB2CF included, prefer QSLs via the GARS Box 292 address rather than direct. (WB2HTJ) . . . Anybody still needing my SV0WB card for 1967-'74 QSO is invited to apply to my Pennsylvania QTH. (W3MOJ) . . . Those CT6s and CT7s are CT1s of the same suffix at normal Portuguese locations. (DXNS) . . . On return from Europe I brought back about 500 4U1ITU QSLs confirming W/K QSOs from September of '74 to this February. They were forwarded via ARRL Bureau branches. (WA3NHG) . . . SM6CSB, after handling so many JA pileups as YB9ABX, is worrying over the postal fate of QSL manager SM6CVE. (K3RDT)

SOUTH AMERICA – I'm now up to date on LU5HFI QSLing. Anyone still needing my card can send a request to the Washington address (in the list to follow). All my Argentine logs were salvaged except for QSOs of April 1-12, 1974. I can also handle QSL requests for my HS3AL and HI8XAL activities. W6DQX still takes care of my HS5ABD confirmations. (W9SZR/3) . . . ZV-ZY-ZZ, as well as PQ-PR-PS-PU-PW-PX, are variant Brazilian tags occasionally employed. QSL to PYs of like suffix or via LABRE. (DXNS) . . . CE9AT's South Shetland confirmations should be getting around now that Rene is returning to the mainland. (NNRC) . . . HC8GI tells K2GBC he has trouble converting IRCs at his local post office. Mint Ecuadorian postage in lieu thereof produced a quick Galapagos QSL. (WCDXB) . . . QSOs with FY7AK made *only* during the second cw weekend of this year's ARRL Test can be QSLd via my address. (K3BSY)

OCEANIA – I receive QSLs via the bureau route or through QSL manager WA3EST who does an excellent job. My address in recent *Callbooks*, at least through first supplement of '75, is incorrect. No postage, fees or anything required, just your card bearing proper data. (KG6JEU) . . . All VK4AK's Norfolk Island contacts in April and May can be confirmed via my QTH. He signed VK4AK/9 on cw, VK4AK/ni on phone. (W7OK) . . . Applications to my Stateside address (see listing to follow) will produce QSLs for my 1972-'74 contacts from Guam. I also briefly signed WB0HMJ/KG6. (ex-KG6JCH) . . . I visit Kwajalein regularly and can confirm any QSO made in the last year or two by KX6s BU and MV. (WA6HRS) . . . According to sources on the

PA0TO works his share of DX despite demanding duties as editor of VERON's widely circulated *DXpress*. Jaap favors radiotelegraphy in Voorschoten with Trio, TS510, KW500, Mohawk and various skyhooks for frequencies high and low.





S21JA's cubical quad overlooks, left to right, JAs 2KLT 2KWJ, PAØIWH/S2 and JA2PJC. The shack shot shows, from left, JAs 2PJC, 3KWJ and PAØIWH/S2. JAs 1MCU and ØCUV, using the call S21CW, also were among the prominent Japanese DXers who engineered this recent Bangladesh bash. Except for a smattering of U.S. sixes and sevens, openings Statesward were poor to nil. *(Photos via W7PHO)*

scene, hams in the Gilbert & Ellice Isles soon will be signing VR1 & VR8 prefixes respectively. Northern Line Islanders are to be VR7s. (WCDXB) . . . Now to individual recommendations discovered in the mailsack, but keep in mind that all suggestions are not necessarily either accurate, complete, or official. . . .

ex-AC3-5SQ, S. Saja, Radionics, Zarkawt, P.O. Alzawl, Mizoram, India
C31LO, P.O. Box 10, Andorra
C6ANN, R. Dawkins, ex-VP7NN, P.O. Box 1432, Nassau, Bahamas
FK8CA, Box 38, Noumea, New Caledonia
FPØs DA MM (via WA1JKJ)
G3VLX, D. Buckley, 16 Wood Ride, Petts Wood, Orpington, Kent, England
HC8FC, B. Chiller, 162 East Ave., Pitman, New Jersey 08071
HI3XPD, P.O. Box 43, Santiago, D.R.
HS3MJ, MARS, P.O. Box 94, 7th RRSF, APO, San Francisco, California 96386
HZ1TA, c/o Maj. H. Porter, Riyadh, Saudi Arabia, APO, New York, New York 09616
IØLPY/TZ, Box 34, I-04024, Gaeta, Latina, Italy
IØWDX, C. Casaroli, Viale Carso 69, I-00195, Rome, Italy
JW4EJ, J. Klaeboe, 9176, Bear Island, Norway
K4ERO/HC1, J. Stanley, P.O. Box 691, Quito, Ecuador
K9KDI/6Y5 (to K9KDI)
ex-KG6JCH J. Rounce, 1239 146th Ave. SE, Bellevue Washington 98007
KH6EVM/KP, 1427 Dillingham Blvd., Suite 209, Honolulu, Hawaii 96217
KM6EA, R. Holman, USNavSta, Box 19, FPO, San Francisco California 96614
KZ5JN-JBN, J. Harris, WB5KSQ, 2111 Thompson Hwy., Richmond Texas 77469
KZ5QR-QRN, M. Schimmenti, WA6BBC/4, 3301 SW 13th St., V296, Gainesville, Florida 32601
LU2DZ/4U, C. de Felipe, Box 593316, Miami International Airport, Miami, Florida 33159
ex-LU5HFI, F. Laun, W9SZR/3, Box 31097, Washington, District of Columbia 20031
OA4S/4X, Box 339, Peruvian Battalion, Jerusalem, Israel
OX3CO, P.O. Box 612, Godthaab, Greenland
TU2EB, E. Botrel, P.O. Box 635, Yamoussoukro, I.C.R.
UK3R, *Radio* Magazine, P.O. Box N-88, Moscow, U.S.S.R.
UM8FM, P. Rushakov, P.O. Box 49, Armavirska St., 63, Frunze, Kirghiz S.S.R., U.S.S.R.
ex-VK8KK, D. McArthur, 14 Merrilong St., Ringwood East, Victoria, Australia
VP1RD, P.O. Box 10, Corozal, Belize, Belize
VP2AB, J. Brown, Box 229, St. Johns, Antigua, W.I.
VP2ABC, Box 444, St. Johns, Antigua, W.I.
VP2s DE LBX VZ (see text)
VP2SPI, ARSB, P.O. Box 814E, Bridgetown, Barbados
W2LGY/6Y5H (via W2LGY)
W9MR/CEØ (via K3RLY)
ex-WBØHMJ/KG6 (see ex-KG6JCH)
YB9ABH/1, R. Whitney, Box 2761, Jakarta, Indonesia
YJ8AN, R. Beets, P.O. Box 219, Vila, New Hebrides
YN4s FOC SMR (to K8s OHG ONV)
YV5DYA, P.O. Box 7673, Caracas, Venezuela
ZB2s CS USA (to W9JVF)
ZD8RW, R. Weston, Box 4308, Patrick AFB, Florida 32925
ZS2JL, 59 Kennington Road, Nahoon, South Africa
ZZ4ITU, F. Carrato, Box 144, 36100 Juiz de Fora, MG, Brazil
ZZs 6AM 8JO (to PYs 6AM 8JO)
3D6BE, P.O. Box 132, Mbabane, Swaziland
4Z4s AI 1B NNK (via WA2KWP)
6W8EX, J. Diop, P.O. Box 4002, Dakar, Senegal
9K2DO, P.O. Box 1262, Kuwait

AP2KS (see text)
C6ABC (to WB4YHN)
CH1AHV (see text)
CP1BCC (via WA2ZDF)
CR6DN (see text)
CT6BY (see text)
CV8B (via W6TCQ)
CVØZ (to CX2CS)
CW3BH (to CX3BH)
DJ3HJ/4W1 (to DJ3HJ)
DJ7TI/a (via DJ1TC)
EA5AX (via K1WPS)
EL2FT (via WA3NGS)
ELØP/mm (via JA1VE)
ELØS/mm (via YU2AKL)
FØBPZ (to W6FKF)
FØRV/p (via G3VLX)
FB8XJ (via F2MO)
FP8DH (via K9OTB)
FW8DA (via KH6GLU)
FY7AK (see text)
FYØST (via F6CWB)
GB3RN (via G3HZL)
GC4BUE (to G4BUE)
GC5AVR (via DJ5UA)
GM5AXO (to WA4UAZ)
GW6GW (via GW4BLE)
HBØAFI (to HB9AFI)
HBØAZD (via OH2TW)
HH2V (via F6BFH)
ex-HI8AL (see text)
HK4CYX (via WA2KWP)
ex-HS3AL (see text)
IG9SEZ (to IT9SEZ)
JY8BH (to OH2BH)
JY8HJ (to DJ3HJ)
JY8ZB (to DJ9ZB)
KG6JEU (see text)
KP6CI (via W2MOY)
KS6SFA (via KS6DY)
KX6BU (see text)
KZ5UL (to K3ULL)
OE5CA/YK (via OVSV)
OX3MB (to OY4M)
OX3WQ (to OZ5WQ)
OX3YB (via OZ4XU)
P29MM (via K4MQG)
P29UC (via WA7ILC)
PAØSOL/W3 (via W3GVR)
PIØJR (via W3ZKH)
PW4KL (to PY4KL)
ex-SVØWB (to W3MOJ)
TA1BW (via W1NML)
TI2WX (see text)

TK9OE (see text)
TY6ATE (see text)
VE8RCS (via WA7OBH)
VK3AID/mm (via ZL2AQO)
VK4AK/9/ni (via W7OK)
VP1CFB (to W6RP)
VP2DX (see text)
VP2LBR (via K2IGW)
VP2MDV (via VE2DDV)
VP2VBV (via WØUQD)
VP2VCN (via WP4EBQ)
VP5AA (see text)
VP5B (via W4ORT)
VP5M (via WB4QKE)
VP5WW (via WB4EYX)
VS5DB (via JA2KLT)
VS9MAA (via G3YOB)
WA2BAV/4X (to WA2BAV)
WA2KGY/4X (see text)
WB2AQC/4X (to WB2AQC)
XE2EX (to W6RP)
XX6SW (see text)
YB9ABX (via SM6CVE)
YU3P (via YU3HIJ)
YV4CVE (to YV4YC)
ZB2CF (see text)
ZE6JJ (via K6ZDL)
ZF1MA (via G3BWY)
ZK1DD (via VE3GUS)
ZP5TI (via WA3TAO)
ZVØJY (to PY2JY)
ZY5YC (to PY5YC)
3C1AGD(via SM3CXS)
4W1AM (to G3JUY)
4W1HJ (to DJ3HJ)
4W1ZB (to DJ9ZB)
4X4JS (see text)
5A1LT (via W2AIM)
5L2FT (see text)
5L2JJR (to EL2RL)
5L9A (via WA6TWG)
5N2NAS (via NARS)
5X5SS (via W2AIM)
8R1VC (via W9BNH)
9A1BT (via I2FOC)
9G18AA (to 9G1AR)
9J2MX (to G3MXD)
9Q5BG (via REF)
9Q5ZT (via UZRA)
9V1SN (via RSGB)
9Y4PHO (to W7PHO)

Our QTH possee this trip: Ws 1CW 1GNC 1OPJ 1SWX 1VH 3YAF 5FGO 5ONL 7HPI 7YF 9KOK 9LNQ ØHBH, Ks 2GAT 3BSY 3RDT 4KCK ØCVD, WAs 1PID 2JZX 3SWF 7WXY, WBs 2HTJ 4LFT 8OBA ØNOU, DL8WX, 12CBM, OZ6MI, 8P6BN, Columbus Amateur Radio Association *CARAscope* (W8ZCQ), *DX News-Sheet* (G. Watts, 62 Belmore Rd., Norwich, NR7 OPU, England), International Short Wave League *Monitor* (E. Chilvers, 1 Grove Rd., Lydney, Gols., GL15 5JE, England), Japan DX Radio Club *Bulletin* (JA3KWJ), Long Island DX Association *DX Bulletin* (K2KGB), Newark News Radio Club *Bulletin* (M. Witkowski, Rt. 5, Box 167, Stevens Point, Wisconsin 54481), Northern California DX Club *DXer* (Box 608, Menlo Park, California, 94025), North Florida DX Association *News* (WA4UFW), Southern California DX Club *Bulletin* (WA6KZI), VERON's *DXpress* (PAØTO), West Coast *DX Bulletin* (WA6AUD) and Western Washington DX Club *Totem Tabloid* (WA7JCB). How about rounding up a few for the crew?

Whence:

OCEANIA – VK8KK writes that he and his family fortunately were in Adelaide when the great storm of Christmas devastated Darwin. Doug reports that VK8s CM DI and HA all lost homes but will remain in the city. Other Darwin VK8s are now scattered far and wide. VK8KK relocated to the Melbourne area and is awaiting a VK3 call. (W5ONL) . . . Wonderful time in the Pacific trying DX bands as FOØRKP and ZL1BOY. (W9RKP) . . . Same here as FOØVAP in April and May. (W6VAP) . . . I expect to be commuting to Kwajalein for another year or so putting KX6MV on the air and operating KX6BU in contests. (WA6HRS) . . . VK3AID/mm works his share of DX roaming the seas aboard M/V *Hop Chong*. (W7HPI) . . . I live on 20 cw where a few midwest and eastern states would complete my WAS. (KG6JEU) . . . 3D2ER remains frequently workable on 14,200-14,220 kHz. (W8KMG) . . . Remember the outstanding stint of OA3X in the aftermath of the big Peruvian quake some years ago? Hal, SM6CSB, when home, now has a TR4 going on army assignment as YB9ABX. (K3RDT)

ASIA – Veteran DX hounds will recall intriguing QSOs with AC3SQ-AC5SQ. Saja now struggles to make a living by means of a small radio shop in India and has much to learn about solid-state electronics. He would greatly appreciate unneeded literature on the subject, and can be reached at the address in the preceding QTH roster. Old-timers also may not know that Chak, ex-AC4NC, passed away a few years ago. (W9KOK) . . . Visited 4X4s IL NW, 4Z4HF and other hospitable hams while filming an Israeli radio documentary in March and April. (WA2BAV, WB2AQC) . . . My 3798-kHz QSO with VS6DO at 0955 GMT, February 13, 1975, probably the first 75-meter DX contact from Japan, was followed by QSOs with W7QK, VU2GDG and 9M2DW. (JA9ESZ) . . . I'm active on 40 cw around 1600 GMT. Neighbor HS2s AIG and AKO are also workable. (HS2AKP-K7VAY) . . . OD5IO is a handy Asian on 3750-3800 kHz around 0300-0630 GMT. (WA3SWF) . . . I'm off to Saudi Arabia and should soon be heard from HZ1AB. Perhaps I'll get the chance to help activate the Kuwait and Iraq neutral zones. (ex-KZ5PW) . . . I'd like to correspond with fellow WAJA-seekers who have recently succeeded in catching Shiga, Shimane, Tottori, Tokushima, Nagasaki and Oita prefectures. (W7FCD) . . . In six months I've worked more than 200 countries on all continents with 800 watts and an antenna about 20,000 feet high. That's right, aeronautical mobile. My home base is Jeddah, and I'm usually found on 14,225-14,235 kHz. I also try 15 and 20 at times. (WB4JUT/am)

AFRICA – After a four-year wait because of age restrictions, I finally became licensed a week before my eighteenth birthday. So far as I know I'm the first and only Swaziland citizen to hold a call sign. Equipment at the moment is an FT200 borrowed from ZS6WRC, my college club station, and it does quite well on cw. Had a two-element triband beam going for a while but a freak storm wrecked it. I'd like to compliment U.S. hams on their cw operating and signal quality. But as for newer amateurs, I note that those who have done extensive SWLing do much better than those who start right off with transmitters. There's no better path to ham radio than the short-wave listening route. I understand that WA4OHO, a Peace Corps volunteer, is hoping to get on the air here but has no gear at present. My most regular spot is near 7025 kHz at 0400 and 2100 GMT. (ZD6AA-ZD6BHW/ZD6) . . . Regular Tunisia licenses allow only 7-, 14- and 28-MHz operation. QSOs must be in French, English or Arabian. (DL7RT) . . . After a long wait 5A1LT was allowed to fire up late last year, the first Libyan available in some time. (W2AIM) . . . CR6IDN has closed down for immigration to Canada. (W5FGO) . . . Limited operating during my 20-month Cameroon stay produced QSOs with 55 countries and 44 states. One of the reasons TJ calls are so difficult to obtain is that certain radio personnel here insist on making illegal international phone patches. (WB4WHE, ex-TJ1AD) . . . I try to be active nightly near 14,270 kHz at 1730 GMT, fixed-portable from a Land Rover. After blowing two sets of power transistors, I've learned not to trust the vehicle's alternator, so all my QSOs are on battery. In five months I've worked 108 countries with 150 watts, dipoles and long-wires. By the way, DX contests are a drag for us relatively QRP DX stations who must hunt rare holes among all the W/K QRO. (5Z4PI)

NORTH AMERICA – On the 20th-21st of this month members of Amateur Radio Society of Barbados intend to put VP2SPI on 10 through 160 meters, code and voice, from Palm Island in the Grenadines. (8P6BN) . . . Check with OX3AB for details on a certification commemorating Julianehaab's 200th anniversary. It's based on sufficient QSOs with appropriate OX3s in the twelve months beginning this April 7th. (EDR) . . . I visit old contest king XE1A periodically, but haven't as yet been able to coax him back on the air. (W6RP) . . . Between traffic sessions I've managed 88/56 countries worked/confirmed without the help of a Japan QSO. My DX60 and dipoles do well from Signal Mountain. (K4KCK) . . . I'll be looking for DX from the British Virgin Islands as VP2VCN in May and June with an FT101B, linear and Hamcat vertical. The station, operated aboard my motor yacht *Joyce*, will use voice on 20 and 40, code in the Novice bands. (WP4EBQ). QST

Operating News

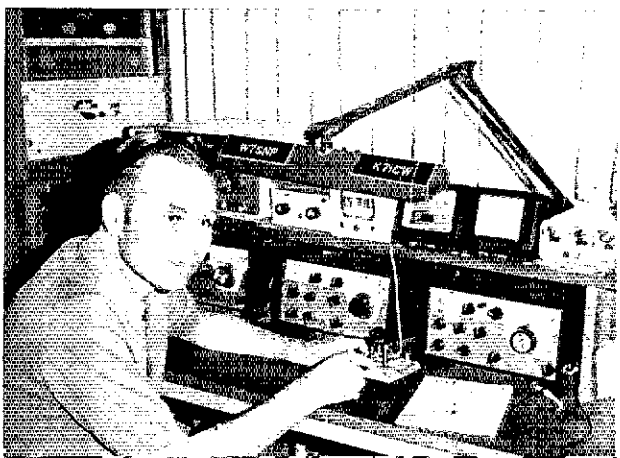
GEORGE HART, W1NJM
Communications Manager
ELLEN WHITE, W1YL
Deputy Communications Mgr.

The Subject Is Changes. They come about slowly in your ARRL contests, since all (with the exception of the 160 and 10 meter contests) have been on the operating calendar for many years. The "big three" (Field Day, Sweepstakes, and the DX Competition) have been annual events since the 1930s. Over the decades the rules for each have evolved into what are primarily a happy medium for most concerned. Serious participant and casual operator (and, indeed, *non*-contester) all find something in each to please them, and this very fact is the essence of the contest in each case. The serious contester must find an outlet for his eagerness . . . a three-hour Sweepstakes once a year would hardly do the job, and yet the casual contester can still chase the "Clean Sweep" and make it in only a few hours of listening and calling. The contests are widely accepted and are growing more popular, since the rules make them of interest to many amateurs.

Times do change, though, and improvements *can* be made, even after 40 years. The DX Test this year had three major changes: two (the one-weekend DXpedition category and the certificate for each 1000-QSO-scoring DX station, a LU5HFI suggestion) involve recognition for accomplishments and don't actually alter the complexion of the contest. The third change, however, the addition of "High Band" and "Low Band" categories for stateside and DX operator alike, brought about some real, obvious differences in many operators' outlooks. The original suggestion for High and Low Band competition came from long-time contester OK2BOB, and was seen as a possible answer for the operators who felt that the DX Test is too long. DX stations have become weary of working only W/VE stations for hours on end, and W/VE operators have felt it necessary to put in 80-90 hours out of 96 in order to be competitive. The changes remove some of the "grind" aspects of this annual activity.

The DX Competition changes didn't just happen; they involved a lengthy process which began and was sustained by contesters' support for them. The idea of somehow "shortening" the contest had been kicked around for many years, but most wanted to retain the two-weekend-per-mode concept and most didn't want to have required time-outs or the like. The high/low band entry was certainly simple in its conception but someone had to come up with the idea; OK2BOB was the man, but it could have been anyone. The concept was spelled out on a Contest Advisory Committee questionnaire which was circulated, by a number of means and channels, to active contesters around the world. Tabulation of the responses showed widespread support for the idea with almost no objection to it. Subsequently the CAC put it into a recommendation for a *trial* rules change. The Headquarters Awards Committee approved, and the new 1975 entry categories were the result.

Compiling and reporting the results of the DX Test this year will be an interesting job, because we are on virgin soil. Every top score this year in the new categories will be a record! Early returns indicate an astounding interest in the new categories and those who chose to enter either high- or low-band competition seem to have abundant praise for the new rules. Those who stuck with the traditional all-band entry certainly were not hurt by the rules changes, so they didn't mind. That's the beauty of a change like this: many are happier and no one objects.



K7ICW has effectively worked himself out – at least when it comes to WAS. In March, Al qualified for his most recent WAS, making it a current total of 7 bands! His 160-meter effort was acknowledged last year and that 6-meter special was achieved in 1971. To quote Al, "Notice the haggard lines of Rhodelslanditis. Other ailments common to the disease are Vermontitis and Delawarosis. Having graduated *summa cum laude* in WAS, I'm now pursuing the advanced degree in DXpertania."

W1AW SCHEDULE (effective February 23, 1975)

The ARRL Maxim Memorial Station welcomes visitors. Operating-visiting hours are Monday through Friday 1 P.M. - 1 A.M., Saturday 7 P.M. - 1 A.M. and Sunday 3 P.M. - 11 P.M., (all times local Eastern). The station address is 225 Main Street, Newington, Conn., about 7 miles south of Hartford. A map showing local street detail will be sent upon request. If you wish to operate, you must have your original operator's license with you. The station will be closed Mar. 28, May 26, July 4 and Sept. 1, 1975.

Times/Days *CDT*	*UTC*	*Monday*	*Tuesday*	*Wednesday*	*Thursday*	*Friday*	*Saturday*	*Sunday*
0740	1240	← Oscar[9] →					.....	.....
0800	1300	CODE PRACTICE[1] (5-25 wpm MWF, 35-15 wpm TTh) Details Below					.....	.....
1200-1300	1700-1800†	21/28 cw[7*]	7.290*	21/28 cw[7*]	7.290*	21/28 cw[7*]	.....	.....
1300	1800	← Oscar[9] →					.....	.....
1320-1400[4]	1820-1900[4]	14.290*	14.080*	14.290*	14.080*	14.290*	.....	.....
1400-1500	1900-2000	7.080*	21/28 ssb[8*]	7.080*	21/28 ssb[8*]	7.080*	.....	.....
1500	2000	← CODE PRACTICE[1] (10-13-15 wpm) Details Below →					.....	Oscar[10]
1530	2030	← CW Bulletin[1] →					.....	.....
1600-1630[4]	2100-2130[4]	7.1 Nov.[5*]	21.1 Nov.[5*]	28.1 Nov.[5*]	21.1 Nov.[5*]	7.1 Nov.[5*]	.....	Oscar[11]
1630	2130	← RTTY Bulletin[3] →					.....	.....
1700-1800[4]	2200-2300[4]	CPN[6]	14.095 RTTY*	3.625 RTTY*	7.095 RTTY*	CPN[6]	.....	.....
1800-1830	2300-2330	.....	CN[6]	.....	CN[6]	.....	.....	.....
1830	2330	← CODE PRACTICE[1] (10-13-15 wpm) Details Below →						
1900	0000†	← CW Bulletin[1] →						
1930-2000[4]	0030-0100[4†]	3.7 Nov.[5*]	14.080*	14.080*	7.1 Nov.[5*]	14.080*	.....	.....
2000	0100†	← Phone Bulletin[2] →						
2010-2030[4]	0110-0130[4†]	3.990*	50.190*	145.588*	1.820*	3.990*	.....	.....
2030	0130†	← CODE PRACTICE[1] (5-25 wpm TThSatSun, 35-15 wpm MWF) Details Below →						
2130-2200[4]	0230-0300[4†]	3.580*	.....	1.805*	.....	3.580*	.....	.....
2200	0300†	← RTTY Bulletin[3] →					.....	.....
2230	0330†	← Phone Bulletin[2] →					.....	.....
2240-2300[4]	0340-0400[4†]	7.290*	3.990*	7.290*	3.990*	7.290*	.....	.....
2300	0400†	← CW Bulletin[1] →					.....	.....
2330-0000[4]	0430-0500[4†]	3.7 Nov.[5*]	7.080*	3.580*	7.1 Nov.[5*]	3.580*	.....	.....

[1]CW Bulletins (18 wpm) and code practice on 1.805, 3.580, 7.080, 14.080, 21.080, 28.080, 50.080 and 145.588 MHz.**

[2]Phone Bulletins on 1.820, 3.990, 7.290, 14.290, 21.390, 28.590, 50.190 and 145.588 MHz.**

[3]RTTY Bulletins on 3.625, 7.095, 14.095, 21.095 and 28.095 MHz.** Bulletins at 170 Hz shift, repeated at 850 Hz shift when time permits.

[4]Starting time approximate, following conclusion of bulletin or code practice.

[5]W1AW will tune the indicated band for Novice calls, answering on the caller's frequency.

[6]Participation in traffic nets.

[7]Operation will be on one of the following frequencies: 21.02, 21.08, 21.11, 28.02, 28.08, 28.11 MHz.

[8]Operation will be on one of the following frequencies: 21.26, 21.39, 28.59 MHz.

[9]When an Oscar satellite is in orbit, daily updated orbital data is sent at 18 wpm on cw frequencies.

[10]Oscar orbital data for the coming week, on cw frequencies.

[11]Oscar orbital data for the coming week, on RTTY frequencies.

* General contact period.

** No 10- or 15-meter activity from 2030-0000 CST.

† Indicates following day when UTC is being used.

All frequencies are approximate.

W1AW CODE PRACTICE

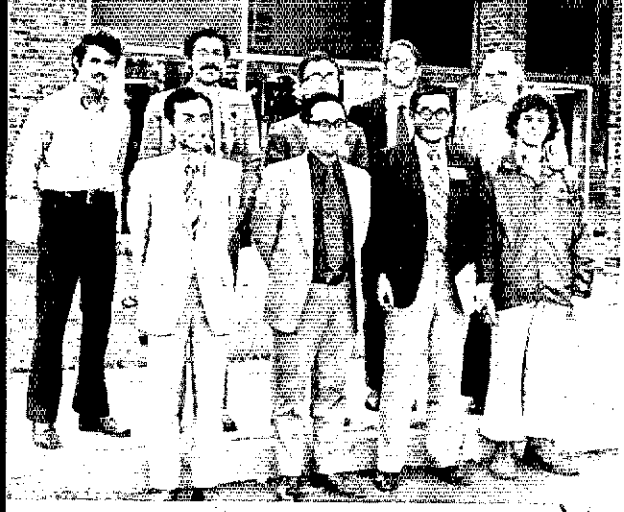
W1AW transmits code practice according to the following schedule. Approximate frequencies are 1.805 3.58 7.08 14.08 21.08 28.08 50.08 and 145.588 MHz. For practice purposes the order of words in each line may be reversed during the 5-13 wpm transmissions. Each tape carries checking references.

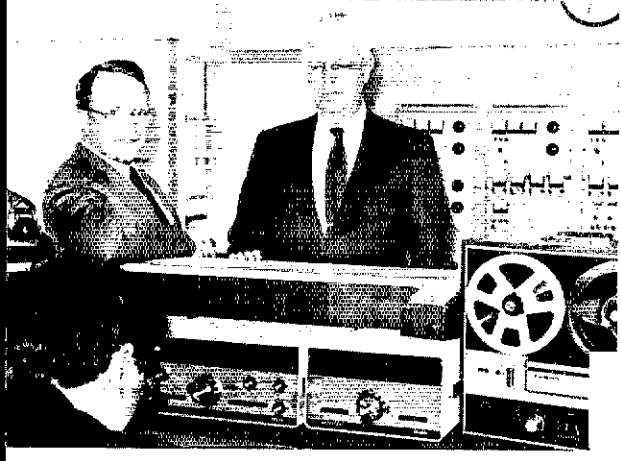
Speeds	*Local Times/Days*	*UTC/Days*
10-13-15	7:30 PM EDST dy 4:30 PM PDST	2330 dy
10-13-15	4:00 PM EDST MTWThF 1:00 PM PDST	2000 MTWThF
5-7½-10	9:30 PM EDST SnTThS	0130 MWFSn
13-20-25	6:30 PM PDST	
5-7½-10	9:00 AM EDST MWF	1300 MWF
13-20-25	6:00 AM PDST	
35-30-25	9:30 PM EDST MWF	0130 TThS
20-15	6:30 PM PDST	
35-30-25	9:00 AM EDST TTh	1300 TTh
20-15	6:00 AM PDST	

June 6: It Seems to Us
June 10: Correspondence
June 18: League Lines
June 26: ARPS
June 30: World Above
July 2: YL News

(from April *QST*)

Editorially, some changes in reporting will be necessary for this year's DX Test. Tabular listings will be fairly straightforward, but will take up more room than in previous years, because more titles will be required. However, the status of multiplier boxes, division leaders boxes, QRP Champs, and others will be affected by the new entries. Methods must be found to handle these. The final objective is to make the write-up as readable as is feasible, while at the same time taking up as little valuable *QST* space as possible; the *QST* write-up of the 1974 DX Competition





The above two pictures represent visits to headquarters of two groups of prominent manufacturers of amateur gear, each of whom brought "goodies" for W1AW. At top, representatives of the Trio-Kenwood line gather in front of headquarters with members of the ARRL Technical and Communications Departments during a visit last September. Left to right, front, are Mr. Nonaka, JA1BMI/W2, JF1BKH, WA1JZC; back row, WA1ABV, JA1SJV, JA1HQS, W1FBY, W1CW. In bottom photo, Heath Co. President David Nurse is shown with ARRL General Manager W1RU while Heath Design Engineer W8KRR operates the new SB-104. Six members of the Heath Co. staff flew to Hartford for the occasion.

required eighteen-and-a-half pages. We can forsee some serious negotiations with the Managing Editor over this one!

The big change in Field Day for this year is double points for cw contacts. This trial change, like the ones in the DX Competition, was a long time coming. It began receiving priority treatment when the ARRL Board of Directors passed a motion to encourage use of varied modes on Field Day; when one considers that RTTY and SSTV are seldom, if ever, employed by groups in the field, this "varied modes" boils down to cw. The reasoning behind a rules change to promote more cw is not as obvious as in the case of the DX Test changes: Field Day is or isn't "just a contest" (We're not going to get into *that* debate here!); take your pick.

The CAC and the Emergency Communications Advisory Committee are now *both* involved in recommendations concerning FD and their outlooks are, naturally, somewhat different. Recognizing that FD *is* partly an emergency operation, the CAC recommended bonus points for cw operation. Why? Because more and more the way to prove one's effectiveness on Field Day is not to haul a six-ton generator to a site and burn 300 gallons of gasoline to fire twelve rigs in order to make 5000 contacts. Rather, the ultra-portable, set-up-at-a-moment's-notice rig is a more viable emergency set-up. We all know that such a rig is most (indeed *only*) effective on cw. So, this year let's give it a try on cw and see how the idea goes over! Keep in mind that this is another *trial* rule and can be kept as is, changed in one way or another, or done away with completely. As always, comments are actively solicited with each group's FD entry. Let your CAC and ECAC representative know what your club thinks and he will transmit your opinions to the entire committee. Then it will be up to them to make the recommendation for next year. – *WA1STN.*

Staff Musical Chairs. In case any of you are surprised to note the WA1STN signature on the above item on Contests, we had another staff changeover recently when Rick Niswander, WA1PID, left the staff to pursue higher education in the great state of Idaho. WA1STN made the lateral move into Contests, a field more in line with his natural instincts, leaving a vacancy in the Club-Training Aids Branch. This vacancy was filled by WA1STO in another lateral transfer from the Public Service Branch where she served so well with WA1FCM, leaving a vacancy at *that* position. The Public Service assistantship is now filled by Bob Poirier, WA1QME, who comes to us from nearby Meriden, Conn. Bob has been very active in public service activities in his three years as a licensed amateur, including NTS participation and appointment as EC, OPS and ORS.

It took a bit of scrambling, but we hope now to be able to settle down and continue the march toward bigger and better operating activities via the CD.

Hawaii Becomes Pacific. For many years all the U.S.-administered islands of the Pacific were attached to the Hawaii Section for operating-administrative purposes in the ARRL Field Organization. Now, at the urgent request of the Hawaii Section SCM, it is proposed that the extent of the section be recognized in its name. Effective with Sept. *QST*, Hawaii Section of the Pacific Division

New A-1 Operators

W1WF W2GLB K4NYO WB4SGV
WB4TAF JA8AKC JH3ROF VK4LZ

DX CENTURY CLUB AWARDS

New Members

Radiotelephone listings follow the general-type "New Member" and "Endorsement" listings – March 1-31, 1975

ZS6RM	292	WA6NBY	122	YU2REE	107	K9ARZ	102	K5LVZ	101	VE3EIM	100
WAØYLN	202	K1NOK	117	G2HLU	106	KØSVW	102	LU1FCU	101	WA2HQH	100
WA2CZG	200	K9KEV	116	W8NZS	106	KH6IAC	102	VE3DH	101	WA2JZX	100
IT9AZS	180	W4EDB	115	WA9FUD	106	W1SPI	102	WA2KDB	101	WA2KFN	100
KA6DE	170	LA8KQ	114	K4HWW	105	WA1NAE	102	WA7TDZ	101	WA2LJM	100
JA8KSF	159	DM2CPE	112	SM5AKS	104	WA2NCF	102	DL4KW	100	WA2PAT	100
W1GTJ	155	YU3UAR	112	WB8MVX	104	WB2PMW	102	FA8HJ	100	WA3SXH	100
WA7LMZ	145	JA7KTY	110	VE3ADJ	103	WB2QCF	102	K3AZ	100	WA4ENJ	100
W1PIV	128	WA6WZO	109	WA1RHA	103	YU3TFB	102	K4FOK	100	WB4DEL	100
JA7YOJ	127	DL8VJ	107	FY7AN	102	F6AIR	101	K6IU	100	WA6DNM	100
JAØBES	125	K6QHC	107	K8CVJ	102	JR1MBU	101	KØCVD	100	W7RZY	100

G3TJW	303	JA8KSF	159	ISØBYR	115	W3CDG	109	DJ8WQ	103	W1PIV	101
ZS6RM	287	VE3CKP	122	WA4DHO	115	WA6WZO	109	WA6GIC	102	K2PAY	100
W9YRA	280	I1ORT	120	F6AED	110	K1NOK	107	JA7KTY	101	K5LVZ	100
W6CYO	229	WA6NBY	120	I5BDE	109	K4AEA	106	K9ARZ	101	KG4FO	100
FA3UU	199	K9UTN	117	W6ONS	109	KH6GHZ	104	KØZHD	101	WA6EVX/KG6	100
KA6DE	167									W3FNT	100

Endorsements

In the endorsement listings shown, totals from 120 through the 240 level are given in increments of 20, from 250 through 300 in increments of 10 and above 300 in increments of 5. The totals shown do not necessarily represent the exact credits given but only that the participant has reached the endorsement group indicated.

KH6CD	340	DJ4LK	300	W2SJM	270	W3QZA	220	W1CYB	180	JA8BKI	140
W1GYE	340	K8MFO	300	WB4BAP	270	WB4VUP	220	WA1HAA	180	K4WVT	140
W9TKV	340	W4BBP	300	WAØTLT	270	W6HEW	220	DK5AD	160	K9UTN	140
W6ONZ	335	W6GC	300	4X4NJ	270	W9QWM	220	HB9AXG	160	W4CBG	140
DL7AP	330	W7YBX	300	G3GIQ	260	DL9YC	200	K4TP	160	WA4LPX	140
W2PV	330	W5IJW	290	K4KJN	260	K4KA	200	KG6SW	160	W7ISG	140
G3IOR	325	W6CDJ	290	W4EZ	260	K9UIY	200	VE1AMB	160	WA7ZLC	140
K5GOT	325	W7MVC	290	W4HY	260	W1RYB	200	WA1IJC	160	WA9LEY	140
WB2CKS	320	F2NB	280	W3FSF	250	W2QXA	200	W6IUV	160	DJ9FR	120
W9FD	320	I2YDX	280	W7TLG	250	W3FNV	200	WA6TLA	160	K2GI	120
K6AO	315	JA3KWJ	280	K4SGL	240	WA4BTC	200	WB6KUC	160	KP4EAK	120
SM5WJ	310	K2DNL	280	SP7HT	240	WB4TDH	200	WØJKF	160	OK1ATZ	120
WØTDR	310	K4DXO	280	W2DEO	240	DJ2IW	180	WAØWSQ	160	OZ2NU	120
WAØKDI	310	KG4GSS	280	W4TK	240	I7TGT	180	ZP5RL	160	W2HKE	120
LA6U	305	OZ8BZ	280	WA4LDM	240	K3LWM	180	DL7RT	140	WA3NHG	120
OE1UZ	305	F2VX	270	W8MFW	240	K6CBL	180	F9XL	140	WBLT	120
WA5VDH	305	KØGSV	270	WA9TVM	240	KH6CF	180	G3AEZ	140	YU2ARS	120
ZS6IW	305	KØIEA	270	VE3HD	220	LA8CJ	180	JA3ANW	140		

WØGAA	330	W7YBX	280	OK1AHZ	250	I2ADN	200	W1CYB	180	K6SF	140
K5GOT	325	I2YDX	270	W7MVC	250	K4FJC	200	W3HCW	180	WA1NSJ	140
ZL3QN	300	K4DXO	270	I3DSE	240	W7GYP	200	WB4VUP	180	WA6GFH	140
K2ANT	290	F2VX	260	OZ5GF	240	W7RCF	200	ZL1AJL	180	ZP5NH	140
SM5WJ	290	G2ZBA	260	W3ATO	240	W9WCE	200	KG6SW	160	K9HLW	120
W6CDJ	290	I3ANE	260	W6SUN	240	ZP5AN	200	WB6KUC	160	K9UQN	120
JA3KWJ	280	K4QPR	260	WA9YEW	240	EA7EU	180	W7AAW	160	KP4EAK	120
WA5VDH	280	W8JXM	260	WAØHZP	240	PY7BSH	180	W7ZH	160	VK3AKZ	120
W6AXH	280									WA7GYR	120

will become the Pacific Section of the Pacific Division, unless Headquarters receives a petition prior to July 20, signed by no fewer than 25 full members, requesting that the membership of the section be polled on the matter. Should such a petition be received, the section will continue to be listed as Hawaii until such a poll can be completed.

Code Practice Stations. From time to time, Headquarters puts out a sheet, listing stations conducting code practice or making transmissions that can be used for such. There used to be quite a few of these in the commercial field, but most of them now use RTTY or other automatic means requiring little or no operator skill. Consequently, more and more of the listing consists of amateurs.

If you conduct regular code practice sessions on the high frequencies, it would be appreciated if you let us know your schedule so we can list it on our form CD-139, next time it is revised. If you

5BDXCC

(Awards issued January 1, 1969 – March 31, 1975)

1, W4QCW; 2, DL7AA; 3, W1EVT; 4, W8GZ; 5, W8BT; 6, W4IC; 7, W1AX; 8, W4BRB; 9, K2BZT; 10, LA7Y; 11, W4AQW; 12, OH2YV; 13, K4HXF; 14, K6KA; 15, W6NJU; 16, W3MFW; 17, W4GK; 18, W2PV; 19, I1AMU; 20, I1ZV; 21, K3JH; 22, HB9J; 23, DL9OH; 24, W8JIN; 25, HK3WO; 26, W6ANN; 27, W9HUZ; 28, W2NQ; 29, DL3RK; 30, SMØAJU; 31, OZ1LO; 32, I1KDB; 33, W9BGX; 34, ZL3GQ; 35, G3HCT; 36, K4ZCP; 37, W1WQC; 38, OK1ADM; 39, KV4FZ; 40 YV4UA; 41, DJ7ZG; 42, G3FKM; 43, W6JKR; 44, LA7TH; 45, XE1KS; 46, LAØAD; 47, WA6GLD; 48, CT1BH; 49, W2QD; 50, W2SSC; 51, W2JVU; 52, OE1NY; 53, OZ3SK; 54, W6AM; 55, DK2BI; 56, DL7EN; 57, DL1CF; 58, W2DCA; 59; HP1JC; 60, W2YT; 61, EA4JL; 62, VO1FB; 63, W2FR; 64, W3NU; 65, W7MB; 66, VE2NV; 67, W2HH; 68, W9BZW; 69, W3KT; 70, W6EJJ; 71, W3NZ; 72, W4DQS; 73, DL7HZ; 74, K4BVD/6; 75, K4CIA; 76, F9RM; 77, K2BKU; 78, W7SFA; 79, K4IEK; 80, W6WX; 81, K4DJC; 82, K4EZ; 83, W4ZXI; 84, F3AT; 85, W2TP, 86, DL7PR; 87, W5WZQ; 88, W2FXA; 89, W8BDO; 90, K4JC; 91, LX1BW; 92, SM5BHW; 93, SM3BIZ; 94, VE7ZM; 95, W5FL; 96, WA2IZS; 97, K4II; 98, W3TV; 99, W4SYL; 100, YU3EY; 101, VO1AW; 102, YV5BPG; 103, W3AZD; 104, OK2RZ, 105, I1AA; 106, G3KDB; 107, KP4CL; 108, LA5HE; 109, W7SGN; 110, WB2YQH; 111, OZ3Y; 112, DL8PC; 113, EP2BQ; 114, PAØXPQ; 115, W9GIL; 116, DJ7CX; 117, W3ZUH; 118, G3NLY, 119, 6W8DY; 120, K2KTK; 121, OK1MP; 122, W6DZZ; 123, W3WPG; 124, VK6HD; 125, W3WJD; 126, W2LWI; 127, W6MAR; 128, W3MWC; 129, G3TXF; 130, K3LGJ; 131, W9JT; 132, IT1ZGY; 133, K1KDP; 134, VE7BDJ; 135, WA3HGV; 136, W4SSU; 137, K8UDJ; 138, W3CRG; 139, W4CRW; 140, W2APU; 141, UQ2AO; 142, VE3KZ; 143, EP2TW; 144, DL1RK; 145, PZ1AH; 146, W9RER; 147, DL7HU; 148, WA3IUV; 149, W6CN; 150, K1AGB; 151, K4BBF; 152, W2HO; 153, ZS5LB; 154, OK2DB; 155, W1FZ; 156, W4REZ; 157, DL6EN; 158, WØNGJ; 159, EA6BN; 160, W2PDB; 161, K4CEF; 162, CT2AK; 163, W1BIH; 164, F2MO; 165. K6HN; 166, W4BFR; 167, W3WGH; 168, K1HSN; 169, K2TQC; 170, W1GL; 171, K8YBU; 172, DK1YK; 173, K4PUZ; 174, DL7NJ; 175, DJ6RX; 176, YU3OV; 177, W3AXW; 178, VE3AAZ; 179, OZ3PO; 180, W6DQX; 181, W9EXE; 182, CT1UE; 183, DL1JW; 184, W1FTX; 185, K2BK; 186, W2PN; 187, W1AA; 188, K1KNQ; 189, EP2DX; 190, K5PFL; 191, W8QXQ; 192, W2CUC; 193, K6SDR; 194, W5RUB; 195, W3QOR; 196, WØGNX; 197, W8DCH; 198, WA4LDM; 199, F2IU; 200, W1CT; 201, VE1AIH; 202, W4NJF; 203, DL1MD; 204, YV1KZ; 205, W4WSF; 206, OZ5DX; 207, G3UML; 208, DLØWW; 209, HR1KAS; 210, PY2FIQ; 211, XE1J; 212, JA1MCU; 213, W6VD; 214, OK1ADP; 215. OH3YI; 216, VE3CDP/W9; 217, DM2DTO; 218, VP9BK; 219, I6FLD; 220, WA2FCA; 221, DJ2BW; 222, K4KQ; 223, K4MQG; 224, K1OME; 225, HB9AHA; 226, EL2CB; 227, OA8V; 228, K1LPL/3; 229, SM5EXE; 230, PY3APH; 231, W2HUG; 232, IØJX; 233, WB6UDC; 234, OH1VA; 235, W9KB; 236, W2ZZ; 237, W6ISQ; 238, YU2DX; 239, W5KC; 240, W3YIK; 241, VK6CT; 242, WA2EAH; 243, PAØINA; 244, KZ5JF; 245, WØEXD/4; 246, KP4DLW; 247, YO3AC; 248, CT1MK; 249, VS6DO; 250, W2YY; 251, SM6CKS; 252, W2GUH; 253, DK1FW; 254, W5SBX; 255, W9LT; 256, WA4DRU; 257, PZ1CU; 258, SP3DOI; 259, WA2HSU; 260, OZ8KR; 261, W9WYB; 262, K1ZND; 263, WB2IEC; 264, W9CH; 265, YU1BCD; 266, W9SFR; 267, W8VHY; 268, WA2BLV; 269, K1NOL; 270, SMØCCE; 271, DL1KB; 272, DL6QX; 273, W9HU; 274, WA2IDM; 275, YU1EXY; 276, W4MCM; 277, I5FLN; 278, YU2NFJ; 279, W3NB; 280, JA2AAQ; 281, K6SSN; 282, K4YFQ; 283, DK3PO; 284, K6RM; 285, W9JA; 286, YU4EBL; 287, I8YRK; 288, VE2WA; 289, DL8LH; 290, K6VX; 291, UW9AF; 292, DM2BJD; 293, SM4CAN; 294, G3TJW; 295, DK4TP; 296, WA3ATX; 297, OK1AWZ; 298, W4UQ; 299, PJ2CW; 300, DL9DY; 301, EA4LH; 302, W2BXA; 303, W3GL; 304, K4THA; 305, CE8AA; 306, HB9KB; 307, W2AO; 308; W3GRS; 309, I4ZSQ; 310, K6WR; 311, JA3UI; 312, YU2HDE; 313, DJØYD; 314; WA5VDH; 315, W2FPM; 316, W7QK; 317, W4HOS; 318, SM6CKU; 319, OK2BOB; 320, W4HHN; 321, GI3OQR; 322, OZ6MI; 323, W9LKJ; 324, WA5RXT; 325, W4WRY; 326, DL8NU; 327, VK2EO; 328, F9MD; 329, G3KMO; 330, K4UAS; 331, OE1CP; 332, W4QQN; 333, SM7CMC; 334, K1LBB; 335, K1VTM; 336, W2LV; 337, WØPAH; 338, WØGYH; 339, OK1FF; 340, W8UM; 341, CR4BS; 342, W8II; 343, W8JW; 344, OZ6RT; 345, WA8NYB; 346, W2MB; 347, W9KYZ; 348, PAØLOU; 349, YO2BB; 350, W8FAW; 351, W9MAF; 352, W1FJJ; 353, K8DYZ; 354, WA5ZWC; 355, WA4LCO; 356, W5KGJ; 357, DJ3HJ; 358, K4FN; 359, W9AG; 360, SM5CBN; 361, SM5CAK; 362, G2MI; 363, K4MPE; 364, W5KFL; 365, W9VNF; 366, SM6CVX; 367, WØIS; 368, GM3CFS; 369, VP2AAA; 370, W3JXH; 371, W2DXX; 372, G2TA; 373, K4ELK; 374, I1BGJ; 375, YU2BHI; 376, W9DD; 377, DK5PR; 378, WA8ZDF; 379, K4OD; 380, W9ZTD; 381, EA8CR; 382, K4BBK; 383, DL7OK; 384, K5ABV; 385, W5UR; 386, WB2UKP; 387, YU2CBM; 388, W5UDK; 389, OE1ZGA; 390, DJØUP; 391, PJ2VD; 392, WB2AMO; 393, HC2TV; 394, HKØBKX; 395, K8IFF; 396, G2BOZ; 397, WA6AHF; 398, 4X4NJ; 399, WB8EUN; 400, K9YXA; 401, W5PD; 402, DL7PH; 403, WA1SSH; 404, K8MFO; 405, DJ4PI; 406, W9DY; 407, KH6RS; 408, WA6MWG; 409, WA9IVL; 410, JA1GTF; 411, CP1EU; 412, G3RUV; 413, JA1NEC; 414, W7YTN.

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don't now transmit such practice but are in a position to do so, give it some thought. W1AW isn't always received everywhere, and a choice of stations is often desirable. Should you decide to participate, however, make sure you adhere to the schedule you submit for publication. Offering a practice schedule and then not observing it is worse than useless.

Seniority. A note from Eastern Mass. SCM W1ALP mentions that he just came across his first SCM certificate, signed by Communications Manager Handy and dated Mar. 11, 1940. In a closely-contested election, Frank defeated W1GAG. Since that time, Frank has been reelected 17 times, mostly without opposition – not because no one else was interested, but because Frank's

performance of the job left so little to be desired. In 1944, he almost made director – a flat-footed tie with W1BVR, which the latter won in the run-off, one of only two ties for director election in ARRL history.

Anyway, congrats to W1ALP on his long service to ARRL! – *WINJM.*

SCM ELECTION NOTICE

To all ARRL members in the Sections listed below.

You are hereby notified that an election for Section Communications Manager is about to be held in your respective sections. This notice supersedes previous notices.

Nominating petitions are solicited. The signatures of five or more ARRL full members of the Section concerned are required on each petition. No member shall sign more than one petition.

Each candidate for Section Communications Manager must have been both the holder of amateur Conditional Class license or higher (Canadian Advanced Amateur Certificate) and an ARRL full member for at least two years immediately prior to receipt of petition at headquarters. Petitions must be received on or before 4:30 PM Eastern local time on the closing dates specified. In cases where no valid nominating petitions were received in response to previous notices, the closing dates are set ahead to the dates given herewith. The complete name, address, Zip code of the candidate and signers should be included with the petition. It is advisable that a few extra full-member signatures be obtained, to insure that it will be valid.

Elections will take place as soon after the closing dates specified as full information on the candidates can be obtained. Candidates' names will be listed on the ballot in alphabetical order.

The following nominating form is suggested. (Signers should be sure to give city, street address and Zip code.)

Communications Manager, ARRL (Place and date)
225 Main St., Newington, Conn. 06111

We, the undersigned full members of the . . . . . ARRL Section of the . . . . . Division, hereby nominate . . . . . as candidate for Section Communications Manager for this Section for the next two-year term of office.

You are urged to take the initiative and file nominating petitions immediately.

George Hart, W1NJM, Communications Manager

Section	*Closing Date*	*Current SCM*	*Present Term Ends*
New Mexico*	6/20/75	E. Hart, W5RE	7/2/75
Sask*	6/20/75	P.A. Crosthwaite, VE5RP	4/10/75
W.Mass.*	6/20/75	P.C. Noble, W1BVR	8/11/75
Alaska*	6/20/75	R.Davie, KL7CUK	8/17/75
Kansas*	6/20/75	R.M. Summers, KØBXI	8/18/75
W.Va.*	6/20/75	D.B. Morris, W8JM[1]	9/18/75
Canal Zone*	6/20/75	Chris Q. Smith, KZ5CQ[2]	7/11/76
Mich.*	6/20/75	L.J.Olinghouse, W8ZBT[3]	12/10/76
E.Pa.*	6/20/75	A.R. Breiner, W3ZRQ[4]	2/4/76
S.Barb*	6/20/75	D.P. Gagnon, WA6DEI	9/2/75
Tenn.*	6/20/75	O.D. Keaton, WA4GLS	9/11/75
S.Diego*	6/20/75	C.F.Huvar, Jr., W6GBF	9/24/75
Del.*	6/20/75	R.E. Cole, W3DKX	10/10/75
E.Bay*	6/20/75	C.R. Breeding, K6UWR	10/10/75
Va.*	6/20/75	R.Slagle, K4GR	10/11/75
R.I.*	6/20/75	J.E. Johnson, K1AAV	10/12/75
S.Dak.*	6/20/75	E.C. Gray, WAØCPX	11/1/75
La.*	6/20/75	R.P. Schmidt, W5GHP	11/4/75
Maritime*	6/20/75	W.D. Jones, VE1AMR	11/10/75
N.C.*	6/20/75	C.H. Brydges, W4WXZ	11/10/75
Hawaii*	6/20/75	J.P. Corrigan, KH6GQW	11/12/75
Wisc.*	6/20/75	R.Pedersen, K9EHI	12/11/75
Ill.*	6/20/75	E.A.Metzger, W9PRN	12/15/75
N.Fla.*	6/20/75	F.M. Butler, Jr., W4RKH	12/15/75
Maine*	6/20/75	P.E.Sterling, K1TEV	12/28/75
Vt.*	6/20/75	J.H. Viele, W1BRG	3/1/74
Manitoba	8/20/75	S.Fink, VE4FQ	1/11/76
N.Dak.	8/20/75	H.L.Sheets, WØDM	1/11/76
Ind.	8/20/75	M.P.Hunter, WA9FED	1/12/76
SCV	8/20/75	J.A.Maxwell, W6CUF	1/11/76
Ore.	8/20/75	L.R. Perkins, WA7KJU	2/1/76
S.Fla.	8/20/75	W.Huddleston, K4SCL	2/4/76

[1] Resigned 1/1/75, [2] Resigned 1/25/75, [3] Silent Key, [4] Resigned 2/15/75, *Repeat solicitation.

SCM ELECTION RESULTS

Valid petitions nominating a single candidate were filed by members in the following sections, completing their election in accordance with applicable rules, each term of office starting on the date given.

Sac. Valley	Norman A. Wilson, WA6JVD	5/7/75
Ala.	L.A. Brashear, Jr. WB4EKJ	7/11/75
Ga	A.H. Stakely, K4WC	5/22/75

Balloting Results: In the Los Angeles Section, Mr. John R. Shepherd, WB6VYX and Mr. Eugene H. Violino, W6INH were nominated. Mr. Violino received 1059 votes and Mr. Shepherd received 452 votes. Mr. Violino's new term of office began May 19, 1975.

ARRL AFFILIATED CLUB HONOR ROLL

In these days of raising requirements in one place and lowering them in another, the affiliated club that can maintain its ARRL membership at 100% deserves some special recognition. Headquarters bestows such recognition twice a year in the form of an honorary listing in *QST* and a special certificate.

Each year, as annual affiliated club questionnaires are received, those showing that *all* their members are also ARRL members are noted and put aside for this special honor. The list below are those clubs who are 100% ARRL according to questionnaires so far received. If your club is 100% ARRL and is not listed below, it means we do not have your questionnaire form yet; fill it out and send it in, so you will make the addendum of 100% ARRL Clubs in December *QST*. Ladies and gentlemen, our Affiliated Club Honor Roll!

Adams County Amateur Radio Society, Gettysburg, Pa.
Aeronautical Center Amateur Radio Club, Oklahoma City, Okla.
Alamo DX Amigos, San Antonio, Texas
Albert Lea Amateur Radio Club, Albert Lea, Minn.
Anderson Radio Club, Anderson, South Carolina
Arkansas DX Association, Ft. Smith, Ark.
Associated Mountain Toppers, Montebello, Calif.
Bandhopper's Radio Club, St. Louis, Missouri
Buffalo Area DX Club, Buffalo, N.Y.
Central Virginia Contest Club, Richmond, Virginia
Chicago Radio Traffic Assoc., Chicago, Ill.
The Committee For Amateur Radio, Forest Park, Ohio
Connecticut Wireless Association, E. Hampton, Conn.
Crystal Lake Community H.S. ARC, Crystal Lake, Ill.
Crystal Radio Club, Valley Cottage, N.Y.
DeWitt County Amateur Radio Club, Clinton, Ill.
The Electron Club Of Denver, Aurora, Colorado
Estero Radio Club, Morro Bay, Calif.
Fountain City Radio Club, Knoxville, Tenn.
Ft. Pierce Radio Club, Inc., Ft. Pierce, Fla.
Granite State Amateur Radio Assoc., Merrimack, N.H.
Hiawatha Amateur Radio Club, White Cloud, Kansas
IBM Owego Amateur Radio Club, Owego, N.Y.
ISKRA, Inc., Madison, Ind.
Jefferson Barracks Amateur Radio Club, St. Louis, Missouri
Loudon County ARC, Lenoir City, Tenn.
Louisville Gas & Elect. Co. ARC, Louisville, Ky.
Magic Valley Chapter – Idaho Soc. of Radio Amateurs, Inc., Twin Falls
Mason-Dixon Pirate Radio Society, Wilmington, Delaware
Massillon ARC, No. Canton, Ohio
McPherson Amateur Radio Club, McPherson, Kansas
Miami Valley Amateur Radio Contest Society, Arcanum, Ohio
Mid-South DX Association, Germantown, Tenn.
Minnesota Wireless Assoc., Minneapolis, Minn.
Murphy's Marauders, Plainville, Conn.
National Capitol DX Assoc., McLean, Virginia
Newport County Radio Club, Newport, Rhode Island
Niagara Radio Club, Inc., Niagara Falls, N.Y.
Niskayuna H.S. Amateur Radio Club, Schenectady, N.Y.
Norfolk County Radio Association, Norwood, Mass.
North Alabama DX Club, Huntsville, Ala.
North Jersey DX Association, Paramus, N.J.
Northeast Nebraska Radio Club, Norfolk, Nebraska
OBP No. 1 Radio Club of St. Louis, St. Ann, Missouri
The Orange Amateur Radio Club, Inc., Orange, Texas
Order of Boiled Owls, W. Hempstead, N.Y.
Order of Boiled Owls, Columbus Ohio Chapter, Columbus, Ohio

Owensboro Amateur Radio Club, Owensboro, Ky.
Paducah Amateur Radio Emergency Corps, Paducah, Ky.
Potomac Area V.H.F. Society, Rockville, Maryland
Potomac Valley Radio Club, Arlington, Virginia
Providence Radio Assoc., Inc., Greenville, Rhode Island
Radio Society of Greater Brooklyn, Brooklyn, New York
Red River Valley Amateur Radio Club, Paris, Tex.
Rock Hill Amateur Radio Club, Rock Hill, South Carolina
Rockaway Amateur R.C., Brooklyn, N.Y.
Scarboro Amateur Radio Club, Scarborough, Ont., Canada
Sheboygan County DX Assoc., Plymouth, Wisconsin
Shelby Radio Club, Shelby, N.C.
Southwest Minnesota Amateur Radio Assn., Fairmont, Minn
Suffolk County RC, Commack, N.Y.
Ten-J Amateur Radio Club, Kansas City, Missouri
Three Rivers Radio Club, Wahpeton, N.D.
Victor Valley Amateur Radio Club, Victorville, Calif.
W.F.N.S. Radio Club, Philadelphia, Pa.
Wichita Amateur Radio Club, Inc., Wichita, Kansas
Windblowers VHF Society, N. Caldwell, N.J.
York Amateur Radio Club, York, Penn.

CLUB COUNCILS & FEDERATIONS

Canadian Amateur Radio Federation, Inc., C.A.R.F., VE3VCA, Box 356 Kingston, Ontario, Canada.

Chicago Area Radio Club Council, Roger A. Baim, WB9BDP, 2753 W. Coyle, Chicago, Illinois 60645.

Federation of Eastern Mass. Amateur Radio Assoc., Eugene H. Hastings, W1VRK, Secy-Treas., 28 Forest Ave., Swampscott, Mass. 01907.

Northern Virginia Amateur Radio Council, F.B. Redington, W4ZM, Secy., 5218 Light St., Springfield, Virginia 22151.

Public Service

(Continued from page 68)

BRASS POUNDERS LEAGUE

Winners of BPL Certificates for March Traffic

Call	*Orig.*	*Recd.*	*Rel.*	*Del.*	*Total*
WØWYX	34	893	183	212	1822
W6RSY	54	591	308	9	1162
KØZSO	—	478	1	476	955
WBØHOX	114	413	386	27	940
KØONK	114	389	367	12	882
W8PTT	161	334	315	69	879
K9CPM	33	256	70	446	805
WA1OME	167	292	249	7	715
WB6FIC	27	3	570	6	606
W1PEX	29	285	241	35	590
WA4AVN	14	287	271	16	588
W4OGG	278	130	111	12	531
WØZWL	1	276	—	238	515
WA8MCR	32	240	232	8	512
WA2DSA	31	262	207	5	505
WA4SCK	20	251	225	6	502
WB6IGI(Feb.)	19	295	295	3	612

BPL for 100 or more originations-plus-deliveries

WAØAUX	187	WØIIR	130	KH6JAQ	106
W5TI	186	K8KMQ	127	VE3ASZ	104
WØJPJ	182	WB2UUD	126	W4EHZ	103
k6RPN	178	WB5MEO	125	WN1UAX	102
KH6IAC	156	W1DMH	121	WA3EOP	102
WA6DMB	142	K1PNB	121	WB2RKE	101
W6RET	141	WBØHHC	117	WAØYVT	101
WØNO	135	W4LDM	114	K1PNB(Jan.)	110
		WA8WZP	109		

More-Than-One Operator Station

K3UR	175	W1AEC	102

BPL Medallions (see December, 1973 *QST*, p. 59) have been awarded to the following amateurs since last month's listings: WA1QIU WA2PJT WB2PYM W3UBI VE3ERG VE3GJG VE3GOL VE3SB.

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

Daytime traffic was relayed through WestCARS while the TACO Net was used at night. Three of the fishermen were found the next day. – (W6GBF, SCM SDgo)

■ Paducah, KY – Mar. 28. Fifteen amateurs were activated when heavy rains caused flash flooding in Paducah. C.D. facilities were used in evacuation operations and mobile units were deployed to monitor conditions on the swollen Ohio River. – (WA4IGS, EC Dist. 1, KY)

■ McLean Co., KY – Mar. 29-30. Local amateurs and a CB rescue squad combined to evacuate a stranded family during heavy flooding in the Ohio River basin. The family was rescued by boat before the flooding had reached its peak. – (W4EMI)

■ Chicago, IL – Apr. 2. During heavy snows, the Elk Grove ARC station WB9FZN, was set up to assist local authorities in receiving reports of stranded motorists and coordinating evacuation to shelters for the night. Several other amateurs stood by as backup. – (WB9PRK)

Local repeaters WR9ABY and WR9ABZ were also utilized during the storm for the purpose of passing storm-related traffic and information. – (WA9MZS)

■ Genesee Co., NY – Apr. 4. Seven amateurs provided communications for C.D. Red Cross, and the N.Y. National Guard when a spring blizzard closed the N.Y. Thruway. Motorists who chose to stay with their cars were given provisions for the night. – (W2AIV)

■ Winston-Salem, NC – Apr. 4. While monitoring his 2-meter rig, WB4WUY heard a call from a nearby amateur seeking medical advice for a nurse in Nicaragua. WB4WUY called a local hospital and the information relayed by phone patch to YN4RRA at the scene. – (W4CTS)

■ *Repeater Log.* Reports received indicate that repeaters were used to report 59 vehicular accidents, 53 disabled vehicles, 14 fires, and 20 dangerous situations between Sept. 16 and Apr. 4. Repeaters involved were: WRs 1AAC 1ABP, 2ABU 2ADZ, 3ABC 3ACI 3ADG, 4ADD, 5ADC, 8ABJ, VE1AFH, VE3OSR, and K4ITL.

■ Okaloosa &Walton Cos., FL – Mar. 13. When severe weather alerts were issued, C.D. officials asked amateurs to man the emergency operations center radios for the duration of the alert. Several funnels were sighted in Walton Co. and one touchdown on Okaloosa Co. caused considerable damage. – (W4RKH, SCM NFla)

■ San Antonio, TX – Mar. 17 & 23. The San Antonio SKYWARN Net was activated as severe thunderstorm and tornado warnings were issued for the area. Twenty-nine amateurs participated and close liaison was kept with the National Weather Service for updates. – (WA5FSR)

■ *Special Activities, December.* WA7BBJ/7 and K7KVV arranged a schedule with a Peruvian amateur so that a young student going to school in Eugene, OR, could wish her parents a Merry Christmas. The schedule was made and greetings exchanged. – (W7QGP, SCM WA) *February.* On Feb. 15-16 amateurs provided communications for the annual Sled Dog Races in Kenai, AK. – (KL7JDO, SEC AK) *March.* Ten amateurs provided communications for a 50-mile snow shoe race in Selkirk, MB on the 1st. – (VE4FQ, SCM Man.) On Mar. 5-9 several amateurs stood by in case they were needed to cover any emergency situations at a horse show in Rancho Bernado, CA. – (W6GBF, SCM SDgo) More than 50 amateurs from radio clubs in Montreal and Quebec supplied communications at the Canadian Ski Marathon via a 2-meter link. – (VE3CRX, EC Ottawa) On Mar. 29 ten members of the El Cajon ARC set up an exhibit of amateur radio in a shopping Mall. Posters explaining amateur activities were displayed and several questions were answered. – (W6GBF, SCM SDgo) Members of the Saltminers, a group of 125 hams, raised $815 in connection with the disaster in the Honduras last fall. The aid was forwarded to HR2VFB in San Pedro Sula. QST

Operating Events ..... *de W1YL*

JUNE

1 *Worked All Britain*, low-frequency cw, p. 105 May.

1-30 *160-Meter Activity Period*, trans-equatorial tests, throughout the month from 0000-0030Z, extending into July and beyond 0030Z, conditions permitting. Participants are those stations interested in 160 meter DX in Europe, South America, Africa, near and middle East and east coast U.S.A. EU stations transmit on 1825-30 (the DX window), S.A. on 1800-1808 kHz. Other DX will use one or the other segment depending on the station they're calling Exception: ZS stations will transmit on 1930-1935 kHz. Keep QSOs short. Submitted by PY1RO in behalf of both EI9J and PY1RO.

4 *West Coast Qualifying Run* (W6OWP prime, W6ZRJ alternate), 10-35 wpm at 0400Z on 3590/7090 kHz. This is 2100 PDST the night of June 3. Please note that dates are always shown at least 2 months in advance and times are always the same local "clock time," i.e. 9 PM local Pacific time. Underline one minute of the highest speed copied, certify copy made without aid and send to ARRL for grading.

12 *W1AW Qualifying Run*, (including 40 wpm!), 10-40 wpm at 0130 UTC transmitted simultaneously on 1.805 3.580 7.080 14.080 21.080 28.080 50.080 and 145.588 MHz. This is 2130 EDST (9:30 PM local Eastern time) the night of June 11. Underline one minute of top speed copied, certify copy made without aid (typewriters OK), send to ARRL for grading. Please include your full name, call (if any) and complete mailing address.

14-15 *VHF QSO Party*, p. 73 May.

21-22 *West Virginia QSO Party, All Asian phone DX Contest*, p. 105 May.

25 *W1AW Morning Qualifying Run*, 10-35 wpm at 1300 UTC. This is 9 AM EDST. Same frequencies/details as under the June 12 listing.

28-29 *FIELD DAY*, p. 74 May.

JULY

3 *West Coast Qualifying Run.*

4 *Straight-Key Night*, a six-hour stretch starting at 0100Z (remember, this is July 3 local time!). Rules require use of a straight key. Suggested areas on 80-40-20 from 060-080 kHz up from the bottom edge; 10 kHz up from the bottom of the Novice segments. If you're participating in SKN please use SKN in lieu of RST (following by the 3 numerals). This will help spot participants more readily. Following SKN send a list of the calls of the stations you worked plus your vote for the best fist heard that night. To make the Sept. issue we must have your report within a week following SKN. (Results of the last SKN appear on page 98, March issue.)

5-6 *7X2 Contest*, from 1200Z July 5 to 1800Z July 6; 80-10 meters, phone and cw. Detailed rules not available as of this writing. *Radio Club of Tacoma Area Code Contest*, 2000Z July 5 through 2359Z July 6. Same station may be worked once per band and mode. Phone and cw are separate and should be scored separately. Exchange RS(T), Area Code, state/province/DX country. DX stations use area code 011. Each complete QSO worth 2 points. Multiplier consists of the no. of different Area Codes worked plus one additional multiplier point for the first DX station worked. Max. multiplier = 125. TWX, Inwats, Mass Calling, and vacant area codes not valid. Call CQ AC. Suggested freqs.: cw band edge plus 40 kHz; phone 3910 7230 14280 21380 28580; novice 3710 7110 21110 28110. Awards. Mailing deadline July 31. Send to RC of Tacoma, Route 1, Box 114, Vaughn, WA 98394. *CW QRP Contest*, sponsored by the DL Activity Group, 1800Z July 5 to 1500Z July 6. Select 5 bands from 1.8 to 28 MHz. Other rules as shown on page 82 Dec. 1974 *QST*. Logs by July 31.

11 *W1AW Qualifying Run.*

12-13 *"Open" CD Party*, cw, this issue. *Ten-Ten International Net Summer QSO Party*, full 48-hour period GMT. Any mode, 10 meters only. Members score 1 point per QSO; add 1 point if with a 10-10 member; add 1 point if outside your state/province/country (maximum 3 points). Give name of your Chapter to receive credit for Chapter scores. Non-members ineligible for awards. Logs must be postmarked by Aug. 31. Send to Grace Dunlap K5MRU/Ø, Box 13, Rand, Colorado 80473.

15 *WG3AS Operation* (pending final FCC approval) by the Goddard Amateur Radio Club commemorating the Apollo-Soyuz joint mission. Operation will be immediately following lift off to splash down. Frequencies, cw up 75 kHz from the low end. Phone, 3890 7230 21360 28600 kHz. Look for SSTV. S.a.s.e. QSL care of WA3NAN, Box 86, Greenbelt, MD 20770.

19-20 *"Open" CD Party*, phone, this issue. *HK Contest*, sponsored by the LCRA, the full 48-hour period, 80-10 meters; ssb, am, cw but no cross mode. American stations score 3 points per HK QSO. Total multiplier is made up by the addition of the total no. of HK zones plus the total no. of countries worked on each band. Exchange report plus consecutive serial no. Categories: single op., multiop, single transmitter, multi-multi. Mail by Sept. 30 to: Independence of Colombia Contest, c/o LCRA, Ap. 584, Bogota, Colombia, S.A. *VHF Space Net Contest*, honoring the 6th anniversary of Apollo 11, 6 pm to 6 pm. Power categories: Class I 100-1000 watts input. Class II 25-100 watts, Class III 5-25 watts, Class IV 1-5 watts. Send QSO no. and Zip Code only. Adding the last 2 digits in each Zip Code will total the final score. Where a Zip Code bears a double zero (i.e. 19100) this will be in the nature of a super bonus meriting 100 points. Stations may be reworked on all vhf bands for added points. Club participation, trophies. Mail entries promptly to WB2MTU, Box 909, Sicklerville, NJ 08081.

26-27 *CW County Hunters Contest*, 0000Z July 26 to 0600Z July 28. Exchange QSO no., category (portable or mobile), RST, and county (for U.S. stations). Stations may be reworked on each band and again if the station has changed counties. Portable or mobile stations changing counties during the contest may repeat contacts for QSO points. Stations on county lines give and receive only one no. per QSO but each county is valid for a multiplier. QSOs with fixed stations worth 1 point, with portable or mobile stations 3 points. QSO points times no. of U.S. counties worked equals score. Mobiles and portable calculate their score on the basis of total contacts within a state. Suggested freqs.: 3575 7055 14070 21070 28070 kHz. Certificates, trophies. Logs must show category, date/time in UTC, stations, exchanges, band, points, location and claimed score. If log contains more than 100 QSOs it must contain a check sheet of counties worked or be disqualified from awards consideration. Enclose large s.a.s.e. if results desired. Postmark entries by Sept. 1 and send to CW County Hunters Net, c/o Jeffey P. Bechner W9MSE, 64 North Pioneer Parkway, Fond du Lac, Wisconsin 54935. *World-Wide VHF Activity*, 5th annual, sponsored by the Itchycoo Park VHF AR Soc., starts 6 PM July 26, ends 10 PM July 27; all times local. Each band is a separate contest. The same op. may enter more than one contest. Eligible bands are 50, 144 and 220 MHz. Each station may be worked once per band. Only simplex operation allowed and there is no mode distinction. Exchange call, county or political subdivision and state/province/judicial district. Logs should show exchange info., band, time of QSO and scoring. Scoring: QSOs times counties times states worked. Do not add scores of 2 or more bands. Awards. Entries must be received no later than Aug. 31. Send to: WA3NUL, Box 1062, Hagerstown, MD 21740. (S.a.s.e. required for copy of contest results.)

26-Aug. 7 *Calgary Centennial Calgary-to-Mobile Contest*, to promote hospitality and interest in the CC Convention. Starts 1700Z July 26, ends 1700Z Aug. 7. All contacts must be between CY stations (fixed or mobile) and convention guests who are not Calgary residents and who are operating mobile on their way to the convention. Exchange report, operator, location of mobile. One contact per band per mode per day. Score 1 point between CY and mobile who is within city limits of Calgary, 2 points between CY and mobile outside city but within Alberta, 3 points between CY and Sask-B.C.-Montana, 4 points between CY and any other QTH. Mobiles look for CY stations afternoons and evenings plus/minus 20 kHz of 3770. When in range, check 34-94 28-88 and 146.46-147.00. Awards. Logs must be deposited at the Calgary Centennial Convention registration desk no later than 2359Z Aug. 2. Show date/time in UTC, band, mode, reports, first names and location of mobile.

AUGUST

2-3 *YO Contest, Illinois QSO Party.*

6 *West Coast Qualifying Run.*

9-10 *W1AW Qualifying Run.* *Nov. 8-9, SS cw. Nov. 22-23, SS phone.*

23-24 *All-Asian DX Contest, cw.*

Sep. 6-7, VHF QSO Party.

Sep. 7, FMT.

Station Activities

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

ATLANTIC DIVISION

DELAWARE – SCM, Roger E. Cole, W3DKX – SEC: K3KAJ. RM: W3EEB. PAM: WA3DUM. PSHR: WA3DUM 61, K3KAJ 44. New appointee: WA3QPX as OVS. Easter vacation found W3PCZ in London and K3NCL at the Canary Islands on group tours. K3YHR, former pres. of Del. ARC, was guest speaker at the First State ARC with Oscar operation as his topic. Apr. ham activities included a trip to Ft. Monmouth by First Staters and spouses. The Spring Army MARS dinner at Dover, and a program by the operators of KC4NI at the Del. ARC. The Del. 2-Meter Net has moved to 146.52 MHz fm simplex on Mon. at 1930 local time with WA3QPX as NCS. DTN QNI 342, QTC 64; DEPN QNI 87, QTC 7; Del. 6-Meter Net QNI 13. Traffic: K3KAJ 139, W3EEB 111, WA3DUM 84, W3DKX 31, K3HYR 11, WA5KUD/3 5.

EASTERN PENNSYLVANIA – SCM, Paul D. Mercado, W3FBF – SEC: W3FBF. PAM: WA3PZO. RMs: K3DZB, W3EML, K3MVO, WA3PHQ. We are sad to hear W3EML may go back into the hospital. WA3NDQ has a BC-221T Frequency Meter and is looking forward to next FMT. Nominations for RM, PTTN were held. WA3PHQ being the only nominee got the job. K3MVO says everything as usual, "good," W3LC just got back from VP9-Land and had a great time. W3CL wants your editor to read "cheese bits." W3ADE was in attendance at the Greater Baltimore Hamboree where he was observed buying flea market loot. W3BNR was going out of town so his report came a week early. WA3QLG back at Penn State. WA3VDQ passed Advanced Class exam and is sincerely congratulated. W3EU just discovered the address of your ed. His Activity Report finally came. WA3CKA very active on cw and MARS. W3CUL is the greatest of all traffic handlers. W3VR must be sad with low traffic totals. WA3GOA says nothing. W3WRE was main speaker at recent QCWA meeting. She was presented with another antique key for her collection. WA3PHQ is busy teaching PTTN newcomers procedures on traffic handling. WA3REY was involved together with K3SLG in rendering AREC Public Assistance to a disabled car on Interstate Route 81 when its rear broke into flames and through their local repeater were able to summon help. WA3UZI was chief cw operator at Explorer Post 173 station WA3WKR/3 in Pennsburg, PA. EPA/EP&TN had QNI 341, QTC 139; CMTN had QNI 52, QTC 12. Negative reports from other nets. Traffic: W3CUL 2681, W3VR 932, W3WRE 532, WA3ATQ 353, W3EML 266, WA3PHQ 232, WA3PZO 167, W3IPX 129, WA3YEX 127, K3MVO 102, WA3TLF 87, WA3UKZ 78, WA3VDQ 74, WA3SVJ 64, WA3QLG 50, W3BNR 42, WA3UNI 40, WA3QYY 37, K3BHU 36, W3HWZ 30, WA3UZI 29, WA3NDO 23, W3ADE 18, K3OIO 18, WA3WOE 14, W3LC 12, W3CBH 9, K3HXS 6, W3OY 4, W3FBF 4, WA3CKA 2.

MARYLAND-DISTRICT OF COLUMBIA – SCM, Karl R. Medrow, W3FA – SEC: K3LFD. RM: W3FZV. PAM: WA3EOP. NCM: WA3LPL. WA3EOP makes BPL on Mar. originations. My error K3ORW and WA3VSG made it to Advanced not General as listed in Apr. Congrats to K3LFN on 44 years of wedded bliss. WA3IHW was a communicator in the windy WDC Cherry Blossom parade. WA3TJM says WN3YZI, WN3ZEN and WA3ZEO have their new Novice tickets. The latter two a fatcher son team. Congrats. The Goddard ARC has now started General/Advanced classes. K3IQG has three-elements at 70-ft and WN3YZE a new operator. WN3YKK is still working on that novice net and WN3YJY is interested. Cumberland, reports W3BHE, has a 28/88 repeater underway. W3JZY moved some traffic on the ham bands, and congrats on earning the QCWA 50 year certificate. W3CDQ was a QCWA dinner attendee. WA3WRN is about to dabble in RTTY. WA3UYF teaches code to two friends via tape cassette. K3GJD breaths a sigh of relief at the end of the DX contests. K3DI is etching crystals. WA3SJY is the main standby on the IC Net. W3ZNW likes the new club in Calvert Co. W3OKN opines his retirement is punishment for a life of ease. W3JPT a homebrew artist is into Oscar 6 with a rebuilt solid state exciter. WA3EOP has ideas for the 1975 National Convention. W8GXY now W3EVV and mildly surprised the beam worked after years of storage. K3GJD plans OBS for the repeaters. WN3YJY sends his thanks to WA3QZW his Elmer. The net summary is sessions/traffic/QNI average. 6/2/248/6.8, MDD (Feb.) 50/175/6.7. Congrats to MEP Toppers W3ADQ, WA3CBC and WA3PRW. MDCTN Top Honors WA3WRN, WA3LPL, W3LDD, WA3PRW and WA3UYB. MDD To Brass W3FZV, W3FA and K3DL. WA3UUM getting ready for t farm season. W3QU says the winds are too strong for him. Traffi (Mar.) WA3WRN 232, WA3ZAS 196, W3FZV 159, WA3EOP 15 W3FA 116, WA3UYF 95, WA3LPL 71, W3OKN 64, K3DI 6 WA3SJY 58, WA3UYB 48, WA3SJS 37, WA3UPH 31, WA3PR 15, W3ZNW 15, W3QU 12, W3BHE 10, W3JZY 6, WA3UUM (Feb.) K3IQG 58, W3BHE 7. (Dec.) K3IQG 61.

SOUTHERN NEW JERSEY – SCM, Charles E. Travers, W2YP – SEC: W2JL PAM: WA2DSA. A successful EDN, sponsored by th NJ Army MARS and assisted by the NJ RACES was carried out thr the leadership of K2GZW and many interested and dedicated MAR and RACES members. WA2SEA is again Field Day chmn. Nation Radio Week will be observed June 17-23. WA2FGS has bee selected as a delegate in the U.S. Music Teachers National Ass Leaders Goodwill People to People Tour visiting countries western and eastern Europe. It is an informative education goodwill mission dedicated to improving relations and unde standing between American and the people of Europe. Co gratulations and our best wishes for an excellent trip. WA2DS NJN Mgr. reports 254 stations, 31 sessions and 100 traffic on th late net with 441 stations, 130 traffic on the Early Net. WA2TR won five awards in his "Radio Emissions from Jupiter" project the Greater Trenton Science Fair. Effective Apr. 1 NJSN will b headed by WB2RMK. Congratulations go to WA2DIW for a job we done. Construction on the new tower at W2ZQ is headed by K2SN and progressing very well. Traffic: W2HIF 66, W2ZQ 32, WB2SF 15, W2YPZ 14, WA2LZB 12, K2BG 10, WA2TRK 4, W2IU W2ORS 3, WB2TEN 3, K2JOC 2.

WESTERN NEW YORK – SCM, G.W. Hippisley, K2KIR – SEC W2CFP. Note new Empire State Novice Net (ESNN) on 3735 1930Z (10 wpm). New tickets: Novices WN2ZQL, WN2ZQM WN2SAM; General WN2SHN; Advanced WA2VYB, WB2FX Extras WA2DRC, WB2JRX. New calls to WA2ZOM (K4MLA/2) an WB2ZEK (WA6ACF/2). Silent Keys: K2PCU, W2RGJ. Red Cro Citations to K2DNN and WA2TCZ. Certificates of Merit for Publ Service awarded to WA2FSJ, WA2VCM and K2DUB by Auburn ARA. WB2FXY is the new secy. of the WNY Emergency Net. Rom Radio Club (WR2ABO) held a combination treasure hunt/comm exercise on 28/88. WR2AFA (still not on the air) needs a ne trustee. Guess the old one got tired of waiting. New equipmen dept.: 80-meter antennas for WA2EAJ, K2QLE, WA2LUC; t banders for WB2KUN, WA2WSG; 18-AVT for WA2EKW, WB2TE Phone patch for K2JT; IC speech amp for WR2FXY; 2-meter fm fo W2MTA; and the whole shack for W2CFP! Current club projec include Selcall(Auburn) and FM Synthesizer (Rochester). Th Chemung County AREC Assn. provided communication for Re Cross open house. Syracuse area OTs please contact K2GFL, who reorganizing the Finger Lakes QCWA. WB2JWN operating K4NC for the next year. W2ROF is back on 160 after an absence of 4 years. Back in WNY after recent vacations are W2s AED, PDV RPO, K2s KIR, PQZ, WA2s DRY, NFY and WB2NCK. New office of UNYREPCO are K2DLL, WA2VCM, WA2JWD and WA2CZR (usual order). WB2FXY active on 20 meters, DXing. WB2WP reports a tropo opening on 2 meters. K2KIR operated KH6GPQ the Mar. CW DX Test; he and K2SIL supplied communications f the annual Maui hang glider competition. Mar. net reports: ESS 362 QNI, 140 QTC, in 31 sessions; NYS: 800 QNI, 572 QTC, in 6 sessions. PSHR to W2MTA, W2FR and WB2JRX. New appoin ments: WB2THS ORS; WB2FXY and WB2KUN OPSs. Renewal WB2VND ORS, OPS; WB2YQH OO, OBS. Rochester ARA h requested special permission from FCC for their unique Fuzz-Bus emergency link to the Monroe County Public Safety Radi Dispatching Center. WA2GCX of ARRL VRAC and WB2EDT ECAC discussed committee operations at recent Batavia clu meeting. Don't forget Field Day, Rome Family Day, and you response to FCC Docket 20282. Traffic: (Mar.) WB2JRX 29 W2FR 266, W2OE 158, W2MTA 125, WB2UBW 119, WA2ICB 11 WB2VND 84, WA2KCW 82, WB2THS 80, W2FZK 72, W2RUF 6 WB2QIX 67, WN2VRJ 61, K2UIR 53, W2HYM 52, WB2AEK 4 W2RQF 39, K2OFV 36, WA2PUU 35, WA2DRC 34, WA2TPC 2 W2RUT 27, W2EAF 21, WB2HGG 21, WB2KUN 18, WB2QDN 1 K2DNN 12, K2KIR 11, WB2CTB 10, WA2HSB 10, W2ZOJ K2IMI 6, WA2EAJ 5, WA2EKW 3, WA2AIV 2. (Feb.) W2CFP K2GFL 2. (Jan.) W2CFP 113.

WESTERN PENNSYLVANIA – SCM, Donald J. Myslewsk K3CHD – SEC: W3ZUH. Asst. SEC: K3SMB. PAM: K3ZNP. RM: W2KAT/3, W3NEM, W3LOS. W3KUN, WPA CW Traffic Net mee daily on 3585 kHz at 7:00 PM local time. Pa. Traffic Training Ne meets daily on 3610 kHz at 6:30 PM local time. Pa. Phone Ne

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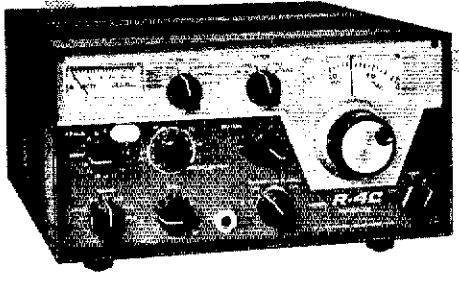

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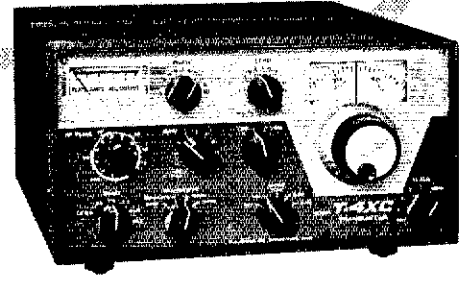

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Designed to match the SB-104 in styling and pe formance. The "604" uses a 5 x 7", 3.2-oh speaker. And there's room inside for the HP-114 power supply. With connector cable and plug.

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HWA-202-6, one Transmit Crystal certificate **5.95***

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Tone Burst Encoder.

Put this in your "202" so you don't have to whistle while you work repeaters. 4 tone buttons can be preset to any tone between 1800 and 2500 Hz. Burst duration is adjustable. Stability is ±1% from −30° to +50°C. Mounts behind removable front panel bezel of your "202".

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To work your "202" as a fixed station. Delivers 13.8 VDC @ 2.2A. with better than 1% regulation. Circuit breaker protected. Wire it for 120 or 240 VAC. Includes 3-wire line cord and transceiver cables.

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40-watt 2-M Amplifier.

Hauls up fringe repeaters by putting out a minimum 40 W from 10 W input. Only 7A battery drain, and so compact (3 x 4¼ x 5½) that it fits anywhere. Internal antenna changeover relay and sensing circuitry for automatic T/R switching. Tuned input/output circuits for low spurs and coverage of any 1.5 MHz portion of 143-149 MHz.

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New mobile 2-M colinear; ¼ & ⅝-wave phased radiators; 5.2 dB gain; swivel trunk lip mt. 17' coax.

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AM-313

meets Mon. through Fri. on 3960 kHz at 5:30 PM local time. Recent endorsement for RM W3NEM, WA3TPM now a Life Member of ARRL and received his 25 wpm sticker. Good luck to K3USL who recently retired. Steel City ARC is constructing a repeater on 147.63-.03 MHz. Also, a new repeater in the Latrobe area will be on 147.66-.06 MHz. A new net on six meters am is being organized by the Mt. Lebanon ARC and will meet every Thur. at 9:00 PM on 50.400 MHz. Contact WA3RSP or WA3YER for details. The Mercer County ARC plans to display an amateur station at the Boat and Sport Show in Hickory Armory. Don't forget Field Day this year on June 28-29. Messages to the SCM should be sent to the Two Rivers ARC site operating with the call W3OC. Good luck to the following new Novices: WN3YKN, WN3ZBX, WN3ZCA, WN3ZBY, WN3ZBZ and WN3ZCB. Congrats to WA3WBI on passed the Advanced Class exam. The Foothills ARC of Greensburg meets every 2nd and 3rd Tue. of the month at the Westmoreland County Parks Building on Donohoe Road at 7:30 PM. The WPA CW Traffic Net had 31 sessions for Mar., 438 stations check in, and handled 260 messages. K3CR made BPL. PSHR credits WA3VBM 47, K3CR 46 and W3NEM 39. Traffic: W2KAT/3 400, W3NEM 267, WA3VBM 201, K3CR 200, K3CB 138, W3UT 137, WA3RBS 117, W3EGJ 70, K3HCT 50, W3RUL 45, K3VQV 22, K3SMB 21, K3ZNP 21, K3CHD 19, K3ASI 18, WA3TTS 17, K3OFN 14, W3ATQ 8, W3SN 5, K3HWL 4, WA3TPM 4, WA3OKK 3, W3IDO 2, WA3IYA 2, K3JSV 2, WA3SWC 2, W3TTN 2, K3SJN 1.

CENTRAL DIVISION

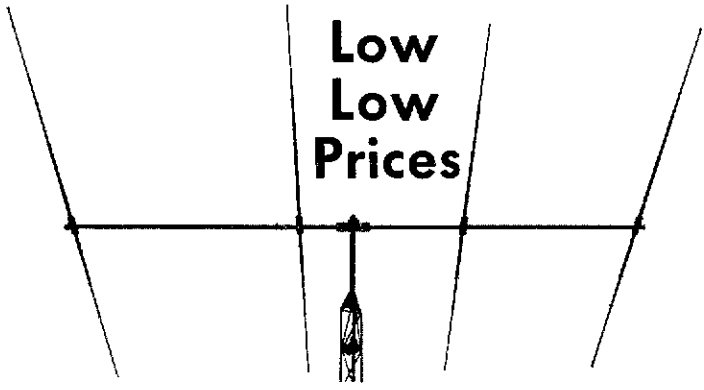
ILLINOIS – SCM, Edmond A. Metzger, W9PRN – Asst. SCM: Harry J. Studer, W9RYU. SEC: W9AFS. PAM: WA9LDC. RM: W9NXG. Cook County EC: W9HPG. Net, Freq., GMT/Days, Tfc.: ILN, 3690, 2230/0300 Dy, 240; Ill Phone, 3915, 2145 Dy, 383; NCPN, 3915, 1700 MS, 65; NCPN, 3915, 1200 MS, 218; IEN, 3940, 1400 S, no report. W9TAL has a new ICOM 230 on 2-meter fm. WA9ULP passed his Advanced and waiting for his ticket. K9DDA is now Extra Class. The new officers of the Valley Amateur Repeater Assn. are WB9KCQ, W9ZMR, K9WVY and WB9FUE. W9AZP retired (after 33 years of service) from radio station WCFL of Chicago. WN9QQQ, WN9QOM, WN9QLE, WN9QLG, WN9QLD and WN9QLT were graduates from the CENOIS Amateur Radio Club of Decatur's novice class. W9NKQ and his wife are the proud parents of a new harmonic son. The Chicago FM Repeaters did an FB job in handling communications between autos and their homes during the 10 inch snow storm on Apr. 2, by notifying their families their location in stalled or delayed vehicles. The Hamfesters of Chicago will hold their annual Hamfest on Sun. Aug. 10 at the Santa Fe Park in Willow Springs. The Dekalb Hamfest was a great outing and many eyeball QSOs were held according to W9LDU. This is the last reminder about the annual Field Day event. Lets get those rigs and power supplies in operating condition so that if a real emergency should arise, the equipment will be in A-1 operating condition. Many Ill. Section amateurs were represented at the Dayton Hamvention. Pres. of the League Harry Dannals, W2TUK was a speaker at the ARRL forum. Our sympathy to the family and friends of K9YZN who recently passed away. WB9NOZ received his Extra Class license. Traffic: (Mar.) WA9BGW 472, WB9NOZ 183, W9NXG 276, W9HOT 201, WA9IJE 148, K9KHI 110, W9JXV 101, WB9LQC 100, K9ZTV 93, K9BGL 84, W9OYL 83, WA9ULP 67, W9KR 56, W9LNQ 62, W9RY 26, W9PRN 24, WB9DED 23, WA9MZS 20, WB9PHM 12, WB9ELP 10, WA9LHD 8, WN9NIO 5, K9DDA 2, W9ZAV 2. (Feb.) K9DDA 2.

INDIANA – SCM, M. P. Hunter, WA9EED – SEC: W9UMH. PAMs: WA9OAD, W9PMT. Nets, Freq., GMT/Day, QNI, QTC, Time, Mgr.: ITN, 3910, 1330,2300 Dy, 2130 M-S, 3415, 480, 2783, WA9OAD; QIN, 3656, 0000,0300 Dy, 216, 144, WB9OMX; IPON, 3910, 1300,2130 Su, 146, 16, 181, WB9AHJ; Hoos. VHF, 50,58, 345, 3, 476, W9PMT; INN, 3740, 2330 Dy, 12, 1, WB9MDS. Band conditions remain marginal and unstable. The DXers are moving to 80/40 meters for some juicy stuff. Conditions for traffic seemed to have improved; ECs are beginning to enter their busy season. Hope they end up like the Maytag repairman. WB9MDS reports that INN is slow getting started and could use your assistance. WA9VDJ put an outstanding effort in the Feb. FMT. The IRCC held its spring meeting in Indy with a good turnout. A plaque was presented to W9UMH for his efforts in the SFT this year. W9HPG was honored for his faithful attention to IRCC. Our best wishes are with K9JOY and his family as he enters the hospital. Traffic: WA9OAD 224, W9FWH 222, W9QLW 213, WB9FOT 122, K9EOT 58, WA9OKK 55, W9UMH 45, WN9PFZ 42, WB9MDS 40, K9RPZ 36, W9MCJ 34, K9RWQ 33, K9CBY 32, WB9DIX 32, W9KWB 28, W9ENU 27, K9JOY 23, WA9OHX 21, WA9TJS 16, W9HUF 15, K9DIY 14, K9KFM 14, K9YBM 14, WB9BAP 12, K9PIJ 12, W9JGE 11, W9PMT 10, WB9DNT 8, WB9HCH 5, W9BDP 2, W9CMT 2, WB9OJY 2, WB9MDB 1.

WISCONSIN – SCM, Roy Pedersen, K9FHI – SEC: K9PKQ. PAMs: W9AYK, WA9LRW, K9UTQ. RMs: WB9ICH, W9MFG, K9KSA, K9LGU. Nets, Freq., Time(Z)/Days, QNI, QTC, Mgr.: BWN, 3985, 1145 M-S, 362, 264, W9AYK; BEN, 3985, 1700 Dy, 815, 172, WA9LRW; WNN, 3725, 2215 Dy, 121, 34, WB9ICH; WSBN, 3985, 2230 Dy, 1539, 260, K9UTQ; WSSN, 3662, 2330 MWF, 68, 21, K9KSA; WIN-E, 3662, 0000 Dy, 349, 197, W9MFG; WIN-L, 3662, 0300 Dy, 195, 70, K9LGU; WIPON, 3925, 1701 M-F, 600, 34, WA9NIX; WRN, 3660, 0000 Su, 15, 2, K9GSC, WB9NME

Wilson Electronics

WILSON 204 MONOBANDER



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HQ-170AC Receiver 199
HQ-170AC/VHF Receiver 259
HQ-170AC/Immunizer 299
HQ-180 Receiver 259
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HW-101 Transceiver 269
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SB-101 Transceiver 249
SB-102 Transceiver 289
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SB-650 Freq display 169
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HW-17 2m Xcvr 69
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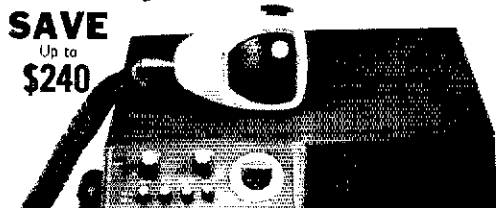

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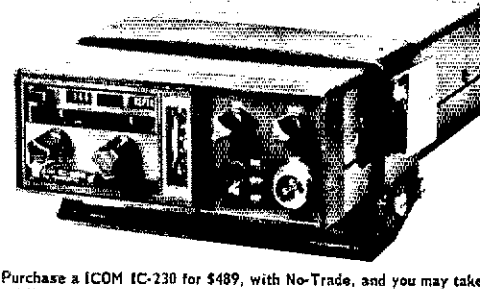

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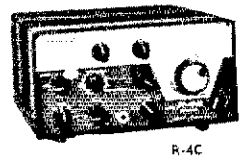
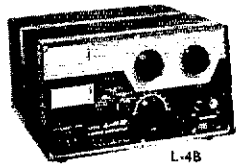


R-4C



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has new NCX3. K9UTQ has new FPM-300. W9MMP/Ø made phone patches in one week for patients at Mayo Clinic. WN9N made 19,459 points in NR. Regret to report the following SK: Keys: W9APN, K9TNU, W9KRO, W9EKU, WB9HRP passed Ex Class exam. BEN cert. endorsed WB9CVB. K9CFA, ex-KP4 HS1H and XW8AO back on the air, 40 meters week days 0645 1700 local time, week ends anytime. Menomonee Falls ARC officers are WB9LLW, pres.; K9VHX, vice-pres.; WB9LIZ, sec WB9KAB, treas. BEN cert. to WB9BRF. QRS to WN9PTX. W new time 5:15 PM local time. WSBN cert. endorsed WA9ZPC. B cert. to WB9LKC. OPS to WB9NKC. Don't forget the WNA pic July 13 at Oshkosh. W9EWC getting ready for Oscar, has ITC 20 WNN cert. to WN9OEC. Severe weather is upon us, monitor 3.9 maybe you can help, 2-meter repeaters are very helpful also. D your county have an EC? Why not help and apply for one. CW could use more QNI, get the rust off your keys. K9CPM made B Traffic: (Mar.) K9CPM 805, W9CXY 282, WB9KPX 241, WB9K 217, WA9QVT 197, K9EHI 146, W9PD 112, WB9NME 1 W9AYK 99, WR9ICH 98, W9DND 86, W9IHW 74, K9LGU W9MFG 61, WB9ABF 60, K9UTQ 47, WA9KRF 44, K9KSA WA9PKM 38, W9BVQ 35, WB9HLS 32, K9JPS 30, K9HDF W9BDK 26, WB9JSW 24, W9WJH 24, WB9RRF 23, WB9KMO WB9LSS 20, WN9PTX 20, WB9NKC 13, WB9NRK 11, WB9LKC K9GSC 5, K9ANV/9 4, WN9PYG 4. (Feb.) K9JPS 25.

DAKOTA DIVISION

MINNESOTA – SCM, Tod Olson, WØIYP – SEC: WAØOF PAMs: WAØYVT, KØFLT, WBØFTL. RMs: KØZXE, WAØYA Chief OBS: WBØLOR. Chief OO: WAØPRS. Net, kHz, Time/Da Sess., QNI, QTC, Mgr.: MSN-1, 3685, 6:30 P Dy, 31, 235, 1 KØZXE; MSN-2, 3685, 10:15 P Dy, 29, 132, 41, WAØYA MSPN-N, 3945, 12:05 P Dy, 30, 910, 159, KØFLT; MSPN-E, 39 5:45 P Dy, 30, 924, 164, WBØFTL; PAW, 3925, 9A-5, P DY, 16 4146, 303, WAØYVT. New officers of the Mankato Radio Clu WBØJYT, pres.; WAØTFC, vice-pres.; WAØVSW, secy.-trea WØTOF, KØKMR, KØKLY, dir. WØBWM now W8GVC in Bang MI. WØPBL now K7KNY in Sun City, AZ. KØPIZ, WBØHW WBØEKC & WAØSUA passed the Advanced Class exam in M WØNO made BPL 3rd month in a row. KØAWU in charge planning a Northern Minn. Hamfest. WBØANT lost his 40, 20, 15 10-meter beams plus tower just before the DX Test. KØBAD putting the Winona repeater on 04/64 (WRØAIY). It is radio-remo and will have touch-tone auto-patch. WØPAN wants to thank who wrote to share ideas on Docket 20282. June 16 dis deadline having your opinion at FCC. Field Day is June 28-29; with all new solid state rigs around there should be a lot of battery power groups. Summer is a good time to run Novice classes – let's not lo any good prospects to CB! BPLs: WBØHOX, WØNO, WAØYV Traffic: WBØHOX 940, WØQMY 236, WØNO 202, KØCVD 16 KØZXE 161, WAØYVT 142, KØCSE 132, KØPIZ 130, KØGNI 11 WAØGLI 98, WAØONE 95, WAØTFC 94, WØIYP 93, WBØFTL 7 KØRMX 60, WBØCPC 51, KØFLT 46, WBØLOR 38, WBØFMI 3 WAØYAH 28, WAØCCA 27, WAØURW 27, WBØKTH 25, KØZBI 2 WØOBB 19, WAØMMV 18, WAØYWA 15, KØJTW 14, WBØDBD 1 WBØCYM 12, WAØDUA 12, WAØJPR 11, KØSXQ 10, WAØWO 10, WAØIIB 9, WAØIAW 6, WBØLDO 5, WØOPX 5, WBØIYT WAØVUP 4, WØRAQ 3, WBØGMJ 2, WBØGMK 1.

NORTH DAKOTA – SCM, Harold L. Sheets, WØDM – SE KØRSA. OBS: KØPVG. RM: WBØHHC. OO: WØBF. KØPYZ is aga active. WAØRWL enjoying a Pacific cruise. WØEUQ now on SSB a recently got a 2-meter FM rig on. WAØAYL recently made a trip Wash., DC. WRØADQ on the air at Fargo and antenna sites are bei tried. Their Repeater Assn. meets the 2nd Tue. at 7:00 PM at t Moorhead Library. You are invited. KØALL received SSTV WA No. 14. He believes he is the only WØ having this. Congrats to yo The YL WX Net has closed down for another season. Our thanks WAØRWM and her helpers in her untiring efforts to make this going working net. A large group of visitors from the eastern part ND met with the Forx RAC at their last meeting; discussed t possibility of including the Red River Valley hams in picnic to held June 8 in the Mayville Park. WØOEL is the man to ca WAØHUD back on the air. WBØHHC again made BPL and also t PSHR. Net, kHz, CDST/Days, Sess., QNI, QTC, Mgr.: Goose Rive 1990.0, 0900 Su, 5, 62, 2, WØCDO; RACES, 3996.5, 1830 M-S, 3 543, 60, WBØATJ-WAØSUF; YL WX, 3995, 0730 M-S, 26, 41 390, WAØRWM. Traffic: WAØRWM 415, WBØHHC 200, WØWW 59, WAØSUF 55, WØCDO 50, WØDM 25, WØMXF 8, WBØBMG 5.

SOUTH DAKOTA – SCM, Ed Gray, WAØCPX – The Sout Dakota Ham Picnic will be held June 14 and 15 and the 4- Grounds west of Mitchell. Information for registration is availab from John Boisen, WBØFPY, Box 72, Mount Vernon, S.D. 5736 Camping will be available on the grounds. A program for the whol family is being planned for Sat. night. A number of programs a planned for Sun. For complete program details contact a Mitche amateur on one of the South Dak. nets. Several Rapid City amateu assisted Pennington Co. Civil Defense in locating starving livestoc after the April blizzard. Net reports: WX Net – 292 check-ins an 127 traffic; NJO Net – 848 check-ins and 36 traffic; Evening Net 1572 check-ins and 69 formals; SDN CW active but no report Traffic: WØZWL 515, WAØKKR 183, WAØVRE 61, WBØIJV 27 WBØEVQ 16, WBØLJM 12.

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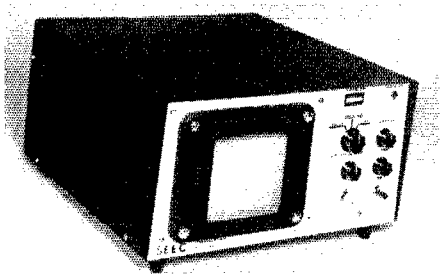

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SSTV

now carry U.S. disclosure document numbers DD-033468 (Monitor) and DD-033471 (Camera), on file at U.S. Patent Office. Watch for our new HCV-3KB SSTV keyboard and our Hard Copy machine, available soon. Call or write for complete specifications on all HCV equipment. We have 24 hour telephone answering service for your convenience.

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- Fully meets or exceeds all currently accepted SSTV standards. World-wide.
- Built to rigid industrial specifications for long trouble-free service. Full 1 year warranty—90 days on Vidicon Tube. Printed Circuit Board exchange program and complete service department available if ever needed. A separate lab facility is also available which is involved in making improvements and testing our new designs prior to production. Modifications, improvements, etc., are sent out as they are made. 24 hour telephone answering service to better serve our customers.
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ARKANSAS – SCM, S.M. Pokorny, W5UAU – SEC: W5RXU. PAMs: WB5FDP, W5POH. RM: W5MYZ. Net, kHz, Time/Day, QNI, QTC, Mgr.: OZK, 3765, 0000 Dy, 190, 40, W5MYZ; APN, 3937, 1100 Dy, 663, 28, W5POH; M/Bird, 3939, 2130 M-F, 555, 9, WA5ZWZ; ATN, 3995, 2230 Dy, WB5IGF; ANN, 3715, 2300 Dy, WB5IGF; ARN, 3995, 2330 Dy, 667, 67. K5OKO and WB5AFR are helping W5EIJ with code class for novices at their place of employment. New Ark. hams: WB5NSI, WB5NSL, WN5NSY, WN5NRR, WN5NWH, WN5NWR, WN5NWP, WN5NWV, WB5NXI, WB5NXJ, WN5NXV, WN5NXY, WN5NYB, WN5NYV. K5HTF, W5MRD and WB5BLF working on accu-keyers. WN5LMD now General, WB5BLF Extra. K5HTF has new tribander on 50-ft. tower also new HR2B. EC W5TXA has established liaison with newly formed Benton Co. Red Cross disaster committee. Now have 12 AREC in Baxter Co. W5SHY has new linear. WA5ULI EC for Craighead Co. PSHR W5EIJ 49. Traffic: W5UAU 84, W5EIJ 39, WB5GWU 18, W5TXA 14, W5KL 11, WA5TLS 11, WN5NBC 9, W5SHY 8.

LOUISIANA – SCM, Robert P. Schmidt, W5GHP – Asst. SCM: John Souvestre, WA5NYY. SEC: W5TRI. RM: WA5ZZA. PAM: WB5EKU. VHF PAM: WA5KND. New officers of the Twin Cities ARC are WB5IKT, pres.; WB5JCK, vice-pres.; WA5YKD, secy.-treas. Twin Cities ARC very active with weather watch net on the 2-meter repeater. The Baton Rouge Hamfest a great success. Congrats to all. Remember the New Orleans Hamfest is set for Oct. 11 and 12. WB5APK is chmn. for the IARC. K5EJP, active DXer now has 97/150, and is awaiting his DXCC. New Freq. Coord. for the La Council is W5MLE of Morgan City. WA5NYY installed and tested the NO VHF Club new repeater on 16/76 with auto patch. Slidell Club repeater now operational on 31/91. WB5MLH very active on LTN. WB5EKU net mgr. LTN advises that we still need stations from Lafayette and Lake Charles area. New ORS is WA5NUK of New Iberia. New station call for the Southeast La ARC (SELARC) is WB5NET. Congrats to WA5PCE on his new Advanced Class license. WN5NJG and WN5MKH are new Novice members of the Lafayatte Club. Please note that the RTTY Net LRN, has moved to Sun. night at 7:30 PM. See you there. Net, kHz, Time, QTC, QNI, Mgr.: LAN, 3615, 7:00 & 10:00 Dy, 141, 374, WA5ZZA; LTN, 3910, 6:45 PM Dy, 42, 292, WB5EKU; LSN, 3703, 8:30 PM M-F, 20, 104, WA5IQU; LRN, 3587.5, 7:30 PM Su., 2, 8, W5GHP. Traffic: WA5IQU 169, W5GHP 160, WA5ZZA 130, WB5LBR 109, WA5PRI 51, K5TTC 26, WB5JZQ 25, WB5KFA 23, WB5JZQ 22, WB5EKU 15, WB5DVS 8, WN5NSR 2.

MISSISSIPPI – SCM, W.L. Appleby, WB5DCY – WB5ISY & WA5FMF now Advanced, K5RSE swapped cond for General, WB5EHI now Extra. WB4HRR/5 reports new net on coast 28.600 kHz, Tue. 8 PM local. W5BW & WB5KUJ doing FB job as OBS. W5SEJ now K5BX. WN5NJZ now on 3733 kHz. SEC WB5FXA reports increase in AREC members for Mar. '75. Enjoyed visit with Vicksburg ARC Picnic, Swaptest & Auction. K5RSS is Asst. Mgr. MSBN. WB5EHA created FB issue of MTN Newsletter. Regret to report W5AO & W5OCX as Silent Keys. Appts: K5IMT EC; WB5MTQ RM, ORS; 47% increase in League Membership in Miss. since 1970. Welcome to new Miss. amateurs WB5NVD, WB5BRF, WB5NTV, WN5NUW, WB5NTE, WN5NSC, WN5NXW, WN5NYW, WN5NXU, WN5NXT, WN5NWK, WN5NW5NXR. Hope to hear you fellows on MSN 3733 kHz MWF 7 PM local. K8YUW/5 gone back to Ohio. WN5NQS recd Radiotelephone 3rd Cl & WB5EIN recd Radiotelephone 2nd with Radar end. K2DE/5 sporting new ICOM. W5BW sporting new glasses. K5VOK now on with SB-102, WA5FDP with new HT, & WA5PPS new SB 102. W5PUW heard on 160 meters. WB5HVY recd DXCC. Laurel Area Amateurs were cited by CD Council for Hurricane Carmen efforts. Cert. of appreciation issued to former MSN Mgr. WB5JBW. Heard on VHF-FM WA4KFH/5, WB5NPM, WA6SPM/5. WB5BKM lost both 20- & 40-meter antennas in quicky windstorm. MSN Mar. QTC 9, QNI 41; MSBN QTC 157, QNI 1062; CGCHN QTC 228, QNI 1790. Traffic: W5EDT 151, WB5EHA 71, K5OAF 68, WB5JBW 63, WB5DCY 50, WB5BKM 25, W5NCB 23, WB5IUS 22, K8YUW/5 19, WB5MTQ 19, WB5BUE 17, W5QDC 12, WA5YZW 11, WB5HVY 10, W5BW 9, WB5FML 1, WB5SBM 1.

TENNESSEE – SCM, O.D. Keaton, WA4GLS – SEC: WB4DYJ. PAMs: WB4PRF, K4LSP. RM: WB4DJU. Net, Freq. Time(Z)/Days, Sess., QNI, QTC, Mgr.: TPN, 3980, 1040 M-F, 72, 3554, 159, W4PFP; 1145 M-F, WA4EWW; 2330 M-S, 1300 SSuH, WB4YPO; TCN, 3980, 2330 S, WA4ZBC; TECN, 3980, 2100 S, WB4DYJ; TN, 3635, 0000 Dy, 30, 227, 209, K4YFC; TNN, 3707.5, 0000 Dy, 19, 123, 37, WN4FZU; ETVHFN, 50.4, 0000 TThS, 11, 137, 3, WA4YKN; ETVHFN, 145.2, 0000 WF, 8, 34, 1, WB4DZG; ETTMN, 28.7, 0000 WF, 8, 93, 2, WB4NFI; MTTMN, 28.8, 0100 TF, 8, 60, 0, W4EAY; ACRECN, 146,28/146.88, 0000 T, 4, 59, 1, WB4ZSZ; KCARECN, 146.52, 2130 F, 4, 32, 4, WA4ZBC; WTVHFN, 146.37, 2000 S, 146.97, 0130 F, 7, 77, 0, WA4VVX. Everyone remember Field Day coming up on the 28th and 29th, lets make this one the greatest ever. A Memphis Area Callbook now being prepared, should be invaluable to Tenn. hams. Our appreciation goes to all Memphis Amateurs who helped in the Heart Fund drive. New officers of the Oak Ridge Ham Radio Club are WB4ZSZ, pres.; WB4DJU, vice-pres.; WA4AUW, secy.-treas., WA4CRS, tech chmn.; W4GEK, pub. chmn. The Nashville area amateurs are commended for their assistance in the recent Marcia Tremble case and the floods that hit

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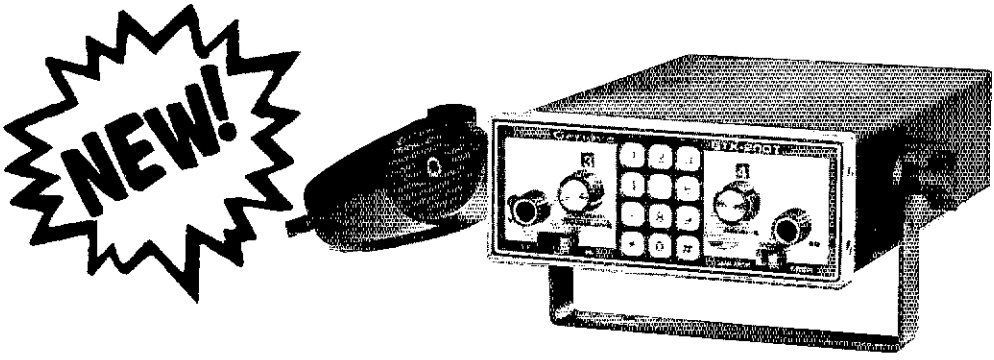

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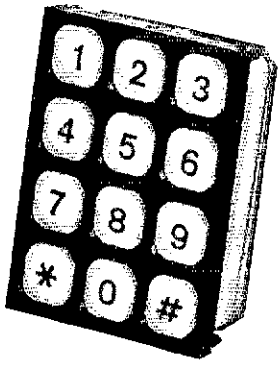

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GENAVE, 4141 Kingman Dr., Indianapolis, IN 46226

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GTX-200-T
2-meter FM, 100 channels, 30 watts (incl. 146.94 MHz)
Special Introductory Price **$249.95**

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GTX-200
2-meter FM, 100 channels, 30 watts
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GTX-100
1¼-meter FM, 100 channels, 12 watts
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GTX-10
2-meter FM, 10 channels, 10 watts
was $239.95 (Incl. 146.94 MHz)
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GTX-2
2-meter FM, 10 channels, 30 watts
was $299.95 (Incl. 146.94 MHz)
NOW **$189.95**

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GTX-600
6-meter FM, 100 channels, 35 watts
was $309.95 (Incl. 52.525 MHz)
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☐	**ARX-2 2-M Base Antenna**	@ $29.95	$_____
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☐	**Lambda/4 2-M Trunk Antenna**	@ $29.95	$_____
☐	**TE-I Tone Encoder Pad**	@ $59.95	$_____
☐	**TE-II Tone Encoder Pad**	@ $44.50	$_____
☐	**PSI-9 Port. Power Package** (less batteries)	@ $29.95	$_____
☐	**PS-1 AC Power Supply**	@ $59.95	$_____

and the following **standard** crystals @ $4.25 each: _____ $_____

Non-standard crystals @ $5.75 each: _____ $_____
(allow 8 weeks delivery.)

For factory crystal installation add $8.50 per transceiver.

Sub-Total: $_____

IN residents add 4% sales tax:

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Note: Orders accompanied by personal checks will require about two weeks to process.

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☐ BankAmericard #_____ Expires_____

☐ Master Charge #_____ Expires_____ Interbank #_____

Prices and specifications subject to change without notice.

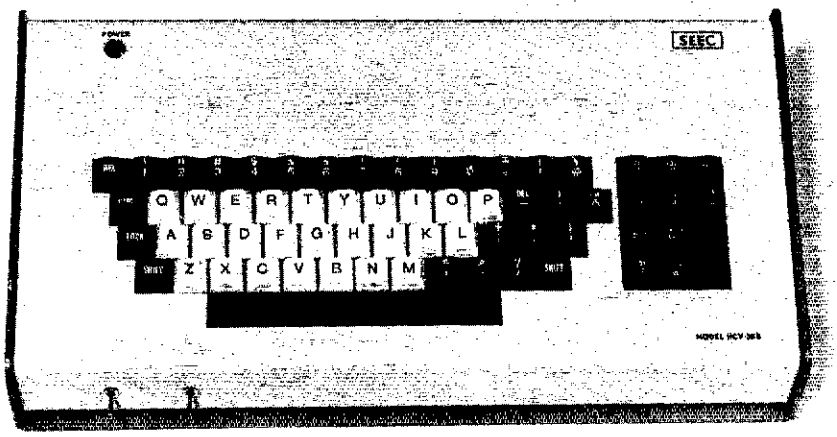
the area. We are proud of WA4DPF on his participation in the n
nets and handling the large number of phone patches (71 in M
Traffic: W4OGG 531, K4CNY 206, K4KCK 105, WB4ZSZ
WN4FZU 83, WB4DJU 71, WB4DYJ 45, WB4ANX 41, WB4
39, W4RUW 32, WB4GTW 26, WA4UAZ 23, W4SGI 21, WA4
20, WA4GLS 20, WB4MPJ 17, WB4CMQ 16, WB4DDV 16, K4
14, WB4CRT 12, WA4DPF 10, WA4KFS 6, K4UMW 6, K4AM

GREAT LAKES DIVISION

KENTUCKY – SCM, Ted H. Huddle, W4CID – SEC: WA4G
BPL: W4RHZ. Net, QNI, QTC: KRN, 262, 28; MKPN, 539,
KTN, 1471, 172; KYN, 244, 200; KNTN, 89, 31; WKETN, 49
KSN, 80, 45; 6DAREC, 94, 4; 8DAREC, 90, 11. WB4ZMK resig
as RM of KNTN. Jim has done an FB job in working with Nov
New RM is WA4IGS. Hamfest dates: Mammoth Cave, Jun
Lexington June 15; Somerset July 6. K4TXJ enjoying new rig w
old cw hand, W4CDA, has finally yielded and has a new 2-meter
W4RMZ made BPL for second straight month. Another court h
lost re license plates. Monitor the nets for details. Traffic: W4I
242, W4BAZ 126, WB4EXQ 116, WB4AUN 83, WB4ZML
WB4FOR 63, W4CID 57, WA4IGS 51, WA4GHQ 44, WB4WCM
K4HOE 40, W4CDA 37, WB4RFN 29, K4TXJ 28, WB4FAT
WA4RCD 15, WA4AGH 14, WA4FAF 12, K4HFD 12, WB4
11, WN4IKF 9, W4YOK 9, K4AVX 5.

MICHIGAN – Acting SCM, A.L. Baker, W8TZZ – S
W8MPD. RMs: W8JYA, W8RTN, K8KMQ, WB7IMI, WB8
PAMs: WB8IIX, K8LNE, WB8BYB. VHF PAMs: WA8W
K8AEM. Net, Freq., Time/Days, QNI, Ffc., Sess., Mgr.: OMN, 3
0200/2300 Dy, 1044, 350, 90, W8JYA; GLETN, 3932, 0230
355, 36, 26, WB8OBR; MACS, 3953, 1600 Dy, 959, 412,
K8LNE; UPEN, 3922, 2230 Dy, 694, 64, 35, WB8IEH; BR/M
3930, 2230 Dy, 883, 153, 31, WB8BYB; WSBN, 3935, 0000
803, 138, 31, WB8IIX; MI6M, 50.7, 0000 MS, 279, 24,
WA8VXE; MNN, 3720, 2230 Dy, 210, 83, 30, WB8JAD. W8C
reports SW Mich. 2M Net QNI 68 in 5 sessions. 2M Catfish Net
95 QNI in 5 sessions as reported by WA8WVV. WA8PIM back
the air after heart surgery. K8OWG has added an SB102 to
Drake line. W8OW reports increased activity on the local 6M
WB8RXS took high honors in the MNN in Feb. W8UOQ stimula
the economy with the purchase of a new Kenwood at the Muske
Convention. WB8FUO plans VHF operation for the Mich. C
Party on 50.125 and 145.025 MHz. Monroe County Ra
Communications Assn. reports election of officers for 1975
WA8EFK, pres.; K8LYY, vice-pres.; WA8YZB, secy.-treas.; W8Y
WN8TKL, K8WXO, trustees. Big Rapids ARC elected K8YHJ, pr
WNRRUV, vice-pres.; WN8TVD, secy. Wolverine Net officers elec
at Muskegon are WB8IIX, mgr.; W8UOQ, asst.; WB8OKA, secy
late winter storm proved to be no obstacle as members of the Mo
City RC turned out to hear Lew McCoy of ARRL Hq assail
philosophy of Multi-Band trap antennas. Membership is increasing
the UCruese ARC. Club bulletin show 11 new members added
the roster. The Cherryland ARC included a "Good Guys" list in
current bulletin. Editor threatens to publish a different list n
month. Most club bulletins include items pertaining to Field D
Suitable sites and FD chmn. are in short supply. Traffic: (M
K8KMQ 331, K8DYI 222, K8LNE 210, WB8ITT 192, W8JYA 1
W8OW 146, K8WRJ 142, WB8DKQ 139, WA8WZF 120, WB8F
99, W8TZZ 94, WA8TBL 86, W8MO 84, WA8VNZ 64, WB8DJS
W8GLC 61, WB8HYR 59, WB8IMI 55, K8LJS 52, W8EOI
W8NOH 45, K8YZI 44, K8JED 41, WB8BYB 35, W8VIZ
WB8JIX 34, WB8NCD 33, W8YIQ 33, K8AMU 31, W8EU
K8GBC 28, W8SCW 28, W8UFS 27, WA8ENW 25, W8IUC
WB8OBR 24, K8ZJU 20, W8DT 18, K8GXV 16, WB8MKU
W8ACW 13, WA8WVV 12, WB8APN 11, WA8FXR 11, K8JHA
W8WVL 11, W8BEZ 10, WA8CUP 10, W8SDB 10, W8TBP
W8UOQ 10, W8JUP 8, K8PYN 8, WB8GKB 7, K8MJK 7, W8L
6, K8ACO 5, W8DCN 5, W8HKL 5, K8WLE 5, WA8YPY 5, W8F
4, WA8MTI 3, WB8SIA 3, W8NLO 2. (Feb.) WB8PFB 16.

OHIO – SCM, Hank Greeb, W8CHT – Net reports: Net, Q
QTC, Sess., Time, Freq., Mgr.; OSSBN, 2686, 1225,
1430/2000/2245, 3972.5, W8MOK; OSN, 269, 94, 31, 2210, 35
WB8KKJ; BN, 610, 367, 62, 2245, 3577, WA8WAK; BNR, 1
314, 31, 2200Z, 3605, K8NCV; O6MtrN, 397, 48, 31, 0100
50160, WA8VWH. The Buckeye Traffic Net Bulletin edited
W8GOE and published by W8PMJ, contains news and views of O
Traffic Nets. Contact W8GOE for details. Burning River Traffic N
146.46 MHz, 6:30 & 9:00 PM daily in the Cleveland-N.E. Ohio ar
reports 18 sessions, 42 check-ins, 26 messages, in the first 9 days
operation. W8IBX and WB8OZA are co-managers. WB8NUT repo
formation of SW Ohio Six Meter Net (SWOS) on 50.4 MHz, 10:
PM, beginning May 10 in Cincinnati-SW Ohio. NW Ohio Amate
Radio Club (Lima) reports 100% ARRL membership. Critical B
Radio Club (Toledo) is new ARRL affiliate. Officers Champaig
Logan ARC are W8GKI, pres.; WA8VFM, vice-pres.; K8YR
secy.-treas. Western Ohio Repeater Assn.: WB8KGO, pres.; WB8HF
vice-pres.; WB8IFF, secy.-treas. Chippewa ARC: WA8KHL, pre
WA8YDK, vice-pres.; W8DRP, secy.-treas. SE ARC: WB8LIA, pre
WB8CHU, vice-pres.; WB8NQT, secy.; WA8YIC, treas. Apricot N
(Cleveland) and SWOhio AREC were among groups providi
communications for St. Patrick's Parades. K8NYN advises he m
give up OO work because of health problems. Thanks for the fi
job! OH QSO Party winner was WB8AYC, with 57,000+ poin



SEEC (THOMAS) MODEL HCV-3KB
SLOW SCAN TELEVISION (SSTV) KEYBOARD

The HCV-3KB Slow Scan TV Keyboard is a system whereby a keyboard is used to generate alphanumeric information at the proper SSTV frequency levels through a direct digital (TTL) process. This system eliminates the need for a "menu board" or other letter/number set-up arrangement which is very time consuming, etc., to set up a meaningful text on, by arranging the letters and numbers by hand. By using the keyboard the operator simply types out the message to be sent as one would on a typewriter. The use of the keyboard also "frees up" the SSTV camera from looking at a menu board, so that it may be used for live scenes of the operator or other subject matter. The keyboard also provides the necessary switching to switch from keyboard to camera and vice versa, when using the HCV-1B or similar camera. For other SSTV equipment (other than SEEC/HCV) an output is provided for inputting the keyboard into the Tape In on the SSTV monitor or direct to the transmitter mike jack.

The HCV-3KB meets all currently accepted SSTV standards and is therefore compatible with all SSTV equipment operating to these standards in the U.S. and Canada. The basic keyboard system consists of 9 main sections: Keyboard, memory, write clock, read clock, character generator, D/A converter, SSTV VCO, gray scale generator (4 shades—2300, 2100, 1900, 1700 Hz) and the power supply. All these sections are housed in a single cabinet, which allows for a neat, compact unit. A standard ASCII encoded keyboard is used.

$455.00 complete ready to operate.

SPECIFICATIONS

- The HCV-3KB SSTV Keyboard will produce the following SSTV screen format, when properly encoded:
  30 Characters Per SSTV Frame = 6 Characters Horizontally and 5 Characters (Lines) Vertically.
- Other character formats will be made available in the form of modification kits to produce the following:
  35 Characters Per SSTV Frame = 7 Characters Horizontally and 5 Characters (Lines) Vertically.
  6 Characters Per SSTV Frame = 3 Characters Horizontally and 2 Characters (Lines) Vertically.
- The standard SSTV frequencies used in the HCV-3KB are as follows:
  Number of SSTV Lines: 120-128
  Time Per Full Frame: 8.0-8.5 Sec.
  Modulation: FM 1 Volt PP
  White Frequency: 2300 Hz
  Black Frequency: 1500 Hz
  Sync Frequency: 1200 Hz
  Sync Pulse (Duration):
  Vertical: 30 ms.
  Horizontal: 5 ms.
- Reed Key Switches—Average Life 30 million operations.

SPECIAL FEATURES

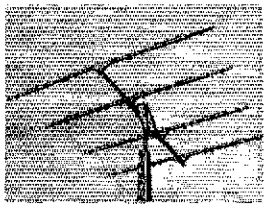
- Positive-Negative Video (Color) Background Reversal.
- ¼ & ½ Frame Rates—1 Line or 3 Lines.
- 4 Shade Gray Scale Generator—To Aid in Proper Monitor Set-Up.
- Dual Fast and Slow Scan RF and Video Outputs—Optional Modification Kit to be Available later. RTTY Mod Kit to be Available later, also.
- Keyboard-Camera or Aux SSTV Video INPUT Selector.
- Sync Only Test Key.
- Video Only Test Key.
- Plug-In Printed Circuit Boards—G10 Glass-Epoxy-Gold Flashed Edge Connectors.
- Plug-In Sockets for ICs, Op Amps, etc.
- SSTV Video Level Control.
- RF Protection Provided as in all SEEC (Thomas) equipment.
- Power Input: 115V 50/60 Hz
- Size: 4" X 8¼" X 16¼"
- Weight: 10 lbs.
- Construction: Aluminum Cabinet. Color: Black & White; 2 Tone Gray. Black & White is standard.
- Standard 1 year warranty on all parts and workmanship.
- Disclosure Document #DD-033469 on file at U.S. Patent Office, as well as other Copyright numbers. All Rights reserved by SUMNER.

Traffic: W8PTT 879, WA8MCR 512, WA8HGH 338, WA8WNI 215, WB8KKI 201, W8DIL 179, W8MGA 177, W8SUS 165, W8QZK 143, K8LGA 102, WB8KWD 97, W8CUT 95, WB8MZZ 94, WB8BZX 92, W8IBX 89, W8FGD 84, W8MOK 82, W8JD 78, WA8ZNC 69, K8MLO 66, WB8RKA 56, WA8SED 53, WB8KQJ 52, K8OYR 47, WA8VTD 45, WB8JUI 40, W8QCU 38, K8BYR 37, WB8JOW 36, W8WEG 36, WB8SGF 35, WA8VWH 34, W8IMI 33, W8OL 32, K8VMI 28, W8IBC 27, W8OUU 26, WB8GGR 25, K8LXA 24, WA8SSI 23, WN8PIY 22, WA8DWL 21, W8CHT 19, W8CXM 18, K8DHJ 16, W8DCX 15, WA8FSX 15, W8GOE 15, WA8IXM 14, W8TH 14, WB8TEM 13, W8GVX 12, WA3BGE 10, W8DPN 10, WB8MGW 10, W8ARW 8, K8BPX 8, WB8HUP 8, W8LT 8, WA8MHO 8, WB8CJU 7, WB8DOF 7, W8LOH 7, WA8TSX 7, WB8LOL 6, W8BHL 5, K8CKY 5, WB8FMW 5, WA8ETX 4, K8JPF 4, W8UQY 4, WA8ETW 2, WB8IBZ 2, WB8NUT 2, W8LAU 1.

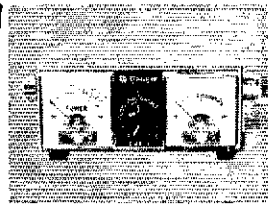
HUDSON DIVISION

EASTERN NEW YORK – SCM, Graham G. Berry, K2SJN – Asst. SCM/RM: Gary J. Ferdinand, WA2PJL. SEC: W2KGC. RMs: WA2FBI and WB2IXW. PAM: WB2QEL. RM for RTTY: K2DN. NYS 3.675 MHz daily at 2300/0200Z. ESS 3.590 MHz daily 2200Z. NYSPT&EN 3.925 MHz daily at 2200Z. NYR (RTTY) 3.613 MHz daily 2300Z. Hudson Division P/R Net 2nd and 4th Sun. 3.925 MHz at 2100Z now welcoming ECs and asst. ECs for regular get-togethers, so please note. New appointment as Asst. SCM to WA2PJL and thanks again to WB2VJB for past help. First quarter activities reports from major nets: NYSPT&EN QNI 3,840 and QTC 551; NYS (CW), 2,550 QNI and 1,805 QTC. Westchester ARA heard W2AIM in slide talk on Pitcairn Island, slides by VR6TC. Albany ARA heard talk on Nuclear Power by rep of Niagara-Mohawk. Overlook Mt. ARC still holds on-air meetings, and annual auction in Mar. Harmonic Hills RL and many other clubs in area heard K2SJO on Docket 20282. Schenectady ARA heard WA2KTV on Ham's legal problems such as towers, RFI/TVI etc. New Rochelle Communications Club heard W2KFB on "What's New in Audio for '75." WB2RKF moves to VT. at school-year end. WA2CJY lost quad to Mar. winds. WA2PAU has Advanced ticket and new linear. K2DN reports more NY check-ins needed on RTTY net, with or without traffic. WA2PJL reports XYL, WB2EMU from Tech to Advanced. Sorry to learn K2IES joined Silent Keys in Mar. K2BK now No. 1 in US on DXCC Roll – congratulations! SEC W2KGC back from Fla. vacation and looking for regular monthly reports from all ECs – please! See note under "nets" about easy to make 'em. Good to hear W2OUC is "off the hook" on TVI portion of his court case; local zoning law forced tower down, though – Lenny out of the area ending his immediate problems with neighbors. Minor problem in area – new repeater using .94 makes things tough on simplex operation. How cum? All stations and clubs planning Field Day activities – be sure to see rules change on CW in May QST. Most Section Leadership appointees at month-end meeting with Dir. K2SJO, second such meeting and more to come. Traffic: (Mar.) WB2RKF 351, WA2PJL 301, WA2LNA 199, W2BLW 158, WB2TGL 99, K2OUA 92, K2TTG 80, WA2PAU 47, K2DN 46, K2SJN 27, WB2RUZ 17, WB2TDK 16, WA2IOQ 15, WA2CJY 2. (Feb.) WA2BRV 36.

NEW YORK CITY-LONG ISLAND – SCM, John H. Smale, WB2CHY – Asst. SCM: Art Malatzky, WB2WFJ. SEC: K2HTX. RM: WB2LZN. PAM: WB2EDW. VHF PAM: WB2RQF. The following are traffic nets in and around the section: NLI*, 3630 kHz, 1900/2200 Dy, WB2LZN Mgr.; NLI Phone*, 3928 kHz, 1730 Dy WB2PYM Mgr.; NLS*, 3730 kHz, 1930 Dy WB2EDW Mgr.; Clear House, 3925 kHz, 1100 Dy, WA2DDD Mgr.; All SVC, 3925 kHz, 1300 Sn, W2OE Mgr.; MIC FARAD, 3925 kHz, 1300 MTWThFS, W2OE Mgr.; ESS, 3590 kHz, 1800 Dy, K2UIR Mgr.; NYSTPEN, 3925 kHz, 1800 Dy, WA2RSP Mgr.; MRA, 40/00 MHz fm, 2100 TTh. *Denotes section net, all times are local. I hope that by this time, everyone has had a chance to read Docket 20282. Most of the clubs have had a chance to hear K2SJO speak on this matter; now I hope everyone will take the time to let FCC know their views on this proposal. Remember also, that along with the 14 copies, please include one for ARRL and one for K2SJO. The FCC has moved to its new officers on Varick and Houston St. WA2JZX reports the Babylon ARC now has a net on 146.94 MHz fm, which will meet every Mon. at 1930 local. W2PF reports the Radio Club of Brooklyn is celebrating its 50th anniversary of ARRL affiliation; W2PF is a charter member of the club, he first joined in 1919. Attention CW Ops, bring those old keys out of storage. This year on Field Day, you can be a very important member of your club's effort, CW QSOs are now worth 2 points each, also, a message originated to your SCM and/or SEC is worth bonus points. I will be around. WB2FZF was recently elected a Trustee of the Board of Trustees of the International Awards Hunters Club. Congrats to WA2VEN and XYL on the birth of their 2nd harmonic. Hall of Science ARC now has a new FT101B and an FT101 for station WB2ZZO; they also had a beam lent to them by Westchester ARC and WB2REX, also. The director of operations of the Hall of Science is finally licensed as WN2UAV. Larkfield ARC is trying to put a repeater on 220 MHz. Welcome to ORSs WA2VPA and WB2QCF and new OPSs WA2VPA, WB2QCF and WA2ROK. If any clubs or organizations are planning Novice classes, please let me and K2SJO know, if you are in need of help, the ARRL has an excellent guide for starting classes. WA2MCE and WB2YER have started up a new club in Brooklyn, the "Young Amateurs Radio League." For



HOT COMBO



Element for element, our rugged High-Q beam antennas are designed to give you the biggest signal your transmitter is capable of.

Now when you install one of these Swan antennas you can make sure you're running full bore all the time by hooking our new SWR/RF Power meter in the coax.

Heavy duty 4-element Tribander Four elements work on 10, 15 and 20 meters. Optimum spacing for maximum performance. Precision tuned, weatherproof traps. 100-mph winds. TB-4HA. *$249.95*

Heavy duty 3-element Tribander Three elements work on 10, 15 and 20 meter bands. Rugged construction. Precision tuned, weatherproof traps. Excellent performance on lighter tower. TB-3HA. *$189.95*

Economy 2-element Tribander Light enough for standard TV rotator but withstands 80 mph winds. Two working elements on 10, 15 and 20 meters. TB-2A. *$129.95*

Heavy duty 2-element 40-meter Beam Two elements on steel beam. Maximum performance for 40-meter CW or phone. Big, weatherproof high-Q loading coils. Easily takes 100 mph winds. MB-40H. *$199.95*

SWR/RF Power meter Combination meter measures standing wave ratio and antenna power. Low insertion loss lets you leave it in circuit. 3.5 to 144 MHz. *$21.95*

All Swan Beam Antennas are Rated for 2000 Watts and designed to use 52 Ohm coaxial feedlines.

SWAN BEAM ANTENNA SPECIFICATIONS

Antenna Model Number	Boom Length & Diameter	Longest Element	Turning Radius	Maximum Wind Survival	Wind Load @ 80 mph	Wind Surface Area	Net Weight
TB-4HA	24' x 1.5"	28'-10"	18'-6"	100 mph	148 lbs.	6 sq. ft.	54 lbs.
TB-3HA	16' x 1.5"	28'-2"	16'	100 mph	110 lbs.	4 sq. ft.	44 lbs.
TB-2A	6.5' x 1.5"	27'-8"	14'-3"	80 mph	60 lbs.	1.8 sq. ft.	18 lbs.
MB-40H	15.75' x 1.5"	30'-4"	17'-6"	100 mph	80 lbs.	2.5 sq. ft.	40 lbs.

SWAN® ELECTRONICS
A subsidiary of Cubic Corporation
305 Airport Road, Oceanside, Calif. 92054

further info write or contact "YARL" @ WA2MCE, 151 Navy Walk Brooklyn, NY Apt. 5D 11201. Traffic: (Mar.) WB2PYM 387 WB2LZN 249, WB2QCF 167, W2MLC 152, WB2FLF 122, W2GKS 100, WA2WKH 82, WB2UFG 63, W2HXT 55, WB2CHY 29 WB2IJD 22, WA2USJ 21, WB2VTN 17, K2FJE 15, W2EC 10 W2PF 10, WA2ROK 10, W2EW 8, WA2JZX 3. (Feb.) WB2UFG 56

NORTHERN NEW JERSEY – SCM, William S. Keller, III WB2RKK – Net, Freq., Time/Days, Sess., QNI, QTC, Mgr.: NJN 3695, 7:00 Dy, 31, 441, 130, WA2DSA; NJN, 3695, 10:00 Dy, 31 254, 100, WA2DSA; NJPN, 3950, 6:00 Dy, 31, 661, 306 WA2DVE; NJPN, 3950, 9:00 Su AM, 5, –, –, WA2DVE; NJSN 3730, 8:15 Dy, 31, 280, 111, WA2DIW*; NJPON/VHF, 146.52 10:00 SuTh, 6, 63, 12, WA2EPI; PVTEN, 145.71, 8:00 Dy, 31 176, 28, WA2OPY. SEC: WB2PBO. PAMs: WA2DVE, WA2OPY (VHF). RMs: WA2DSA, WB2RMK. *Effective Apr. 1, WB2RMK i the new NJSN mgr. Most sincere thanks to WA2DIW for th outstanding job as mgr. during the past year. New appointments WB2ZPM as EC for Newfoundland, and WA2DIW as ORS and EC for Wayne and vicinity. OO reports received from WB2CST, K2EK WB2IEC, K2JFJ, WB2YGK, NNJ welcomes the following new hams: WN2ZRG, WA2YDZ, WN2YJQ. Congrats to the following on upgrading their tickets: WA2SLF, Advanced; WB2TDI, General WN2VKH General; K2SHD, WN2VSN, WA2TXY all to Advanced WA2SLF received the WAC award. WA2EUO now has 140 confirmed for DXCC. WA2RYD has left the NNJ area to join the Navy. WA2EJZ has WAS after working Idaho and Utah in the Nov SS. K2QBW reports working FY7AS via Oscar 6. WA2SLA now on 52.525, while K2EQP reports the new HW101 in operation WA2TXY has an HW12A, WA2SLA a T4XB, and K2JFJ getting ready to work 2M AM with a Communicator II. W2YD, along with WA2SRQ and WB2RKK, operated in recent ARRL CW DX Competition, working nearly 1600 stations. Dir. K2SJO spoke a recent Knight Raider and NJDXA meetings, about the amateur restructuring proposals. WB2DTV teaching license course at Rahway CD. June 22-28 has been proclaimed Amateur Radio week in Englewood. Belleville High School ARC officers are K2DQT, pres. WB2NSV, vice-pres.; W2PKH, secy.-treas.; who also is CD RO for Belleville. W2OBJ teaching a license course at Cranford ARS. WA2OOH is their membership chmn. K2DQT invites all to join the NNJ VHF Net, which meets at 8:30 PM Mon.-Fri. on 146.8 WA2CXS invites all to join the Knight Raiders Net, which meets 8 PM on Wed. on 145.584. W2NR gives code practice at 2130 local time MWF on the Oakland repeater, 146.10/146.70. Clubs wishing help with publicity for activities should contact our Public Relations Asst. WA2CXS and K2AGZ. Good luck to all in Field Day, 1975 don't forget to send me a message during the operation for more points. Traffic: WA2DSA 505, WB2RKK 436, K2BHL 222 WB2UJD 203, WA2BSU 181, WA2PCF 100, K2OQJ 88, WA2DIW 68, WB2AEH 66, WB2HSG 65, W2BLM 46, W2ZEP 43, W2SWE 41 WA2SLF 39, WA2DVE 38, WB2VTT 38, W2CU 33, WA2KFF 33 WB2FIT 26, WA2NPP 26, WA2OPY 24, WA2EPI 22, WB2GAV 20 K2ZFI 18, W2CVW 17, WA2CAK 15, WA2CCF 15, WA2SOU 14 W2WOJ 14, WB2ELF 12, WB2PBO 10, W2SHM 9, WA2QJU 5, K2DQT 4, WB2RJJ 4, WA2UOO 3, WA2EUO 2, W2JDH 2, K2MFF 2, WA2SRQ 2, WB2TDI 2, WA2TXY 2, WA2UZH 2, W2YD 2, WA2SHT 1, WB2VFT 1.

MIDWEST DIVISION

IOWA – SCM, Max R. Otto, WØLFF – Take note of page 65 of Feb. QST for the change in counting tfc starting in July. My apologies to WBØAVW for showing his call as WAØAVW in the Apr. issue. Congrats to WNØOVS, WNØOTQ, WNØOOD and WNØOWO for their new tickets, and to WAØYWD, WØDUN and KØTFT on Advanced. KØBGG, KØAAR, KØMMS, KØTFT and WAØDGZ are working with Woodbury and Plymouth Co. Red Cross, and will handle their traffic. WØOUC, WØLFF and KØLUM lost antennas in the last ice storm of the winter. WØBOJ and his FAA retirees can be found on 3865-70 week days after 1330Z. WAØVRJ, WAØUIT, WAØMIZ, WAØVZH, KØTBV and WAØZNN kept Camp Sunnyside station busy with progress reports of the Pony Express riders. KØUTC, WAØKVB, WAØAUX and WBØBSR manned the camp station. Lots of good PR for the amateurs, and the camp collected $130,000. Anyone interested in hosting foreign Amateur Radio visitors contact WØMHK who hopes to drum up some famous Iowa hospitality. WBØCST going to Purdue and WAØYJW going to Iowa State this fall. WBØMSX now WØPRY and K1INO now WØPOJ. Cyclone ARC WAØKHF new officers are WAØYWD, pres.; WBØDPG, veep; WBØDGF, secy. WØYLL and WØKLD recruiting new amateurs. Muscatine and West Liberty may soon have repeaters. W6PJF, ex-WØNTI moved back to Iowa City. Nets, Freq., Time/Days, QNI, QTC, Sess., Mgr.: Iowa 75 Meter, 3970, 1730 M-S, 1598, 138, 26, WAØVZH; Iowa 75 Meter, 3970, 2300 M-S, 1157, 77, 26, WAØACX; Tall Corn, 3560, 2330/0300 Dy, 305, 60, 59, KØAZJ. Traffic: (Mar.) WAØAUX 396, WØJPJ 193, KØAZJ 107, WØYLS 54, WAØVZH 36, WBØAVW 20, WAØTAO 14, WØOMV 9, WØLCX 8, WØBQJ 5. (Feb.) WØLCX 53.

KANSAS – SCM, Robert M. Summers, KØBXF – SEC: KØJMF, RM: KØMRI, PAMs: WAØSEV, WBØBCL, VHF PAM: WAØFDA. The Kans nets welcomes back WAØMLE. WØINH still having grounded beam problems. WØTEC now reported having his SSTV monitor working as well as his flying pot scanner and is soon to hit the airwaves transmitting. Two new certificates for participating in

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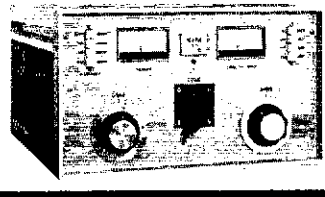

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OKS net to WBØKWO and WBØLKA. WAØSEV informs us tha effective by the time you read this KSBN will be operating on daily sked – 3920 kHz at 6:30. WØWOB has consented to the NC duties, now how about our part – QNI often. KØJMF says th AREC ranks now standing at 692 members. The past month th zones participated in 109 net sessions totaling 1233 QNI and 12 QTC. KØJMF wants reports badly from Wichita area on ARE activities. If you are intersted in the EC spot get in touch with Mer or your SCM. KSBN QNI 901, QTC 110. KPN QNI 127, QTC 12 HBN for Feb. QNI 357, QTC 34 and Mar. QNI 264, QTC 24. Ks W Net QNI 506, QTC 162. QKS QNI. 400, QTC 224 and QKS-SS QN 108, QTC 49. Hamfest time is nearing, so let us all get the ole buggi in shape, the rig installed is a must also, and see you all at th hamfest this year. The info is spread on 3920 kHz. Traffic: (Mar. WØHI 196, WØINH 169, WØFIR 157, WBØIIBM 127, KØBXF 102 WØOYH 96, WØCHJ 95, WØOF 90, KØMRI 88, WAØMLE 82 WBØCZR 80, WØPB 43, WAØSEV 38, KØJMF 35, WØMCH 27 WAØSRQ 25, WBØLKA 20, WAØKVP 15, WØGCJ 13, WØFDJ 12 WBØKWI 7, WØNYG 5, WBØCUY 4, WAØOWH 3, WØKLJ 2 WAØGSG 1. (Feb.) WØPB 58, WAØSEV 32, WØNYG 9, WAØKVP 6 WBØCUY 5, WAØNXD 2.

MISSOURI – SCM, B.H. Moschenross, WAØFMD – Asst SCM/SEC: Clifford Chamney, KØBIX. WAØMOF appointed OBS Appointees are reminded that reports due monthly to the SCM. Net ONI, QTC: MOSSB, 1432, 121; MEN, 614, 89; MON, 273, 174 MON 2, 135, 54; MOAREC, 120, 9; MSN, 74, 55; JC2AN, 59, 0 SCEN, 41, 3; WEN, 12, 2; ACE, 6, 0. CPARA has 30 prospective amateurs enrolled in their noivce class and 23 in the intermediate class. Three Rivers ARC officers are WAØBXY, pres.; WAØIIK vice-pres.; WAØEKD, secy.-treas. Lebanon ARC is organizing and already has a large membership. PHD ARA Kansas City area directory lists 2720 amateurs. The editors WAØKUH and KØTLM wish to thank all who assisted. WAØABI, KØFNW and WAØJCZ were winners of the St. Charles ARC's recent hidden transmitter hunt. Congratulations are in order for the following: WNØLGN and WNØLRF on passed Advanced; WBØIVU on receiving Genera ticket; and WØTDR on his marriage. Welcome to new Novices WNØOOZ and WNØOVE. The MOSSB net will miss Silent Keys WØFOF and KØHNE. KØCEV who represents K.C. on the Eyebank Net is Phd Amateur of The Month. KØRWL is returning to road duty with the highway patrol. Watch your speed. Good luck on Field Day. Traffic: (Mar.) KØONK 882, WBØJWM 165, WØOTF 125, WBØHSP 112, WAØFMD 68, WØEPI 64, WBØLRX 42, WØOUD 42, KØBIX 37, KØRWL 31, WBØCKI 28, KØENH 27, KØPCK 22, WØJKF 21, WBØLMW 20, WAØOOA 19, WØBVL 16, WØGBJ 16, WØVZK 16, WAØFKD 15, KØAHL 14, WAØYNC 12, WBØFQM 11, WØRTW 4, WBØLTD 1. (Feb.) WNØNNL 4, WNØNPY 2.

NEBRASKA – SCM, Dick Dyas, WØJCP – The SCM attended an organizational meeting for the Holdrege Area ARC on Mar. 9. In spite of a heavy snowstorm 18 were present. A committee was appointed to write the constitution and By-Laws. New Novices in the Holdrege area are WNØOYF, WNØOWZ and WNØOWY. The Annual Pancake Feed sponsored by the Crete ARC was well attended. WØYOY and WAØNNC are moving to Sioux City. Wedding bells will ring in June for WBØCBI. 160 M WX net closed Mar. 31 for the summer. WØIF is a Silent Key. Net, Freq., GMT/Days, QNI, QTC, Mgr.: NEB I&II, 3700, 0000/0245 Dy, 60, 3, WAØGHZ; NSN I, 3982, 0030 Dy, 940, 41, WAØLOY; NMN, 3982, 1230 Dy, 981, 1, WBØGWR; WNN, 3950, 1300 M-S, 416, 15, WØNIK; AREC, 3982, 1330 Su, 235, 5, WØIRZ; CHN, 3980, 1730 Dy, 1519, 63, WAØGHZ; SHN WX, 3950, 1830 M-S, 225, 11, WØPL; NAN, 3980, 2000 M-F, 476, 25, WAØAUX; 160 M WX, 1995, 0030 Dy, 254, 173, WAØCBJ; QCWA, 3980, 1400 S, 76, WØFOB; NSN, 3982, 2330 Dy, 1349, 28, WAØLOY. Traffic: WAØCBJ 75, WØVEA 46, WØHOP 32, KØPTK 27, WØNIK 25, WBØEVS 23, WØVYX 22, WØJCP 16, WØCSW 15, WAØGHZ 15, WØGKK 15, WØHTA 14, WØGEQ 12, WBØJWO 10, WØYFR 9, WØJDJ 8, WBØKCV 8, WØMW 8, WØPL 8, WAØPCC 5, KØSFA 5, WAØGAK 4, WBØGMQ 4, WØZOU 4, WAØLOY 3, WAØEFI 2, WAØHFH 2, KØOAL 2, WAØOEX 2, WØUFZ 2, WØAFG 1, WBØBCB 1, WØLCE 1, WAØVIT 1.

NEW ENGLAND DIVISION

CONNECTICUT – SCM, John McNassor, W1GVT – SEC: W1DGL. RM: K1EIR. PAM: K1YGS. VHF PAM: WA1YOE. Net, Freq., Time/Days, Sess., QNI, QTC: CN, 3640, 1900 & 2200 Dy, 62, 588, 533; CPN, 3965, 1800 M-S/1000 Su, 31, 576, 314; VHF 2, 28/88, 2130 Dy, 31, 341, 71; CSN, 3725, 1730 Dy, 29, 318, 165, High QNI: CN – WA1OME, WA1RUR, W1CTI and WA1FCM. CPN – W1NQO, K1PAD, WA1QMF, WA1RUR and WA1RXA. SEC W1DGL would appreciate reports on AREC activity in your area. Mar. EC reports from WA1s RXA, JYP, QMF, OPB and LMV. Dir. W1HHR enjoyed visit to Candlewood ARA in Danbury. In C'D Bulletin to Appointees and Clubs, read and heed information on "Malicious Interference" – it can help all of us! Meriden ARC held State-wide auction. Tri-City ARC Bulletin includes membership roster and notes the Homebrew Contest. Candlewood ARA Conn. QSO Party A-OK and Annual Dinner all set. CSN Bulletin includes traffic topics and instruction. Conn. Wireless Assn. enjoyed tour of new WTIC Radio. ICRC 28/88 welcomed over a dozen new members at Apr. meeting. Early Eighty Free Net 4:30 PM on 3720. Conn.-Mass. Novice Net 4 PM on 3725. New traffic count starts in

CW FILTER

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CWF-2, PC board, includes 4 position selectivity switch $16.95
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Unintelligible signals become readable as you slide the selectivity switch to optimize the audio bandwidth.

IC active filter includes high-pass filter plus selectable cutoff active lowpass filter. Select 2.5, 2.0, 1.5 KHz cutoff.

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SBF-2, PC board, includes 4 position switch; wired and tested $17.95

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The MFJ-100BX frequency standard provides strong, precise markers, every 100, 50, 25 KHz to beyond 60 MHz.

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CMOS ELECTRONIC KEYER

●State of the art design uses digital CMOS electronics and NE 555 sidetone ●Built-in key with adjustable contact travel ●Sidetone and speaker, ●adjustable tone and volume ● Tune-operate switch ●Internally powered by 4 penlight cells ● Self-completing dots and dashes ● Jam proof spacing ● Instant start with keyed time base ● Perfect 3 to 1 dash to dot ratio ●6 to 60 WPM ●Relay (30 VA to 250 VDC) or transistor (.5 amp to 40 VDC) output

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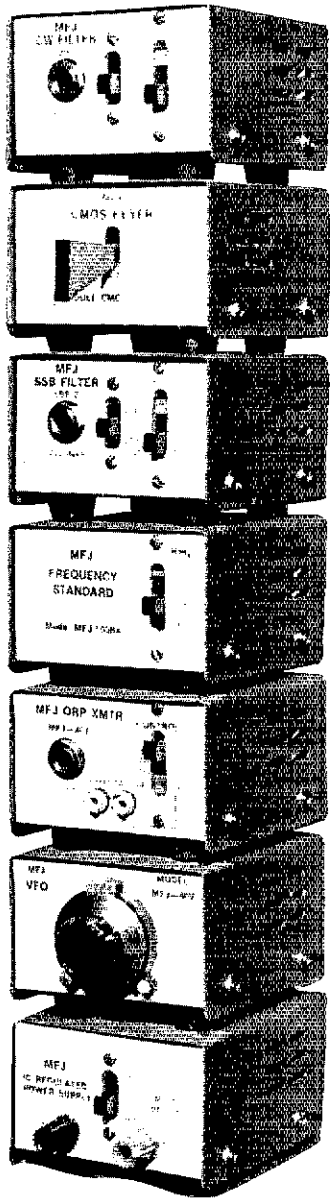

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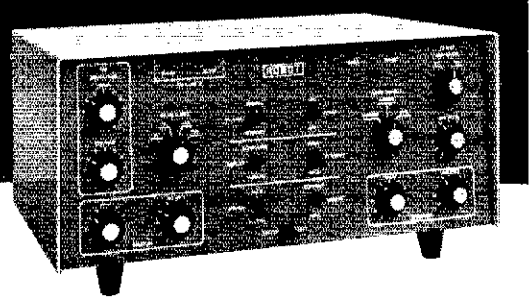
July – see Feb. QST for details. WA1OYE our VHF PAM w
QRMed by stay in hospital. Congraulations to: WA1QME (715
and WN1UAX Mar. BPL; WA1PIX for Extra Class; WA1TAE f
Advanced; and to WA1EDX for General! Field Day coming at t
end of the month! See May QST for rules – don't overlook t
merits of CW – 2 points per contact! ORP with CW and batteri
will provide some real fun! BCNI!! Traffic: (Mar.) WA1QME 71
WA1ECM 299, WA1TGE 252, WA1SHO 235, WA1RYL 23
WA1GHH 228, WN1UAX 219, WA1RUR 109, WA1HLP 8
WA1STN 70, W1CTI 60, WA1JCN 53, K1YGS 52, W1DGL S
W1GVT 49, WA1RXA 47, WA1TXM 45, WA1SWJ 33, W1KV 3
WA1JGA 18, W1RDI 15, W1QV 12, W1CUH 10, WA1OPB
WA1JYP 5. (Feb.) WA1SWJ 11.

EASTERN MASSACHUSETTS – SCM, Frank L. Baker, W1AI
SEC W1AOG home from Efa. W1AAU acting as Dedham CD D
W1OFN, W1NZP endorsed as ECs. WA1OOK new OPS, ORS, OV
WN1URC son of WA1IQX, W1BDS now retired. W9CTI/1 on 7
K1WKS moving to Calif. W1MYG had eve operation. WA1URK
YL related to K1TIH, K1NQA, WA1LYJ now out on Kwajalei
Hollis Baird spoke at South Shore ARC. W1FJH has an FM27
W1CGR, WA1CRI building frequency counter. WA1KFA workin
on automatic tower. WA1BZJ on 2 FM. WA1JDB, WA1MNO
2-meter FAX. WR1ADR on from new location. WA1LBG & wi
also WA1QAA & WA1QAB expecting new arrival. K1UHW a ne
camera. W1KGU had a cruise on Russian ship. BPLs: W1s DM
ARC, PEX, K1PNB. W1FJH has 8 students in Novice Clas
WA1OOK may be EC for Watertown. WA1KFA has 54-ft. towe
Wellesley ARS had an auction. W1DMS building antenna tune
W1GNM is coord. of public service for Waltham ARC. ON6NW
T12WD visited W1PL. T12WD & WA1LZK visited W1NF. Lowe
Tech had auction. Chelmsford ARA toured FAA center, Nashu
NH. WR1ABP updated and replaced by WA1GSF. WA1FM
retired. WA1SDZ has an IC-230 on 2. K1SAU has FTDX 401-
Dorchester ARC now meeting at the Dor. house 1353 Dor. Ave
3rd Sun. K1ZNB in Cal. W1AGX retired. W1UE has sked wi
father WA4SYX on 75. W1EMG off to KH6-Land. WA1QOK bui
the delta loop beam Oscar. W1NF built a Coherer receiver for th
WCC exhibit for W1ALT. K1BJQ RO for Billerica, K1RGD is as
Norwood ARC had auction. WA1EOT new editor of K1MJ
Newscarrier. WN1TRT busy working DX on cw, Capeway RC m
at K1IPB's QTH. W1WSN spoke on repeaters at Middlesex AR
WN1TZQ built an electronic keyer. WN1UAF working on WA
award. W1LM runs a cw net on 3590. W1RZA home for a fe
weeks. K1PNB says quite a few new Novices are checking in on o
FNN. Net, Freq., Time/Days, ONI, OTC, Mgr.: NENN 3720, 183
MWF, 145, (Jan.) 145, 120, (Jan.) 80, K1PNB; EM2MN, 145,
2000 M-F, 52, 17, WA1IPE; HHTN, 04/64, 0330Z Dy, 392, 17
WA1MHJ; NHPN, 3945, 0830 Su, 90, 8, W1KKD; EMRIPN 399
1730 Dy, 233, 225, WA1QJU; EMRI, 3660, 1900/2200 Dy, 44
379, WA1MSK; Clrg. House, 3925, 1100 M-S, 476, 377, W1U2
Mass. Tfc./Ragchew, 50,63, 2030 M-F, 97, 5, W1GJK. Traffi
(Mar.) W1PEX 590, WA1MSK 400, WA1MHJ 299, W1EHE 24
WA1QKD 231, K1PNB 215, WA1QJU 204, W1DMH 172, W1U
159, K1PAD 137, WA1QZX/1 119, WA1QOK 114, W1AEC 10
W1EMG 100, WA1PQY 95, W1CE 94, K1RZD 81, WN1UGJ 4
W1DMS 48, WA1OWQ 45, W1EMG 42, WA1SIR 42, W1MX 3
WA1PGY 30, WA1MYK 18, WA1IPE 17, WA1RGA 16, WA1PA
15, W1EOH 12, W1GJK 7, W1GNM 4, W1PL 4, WA1FNM 2, W1N
L. (Feb.) K1PNB 62, (Jan.) K1PNB 192.

NEW HAMPSHIRE – SCM, Robert C. Mitchell, W1SWX – SE
K1RSC. RM: WA1GCE. PAM: K1YSD. Welcome new han
WN1UOD, WA1UNN, WN1UQO, WA1UNU, WN1USN, WN1UQ
WN1UQW, WN1USO & WN1UTC. Congrats to RM WA1GCE on th
excellent NHVT Net Newsletter. K1YSD moving the shack to th
cellar. K1PQV has a new Gotham 20-meter beam & data sign
preamp. W1IB running some tone patch traffic on 75. WA1JSD sa
the ARRL DX Test brings out a lot of faithful friends, both he
and abroad. RM, WA1GCE says we need more liaison between fi
cw and tone nets. W1DXR & XYL were vacationing in Europe. Th
Concord Brasspounders meet the 2nd Tue. of the month
welcomes all. This is one of the oldest & best known for its Fie
Day operations, and giving rare NH contacts with W1OC. Winner
the last CD Party, both modes, was W1EHT. How about more new
items from everyone? Traffic: (Mar.) K1PQV 84, W1MHX 26, W1J
10. (Feb.) W1MHX 2.

RHODE ISLAND – SCM, John L. Johnson, K1AAV – SE
W1YNE. RM: WA1POJ. PAM: WA1RFT. The Newport Count
Radio Club W1YNE reports that WA1PZC chmn. of the Repeate
Committee reports they have made enough money to purchase
repeater and have applied to FCC for their license. W1GO will be
charge of designing the station and building and testing it. WA1OS
is on 2-meter fm and is equipped for 147.36 MHz duplex operation
The Field Day Committee is headed by WA1POH and assisted b
WA1AUL. The Club will have 5 stations in operation on site at S
George's School. W1FX has been working DX with other station
via Oscar 6 and Oscar 7. W1AM built a WB4VVF Keyer and is no
making auxilaries for it. W1KMV Club Station at the Univ. of R.I.
currently running Novice classes Thur. nights at Union Hall Roo
308, all interested should meet to sign up. WA1POJ now active o
Oscar 6 and 7. WA1RFT has a new keyer and is working 40-mete
DX. Traffic: WA1POJ 547, WA1RFT 49, W1KMV 1.

Now get commercial TV picture quality on Amateur SSTV operation



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VERMONT – SCM, James H. Viele, W1BRG – SEC: W1VSA Net, Freq., Time(Z)/Day, QNI, QTC, Mgr.: VTSB, 3909, 2200 M-S/1130 Su, 591, 84, WA1PSK; Carrier, 3935, 1300 M-S, 416, 19 W2DSK; Green Mt., 3932, 2130 M-S, 529, 34, W1JLZ; Vt. Phone 3909, 2130 M-S, 148, 11, W1KKN; VTREP, 3909, 2200 Su, 94, 17 K1BQB; NHVTN, 3685, 2230 Dy, 104, 45, W1GCE. Welcome new amateurs WN1UNX, WN1UNZ, WN1UQL, WN1UOY, WN1URD WN1USM, WN1UVW and WN1UWG. W1SOV is father of a new YL harmonic, name Cheryl. Congrats. WN1UWG building a new SB102 BARC presented a club position paper to ARRL on proposed license restructuring. Skip Tenney of Ham Radio spoke to Centra Vt. ARC on restructuring. Conn. Valley FM Assn. (WR1ACA) me Apr. 12 and discussed action on auto patch and license re structuring. W1REP on his way to Alaska for a few weeks. Traffic K1BQB 110, W1LMO 7.

WESTERN MASSACHUSETTS – SCM, Percy C. Noble, W1BVF – OPSs: W1IQU, WA1RLP. New Novice: WN1UUZ. WN1RSY ha gone after his General after 47 states and 36 countries as a Novice W1IQU new member of OOTC. W1IRZ built new Electronic Keyer. WA1RWU has new Swan 250C. RM W1DVW reports WMN held 3 sessions, QNI 195, traffic 141. PAM WA1MJE reports WMPN held 21 sessions, QNI 242, traffic 51 (total of 57 different stations). SEC WA1DNB reports WMEN held 5 sessions, QNI 108, traffic 14. Tota AREC members in West. mass. is 100. UHF/VHF PAM W1KZS reports Berkshire Co. AREC Net held 5 sessions, total QNI 42 Three-Co. UHF/VHF PAM WA1PLS reports WM AREC held 20 sessions, 30 different stations for a QNI of 147. West Mass Section-Wide Nets: CW WMN Dy, 7:00 PM 3560; Ph WMPN M-F 4:30 PM 3935; Ph WMEN Su, 8:30 AM 3935. CMARA reports Novice & General classes going well with K1COW and WA1OLK a instructors. Thanks were received from the Worcester Science Center for the ham radio demonstration by WA1OAT, WA1PDQ WN1TAL, WA1OAU. HCRA says month's speaker was W1HDQ MARC reports W1FVM recovering from heart attack. Mt. T ARA says speaker of the month was W1MDM, aided by WA1CZG W1EBW & WA1BWF. New members: WA1ADV, W1EOO, K1GZU K1LJH, WA1RNI, WA1UNN, W1YOL. Fifteen club members provided communications during Holyoke St. Patrick's Day parade NOBARC bulletin contains list of all equipment & parts on hand marked "paid" or "donated." Congrats! WMARA reports 17 Mass operators participated in the Hawk Watch this year. Number observed was 5300. Traffic: (Mar.) W1DWA 132, W1TM 126, W1DVW 115, W1ZPB 96, W1BVR 89, W1KK 56, WA1RWU 55, WA1MJE 50, WA1OUZ 33, WA1BXP 20, WA1LNF 16, WA1RLF 14, WA1DNB 13, WN1RSY 9, WA1OLK 2, WA1PLS 2. (Feb.) WN1RSY 101, WA1BXP 4.

NORTHWESTERN DIVISION

ALASKA – SCM, Roy Davie, KL7CUK – KL7CFX reports they have 14 new calls in their area. Also have 17 working on their Novice ticket. KL7GCH still working 160 with good results. Winter is very much in being on Kodiak with high winds and snow. Sorry to report KL7HRK has left Kodiak because of job change. Buzz was a strong traffic man and had set up a lot of schedules with lower 49 stations into RN7. Lets hear if anyone would like to take up where Buzz left off. KL7JDO very busy with his business these days and still has time to meet the nets and work Oscar. KL7HOV reports the SNIPERS Net, held 31 sessions, 550 check-ins and a whole bunch of traffic. Chuck is our PAM for Alaska. The amateurs of Alaska again for the third year provided communications for the World Iditarod dog sled race from Anchorage to Nome a distance of 1049 miles. Traffic: KL7CUK 47, KL7GCH 17, KL7JDO 6.

IDAHO – SCM, Dale A. Brock, WA7EWV – SEC: W7JMH. PAM: WA7HOS. VHF PAM: WA7FSI. Net, Freq., Time/Days, Sess., QNI, QTC, Mgr.: FARM, 3.935, 0200 Dy, 30, 1133, 25, WA7HOS; IMN, 3.582, 0230 M-F, 21, 181, 63, W7GHT; RACES, 3.99, 1415 M-F, 21, 557, 13; IDA Silver, 3.93, 0115 MWF, W7IY, W7ZRO and W7CTX are actively working the Oscar satellite between 2400 and 0100Z almost every night. Stations needing Idaho please contact these stations. New Novices are WN7AZI and WN7AVX, daughter of WA7EWV. W7IY reports two 75-meter SSB contacts with ZLs. W7GBO has received OTC and WAS certificates. WA7JEC and W7FHQ returned from Calif. in Apr. Traffic: W7GHT 216, K7NHV 95, WA7CTS 62, W7GBO 14, W7FIS 4, W7IY 2.

MONTANA – SCM, Harry A. Roylance, W7RZY – SEC: WA7IZR. PAM: WA7PZO. Sorry to report the passing of W7IWW. WA7OBH has his 100 cards for DXCC. K4ROT/7 has a new call of W7KPX. Mont. traffic net had 1081 check-ins, 21 sessions and 27 pieces of traffic. IMN had 21 sessions, 181 check-ins and 63 pieces of traffic. If you are interested in a Mont. QSO party contact WA7PZO. Traffic: W7TGU 28, W7NEG 19, W7KPX 6, WA7KMP 5, WA7OBH 2, WA7VTD 2, WA7PZO 1.

OREGON – SCM, Leonard R. Perkins, WA7KIU – Net, Time, Freq., QNI, QTC, Sess., Mgr.: OSN, 0145, 3585, 194, 94, 31, WA7TXV; BSN, 0030, 3908, 802, 59, 38, 41, WA7QDC; ARLC, 0200, 3993, 398, 27, WA7RWM; NUCLEAR, 9:30 AM PDT Su, 37, 5, W7FFE. Congrats to WA7TXV, new net mgr. for OSN, and WA7QDC new net mgr. for BSN. Net mgr. is a lot more work than glory so give these fellows all the help you can. Field Day – get your group out, get on vhf, earn extra points for cw, do something.

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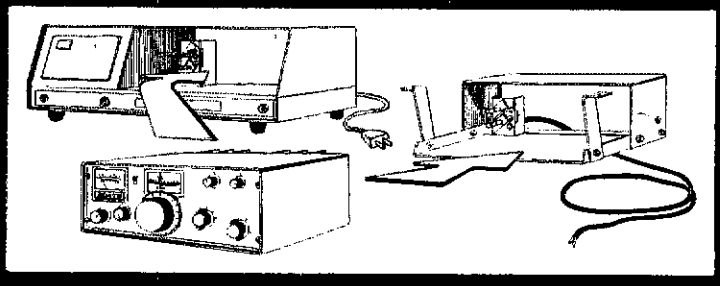

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Portland ARC reports putting WR7AFO on the air at OMSL. 13/
open access. During a recent "Keg Roll" by Univ. students for t
Kidney Assn. of Ore., progress communications were provided
Salem ARC. I understand they did as well or better than may ha
been done on 27 MHz. Several clubs reports new batches
amateurs coming out of the winter skull sessions. Don't forget
can still help these people along and we sure want them in t
League. Does your group have a TVI or Tech. Committee? Sm
problems can becomes monsters by the time a committee is form
after the fact. Another good suggestion from Salem was, "why n
send a copy of your Club Bulletin to other Clubs?" Lets hear wh
you are doing, picnic, bunny hunt, etc. See you Field Day. Traff
K7IWD 185, K7QFG 146, K7OUF 113, W7ZB 98, W7DAN
WA7YEU 79, WA7QDC 73, W7IWN 33, WA7UJO 30, WA7KIU
W7LT 10.

WASHINGTON – SCM, Mary E. Lewis, W7OGP – Nets, Fre
Time, QNI, QTC, Sess., Mgr.: NFN, 3970, 11:30, 1815, 81,
W7PWP; NWSSB, 3945, 18:30, 662, 33, 31, W7FIM; NSN, 370
0200Z, 577, 164, 31, WA7NIB; WSN, 3590, 18:45, 298, 108,
W7LG; WARTS, 3970, 18:00, 2355, 142, 31, W7GOP; W7F
reports quiet except for 2 new Grandsons in last month. K3MNT
received 1st place W7 area certificate for '74 all Asian conte
phone. W7LG had a great vacation in Fla. for three weeks, visit
son WB4KGY. W7AXT busy on RTTY traffic net, renewed ha
license for 5 more years – 45 years a licensed amateur has passe
W7KHN planned to utilize AREC in ecology project-Ocean Sho
cleanup Apr. 12, W7IEU still looking for ECs, anyone interest
contact him. W7AIW home from hospital after heart attac
K7GGD returned home from two weeks of electronic switchi
system school in Spokane. Walla Walla ARC had a very successf
repeater auction, an excellent turnout of hams from eastern part
Wa. Tri-Cities ARC invited me to stay over and talk on Dock
20282. K7KFT due to Easter vacation and everyone missing ske
had his traffic month to date. K7GWE new VHF PAM still nerds
Mex. for WAS Oscar 6, he also has 6 & 7 computer print-outs
intersted contact Randy. ARC Vancouver W7AIA will be operati
daily for Sesqui Centennial (150th) anniversary of founding of F
Vancouver by Hudson Bay Co. during July – a classy QSL f
contacts. Regret to report W7UWT, former SEC for 12 yrs., a Silc
Key. Traffic: WA7BDD 112, W7OCV 112, K7CTP 88, K7OXL
K7KPI 74, WA7UHW 64, W7APS 48, W7BQ 46, K7OZA
W7PWP 33, W7SYS 33, W7BUN 32, W7LG 17, W7IEU
WA7RCR 12, W7AIB 9, W7AXT 8, W7HHU 5, W7RXH 4, K7V
4, K3MNT/7 1.

PACIFIC DIVISION

EAST BAY – SCM, Charles R. Breeding, K6UWR – Asst. SC
Ronald G. Martin, W6ZF. SEC: WB6RPK. Asst. SEC: WB6DSI.
has become necessary for K6OKO to leave as EC for Southe
Solano Co. We all would like to thank him for an FB job. Taki
over duties as EC is WA6GIO. In spite of just about the wo
weather this year the Mt. Diablo ARC had a most successf
auction. K6HYQ has been working with IC's with interesting resul
WA6AMB and WB6BNR are keeping the north end of the Secti
active on 2 meters. WB6RPK has been elected to the Board of D
of WCARS. Even with bad propagation, K6HW has done a good j
with his traffic count. W6ZF has finished working over the pow
supplies on the rigs used for the West Coast Bulletins. See l
month's report for time and frequencies. WB6DSI has a new 2-me
antenna up. CCRC reports the following new calls: WB6JM
WN6JOS, WN6JPL, WN6JPC, WN6JLP, WN6JLV, WN6JY
WN6JER, WN6JEM, WB6JHD, WN6JIM, WN6JIK and WN6JD
Congrats and good luck to all. The Northern Calif. Contest Club h
a repeater on 450 MHz. NCCC will sponsor the Calif. QSO Party t
year. For latest information all are invited to check in to the NC
net on 3815 kHz at 7 PM on Tue. Traffic: K6HW 487, WA6IPI 22
W6JXK 74, K6PMG 18, WB6VEW 15, WB6WBG 5, K6UWR
W6ZF 4.

HAWAII – SCM, Pat Corrigan, KH6GQW – SEC: KH6IKB. P
News! On July 1 our section will finally have its proper name
Pacific Section. See details Op. News this issue. ARRL Gen. Mg
W1RU & spouse visited KH6 in Mar. A most pleasant visit. KH
AN, AKE, BHJ & families hosted the "mayor" of Molokai, KH6
to dinner as Shell & wife went east to visit. W. PacificNet contin
to grow, mgr. KG6IAQ puts out nice bulletin for QN
(1410/0700Z). KH6IJ gave his great talk on satellites at M
meeting EARC, Hilo. Kauai repeater (04/64) should soon be in t
swing. EARC has new transistor repeater to go on Maunakap
Special bicentennial calls authorized by FCC; see this issue. Seen
Dayton Hamvention: KH6s GQW, GMP, HCM, HEL. GMP
repeaters from Fla. to NY & GQW from Wash. DC to SFO duri
May. Welcome back KH6GDR. KH6ILX still sorting out de-sen
WB0JNV/KH6 now KH6IOO. Life Member KH6IGJ soon bi
farewell. KH6IKB sez ZL1VY was in KH6 enroute to W & worl
Traffic: KH6IAC 440, KG6IAQ 262, KG6JEU 101, KX6LJ 6
KH6IKB 63, KG6JED 63, WA1LWS/KH6 17, KH6GQW 17.

NEVADA – SCM, John D. Weaver, W7AAI – Heartfelt than
to K7ZOK for a job well done as SCM. I'm eagerly seeking As
SCM applicants from Northern or Central Nev. Welcome to ne
appointees K7OHX ORS and WA7WYF OBS. LVRAC Spring Picr
suffered cold, windy weather but host WA7VEZ busy planning t

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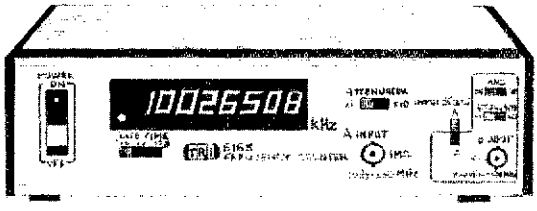

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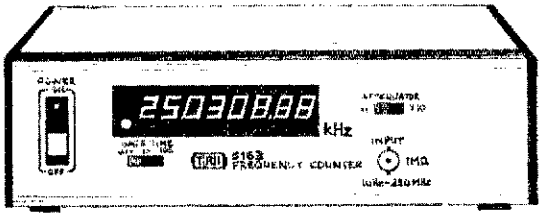

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next one. W7ILX still chasing bugs out of his new R3
K6MQX/7 built his own antenna noise bridge. LVRAC Bulletin
been mailed to all known hams in Southern Nev. If you would l
copy contact me. The Jan. survey showed an overwhelming maj
hold Advanced Class tickets. EB! WA7LEF, WA7GIV, K7R
WA7WYF teaching ham classes twice weekly. LVRAC has app
for re-issue of K7UGE, former club call. K7ICW claims first 7-
WAS! Don't forget to send me a Field Day message for those
points. Traffic: (Mar.) W7ILX 105, WA7UEK 87, K6MQX/
(Feb.) W7ILX 55.

SACRAMENTO VALLEY – SCM, Norman Wilson, WA6JV
SEC: W6SMU. The North Hills Radio Club has their repe
operational on 222.98/224.58. The Berryessa ARC, WR6ABX, h
new trustee, WB6WPH, and has gone solid state. K6RPN has n
BPL for the third time which entitles him to the ARRL BPL tr
award. I think this is a first for SV. Congratulations to WA6A
WA6PAY and WA6QJK who recently passed their Advanced
exams. WA6KSZ building a 220 MHz linear and K6SG has a
40-meter beam up. WB6CBJ is locally ORT while /5 in Tex.
the Navy. WB6EKG has a telefax on 2-meter am. WA6HAF's
dammaged antennas have become the object of the Davis
Counsel's wrath. The Sycamore Ele. School of Gridley is looking
a communications receiver for use in a radio class. The Calif.
Party will be the 1st week end in Oct. The Northern Calif. Con
Club is trying to have all counties in the State represen
Interested operators please contact the SCM with their plans so
possible portable stations will activate those counties not re
sented. Traffic: K6RPN 303.

SAN FRANCISCO – SCM, Charles K. Epps, W6OAT –
Calif. Slow Net (CSN) is a Novice Net meeting on 7119 kHz at
PM PST on Tue. and Sat. evenings. WB6BDL is net mgr. and N
CSN handled 11 messages in Mar. WA6PMK, WB6BDL and WB6
are new OOs. New EC for Mendocino Cty is WB6AGR. W6P
passed his Extra. WB6FMJ passed his Advanced. (He was the
graduate of the EDT Club's Novice class to pass his Gener
WA6ICQ succeeds WB6UPV as mgr. of W6SG. MARC's club stati
Marin Cty has an excellent emergency preparedness prog
through joint efforts of MARC and WR6ACS groups, but they
want to get more Marin hams involved. Contact WA6KBF
details. W6EAJ uses a water wheel to generate electricity for
transmitter. MARC members provided communications for the A
27 Bikathon to benefit Marin General Hospital. WB6ZUC almost
ber new CW DXCC. SF Radio Club meets the 3rd Fri. of e
month. See WA6DJI for details. RM WA6BTF reports NCN/2
37 different stations passing 130 messages in Mar. Traffic: K6
249, W6RNL 168, WA6BTF 42, WB6BDL 18, W6BIP 10, W6O
4.

SAN JOAQUIN VALLEY – SCM, Ralph Sarovan, W6JPL
W6CUA is on 2-meter fm using a Heath 202. WA6VXT bought
IC-230 and is on 2-meter fm. WB6AIE also active on 2-meter
OD2SC from Lebanon, now in Fresno, and looking forward
getting back on the air. K6RPH recuperating very nicely after he
surgery. WA6OQE learning how to whistle on WR6AIM. K5SSE
lost his Quad in the last windstorm. W6GUZ and W6MOU dona
radio equipment for the FARC picnic to be raffled off. WA6EYF
in Lemoore on 2 meters. WB6RLR active on 2 meters. W6O
active on 40 cw. K6BPT working with the Stockton Repea
WB6ITM moved to a new QTH and is on 2 meters. WN6WFQ pas
his General Class exam. WB6QWE passed the Advanced Class exa
K6QHC putting up a 54-ft. tower. WB6DTF has a TS-5
WA6EYK working DX and has 175 countries. New Novices
Lemoore are WN6FMG, WN6IRI, WN6IUL and WN6JXT. WA6R
started the West Kern AREC Novice traffic net which meets Sat.
6 PM on 3720 kHz. WN6FPV active in handling traffic. WA6Z
putting up a 6-meter repeater. W6TN now located in Bodfish, Ca
Traffic: WA6RXI 55, WN6FPV 13, WA6CPP 1.

SANTA CLARA VALLEY – SCM, Jim Maxwell, K6AQ/W6C
– SEC: WA6RXB. W6RSY and W6RFF made BPL. New appoi
ments: WN6RYO ORS; WB6JNN OVS. WB6IYA complains nig
classes play havoc with his tfc total. A QSY to San Luis Obispo
planned for later in the fall. WB6JNN reports ssb QSOs with S
Diego (WB6NMT) and LA (K6QEH and WA6IRA) while runni
only 8 W. PEP to eight-element at 76-ft. W6BWB putting
finishing touches on a 2M solid state transverter. W6AUC keeps
touch with brothers W6JAO and W6BFU via daily skeds on 38
Nephew K7UIO also drops in the family net. The town fathers
Portola Valley are installing permanent ham antennas, following
successful SET demo by W6QNB. K6LU heading up the West Vall
ARA FD effort for '75. All help accepted. FD bosses for Santa Cr
County ARC are K6QIZ and WA6UDE. The Santa Cruz Co. ARI
Net meets each Mon. evening on 146.52 MHz fm at 1900 loc
W6RFF mgr. of the Northern Calif. Net (NCN) points out t
second session each evening is a training session, especially design
for introducing interested hams to traffic handling. NCN meets da
at 7:00 and 8:30 PM local, on 3630 cw. WAØUMH traded his Ø
WB6JST. W6FKF QRV again after a 41 year (!) layoff. Expects
be QRV as FØBPZ this summer. K6USS and WA6YOG both pick
up new ECHO II 2-meter ssb rigs. K6SSI is readying a ne
five-element monobander for 20-meter summer work. WA6TU
reports hearing JA via Oscar 7 mode B. He expects to be QRV
both ssb and cw during summer school vacation. SCCARA's fl
market will be this June. Contact prexy W6ZM for details. Membe

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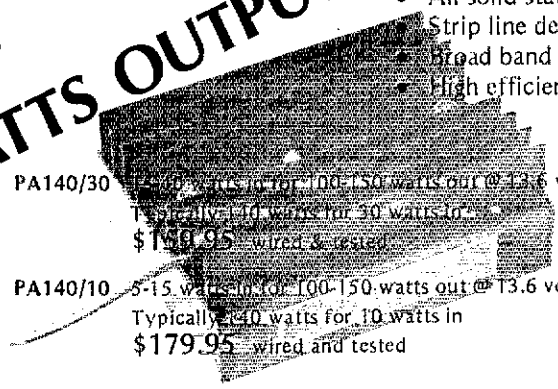

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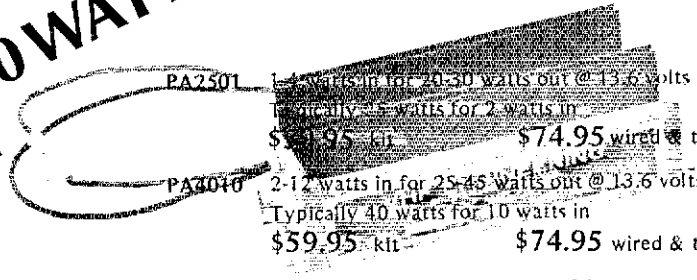

PA2501 [illegible] watts in for 20-30 watts out @ 13.6 volts
[illegible]ically [illegible] watts for 2 watts in
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of the Northern Calif. DX Club and others were saddened to he the passing of WA6IDF, ex-W2ZBS. Rolf was active on all m and was an asset to amateur radio. NCN for Mar. 1975; QNI QTC 456 in 62 sessions. Traffic: (Mar). W6RSY 1162, W6YBV W6RFF 226, W6BVB 179, W6DEF 75, WB6TYA 70, W6AUC W6ZRJ 16, W6KZJ 10, K6WT 10, W6QNB 5, K3AQ 3, WA6ND (Feb.) K6WT 23, WB6TYA 8, WB6VBG 2. (Jan.) WA6UPE 18.

ROANOKE DIVISION

NORTH CAROLINA – SCM, Chuck Brydges, W4WXZ – S K4FBG. RM: WB4ETF. PAM: WB4JMG. VHF PAM: K4GHR. of the month is W4EHF Fayetteville covering Cumberland Co. has been active in all facets of emergency communications. Cor him if you are in that area. Speaking of ECs and their w WA4VNV came up with a plan for Western NC and this brin two new ECs with an additional seven county coverage. coverage for NC now is 33 ECs covering 52 counties. Great. unusual Hamfest will take place in Winston Salem on July 1 this being a Meet by the Antique Wireless Assn. specializin antique wireless equipment, parts and magazines. Contact W4 for details. If you weren't there you missed a good one, Charlotte Hamfest (3rd Annual) which drew somewhere around 1100 mark. Congrats to WB4DNP on making Extra Class. W4 nears the 140 mark on DXCC. W4WXZ is at 160. W4CQ, Charl ARC, expects almost 30 new novices graduating from its code theory class, congrats. Last couple of meetings for Raleigh averaged around 90 people and they have several technical proj going. Reminder: This is Field Day Month, check QST for detail cw QSO counts two points, so grease up those keys, crank t generators and head for the hills. Another reminder: Don't fo the ARRL National Convention at Reston, VA. in Sept., this is a bad drive from NC and the meetings on a variety of subjects technical sessions will make it a must. The semi-annual 3 "Ham-in" was held in Raleigh on Mar. 8 with about 120 at evening banquet with K4VLR as MC, WA4MXX as awards ch and W4BOH along with WB4GIM introducing the W4HUL Memo Award which was presented to WB4OXT. Congrats. Traffic: (M K4ETB 144, W4OFO 100, WA4KSO 76, K4EZH 49, K4MC W4WXZ 40, WB4KHZ 38, WB4OXT 31, WB4JMG 26, WB4M 23, W4ACY 21, K4AIH 19, WB4FFX 17, WA4KWC 9, K4TT K4IOY 6, K4BE 4, WB4CES 2. (Feb.) WB4FFX 27, WB4JMG W4IZI 3.

SOUTH CAROLINA – SCM, R.H. Miller, WA4ECJ – A SCM: Charles N. Wright, W4PED. PAM: K4GQG. We regret resignation of K4LND as RM. WB4OBZ is the new RM in charg the SC Section of Carolinas Net. Please give him your full supp hnys. A Section meeting, primarily for NCS of CN and SSBN, held in Camden on Mar. 16. Liaison between the two nets and 4RN was discussed at some length, and several problems w brought closer to solution. Our attention was invited to the fact all SCM appointments are now for two-year terms. All appoin please check page 109 of QST for Jan. 1974. The meeting hosted by the DX ARC, whose members enjoyed the occasion well that there is already talk of offering their services for a sim affair at a later date. Question: Is there a Novice Net functioning in this Section, such as the movement initiated s years ago by WB4UQS and WA4BJF? WB4OBZ is making plans start one as an Official Section Net, with a target schedule of 7 PM daily on 3718 kHz. Comments, anyone? Traffic: W4NTO WB4OBZ 61, WA4ECJ 3, K4FRX 3, K4PIW 2.

VIRGINIA – SCM, Robert J. Slagle, K4GR – Asst. SCM: A Martin, Jr., W4THV. SEC: WA4YIU. Asst. SEC: WA4PBG. R W4SHJ, K4IAF, WB2VYK/4, WA4AVN, WA4DHY. PA WA9NEW/4. Kudo of the month goes to LARC for participatio a successful search for a missing man. Head of K0PIV/4 ba keeping above school work. W4YZC taking on Fairfax to ordinances. WB4QEB/4 getting feet wet in FMTs. New SB 22 W4TMN passed smoke test. ARRL Exec. V.P. W4KFC atten Alexandria RC, AMSAT Experimenters dinner and was in contest (cw). W4DM says DX condx sure worse this year. W4 hamming wasn't much in Mar. 25 wpm CPM is sticky for WB4YX WB4DRC doing his OBS QSTing on repeaters. WB4FDT recei Public Service Award. K4FEL (sole operator WB4FDT) moving still on campus. New SLINKY dipole has K3DSQ active on 75. N SB 220 at WB4DZL should help. WN4CWM passed Advanc W4IUJ has all counties in 33 states. K4VWK/4 in new Q WB4DRB got first three Oscar contacts on one pass. WB2JWM he operating K4NCP at Dam Neck for a year. K4JM finally QSK. Business travel interfering with W4UQ. WA4AVN back on after 6 years. Mark June 8 down for Ole Virginia Hams A Hamfest at Fairgrounds, ½ mile south of Manassas on Rt 234. F issue of Va. Beach/Norfolk AREC Newsletter full of tidbits – w done – VA HAM, take notice. HRRA (Hampton Roads Ra Assn.) installed radio station for city of Chesapeake's EC WA4GPM to new QTH with full jug on 6 and ½ jug on 2. WA4M erecting a 28-ft. 6 inch 6-meter Yagi at 65 feet. The Easter break traffic total of K0PIV/4 up. K4KA lost all dipoles in northern wind (me too). It's good to have WA9NEW/4 back after a mon Nets CV2FM QNI 527/QTC 52. VFN 751/17. VNTN 72/7. VS 1042/335. VSN 365/142. Also heard from W4HU and Vie Wireless Soc, VSBN, 1800/2200, EDST Dy, 3947 kHz; VSN, 18 EDST Dy, 3680 kHz; VNTN, 1830, EDST Dy, 3712 kHz; V

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1900, EDST Dy, 3680 kHz; VFN, 1930, EDST Dy, 3947 kH CV2FM, 2000, EDST Dy, 01/61 kHz; VNFN, 1800, EDST D 7145 kHz. BPL: WA4AVN. Traffic: (Mar.) WA4AVN 588, K4KN 276, K4IAF 212, KØPIV/4 149, K4GR 139, K4JM 133, W4QD 118, W4UQ 118, K4KDJ 115, W4YZC 112, K4FEL 88, WB4DZ 77, WB4KIT 76, K4MLC 62, W5VZO/4 60, WB4DRB/4 50, K4K 50, WB2VYK/4 46, WA4PBG 46, WA4HUB 42, WA4EAZ 3 W4SUS 33, WB4YXN 29, WA9NFW/4 26, K4VWK/4 24, W4LG 22, WA4SMR 21, WB4FDT 19, WB4ODZ 19, K4NVP 16, W4TZ 14, WB4QEB/4 12, WB4WIS 12, WB4DRC 10, K3DSQ/4 8, W4M 8, W4KFC 7, WA4PRP 4, WB4WUZ 4, WA4WQG 3, W4DM W4JUJ 2. (Feb.) W4ODY 209, K4MLC 85, WB4WUZ 27, KØPIV 23 K4FEL 8.

WEST VIRGINIA – Acting SCM, Kay Anderson, W8DUV – Several WV stations will go "mobile" to some of the "rare" counti during the WV-QSO Party June 21-22. Here's your chance to wo all 55 for that hard-to-get Worked all Counties WV. W8LGT acti in Intruders Watch program, especially on 80 cw. WA8KCJ repor VHF activity regularly since receiving his appointment (OVS); sa the Logan 2-meter repeater has changed freq. to 146.37/97. MAR (Fairmont) members visited control tower at Clarksburg Airport f Apr. meeting. WB8RAG now has his old call W8CKM. W8HZ working out a plan with National Weather Service to have amateu throughout state participate in Skywarn Program. Net, Freq., Ses Stns., QTC, Mgr.: MID-day (12n), 3990, 30, 750, 126, WB8DQ WV Fone (6 PM), 3990, 31, 1113, 186, WB8DQX; WVN (7 PM 3567, 31, 227, 99, W8HZA; WVNN (4 PM), 3730, 31, 180, 6 WB8PAV. Traffic: WB8PAV 185, W8SQO 87, W8HZA 7 WB8DQX 76, W8JWX 49, W8EUE 22, K8QEW 21, W8DUV 2 W8CZT 15, K8CET 13, K8BCF 10, WA8NDY 10, K8NNK K8LSN 8, WB8MKL 8, W8FZP 6, W8JM 6, WA8LEW 5, W8QEC K8ZDY 5, WB8IJW 4, WB8MAV 3, WB8NEZ 3, WB8NXA W8DPT 2, WB8FER 2, WA8FIE 2, WB8OMC 2, K8ZDV 2, W8CK 1.

ROCKY MOUNTAIN DIVISION

COLORADO – SCM, Clyde O. Penney, WAØHLO – SEC KØELQ. RM: WBØHCK. PAMs: KØCNV, WAØYGQ. The CC moved its operations into the Novice band, where it meets daily 6:30 PM, local time, on a freq. of 3715 kHz. Code speed will b held to match that of the person checking in, with a maximu speed o 15 wpm. Those interested are invited to check into th CCN as often as possible. A warm welcome back to the air extended to KØSPR who just returned from the hospital, followir surgery. Congratulations to KØHPF on receipt of his WAS certif cate. Newly elected officers for 1975 for the Longmont ARC a WØILR, pres.; WØONF, vice-pres.; WBØHZV, secy.; WBØIFW, trea WBØIZO is enjoying his new Swan 300B. Also, congratulations WBØIZO and KØCNV, both of whom passed their exams for the Advanced Class tickets. WAØTMA has made numerous contac through Oscar 6 & 7. WØLRN has resigned as mgr. of 12th Regio Net, and WØHXB has been nominated for the position by Pacif Area Staff. Net Tfc. for Mar.: HHN QNI 820, QTC 36, informa 104, 30 sessions, 1083 minutes. Late Net Tfc.(Feb.) SSN QNI 21 QTC 60, informals 15, 28 sessions, 468 minutes. Traffic: (Mar WØWYX 1822, KØZSQ 955, WBØHCK 162, WØHXB 153, WØIW 8 WAØYGQ 32, KØDOW 27, WBØIWL 24, WØYCD 21, KØTIV 2 WBØIZO 19, WAØTMA 18, WAØYNQ 11, WØGW 6, WØLAE KØSPR 6, KØCNV 4, WØETT 2. (Feb.) WØHXB 61, WBØIZO 2 KØSPR 22, WBØIWL 20, WAØYGQ 20, WØPT 12, KØCNV 6. (Jan WBØNOH 103.

NEW MEXICO – SCM, Edward Hart, Jr., W5RE – Asst. SCM Joe T. Knight, W5PDY. SEC: W5ALR. PAMs: W5PNY, W5DMC RMs: W5UH, K5KPS. SWN (New Mexico and Ariz.) meets at 7:1 local time daily on 3585 kHz. Had QNI 220 and handled 15 messages. NMRRN meets at 6:00 local time daily on 3940 kHz Reported QNI 834 and handled 29 messages. W5ZLX has put in 3 miles of radials for his 160-meter antenna. WB5KSS off to Wash. (I for an operation on his arm. Look for him from K4CIO during May W5QNR is now on 2 meters. W5HRS/Ø should be back in the lan of enchantment soon. Traffic: K5KPS 170, K5MAT 169, W5EN 145, WB5KSS 125, W5RE 47, WA5OIH 16, W5QNR 11, W5QNQ

UTAH – SCM, Ervin N. Greene, W7EU – Utah Hamfest a Taylorsville Park July 26. Activities all day and Steak Fry in th evening. For more info contact W7VEO. WA7MEL has bee appointed Net Mgr. for UCN. K7JVC is recovering from recent hea attack and active on 2-meter RTTY autostart. WA7ZGJ moved t new home and installing antenna farm. Many hams were active o the air during the recent earthquake. UCN and RACES wer activated. WA7TSB and WA7KSF passed Extra; WA7OBG an WA7YNZ passed their Advanced Class exams. Congratulations guy W7QDY busy rebuilding a Globe King 500C for cw with break i and all other features. A Novice class is being organized by th UARC for this summer. Contact one of the officers or your SCM fo details. WA7UOW, W6EOS and W7EU awarded BUN certificates fo net participation. Traffic: WA7MEL 82, WA7OAU 43, W7OCX 3 WA7TSB 30, W7DKB 21, W7EU 14, WA7HCQ 8, W7BE WA7ENF 3, W7UTM 3.

WYOMING – SCM, Joe Ernst, W7VB – W7PVN had open hear surgery in Mar. and now convalescing at home. On Mar. 29 K7SD

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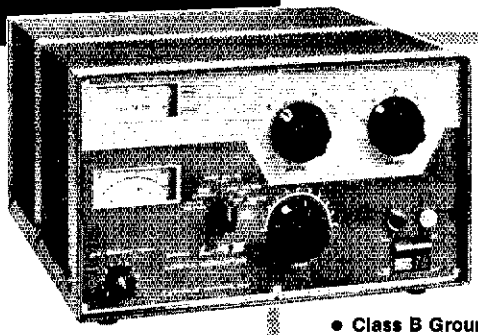

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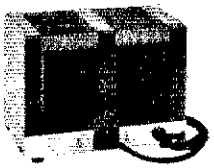

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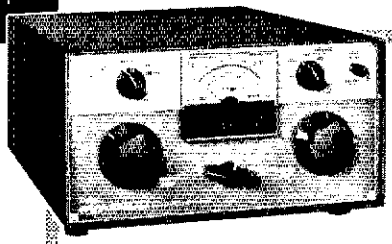

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with hams from Casper, Thermopolis and Rawlins tested a tw meter site on White Mountain which can trip the repeaters Laramie, Casper and Boysen Peak. When giving the weather to ham in Iowa, W7TZK found he was on the tape a Minister at th Church next door was doing his Sun. sermon. WA7ZZY whil mobile in Lusk from So. Dak. set off the burglar alarm at the Lus Bank. K7WRS, K7NQX, W7CGK waiting for fishing season to open W7VB attended the NAB Convention in Las Vegas in Apr. W7SD reported the Wyo. Cowboy Net with 21 sessions, 703 QNIs, 5 pieces of traffic handled. Traffic: W7TZK 70, W7YWW 44, K7VW 29, W7SDA 12, W7SQT 11.

SOUTHEASTERN DIVISION

ALABAMA – SCM, Jim Brashear, WB4EKJ – Congrats an welcome to WN4MVV, daughter of K4KM. Our newest net, AENX meets each Tue. night on .34/.94, WR4ADD. NCS are K4UMD W4EFF, WB4JOY, K4BET and WA4BDW. Emergency preparednes and communications during severe weather is their primary purpose Congrats to WB4SVX, first place winner of the State VFW "Voic of Democracy" contest. The Birmingham ARC held their Apr. meeting at the CD EOC. Col. C.Q. Wadsworth, CD Dir., hosted th event and groups from Calhoun Co., Tuscaloosa and Jaspe attended. Glad to hear K4UMD back on the air. K4HJM has bee elected pres., Country Cousins (Southern) Net. The Birmingham an Huntsville ARC's provided communications for March-of-Dime Walk-A-Thons. The Huntsville ARC also provided communication for the North Ala. River Runners Assn. and the Shriners for thei Palm Sun. paper sale. Glad to hear WN4s KWL, LKS, LKU an MWF active on AFND. Enjoyed the "Eatin-Meetin" at the Hickor House. Watch/listen for the next one and plan on attending. K4YU gave a talk to the Huntsville ARC on the Heath Counter. Sorry t hear W4UZZ moved to Fla. Appointed W4MTO as EC Limeston Co. Endorsed EC appointment of WA4FYO, Lawrence Co. Goo luck to all FD participants. Just heard WA4VEK got married congrats to him and the XYL. Traffic: (Mar.) WB4FKJ 187 WB4FZQ 114, W4LNN 108, K4AOZ 92, WA4FYO 74, WB4KS 63, W4RQS 60, WB4IYW 39, WA4AJA 37, K4CUU 25, WB4SV 19, WN4JDH 16, K4HJM 15, WA4BDW 13, K4VF 13, WN4KW 11, WB4TVY 9, WB4BAP 7, K4DSO 5. (Feb.) WB4BAP 18.

CANAL ZONE – SCM, Roderick J. Isler, KZ5PI – FCC restructuring proposals, Docket 20282 was the subject for debate a the recent Canal Zone AR Assn. Club meeting. The ARR questionnaire was completed by club members and forwarded t League Hq. along with appropriate comments. Preparations ar underway for the June Field Day with KZ5WA appointed a committee chmn. The CZARA plans for an all out effort for th year's Field Day activities and are expecting a vast improvemen over last year's participation. Congratulations to new General KZ5BN, KZ5DS, KZ5KC, KZ5KN, KZ5PF, KZ5VD, KZ5ZK an KZ5JIN a new Novice. Army MARS is presently conducting theor and code classes for interested Canal Zone citizens.

GEORGIA – Acting SCM, John Englund, K4JJQ – PAM K4JNL. RM: K4JJQ. Nets, Freq., Time(Z), QNI, QTC, Mgr.: GSN 3,595, 2300/0200, 206, 90, K4JJQ; GSBN, 3,975, 2330, 1367, 96 K4JNL; GTN, 3,718, 2200, 43, 11, WA4FSL; CVEN 1, 3,950, 173 Su, 101, 14, K4YRL; CVEN 2, 146.94, 0130, 567, 86, K4YRL NEGEN, 3,950, 1830 Su, –, , WA4AJY; NEGEN, 147.15, 0130 –, –, WB4GOX. K4JNL reports QNI on GSBN establishes a new record, notice also QTC beats all other nets. Congrats to WA4IW who took over as RM and mgr. of GSN May 1. New Novic WN4NFN, nice going. WA4IWO now on RTTY, K4WC, WB4ZH and others were busy with emergency traffic during recent tornad in Atlanta. K4YRL and NW Ga. gang doing fantastic job in AREC W4JM planning new antenna farm and keyer. K4GXV active o GSN until July when he will be sent to Greece. W4FOE earned a ne certificate for Fla. Phone Traffic Net! Attend Atlanta RC's 4th o July Amateur Radio Festival, July 5-6, contact W4BCD. "Dirt Dozen" Contest Club of Smyrna now WB4LOK. Traffic with indicating PSHR: (Mar.) K4JJQ* 92, WA4FSL 59, K4YRL* 54 W4AAY 30, K4GXV 9, W4JM 8, K4JFY 4, K4BAI 1. (Feb.) K4YRL* 39, W4PJM 17. (Jan.) K4YRL* 99.

NORTHERN FLORIDA – SCM, Frank M. Butler, Jr., W4RK – New appointees: K4MZK as OO; W4COE OPS/ORS. Renewals WA4VZF EC; WB4OMG EC/ORS; W7EMI/4 and WB4NHH ORS W4YSO OPS. WA2FMD/4, K4GRV, WB4JHQ, W4WYR qualifie for NFPN certs.; WB4UPJ & W4YSO earned FPTN certs. Officers o Pensacola FFARA: WB4JHQ, WB4ZPC and K4LAN. WB4ZPC wen QRP with an Argonaut. W4AKJ earned ARRL 40 wpm CP cert WA4UOH and K4KJP received Advanced Class. PARC's first Tech Night was a tour of Metric System plant. Nine club members, led b W4MMW, aided in food collection drive for Salvation Army W4AFT back after surgery. Officers of St. Andrews Bay ARS an K4GVV, WA4HZR, WB4LIJ, W4RKE and K4VFY. Meetings, 2nd & 4th Mon., 7:30 PM, at the Jr. College. W4LKB was 2 Hz off in las FMT. WA4BAX new HW-101. Fla. Sheriff's Boys Ranch statio WB4PHT heard on NFPN; W4TBF active in Live Oak. Enjoye meeting everyone at the Bold City Hamfest. NOFARS manned a exhibit station at Regency Square. WB4HKP chief op. of K4BV DBARA station, and sends bulletins daily on 3651 kHz at 2245Z WA4CRI and WB4VAP taking photos of each member at their rigs WB4GHU using NCL-2000 to help 4RN skeds. Orlando ARC ha

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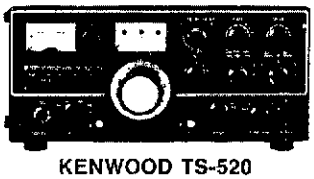

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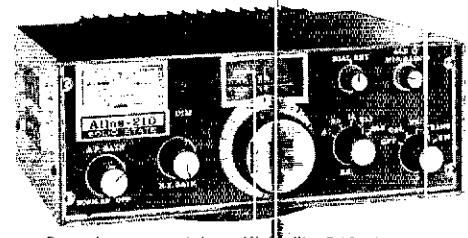
AR-117 Power Supply	129
AR-230 Power Supply	139
AR-200 Portable AC Power Supply	89
Mobile Mounting Bracket Deluxe Plug-in Model	44
DC Battery Cable	12
Mobile Bracket Kit	6
Mobile Antenna matching Transformer. Broadband design transforms base impedence to 50 ohms.	24
Model-10X 10 position crystal oscillator, less crystals	55

Other accessories to be announced.



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excellent new bulletin, "Listening Post" edited by WA4DWR. Disney World ARC formed, with WB4HXS, pres., W4ZNV, trustee. FTU ARC has new home and complete club station; contact WB4WPP for info. K4CVO handled traffic from Citrus Co. Fair. Traffic: (Mar.) W4LDM 379, WA4FBI 374, WB4GHU 360, K4BV 245, WB4DXN 200, K4VFY 163, W7EM/4 163, W4YSO 143, K4CVO 133, W4SDR 108, K4VND 105, WB4JHQ 73, W4KIX 59, W4RKH 59, WB4DAD 40, WB4ALDL 34, WB4NJI 29, W4LSR 17, WA4WBM 16, K4DDY 15, WA4BAX 12, WB4VDM 12, W4VLK 12, WA4EYU 10, WB4VMP 9, WB4TVQ 7, WB4NHH 6, WB4VAP 6, WA4CRI 5, K4RNS 5, W4IKB 3. (Feb.) WA4HOL 164, K4VND 113, W4SDR 92, WB4DAD 35, WA4EJV 11, WA4HCS 6, K4RNS 3.

SOUTHERN FLORIDA – SCM, Woodrow Huddleston, K4SCL – SEC: W4IYT. Asst. SEC: W4SMK. RMs: K4EBE, W4EH, WA4GBC. PAMs: WA4NBE, W4OGX. New appointments this month: WB4LWB OBS; W4EH OPS; W4BX EC Charlotte County. WB4DFV reports formation of Charlotte County Radio Assn. WN4JWN reports formation of South Fla. Clearing House Net, 21.125 MHz at 0000 GMT daily. WB4HKP has initiated transmission of "Florida Bulletins" – items of statewide and local interest to amateurs at 2245Z on 3651 kHz at 18 wpm. WA4LZW still waiting for his ATV repeater license. WA4JID planning Caribbean trip maritime mobile working States via Oscar 7 and Oscar 6. W4AWS reports QRP Net, under 5 watts, in session each Tue. at 0200Z on 3540 kHz. WB4ZSO lost his quad in strong winds but still active on 75/80. Traffic: (Mar.) WA4SCK 502, K4SJH 392, K4SCL 310, W4WYR 135, W4EH 122, W4IRA 85, K4GYF 76, W4DVO 73, WA4EIC 67, WB4ALH 66, K4BLM 61, W4BM 56, W4BCZ 52, WB4ZSO 48, K4CFV 45, W4DOS 45, K4TH 30, W4GDK 29, K4QG 27, WA4KKE 25, WA4HDH 23, WA4IJH 22, WB4AID 21, WB4TRI 12, W4OGX 10, W4ILE 6, W4SMK 6, WA4UQQ 5, W4LK 4, WB4WYX 4, WB4ABK 3, K4DRH 2. (Feb.) WN4JWN 71, WA4IJH 28, W4IYT 15, WA4UOO 11, W4KGJ 5, K4GFW 2.

WEST INDIES – SCM, Juan S. Sepulveda, KP4QM – On Mar. 23 the RCPR celebrated its annual HAMFEST at the Dorado del Mar Hotel with about 600 persons attending. KP4RE has a TR-22C, KP4US the KLM-140B and KP4PMG the handie-talkie Wilson. Certificates were given to several amateurs for their active participation on different aspects of amateur radio. The new Board of Dir. for RCPR are KP4AOC, pres.; KP4BBK, vice-pres.; KP4DDP, treas.; KP4BBI, secy.; KP4s QM, CQM, BDL, DKZ & RK, dir. New stations heard on two meters KP4s WR, EEE, DSJ, MS, DJ, RE, CQ, EDM, KV4BA, heading the group which will install and operate a repeater in St. Thomas, contacted the Dominican Republic via WRAEC. This repeater now is operating at the highest mountain in the island. The altitude is about 4000 feet above sea level.

SOUTHWESTERN DIVISION

ARIZONA – SCM, Marshall Lincoln, W7DQS – RM: K7NHL. PAMs: WA7JCK, W7UQQ. Free classes for Novice, General and Advanced license exam preparation are provided each Tue. evening by the Old Pueblo Radio Club. Interested persons should call 795-6955 for information. The Scottsdale ARC hopes to obtain use of a home at 7801 E. Thomas for a clubhouse. W7FCQ is contacting Scottsdale officials on this project. W7GFF is collecting trading stamps to be used to obtain prizes for the XYL luncheon at next year's convention in Tucson. Southwestern Division vice-director W6EJJ, formerly K7IDI of Tucson, intends to attend the Ft. Tuthill Hamfest July 25-27. W7UQQ, mgr. of the Cactus Net, formerly the Ariz. Post Office Net, is a new PAM. Two more amateur rigs were reported stolen from vehicles during Mar. Police recommend you scratch identification marks, traceable to you, inside valuables so they can be identified if recovered. ARRL membership in Ariz. increased 25 per cent from 1970 to 1974. Ariz. amateurs are urged to enjoy hamming in the outdoors in our wonderful state by participating in Field Day on June 28-29. Your local club needs YOUR help. Nets: Cactus Net QNI 1,111, QTC 409; ATEN QNI 713, QTC 33, certificates to W7RO, WA7KQE, K7NTG, K7NMQ, WA7NHQ. Traffic: K7NTG 114, W7UQQ 77, K7CC 35, K7UXB 23, W7DQS 18, W7YKM 15, WB2WPY 11, WA7KQE 5, WA7NHQ 2, K7NMQ 2.

LOS ANGELES – SCM, Eugene H. Violino, W6INH – SEC: WA6DUC. RMs: WB6OYN, K6UYK. An unfortunate accident happened to one of our local hams while working on his tower, "he fell", send get well QSL card to W6LHI, I am sure he would appreciate it. Thanks to W6ATC who has been in Italy and sent his vote for the SCM election from there. The TELCO RC recently toured the Goldstone tracking facility in the Mojave desert. The VHF RC provided communications for the seventh year for the City of Carson Anniversary Parade. WA6QJP has prepared a super simple digital clock on vector board including power supply and six digit readout. A complete schematic is available for any VHF member to copy, see Ki. The PARC recently had a big party celebrating their new repeater. The Santa Clarita RC has been very active recently with "T" hunts, Pizza Eating contest at Shakey's, and putting their upcoming repeater together. K6YQ will assume the role of Field Day chmn. for the IRW RC this year, Paul is past pres. and was instrumental in the development of the club training program. The Metro Net had 26 sessions and 473 check-ins with a total of 198 messages handled this past month so reports net mgr. WB6ZLP. You

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6-meter butts should check into this net. WA6TLV recently went f FCC and passed his Extra Class exam. Congrats. W6USY received h instrument rating on his flying machine license. K6CL planning tr to SM-Land in near future. WA6WJV now has station which completely powered by wind power, must be trying to conserv energy. W6AM operated from 5 Caribbean countries while on cruise ship trip; also gave a talk to Venezuela Radio Club and wa made a member. WB6VZI reports he is working 80 plus hours week and still managed to operate CW WPX contest from K6JAN place and claims an all time worlds high score. Congrats t WB6OYN on being accepted to Cal Tech Institute of Tech. Yours truly has been nominated program chmn. for the Lockheed RC, s you with programs can offer me programs, please. I received a ver nice Newsletter from WR6ABN, Mt. Lee Repeater Assn., congrats t WA6PFM for the very fine work. I want to thank you all for you kind support and looking forward to another two years as you SCM. Traffic: WB6OYN 302, W6INH 257, W6UE 142, K6UY 130, WA6TLV 105, W6QAE 101, W6IVC 95, WA6IDN 6 WA6OTU 60, W6HHJ 51, W6OEO 43, WB6TKR 42, WB6YID 2 K6EA 20, WA6ZKI 14, WA6EWY 11, W6USY 10, WA6TCH K6CL 6, W6NKF 6.

ORANGE — SCM, William L. Weise, W6CPB — Asst. SCM: Dic Birbeck, K6CID. SEC: WA6TVA. RM/PAM: WB6AKR. W6BAM back on 3580 kHz and 7080 kHz with Official Bulletin sked Mon Wed., Fri. 2000 local and 2300 local. The Anaheim annual auctio in Mar. was a huge success. Many "goodies" were available. Look to next years, it will be bigger and better. Better dust off your favorit key for Field Day June 28, 29. A major change raises the value of CW QSO to two points. K6VNB recently took the Calif. Bar Exan Wayne is anxiously awaiting results. Hope you made it. Congrats t WB6EIG on making BPI. This is John's fourth in the last fou months. Quite a record under very poor band conditions. Anticipat increased activity in cw during FD with the new rules giving tw points for each QSO. The phone men and ladies are going to have t work twice as hard to keep up. Good luck to all. Congrats t W6AQB for his activity on SCN. Jim was awarded a Section Ne Cert. for his participation. SCN needs many outlets in the Orang Section. Who will be next to receive the Net Cert? Problems i message delivery are occuring in some remote areas. If you live in sparsely populated area your activity on any of the traffic nets encouraged. W6AR1 reports the strong winds took out his 75/4 antenna. Traffic: (Mar.) WB6EIG 606, K6GMI 365, WB6VTK 11 WB6AKR 66, WA6IVA 41, W6WRJ 38, WA6BJO 20, W6QBD 18 W6CPB 17, WB6ULU 3. (Feb.) WB6EIG 612, WA6YWS 22.

SAN DIEGO — SCM/SEC, Cy F. Huvar, Jr., W6EBF — Ass SCM: Art Smith, W6INI. Southern Calif. Repeater Assn. has S repeater owners and new secy. W6GIC & W6PDA on Tech Committee. W6INI is Vice-Chmn./Coord. South for the Region (Ninth) Disaster Communications Council which covers Calif., Ariz Nev., and Pacific Islands offering their services for emergenc communications in Federal, State and Red Cross relief operation WB6BOD outgoing pres. of Poway ARS presented K6CD Ham Year plaque. Joe has been teaching classes at Poway School Palomar has new call WR6AII. K6EJO braved 16 inches of snow t install new IDer programmed by W6NOZ. Code practice nightly 2000 on 3590 by W6QIE. Ex-WB6RPU now WA6ISN. WB6ZR moved back to Lake Chelan and soon will be WA7ILL. WB6UR now WA3YRF. WAØYTY now WB6CBR. XE2QB offers to tea conversational Spanish. Palomar ARC has new secy. WA6AEZ ARFC repeater on 146.13/73 0830 each Sun. Simplex AREC o 146.52 1900 Sun. WA6QGY & K6AEH relinquished their repeat pair so 147.93/33 could be assigned to Baja, Calif., to provide a cle channel. This act of friendship across the border deserves a bi thanks. Imperial College has 20 enrollees taught by WB6RMC W6IHG, WB6PUM. New calls WN6KAU, WN6JGI of S.D. Mt Rescue. Traffic: WA6OMB 453, WB6PVH 331, W6BGF 13 W6DEY 32, W6PZU 26, W6GBF 22, K6PM 4.

SANTA BARBARA — SCM, D. Paul Gagnon, WA6DEI WA6BLS completed an SB220 amplifier. W6DKO and WA6LL completed the new WR6AER repeater complete with autopatch to Lompoc/Santa Maria. WR6AEP in Ventura Co. (28/88) now ha autopatch thanks primarily to WA6OBT and WA6BSQ. 31/9 repeater is operational in Santa Barbara thanks to WR6FZU an WB6IYW, W6PNM, WA6BIV, W6IDU, WA6SSN and WA6DEI ac on the WR6ACA (10/70) RTTY repeater. WR6ADS (16/76) operational in SLO. W6DKO passed his Extra Class exam an bought a new Standard 826. Hunts are held in Ventura on 146.5 on the 2nd Sat. each month. Contact WA6WKQ. WA6LQG an W6KW spoke at SBARC in Feb. and W6LNW from Comcraft spok in Mar. SBARC held an OT's night, a huge success. New Radi Council officers are WB6IJW, chmn.; WA6EAR, vice-chmn. WB6DHW, secy. treas. The TRICAR annual picnic will be held a Cuesta Park in SLO July 19. WA1EWF/6 passed his Extra. Over 4 hams showed at Ventura City Council to fight antenna restriction imposed on WA6LBP. K6CFJ taught communications procedures t the CAP. New EC for Ventura Coastal is WB6LND. Asst. for Oxnar is WB6RWY and asst. for Ventura is WA6HCD. Division convention is Oct. 25 in Ventura. I am allotted 21 lines or less for this column In the future I will print only station activities reported to me leaving extra space for other sections whic get more reports tha they have space allocated for. PSHR: WA6DEI 44, W6JTA 41

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- Exit 33 - Francis Lewis Blvd. turn right
- On FLB, 3/10 mile to Sunrise Hwy.
- Turn left, and ride 2 miles east on Sunrise Hwy.
- At Rockaway Ave., bear right ½ block.

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Via Queens Midtown Tunnel (495):
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- * (see above)

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K6YX 32, W6POU 28. Traffic: WA6MBZ 96, W6JTA 85, WA6D 55, WA6BLS 45, W6POU 38, K6YX 14, W6IDU 1.

WEST GULF DIVISION

NORTHERN TEXAS – SCM, L.E. Harrison, W5LR – As SCM: Frank E. Sewell, W5IZU. SEC: W5SHN. RMs: W5Q W5GSM. PAM & st. OO: W5QPX who has returned fro DXpedition CenSoAmn where he signed YS1WPE/3 while on pact side. Dallas ARC school Braniff Training Center going again wi 200 plus enrolled. This is a record. NTex SCM can't turn his head such enthusiastic groups. New officers DARC W5SOQ, pres. Cl fone numbers are 352-3115 & 357-1261. K5OKM turned in FB j as SEC. Understand 160 going great. Eq. Sheet KC Club FtW repor Lloyd Spinks passed FCC test & Jeanie England now WN5NQ Memorial Services for W5FIR conducted by WA5DBY. 77/RR family. WB5DXB, age 15 has Extra Class, works all bands. Yo SCM appeared before "E" Systems ARC Apr. 21st 1st N'tl Bk Bl mtg Tl, Garland and RWK ARC's pres. is W5TUU. DARC OT Ni Apr. 1, 250 present. Flea market WA5VFS Cedar Hill Apr. 13. Yo SCM attended regular meeting Southmost ARC San Benito duri Jan., Feb. and Mar. Call signs to be changed see OBS 527. Sile Keys include W5DY, W5CQO, W5DML, W5FIR. W5UJJ new N Mgr. Tex CW Traffic net. OO W5QPX reported 5 Novice obs vations in Feb. W5JA mgr. 40-meter Eye-Bank Net reports Mar. sessions, 55 eyes shipped, 7695 total eyes shipped, check-ins 54 time 836 minutes. TTN 28 sessions, 187 QTC, 1309 check-i W5GSN mgr. OVS reports received from WB5CHW; on Mar. 22. worked WB5CUK, WB5HRI, WB5ODA. WB5BMH Austin, K1VP K5ZMS and WA5IYX of San Antonio & WB5IHQ plus W5EU Arlington ARC pres. K5JTB; VP K5DOI; meets 3rd Fri. UTArli ton Students Bldg. 1830 LST 3985 kHz, Sun. K5AE submitt "well-prepared" & "gramatically perfect" set of comments Docket 20282. Richardson WK "Chawed Rag" Editor expounded detail covering 20282 at Feb. meeting, 50 members preser discussion "code free" Communicator license. Net certificates hand for W5UHF, WB5DBX, W5COX and W5OWV. WB5AC requests OPS. An ex-pres. DARC says his view of 20282 amounts RHIP. Our SEC shows 437 amateurs participating in emergen communications for the North Tex. area. They include amo others WB5WGB, WB5KJT, W5GY, WA5WLL, W5ATG, W5PP W5BCB and also W5CMC. Thanks Duane for an excellent job on t last report. Traffic: (Mar.) W5TT 457, W5SHN 291, WB5MFQ 22 WB5DXB 204, W5GSN 54, W5GY 27, W5IZU 14, W5LR 11, W5Y 8, (Feb.) WB5BCW 166, WB5DXB 146, W5YK 6. (Jan.) WN5MT 33, WB5JIB 9.

OKLAHOMA – SCM, Cecil C. Cash, W5PML – The Feb. repo on Muskogee amateurs aid in locating five lost motorcycl marooned in 8 inches of snow at Camp Gruber, saw W5DO K5PRW, W5WAX, WA5VSF, and EC WB5HLR working around t clock with Red Cross and Law Enforcement agencies. In Mar. t Muskogee ARC again went into action helping the CD in a siren te alert. The Bartlesville ARC got together with the Sooner H.S., t Police, Red Cross, and CD and staged an all out SIMULATED boil explosion, the Ambulance Co. and Hospitals also went into actio simulating 2 dead, 2 serious injuries and 25 less seriously injure There was one full page of pictures along with a front page headli story of the test. WA6INF/5 really going great guns at Ft.-Sill with training program resulting in new Novices WN5NUS, WN5NU WN5NJM, WN5LMJ, WN5NHE, WN5OCM and WN5OCN. Oth new Novice WN5NXO. Tech WB5OCZ, General WB5LAF, A vanced WBØBKV/5, K5BKA, Extra WB5LBK. Congrats. Traffi W5RB 90, WB5ELG 72, W5FW 38, WB5AZS 33, WB5HQX 3 WA5ZOO 30, W5FKL 20, K5MBK 18, WB5EAY 17, W5SUG WB5HLR 16, WA5CUJ 12, W5PML 10, WA5FSN 5, WA5OUV WA5WRC 4, WB5EQR 2, W5JJ 2.

SOUTHERN TEXAS – SCM, Arthur Ross, W5KR – SE WB5CUR. RM: W5UGE. PAM and DRN5 Net Mgr. W5HWY becam Silent Key Mar. 31. OOs reporting this month: W5NGW (Feb. Mar.), W5RBB, WA5LES, WA5ZBN. OVSs reporting this mont K5ZMS, WA5FSR, WB5HRI. EC WB5GNP reports Laredo amateu busy: W5SXE went from Conditional to Advanced; W5SXE's wi had no amateur license passed the General; WB5MPV went fro Tech. to Advanced. WB5BFX, son of WB5BFW, graduates fro Univ. of Tex. this June. WB5OER is new General Class licensee Corpus Christi. ORS W5TTS moved to new QTH. ORS WB5IB says Brazoria County ARC provided communications for March Dimes Apr. 19. EC W5TFW says K5TAX is new addition to 2-met crowd. ORS/OBS WB5GZG now has full break-in capabilit OO/ORS WA5ZBN has new off-center fed dipole working FB. W5UJJ is new net mgr for Tex CW Traffic Net. OBS W5KLV acting as mgr. for DRN5 net. W5QPX seeking amateurs interested forming an international amateur radio op hosting club; drop him line if you're interested. WN5LYN upgraded to General. Sun Ci ARC (El Paso) has code classes going. K5PDT doing the work wi some help from others. Austin ARC also has license classes goin EC WB5FMA working in North Tex. Section; looks as though N Te will be big gainer. K5UNC, beloved wife of K5SJA, became Sile Key in late Mar. Traffic: (Mar.) W5TOP 389, W5UGE 275, K5HZ

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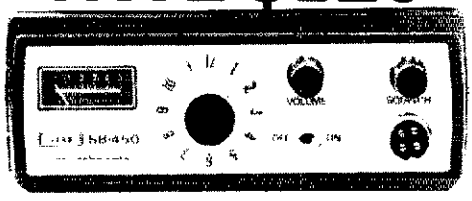

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CANADIAN DIVISION

ALBERTA – SCM, Don Sutherland, CY6FK – SEC: VE6 PAM: CY6ALO. FCs: CY6AW, CY6AVV, VE6WJ, VE6CA understand the annual ham get-together held in Mearns was its u success, with over 100 in attendance. Perhaps the more South VE6s should see that the Stavely-Stomp as spearheaded by CY becomes an annual do. At a recent AREC meeting CY6FM CY6AFP proved to be the best dog catchers in Calgary. Our pre Apr. showers (?) bring dented fenders and frayed bumpers. Oh we did have a good winter. APSN doing well with condx in and CY6FM is considering getting a two meter F&T net going on 34/94 VE6RPT. Traffic: VE6FS 110, VE6YW 14, VE6WN VE6WJ 8, VE6AEO 4, VE6EV 4, VE6AFJ 2, VE6AFW 2, VE6 2, VE6AXN 2, VE6BAH 1, VE6PZ 1.

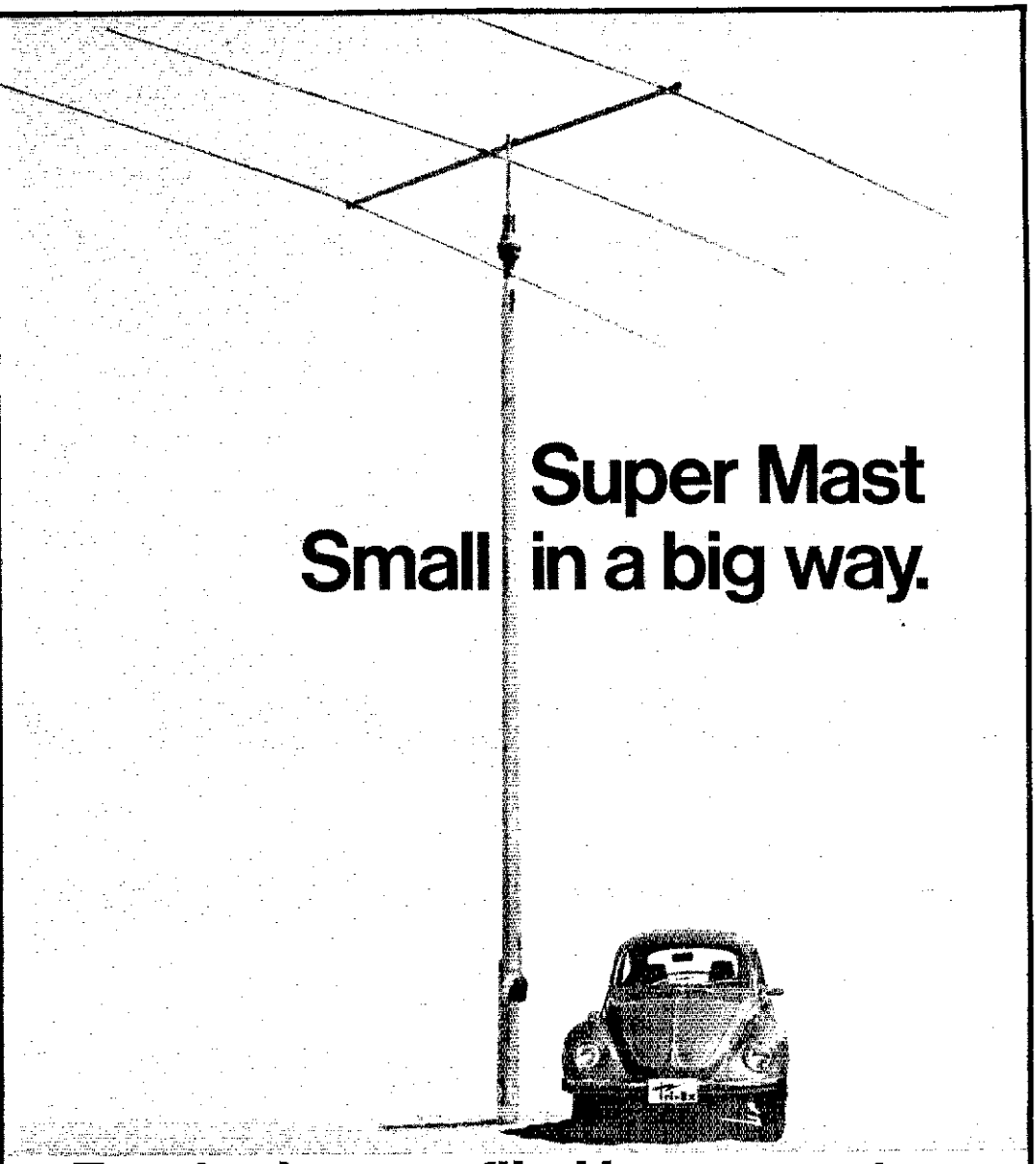
BRITISH COLUMBIA – SCM, H.E. Savage, VE7FB – It's to report our RM VE7QQ's heart pacer was OK it was a cas fatigue. I think it is nice to read club reports of Departmen Communications, RI's visiting club meetings. Prince George A newsletter mentions one member, VE7DSF activity of home b and grinding his own crystals for two meters. VE7DSN home b electronic keyer and circuit. Okanagon International Hamfest, celebrate it's twenty fifth year this summer. Maple Ridge's Ham plans are shapping up to be bigger two days than last year.

MANITOBA – SCM, Steve Fink, VE4FQ – WARC held Spring auction Apr. 27, while BARC's Apr. meeting feature Tupperware party for the XYLs. Ten amateurs, led by VE4 provided communications for the St. John's Boys School at Sel for its Mar. snowshoe races. VE4FY has been appointed Dir. of Winnipeg Planetarium. VE4AT and VE4LX are new ARRL Members, while VE4RB has left for Toronto. With Summer about here, make plans to attend the Peace Garden Hamfest 12-13, and the Calgary 'Fest Aug. 1-3, and let's all get out for t Day June 28-29. MTN: 31 sessions, 158 QNI, 77 QTC. MFPN: sessions, 1167 QNI, 31 QTC. Traffic: VE4RO 89, VE4PG VE4TY 34, VE4XP 33, VE4TR 14, VE4IX 7, VE4JP 7, VE4H VE4MP 5, VE4NE 5, VE4LU 4, VE4CR 3, VE4FK 2, VE4J VE4XN 2, VE4LA 1.

MARITIME – SCM, W.D. Jones, VE1AMR – SEC: VE1SF new club in the Maritimes, the "Road To The Isles ARC" formed on Mar. 15 in Port Hawksbury. The first project the club set for themselves is a 2-meter repeater for the Canso Strait a Officers include VE1AWG, pres.; VE1UH, secy.-treas. Welcome new amateur in the Moncton area VE1OZ. CHILV is sporting a Kenwood TS520. VE1AHM has joined the slow-scan society. D forget, cw counts 2 points per contact this Field Day and ssb ou so polish up the old fist and be ready. APN reports QNI 125, Q 111 in 25 sessions. Traffic: VE1AMR 169, VE1ZH 97, VE1A 52, VE1AKB 46, VE1AWP 31, VE1ARB 26, VE1AMN 20, 1A 19, VO1GW 13, VE1AFM 7, VE1AYJ 6, VE1KR 6, VE1ST 3.

ONTARIO – SCM, Holland Shepherd, VE3DV – Please r that it was VE3FHF and not VE3EHL that looked after the colu for Feb. Thanks Bill. VE3HJA has joined the cw traffic gang wi good fist and lots of suavy. Welcome aboard Mark. FD participa are again reminded of the bonus points you can earn by sendi properly prepared message to the SEC/SCM. Congrats to VE3I on getting his Advanced. The Ottawa chapter of the OCWA have a hospitality room at the Oct. RSO Convention being hel Ottawa. Best wishes to VE3RL on his retirement after 28 years w Northern Electric. Howard has been very active in the Quinte A and it is frightening to contemplate his output now that he those extra hours to devote to amateur radio. Don't fall off y chair when you hear the prefix XO3, it is just out North amateurs celebrating the city's 50th anniversary. After 51 years hamming VE3DH finally made DXCC. Is this a record of some ki VE3GFN, EC Toronto has a new QTH and a new all band ante which will certainly give that extra edge in upcoming CD conte VE3CYR visited PR during Mar. CARTG has reduced its bulk issue to ten per year but it still remains the best buy for the RT buff at $2.00 a year. VE1AL/VE3 (Toronto) has been appoin Editor Canada DX Bulletin. DOC increase in license fees to $1 is a shocker. Perhaps it is time to stop the petty bickering betw CARF and the Canadian RRL and make a strong protest to Minister because the increase will deplete our ranks more than other reason. Congrats to all those unsung heroes in Toronto Ottawa for their work in the Motor Rally & the Ski Marathon. T really big shows. Traffic: (Mar.) VE3GOL 261, VE3EJF 2 VE3SB 201, VE3GJG 200, VE3IJA 163, VE3FRG 140, VE3A 133, VE3EQZ 105, VE3DPO 93, VE3DVE 92, VE3GFN VE3EWD 50, VE3FGV 38, VE3CYR 24, VE3ATR 16, VE3G 16, VE3DH 14, VE3EHL 10, (Feb.) VE3DV 62, VE3FHQ 11.

QUEBEC – SCM, Larry Dobby, VE2YU – The West Isl Radio Club conducted another successful auction in Valois w many local amateurs in attendance. It is with regret that announce the death of VE2AE. Ernie was well known in Broad



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Radio circles in Canada and will be missed by his fellow amate
The MARC, UMS and West Island Radio Club continue to hold t
regular monthly meetings attracting amateurs for eye-ball
technical sessions. Field Day is in the air with VE2UY appointed
coordinator for the WIRC. Traffic: VE2DR 148, VE2ALH
VE2OJ 50, VE2DRC 35, VE2EC 28, VE2APT 16.

SASKATCHEWAN - SCM, Percy A. Crosthwaite, VE5RP
There will be a good representation from Saskatoon and district
the Calgary ARRL Hamfest, Aug. 1,2,3 '75. So perhaps you will
want to miss the Hamfest join the band wagon and we shall see y
there. The Sask. amateurs are expected to have a Hamfest Picnic
summer so lend an ear to 75 meters for particulars. VE5SO recei
the Saskatoon Amateur Radio Club's "Amateur of the Year Awa
at the spring Ball in Saskatoon. Traffic: VE5HP 51, VE5BO
VE5TT 23, VE5RP 11, VE5YK 11, VE5WM 10, VE5CJ 5, VE5
5, VE5DN 4, VE5FT 4, VE5HE 4, VE5EO 2, VE5IZ 2, VE5RB

NEWS BULLETIN

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Crystal Ball

(Continued from page 2

indicates a narrow spectrum of usable frequenci with severe fading and generally poor signal leve With a very low quality figure, it could mean propagation at all – though you probably wo hear WWV readably anyway, in this situation!

The K-index is a geomagnetic figure for three-hour period ending one hour before bulle issuance. It is also stated on a scale of 0 (ve quiet) to 9 (extremely disturbed). In general, figures of 0 to 3 are considered "quiet," and 4 to are considered "disturbed." But often a value of to 4 may be called "unsettled" – somewhe between quiet and disturbed. A regular listen eventually learns his way around in these nuanc of propagation terminology, but there is son considerable variety.

The K-index is a measure of the variati (disturbance) in the earth's magnetic field, duri the 3-hour measurement period at Boulder. value and the statement of trend following t number can be quite useful in anticipating sho term changes in propagation conditions, sin geomagnetic disturbance is a critical factor in propagation via the ionosphere, especially on hig latitude circuits. Here again there are delica shadings of meaning, trends having been given "tending to increase," "tending to decrease "tending to remain constant," "tending to variable," and "tending to increase (or decreas slowly (or slightly)."

The solar-flux index is a measure of over solar activity, closely related to the longer-us daily sunspot number. It is a radio observatio made on 2800 MHz at Ottawa, rather than a visu observation of solar features. As shown in Fig. there is a good correlation between solar flux a sunspot number, but flux values change from d to day, in association with specific activity cente on the sun that may or may not be visible wi simple observing methods discussed recently by t writer in several recent vhf column leads.[2]

The trend information given for the solar flux very useful. The increment of change from day day is small, rarely more than 4 in a 24-ho period. Steadily rising or sustained higher-tha average flux numbers portend generally improv hf propagation and above-average muf for *F*-lay propagation. Flux numbers as low as 73 we recorded in every month from September, 197 through February, 1975, except in Novembe when the minimum was 78. In the extraordina period of October 6 through 14, flux numbe were above 110 every day, reaching a peak of 14 on Oct. 11-12. If you were on 10 meters in th period, you don't need to be told that DX w tops, regardless of latitudes traversed. Japan, Indi Alaska, and Greenland, all paths through hig latitude regions, were worked on 10 from t Northeast, for the first time in several years. C the steep down slope, Oct. 14 through 18, absor

[2] "The World Above 50 Mc.," November, 197 p. 96; December, 1974, p. 83; January, 1975, 84; all *QST*

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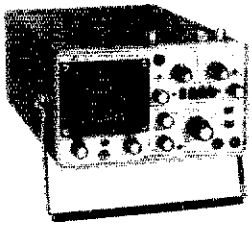

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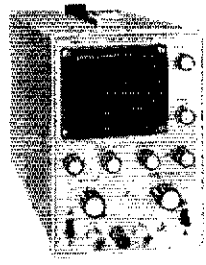

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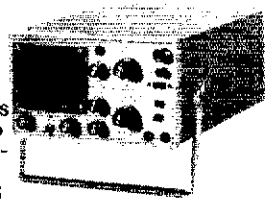

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tion went up and muf went down – though v enthusiasts liked it, this having been a time widespread and intense aurora. By contrast, so flux numbers as low as 70 were common near t end of February, and the high for that month w only 84.

The 14-after bulletins are prepared by t Institute for Telecommunications Sciences of t Office of Telecommunications, Boulder, Colorad Other useful information, transmitted at minutes after the hour, is supplied by the Natio Oceanic and Atmospheric Administration. T bulletin is in two main parts: a statement conditions for the previous day and a forecast f today. The text below is a typical 18-after bulle in its simplest form.

> Solar terrestrial conditions for February 9 follow: Solar flux – 79, A-index – 6. Solar activity was very low. Geomagnetic field was quiet.
>
> The forecast for February 10 follows: Solar activity will be very low. Geomagnetic field will be active.

As in the other bulletin quoted, the underlin items are changed as required. Solar activity usually described as very low, low, moderate, hig or very high; the geomagnetic field as qui unsettled, or active. Normally the bulletin ru without change for 24 hours.

The solar flux and A-index are always give but the second half of the first statement may varied to include information on geomagne disturbances, giving the beginning or ending tir of a disturbance, or perhaps the information tha geomagnetic storm (minor or major) is "in pr gress." Major solar flares, proton flares, and pol cap absorption events may also be described. The items may also appear in the forecast portio along with stratospheric warming alerts provid by the National Weather Service. The short for above, is usual.

If you record both bulletin periods and co pare them regularly, the 18-after one tends appear anachronistic. (Often it predicts somethi different from what the 14-after bulletin says happening!) The bits of information are given on once, instead of repeated as in the 14-after tex and it is not always easy to catch numbers give that way. During disturbed conditions, selecti fading can be rather bad, and readability of sho words or numbers is often destroyed by "arruch" of selective fading at a critical time. B the A-index, while given at least a day old, is ve useful for record purposes – and record keeping part of the propagation guessing game we'll spelling out later.

The solar flux number given is the 1700 UT reading taken on 2800 MHz at Ottawa. It w check well with averages of the information give the previous day on the 14-after bulletins. Becau the transmitted information normally remains th same for the entire day, the 18-after bulletins a useful to people who have limited opportuniti for listening, but want to keep records for futu use.

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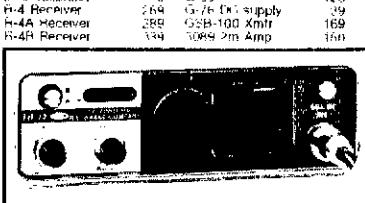

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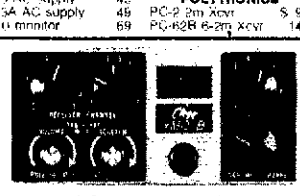

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K-Index or A-Index

With the K and A items referring to the same phenomena (disturbances in the earth's geomagnetic field) one may ask logically why both are given. Printed bulletins available from Boulder don't completely answer this question – but at this stage of using the information in amateur communications planning we'd not like to see either dropped. Following are excerpts from a note by Kent Boggs, Chief Ionospheric Forecaster, Institute for Telecommunications Sciences.

> The K-figure is a measure of variation, or disturbance, in the earth's magnetic field during a three-hour period. It is measured from the most disturbed of the three components of the field during that period. [It is given on] a quasi-logarithmic scale which allows a wide range of geomagnetic activity to be expressed by a single digit. . . . For do-it-yourself forecasters who prefer to use . . . the A-index, the K-figures can be converted to 3-hour A-indices by use of the following table. (This procedure is actually used by observatories when calculating the daily A-index.)

K	*a*	*K*	*a*
0	0	5	48
1	3	6	80
2	7	7	140
3	15	8	240
4	27	9	400

The A-scale was developed in order to provide a more linear scale of geomagnetic variation, especially as a whole-day index of activity.

In practice, the A-index is useful mainly for record purposes. As will become apparent from later discussions, it is a key factor in one's ability to anticipate propagation conditions on the amateur DX bands, especially in connection with recurrence phenomena related to the sun's rotational period. The K-index, being based on a current condition with the anticipated direction of change now available, is very useful for short-term planning, particularly for the observer who is not going to keep a continuing record. All one has to do to see the unique usefulness of these two indices of geomagnetic conditions is to record them in graph form. The fluctuations of the K-index are so involved that they tell you little about what is likely to occur next month, but they help mightily in regard to the next few hours. The day-long number that the A-index represents is exactly the opposite in usefulness, showing clearly the overall trends that you will want to know about in predicting how things are likely to develop four weeks from now.

Do-It-Yourself Solar Observation

The existence of sunspots has been known through almost all human history, and they have been studied since the time of Galileo. That the

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father of experimental physics and astronomy was able to observe and study sunspots with the first telescope ever made shows that recording the passage of sunspots across the solar disk is within anyone's capabilities today. The *QST* vhf column leads of reference 2 give all necessary details, so they will not be repeated here.

Even in an area like New England, where the sun may not shine clearly enough for sunspots to be seen for several days at a stretch, visual projection of the sun is well worth doing, as often as weather permits. Not all solar phenomena that affect radio propagation can be seen with backyard methods outlined, but when spots are seen they can give considerable advance warning of important propagation variations on the way.

With the simple arrangement shown on page 85 of January *QST*, the image of the solar disk is inverted, if you view it while standing with your back to the sun. Thus, the spots appear on the left edge of the projected image, and move to the right. Their path is slightly inclined to the horizontal, paralleling the position of the solar equator. Spots of the current cycle (No. 20) move close to the equator. Spots of Cycle 21 will be seen well removed from the solar equatorial region, in the early part of the new cycle. The solar minimum we are now entering is thus a period of considerable interest, as we will have time to observe the effects of two cycles, one declining and one rising. Spots are centers of solar activity. They have maximum effect on the earth's ionosphere and magnetic field when near the center of the solar disk. We are under the influence mainly of the Cycle 20 spots, and the transition from 20 to 21 will be gradual, with no clearly defined overall minimum activity.

When spots near the solar equator appear on the eastern edge (left side of the projection) near the solar equator, the solar flux numbers transmitted by WWV will be seen to rise. Visible spots are not the sole source of solar flux variations, so the backyard projection record is not to be relied upon entirely. The record is important, however, and the longer you keep it the better it becomes. With the small number of spots currently being seen, it is no trick at all to keep track of visible activity centers, and to become familiar with them as they come back around into view again, roughly 27 days later.

The "roughly" should be accented. The sun is no solid mass, so 27 is only a ballpark number. The size, appearance, and activity of spots and spot groups can change markedly in a few days, so you might not recognize "old friends" visually on later times around, had you not kept a record of their previous appearances. The propagation effects resulting from solar activity centers you *can't* see also recur on the "27-day cycle," so it can be seen that a daily record of solar flux, the A-index, and visual observations can give you a crystal ball for radio propagation almost as effective as that available to the experts.

So far we're barely described some of the tools of the propagation seer's trade. In a later installment we'll go more into their use in what can be

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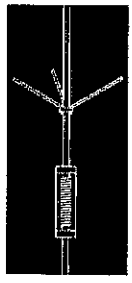

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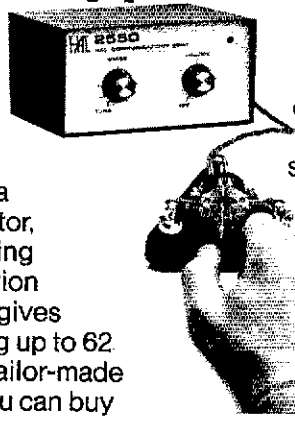

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as interesting a game as one is likely to find within the greater overall game we call ham radio. It might even become one of those "tails that wag the dog," at least through the period of low solar activity now upon us.

The writer gratefully acknowledges much information and assistance given by Yardley Beers, WØJF/WA1NOJ, and Peter P. Viezbicke, WØNXB, of the Time and Frequency Division, NBS; Kent D. Boggs, Chief Forecaster, Telecommunications Services Center; and Don Hilliard, WØPW, formerly WØEYE, all of Boulder, Colorado. The cooperation of several members of Murphy's Marauders in subjecting the author's early attempts at propagation forecasting to the acid test of DX Contest use are also much appreciated.

Part II, dealing with do-it-yourself forecasting methods, will appear in a subsequent issue.

(Note: Cover photo courtesy Carling Electric, Inc., Hartford, Conn.) QST

World Above

(Continued from page 82)

openings to JA. Bill uses a Yaesu 620 transceiver. These rigs seem to be very popular in the Far East as well as in Australia and New Zealand, but have not yet appeared on the US market. They have been shown at several hamfests and conventions along with the companion 2-meter unit, the 220. What is holding up marketing of this versatile pair of vhf rigs is a mystery. Maybe if some of us wrote to the importers of Yaesu equipment, something could be done about the situation. The more good vhf gear available, the greater will be the activity on the bands above 50 MHz.

Also from Guam comes a timely report via the telephone answering machine from KG6JDX. He states that 6-meters was open on April 6 for over an hour beginning at 0835Z. Thirteen JAs were worked in call areas 1, 2, 3, 4, 5, and 7. The opening which was most probably E_s, ended in a contact with HL9WI. KG6JCM and K2IRT/KG6 were also on hand for the fun.

Those in the Hartford, CT area who would be interested in some code practice are asked to contact WA1ZTK. Mark plans to set up a slow (at first) speed net on about 50.125 MHz and is looking for others to join him.

144 MHz The stalwart Moonbouncer, SM7BAE, is apparently to have some help in keeping Sweden on the 2-meter EME map. A letter from SM6CKU lists a number of stations heard. Ben is using a home-built 80 element collinear and, as soon as his special permit comes through, he will increase his power to 1 kW output. Although no contacts have been made as yet, Ben says that several stations he has called have come back with QRZ's, so he figures that he is getting something back. I am sure that you will soon be among the ranks of the successful Moonbouncers, Ben. Speaking of the ranks of the successful Moonbouncers, Stan Savage, W6ABN, suggests that some type of award be offered to those who have joined the "EME Club." In order to distinguish between those who have worked only the "big" stations such as WA6LET and KP4BPZ, Stan would require that at least 3 two-ways be needed to qualify. What do you think of this idea? Speaking of honoring EMEers, be reminded that a box is soon to appear listing exploits of the EME gang on the various vhf/uhf bands. Please forward your accomplish

ments. List band, station(s) worked, reports exchanged, dates of contacts, and pertinent data on your station.

Among the successful 2-meter Moonbouncers is K7NII of Queen Creek, AZ. Tom's array consisting of 16 8-element Yagis has paid off, most recently with QSOs with K2RTH and WA2BIT, New York; K8fII, Ohio; and K1WHS, Maine for 3 new states. Tom expects soon to have the "monster" fully steerable, so watch out for him on terrestrial modes as well as via the lunar route. A newly initiated member of the EME club is WB5BKY of Tulsa, OK, who completed his first 2-meter two-way via the Moon with K1WHS.

K9UNM of Fort Wayne, IN, caught the aurora session of March 10. Jim reports contacts with WØRLI, Minnesota; WAØCHK, Missouri; K1WHS, Maine; W8TIU, Michigan; and KØDAS, Indiana. Several telephone calls to South Carolina were of no avail. He couldn't find any of the two-meter gang at home. All in all, it was the best aurora noted at K9UNM since last fall. Activity seemed to be up, which is a good sign.

The excellent tropo conditions prevailing along the Gulf Coast this winter were existent again in late March. WB6CBJ/5, stationed at the Naval Air Station, Corpus Christi, TX, files an interesting report of contacts made on 2-meter and 70-cm fm. Dennis states that on March 20 and 21 he was able to work WA4UUE and WB4IFU, Miami; W4AAA, Fort Myers; and WA4IXS, Bokeelia, all Florida. These contacts were made on 2 meters using a 25 watt mobile installation employing a 5/8 wave whip, and all the QSOs were on 146.52 simplex. Not satisfied with that, he tried his 4-watt, 450-MHz rig with a 5-inch piece of wire for an antenna. From inside the car, WA5OPY, Bryan, TX, 230 miles distant was worked with full quieting signals. Other contacts were managed on both bands through several repeaters. Dennis speculates these superb tropo conditions were caused by a high pressure system which settled over the Gulf. The air aloft was heated by convergence while the lower air was cooled by the still cool Gulf water. This combination resulted in a marked temperature inversion. WB6CBJ is in flight training for the U.S. Navy so he has undoubtedly acquired a better than average knowledge of meteorology. Dennis says that the next opening will find him better prepared, with a pair of 11-element beams for 70 cm.

WA2FZW, Plainfield, NJ, reports that he has been so busy working on his local repeater, WR2AFH, that his other vhf activities have taken a temporary back seat. The machine employs an interesting design wrinkle. The logic uses an Intel 8080 microprocessor. How about an article for *QST* on how and why this is done, John; and get that repeater going so we can see you on the "low end" again soon.

WA3NHO of "the city of brotherly love" reminds fellows in his area of the Montgomery County Civil Defense Net, which meets Thursdays at 1930 local time on 146.835 MHz fm.

While on the subject of fm, WA4MMP urges us to use fm as a means of working DX, particularly on 2 meters. With the high population density of fm operators throughout the country, openings can be spotted that might go unnoticed on the "low end." Bill warns against DXing through repeaters, however. He points out that Section 97.1(i) of the FCC Rules defines repeater stations as "Stations licensed to automatically retransmit the radio signals of other Amateur radio stations for the purpose of extending *intra*-community radio communication range." (emphasis added). The

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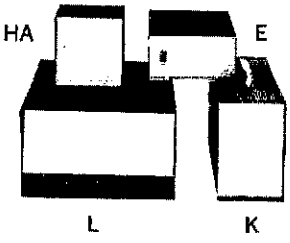

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BB*	9 x 2-½ x 3-⅛	5.90
C	7-¼ x 3-⅜ x 5	7.80
D	8 x 2-½ x 8**	9.85
E	6-½ x 3-15/32 x 7-1/16	9.25
F	7-½ x 4-½ x 10	11.15
G	10-1/16 x 3-5/16 x 9	11.15
HA	5-¼ x 5-½ x 4	7.85
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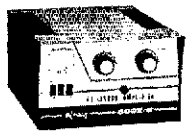

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commission's intent is apparently that DXing through repeaters is not within the rules. Bill states that he has learned from the local FCC Field Office that some amateurs in the Norfolk area have actually been cited for DXing through repeaters. It was pointed out, however, that these citations were issued because the hams involved were interrupting local communications taking place on the repeaters in question. Bill goes on to urge that we do our fm DXing on simplex channels. He recommends specifically that 146.49 be used in lieu of 146.52, which is usually crowded, especially when the band is open. He feels that most fellows seriously interested in fm DXing have synthesizers anyway, so they can select any channel.

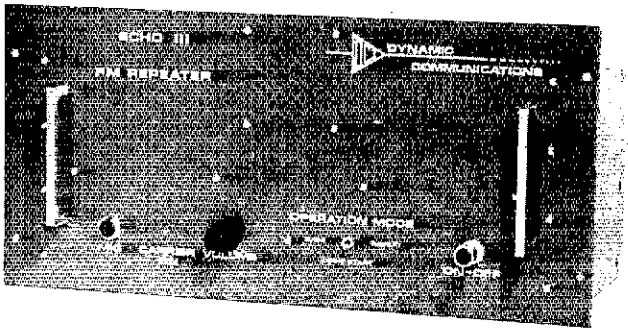
420-450 MHz From the looks of the mail received, our lowest frequency microwave assignment is becoming a DX band. Calls like PA0SSB, VK2AMW, JA1VDV, SM5LE, ZE5JJ, F9FT, G3LQR, and OZ9CR are seen as frequently as the likes of K2UYH, W1JAA and W1SL. Yes, EME is very much becoming the name of the game on 70 cm. Moonbounce isn't easy on any band, but it must might be that this may be the optimum place in the amateur spectrum to do it now that suitable equipment is within the reach of most of us. Antennas for this band are possibly somewhat more easily managed than on 2 meters. Whatever the reasons, there is a lot of EME activity on 432 so it must be fun, and it is possible if one works at it.

Here's just a sample of the activity that is taking place. On March 22 VE7BBG and JA1VDV completed a two-way contact. It was the first Moonbounce contact for JA1RDV, the first Asia/North America vhf/uhf QSO on any band above 50 MHz, and the first Asian EME work. Aki's 20-foot dish seems to be doing the trick. I am sure that we will be hearing a lot more from him in the months to come.

From closer at hand, K8DEO writes that he now has his 432 EME setup in operation. A 40-foot tower is topped off with 8 British-type Yagis. With this and a 3-dB noise figure antenna mounted preamp consisting of a Fairchild FMT 4575, Don is able to hear sun noise of about 8 dB. A K2RIW amplifier provides plenty of soup to cut the mustard. Using a frequency of 432.100 MHz, Don will transmit for 15 minutes and listen for 15 minutes, starting at 0200 UT anytime that the moon is available.

In the "not so good news department" word comes from K9EFX that he lost his antenna in a sleet storm which hit John's Valparaiso, IN, QTH. A similar fate struck the EME array at W4LNG. It fell victim to the tornado which struck the Atlanta area in late March. Ruddy says that his 50-MHz antenna came through OK. It was put away in the garage at the time. The 144-MHz beam was bent up, but is repairable.

W4FJ comes up with a handy idea for use with 70 cm amplifiers using tetrodes such as the 4CX250B. Eimac recommends that 5.5 volts be used on the filaments of the tubes when operating at these frequencies. Under this voltage, Ted notes that, after he has been in receive for a few minutes, the output power is down considerably when first going to transmit. Eimac's "Care and Feeding of Power Tetrodes" explains that the reason for this behavior is back bombardment heating of the cathode. The simple expedient employed by W4FJ is to put a relay across the dropping resistor in the primary of the filament transformer to drop the secondary voltage from the transformer's norma



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T-200	755	360	120	105			2.00	3.25
T-130	785	330	110	96			1.30	2.25
T-106	900	405	135	116			1.06	1.50
T- 94	590	248	84	70	58	32	.94	1.00
T- 80	450	180	55	45	35	22	.80	.80
T- 68	420	195	57	47	32	21	.68	.65
T- 50	320	175	50	40	31	18	.50	.55
T- 37	240	110	42	30	25	15	.37	.45
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Number of turns = 100 $\sqrt{\text{desired L (uh)}} \div A_L$-value (above)

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FT- 82	23.4	73.3	557.0	1172.0	2930.0	.82	.90
FT- 50	22.0	68.0	523.0	1100.0	2750.0	.50	.65
FT- 37	17.7	55.3	420.0	884.0	2210.0	.37	.55
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Number turns = 1000 $\sqrt{\text{desired L (mh)}} \div A_L$ value (above)

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voltage of 6.3 to the desired value of 5.5. When transmitting, the relay contacts are open so that the resistor is in the circuit. When not transmitting, the relay closes, shorting the resistor and placing the full 6.3 volts on the tube heaters.

From the fine 432-MHz Moonbounce newsletter published by Alan Katz, K2UYH, we have excerpted some very interesting observations made by W1BZT which were presented at the Eastern Vhf Conference held at Durham, NH, in late March. As part of Jack's work at the Air Force Cambridge Research Lab., he has been measuring moon echo polarization. Among the points he made was that minimum libration fading rate tends to occur when the moon is on the horizon (not at zenith), and that it is fading rate which changes the fade depth is relatively constant. Interestingly the libration fades are not correlated beyond 1 or 2 kHz. This fact suggests that certain forms of FSK cw might be effective in improving EME copy.

With regard to Faraday rotation, Jack indicated that the one-way rotation on 432 MHz is normally small (10-20 deg.) between 2300 and 0700 local time (dark hours), but abruptly changes during sunlight hours to 120 degrees or more. The rotation is always in the same direction regardless of the direction of transmission.

This Faraday rotation characteristic suggests an operating procedure which can be followed by a station with rotatable polarization when trying to communicate with a station having only fixed linear polarization. First, the station with rotatable polarization should initially adjust his polarization to correspond to the polarization angle at which he would expect to receive the fixed polarization station with zero Faraday rotation. (Even when no Faraday rotation is present, stations using El-As mounts and common horizontal polarization will experience cross polarization at different points on the earth. A station looking at the moon at zenith with horizontal polarization in Europe will appear vertical in Western America.) Next, he should adjust his polarization angle for best reception of the fixed polarized station, noting the number of degrees and the direction he has moved his polarization from the initial position. Then on transmit, he should rotate his polarization the same number of degrees as he did for best reception, but in the opposite direction from the initial polarization position. If the station with rotatable polarization always switches between these two polarization positions on receive and transmit, polarization should be properly aligned.

W4ZXI of Miami feels that the Gulf area is a good place to attempt to break the existing 330 mile record on 2300 MHz set by W6FZJ and WA6HXW. Russ is looking for Houston area stations who would like to give it a try. QST

Linear Amplifier *(continued from page 43)*

Nothing really new or revolutionary is claimed for this amplifier. It is presented mainly in the hope that it will provide an answer to a gap which exists today in amplifier design. With this amplifier, the owner of a low-power exciter need not go to an intermediate amplifier to obtain the power needed to drive the more common grounded-grid amplifiers so much in vogue today. However, the amplifier is of sufficient complexity so as to make it impractical as a project for the beginner. But for the experienced constructor with a few pieces of equipment under his belt, it should prove to be an enjoyable and worthwhile undertaking. QST

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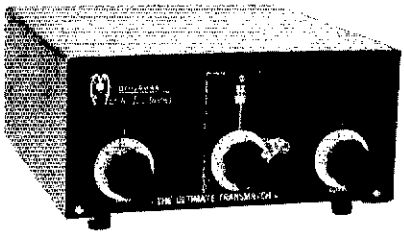

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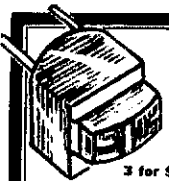

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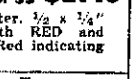

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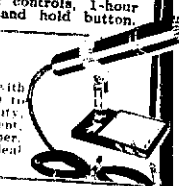

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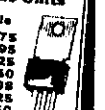

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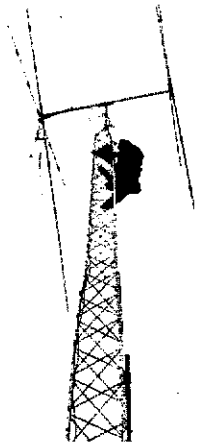

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MODEL CX-11 ... *Deluxe Integrated Station*

Many New Features

New solid state broadband linear power amplifier 10-160 meters. 360 watts input — requires no tuning — completely self-protected.

New concept front-end design — utilizing **TWO** revolutionary double active quad J-FET balanced mixers — for the ultimate in cross-mod, inter-mod, and overload prevention.

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Phone/write DON PAYNE, K4ID, for a brochure, and trade on your gear. Dial direct day or evenings (615) 384-2224. Personal phone answered only by Don Payne.

Contact the factory for parts and service only

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HAM-ADS

(1) Advertising shall pertain to products and services which are related to amateur radio.

(2) No display of any character will be accepted, nor can any special typographical arrangement, such as all or part capital letters, be used which would tend to make one advertisement stand out from the others. No Box Reply Service can be maintained in these columns nor may commercial type copy be signed solely with amateur call letters. Ham-ads signed only with a post office box or telephone number without identifying signature cannot be accepted.

(3) The Ham-Ad rate is 60 cents per word, except as noted in paragraph (6) below.

(4) Remittance in full must accompany copy, since Ham-Ads are not carried on our books. No cash or contract discount or agency commission will be allowed.

(5) Closing date for Ham-Ads is the 20th of the second month preceding publication date.

(6) A special rate of 20 cents per word will apply to advertising which, in our judgement, is obviously non-commercial in nature. Thus, advertising of bona fide surplus equipment owned, used and for sale by an individual or apparatus offered for exchange or advertising inquiring for special equipment, takes the 20-cent rate. Address and signatures are charged for, except there is no charge for zipcode, which is essential you furnish. An attempt to deal in apparatus in quantity for profit, even if by an individual, is commercial and all advertising so classified takes the 60-cent rate. Provisions of paragraphs (1), (2) and (5) apply to all advertising in this column regardless of which rate may apply.

(7) Because error is more easily avoided, it is requested copy, signature and address be printed plainly on one side of paper only. Typewritten copy preferred but handwritten signature must accompany all authorized insertions. No checking copies can be supplied.

(8) No advertiser may use more than 100 words in any one advertisement, nor more than one ad in one issue.

(9) Due to the tightness of production schedules, cancellation of a Ham-Ad already accepted cannot be guaranteed beyond the deadline noted in paragraph (5) above.

Having made no investigation of the advertisers in the classified columns except those obviously commercial in character, the publishers of QST *are unable to vouch for their integrity or for the grade or character of the products or services advertised.*

QCWA Quarter Century Wireless Association is an international non-profit organization founded 1947. Any Amateur Radio Operator licensed 25 or more years is eligible for membership. Members receive a membership call book and quarterly news. Write for information. Q.C.W.A. Inc., 2012 Rockingham St., McLean VA 22101.

PROFESSIONAL CW operators, retired or active, commercial, military, gov't, police, etc. invited to join Society of Wireless Pioneers — W7GAQ/6 Box 530, Santa Rosa CA 95402.

FREE sample copy Long Island DX Assn. bulletin. Latest DX news, Business size s.a.s.e. to the L.I. DX Assn., P.O. Box 73, Westbury NY 11590.

EDITING a club paper? Need public relations help? You should belong to g to the Amateur Radio News Service. For information write: Rosemary Willis, 9276 Borden Ave., Sun Valley CA 91352.

THE New York Radio Club invites Hams to club meetings, 2nd Monday of each month, 8:00 PM at the Williams Club, 24 E. 39th St., NYC. For information: Box 614, NYC 10028.

RADIO museum now open. Free admission. 25,000 pieces of equipment from 1850 telegraph instruments to amateur and commercial transmitters of the 1920s. Amateur station W2AN. Write for information. Antique Wireless Association, Main St., Holcomb, N.Y. 14469.

ORLANDO Hamfest, June 14 and 15, Orlando Exposition Park, West Livingston at I-4, Downtown Orlando. ARRL Forum, DX Forum conducted by Gus Browning, commercial exhibits, transmitter hunt, prizes daily, Florida's largest flea market. Admission $3 per family. For tickets or room reservation — $15.50, single $18.50, double at Howard Johnsons Downtown. Write Herb Roland, W4LSR, 8024 Chaplin Pkwy, Orlando FL 32809.

THE 28th annual Turkey Run Hamfest and VHF picnic sponsored by the Wabash Valley ARA, Inc., will be held Sunday, July 27, at Turkey Run State Park near Rockville, Indiana. Don't miss the midwest's finest flea market. XYL Bingo, refreshments, camping facilities and park recreation for the kids. Also this year, banquet July 26, 7:30 pm featuring guest speaker W9NTP, in park dining hall. Banquet by reservation only, $6.50/person; reservation deadline July 1. Activities begin 9 AM Sunday, talk-in 146.94 W9UUU/9. For details/ticket/banquet reservations S.A.S.E. WVARA Hamfest, Box 81, Terre Haute IN 47808.

HAMFESTERS 41st hamfest and picnic, Sunday August 10, 1975, Santa Fe Park, 91st and Wolf Road, Willow Springs, Illinois, Southwest of Chicago. Exhibits for OM's and XYL's, famous Swappers Row. Information, contact John Raiger, K9DRS, 8919 West Golfview Drive,Orland Park, Illinois 60462. Tickets, write Joseph Poradyla, WA9IWU, 5701 So. California, Chicago IL 60629.

QSLs??? "America's Finest!!! Samples 50c. DeLuxe 75c. Religious 50c. (Deductable) Sakkers, W8DED, Box 218, Holland MI 49423.

PICTURE QSL cards of your shack, etc. from your photograph or art work. 500 — $14.00, 1000 — $19.25. Also unusual non-picture designs. Generous sample pack 35c. Half pound of samples 65c. Raum's, 4154 Fifth Street, Philadelphia PA 19140.

3-D QSLs — Increased returns assure users' satisfaction. Samples 25c (refundable). 3-D QSL Co., Monson 2, Mass. 01057.

TRAVEL-PAK QSL Kit — Send call and 25c; receive your call sample kit in return. Samco, Box 203, Wynantskill NY 12198.

FREE Samples—Stamp appreciated. Samcards, 48 Monte Carlo Dr., Pittsburgh PA 15239.

QSLs, samples 20c. Fred Leyden, W1NZJ, 454 Proctor Av., Revere MA 02151.

QSLs 300 for $4.65, samples 20c, W9SKR, Ingleside IL 60041.

QSLs "Brownie" W3CJI, 3035A Lehigh, Allentown PA 18103. Samples with catalog 35c.

DELUXE QSLs. Samples 20c. Petty, W2HAZ, P.O. Box 5237, Trenton NJ 08638.

DON'T buy QSL cards until you see my free samples. Fast service, economical prices. Little Print Shop, Box 9848, Austin TX 78766.

FRAME Display, and protect your QSLs with 20 pocket plastic holders, 2 for $1, 7 for $3, prepaid and guaranteed. Tepabco, Box 198T, Gallatin TN 37066.

QSLs. Second to none. Same day service. Samples airmailed 50c. Include your call for free decal. Ray, K7HLR, Box 331, ClearfieldU T 84015.

QSLs — Variety, value, quality, custom. Samples and catalog 20c. Alkanprint, Box 3494, Scottsdale AZ 85257.

RUBBER stamps $2.50 includes postage. NJ residents add tax. Clints Radio, W2UDO, 32 Cumberland Ave., Verona NJ 07044.

QSLs catalog. Samples 35c. Ritz Print Shop, 5810 Detroit Ave., Cleveland OH 44102.

COMPLETE 36 page QSL catalog! 300 cuts, stock and ink samples. Ten sample QSLs. 25c. Cornelison's, 321 Warren St., N. Babylon, NY 11704.

QSLs from "Bullet", creative designs, fast service, economical. Send 20c for samples to Bullet Printing Co., Box 3033, Waco TX 76707.

QSLs printed. Fast service. Samples for 25c. Castle Press, Brass Castle, Washington NJ 07882.

CANADIAN Surplus Catalog and flyers $1. Etcox Electronics, Box 741, Montreal Canada H3C 2V2.

DO-it-urself DX-pedition, stay at ZF1SB, Cayman is. Vertical antenna and Caribbean at your doorstep. Diving, fishing if band folds. Write Spanish Bay Reef Resort, Box 800T, Grand Cayman, B.W.I.

WANTED to Buy, pre-1930 Wireless gear and Morse keys. Any type? Condition. Write VK4SS, 35 Whynot St. West End, Brisbane, Q. 4101, Australia.

CANADIANS — latest model full set Galaxy, GT550A, RY550A, RF550A SC550A, A.C. pwr supply, c.w. filter and vox, mint condition, reasonable offer accepted. VE6RY, 13814-102 Ave., Edmonton, T5N 0P3.

PEORIA Hamfest — September 14, Peoria, Illinois. Same place as last year. Note change of date. For further details see Hamfest Calendar. Banquet Saturday, September 13, 5:30 PM at V. Junction — $6 per person. Two motels within walking distance. Reservation deadline August 30, cancellation September 8, 150 maximum, so get reservations in early. For hamfest tickets, $1.50 advance ($2.00 at gate) write Earl Kimzey, WA9SCA, RFD 1, Hanna City, Illinois 61536. For banquet reservations write Larry Pearsall, W9FDY, 2224 W. Herold Ave., Peoria IL 61604.

MONTREAL Hamfest 75, Aug. 3, MacDonald College Farm, Ste. Anne de Bellevue. Prizes, Giant fleamarket, technical sessions, family fun. $2.50/aduit. Information, contact VE2RM, Box 201, Pointe Claire-Dorval, Quebec, H9R 4N9.

THE 3rd annual Des Moines Hawkeye Hamfest will be held on Sunday, June 8, 1975 at the Iowa State Fairgrounds. Plenty of free parking. Flea Market, covered display booths available, small charge; open arena, no charge. Dealer displays, XYL activities. Camping available, small charge. Registration $1.50 advance — $2.00 at gate. Write Des Moines Radio Amateur Association, Box 88, Des Moines IA 50301.

HALL of Fame Hamfest and Auction, rain or shine, August 3, 1975, Canton, Ohio. Come to Canton for football's greatest weekend. Saturdays activities — parade, enshrinement, NFL game — Cincinnati VS Washington. Sunday — Hamfest and auction at Stark County Fairgrounds. Main prizes — ICOM 230, Hallicrafters FPM 300, Standard 2-meter hand held. Motel and camping space available. Call WF8HOF 146.19/79 or 146.52/52. Further information, write WA8SHP: 73 Nimishillan St., Sandyville OH 44671 or call W8SWB 216-455-4449.

CASH paid for your unused tubes and good ham and commercial equipment. Send list to Barry, W2LNI, Barry Electronics, 512 Broadway, NY NY 10012.

CALL toll-free (800) 327-7798. Ask for Bob Hoffman (Jaro Electronics Corp.) We buy all types of tubes. Top prices paid for Varian, Eimac, Amperex. Address: 412 27th Street, Orlando FL 32806. In Florida call collect (305) 843-9551.

SPIDERS for boomless quads. Heliarc welded aluminum. Al's Antennas, 16473 Greentree Blvd. No. 32, Vicotville CA 93292.

NOVICES: Need help for General ticket? Complete recorded audio-visual theory instruction. Easy, no electronic background necessary. Write for free information. Amateur License, PO Box 6015, Norfolk VA 23508.

WE BUY electron tubes, diodes, transistors, integrated circuits, semiconductors. Astral Electronics, 150 Miller St., Elizabeth NJ 07207, (201) 354-2420.

MOBILE Ignition Shielding gives more range, no noise. Kits and custom systems. Litreature, Estes Engineering, 930 Marine Dr., Port Angeles WA 98362.

TELETYPEWRITER parts, manuals, supplies, equipment. Toroids. S.a.s.e. for list. Typetronics, Box 8873, Ft. Lauderdale FL 33310. W4NYF. Buy parts, late machines.

MANUALS for ham gear before 1967. Large s.a.s.e. for quote on specific manuals. W0JJK, Hobby Industry, Box Q864, Council Bluffs IA 51501.

WANTED: An opportunity to quote your ham needs. 36 years a ham gear dealer, Collins, Drake, Ten-Tec, Swan, Kenwood, Tempo, Regency, Icom, Hy-Gain, etc. Trades, terms. Request catalog. Chuck, WR1CG, Electronic Distributors, 1960 Peck, Muskegon MI 49441. (616) 726-3198.

SWAP-N-Sell ads free in Tradio. Box 4391, Wichita Falls TX 76308.

AMSAT/OSCAR 6-7 slides, set of 5 — $1.25 Lift-Off and Equipment. Proceeds AMSAT, K6PGX, P.O. Box 453, Pasadena CA 91102.

WANTED, Make, Model and Serial Numbers of stolen ham gear, for big list. W7UD, 3637 West Grandview, Tacoma WA 98466.

FM receiver, preamp, scanner, UHF converter kits. Hamtronics, 182 Belmont, Rochester NY 14612.

COMING to Florida? Use our club station or your own rig and our all-band antennas to work DX or your home town. All hams welcome. Details — H.E. Saxton, W4QED, c/o Spanish River Inn, Delray Beach FL 33444.

TRISTAO self-supporting crank up heavy duty tower, Model TWS-754 with hinged base and TRM-100 tower raising fixture. Handles 24 square feet of antennas in 80 mile winds. Factory reconditioned like new with new winches, cable, etc. List price $2750, sacrifice for $1,250. FOB Hanford CA. Doug Kahle, K6OE, Box 218, Carmel Valley, CA 93924.

TELETYPE equipment for sale, for beginners and experienced operators. RTTY machines, parts, and supplies. Special Lorenz model 15 KSR checked out — $95 and Lorenz 15 ASR — $145 plus shipping. Atlantic Surplus Sales Co., 3730 Nautilus Ave., Brooklyn NY 11224.

PROP Pitch motors wanted — medium sized, in good condition, need repair and maintainence manuals if available with motors or separate. Need several for friends overseas. J.P. Ashcraft, 5641 Dyer St., Dallas, Texas, 72506. WB5BFZ.

SIGNAL/one owners: special one year service-contract. Write for details. CX7A, mint, — $1295. Tuneable audio filter, 50 db notch, also has peak and low-pass included — $69.50. PACE Electromes, 5717 Genematas, Tucson AZ 85704. (602) 888-5234.

KWM-1 with 516 F1 AC p/s, — $325. Heath HW-32A — $110. Both excellent condition and with manuals. WA9CQS, Rte. 1, Box 223, Camby IN 46113.

SELL: Complete Heathkit station. Send or call for list. WA4BMK/2, Tom Jenkins, Rt. 144, Glenmont NY 12077. (518) 463-8250.

R4B, mint condition, full 10 meter coverage — $325. WA2OLO, Steven A. Jacobson, 124 Fort George Ave., N.Y.C., NY 10040.

WANTED: Self-supporting tower, 50 to 70 feet. John Record, K1SUG, 76 Fairview Ave., RFD 3, Rehoboth MA 02769. (617) 226-2074.

FOR SALE: Heath SB-401 XMTR with full crystals & mike. In working condition. — $210 & shipping gets it. WN4EJK, Box 421, McRae GA 31055.

BAY Area Ham Repairs, K6BE. 415-548-1889.

GEOCHRON wanted: Electronic wall mounted map-clock, reviewed 1967 QST. WB4SEO, 908 Penn Avenue, Atlanta GA 30309. (404) 874-7725.

KLM Echo II 2mtr SSB xcvr in sealed carton — $310. 1 ship. Ed Narwid, 61 Bellot Road, Ringwood NJ 07456. (201) 962-4695.

FOR SALE: Two national NCL 2000 linear amplifiers. New tubes, mint condition — $350 each. F.O.B. original owner, Otto J. Supliski, 53 Hayward St., Yonkers NY 10704. (914) 969-1053.

SELL: 40-3el Wilson beam — $175. W3TV, Box 73, Shelocta PA 15774.

GALAXY III — 80, 40, 20 M ssb/cw xcvr with ac and d.c. power supplies and Hustler Ant. with 20M, 40M resonators, — $250. E.J. Jones, Quail Valley, Batesville AR 72501. (501) 793-6783.

COLLECTION QSTs, July 1923-July 1971. Complete, perfect, bound. Offer? Royse, Box 1478, Benson, Ariz 85602.

COOL it with a New Mark 4 Muffin 100 cfm fan. 120 VAC. 50/60 Hz. Postpaid — guaranteed. Check or moneyorder — $10 each. P.R. Electronic Supply, Box 203, Webster NY 14580.

BUILD your own radio desk/console cabinet. Design drawings, photographs. $4.75. Bill Morris, WA5RSC, P.O. Box 20302, Oklahoma City OK 73120.

PHILLIPS code — $10 postpaid. Hess, W6CK, Box 19-M, Pasadena CA 91102.

SERVICE by W9YKA. Professional grade lab, FCC commercial license, Amateur and commercial SSB-FM equipment. Repair, calibration, modifications, consultation. Low overhead, reasonable rates. Write or call Robert J. Orwin, Communications Engineer P.O. Box 1032, La Grange Park IL 60525. (31 352-2333.

LOW and Medium frequency radio scrapbook. Unique ne handbook dedicated to the experimenter. Receivers, converter coil winding, antennas, loops, the nonlicensed communicatio bands and the FCC rules. Over 100 pages chock-full of diagra and data. Nostalgia for the old-timers and an introduction radio communications for the newcomer. $4.75. Cornell, 22 Baltimore Avenue, Point Pleasant Beach NJ 08742.

WANT: New AD - 1530; new ham ll rotor w/box; new SB 10 new SG GR — 78, ideal for tourist. Sell/trade SB 1 w/matching Hygain antenna (just 2 hours cookin from new). N dealers. WA0GYX, George, 1107 N. Scott No. 3, Belton M 64012.

CLOSE out — DX awards log 150 pages, details on 200 award Regularly $3.95, now —$1.50 plus 50c postage/handling. M Mahon Company, 443 C Orange Grove Circle, Pasadena, C 91106.

UPGRADE your ham license now! Let Posi-Check help yo Original, expertly devised, multiple choice questions and d grams covering all areas tested over an FCC exams. IBM shee for self testing. Keyed answers with explanations. Novice Class $3.35; General Class (including latest rules and regulations) $5.10; Advanced Class — $4.65; Extra Class — $4.90. First cl postage prepaid U.S.A. Air mail 25c extra per copy. Send che or money order to Posi-Check, P.O. Box 3564, Urbanda Station, Des Moines IA 50311.

MUST Sell: Mint Collins, 75S-1, 32S-1, 516-F2 — $775. N used in heavy service. Paul Young, P.O. Box 303, Hartford 53027. 414-644-8809.

MOBILE ops — tired of ignition noise? Please send sase for in on shielded ignition systems. Summit Enterprises, 20 Eld Street, Yarmouthport, MA 02675.

GONSET Communicator IV, 2 meter A.M. last model mad with mike, manual, excellent cond. — $95. K6LJA, 3200 Airpo Way, Long Beach CA 90806.

SELLING: Gonset GSB100 Xmt — $165; National NC303 r — $150; both very good condition, excellent beginning static KWM-2 with power supply — $750. Almost mint; TR22-C wi 21 xtls, touch tone pad, AA-22 25 watt amp & Hustler colline ant., all like new — $415, save $125. WB0LHQ, 912-43rd, D Moines IA 50312. (515) 279-0254.

DRAKE TR-22, 6 channel w/AA-10 amplifier, MMK-2 mob mount, w/crystals for, 34/94, 94/94, 16/76, 28/88, 07/6 52/52 plus others. Best offer over $185. Also wanted, Hea SB-610 and/or SB-500, prefer in working condition w/manua WA2HXZ. 251 Maple, South Bound Brook Nj 08880. (20 356-8591.

WANTED — Heath HW-16 with crystals, speaker, L. Danie Lansford PA 18232.

COLLINS KWM2A, 516F2 (round); 312B5; 30L-1; SM2; exc lent — $1700. J. Sullivan, 245 Berkshire Drive Rochester N 14626.

FOR SALE: Magnum-Six speech processor for T4X/B/C. — $9 postpaid in US. Allan Moser, W7GYR, Route 1, Box 8, Samu ID 83862.

SELL: HR10B, HRA-10-1, good condition, modified — $ Write Dan Swearman, 11 Longview Dr., R.D.6, Irwin PA 1564

SELL: Sierra Electronics Corp. frequency selective voltme 125A with manual — $50. General Radio decade attenuator $20 or best offers. William Boyer, R.D. 2, Box 308H, Johnsto PA 15904.

DRAKE station — T4X with AC-4 — $310; 2-C with 100 kH ca, and extra xtls — $180; 2-vt — $75; Mb 2000 — $175; B complete station with mics, straight key, but, GMT tymet extra swr bridge, MS-4 speaker, $740. John W. Hayden, 54 Liberty Bell Rd., Grand Blanc MI 48439. (313) 694-50 evenings.

HALLICRAFTERS HT-46 xmtr mint condx — $150. Lafaye HA-350 ssb rcvr — $30. Both — $165. W2ENT, George Pet Long Hill Road, Hopewell Jct NY 12533.

FOR SALE, or equitable trade: (T-217A) (R-278B) (MD-129 = GRC-27, UHF Ground/Air multi-channel communicatio transceiver. Address inquiries to Joe Waters, 2913 East Sio Sious Falls SD 57103.

SELL: SB610 — $85; A-1, manuals, plus shipping. Prefer picku W2JFV, Box 42, Roosevelt NJ 08555.

DRAKE 2A, 2AQ, 2AC — $140; WA5OKC, 12823 Westlei Houston TX 77077, (713) 497-5639.

IMMACULATE Drake, Heath. TR-4C, with AC supply — $6 SB-220 quality build, $300. Both little use, much care. He Ken Gary Bort, 2221 Guthrie Circle, L.A., CA 90034.

HEATH SB-102 transceiver kit for sale. All circuit boa already assembled, by an electronic engineer, namely me. W the optional cw filter, I just do not have time to complete t kit. Will ship, freight, prepaid and insured. — $350. K Eisenach, 604-12th Ave., International Falls MI 56649.

SELLING: Factory aligned HW101 w/CW filter — $285; HP 2 w/SB 600 — $70; SB 650 display — $150; Heathkit desk mic $30; HQ 170 w/spkr, — $110; all excellent, old scope — $ WA9YKC, 2615 N. 69 Street, Wauwatosa WI 53213.

GALAXY V, AC-35, speaker — $260. DX-100B - $80. Y ship. Stephen Stuart, WB5JNM/2, 2 Bockoven Road, Mendh NJ 07945. (201) 543-7579.

SELL: Heath SB-303, cw filter — $300; B&W 5100 xmtr, sideband adapter — $100; 15 mtr. beam with rotator — $50. Dean Weurding, 328 S. Main, Lawton MI 49065. (616) 624-2551.

WANTED: Crank or tilt tower, WB4RLS, Rt. 10, Box 461-43, Charlotte NC 28213. (704) 596-7270.

SYNTHESIZED brimstone 144 2 mtr. transceiver (as advertised in QST) covers 142-150 MHz in 5 kHz steps. Includes Touch-Tone interface, mint condx. 4 months old — $550 firm. Will ship UPS. WA2ZDN, 628 Exeter Rd., Linden NJ 07036.

WANTED: Electrical Experimenter, Modern Electrics and Science and Invention magazines. Will buy bound volumes. K7NER, 172 Freihage Dr., N.E., Sierra Vista AZ 85635.

HENRY 4CX-5000 linear amplifier complete with tube — $1500. Galaxy GT-550 transceiver with AC-400-PS, 30 hours use — $350. Alex Magocsi, WB2MGR, 24 Sheffield Ave., Englewood, NJ 07631. Day 201-871-3000.

TECH Manuals — $6.50 each; R-22/URR, SP-600 JX, USM-159, GRR-5, URM-25D. Thousands more available. Send 50c (coin) for large list. W3IHD, 7218 Roanne Drive, Washington DC 20021.

FOR SALE: Hallicrafters FPM 300 transceiver. Excellent condition — $340. L.O. Smith, 8 Newberry Dr., Endicott NY 13760. (607) 748-1897.

ALELEX high speed printer, model 4.5-80-DD, 80 columns, complete with P.S. and driver cards sase for details. Best offer. Mike Vande Voort, Route 1, Leighton IA 50143. 515-626-3195.

SELL: Swan 500C modified CX, 117XC, ps/spkr, 14-117 ps, spare tubes — $420; Heathkits, Dipper GD-1 (350 Hz-250 MHz) — $15; GR-79 rcvr — $110; Scope calib. VC-1 — $8; Cantenna HN-31 — $10; DC filter BFI — $3; color generator LP-2 — $10; CB transceiver GW-48 GWA14-1 — $85; New E-V mike 664 — $45; Hy-tower 18HT — $85 (pick up); VTC choke S-37 — $5; Burndy Pentroxa alum. paste — $3; RP electronics compressor RPC-3V — $15. Allan Porsch, W3NFT, 16 Leland Dr., Seneca Falls NY 13148. (315) 568-2510.

KENWOOD R599 with 8 pole CW filter and 2 meter converter, good condition — $325. Firm. You ship. WN6CZK, 511 Rialto Ave., Venice CA 90291. (213) 399-0970.

HEATHKIT GR-78 receiver — $95; SB-620 spectrum analyzer — $110; Both in excellent condition. WB4YTS, 306 Chickasaw Cir., Ft. Walton Bch FL 32548.

FOR SALE: BC-348Q, BC-455, AN/GRR-5, TS-186, TS-323 frequency meters, TS-419 signal generator, HP-330B distortion analyzer, and miscellaneous items. SASE for list. Ed French, P.O. Box 249, Aurora IL 60507.

NATIONAL SW-3 Velvet 5880AB power supply excellent, 80, 40, 10, BS coils best offer over $80. No. 60, 61, 63, 68 GC SW-3 coils in original boxes, $10 each, you ship. Used SW-3 coil forms, sockets, FB-7 parts, Rohn No. 25 galvanized 38' tower — $69, pick up only. W9KC, 10 Taylor Estates, Kirkwood, MO. 61322.

DISCOUNT Prices plus full warranty on new guaranteed items: CDE HAM-2 $117; Belden 8448 rotor cable 12c/ft; Hygain TH6DXX $179; Mosley Classic 33 $179; 204BA $144; 15% discount Tries W, MW towers, supermast FOB Calif; Belden 8214 RG8FOAM coax 22c/ft; 8237 RG8 18c/ft; RG62B/U 8c/ft; centralab transmitting cap 100pF/15KV $5.95; CDE .001/10KV doorknob $1.95; Raytheon $11A $15.00/pr; 20-100pF padder 50c; quote KLM Echo 2MSSB, TS520; old tubes (IV, 7V) Write needs; Prices FOB Houston; Madison Electronics 1508 McKinney, Houston TX 77002. (713)224-2668, Nite (713)497-5683.

FOR SALE: Heath HW-16 xcvr/HG-10B VFO. Mint condition. Both $115. Pickup only. Nicholas LeFor, W1DB, W. Redding Road, Danbury CT 06810. Phone (203) 743-2374.

SALE: SB-34 transceiver with 110 VAC/12 VDC built in power supply and SB 2MB mobile plate. Mobile tilt whip. Turner SR900 microphone. All like new. Original instructions — $250. W3LSR. Telephone (301) 296-0500 or (301) 472-4845.

HOW to pass examinations — $2. Swank, 657H Willabar, Washington Court House OH 43160.

HEATHKIT HW-101, transceiver, HP-23-B ac power supply. SB 600 speaker, all new. Heathkit aligned — $325. (203) 585-5433. K1PNL.

RTTY equipment, model 14, TD, power supplies, 19" relay racks with door. Hy-Gain two meter beam. $25 each. WA2DGU, 112 Elington St., East Orange NJ 07017.

HW-32A — $95; pickup only. W2APD, 32 Eleventh, Haddon Heights NJ 08035.

WANTED: Technical literature for SX-28, DX-20 and Knight VFO. Tim Evans, WN6VEZ, 1848 Elkwood Dr., Concord CA 94519.

WANTED: Schematic or manual for Allied Radio Knight Star-Roamer 4 tube all band kit receiver. Francis Donovan, Box 3, Medway MA 02053.

FTDX 560, SX101A, 200 ft. RG8, D104, Misc. All A1 condx. — $500 R. Hrsana, WA1SNN, County Rd., Bedford NH 03102.

WANTED: Pre WW II car radio, particularly 1933-34 Ford glovebox style, or other old auto radio. Cash or swap teletype, or test gear. Gordon White, Box 3067, Alexandria VA 22302.

DRAKE R-4-A and MS4 — $240; Drake 2-NT, factory serviced — $70; new Ten-Tec VFO — $45; All 3, — $325. Perfect condition. Also, Heath H-W-7 with H-W-7-1 power supply — $50. Will ship. R. E. Ford, East Calais, VT. 05650. (802) 456-7048.

WANTED: McCoy SSB-9 filter and crystals. Also, McCoy "Silver Sentinel" 9 MHz filter and crystals. Price to J.R. Henrich, W3EAI, RD 2, Box 76, Mertztown PA 19539.

DRAKE 2B, 2BQ, 2AC, like brand new. Original owner — $180. Heath SB-10 — $75. Morris Wideman, WA4MIT, 4107 41st Avenue, Northport AL 35476.

HEATHKIT counter & scaler, professionally built. Good to 175 MHz. A-1 shape — $325. Also Lampkin frequency meter with PPM meter — $185; Motorola test sets, one with peaking generator. Older type. Completed, with leads. $35 and $45. Nick Swan, WB8ERN, Route 2, Ludington MI 49431.

SALE: HW-100, mint cond. — $195. HW-18-3 160 xceiver — $85; HW-12 — $55. Will ship. M. Heiman, Box 744, Showlow AZ 85901. (602) 537-2450.

SELL, Dumont 304A oscilloscopes — $60, used, excellent condition. Pick up only. WA1RPB, 40 Deerfoot Drive, E. Longmeadow MA 01028. (413) 525-4797.

NATIONAL NCX-5 transceiver with NCXA spkr. power — $285; Heath Apache 10 thru 80 transmitter. — $95. Both excellent condition. Also, 800 watt CW transmitter — $50. Maurice Lindquist, W1ORG, 35 Wayne Drive, Plainville CT 06062.

WANTED: Issues of "Oscillator", original CQ, 73, Modern Radio magazines, published early 1930's; 5th edition ARRL, 13th edition RADIO handbooks; RADIO before August 1933; 1945 CQ. Nagle, 12330 Lawyers Herndon VA 22070.

QUAD kits — $14.50 to $25. Boomless spider mount — $12. Send sase for information. WAC, 404 Sanders Rd., SW, Huntsville AL 35802.

MOBILE power supplies: Heath HP-13 — $40; Heath HP-14 kilowatt mobile supply — $50. Robert Irish, 222 Walnut Ave., S.W. Roanoke VA 24016.

SELL: Hustler 75-20 mobile antenna, Heath phone patch (PT-101B- accessories- mobile bracket - speaker) trade for DD-1, FV-101B, YO-100, magnum six wired for FT-101B. 2420 Dutton, Waco TX 76706.

ROHN 25G and 45G tower sections wanted, will take down, pick up, W1 & W2 areas preferred. M.S. Pride (203) 621-6392.

CLEANING out shack — Eico 730 modulator — $50; oscilloscope — $85; RCA 20-240 MHz. signal generator — $100; 807s — $3.75; lots more stuff. SASE for list. WA2TNZ, Howard Mark, 55 Parade Place Bklyn NY 11226.

SELL: 80 thru 20 Hallicrafters RCVR SX146 — $175; XMTR SX46 — $185; together — $325 in original cartons. Clegg 22er — $100. Marty- K2BPY. (516) 541-7931 after 5PM.

WANTED for cash. Collins 75A4 receiver. Prefer unit in mint condition. Serial number 5700 or over, with cw filter. All replies answered. Many thanks. Paul Beavin, WB9PEL, 3540 Deerfield Place, Columbus IN 47201. (812) 379-9628.

NOVICE station: DX-60B transmitter with 17 crystals for 40 and 15 — $75; HQ-110C receiver with matching speaker — $130; all manuals; Dow key relay, Dipole with coax, and key — $30. Package — $220. WN2WYL, 47 Patchogue Drive, Rocky Point NY 11778. (516) 744-5583.

WANTED: National NC-121 General coverage receiver with manual. State price and condition. W4KOP, 6100 Sylvan Ave., Norfolk VA 23508.

SWAN 600R receiver and 600 SP deluxe speaker-phone patch, mint condition — $300, plus shipping. Ron Distler, 8219 Belair Rd., Baltimore MD 21236.

WANTED: Tri-Ex tower Model HZR471N (71' rotating tower) Galvanized and complete with rotating rings, W1WL, Arthur C. Egan, 56 Stilson Ave., Northampton MA 01060. (413) 586-4244.

WANTED: AN/GRC-9 (BC-1306) Mark, WA1TZK. (203) 528-2280.

SELL: Drake R4A-MS4 spkr. Perf. cond. — $285 or trade for MN200 and cash. K9TVF, Greg, Box 2142, Northlake IL 60614, or call (312) 620-6371.

FOR SALE: Drake T-4XB transmitter, R-4C receiver, AC-4 power supply, MS-4 speaker, W-4 wattmeter, Shure 444 microphone, Whisper fan, home built audio speech processor. All mint condition, — $800. Phone (212) 331-8777

FOR SALE: Drake 2-C receiver — $170; 6 meter AM Knight TR-106, w/VFO, T-175 amplifier for 6 and 10 — $100. U ship. E.C. Barkley, WN4IAJ.

SELL: Kenwood T-599 & R-599 with converters, — $275 each or $500 both. Jesse Newton, c/o Ben Byron, MHP, Box 10, McDonald TN 37353.

COLLECTORS — Old QST 1917 thru 1967; Radio T.V. News 1940-1954; Radio Craft 1938-1946; Short Wave 1934-1938; Radio News 1923-1939; Pupular Electricity 1909-1913; Modern Electric 1908-1913; All excellent. Make best offer. All or part. R. Horan. (616) 363-7567, 2742 Wabash Dr., N.E., Grand Rapids MI 49505.

COLLINS S-t line with power supply and console. Like new. Will take best offer. Call Mike, WB5CEU, (918) 932-1969.

SELL: Central 20A xmtr w/VFO, antenna tuner, key, mike, osc. patch, misc, — $110; Realistic DX-150A w/external speaker, headphones, Autex Research 30Hz selectivity filter — $70. Both $170. WN9OAL, 1251 So. Farwell St., Eau Claire WI 54701.

WANTED: Motorola HT220, state condition and lowest price. WA2WOW, 1290 Lafayette Ave., Bronx NY 10474.

Collins: 75S1 with 136A-1 blanker, just completely factory realigned, mint condition — $350. Frank Pietlock, 105 Farmstead Rd., East Hartford CT 06118. Phone (203) 568-8303.

SELL: Plate Xfmr 3600-0-3600 at 1 amp, 110/220 Pri $40 fob. Want SB-200. Paul Bittner, W9AIH, 304 W. 17, Grand Island NE.

R4C, 250 Hz, MS-4 — $450; 75S1, Q-multiplier — $295; HyGain Long-John 204B, new — $295; Heights 26 sq. ft. motorized, 80 ft. tiltover tower — $950; Kenwood R599A/T599A — $750; Magnum Six (Kenwood) — $110; 18HT Hy-Tower — $125 as new. K1VTM (203) 621-6392.

ALLIED A-2515 RVCR A-1 — $75. Unique wire tuner — new — $65 p.pd. W7FOM, 1013 Elm St., Missoula MT 59801.

FIELD DAY Groups: Let's revive 2-meter AM with twoers, communicators, etc. CU FD — 145.350 or thereabouts. Horizontal polarization. K9KQR, K9VIS, K9UZI for K9HWI, Barrington IL ARS.

QUALITY Stainless threaded, washer, hardware! Insulators! Machine, sheet metal, screws! Bolts! Walt, W8BLR, 29716 Briarbank, Southfield Mich. 48076.

QSTs for sale, 1925-1971. Inquire with sase. Foothill High ARC, 10452 Brightwood, Santa Ana CA 92705.

COLLINS KW station consisting of KWS-1, S/N 998, 75A4 receiver S/N 5484 with .5, .8, 1.5, 2.3, 6.0 kHz filters, SC-101, station control console, with 68Y-1 antenna selector unit. Also have Collins 32V3 xmtr, Johnson Ranger II, and brand new BC-348-P revr w/power supply. All of the above equipment in mint condition. Best offer, plus shipping. Dean Pollock, WA3SSU, RD9, Box 702, Greensburg PA 15601. (412) 837-7411 after 5PM.

SALE: Heath HR-10B receiver, DX-60-B transmitter, HG-10-B VFO, manuals, — $175 plus shipping. George Stevens, WB2ZFA, R.F.D. 1, Box 112, Mays Landing NJ 08330.

FOR SALE: Drake R4B, T4XB, AC4, MS4. Perfect condition, little use — $675. Tom Swift, WA2JEH, 4 Locust Lane, Bronxville NY 10708.

2-METER FM antennas 1/4; 5/8 wave "cartop" unique designs. Literature available. Marsh Devices, P.O. Box 154, Old Greenwich CT 06870.

SYNTHESIZER Boards, 2 mtrs. June 1973 QST. Current modifications and instructions, three 3" x 5" G-10 boards — $15.50 postpaid. K1ZJH, Box 119, Hampden MA 01036.

SELL: Signal one CX7-B with cw filter, has all latest modifications — $160; Collins 75S-3, 32S-1 and 516F-2 — $900; Alpha 374 Linear, as new — $1,000. All equipment is absolutely mint and works perfect. Will consider taking in trade Yaesu FT-101B, KWM-2A, Drake C-Line, Kenwood TS-520 Richard Schark, 417 North Ferry, Ottumwa IA 52501. Ph. (515) 682-5741.

SELL: Drake WV4 wattmeter, guaranteed mint, best offer. Measurements ppm for Lampkin, 105B — $25. Larry Kuykendall, WA8FJA, Moorefield WVA, 26836. (304) 538-6033.

SELL: Swan 240 transceiver, matching swan SW-12DC mobile supply, Astatic mobile mike 513H cable and all manuals. Mint condition — $250. Drake Hybrid phone patch — $25. Jules Milton, W2OCG, 3 Henry St., Great Neck NY 11023.

WANTED: Technical material corporation SBE-1 or SBE-2 or parts for same. Also, GPT-750 transmitter or parts for same. For Sale: Stoddard receiver: URM42 - NM60A, 1-10 GHz range, 4 plug-in R.F. tuners, broad- band antennas, impulse generator, power supply, in three carrying cases. Sell or trade, RV-591 — $75; BW 5100B — $75; SSB 313 spectrum analyzer — $275. Measurements model 59 grid dip meter — $95. George H. Rancourt, K1ANX, 78 Williston Ave., Easthampton MA 01027. (Tel) 413-527-4304.

CRYSTALS airmailed: Nets, MARS etc. — Novice, active FT-243, all frequencies, minimum five, 40M, 15M, 10M — 99c each, 80 M $1.75. Cover bands inexpensively — rock solid — less than five 80M — $1.90, other $1.50. Novice, six crystal three band, edge marker and QSO package (good with VFO) — $7.95. Four band package (including 10M) — $9.95. General purpose: FT-243 .01% - 32pF - 3500- 8600 kilocycles — $1.90, (five, $1.75 each), 8600 - 13000 Fundamentals, 1000 - 3000 overtones — $2.95. For .005% add 50c each. 160M Four for $9.80. Airmail 20c/crystal. 1st el 15c. Free listings, 160M 50 2M. Bob Woods, W9LPS. Crystals since 1933. C-W Crystals, Marshfield MO 65706.

2METER FM&AM Gonset Communicator II For Sale. Good working condition. 110V AC, 12V DC, W2HTF, Kay, 25 Maplewick, Willingboro NJ 08046. Tel (609) 877-2838.

JOHNSON KW matchbox with relay, SWR meter — $100. 18ATV/WB — $40. Both with factory manuals. John Taylor, WB9MRX, 925 South Madison, Junction City KA 66441.

TRANSMATCH James Millen No. 92200 2 kW, mint condition w/manual — $135. Stover, 1001 Main, Norwalk IA 50211.

KILOWATT plate modulator from BC 610F like new — $100 + shipping. BC610F tuning units — ham bands plus general coverage. Best offer. Transformers wanted, 7.5 volt 25 amp; also Hammarlund Super Pro, WA3RCA, 111 S. Easton Rd., Glenside PA 19038.

TEMPO FMH 2 meter Handy Talkie, Tiny Tone Pad, five sets crystals, AC/charger, NiCads, case, rubber antenna. Brand new — $300. Kellersman, 1433 Redding Road, Fairfield CT 06430. (203) 259-7033.

HEATHKIT twoer, Squalo, D-104-C microphone/stand — $60. WA2RDH, Robert Zerrenner, 18 Fawn Lane, Westbury NY 11590.

SELL HT37 — $100, unused Kenwood R599 with two and six converters — $275. Both with manuals. Local buyer preferred. W2MIB, (516) 352-7245.

ATLAS 180, recently purchased, mint. — $350 postpaid. K0KWN, Rev. Ron Lundeen, Rt. 2, Decorah IA 52101. (319) 382-9053.

NEW Clegg 27B — $319. Ross Hansen, Preston, ID 83263.

HQ-170 — $109. HT-40 — $35; 99'er — $39; Lil' Lulu (6M) $35; Tecraft 6M — $29; Sixwe w/dc — $29. Converter receivers, etc. K4JCX, 121 Maple, Oak Ridge TN 37830.

MUST Sell: SB-110-A, spkr, ac supply, mike — $350 or B.O. Swan MK VI (2KW-6M), perfect — $375 or B.O. Univers tower, never up, 40' w/hinged base, all acc., used 16' mast TR-44 rotor. Over $800 new, sase for specs, best reas. offe Kevin Higgins, W1GAO/W7KLZ, 48 Water St., Wakefield M 01880. (617) 245-3341.

WANTED: Nems Clarke IFM-10, IFM-30, IFM-30/50, PDT-10 plug ins for 1455/1456 receivers. WA5NQE, 701 Carolyn Ave Austin TX 78705.

LEGAL Limit amplifier Sale. National NCL-2000 — $295. R LK-2000 — $395. Both excellent condition. Contact Deb Hawrysko, WB2JXY, P.O. Box 568, Boro Hall Station, Jamai NY 11424.

VHF Sale: Swan 250C 6 meter SSB transceiver with 210 VF and 117xc supply — $395; Clegg 22er Mk. II 2 meter transceiv — $195; Contact G. Hawrysko, WB2GWU, P.O. Box 568 Bo Hall Station, Jamaica NY 11424.

OSCILLOSCOPE USM-50 very good condition — $85; Aircra Radio Corporation VHF transmitter, T-13A — $8; Collin 618S-1 — $35. W4LNI 3016 Cordelia St., Tampa Fl. 33607.

RTTY Model MRB-TU Terminal Unit. Features: automatic shi selection- delayed autostart- all solid state — no toroids operates on 12 V dc- compact size — guaranteed. Assemble board with motor relay, less loop supply — $60 ppd. Less rel — $57 ppd. G&M Electronics, P.O. Box 22, West Carrollton O 45449.

SELL: FT-101 with fan, less internal speaker (only mod) months on air AC-DC cables & mike — $500 FV-101 with cabl — $75; SP-101 — $45, package $590. Certified check/mone order, WA2JFK, Box 1747 MAFB NJ 08641. Going homebre

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CENTRAL Electronics 10A with BC 458 VFO, 160 to meters, drives 813 linear to 300 watts PEP. All manuals, $ pickup. W2FYU, Chester St., Bridgehampton LI 11932. (51 537-3861.

KENWOOD T-599 and R-599 companion — $400. WB0LE (319) 393-4473 evenings.

SB220, like new, under 50 hrs., — $359. K8IKB, (41 352-8734.

DX'ers DC-100 preamplifier: Mosfet, 20 db gain, 5 db n.f., 10- MHz — $49.95. DC-200 logarithmic speech processor: 8 increase in average power, with level meter — $59.95. cabinets. Dynacomm, 1183 Wall Road, Webster NY 14580.

MUST sell the following equipment: Kenwood R-599A receiv — $349; Heathkit DX-60B — $69 HG-10B — $39; SB-600 — $1 or will sell as a package for $425, You pay shipping. A equipment is in excel. to mint cond. Also have a model 5 instructograph with 10 tapes — $40. WN7YQS, 5147 S. 1900 Roy, UT 84067.

COLLINS 32S-3B, 75S-3C, 30L-1, 516F-2, 312B-4 a accessories. (New) Best offer over $2,200. K8DHU, 5834 Swa Creek, Toledo OH 43614.

HEATH HW-16 with additional cw/xtal filter, VFO, manual exc. cond — $105. WN3YRN, 5 Sharpless Rd., Melrose Park P 19126.

SSTV, CRTs, yokes and focus magnets. SASE to LOTZ-W5HC 750 Florida Blvd., New Orleans LA 70124.

HT-37, excellent condition — $170; SX-140, good novi receiver, — $40 Steve Mates, WA2FIQ. After 7 PM, (91 356-0631.

FOR SALE: National HRO 60 / A, B,C, D coils, Hammarlu HQ 180C like new condition, Hallicraft SX101A fine conditio Eddystone S940 receiver. All replies answered. Ales. Bartgia Phone 219-674-9213. R.R. 3, Box 119, Elkhart IN 46514.

PENN State ARC, K3CR, will hold an open house for PS alumni after the homecoming game on 4 October, 1975. Wri for details.

INSTRUMENTATION recording tape, precision 10/14 in reels, Scotch, Memorex, bottom prices. SASE details, WA6ZT 34022 Blue Lantern, Dana Point CA 92629.

PC's, SASE for list. K9FZS 1826 South H Richmond IN 4737

COLLECTOR is interested in books, autographs and oth information on early radiotelephone pioneers. Ronald Phillip 1925 Baltimore, Kansas City MO 64108. (816) 842-9009.

YAESU FT-101 Owners — Want to boost both receiv sensitivity/selectivity and transmitter talk-power by 5 to 10d Send a dollar for February 1975 issue of monthly Newsletter. Creditable towards dues if you join the Internation Fox-Tango Club. Or send business-size SASE or two IRCs f complete club information. Milt Lowens, WA2AOQ, 3977 Sedgwick Ave., Bronx, NY 10463.

WANTED: E.F. Johnson Roller inductor type 229-203, 28 u W6RGZ, 1330 Curtis, Berkeley CA 94702. (415) 526-7345.

PHOTOSTAMPS Make QSLs Distinctive. 100 unique stamp-si photos — $3.00 Quick! Gummed. Perforated. Made from yo photo, returned unharmed. Kendall Baker, 5342 La Luna, Palma CA 90620.

FOR SALE: Collins 75A2 & speaker, $200. TMCES81 SS adaptor, mint — $150. Louden Boomer amp, new 3-400 & ps $200; Brand new SB220 — $350; Collins 75S3, 32S1, new roun 312B3, 516F2, SM3 — $850; Hewlett Packard 524B & 525. 525B, 526A, 526B, 526C, book — $400; TEK 514D & 500 cart — $200; Mint R390A Collins — $400; Cash or bank che only. All FOB, Michael D. Harrison, 431 Windsor Pl, Oceansi LI NY 11572. (516) 536-5320 Day, Night 764-3873.

SWAN 400 and 420 VFO with 117 AC supply. All band transceiver with 400 watts input on ssb, cw — $295. R4B, $325. R. Myers, 221 Long Swamp Rd., Wolcott CT 06716.

WANTED: SSB gear in working or repairable condition. State price and condition in first letter. Elvin Miller, 505 Roxbury Ct., Ft. Wayne, IN 46807.

ALPHA-77 — $1395. Signal/one CX7A — $1295. All mint, 90 day warranty. Payne Radio (615) 384-2224.

SELL: Yaesu FTDX570, brand new, never used. Mfg's price — $560. My price — $460. Paul Reddy, WA1PIQ, 3 Henry Ter., Worcester MA 01607. (617) 754-2307.

SELL: Hallicrafters SX-122 receiver — $200. Also HW-101 transceiver with AC supply, spkr & Digital readout SB 650. All mint condition — $425. Pick up only. I am 45 mi from Chicago. Karl Luckhart, W9YWX, (815) 485-6368.

SWAN 500 CX w/new matching speaker & power supply — $395. R. Heckert, Box 426, Elwood KS 66074.

HW-12, HP-13, HP-23. Seldom used; all for — $125. New Vibroplex — $15. Prices plus shipping. Thomas, 513 Moore Bldg., University Park PA 16802.

SELL: Heath Apache TX-1 — $100; SB-10 — $60; DX-60B — $80; HG-10B — $40; with manuals. WA1JHW, 860 Central Ave., Pawtucket RI 02861.

HALLICRAFTERS SX122, excellent condition — $225, Coleman 2336 Haymaker Rd., Monroeville PA 15146.

KENWOOD TS-900 and PS-900, four months old. Perfect. Cost $915, sell — $695. Heathkit SB-102 and HP-23B eight months old. Kit cost $455. Professionally wired, perfect — $439. Plate transformer 3500-0-3500 volts, one amp. — $25. Choke — $10. Autotransformer 7.5 KVA either 110 or 220 volt — $15. W0WAM 7928 Hedges, Raytown MO 64138. (816) 358-1148.

Hoss Trader Ed says, "The horse thief has come and stolen our hay; now my stable is empty!" Remember, if you didn't buy it from the Hoss, You Paid too Much! New Atlas 180 transceiver, $439; Demo TR-4C, $479; New display Swan 700CX, $519; Demo T-4XC, $479; New Genave GTX-200, $194.95; New demo Atlas 210 transceiver, $489. New Rohn 50-ft. foldover tower, prepaid, $339.95; Demo Ham-II rotor, $109. Hoss Trader Specials: used equipment. Drake TR-4, $375; R-4C, $439; T-4SC, $459; Mint R-4B, $329. Some Left — New Collins at old prices! Moory Electronics Company, P.O. Box 506, DeWitt Arkansas, 72042. Tel. 501-946-2820.

QSTs for sale, private collection, continuous from 1925, also Radio, Radio Broadcast, handbooks. Prefer West Coast for delivery. F. Tesche, 3728 Mosswood, Lafayette CA 94549. (415) 284-5608.

FOR SALE: 2 meter Regency HR-2B brand new. Used one hour. First $175 takes it. L. Daniels, 22 Ridge, Lansford PA 18232.

DRAKE TR-4, AC-4, mint condition. Rarely used — $450. WA2NDU, 22 Stephen Drive, Englewood Cliffs NJ 07632. (201) 568-4064.

TOWER: Brand new 64' self supporting, extra sections make 80', $300 or swap for SB-220. W6MCN, 372 W. Arrow Hwy., Upland CA 91786. (714) 981-2121.

ELECTRONIC printing calculator, Unicom model 1011P, brand new, still in box. Original cost $195, received as gift. Want to trade for any kind of ham gear. Pat, P.O. Box 314, Shiremanstown PA 17011.

TRANSMATCH plus portable antenna package — $60. Bob Gorman, 64 Summer St., Andover MA 01810.

WANTED: Mint HC303 and spkr. Charles Astor, 34 Sylvester Ave., Hawthorne NJ 07056.

GALAXY 300 transceiver, PSA300 console speaker, SSB-CW. Retubed, realigned. Higain — $139. Cope, 5011 F St., Little Rock AR 72205.

STANDARD SRe 145, 2 meter FM, 5 channel, 2 watt handy-talkie, four channels, equipped NiCads, 1 amp. supply/charger, manual, and case included. $185. W1MBX, 21 Nancy Mae Ave., Prospect CT 06712. (203) 758-5858.

HQ-170 w/clock — $110. QSTs 56-66, CQs 61-64, 73s 64, QSTs misc, 43-55 (21) 100' RG-8, 300' No. 12 copper. Make offer. James King, RFD 1, Battleground IN 47920.

HEATHKIT HX-10 Marauder Xmtr, absolute mint condx. $175. Western Union No. 100 teletype and extra parts — $55. WA9UIM.

FOR SALE: Drake 2B with 2AC — $150. Perfect. W4LCM, Route 2, Box 209J, Crystal River FL 32629.

WANTED: 2 meter fm and RTTY gear. Send description and price to Jim, K4JVG, 3801 Benson Ct., Dumfries VA 22026.

FOR SALE: KWM-2 with noise blender, AC & DC supplies and mobile mount. Serial number 80 — $950. Ed Burr, K3CDT, 5014 White Flint Drive, Kensington MD 20795.

GENERATOR wanted; portable, gasoline powered, 1500-watt or below preferred. $100 price range. Joe Hoener, K0FYL, 1421 North Main, Hutchinson KS 67501.

VFO: Heath HG-10B, one month use, $40. W3FPO, 502 Thomas Street, Stroudsburg PA 18360.

COLLINS 75S-1, 32S-1, 312B-4, 516F-2 — $1,000. SB-200 — $200. Cables, manuals, good condition. Millen solid state Grid dipper, like new — $100. FOB. William Deane, 8831 Sovereign Rd., San Diego CA 92123.

SAVE, Save, Save — Discounts on tubes-transistors-antennas-speakers- Rheostats. Taled Electronics R-2 Pine Tree Hill Road, Newtown CT 06470.

TRANSMITTER, Eldico 100F, SSB, AM, CW, 10 through 80 and 11 meter band, 100 watt, built-in scope, resembles 75A4 — $150. Tektronix model 315D 3 inch portable scope — $150; H.P. 400 C VTVM — $50; Moseley 20M quad, unused — $50; Telerex Monarch triband TM-30 antenna — $150; Hall, T.O. keyer — $40. Want 180 MC. counter, RV-4C, swan 700 CX. Arthur Fenster, 3360 Parkway Drive, Baldwin Harbor NY 11510.

SELL: Heath HR-10B, HP-23B, HD-20, VF-1 VFO, Conar model 400 Xmtr, Globe model 90A Xmtr, Knight Star Roamer, SWL Rcvr. E. Nussbaum, 19617 CR-2, Bristol IN 46507.

ROTOR sale, June and July, CD-44 — $89.95, HAM-II, — $119.95, Triton-II demonstrator $500, Triton 262 power supply — $100. Used Argonaut, can't be told from new — $210. All latest factory mods. Tempo-I DC supply, new — $90. Atlas 180, perfect — $425. Swan 500C with AC117X — $400. Kenwood R599 — $275; TS-900 with PS-900 Demo Unit, perfect, both for — $750. Stocks of new Atlas, Kenwood, Icom, Regency, Cush-Craft, etc. All our equipment checked before shipment. Crystals for Regency — $9 set. Good stock all popular channels. South Texas Most Complete Electronic Supply. Douglas Electronics, Bob Douglas, W5GEL, 1118 South Staples Street, Corpus Christi TX 78404.

VERY in-ter-est-ing! Next 5 big issues $1. "The Ham Trader," Sycamore IL 60178.

TRANSFORMERS rewound, Jess Price, W4CLJ, 507 Raehu, Orlando FL 32806.

TOROIDS — 44 and 88mhy 5 — $3.00 P.P. M. L. Buchanan, P.O. Box 74, Soquel CA 95073.

WANTED: 628I SBE 34 Xtal Calibrator. For Sale, 75S3B, WA1BJY, (203) 568-5925.

MISSIONARIES for Jesus Christ welcome help or donations of any ham equipment, transmitters, receivers, linears, etc. Contact: Gospel Outreach, c/o Steve Leonhard, His Loft, 5815-5th Avenue, Brooklyn NY 11220, Telephone: (212) 492-6599.

WANT: Heath SB610 signal monitor. Call collect 1-314-867-2621 or write A.C. Nelson, 2340 Berwyn St., St Louis MO 63136.

WANTED: Cabinet and knobs for Hammarlund SP600 receiver. Keltner, 1136 6th Ave., Rockford IL 61108.

SELL: Complete station. SB102 — $300; SB200 — $200; SB610 — $60; SB600 — $15; HP23B — $45; HM102 — $20; 18AVT/WB, never used — $60. John Turner, Jr., WB5IRM, Rt. 2, Box 890, Haskell OK 74436.

SALE: Hallicrafter HT-46 Xmtr, with manual — $100; Hallicrafter R-47 speaker — $10; Johnson TR switch — $15; tube tester with manual — $50; Homebrew transmatch — $25; Plus shipping costs. Write for info. WB4GRL, Boyd, 14 Live Oak Road, Hilton Head Isl., SC 29928.

NEW, unused: Heath HW-16 cw xcvr — $120; HG10B VFO — $50; SB650 frequency display — $150; Drake 2NT cw xmtr — $140. W5FR, (713) 488-0517.

51J/R388 — $235; Swan 400, need alignment — $120; SB34 RX dead TX OK — $125; HA410 — $65; TR3 Galaxy monitor/spkr, pwr — $350; 75A4 VOZ MOD — $300; RAO $25; HG10 —$22; Globe Scout — $15; 14-117 Swan — $75; FOB Art Ford, 56 Gildare Dr., East Northport NY 11731.

HT-37, HT-32, power xfmr Hallicrafter P/N o52-400673- $23. You pay postage. W0EFK, 10812 Thomas Ave., Minneapolis MN 55431.

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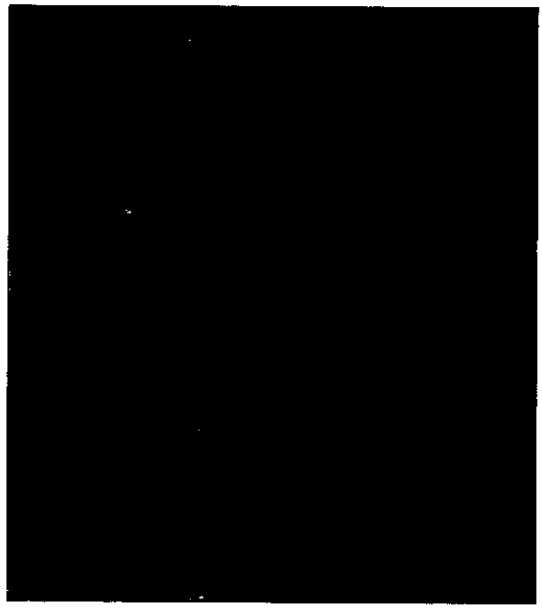

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