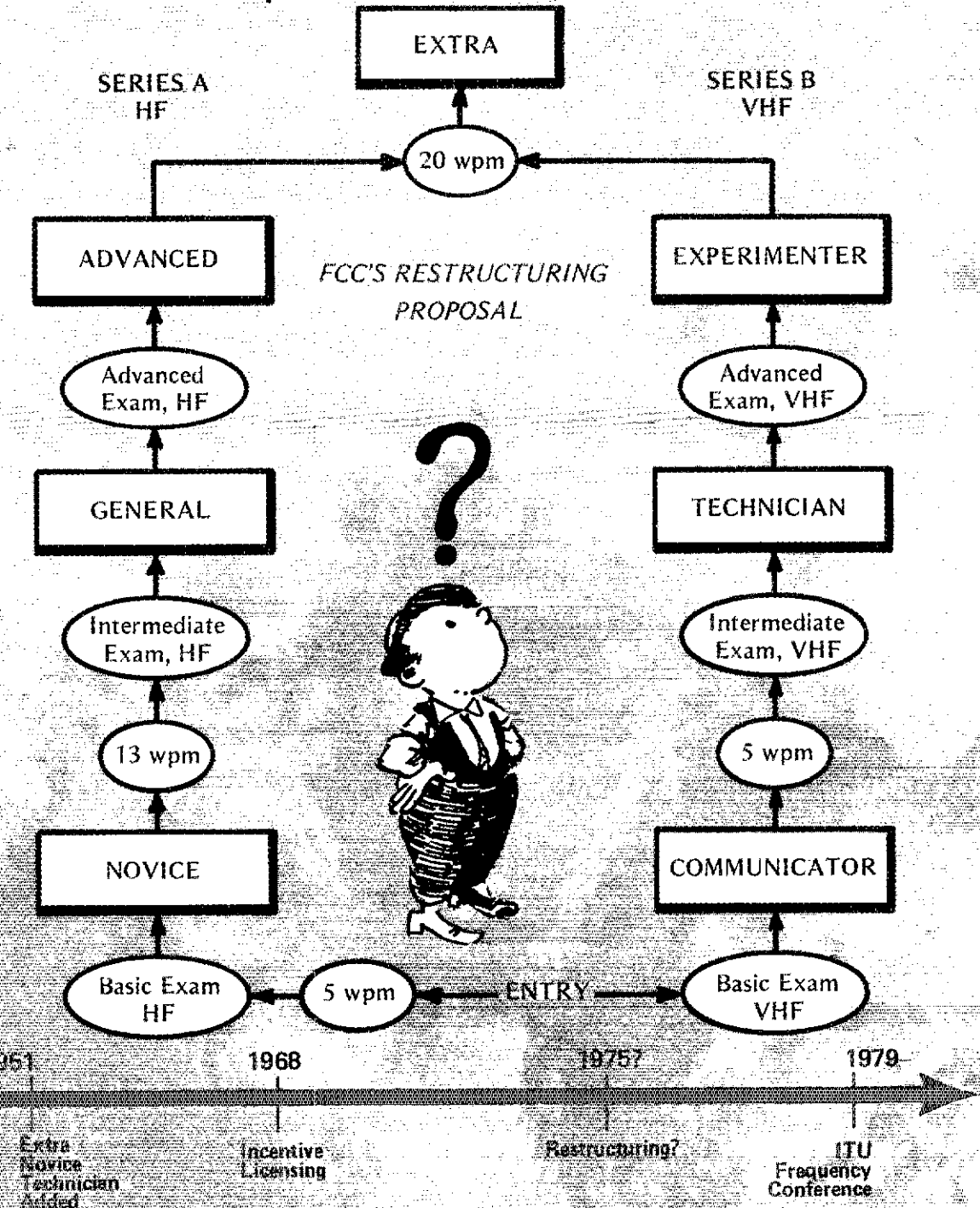


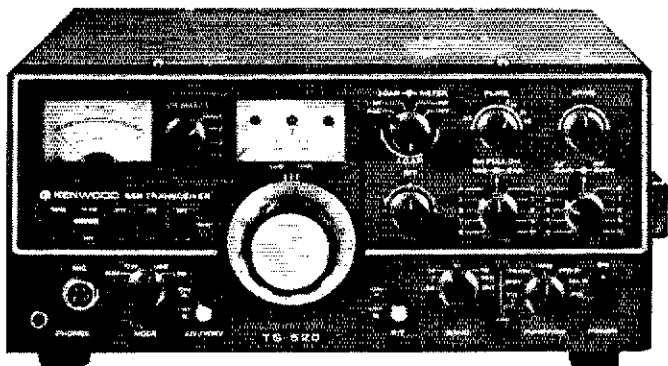
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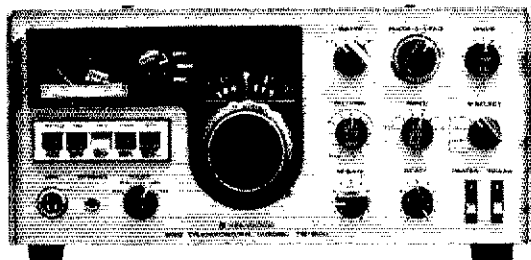
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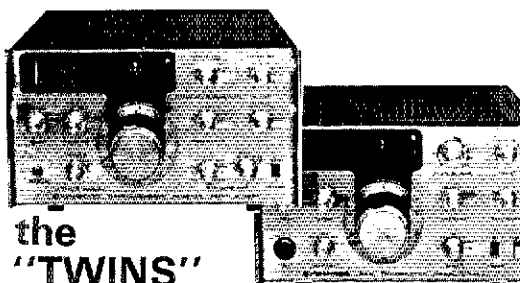
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— CONTENTS —

TECHNICAL —

The Contester *Michael M. Dodd, WA4HQW* 11

A State-of-the-Art QRP Transceiver for 50 MHz
Peter J. Bertini, K1ZJH 16

Precision Tuning *B.H. Brunmeir, W6FHM/DU1* 22

Frequency Counter, Part II *Arlo R. Eggenesperger, W2TJZ* 25

Practical Ideas for the ATV Enthusiast, Part II
Thomas R. O'Hara, W6ORG 30

Transmitting Variables
Doug DeMaw, W1CER and Anthony Dorbuck, W1YNC 37

A Stacked Multiband Vertical for 80-10 Meters
Willi Richartz, HB9ADQ 44

Recent Equipment

The RP Electronics MFA-22 Frequency Synthesizer 48

Gimmicks and Gadgets

Measuring Meter Resistance *Zeb William Rike, III, K5BBN* 52

OPERATING —

September VHF QSO Party Results *Rick Niswander, WA1PID* 60

New Traffic Counting Categories 64

GENERAL —

Contesting *Albert Kahn, K4FW* 53

To EP, or not to EP? *Herbert L. Lacey, Jr., K4FBG* 54

A Tribute and a Challenge *FCC Commissioner Robert E. Lee* 56

College Credit for Ham Licenses *Ralph R. Lee, WB4YUY* 59

Oscar News 63

ARRL QSL Bureau 90

Coming Conventions 73

Correspondence 74

Hamfest Calendar 73

Happenings of the Month 76

Hints & Kinks 46

How's DX? 91

IARU News 80

"It Seems to Us . . ." 9

League Lines 11

New Apparatus 50

Operating Events 101

Operating News 96

Public Service 64

Silent Keys 90

Station Activities 102

World Above 50 Mc 85

YL News & Views 82

WIAW Schedule 97

25 and 50 Years Ago in QST 72

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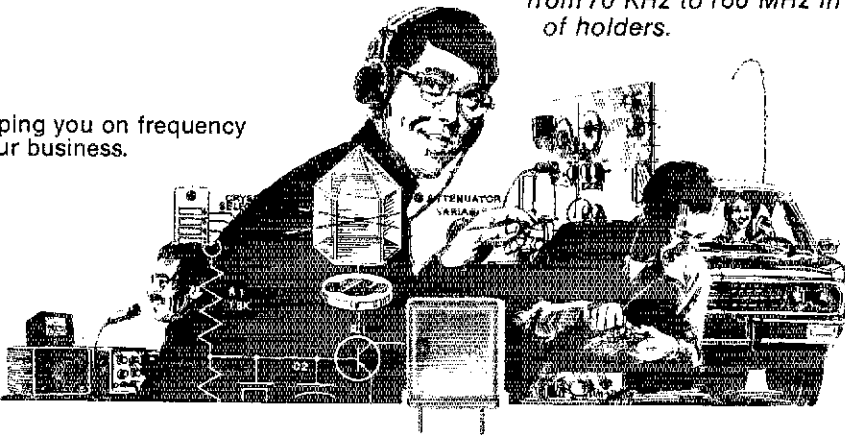
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It is an incorporated association without capital stock, chartered under the laws of Connecticut. Its affairs are governed by a Board of Directors, elected every two years by the general membership. The officers are elected or appointed by the Directors. 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.

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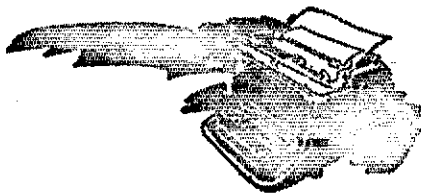
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THE FCC PROPOSAL

BASED ON the skeleton of the FCC public notice and fleshed out with supplementary comment courteously supplied by their staff, a special article was prepared and rushed into January *QST* containing the meat of Docket 20282. This proceeding is the Commission's concept of what revisions ought to be made in our license structure, with particular attention to correlating privileges with examination requirements. The purpose is to strengthen the Amateur Radio Service, using concepts which FCC has selected from a number of petitions on the general subject filed by individuals and groups of amateurs over the past several years.

Hopefully the January item, along with material from other sources, has slowed down some of the misinformation and rumors which seemed rampant on the bands since the first word from WIAW that the document was out. In "Happenings" this month we publish the entire text, which has already been sent to League officials and affiliated clubs. Before you turn to that section to examine details, though, let us make a few points:

1) *Docket 20282 is, at this stage, a proposal only.* The very earliest that any regulations to implement it could be announced is mid-July (after the deadline for reply comments), but there will be such a flood of comment that several months beyond the deadline will almost certainly be required for the Commission to digest the information and opinions furnished them.

2) *The proposal is a product of the FCC's own staff work* in which 35 separate petitions were considered. One of these was the ARRL request of five years ago, RM-1535, for Technicians to have 144-148 MHz, some privileges on 10 meters, and the right concurrently to hold a Novice Class license. The docket goes far beyond that modest petition.

3) *Any opinion* you heard of the docket, prior to January 16, could not possibly be "the League's" but *must be that of an individual* - regardless of any League titles

he might have. Only the Board of Directors has the right and duty collectively to establish a League policy toward this docket, or any similar matter. They will do so only after the opportunity to hear from members, whose representatives they are, or at least take samplings of membership opinion.

4) *There are no foregone conclusions in the docket.* Each of the proposals is subject to modification or even abandonment, depending upon the thoughtful reasoned arguments presented against them by the fraternity. At the same time, the FCC needs to know those items which we amateurs can support. Comments on the order of "Scrap the whole thing," will probably receive minimal attention from the Commission.

5) *Study, discuss, ponder - then notify your director* (see page 8) of your considered views toward all or several of the proposals included in the docket, as you feel capable. Be sure the subject gets full airing at your club, perhaps resulting in a collective expression of the members to the ARRL director and to the Commission.

The proposed changes, if adopted, will substantially alter the makeup and nature of amateur radio. We have the opportunity to offer constructive comment - pro or con, or alternatives - to guide the end result. Let us give deep and rational thought to each aspect, with particular attention to its likely effect on the Amateur Radio Service as much or more than to ourselves as individuals, and then offer our best judgments in response to the Commission's invitation.

QET

ARE YOU LICENSED?

- When joining the League or renewing your membership, it is important that you show whether you have an amateur operator license. Please state your call and/or the class of operator license held, so that we may verify your classification.

League Lines . . .

Hottest topic of the year is "Restructuring," as proposed by FCC in Docket 20282. The editorial on page 9 discusses it; the complete text appears in "Happenings." An often-asked question: "What is the League's view?" We don't know; you haven't told us yet! Seriously, the League's official reaction will be determined by your representatives, the ARRL division directors, and they want to hear from you before firming up the League position.

So far we have found but one error in our hurried assembly of 20282 info for last month's issue: An Advanced Class will not be able to proctor a Communicator exam, as he can act in that capacity only for exams in his hf "channel" -- i.e., General and Novice.

At press time, Ted Cohen, Secretary of the ARRL RFI Task Force, reports that the number of RFI packets already distributed is approaching 1000. An s.a.s.e, 9 x 12 envelope and 40 cents postage to him at 8603 Conover Place, Alexandria, VA 22308, will get you the packet.

Amateurs in Alaska or within 50 nautical miles of that state after January 27, 1975 will be eligible to participate in emergency communications on the frequency 4383.8 KHz, upper sideband, 150 watts p.e.p. maximum, with stations of other services. (Airborne stations are not permitted to participate.) The Alaska Disaster Office will provide the Communications Plan and assume responsibility for net control stations, state and regional, with assistance as necessary from the Alaska State Troopers.

"Happenings" this month reports on new appointments to the Advisory Committees. These committees are an additional avenue for you to get your ideas across, especially as concerns specialized portions of amateur radio -- contests, DX, vhf repeaters, and emergency communications. You may reach a committee through its member who lives nearest to you, or by writing the committee care of headquarters.

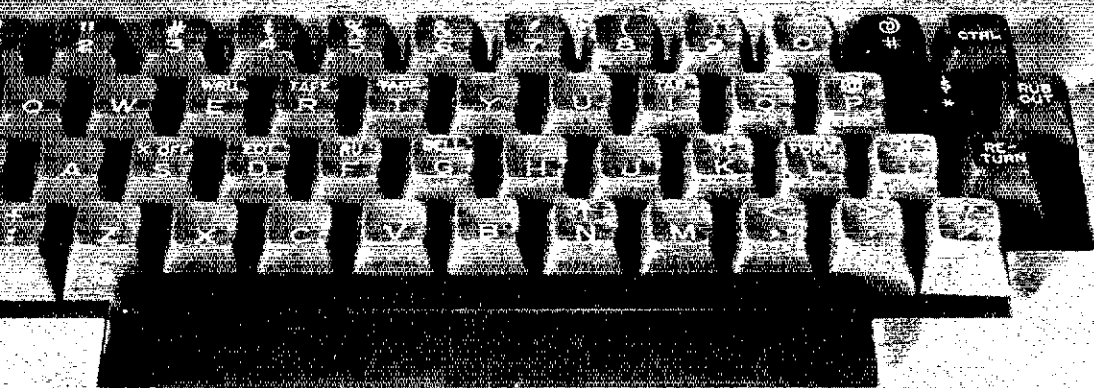
Taking your ham gear abroad? In some 30 countries you can save time at Customs by obtaining a CARNET (pronounced kar-nay) -- a customs document which enables you to carry or send goods temporarily into foreign countries without paying duties or posting bonds. Details from the United States Council of the International Chamber of Commerce, CARNET BUREAU, 1212 Avenue of the Americas, New York, NY 10036.

NASA is seeking qualified teachers to work in the NASA Space Science Education Project (Spacemobile). Background in amateur radio -- particularly Oscar work -- would be an asset. A minimum of a bachelor's degree plus three years teaching experience in science or math at the elementary, secondary or college level is required, and extensive travel is involved. Contact Dr. William Rich, NASA Headquarters, Code FE, Washington, DC 20546.

"SUPER-LATE" FLASH: This page last month stated new FCC rules to implement environmental protection exempted ham towers under 300 feet. But the exemption does not apply in special geographical areas like wildlife preserves, historical (current or proposed) areas, etc., and FCC is going to require all amateur station license applications to contain a statement such as, "This application is not a major application as defined in Section 1.1305 of the Commission's Rules." Amendment of application forms will take time, prompting ARRL to ask a delay in effective date so the news can be disseminated and applications will not be returned as "defective." Meanwhile, assuming you don't live in such an area, and don't have a dish antenna more than 30 feet diameter, tack the quoted statement on any station application you file.

Quote of the Month (Director W9HPG annual report): None of the other publications or groups put their money on the line to help pay (amateur radio's administrative) costs. The League is expected to furnish the finances for preparation for a World Administrative Radio Conference where we have to defend our frequencies. The League is expected to be ready with cash for space communications. . . to push educational activity, to support many projects, to be real technical in its publication, and not too technical. . . you name it. . . and all at a low membership fee!

THE CONTESTER *BY WA4HQW*



BY MICHAEL M. DODD,* WA4HQW

THROUGHOUT the history of contest operating, methods have been sought which would make the operation of contests faster and easier. Hams have devised such devices as code wheels, endless tapes, and solid-state cw generators to help them operate the contest. And, every once in a while, someone writes a humorous article describing a completely automatic station. In an answer to some of these articles, and in an effort to "get it all together," the Contester was developed.

The Contester is a semiautomatic contest station (you still have to be there) which will:

- 1) Send your cw,
- 2) Keep and check your dupe sheets,
- 3) Tell you the time,
- 4) Count your QSOs,
- 5) Fill in your log.

The front-panel layout, shown in Fig. 1, gives an indication of the various sections into which the equipment is divided. On the extreme left side are the controls for the two 32-character cw-message storage registers. A cw message may be programmed from the keyboard into each storage from which it may be transmitted as many times as desired. Below these are the controls for the cw buffer, a 64-character temporary storage.

In the upper section of the panel are the readouts. The alphanumeric display presents what was typed on the keyboard and the two smaller numeric readouts display the time and total QSOs.

On the right of the panel are controls for the memory, the "dupe sheet" section of the Contester. A thumb-wheel switch selects one of eight possible bands.

Operation

In any contest, there are two types of operators: those who call CQ and those who answer CQs. The Contester was originally designed for those operators who normally answer CQs, but it may also be used by the other operators as well. Operation of the Contester is quite simple, once the sequence is learned and practiced.

At the beginning of a contest, several things must be done with the Contester to program it for operation. Two cw messages are programmed into the two storage registers by selecting the program position of one of the toggle switches. The message is typed on the keyboard and is stored in the selected register. In the first register, for example, DE WA4HQW K might be programmed while DE WA4HQW R 589 VA BK might go in the second.

The memory must be erased, the clock set, and the QSO counter reset to zero and the Contester is ready for operation.

During a contest, when you hear a station calling CQ, you type his call on the keyboard, causing it to appear on the alphanumeric display. Next press the SEARCH button on the keyboard, directing the Contester to search the dupe-sheet memory. Within .03 second, you will have an answer to whether or not you have worked the station before. If not, the light under the display will light up green; if you have worked him before, the light will light up red and the audible alarm in the upper right corner will sound.

If you get the green light you can call the station. To do this, simply press the CALL button (under the rotary switch in the cw section). The Contester will transmit the station's call in perfect code, followed by the programmed message that the rotary switch is selecting. If you have DE

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Fig. 1 — The front-panel layout of the Contester. In the center are the readouts and speaker for the cw monitor. On the left are the controls for the cw storage registers, while the cw speed and monitor controls are beneath the speaker. The alarm is in the upper right corner, and additional enter and clear buttons are directly under it.

Answers

Almost everyone who has seen the Contester has asked some very logical questions about it. Here are the answers to some of the more common questions.

The memory will store 512 calls on eight different bands. Each call takes up only one address, no matter how many bands it is worked on. If you work 512 stations on one band, you cannot work any different stations on other bands; you must work the same 512 stations. The memory can be expanded, almost to infinity, in groups of 512 calls. Each call may be from one to six characters long. The memory may also be expanded in width, for longer calls, to almost any width you desire. However, six characters has proved to be an acceptable length.

If the power fails, even for an instant, the contents of the memory are lost. For this reason, the Contester should be equipped with a battery to maintain power should the ac mains fail. Or, as is the case with the prototype, a dc-to-ac inverter powered by an automobile battery can be used to run the Contester. The battery can be charged from the power lines.

There is no provision in the original model for inserting the serial number automatically in the contest exchange. However, this is entirely possible and the only reason it wasn't added was a lack of space for the ICs. For the same reason, there are only two cw-message registers instead of three or four. Also for the same reason, the serial number is not printed on the log; this could be added.

The Contester uses about 200 integrated circuits and the parts for the original cost about \$550, including \$265 for the alphanumeric display.

The Circuit

Fig. 2 shows the block diagram of the Contester. All information is entered into the machine through the keyboard, which generates American Standard Code for Information Interchange (ASCII code). There are several types of surplus keyboards available which fill the requirements, or one may be made quite easily. In addition to the standard letters, numerals, and punctuation keys, the keyboard should have three or four extra keys for control functions. The keyboard feeds the display, the two cw storage registers, the keyboard buffer, and the data selector.

The two cw storage registers are 32-character static shift registers which will store the data as

WA4HQW K in the first storage and have the switch in that position, that message will be sent in cw immediately following the transmission of the call. Either cw message may be sent independently by pressing the button associated with it, instead of the CALL button.

Once the station returns your call, you type the report he sends you on the keyboard. When it is your turn to send a report, simply press the button for the second message (DE WA4HQW R 589 VA BK) and it will be transmitted.

The contact is now completed. The next step is to fill in the log and dupe sheet. Instead of reaching for your pencil, you press the ENTER button and all the work is done for you.

When you press the ENTER button, the call is loaded into the memory, along with the band you are operating. If the memory is working correctly, the ENTER call light will illuminate, giving a positive indication that the call which was on the display is now in the memory.

At the same time this is happening, the logging sequence starts. The log printout can be a standard teleprinter or a high-speed tape punch. The printer, although slower, is nice because you can glance at it occasionally to see how you are doing.

The log entry consists of everything you have typed on the keyboard (call and exchange) plus the correct time and band. At the end of the logging sequence, the printer motor turns off and the Contester clears itself, ready for another contact. Using a 60-wpm printer, the logging sequence takes about seven seconds; a high-speed punch can take less than one second.

The above describes operation for those who answer CQs. The Contester can also be used by those operators who call CQ, but this operation requires the use of an auxiliary cw generator. The two built-in registers could be used for the CQ and the exchange, while the extra generator could be used for the QSL, QRZ message.

long as the power is on. They are programmed from the keyboard and send their data to the cw generator when selected by a front-panel button. As data are read from the register, they are automatically recirculated back into the register for future use.

The keyboard buffer is a pair of Fairchild type 3341 "first-in, first-out" (elastic or FIFO) shift registers. This special-purpose device will accept and transmit data independently, at different data rates. It stores everything entered on the keyboard and transmits it in cw at a later time. Once the data are read from this register, they are not recirculated. This one device allows the Contester to be used as a keyboard cw generator; just type some information, start the cw and continue typing. The buffer will store up to 64 characters at any input rate and transmit them to the cw generator in a steady stream.

In order to display the information entered on the keyboard, a Burroughs "Self-Scan" display is used. This device accepts six-bit ASCII code and has the necessary circuitry to generate and display the characters. New characters appear at the right side of the display and move across toward the left as new ones are added. When a character reaches the left side, it is lost. The display will show a maximum of 16 characters at a time.

The data-selector section controls much of the operation of the Contester. It has four inputs, accepting data from the keyboard, the two cw storage registers, and the keyboard buffer. Normally it selects data from the keyboard and routes

them to the ASCII-to-Baudot converter. From this converter, the data are routed to the memory and the logger.

When a cw button is pressed, the data selector activates the selected cw register (or the keyboard buffer) and the cw generator. In addition, it prevents the memory and logger from accepting data from the ASCII-to-Baudot converter and routes the data to the Baudot-to-Morse converter and thence to the cw generator.

Two code conversions are used in the Contester: one to change the ASCII from the keyboard into Baudot (teleprinter) code for the memory and logger, and a second to change the Baudot into parallel Morse code. Each code converter comprises two type 74188 or 8223 programmable 256-bit read-only memories.

In the case of the ASCII-to-Baudot converter, the six-bit ASCII code is presented to the inputs and the associated Baudot character appears on five of the output lines. The sixth output line is used to indicate whether the character is in upper or lower case. The remaining four output lines are used to help control the cw generator. For instance, one of the four lines indicates that there is no equivalent character in Morse and tells the cw generator to skip over that character. Another tells the cw generator that the end of the message has arrived.

The Baudot-to-Morse converter takes the six-bit Baudot code (five data bits plus one case bit) and changes it to a special 12-bit code used by the cw generator. This is one of two alternatives; instead

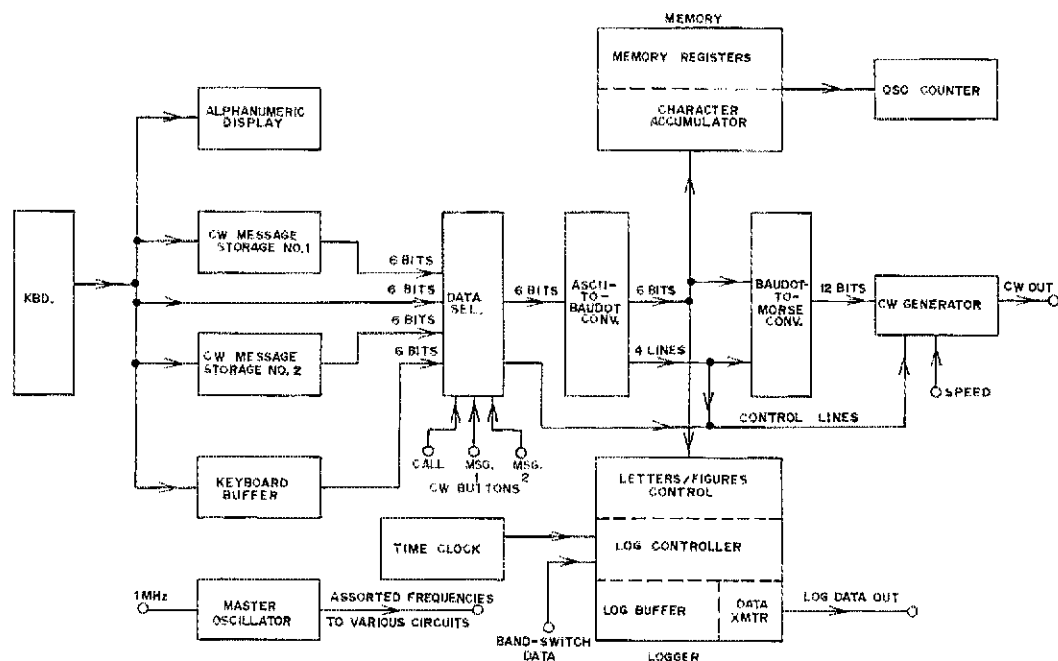
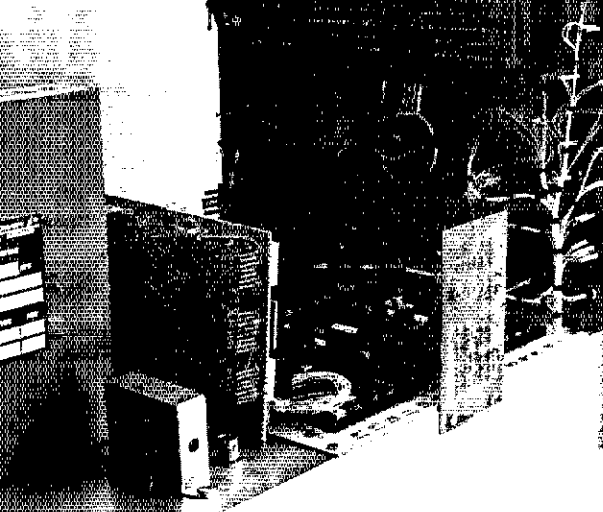


Fig. 2 — Block diagram of the Contester.



The upper section of the chassis. The front panel is at the right, and the power supply section is at the left in the photo. The logic board is mounted on the front half of the chassis, and an additional logic board is mounted vertically between the power supplies and the main logic board. The pc board attached to the side of the chassis is the master oscillator board.

of a 12-bit code, the cw generator could be designed to accept an eight-bit code. In this case, it makes no difference; however, if a solid-state cw generator was desired, with the messages permanently programmed in read-only memories, the eight-bit code would be more efficient.

The cw generator accepts the 12-bit code and transmits it serially, inserting the correct letter and word spaces. The speed of the generator is controlled from the front panel.

When there is no cw being sent, data from the ASCII-to-Baudot converter are routed to the memory and logger. The memory has the task of checking the call entered on the keyboard against all the calls already stored and indicating if the call is already in the memory. The memory accepts only the first six or less characters entered on the keyboard after the Contester has been cleared from the previous contact. Once the call, which must be the first thing entered on the keyboard for each contact, has been entered and the SEARCH button pressed, the memory is inhibited from accepting any additional data until the next contact. If the call is longer than six characters, the memory stores only the first six and locks itself out automatically.

The memory itself comprises thirty-nine 512-bit dynamic MOS recirculating shift registers. Thirty of the registers are used for the call, eight for the band, and the remaining one as a special check register to keep track of the empty addresses in the memory. Each call is a unique pattern of 30 bits and there are 512 slots into which this pattern

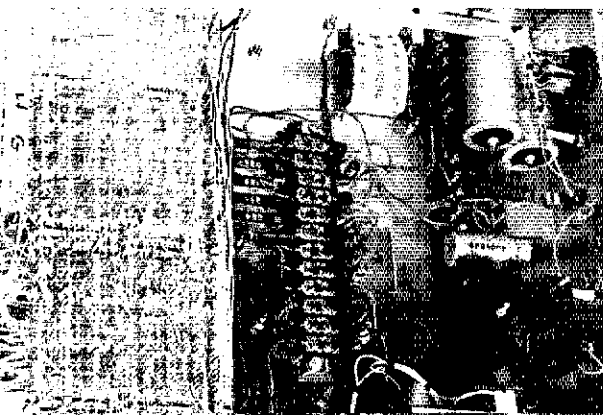
may be entered. The memory is constantly circulating, presenting one pattern after another at its output pins.

When a call is stored and the SEARCH button pressed, the memory looks at the pattern being stored from the keyboard and compares it with all the patterns appearing at the output lines. If a pattern of 30 bits matches completely, the call is already in the memory bank. Immediately, the memory checks one of the eight band registers (which one being determined by the selection of the band switch), looking for a bit in that register, adjacent to the pattern of bits which represents the call. If a bit is found in the selected band register, the call has been worked before and the memory sounds the alarm. Note that the call and band must *both* be present to get the alarm; if the band is not present or the call pattern doesn't match, the station has not been worked before on the selected band and no alarm will sound.

Each time a call is to be entered into the memory, the Contester must decide where to put it. If the call is already in the memory registers, on another band, it would be inefficient to enter it again. On the other hand, if the call is not in the memory registers, it cannot be randomly stuck anywhere without possibly erasing another call. There is circuitry included in the memory to solve these problems.

If the call is in the memory on another band, the memory waits until it comes around again and simply enters a bit in the selected band register adjacent to the call. If the call has never been entered, the 39th register indicates the empty addresses into which it may be entered without erasing a previously entered call.

Each time a contact is completed and the call entered into the memory, the QSO counter advances one count. This is simply a four-digit



This is an under-chassis view of the Contester. To the left is the underside of the logic board, while the power supply section is to the right. At the bottom right is the Minibox which houses the triac motor control for the logging printer. The rear panel, with its input and output jacks, is to the far right in this view.

This is a close-up of the bottom of the logic board, showing details of the Wire-Wrap technique. Wires are wrapped around square posts protruding from the IC sockets and no soldering is required. The three straps visible near the center of the photograph are power distribution bus bars.



counter which totals the contacts made and displays the total on a front-panel display.

The logger is the remaining major block on the diagram. This is a fairly complex section containing two 3341 FIFO buffers, various control circuitry, and a micro-controller to direct its activities.

When there is no cw being sent, data from the ASCII-to-Baudot converter are routed to the logger input. Thus all information entered on the keyboard goes into the logger. Since the output of the ASCII-to-Baudot converter is a six-bit Baudot code (the sixth bit indicating the case of the character), the data must first pass through a LETTERS/FIGURES control.

The LETTERS/FIGURES control looks at the sixth bit and decides when a LETTERS or FIGURES command should precede the character on the data lines. If one is necessary, the Baudot code is generated and inserted in front of the character before it proceeds to the storage buffer.

As in the keyboard buffer, the logging buffer is another 64-character first-in, first-out buffer register. All data from the keyboard pass through the LETTERS/FIGURES control into this buffer where they are stored for future transmission to the logging device.

A typical log entry consists of the call and the exchange, all entered on the keyboard. At the completion of the contact, when the ENTER button is pressed, the logging sequence is initiated. From the buffer the data are sent, in parallel, to a serial-data standard teleprinter at 60 or 100 wpm.

At the same time the logging sequence starts, an additional 16 characters are loaded onto the tail end of the log entry already in the buffer. These 16 characters are directed by a tiny controller which either generates Baudot code for certain machine functions like space, letters, or figures or looks at

the time and band-switch data and generates the Baudot code for those digits.

Thus a typical log entry would read W4XYZ 579 NFLA 4 1837Z. The first part was typed on the keyboard and the second, comprising the band number and the time, was added by the controller. Actually, the controller also adds correct spaces, letters, figures, the Z at the end of the time, and a carriage return and line feed at the end of the log entry.

The output of the logger may be serial data to a printer or parallel data to a high-speed tape punch, sometimes available on the surplus market. Additionally, the logger includes a triac motor control to turn the printer motor on and off at the appropriate times.

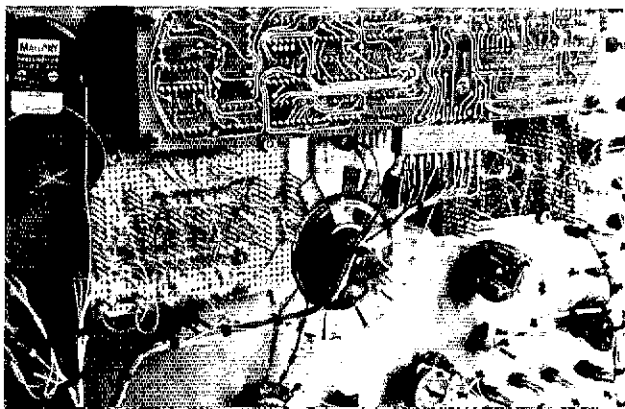
The time clock is a fairly standard 24-hour digital clock, deriving its time base from a 1-MHz crystal in the master oscillator. The band switch is a thumb-wheel type which produces BCD information. Data from both the clock and the band switch are fed into the logger; the clock also displays the time on the front panel.

Construction

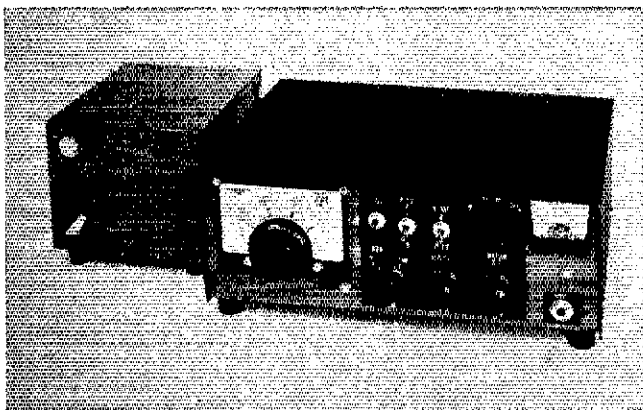
The photographs reveal some of the details of the construction of the prototype. The title photo illustrates the keyboard for the Contester. This keyboard was converted from a surplus model, and new keytops were fitted. It produces ASCII code for the characters on the lower half of each key. There are also control-function keys on the keyboard, just out of the picture, to the right. These

(Continued on page 84)

The rear view of the front panel. At the top is the printed circuit board for the Burrough's Self-Scan display. Beneath it are two small circuit boards for the two numeric displays. Various controls are mounted around these displays.



A STATE-OF-THE-ART



QRP TRANSCEIVER FOR 50 MHz

Three watts PEP will do it on 6!

BY PETER J. BERTINI,* K1ZJH

The "World Above 50 Mc" has lured an increasing number of amateurs, over more than four decades. One of its major attractions has been the effectiveness of low-power gear, especially the portable variety. But with the advent of single-sideband, some of the fascination with vhf operating has tended to fade, especially on the 50-MHz scene, where 200-watt transceivers and the inevitable 2-kW linears tend to make this band seem little different from lower amateur frequencies. After all, how many stations can operate on 50.110, all at once, and not have a rat-race reminiscent of DX pileups on 20? Fortunately there is a difference — there is plenty of room for everyone in the 50-MHz band, and if we just move up a little in frequency, low power works extremely well. Here's an attractive way to get into the QRP game on 6.

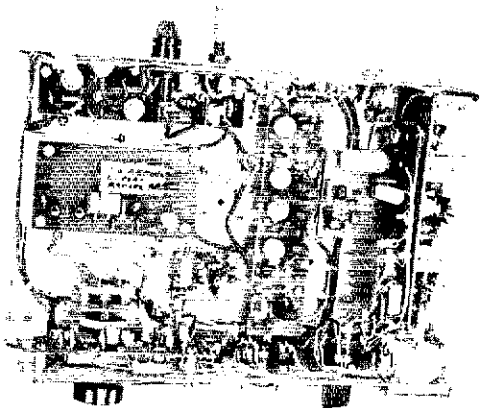
AFTER GOING the high-power route for several years, this author decided that QRO was not his cup of tea, and 6-meter activity fell into a state of desuetude until fairly recently. After reading numerous articles by WICER and other exponents of the QRP cult, we could see no reason why this philosophy should be applied to the hf bands only, especially when the wide-open spaces in the vhf realm are considered. The 50-MHz band should be ideal for QRP work, on cw or ssb. It offers more opportunities for DX, and a greater variety of propagation media than higher bands, and there is more general use of ssb, a mode well-adapted to QRP techniques, now that solid-state gear is "the way to go."

* 20 Patsun Road, Somers, CT 06071.

We set to work, and the result is a small package ideally suited to Field-Day type excursions and local mobiling. It is also a very practical primary or back-up rig for the 50-MHz home station. Its robust 3-watt PEP signal is hardly distinguishable from that of stations running 100 watts or more, when a good antenna system is used — and "neighbor trouble," the bane of so many urban 6-meter operators, is virtually nonexistent.

As can be seen from the first photograph, the transceiver is self-contained except for the power supply. This could have been built-in, but a separate power source is advantageous. It allows use of an ac supply at home, direct connection of a car battery for mobile work, or operation from any of several types of portable batteries, including the

Top view of the 50-MHz transceiver. Circuit-board assemblies identifiable in this picture are listed by numbers given in Fig. 1. (1) Receiver mixers, upper left corner. (4) Audio amplifier, square assembly, upper right. (6) Calibration oscillator, left center. (8) 36-MHz oscillator, small board, lower center. (10) Transmitting mixers, long narrow assembly, right center. (11) Transmitter amplifiers, far right. The agc and meter amplifier assembly (5) is vertically mounted on the back of the panel, lower left corner, so it is not clearly distinguishable as such. The VFO (7) is in an aluminum enclosure directly under the calibration oscillator, except for its tuning and band-setting capacitors, which are visible at the lower left.



15-volt rechargeable units often used with solid-state TV sets.

Eleven separate printed-circuit subassemblies are used, each a basic component of the transceiver circuitry. This allowed individual experimentation and trouble-shooting, and it leaves the way open

for changes or additions without complete rebuilding. Board templates and layouts are *not* available. Construction of such a rig is beyond the capabilities of the novice builder. Experienced constructors interested in duplication, or use of some of the items described, should have little trouble working from the individual schematic diagrams and text.

As will be seen from the block diagram, Fig. 1, the principles involved are not unlike those of crystal-filter ssb transceivers for lower frequencies, but applying these principles is simplified in a one-band design. That "good things come in small packages" is amply proven by the simplification resulting from use of integrated-circuit packages wherever possible. They make a marked reduction in number of parts required, in several key areas. A small crystal filter is the heart of the system, mainly responsible for the excellent performance, both transmitting and receiving. The dual conversion lineup will be discussed in step-by-step order, to avoid confusion, following the numerical order indicated in Fig. 1.

Receiver Front End

Eliminating the rf amplifier stage in a "good" vhf receiver is usually considered a bit unorthodox, and is frequently stereotyped with poor performance and cost cutting. This holdover from vacuum-tube limitations is now something of an "old wives' tale," as the noise figure of a well-designed transistor mixer for 50 MHz can be lower than the external noise encountered in most amateur operation. Especially where simplicity is a factor, eliminating the rf amplifier offers a desirable trade-off between sensitivity and good strong-signal overload capability. It is interesting to note that some of the finest commercial mobile receivers for vhf service do not use rf amplification ahead of the mixer stage. Especially for use with a very low-powered transmitter, the ultimate in low

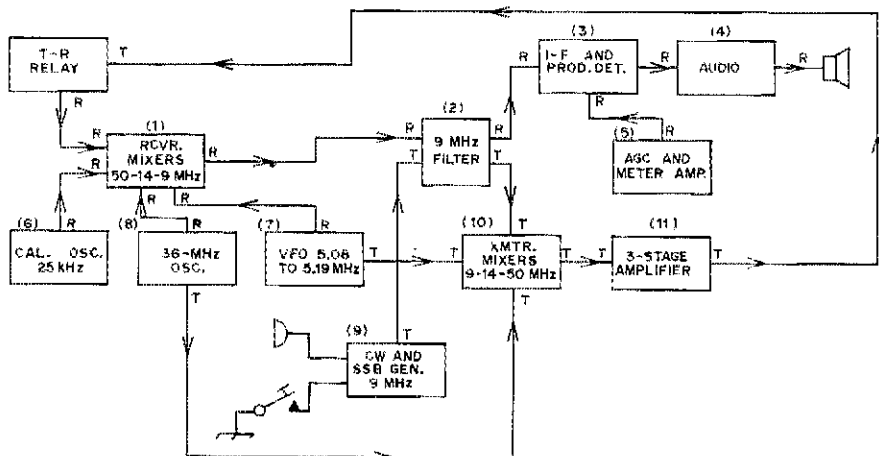
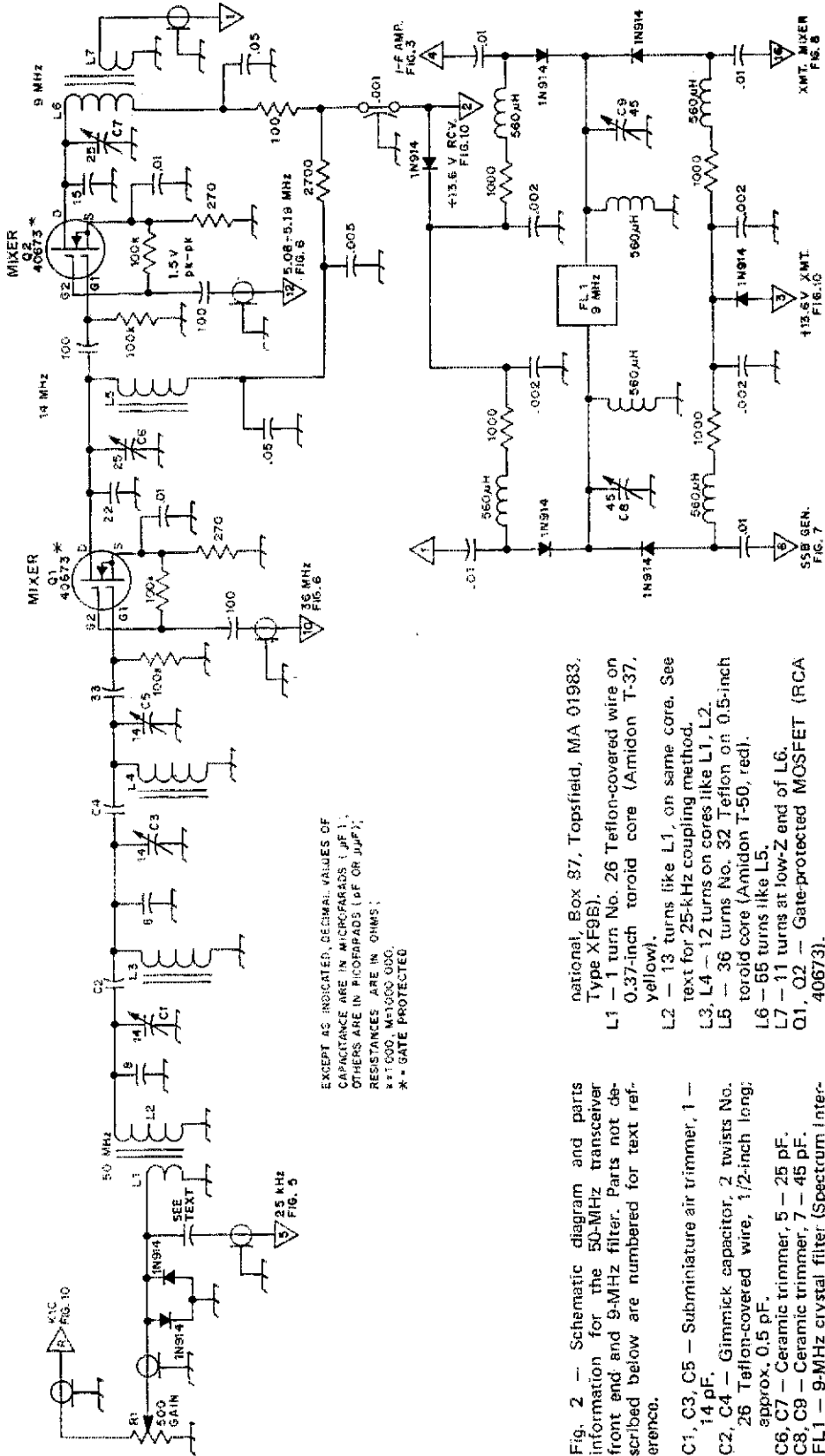


Fig. 1 — Block diagram of the K1ZJH 50-MHz transceiver. Each item shown is a separate circuit-board assembly. Numbers in parentheses are the order of their description in the text. Transmitting and receiving functions are given adjacent to the signal-path lines. Items 1 through 6 are described in Part I.



noise figure is certainly not important in a 50-MHz receiver.

Some types of rf gain-control systems introduce nonlinearities in the receiver front end, increasing susceptibility to overloading and cross-talk. This problem is avoided with the use of a miniature 500-ohm control, R1, across the receiver input, which serves as a simple yet effective rf gain control. Though the mixer transistors, Q1 and Q2, are dual-gate MOSFETs with built-in transient-suppression diodes, additional protection is provided with 1N914 diodes, connected in opposite polarity across the receiver input.

The incoming 50-MHz signal passes through three lightly coupled toroidal LC circuits in a

simple band-pass network, for reasonable rejection of out-of-band signals. The first of two mixers converts the 50-MHz signal to 14 MHz. Injection at 36 MHz is generated by an overtone crystal oscillator, also used in the transmitting section for up-conversion, 14 to 50 MHz. The 14-MHz i-f passes through a simple LC network to preserve bandwidth. The signal is then mixed with the 5-MHz VFO output in a second 40673 stage, producing the second i-f, 9 MHz. The injection level at gate 2 of both mixers is 1.5 V pk-pk, considered to be optimum for conversion efficiency and mixer linearity. Output from the second mixer is link-coupled, through L6-L7, to match the impedance of the crystal filter.

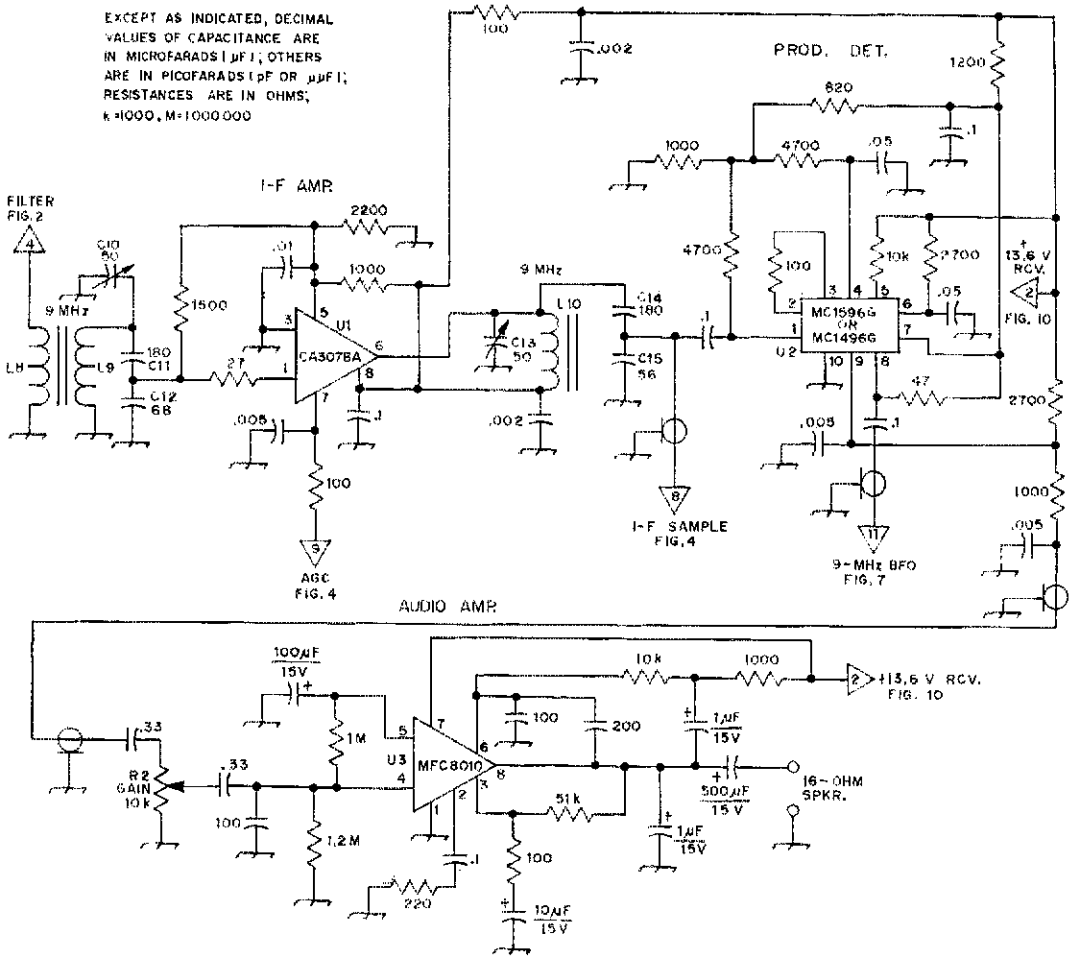
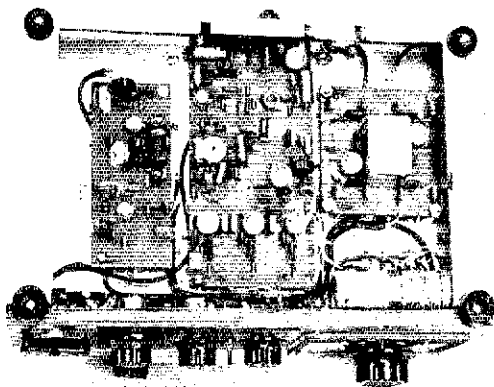


Fig. 3 — Schematic diagram of the 9-MHz i-f amplifier and product detector, and audio-amplifier modules. Parts not described are numbered for text reference. C10, C13 — Ceramic trimmer, 9-50 pF. L8, L9 — 17 and 24 turns, resp., No. 26 Teflon on 0.5-inch toroid core (Amidon T-50-2). L10 — 24 turns, like L1. R2 — 10,000-ohm miniature control.



Bottom view of the transceiver, showing the i-f amplifier and product detector (3), left side; the sideband generator (9) assembly at the center; and the 9-MHz filter (2) at the right.

The 9-MHz Filter

The KVG Model XF9B (See Parts list, Fig. 2) filter was chosen for a variety of reasons. It directly controls the receiver selectivity, and barring nonlinearities in the transmitter power stages, the ultimate bandwidth and carrier suppression of the emitted signal. Obviously this is not an area in which to cut corners with a second-rate filter. Salient features of the 8-pole lattice filter include a bandwidth of 2.4 kHz at 6 dB down, a shape factor of 1.8 at the 60-dB point, and 100 dB of stop-band attenuation, with less than 2 dB of ripple when properly terminated.

The filter does double duty in the transmitter and receiver, so diode switching was used to simplify the circuitry. Care must be exercised to avoid unwanted stray coupling between the two filter ports, as it could degrade filter characteristics. The two 45-pF trimmers, C8 and C9 in Fig. 2, were intended to provide ripple band-pass tuning, for precise adjustment of the filter response. In practice they may be omitted, as it is doubtful that any noticeable improvement is made by their use.

Receiver I-F and Product Detector

In the RECEIVE mode the output of the KVG filter is diode-switched to the input transformer, L8-L9 in Fig. 3. This has a capacitive voltage divider, C11-C12, across its secondary, for optimum impedance match between the filter and the i-f amplifier, a CA3028A differential-amplifier IC, U1. As with other tuned stages, the 9-MHz i-f circuits are toroidal, to lessen undesired interstage coupling and attendant instability. The i-f gain is approximately 25 to 30 dB. The i-f output is sampled through an 8-pF capacitor, to provide energy for the agc amplifier, Fig. 4. The control voltage is fed back to pin 7 of the i-f amplifier IC, to produce about 25 dB of agc dynamic range. The agc voltage varies from less than 2, at minimum gain, to 12, during periods of no agc action and maximum i-f gain. Another capacitive voltage divider, C14 and C15, provides impedance transformation between the i-f output and the product-detector input.

Of all circuits considered for the product detector, the MC1496 IC, U2, proved to be the best candidate. With 12 dB of conversion gain, the 1496 compensates for the relatively low gain of the receiver front end. It has an effective dynamic range of 90 dB, and can handle a wide variation of signal levels, despite limited agc action. BFO injection at 9MHz is generated by a 2N3904 crystal oscillator, Q9 in Part II, in the ssb generator assembly. An injection level of 300 mV pk-pk is needed. Extreme care must be used in laying out and wiring the transceiver, to be sure that stray BFO energy does not reach the rf of i-f stages. Leakage at 9 MHz can kill the i-f gain through the agc, and if the BFO energy reaches the mixers it is possible for the fourth harmonic to beat with the 36-MHz oscillator.

Audio Amplifier

A single MFC8010 (or HEP C6004) is the entire receiver audio system (lower portion of Fig. 3). It is an economical plastic-case unit designed for consumer electronics use, capable of one watt continuous rms output to a 16-ohm load, with as little as 10 mV input. This much sensitivity is not needed, because of the high output level of the product detector, and it caused some instability as a result of stray coupling on our audio board. The final circuit details shown are for an input sensitivity of 400 mV. The amplifier is capable of driving loads of less than 16 ohms, but with a supply voltage of 15 the device ratings may be exceeded, and operation at high audio levels is best avoided. The stabilization network recommended in the manufacturer's application notes was ineffective in curbing instability occurring with certain loads. Instead, it was found that a 1- μ F capacitor from pin 8 to ground would eliminate regenerative tendencies in the amplifier.

A feedback path between the product detector and the audio stages, through the supply wiring, was found when certain high-impedance voltage sources (such as carbon-zinc batteries) were used. This was cured with a 2000- μ F electrolytic capacitor from the supply line to ground. The capacitor, shown in the control-circuit diagram, Fig. 10, Part II, also helps to reduce ripple from an ac supply, or from a car alternator.

AGC

The agc system is a variation of one designed by WICER, for use with the CA3028.¹ Original plans

¹ *The Radio Amateur's Handbook*, 1973 and 1974 Editions, "A Receiving Package for 30 to 144 MHz," Chapter 8.

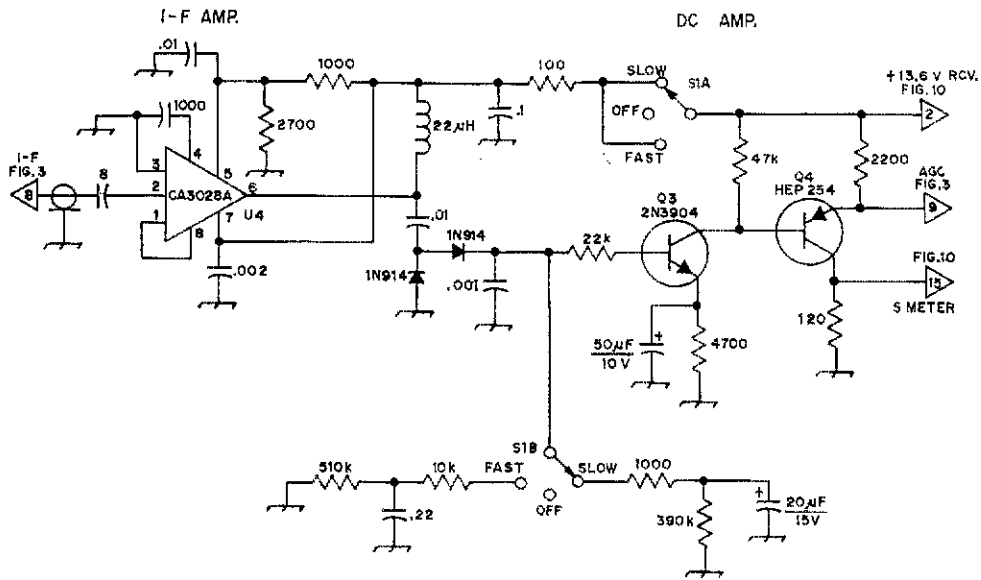


Fig. 4 — Schematic diagram of the agc and S-meter amplifier. Parts not described are numbered for text reference.

S1 — 2-pole 3-position toggle switch, center off.

U4 — I-f amplifier IC (RCA CA3028A).

were for an agc system using the MFC6040 electronic attenuator. This scheme did not work as well as desired, so the i-f agc arrangement was pressed into service. The CA3028A i-f amplifier, U1, is the only stage controlled, so the agc range is somewhat limited. Performance is not spectacular, but the agc is capable of handling the strong local signals encountered in 50-MHz operation. Part of the 9-MHz i-f output is fed to a CA3028A cascode agc amplifier, U4 in Fig. 4, producing about 40 dB of gain. Output of this amplifier is detected in a simple voltage doubler, with RC time constants selectable at this point for fast or slow agc action, via S1. The dc level from the voltage doubler is stepped up in a two-stage dc amplifier, Q3 and Q4, which supplies both S-meter current and agc voltage to the i-f stage.

25-kHz Calibrator

The calibration oscillator assembly indicated in

the block diagram is a recommended built-in accessory for the transceiver. A 100-kHz crystal, Y1 in Fig. 5, is used in a JFET oscillator. Calibration intervals of 100 kHz are of little use in the small tuning range of this transceiver, so two J-K flip-flops, U5 and U6, were added, to divide the 100-kHz reference down to 25 kHz. The rich harmonic content of the flip-flops extends well into the 50-MHz range. The calibrator output is brought into the receiver through miniature 50-ohm coax (RG-174/U). Stray coupling between an exposed section of the inner conductor, one inch long, and the input transformer of the receiver, gives adequate calibrator signal in the receiver. Coupling is not critical, and the exposed lead can merely lie adjacent to the input circuit.

Part II, covering transmitting and frequency-control circuits, will appear in a subsequent issue.

□ST□

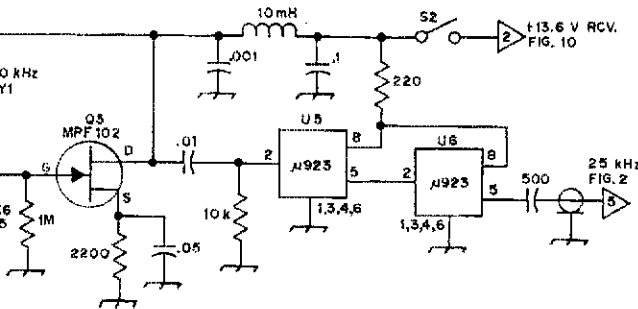


Fig. 5 — Schematic diagram of the 25-kHz crystal calibrator.

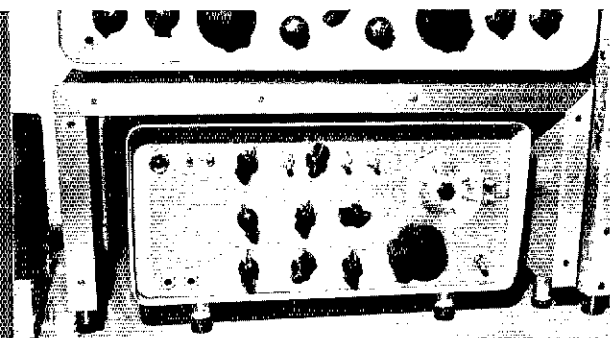
C16 — Ceramic trimmer, 7- through 45-pF.

S2 — Spst momentary-on, push-button.

U5, U6 — J-K flip-flop (Fairchild µL923).

Y1 — 100-kHz crystal, for 32-pF load (International Crystal Mfg. Co).

PRECISION TUNING --



WW II VINTAGE

The homemade dial lends professional appearance to receiver panel.

BY B. H. BRUNMEIR,* W6FHM/DUI

MANY anguished lamentations have been heard of late regarding the increasing dearth of amateur-equipment components on the electronics market. The current parts famine is particularly acute in the field of variable capacitors, for both transmitting and receiving applications. This article is dedicated to the searching soul who has a yen to construct, but has found the quest for tuning capacitors a formidable deterrent to his inspiration.

It is a fact that not a few old World War II ARC-5 Command transmitters are still in circulation, either in shambles or intact. Either way, it is often possible to obtain one for nothing at all, or at flea markets for less than the cost of a new tuning capacitor. The Command transmitter has not one, but two beautiful, precision tuning capacitors, either one of which is worth far more than the cost of the whole rig. Being a confirmed scrounger from way back, I decided to make use of these capacitors both for the transmitter VFO, and the receiver LMO of my station.

If one is committed to subminiaturization, the ideas submitted here will probably fail to inspire, as such miniaturization was hardly a craze in WWII days. These tuning capacitors are a trifle bulky by contemporary standards. However, if low cost and good performance are the criteria, then read on!

A Transmitter Heterodyne VFO

Fig. 1 is the schematic diagram of the transmitter heterodyne VFO. In this application, a range of 600 kHz is covered on the transmitter dial, from 3600 to 4200 kHz. The tuning capacitor itself is mounted with its axis vertical, so the tuning knob drive shaft comes through the panel at the lower left side of the dial. The inductive and

capacitive elements were all mounted in a cast-aluminum compartment scrounged from surplus. The coaxial signal cable connects to the oscillator tube about ten inches away. In this case, the dial is calibrated directly, showing the frequency on the air, rather than the VFO sector covered. One turn of the hand crank spans approximately 13 kHz change in output frequency.

Receiver LMO

Fig. 2 is the circuit of the receiver linear master oscillator. More bandwidth was desired in the receiver, so heterodyning frequencies were selected to give a tuning sector of only 350 kHz for the whole dial, end to end. The LMO tunes from 3654 to 4004 kHz. As in the case of the transmitter, the capacitor is mounted with its axis vertical. All tuning elements are mounted likewise in a surplus aluminum box, with connecting coax running under the chassis to the oscillator tube. One turn of the hand crank spans about 9 kHz; a very comfortable rate for splitting hertz in cw operation. The receiver dial is calibrated in decimal readout, to be added to the crystal tuning range selected.

The 145-pF (as measured here) ARC-5 capacitor was a little too large to tune this narrower segment of the spectrum with reasonable tank-circuit Q . Its total capacitance was decreased easily by putting a 560-pF silver-mica capacitor in series. There is something terribly final about experimental plate-pulling to decrease capacitance, and it is not a recommended procedure for one experimenting with a precision capacitor. Simply inserting a fixed-value series capacitor very nicely decreases the capacitance.

Various combinations of temperature-compensating elements were tried. The two 330-pF

* Far East Broadcasting Co., Box 2041, Manila, Philippines.

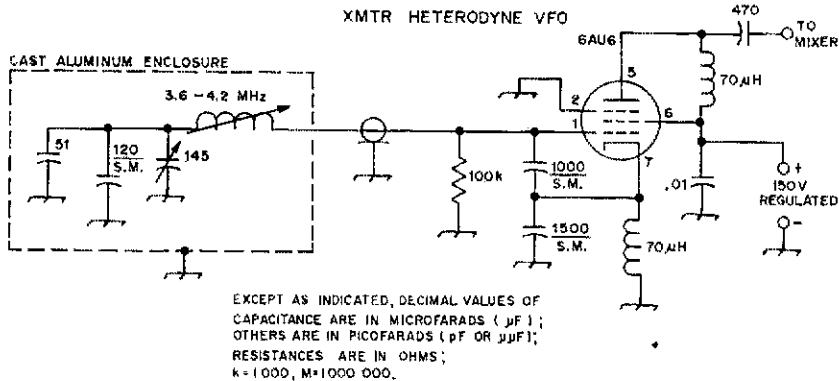


Fig. 1 — Transmitter heterodyne VFO, tunes 3.6 — 4.2 MHz.

L1 — 25-1/2 close-spaced turns, No. 26 enamel wire wound on 3/4-dia form.

N750s in series provided the best compromise my junk box could provide. The 100-pF "dial set" capacitor was used to bring the dial back into calibration with different combinations of temperature compensation tried. With the value of N750 compensation shown, this capacitor was about 60 percent meshed. The tuning shaft is accessible only from the underside of the chassis, and is locked in place by means of a shaft-locking nut once the best combination is found. Temperature compensation was more difficult in the receiver than the transmitter, because the receiver tuning enclosure was built of 1/16-inch aluminum sheet stock, rather than the heavy casting used in the transmitter.

The Homemade Dial

Making and calibrating a respectable-looking dial is not nearly the ordeal many might suppose. A maximum dial diameter of about 4 inches is possible on the Command set dial-drive mechanism. The full diameter was used for the transmitter, but only a 3-inch dial for the receiver with its simpler calibration. The mechanics of making and calibrating the dial plate are really quite painless.

A circle of the desired diameter is marked on aluminum sheet stock, and cut out carefully with tin shears. The center is bored out to put it onto a spinning jig. This jig is then put into the chuck of a high-speed drill motor; see photos. The dial disk is buffed with steel wool as it spins at high speed. A minute or two of buffing will yield a high gloss

that equals any commercially spun dial in appearance. A fine grade file may be used to dress the edge of the dial.

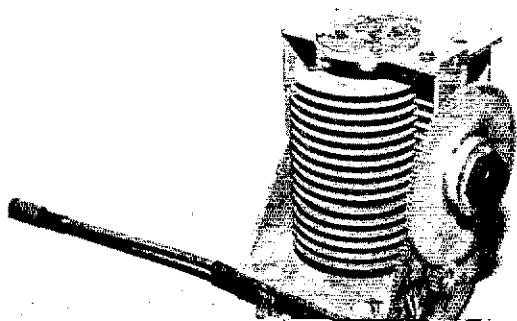
From here on, care must be exercised to avoid touching the freshly buffed dial face. A fingerprint on this raw surface will stay there forever. Handle with extreme care by the edges, as you would a high quality phonograph record. The next step is to carefully ream out the center hole to exactly 9/16 inch diameter, so the dial will seat snugly on the hub of the Command set dial-drive mechanism, and be locked in place with the original plastic cap nut. It will be necessary to make a slight indentation on the rear side of the dial plate to accommodate the locking pin that projects from the face of the hub mechanism. If such locking is not desired, this pin may be filed off.

Now you are ready for calibration. With a suitable frequency standard, handmade calibrations can easily be inscribed 2 kHz apart.

Using a very sharp, hard-lead drawing pencil, lightly mark dial calibrations directly onto the raw aluminum surface of the dial. After the initial calibration is done, remove the dial carefully and lay it flat on the table.

The buffed aluminum face will take india ink very nicely. For the transmitter dial, mechanical drawing instruments were used, with concentric circles and calibration marks inked on with com-

Circa 1940 tuning capacitor. This precision capacitor will give linear frequency readout. Bushings may be hacksawed from the flexible shaft coupling, and used to extend the tuning knob through front panel.



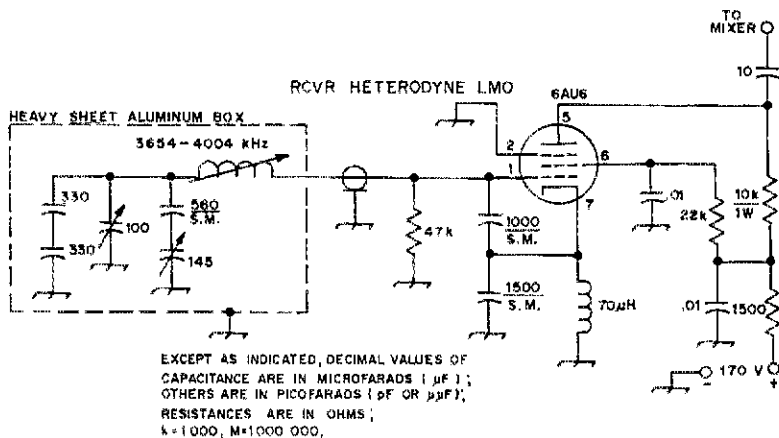


Fig. 2 - Receiver heterodyne VFO, tunes 3645 to 4004 kHz.
 L1 - 14 close-spaced turns, No. 26 enamel wire wound on 1/2-inch dia. form, powdered-iron slug-tuned.

pass and straightedge drawing pens. The numbers were made with a fine-point lettering pen. Once the ink is dry the whole dial face is covered with a thin wash of lacquer solution to seal the surface. A spray can of clear lacquer will do, or a solution (mix one teaspoon of clear brushing lacquer with an equal amount of lacquer thinner) may be spread on with a water-color brush. This solution will dry hard in about five minutes. Once dry, the dial face is sealed, and can be handled freely with no further risk of permanent finger prints.

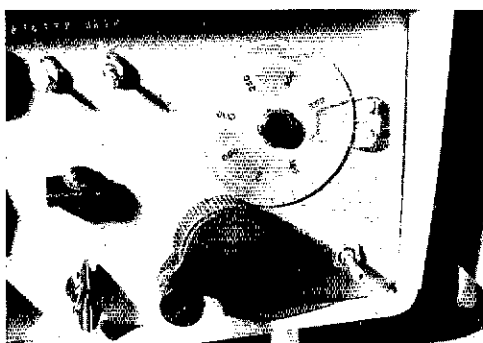
A slightly different technique was used on the receiver dial. A very sharp, hard-steel scriber was used to score the calibration marks as deeply into the aluminum face as possible. Then these surface cuts were filled with india ink, using the fine-point lettering pen. Once the ink was thoroughly dry and

hard, the dial was spun in the jig again, and the surface sanded lightly with very fine grit sandpaper held perfectly flat against the surface. This removed all excess surface ink, so only the very deeply cut ink marks remained. Numbers were then lettered on freehand, and the whole dial given a single coat of the lacquer wash already described.

After the dial is finished, the transparent cursor with hairline is mounted in place. This is made of 1/8-inch Plexiglas stock. The hairline was carefully scratched on the back surface with a thin pointed steel scriber, and then filled with india ink. Once dry, excess ink is wiped away with a damp cloth, and the very well defined hairline remains.

Using such Command set tuning capacitors and do-it-yourself dial techniques, any ham can have genuine precision tuning and readout on home-made gear, at a small fraction of the cost involved with contemporary tuning and calibration components.

QST



Left: the transmitter dial is shown, as inked with drawing instruments. The numbers are inked on with a fine lettering pen. Lower left: a simple spinning jig made from a piece of stove bolt. The dial plate is clamped between two hex nuts. Below: the completed receiver. The tuning compartment is at the upper corner in this view.



FREQUENCY COUNTER

A MODULAR Approach

Part II

BY ARLO R. EGGENSPEGER,* W2TJZ

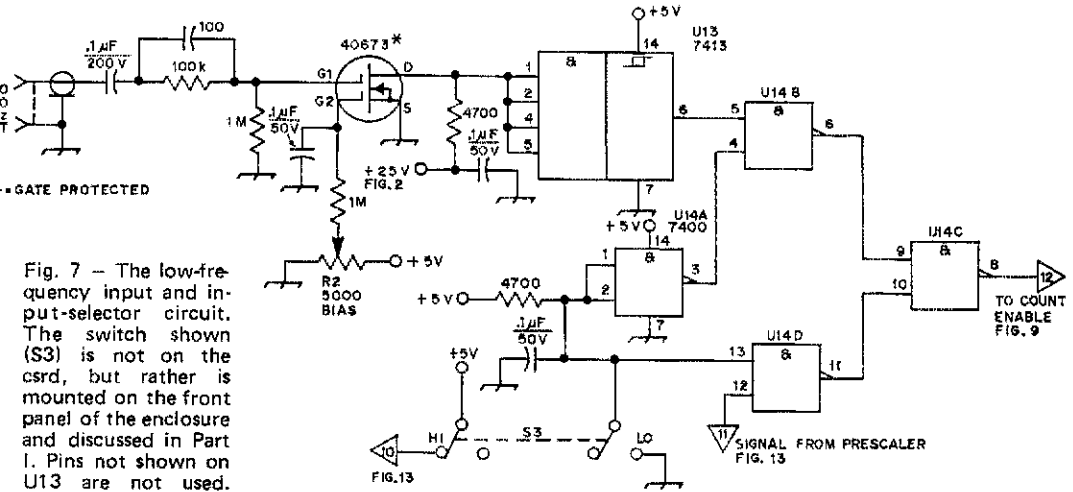


Fig. 7 - The low-frequency input and input-selector circuit. The switch shown (S3) is not on the crsd, but rather is mounted on the front panel of the enclosure and discussed in Part I. Pins not shown on U13 are not used.

PART ONE of this article discussed the general theory of operation of the counter, and described the power-supply, crystal-oscillator, and time-base circuitry. It also included information to enable the user to obtain output at various frequencies for frequency-checking purposes, and a means of selecting the frequency by remote control if desired.

In this part of the article the remaining portions of the counter will be described along with hints on checking for proper operation. The same step-by-step procedure should be used, wherein one section at a time is constructed and tested. As mentioned in Part I, this will cover stages 2, 3, and 4 in the construction.

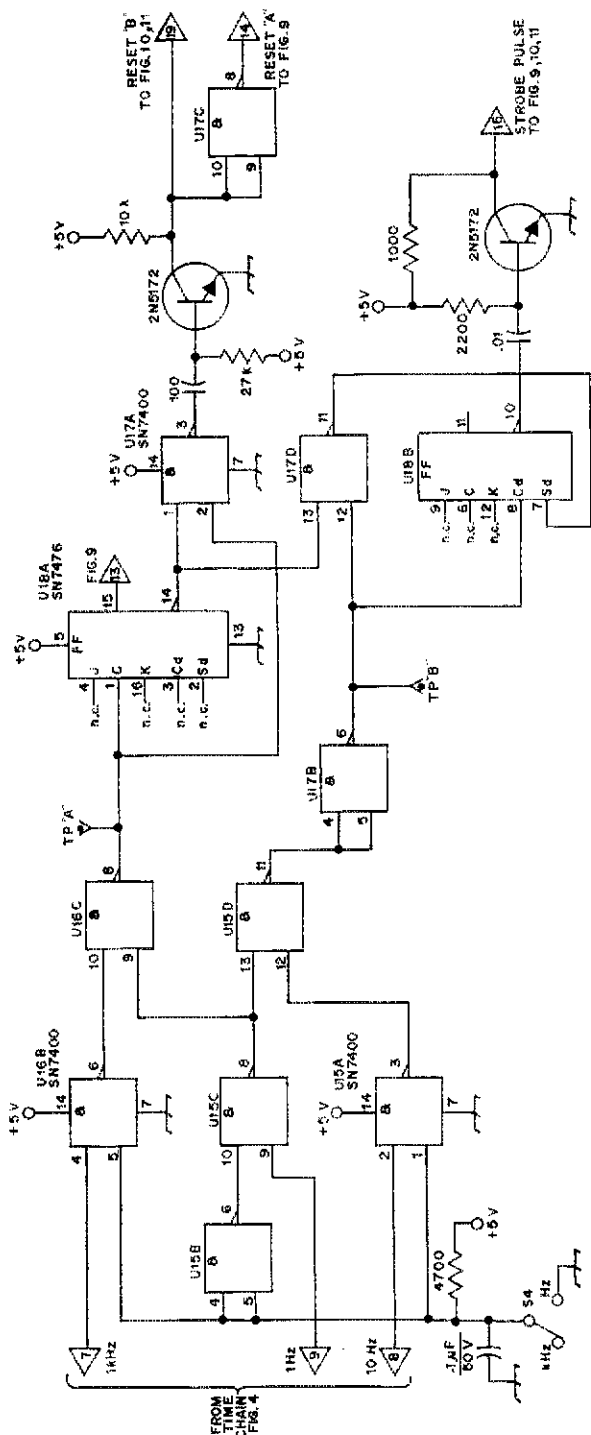
Stage Two

As the first item in stage 2, assemble the low-frequency input and input-selector circuit (Fig. 7) on a plug-in card. This is card D in the photograph. The bias control, R2 in Fig. 7, is placed near the top edge of the board for ease of access. The setting of this control affects the sensitivity of the input circuit. Once optimum performance is obtained, little further adjustment will be required.

Card E contains the time-base selector and control circuit (Fig. 8). This may be one of the most difficult boards to construct because of the higher density of components. Where crossovers cannot be avoided in the layout, insulated jumpers can be used.

* 101 Christie St., Tenafly, NJ 07670.

Fig. 8 — Schematic diagram for the time-base and selector control circuit. Pins not shown on U16 are not used.



There are only two integrated circuits on board F. It might be possible to include this circuit (count-enable and overflow, Fig. 9) in some other board, but space is not at a premium in this enclosure.

These three circuits should be checked for proper operation before continuing to stage 3. To test, the low-frequency input board, inject a 10-MHz signal into the LO input connector. With the LO-HI switch in the LO position, a signal should appear at pin 8 of U14. If not, check the wiring and trace the signal path to determine where it is lost. The bias control, R2, should be adjusted for maximum gain. The output signal should be cut off when the selector switch is placed in the HI position.

To test the time-base selector and control circuit, Fig. 8, determine that you have 1 kHz, 10 Hz and 1 Hz coming from the count-down chain. A good oscilloscope will aid in determining that the following frequencies are present at the test points.

Switch Position	Test Point A	Test Point B
Hz	1 Hz	1 Hz
kHz	1 kHz	10 Hz

By inspection of the scope pattern, you may be able to determine whether these signals are approximately correct with relation to each other.

The strobe, reset A and reset B pulses are the next signals to verify. In both the Hz and kHz measurement positions, the reset A and B pulses are in step with each other but the A pulse is negative going and the B pulse is positive going. The count-enable pulse is a 1-second square wave in the Hz position and a 1-kHz square wave in the kHz position.

The strobe pulse is a very sharp positive one that occurs once every 2 seconds with the switch in the Hz position, and once every 1/10 second in the kHz-measuring position. These pulses are hard to see on a scope having less than a 5-MHz bandwidth.

Stage Three

To start stage 3 of the construction, the five light-emitting-diode readouts and the 35 current-limiting resistors may be mounted on a pc board (Fig. 12). I used a piece of clear plastic in front of the readouts, and fastened both pieces to the front panel by means of small bolts. Small-gauge wire should be used between the resistors

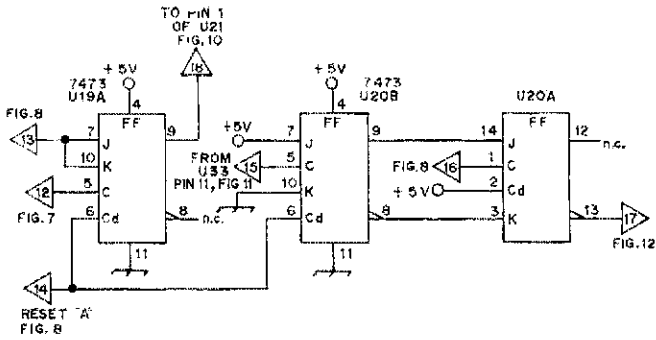


Fig. 9 - The count-enable and overflow schematic diagram. If enclosure space is at a premium, it might be possible to include this circuit on another board.

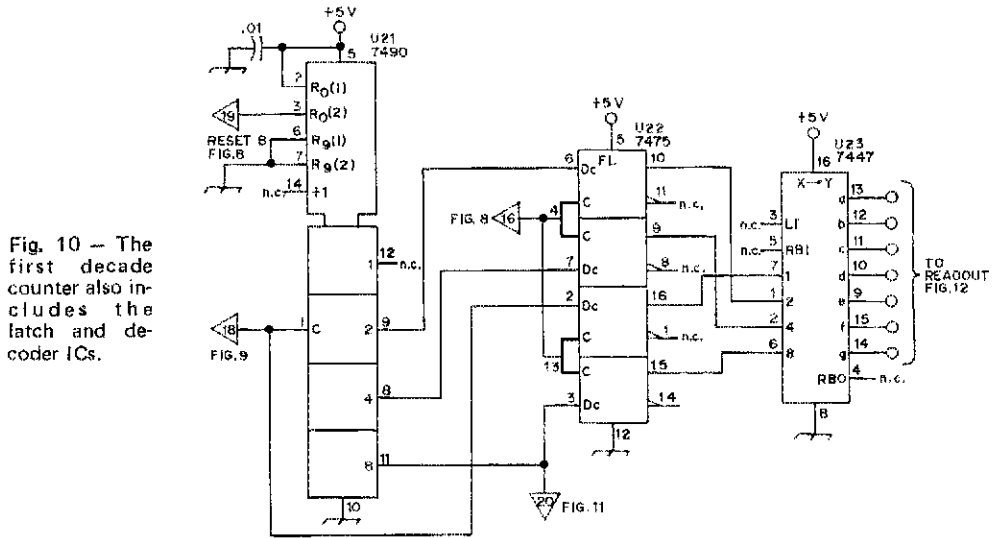
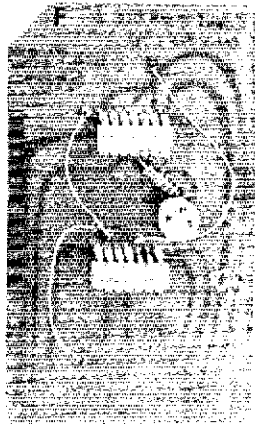
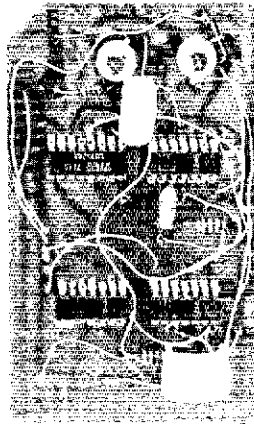
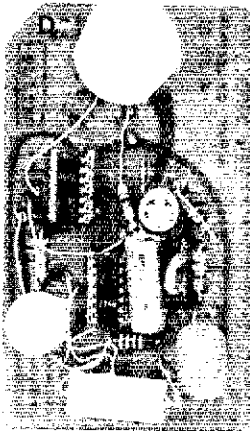


Fig. 10 - The first decade counter also includes the latch and decoder ICs.



Card D is the low-frequency input and input-selector circuit board. The white object at the top is the bias-setting control, R2. Card E contains the time-base selector and control circuit. On card F, the count-enable and overflow board, may be seen an unused transistor socket. It was part of a circuit that is no longer necessary.

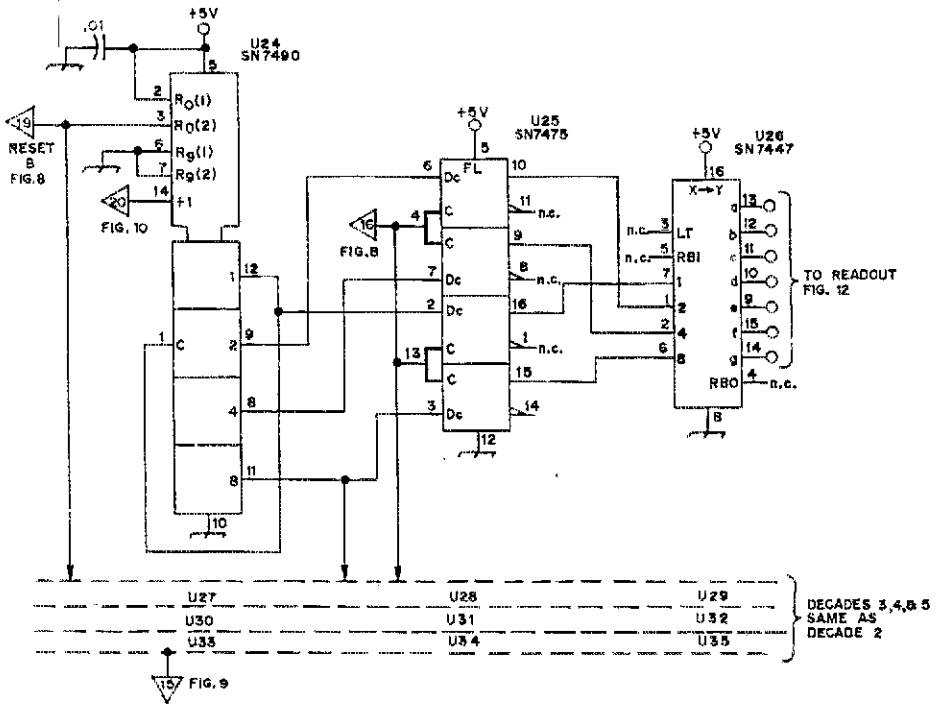


Fig. 11 — Decades 2, 3, 4, and 5 are on identical cards except that on decade 5 there is a connection to pin 5 of U20B on card F.

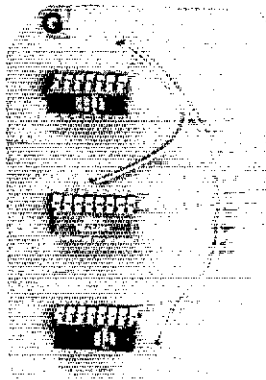
and the Amphenol jacks for the decade cards.

The next step is to assemble a card for the units decade (Fig. 10, card G), and one or more cards with the circuit of Fig. 11. The layout of all the decade cards can be similar, but note that only decades 2, 3, 4, and 5 are interchangeable.

To test the units of stage 3, energize the LED readout assembly and plug in the UNITS decade.

Ground pin 3 of the SN7475 (U22), which should cause all seven segments of the UNITS readout to light up. Trace problems associated with any individual segments by verifying wiring and soldering. The next decade can be checked by inserting it in the succeeding position and getting the TENS readout to function. Each of the remaining decades can be substituted for decade two to verify their operation. They can then be placed

Left photo: The first decade counter is on card G. Decades 3, 4, and 5 have almost identical layouts, but they are not interchangeable with decade 1. Right photo: A preamplifier and vhf prescaler is assembled on card L. The 95H90 counter is at the top. The sensitivity control is in the center of the board, while the 95B2 broadband amplifier is at the bottom to allow short leads to the input circuitry. Good vhf wiring practice should be used on this layout.



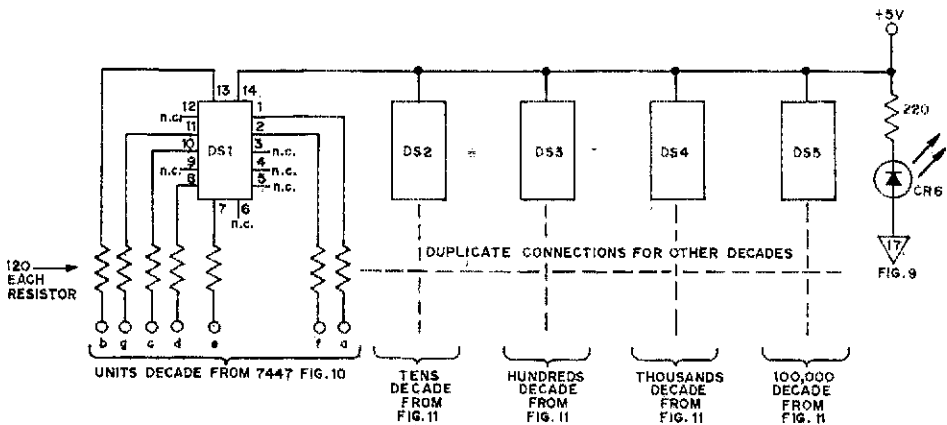


Fig. 12 - The LED readouts are mounted on a pc board and fastened to the front panel. Wiring for each readout is identical. Opcoa SLA1 or equivalent readouts will work in this circuit.

in the proper sockets to activate the associated readout.

The low-frequency portion of the counter should now be operational. However, to obtain operation up to 20 MHz, U20 and U21 must be selected for best performance. Specifications cover their operation to 15 MHz, but many units will exceed that figure.

The Last Stage

Stage 4 involves the prescaler, which should be assembled on glass-epoxy pc material (Fig. 13). Care should be taken to provide short connections between components and to have maximum iso-

lation between input and output wiring. Stability and vhf performance depend upon good construction practices here.

Note that there is a connection from the input-selector board (Fig. 7) to the prescaler, so that it is energized only with the switch in the HI position. To determine that this is correct inject a signal above 20 MHz into the prescaler via the HI (VHF) connector. Adjust R4 for highest gain without regeneration. The latter is indicated by extraneous readings on the display when the HI input is unterminated.

(Continued on page 100)

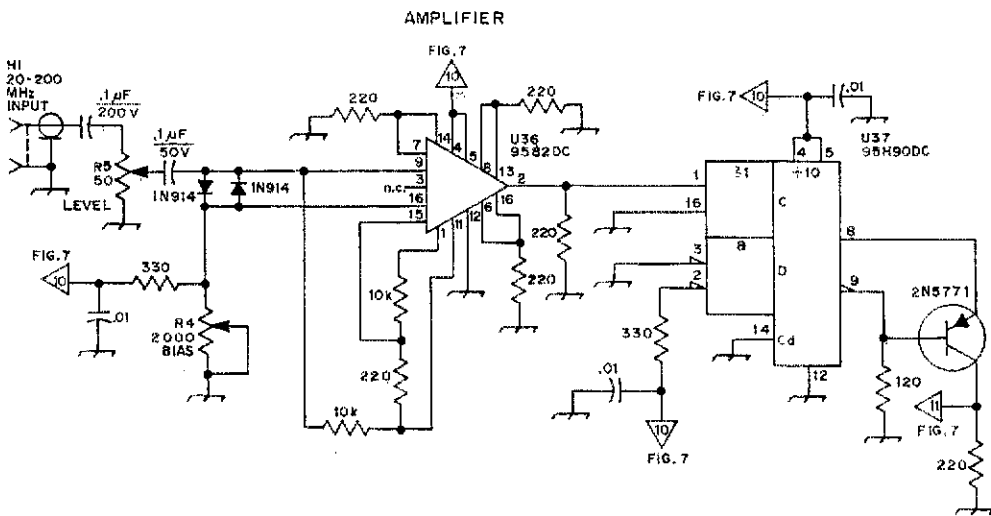


Fig. 13 - The schematic diagram of the amplifier and vhf prescaler circuit. The ICs are of Fairchild manufacture, obtainable from Hamilton Avnet Electronics, Cedar Grove, NJ 07009. R5 and the 0.1- μ F capacitor to the input jack are mounted on the front panel; see Fig. 1, Part I. The input-protecting diodes are mounted on the pins of the Amphenol connector, not on the card proper.

Practical Ideas for the



Enthusiast

BY THOMAS R. O'HARA,* W6ORG

Part II -- Transmitters, Modulators and Cameras

Transmitters

POWER LEVELS that can be generated in the uhf range economically with transistors are rather low, so the specialized modulation problems of solid-state TV transmitters will not be detailed here. For the ATV newcomer, several commercial tube-type uhf transceivers are now available at low cost on the surplus market and offer the simplest solution to the transmitter problem. The two important differences between TV and fm service should be kept in mind in choosing from the available surplus equipment. ATV bandwidth is stated in megahertz, whereas that of fm is in kilohertz. ATV modulation is a-m, so amplifier stages must be linear. The fm transmitter has no linearity requirements, so it is often designed with other objectives in mind.

The 2C39 grounded-grid triode amplifiers, such as in the Motorola T44 and GE Pre-Prog transceivers, are not well adapted to wide-band amplitude modulation. They have very low grid-drive impedance, which requires much more modulator power than grid-modulating tetrodes. These transmitters have built-in bypassing of the grid that limits the bandwidth to 2.5 MHz, or only about 200 lines of video resolution. This allows a fairly good black-and-white picture, but it will greatly attenuate fm and color subcarrier, if these are added later. The best available information on video-modulating the T44 is that given by W0MZL.³ We deal in this section with grid-modulation of tetrode amplifiers of the surplus-rig and homebuilt high-power variety. Typical tube

types include the 6939, 6252, 5894, and 6907, all dual tetrodes in the low- to medium-power range, and the 4X150A and other tubes of the same general type, used for medium and high-power applications. Preferred dual-tetrode transmitters are those in the RCA CMU-15 and the Motorola U44 line. The GE Progress Line is usable, although these GE units have high-*Q* plate lines which limit their bandwidth to about 3.5 MHz, not enough for the fm subcarrier described later.

Converting the CMU-15

The most readily converted of the uhf fm transmitters is the RCA Carfone, CMU-15. It will put out 15 watts, with high-resolution video, at moderate cost. The receiver is not used for ATV, but it can be made to serve as a monitor for any uhf calling frequency, such as 431.5 MHz used in Southern California. Details given refer specifically to the Carfone, but the ideas can be applied to other dual-tetrode amplifiers.

There are three chassis bolted together in the Carfone. Separate them, and cut connecting wires. Transmitter power requirements are 285 volts at 280 mA, 270 at 95 mA, 270 at 20 mA, 200 at 15 mA, and minus 15 at 25 mA. The first three can come from a single high-current source of 300 volts, with the 200 being obtained from the same point through a 7500-ohm 5-watt dropping resistor. A complete supply for the high voltage and bias is shown schematically in Fig. 4. Resist the temptation to try for higher output by running higher plate voltage. The 5894 and similar tubes go bad fairly soon if run at more than 50 watts input in the 420-MHz band. The long periods of operation with continuous modulation which are characteristic of ATV testing are rough on transmitting tubes. Cooling fans are not commonly used, but may be helpful in extending tube life.

* 2522 S. Paxon Ln., Arcadia, CA 91006.

³ McLeod, "ATV with the Motorola T44 UHF Transmitter," December, 1972 and February, 1973, *QST*. Condensation in *Special Communications Techniques for the Radio Amateur*,³ ARRL, 1975.

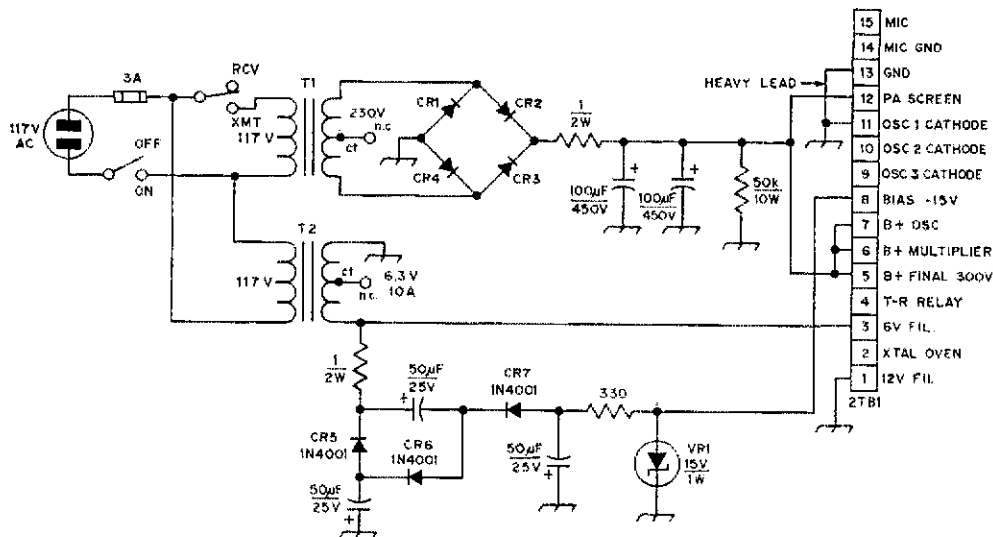


Fig. 4 — Schematic diagram and parts information for the CMU-15 power supply. Part numbers beginning with 2 indicate original CMU-15 components; e.g. 2TB1. All capacitors are electrolytic. CR1 — CR4, incl. — 1000 PIV, 1 A (1N4007). CR5 — CR7, incl. — 100 PIV, 1 A (1N4001).

VR1 — 15-V 1-W Zener diode (1N4744).
 T1 — 150-VA isolation transformer, 235 and 117-volt windings (Essex-Stancor P-8622 or equiv.).
 T2 — 6.3-V 10-A filament transformer (Triad F-21A or equiv.).

The 150-VA isolation transformer, operated backward, with its 230-volt windings series connected to form the secondary as shown in Fig. 4, provides a relatively inexpensive solution to the transformer problem. The 400 mA at 300 volts may not be easily provided, otherwise. If one is willing to do some transformer work, the existing vibrator transformer in the Carfone can be stripped of its heavy primary and rewound with 350 turns of No. 22 enamel wire for 117-volt service. If this is done, only a 6.3-volt transformer capable of delivering 10 amperes for the heaters and bias supply is all that need be added, and the original power supply wiring can be left intact, other than in the primary circuit.

Test the transmitter and tune it up in the amateur band before trying video modulation. Divide the desired operating frequency by 36 to get the crystal frequency (427 MHz requires an 11.861-MHz crystal). The crystal oven is not needed, and inexpensive crystals are good enough. One thing that is *not* critical in ATV is frequency tolerance; the receiver can handle the 4.5-MHz sound subcarrier with frequency variations up to 300 kHz.

Remove the 12AX7 audio limiter tube. Some areas transmit fm sound on the a-m carrier, but the sync buzz will be heard under weak-signal conditions in the fm receiver, when the limiters go in and out of saturation with video a-m. Also, sync buzz may get into the high-impedance speech-amplifier circuits, and cause sync jitter in the picture.

Test the transmitter on a *good* dummy load — no light bulbs at this frequency! The metal strip along the side of the tripler-final cage is a low-pass filter. If off-frequency components are not a problem, removing the filter will eliminate its 1-dB

insertion loss. Apply power, briefly at first, and tune the stages, starting with the first tripler, for maximum negative readings at the first four test points on the meter socket. Run no more than 30 seconds at a time, with two minutes off for cooling between adjustments, until optimum adjustment has been found. The following readings were taken with a high-impedance meter, 20,000 ohms-per-volt or higher: Test Point 1 (first tripler) — 13V; 2 (first doubler) — 29 V; 3 (second doubler) — 76 V; 4 (second tripler) — 62 V.

If the voltage indication does not go *through* a peak as a circuit is tuned, add 5 pF at a time until a definite voltage peak can be passed in adjustment of the tuning. The grid inductors of the tripler and final amplifier need more inductance for best operation. Remove the ribbon leads from the grid pins, and replace them with No. 14 copper wires 1/4 inch longer. Adjust the length until tuning peaks. Recheck all adjustments for maximum power output, as indicated by a wattmeter in the line to the load, or maximum reading (about minus 1.5 V) at pin 8 of the test socket.

Check the plate current, and adjust the screen voltage for 175 mA. There may be a control for screen voltage in the unit; if not, connect a suitable resistor between the B-plus line and pin 12 of the power terminal strip. A VOM can be connected between pins 6 and 7 to measure plate current, but remember the 300 volts dc is present here. With a 20,000 ohms-per-volt meter such as the Simpson 260, a reading of 1.1 on the 2.5-volt scale indicates 175 mA (volts \times 160 = mA).

Bypassing of tube and circuit elements must be done with video characteristics in mind. Electrolytic bypass capacitors, 10 μ F at 450 volts, were added to the 5894 screen and the high-voltage feed to the plate circuit, to prevent video distortion. At

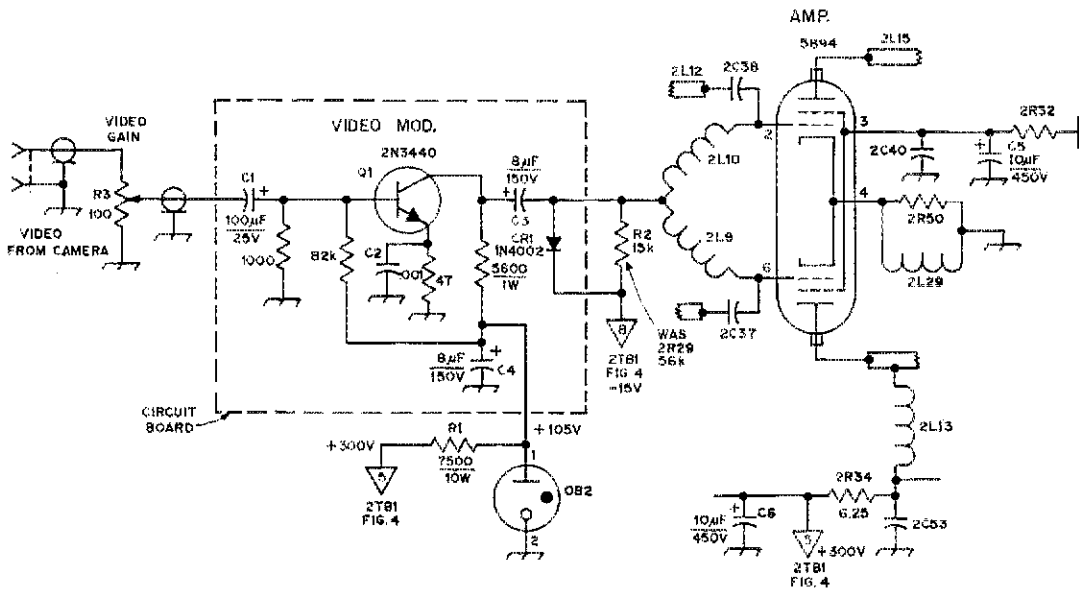


Fig. 5 — Schematic diagram of a one-transistor video modulator for use with the CMU-15 transmitter. Part numbers beginning with 2 indicate original CMU-15 components. Amplifier circuit is shown only in part, to indicate circuits where changes are made in adapting it to ATV service. Capacitors with polarity marked are electrolytic. The video gain control, R3, can be separated from the modulator by 2 feet or less, the connecting lead to be RG-59/U or other 75-ohm coax. The lead from the board to the junction of R2, 2L9 and 2L10 should be 2 inches or less in length.

this point we call attention to the method of identifying the parts shown in Fig. 5, to distinguish between original equipment in the CMU-15 and those parts changed or added in the conversion process. Original components have the numeral 2 before the letter in their number. New parts used are numbered in the conventional manner. Thus, the screen bypass, above, is marked C5. It is in parallel with the original part, 2C40. The grid resistor, R2, 15 k Ω , replaces original 2R29, 56 k Ω . It is well to go through the tune-up procedure outlined above before the purely video changes are made, so that if trouble should develop along the line the worker will know when it started.

If the grid circuit has isolation resistors in place of the rf chokes, 2L9 and 2L10 in Fig. 5, replace them with Ohmite Z-460 or other uhf rf chokes when installing the new grid resistor, R2. If the transmitter is now operating normally, proceed with installation of the video modulator.

Video Modulation

A one-transistor video modulator suitable for use with dual-tetrode transmitters of moderate power is shown schematically in Fig. 5. A two-transistor unit of similar design for use with high-power tetrode amplifiers, such as the K2RIW kilowatt amplifier⁴ is shown in Fig. 6. Constructed

⁴ Knadle, "A Strip-Line Kilowatt Amplifier for 432 MHz," *QST*, April and May, 1972. Condensed version in *The Radio Amateur's VHF Manual*, Edition 3, Chapter 13.

on circuit board, this modulator is shown in one of the photographs, attached to the back of the kW amplifier.

The modulators can be built on perforated boards or printed-circuit boards of simple design. Layout is not critical, except that high-impedance video leads should be short. For example, either modulator should be positioned so that the lead between the modulator output and the point of connection to the grid circuit should be no more than about 2 inches long. There is room for the CMU-15 modulator under the transmitter chassis. The 100-ohm gain control, R3, can be up to two feet from either modulator. The lead from its arm to the modulator input should be 75-ohm coax. The control acts as a termination for the low-impedance line from the camera, in conjunction with the modulator input impedance. As in rf lines, reflections on a video line can cause ghosts and sync instability. Monitors can be tapped on at any point, so long as the monitor input impedance is greater than 1000 ohms.

The diode, CR1, acts to charge up the coupling capacitor, C3, for dc restoration, to insure maximum rf power output at the sync tips, regardless of average white-to-black ratio. This means that the picture will have a high contrast with varying scenes, and will insure a constant sync power level, for stable age and sync triggering. It makes about a 3-dB improvement in weak-signal reception, because the receiver will be better able to lock up with a weak signal.

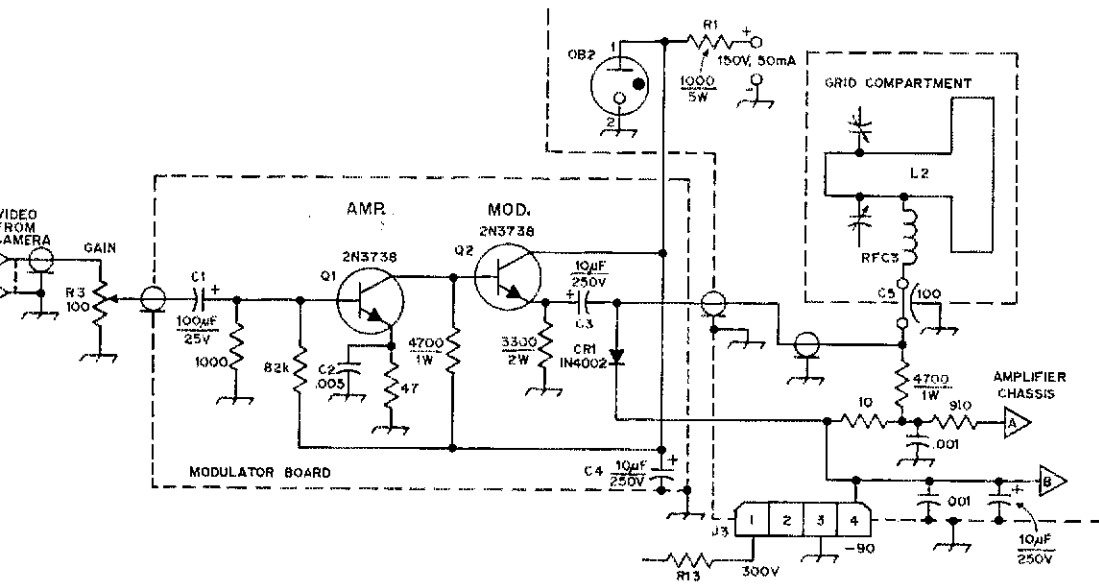


Fig. 6 - Schematic diagram of a two-transistor modulator, for use with the K2RIW kilowatt amplifier or similar high-power stages. Regulated voltage may be obtained from the screen supply, if it is capable of handling the extra load. Adjust value of R1 to suit source voltage. Basic amplifier components, where unchanged, are numbered as in the original article, Fig. 1, April, 1972, *QST*.

Adjusting for Picture Quality

With the modulator connected and the gain at minimum, apply power and check the output level. Then turn the gain up slowly until the output power decreases by one-third. Video modulation with dc restoration acts like downward modulation sometimes observed with a-m transmitters having low grid drive, but it is normal in this case. If everything seems to be working well, try to get another station, preferably a few miles away, to "talk your picture in." Adjusting the camera and modulation while monitoring the signal yourself will give false indications, because of overloading of your receiver. Low modulation will look fine on your monitor, but the signal received at a distance will lack contrast. Have the other fellow describe the appearance of the picture as you make adjustments. Transmitting a detailed test pattern is recommended for this.

The final stage of a high-powered ATV rig can be run as a linear amplifier, driven by a CMU-15 or something comparable. In general, however, final-stage modulation makes for easier adjustment, and with grid modulation it adds little to the modulator complexity. Linearity never comes easily, and there is the extra problem in ATV of loss of bandwidth by the extra stages and tuned circuits.

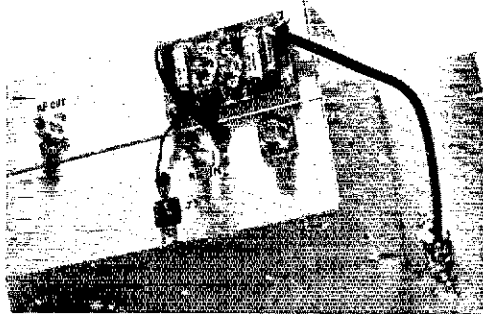
Linear operation with transistors presents special problems. Often circuits must be heavily bypassed to prevent hf oscillation, and such bypassing may impose video bandwidth limitations. Useful application notes on simple uhf broadband

amplifiers are available from several transistor manufacturers.⁵

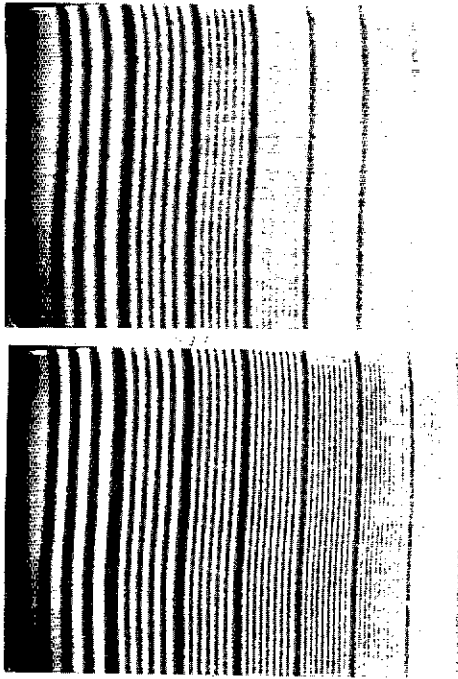
FM Sound Subcarrier

Audio can be added at the camera input to the

⁵ *RF Power Devices (SSD-205B)*, RCA Solid-State Division, Box 3200, Somerville, NJ 08876; *MX-12 Power Modules*, TRW Semiconductor Products, Inc., 14520 Aviation Blvd, Lawndale, CA 90260; *Motorola Semiconductor Products, Inc.*, 5005 McDowell Road, Phoenix, AZ 85008; *Wideband UHF Land Mobile Power Amplifiers*, (Note 2186B), CTC, 301 Industrial Way, San Carlos, CA 94070.



Two-transistor video modulator of Fig. 6, mounted on the back of a kilowatt amplifier built from the popular *QST* article by K2RIW. Only minor changes were required to adapt the amplifier to video service.



The effects of limited bandwidth are clearly apparent from these two views of a test signal. Even the broad lines at the left are a bit hazy in the upper picture, and vertical line detail is practically lost by the middle of the screen. Clear, sharp lines are plainly visible in the lower view, out to almost the right side. The same TV set and the same signal were used for both, except that a filter that limited the bandwidth to 2.5 MHz was in the circuit when the top picture was taken. Definition differences would be still more marked in direct viewing of the picture.

video modulator in the form of a frequency-modulated 4.5-MHz subcarrier, if the modulator and transmitter are capable of passing the 4.5-MHz signal. The CMU-15 and the K2RIW kilowatt amplifier do a good job. The Motorola T44 will not handle this bandwidth, and the GE progress Line transmitter is marginal. Its plate circuit may be capable of modification for lower Q , to increase bandwidth, but this has not been tried. The output filter has a bandwidth of about 8 MHz, so it is not the culprit.

The fm sound generator circuit is given in Fig. 7. Note the low- Q trap circuit, C3-L3, at the camera input. This trap keeps the long coaxial line to the camera from loading the 4.5-MHz generator capacitively. The value of the resistor, R2, in series with the generator output, is selected by experiment to give 0.5 V pk-pk, when everything is connected and operating, but with the camera switched off. R1, in the source lead of Q1, should be of such value that there will be 4 to 5.5 volts at the drain of Q1.

The oscillator, Q3, can be adjusted to 4.5 MHz by listening for it in a general-coverage communi-

cations receiver. Frequency tolerance is plus-or-minus 50 kHz. If adjusting L1 will not bring the frequency to 4.5 MHz, adjust the value of C1 as required. Do not try to tune the oscillator by listening to your own TV receiver. As with the TV picture, have a distant operator check the signal.

The only drawback with this system is that the power put into the subcarrier is taken from the video, which decreases the picture power by about 2 dB. This is a negligible difference with all but the weakest signals. The alternative is to use a separate fm transmitter 4.5 MHz above the video carrier, running on another antenna. This unit can also double as a secondary ATV calling-frequency setup, as shown in Fig. 1.

Cameras

The TV camera is usually the greatest expense in putting ATV on the air, and a primary reason that some potential enthusiasts never quite make it. The problem is not insurmountable, thanks to the boom in closed-circuit TV usage. Any closed-circuit vidicon camera with free-running sync will give very good pictures. New-camera prices start around \$200. Kits such as from ATV Research⁶ run up from \$125. Used but serviceable cameras are increasingly appearing in pawn shops, camera-equipment exchanges, and so on, as firms that have used closed-circuit TV for security purposes go out of business or progress to more elaborate equipment. Prices generally range from \$35 to \$100.

Most cameras have both video- and rf-modulated outputs. The video is run to the modulator on a coaxial line, which must have a low-impedance termination at the modulator end. The gain control, R3 in Figs. 5, 6, and 7, provides this termination, as well as for adjustment of the level to the modulator. The camera output is usually an open emitter-follower requiring a dc path to ground, so do not couple it capacitively. If the camera has an rf output it can be run to a TV receiver to be used as a video monitor, by tuning the receiver to an unused channel between 2 and 6. For best resolution a separate monitor is preferred, tapped in as shown in Fig. 8. It is best to get a manual or Fotofact sheet on the TV receiver before going into it in this way.

Checking Picture Resolution

Most closed-circuit cameras are capable of 400- to 600-line resolution. The number of lines you can see determines the ability to see the video signal change from black to white. Test patterns with converging lines or groups of parallel lines of diminishing width are helpful in measuring the effect of linearity and bandwidth adjustments. A rule of thumb is 75 lines per megahertz of receiver bandwidth. ATVers soon develop a fondness for complimentary horizontal-resolution reports, in the manner of the DXer gloating over 40-over-9 reports from the rarest countries.

An excellent package of test patterns, with information on their use, is available from ATV

⁶ ATV Research, Box 4553, Dakota City, NE 68731.

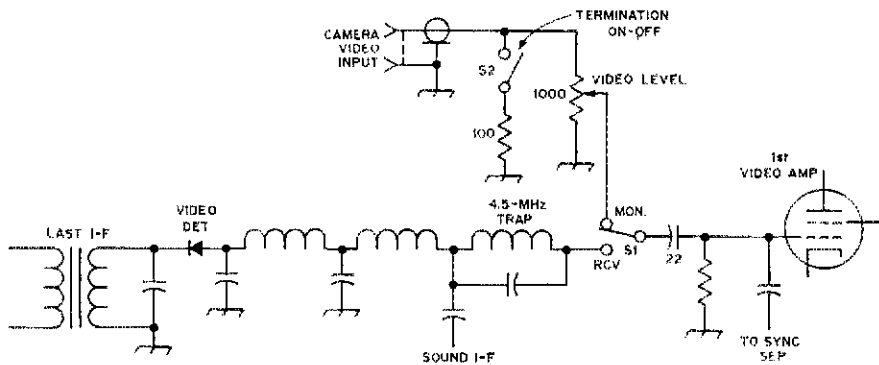


Fig. 8 — Circuit diagram of modifications made to a typical TV receiver, to use it as a video monitor. Parts with no values given are part of the original receiver.

Research. Servicing information, such as Sams, *Servicing Closed-Circuit Television*, is helpful. Many adjustments interact, making it difficult for the inexperienced ATV worker to obtain good resolution, video-to-sync ratio and contrast, without such aids.

Most cameras generate the vertical sync from the ac line frequency, and the horizontal from a free-running oscillator. The internal sync is helpful where more than one camera is used, as all will be running from the same sync source (the power line) and this will prevent picture jumping when cameras are switched.

ATV Horizons

Amateur television offers opportunity for expansion and development, limited only by the operator's imagination and technical skill. As an example, the Southern California ATV Club, WA6EVQ, participated in the Pasadena Rose Parade some years ago. A converted CMU-15 was installed in a helicopter of the Los Angeles County Sheriff's Office, to cover traffic situations. The police now have their own TV system, amateur radio having demonstrated convincingly the advantages of a real-time view of developing traffic problems, rather than relying solely on voice descriptions. Almost anyone entering the ATV field will quickly sense its potential for novel and challenging communication.

Information given here emphasizes simple and inexpensive approaches to ATV. By utilizing surplus components the newcomer can put a good ATV station on the air for \$200 or less, with hardly more difficulty than is usually encountered in converting a commercial fm transceiver to amateur service. Current ATV activity and techniques are detailed in *QST Magazine*, published six times yearly by Ron Cohen, K3ZKO, Box 6512, Philadelphia, PA 19138.

A complete bibliography of *QST* amateur television articles, both fast and slow scan, is available from ARRL, Newington, CT 06111. Send stamped self-addressed business-size envelope.

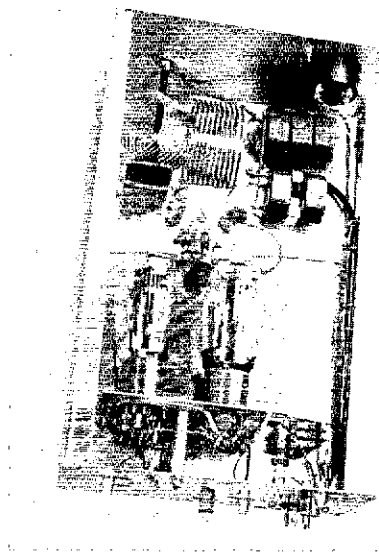


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2. The Life Membership fee for U.S. applicants is currently \$180, for Canadian applicants \$200, and for other applicants \$180, all in U.S. funds.
3. An applicant may choose an alternative time-payment plan of eight quarterly installments (\$22.50 for U.S. applicants, \$25.00 for Canadians, and \$26.25 for others), to be completed within a two-year span. In such instance, he will be provided an interim two-year Full Membership certificate. Upon completion of the payments, Life Membership will be granted.
4. Life Memberships are non-transferable, and dues payments are non-refundable. In the event an applicant is unable to complete payments on the installment plan within the two-year span, he will be given a term of membership, at the annual dues rate, commensurate with payments received.
5. Other licensed amateurs in the same family, and at the same address, of a Life Member may retain or obtain Family Membership upon payment of the annual dues of \$2, but without receipt of *QST*. The dues of the Family Member may be prepaid for any number of years in advance, but there is no special rate.
6. Life Membership is also available to blind amateurs upon payment of a fee of \$40, without the receipt of *QST*.

Interior view of the test amplifier. The variable inductor is at the upper left. Directly to the right of the coils are the five transmitting mica capacitors. The broadband transformer is visible at the lower left, mounted on the rear wall of the cabinet.

Transmitting Variables



— Who Needs 'Em

Designing for Economy

BY DOUG DE MAW,* WICER
AND ANTHONY DORBUCK,** WIYNC

THERE IS MUCH rightful lamenting these days about the burgeoning problems attendant to parts procurement and costs. Take the variable capacitor for instance . . . a species that is nearly extinct nowadays, at least where single-lot purchasing is concerned. If the desired one can be found its price is likely to send the purchaser into rasping spasms of pulmonary edema! Transmitting variables bring a monarch's ransom on today's market, having nearly doubled in price recently. There is no indication that the trend will change. Many of us are unwilling to pay these absurd prices, even if we can find the component required for a specific construction project.

The first writer spent a few evenings in meditation about possible alternatives to the use of variable capacitors. Some 50 cups of coffee later the light bulb burst and some really old techniques were married on paper to a few modern ones. Why use a variable capacitor at all? Instead, why not design with fixed-value capacitors and a variable inductor? The idea of a conventional rotary inductor was brushed aside quickly, however, for those components are as hard to obtain as variable capacitors are, and the cost for one would bring smiles to the faces of the boys on Wall Street.

A remaining option suggested the use of the old-style variable inductor from bygone times — a stationary coil wired in series with one that can be rotated to buck or aid the total inductance. In such a system one could use surplus transmitting-type mica capacitors in place of air-dielectric variables.

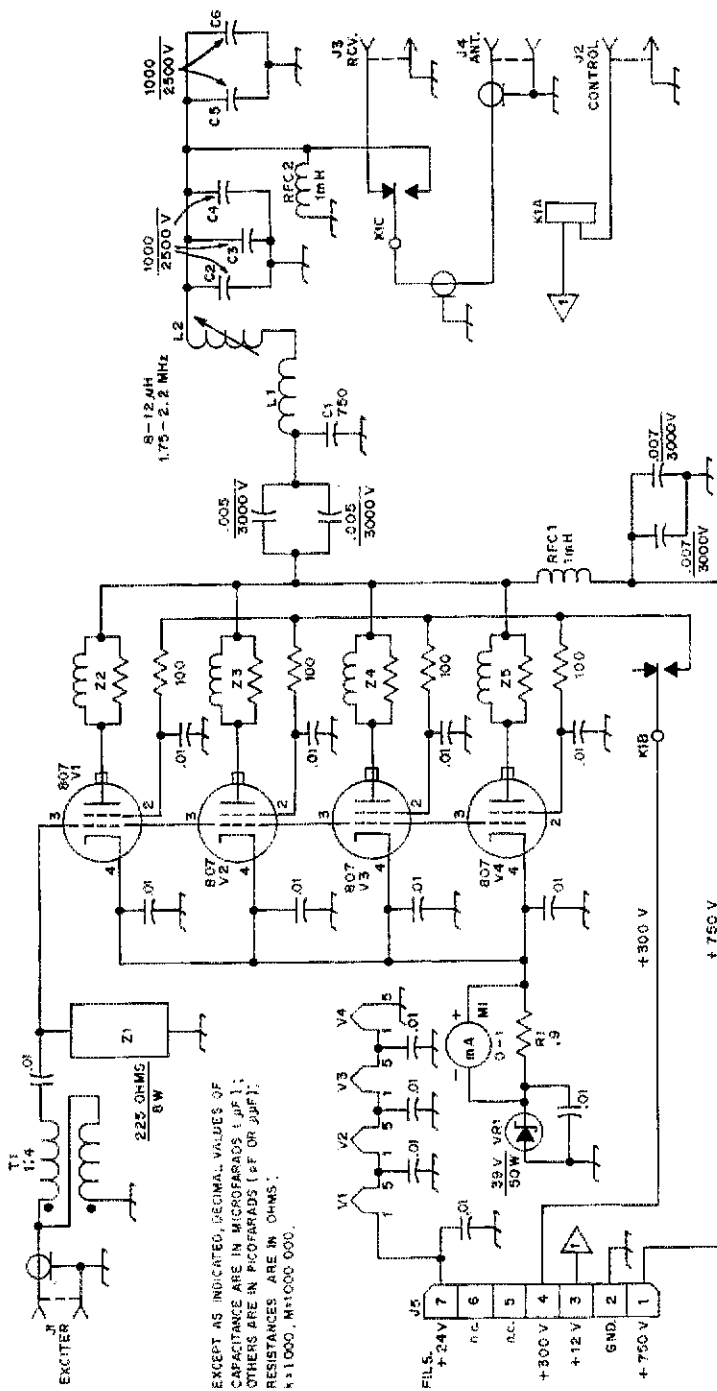
A Test Amplifier

Ideas on paper often look better than the final product proves them to be, so the concept needed testing in a practical circuit. A box of 807 tubes was found in a forgotten section of the storage area, so four of them were commissioned to operate in parallel, Class AB2, on 160 meters. The input circuit would be untuned and broadband to eliminate the need for variable capacitors in that part of the amplifier. Class-AB2 operation was selected for the low driving-power requirement, thereby permitting the use of a solid-state exciter that was available.¹ Emphasis here is not on tube types, class of operation, or power level. The purpose in building the amplifier was to test some circuit ideas, and not to show how to build an amplifier for "top-band" use.

* *QST* Technical Editor.

** Assistant Technical Editor.

¹ DeMaw, "More Basics on Solid-State Transmitter Design," *QST* for November, 1974, p. 22.



EXCEPT AS INDICATED, DECIMAL VALUES OF CAPACITANCE ARE IN MICROFARADS (μF); OTHERS ARE IN PICOFARADS (pF OR PUF); RESISTANCES ARE IN OHMS; ×1,000, M=1000 000.

Fig. 1 - Schematic diagram of the test amplifier for 160 meters. Fixed-value capacitors are disk ceramic unless noted otherwise. Resistors are 1/2 watt composition unless specified differently.
 C1 - See text.
 C2-C6, incl. - 1000-pF transmitting mica.
 J1-J4, incl. - Coaxial fitting of builder's choice.
 K1 - Dpdt relay, 12 V dc, 5-A contacts. Relay shown in photos has one unused set of contacts.
 L1 - 10 turns B&W No. 3029 Miniinductor (2-1/2

inch dia, 6 turns per inch, No. 12 wire).
 L2 - 11 turns B&W No. 3025 Miniinductor (2-inch dia, 6 turns per inch, No. 12 wire). See text.
 M1 - Meter, 0 to 1 mA (Calcraft 2-1/2-inch type).
 R1 - 0.9-ohm meter shunt to provide 0 to 1-A scale for M1.
 RFC1 - 1-mH, 500-mA rf choke (Johnson 102-752 or equivalent).
 T1 - Broadband transformer, 1:4 impedance ratio. Use 25 bifilar turns (8 twists per inch) of No.

24 enam. wire on two Amidon 61-601 ferrite toroid cores. Stack cores atop one another before winding. Core OD is 0.825 inch, ID is 0.52 inch, thickness is 0.25 inch. Permeability = 125.
 VR1 - Zener-diode regulator, 39 V, 50 W.
 Z1 - Noninductive 225-ohm, 8-watt load. Consists of 8 each 1800-ohm, 1-watt composition resistors in parallel (see text).
 Z2-Z5, incl. - Parasitic suppressor, 8 turns No. 24 enam. on 56-ohm, 1-watt composition resistor.

Input Circuit

According to the data sheets it is necessary to provide 35 volts of rf energy at the 807 grids in order to develop full dc input power in Class AB2. Neutralization is a bothersome necessity for most grid-driven amplifiers, so there was a desire to avoid it. It was reasoned that a low-impedance grid circuit should eliminate the need to neutralize, so resistive grid loading was used. Each control grid is strapped to ground (Fig. 1) by means of two 1800-ohm, 1-watt composition resistors. That makes eight in all, providing a parallel resistance of 225 ohms total. Approximately 5-1/2 watts of driving power will develop 35 volts rms across the grid load — just the right amount. The exciter could do the job handily! Some means was needed to get from 50 ohms, the output Z of the exciter, to 225 ohms. Since broadbanding was a criterion, why not use a 1:4 broadband toroidal transformer? One was made, checked on the lab's RX meter to assure nonreactivity, then installed in the circuit.

Class AB2 bias for 807s is listed as 35 volts negative. Not wanting to build a bias supply, the designer used a 39-volt, 50-watt Zener diode in the cathode return to develop the required bias. That was the nearest value of Zener diode available locally, and it worked fine in the completed amplifier.

Amplifier Tank Circuit

A pi network was selected for use in the plate tank. With four 807s in parallel, the Class-AB2 plate impedance works out as 1200 ohms (see appendix). A Q_L of 10 was chosen as a suitable parameter. The pi-network tank would match 1200 ohms to a fixed-value 50-ohm load. This design calls for an X_C of 28 for the output capacitor. As a result the values of C are quite high, and L is small. This is a contrast to what one deals with in amplifiers of higher plate Z . These LC ratios are fine for applications on 160 and 80 meters, but they become impractical to deal with physically on the higher bands. (More on that later.) Therefore, after converting reactance to capacitance and inductance, $C1$, $L1 + L2$, and $C2 + C3 + C4$, respectively, are 750 pF, 11 μ H, and 3000 pF. Addition of $C5$ and $C6$ of Fig. 1 is necessary after computing the value of $C2$, $C3$ and $C4$ because the equation in the appendix provides for *maximum* coupling to the 50-ohm load. In practice such tight coupling prevents one from obtaining a dip in plate current, thereby degrading the efficiency of the amplifier. The additional C provided by $C5$ and $C6$

(2000 pF) should be included. A total amount of 5000 pF turned out about right in this example.

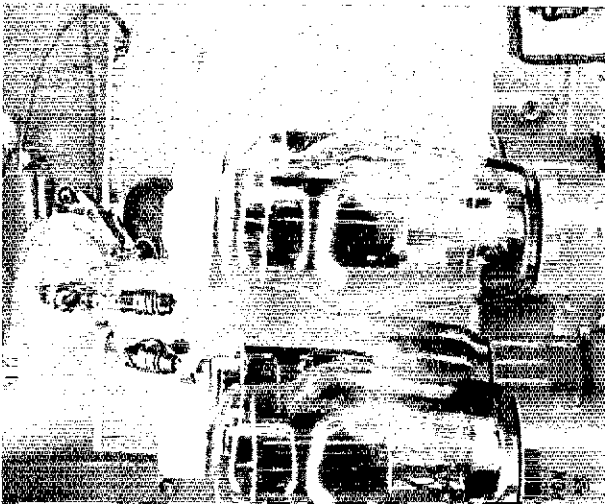
Two pieces of Miniductor stock are used for the tank inductor, $L1$ and $L2$. Each has a value of 5.5 μ H. Tests made while using a Bounton Q meter showed that the inductance spread was 8 to 12 μ H when varying the sense of the movable coil section throughout its aiding and bucking rotation. That permits coverage from 1750 to 2200 kHz with the values of capacitance given.

Checks were made to determine what effect the bucking and aiding principle might have on the Q of the circuit. The unloaded Q (Q_U) readings were 190 in the aiding sense, and 150 in the bucking mode. These readings were taken with the inductors positioned 1-1/2 inches above an aluminum plate, thereby simulating the approximate in-circuit condition. The values were adequate for the design.

First Tests

At the beginning a pair of 400-pF, 2500-volt transmitting mica capacitors were installed for the input capacitor, $C1$. Five 1000-pF, 2500-volt units of the same variety were used at the output of the pi network. The movable section of the tank inductor was made variable in sense by means of a panel-mounted vernier drive. A short length of 1/4-inch diameter Bakelite rod was forced between the coil turns and held in place by means of epoxy cement, and was connected to the vernier drive.

Power was applied and drive from the exciter was increased gradually to a moderate amount. A Bird wattmeter showed that rf power was being delivered to the 50-ohm dummy load, and output increased sharply as the variable inductor was adjusted for a resonant condition. The dip in plate current was about right — a 30-mA dip from 250 mA of plate current. However, only 75 watts of output was indicated by the wattmeter. Something was afoot in the efficiency department! Suddenly the power output dropped to nearly zero: the tank was no longer in resonance. Investigation showed that the 400-pF micas had lost value, dropping to roughly 100 pF each. Furthermore, they were very warm to the touch. The five output capacitors were cool, however, and each maintained its proper



Close-up view of the homemade plate capacitor ($C1$ of Fig. 1). It is visible just under the four 807 tubes. Nylon No. 6 screws hold it to the chassis.

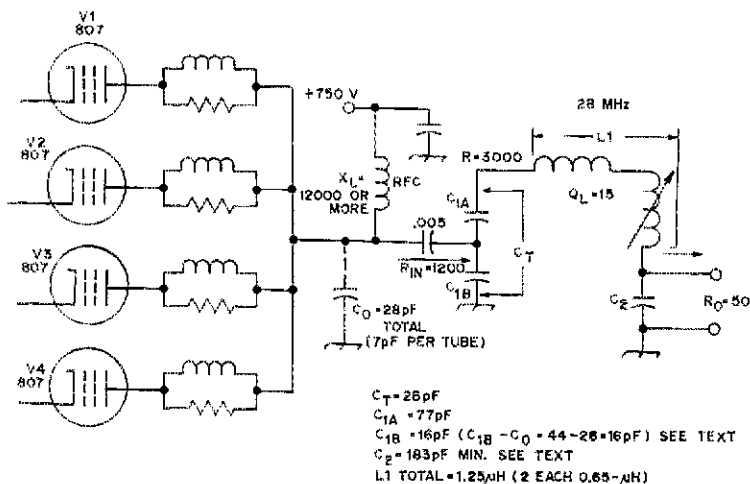


Fig. 2 - Illustration of a modified pi network design suitable for use at the high end of the hf spectrum. Values given were obtained from the equations in the appendix.

value. It was obvious that mica capacitors would not endure the rf current in the plate circuit. The poor efficiency was a result of dielectric loss in the capacitors.

A Different Approach

It was time for more coffee and deep contemplation. What choice remained, other than installing air variables? Defeat couldn't be accepted so easily! Just then co-author Dorbuck happened by the WICER lab bench to inquire about the reason for some unprintable words that were being muttered in despair. After learning of the problem he returned with the *ITT Handbook* and quoted from it the properties of various dielectric materials.² His delivery included facts about Teflon and polyethylene, and the obvious solution seemed at hand: fabricate a fixed-value capacitor from a piece of metal and a sheet of Teflon. But first it was decided to try using glass-epoxy pc board for a capacitor. A suitable number of pieces were stacked and joined electrically to make an 800-pF sandwich. The unit was installed and power was applied to the amplifier. A pair of very long faces and a hot capacitor were the result. Dielectric losses in the epoxy were worse than with the mica capacitors. So, a sheet of Teflon (10-mil thickness) was cut to go with a single piece of pc board, 4-1/2 x 6 inches in size. The foregoing dimensions gave a 750-pF value when compressed against a metal plate. The aluminum chassis under the 807s became the second plate of the new capacitor. The pc section and Teflon were bolted in place by means of six No. 6 nylon screws.³ Success! When power was applied an efficiency of 66 percent was noted. The amplifier worked perfectly.

During one of the tests the amplifier became unterminated because of a faulty coax cable. It had

² *Reference Data for Engineers*, 5th Edition, p. 4-28.

³ Nylon is notoriously poor as a dielectric material at rf. The screws should not be allowed to come in contact with any circuit which is "hot" with rf energy.

been running at its 350-watt maximum dc-input limit. An arc developed in the Teflon capacitor and one of the nylon screws caught fire. Examination showed that the burned nylon screw had been in direct contact with the copper foil of the capacitor. Nylon has very poor dielectric properties at rf, so no wonder a failure occurred. A large drill bit was used to chamfer the stock around each No. 6 hole. That provided 1/8 inch of clearance between the copper and each No. 6 nylon screw. A new sheet of Teflon was installed after noticing a black pin hole in the material. No doubt the arc caused the perforation. The new capacitor worked fine and remains sturdy after many hours of operation.

It is likely that polyethylene sheeting could be used in place of the Teflon. The former would be somewhat less expensive and should be more readily available. The Teflon used in this project was purchased from a nearby plastics supplier for \$2.⁴ If polyethylene is used it should be the clear kind to assure optimum purity. Vinyl and similar plastics are unsatisfactory for the homemade capacitor.

Metal mounting screws can be used provided they aren't allowed to come in contact with the "hot" plate of the capacitor or the chassis. Ceramic or Teflon insulating washers can be used to keep the metal screws isolated.

It was satisfying to have built a capacitor that cost less than \$3 as opposed to paying \$25 or more for an air-dielectric transmitting variable. Incidentally, the output capacitors were purchased at a flea market - just \$1 for the five. There is no reason why a builder couldn't fashion a suitable output capacitor from sections of pc board and Teflon or polyethylene.

Designing for the Higher Bands

The physical impracticality of this general design can be seen when extending it to 10 or 20

⁴ Teflon sheet is available in 144-square-inch pieces (10 mil) from New England Electronics Engineering, Inc., Box 145, Wethersfield, CT 06109. Write for prices.

meters. In converting X_L to inductance it becomes necessary to use a 0.75- μ H coil for operation at 28 MHz. The problem is created by the low plate impedance resulting from the use of high plate current versus low plate voltage.

It seemed reasonable to develop a modified pi-network design that would permit tapping the plates down on the input of the network (Fig. 2) by means of a capacitive divider. The authors collaborated to devise a workable set of equations for solving the problem. The resultant procedure is outlined in the appendix.

The scheme calls for the building of two homemade fixed-value capacitors. For the upper end of the hf spectrum they will be small of capacitance and physical size. It is necessary first to design a pi-section network for some impedance higher than 1200 ohms at the input port. A value of 3000 ohms proved to be entirely viable for most designs. In this application the pi-network output capacitor, computed for a 50-ohm output load, remains a conventional value.

Some Final Comments

It isn't likely that anyone will apply this design to a 2-kW PEP amplifier, but it's entirely possible that it could be done. Certainly, such an endeavor would be worthy of a *QST* article, and we're hoping to have input on such a design if some reader develops one.

There were some unsolicited comments made in a jocular fashion with reference to the design of Fig. 1. At least one person in the lab insisted it be named the "Setback Amplifier," for it seemed to set back the state of the art through the employment of 807 tubes and the age-old method of varying the tank inductance. Could be! But the amplifier "plays" nicely, and it didn't cost much to build. No time was wasted in trying to locate variable capacitors, and that was rewarding enough.

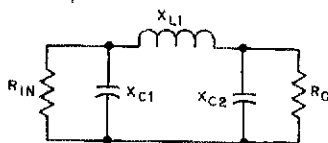
Appendix

The amplifier plate impedance is calculated in accordance with the class of operation, the plate voltage, and the plate current in amperes at the period of maximum current. For Class AB:

$$R_L = \frac{E_p}{1.3 I_p}$$

where R_L = plate impedance, E_p = plate voltage, and I_p = plate current in amperes. Therefore, with a plate voltage of 750 and a plate current of 0.48 ampere maximum, the R_L is 1200 ohms.

Calculate the constants for the tank circuit in a normal manner. Q_L can be selected arbitrarily, but a figure of 10 is viable for 160 and 80 meters in seeking physically practical inductance values. For the bands above 80 meters a Q_L of 15 is a suitable ball-park value. Constants for the circuit of Fig. 1 were obtained by:

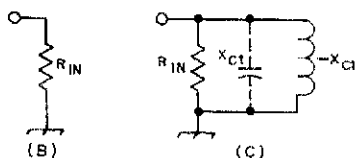
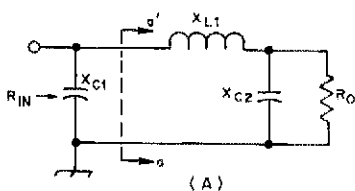


$$X_{C1} = \frac{R_{in}}{Q_L}$$

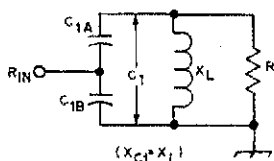
$$X_{C2} = R_O \sqrt{\frac{R_{in}/R_O}{Q_L^2 + 1} - (R_{in}/R_O)}$$

$$X_{L1} = \frac{Q_L R_{in} (R_{in} R_O / X_{C2})}{Q_L^2 + 1}$$

The following progression can be used to determine the tank-circuit values for the modified pi network of Fig. 2, and will yield acceptable component values for the hf bands above 80 meters. Determine C1A and C1B in the following manner.



First, consider the equivalent circuit as seen looking into the input port of the pi network (A). The circuit will look like a resistance to ground with a value of R_{in} (B). Next, assume C_1 is removed and it is desired to find the equivalent circuit looking into the terminals at aa' (A). In order for the network to have been in resonance, the reactance of C_1 (X_{C1}) had to be cancelled by an equivalent parallel inductive reactance with a value of X_{C1} . The result is that when C_1 is removed (C), the equivalent circuit looks like a resistance (R_{in}) in parallel with an inductive reactance equal to X_{C1} .



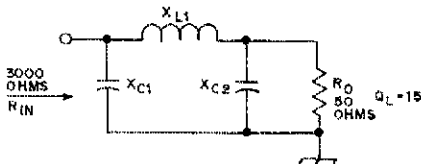
If C1 is now replaced by the capacitive divider consisting of C1A and C1B (above), the values of the latter two quantities can be computed by the following:

$$Q_L = \frac{R}{X_L}$$

$$X_{C1B} = \frac{R_{in}}{\sqrt{\frac{R_{in}(Q_L^2 + 1)}{R} - 1}}$$

$$X_{C1A} = \frac{RQ_L}{Q_L^2 + 1} \left(1 - \frac{R_{in}}{Q_L X_{C1B}} \right)$$

where R_{in} is the desired value of input resistance. As an example, assume that the original pi network was to be designed for matching 3000 ohms to 50 ohms, and with a Q_L of 15.



$$X_{C1} = R_{in}/Q_L, 3000/15 = 200 \text{ ohms}$$

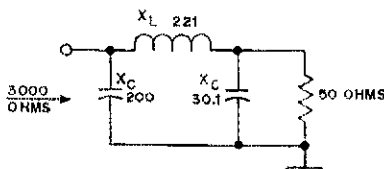
It is convenient to compute R_{in}/R_o and $Q_L^2 + 1$ before continuing: $R_{in}/R_o = 3000/50 = 60$, $Q_L^2 + 1 = 15^2 + 1 = 226$

$$X_{C2} = R_o \sqrt{\frac{R_{in}/R_o}{Q_L^2 + 1 - (R_{in}/R_o)}} =$$

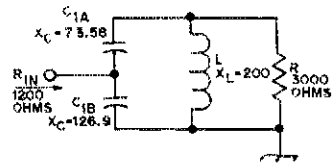
$$50 \sqrt{\frac{60}{226 - 60}} = 30.06 \text{ ohms.}$$

$$X_L = \frac{Q_L R_{in} + (R_{in} R_o / X_{C2})}{Q_L^2 + 1} = \frac{15 \cdot 3000 + \left(\frac{50 \cdot 3000}{30.06} \right)}{226}$$

$$X_L = 221 \text{ ohms.}$$



Next, assume it is desired to use the circuit as a modified pi-network tank, as illustrated in Fig. 2. A capacitive divider must be determined to convert the input resistance from 3000 to 1200 ohms, the latter occurring at the junction of the two capacitors in the divider.

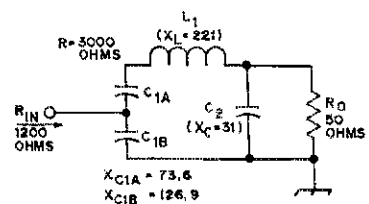


$$Q_L = \frac{R}{X_L} = \frac{3000}{200} = 15 \text{ (since } X_{C1} = X_L)$$

$$\therefore X_{C1B} = \frac{R_{in}}{\sqrt{\frac{R_{in}(Q_L^2 + 1)}{R} - 1}} = \frac{1200}{\sqrt{\frac{1200(226)}{3000} - 1}} = 126.9 \text{ ohms.}$$

$$X_{C1A} = \frac{RQ_L}{Q_L^2 + 1} \left(1 - \frac{R_{in}}{Q_L X_{C1B}} \right) = \frac{3000 \cdot 15}{226} \left(1 - \frac{1200}{15 \cdot 127} \right)$$

$$X_{C1A} = 73.58 \text{ ohms.}$$



The foregoing network values have been computed for operation at 28 MHz:

$$C_2 = \frac{1}{2\pi X_{C2} \cdot 28 \cdot 10^6} = 183 \text{ pF}$$

$$C_{1A} = 77 \text{ pF} \quad C_{1B} = 44 \text{ pF}$$

$$L_1 = \frac{X_{L1}}{2\pi \cdot 28 \cdot 10^6} = 1.25 \text{ } \mu\text{H}$$

One final consideration remains. The output capacitance of the tube or tubes used in the amplifier becomes part of the capacitive divider in

the network. Therefore, the amount of C_o (tube output capacitance) must be subtracted from the computed value of C1B. In the case of four parallel 807s, 28 pF must be subtracted from 44 pF (7 pF per tube) to provide the true value of C1B. In the practical circuit it is necessary (in this example) to fabricate a 16-pF capacitor for use at C1B.

The formula for determining the size of the plates for a homemade capacitor is:

$$C = 0.224 \frac{KA}{d} (n - 1)$$

where C = capacitance in pF, K = dielectric constant of the material between the plates, and A is the area of one side of one plate in square inches. Term d relates to the dielectric thickness in inches (plate spacing), and n = the number of plates.

In practice, where solid dielectric materials are used, the computed value is difficult to realize. This results from the impracticability of bringing

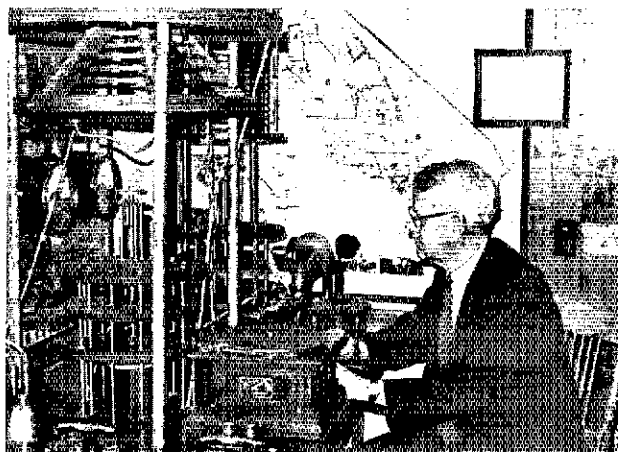
the capacitor plates together firmly enough to maintain a distance exactly equal to the dielectric material thickness. Therefore, the computed value will always be greater than the practical value. This effect is illustrated by the capacitor used in the circuit of Fig. 1, where a 4-1/2 x 6-inch plate is used with a sheet of 10-mil (.01 inch) Teflon. The computed value is 1270 pF. However, it is not possible to compress the plates adequately by means of the six nylon screws. Thus, the capacitance turns out to be 750 pF. Furthermore, some air will always be present on each side of the Teflon sheet, thereby adding somewhat to the effective dielectric thickness.

It would be entirely practical to use the foregoing equation for capacitor designs at the high end of the hf spectrum, provided air-dielectric spacing is used. Because of the relatively low capacitance values encountered (77 pF and 16 pF) for the divider (C1A and C1B) at 28 MHz, air-dielectric capacitors would be easy to build from aluminum plates. QST

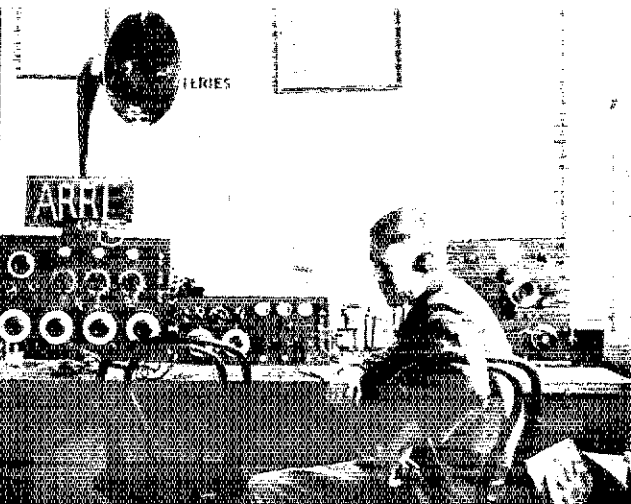
Strays

Noel Eaton, VE3CJ, President, IARU, at an antique broadcast station at Foothill College (California) Electronic Museum. (Photo by W6JZU)

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.



On the right 5KR in 1923, on the left is Bill once again, now W5YN, still enjoying hamming and still a firm ARRL fan.



A STACKED MULTIBAND VERTICAL FOR 80-10 METERS

Here is the complete antenna, roof mounted.

BY WILLI RICHARTZ,* HB9ADQ

I HAVE RECEIVED many requests from amateurs in the United States for a description of my multiband stacked vertical antenna. It has an overall height of approximately 60 feet and covers the 80- through 10-meter bands.

Electrical Description

In order to obtain maximum performance on 80 meters, a full-size quarter-wavelength radiator is required, which has a length of 60 to 65 feet. This length sets the main requirement and means we must work from this requirement to obtain multiband performance on each of the other bands *without* having angles of radiation too high for effective use. Fig. 1 shows the current distribution on each of the bands. On 40 meters, the antenna performs as a half-wave radiator.

The cheapest solution to obtain multiband performance is to use a stub and a trap (see Fig. 2). The trap, near the top of the antenna, is for 15 meters and is tuned to approximately 20.8 MHz. The stub is used for 15 and 20 meters. The resulting electrical configuration is a 9/16-wavelength section stacked above a 5/8-wavelength section for 15 meters. On 20 meters we have a 5/8 wavelength radiator above a 3/8 wavelength one. The phasing stub has a length of 8 feet and 3 inches, which works out to 1/8 and 3/16 wavelength respectively for 20 and 15. The only band that could be considered lacking in outstanding performance is 10 meters, because the lengths are not optimum. However, the antenna does perform as well as, if not better than, a quarter-wavelength vertical.

Construction Information

My vertical is constructed of aluminum tubing, starting with a bottom section approximately 3-1/2

* 8 Looslistr 12, CH 3027 Bern, BE Switzerland.

inches OD and consisting of eight sections, each tapered to fit the succeeding one. Two insulators are required, one at the base where the antenna is supported, and the other at the stub. (see Fig. 3). I use three nylon guys on the antenna, approximately 10 feet (3 meters) above the base.

The stub is made from 1/2-inch diameter tubing and has one brace installed. The antenna has been in use for two years and I haven't had any trouble with the stub breaking off.

Tune-Up and Adjustments

The goal in tuning up the antenna is to adjust the length between the stub and the trap for 15-meter resonance and the section *above* the trap for 20 meters. I used an rf indicator consisting of a microammeter and a diode (to rectify the rf). A neon lamp could also be used, but this would mean making the adjustments at night when the lamp would be visible. The objective is to adjust the sections mentioned above so that minimum rf appears at the end of the stub. I used some long

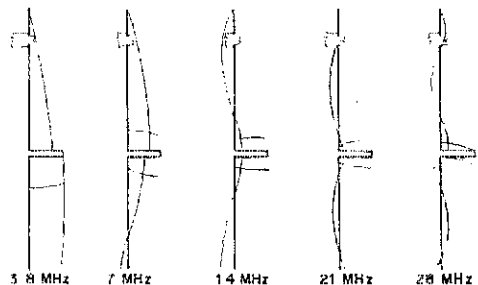


Fig. 1 - Current distribution for the multiband vertical, 80 through 10 meters.

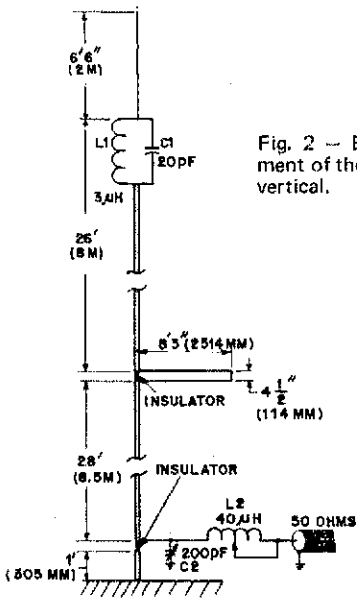
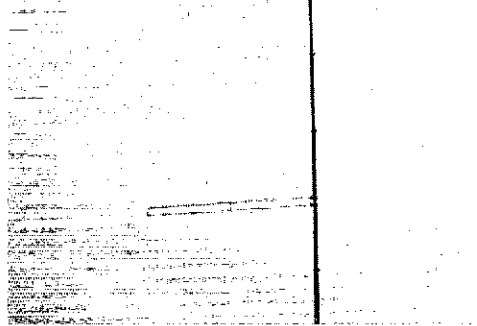


Fig. 2 - Basic arrangement of the multiband vertical.



This photograph shows the stub.

wooden rods connected together, with the rf indicator attached to the end, to get the necessary length to reach the stub from the ground.

Apply power to the antenna on the desired frequency on 15 meters. Check the rf along the stub, looking for a minimum indication. If the minimum point occurs on the bottom leg of the stub, then the vertical portion above the stub needs to be lengthened. If the minimum is on the top leg of the stub, then shortening is in order. The objective is to obtain minimum rf indication at the end of the stub. The same process is followed on 20 meters, but in this case only the length above the trap is adjusted.

In my case, I didn't have a 160-meter transmitter, but it should be apparent that this would make a very good antenna for that band. Also, it should be pointed out that radials will help improve the antenna system.

In order to provide a good load for the transmitter I use a coupling network at the base of

the antenna, as shown in Fig. 2. I was fortunate enough to obtain a motor-driven coil and capacitor so the antenna could be adjusted remotely.

The antenna has been a very good performer. On 40, 20 and 15 meters there is gain from the system, as compared to a quarter-wavelength vertical.

Q57-

Strays

STOLEN EQUIPMENT

Ultracom 20, No. 090561 stolen from automobile. Dave Bennett, 3145 176 St., Surrey, BC, Canada V3S 4N8.

Yaesu FT 401B, No. 316104, VFO, FV 401, No. 679927, Johnson Valiant, No. 29166, Collins 75A4, No. 5564, Sonia Kragh, 170 Summit Ave., Ramsey, NJ 97446.

Tempo FMV-2, No. 500443. M. Fujimoto, W6LZL, 7340 Country Club Dr., Downey, CA 90241.

Drake ML2 with 20 crystals, No. 10121, Robert H. Strid, WB4GFD, 1390 87th Ave. No., St. Petersburg, FL 33702.

Heath HW-100, No. 8221390 with Turner 454X mic, Steve Finberg, WIGSL, 25 4th Ave., Pinehurst, MA 01866.

FM 27B, No. 27043-1626 with touch-tone enclosure, T4X, No. 11649, R4A, No. 2638. Gary A. Black, K8PNZ, 3872 Royal, Berkeley, MI 48072.

FT101 with 160 meters, No. 82L129340/CWF. \$100 reward. Paul Skitzki, W1FX, PO Box 187, Portsmouth, RI 02871.

Drake TR-4, No. 29782, Det. Lt. W. Jacobs, Police Department, Englewood, New Jersey.

TR22 with 12 position channel switch (position 5 T&R jumpered), plus homemade GLB synthesizer with 2 four position switches. Terry Fox, WB4JFI, 6343 Carolyn Dr., Falls Church, VA 22044

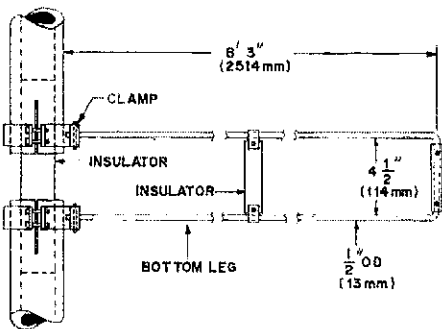


Fig. 3 - Details of the self-supporting stub construction.



Hints and Kinks

For the Experimenter

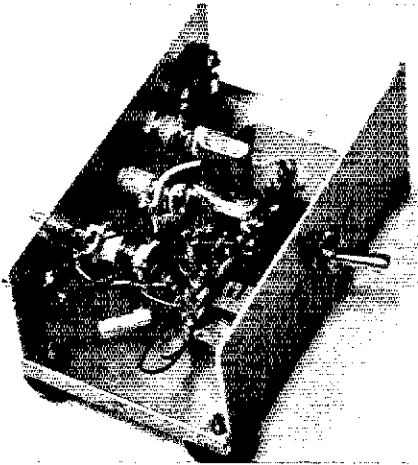


Fig. 1 — The simple 160-meter converter shown here contained in a small aluminum box. The schematic diagram is elsewhere on this page.

A SIMPLE 160-METER CONVERTER

A few of the newer rigs coming out these days have 160-meter coverage. Unfortunately, those of us confined to the older equipment models have to make do with what we have. A simple 160-meter cw or a-m transmitter is no problem to build, and

for receiving, a converter is the simplest way to go. The unit shown is hard to beat for simplicity and performance.

Receiver sensitivity is no problem on 160, so a passive mixer is used. Intermodulation distortion is hardly a problem with this converter! The high output frequency eliminates *f-f* feedthrough and image signals. I used a ten-meter *f-f* since that band is usually dead when 160 is open. However, 20 or 15 meters would do as well. The crystal oscillates on its third overtone and feeds directly into the diode balanced mixer. The device has been used with a Collins 75S3 receiver with excellent results. — Alan Bloom, WA3JSU

OSCAR RECEPTION WITH THE SB-101

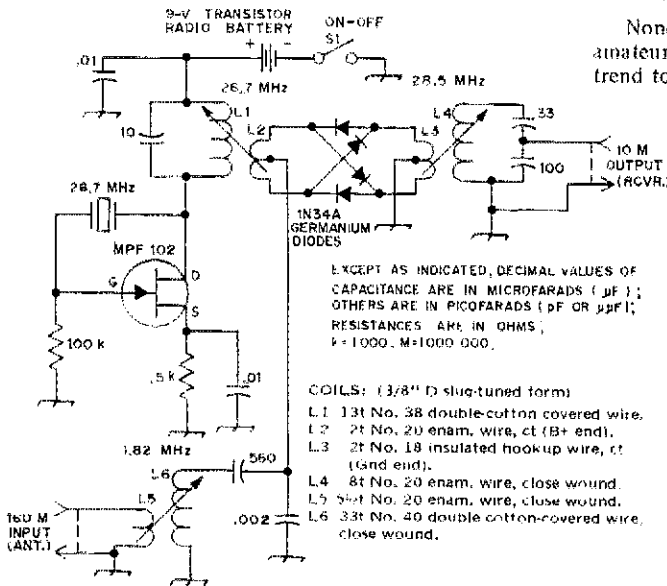
Owners of SB-101s or SB-102s might experience some difficulty when trying to receive the Oscar 10-meter output frequencies, 29.45 to 29.55 MHz, because of the band-switching arrangement in the Heath gear. By replacing the 38.395-MHz crystal (in the heterodyne oscillator circuit) with a 38.295-MHz crystal, the 29.5- to 30-MHz position becomes 29.4 to 29.9 MHz. The only retuning required is that of L608, the plate coil for V19. — Randall Smith, VE2BYG

SELECTABLE NONOVERLINE FOR THE TELETYPE MODEL 28

Nonoverline is a valuable function for most amateur radio teletype applications. However, the trend toward higher baud rates, coupled with poor

operating habits of some amateur and commercial stations, makes correct copying of these stations impossible with the nonoverline function. The authors have yet to find a Model 28 typing unit that will complete the carriage return function in the "less than one character length" required when a printing character follows the line-feed character at 100 wpm. Thus, when nonoverline is being used annoying black "blobs" appear roughly one third of the way across the page. These blobs are caused by the print hammer striking the character which follows the line feed — which also causes carriage return before the carriage has completely returned. There are three possible remedies for this problem:

- 1) Only copy stations which use a



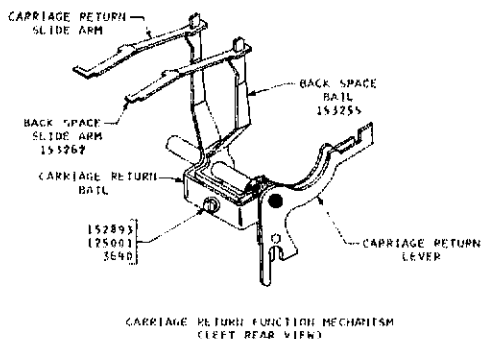


Fig. 2 — The modified carriage-return mechanism for nonoverline operation.

nonprinting character code after the line-feed code.

2) Do not use nonoverline when copying of-fending stations.

3) Use a machine that can complete the carriage return before the next character is struck.

This article explains a simple modification which allows the carriage return on receipt of the carriage return code to be optionally selected in addition to the nonoverline function without removing the typing unit from the cabinet.

The modification consists of using a part of the on-line backspace-function mechanism to perform the carriage-return function. In order to do this a carriage-return-function bar along with the associated function lever, function pawl, function-pawl clip, spring plate, and springs must be installed in slot 9 of the stunt box. The rest of the modification consists of adding a back-space slide arm along with its retaining plate and a back-space bail. Many Mark III machines already have the back-space bail installed, so you only need to add the back-space slide arm and retaining plate. The back-space bail is installed on the same shaft as the carriage-return bail as shown in Fig. 2. A carriage-return slide arm may be used in place of the back-space slide arm if one is available and if either the two-slot extension on the rear of the arm is removed or slot 8 of the stunt box is not used. There is a screw in each end of the carriage-return bail shaft which may be removed allowing the shaft to be pulled away from the machine so that the back-space bail assembly can be placed on the shaft. This operation requires some twisting and turning, but it can be done. Once the parts have been installed, the carriage-return adjustment should be checked. Note that the screw in the carriage-return bail extends through a slot in the back-space bail to couple the two. They are not screwed together rigidly.

With the modification completed, the function pawl in slot 9 can be disabled with the pawl clip and the nonoverline will operate in the normal fashion. The clip can also be set so that slot 9 is active and the machine will carriage return on receipt of the carriage-return code with the following line-feed character interval providing the time

needed for completion of the carriage-return function.

We have found this feature to be extremely useful when copying 100-wpm press stations, some amateur stations, and certain types of teletype art where overlining is used on purpose. The required parts necessary for nonoverline operation are listed below:

— *Lenox Carruth, Jr., WASOVG and Dick McDonald, KSWOR.*

Teletype Corporation Part Number

153254	Bracket. Retaining plate for back space slide arm.
151657	Screw. Used with 153254.
2191	Lock washer. Used with 151657.
152127	Clip. Function pawl clip.
152642	Function lever.
152653	Function pawl.
152660	Plate, spring.
157240	Spring.
72522	Wick.
90517	Spring.
4703	Spring.
152667	Function bar (carriage return).
153262	Back space slide arm. A modified carriage return slide arm may be used.
153255	Back space bail.
152893	Screw. Used to couple back space bail and carriage return bail.
3640	Lock washer. Used with 152893.
15011	Washer. Used with 152893.

GUY ANCHOR TEST

Shown in the accompanying photograph is a simple and effective way to test that screw-in guy anchor which you may have just installed. When this kind of anchor is in sandy soil, it sometimes leaves the question in one's mind, "Will it hold?" After I heard a real bad crunch, I decided it wasn't worth tearing the car apart to try harder. Even with a car jack, I don't believe it could have been pulled out. — *Roger Kaul, WFLM*

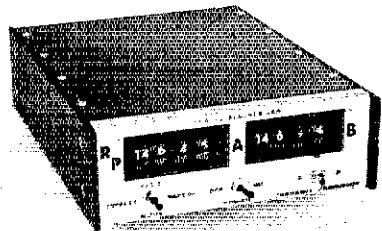




Recent Equipment



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



The *RP* *Electronics* *MFA-22* Frequency Synthesizer

WITH THE GROWING number of repeaters, increased channel capability is becoming a requirement rather than a luxury. While some rigs are inclusive of a synthesizer as standard equipment (see Recent Equipment in *QST* for July, 1974) in order to get this capability, the problem remains of what to do about an older transceiver. For the stay-at-home ham, perhaps a few extra crystals will provide the best solution. However, for those who do much traveling, an external synthesizer eliminates the need for an extensive crystal inventory. The RP Electronics MFA-22 frequency synthesizer is one answer to carrying scores of transmit and receive crystals for complete repeater coverage. In addition, the need for netting each crystal is eliminated.

One question that immediately comes up, whenever a device such as a synthesizer is considered, is whether or not it will cause spurious output from an otherwise clean rig. Any advantages a synthesizer might offer would be more than offset if interference to other services or repeaters occurred. Consequently, the MFA-22 was checked on a wide-dispersion spectrum analyzer. There was no increase in the number or the strength of spurious products compared to operation of the transceiver under test when it was used in the crystal-controlled mode. There is one precaution that should be observed: be sure the synthesizer is turned off when the transceiver is returned to crystal-controlled operation. Otherwise, rf energy from the synthesizer may get into the transceiver circuitry and cause a drastic increase in spurious-product output.

Operation

The MFA-22 is a frequency synthesizer of the phase-locked-loop type. Some earlier synthesis schemes utilized complicated mixing processes involving numerous oscillators. The result was that spurious products in the output were indistinguishable from the desired signal! While such

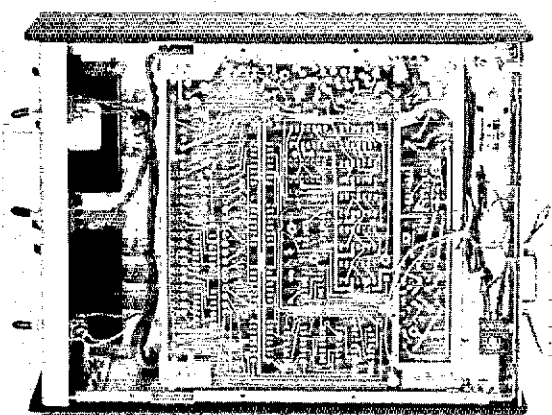
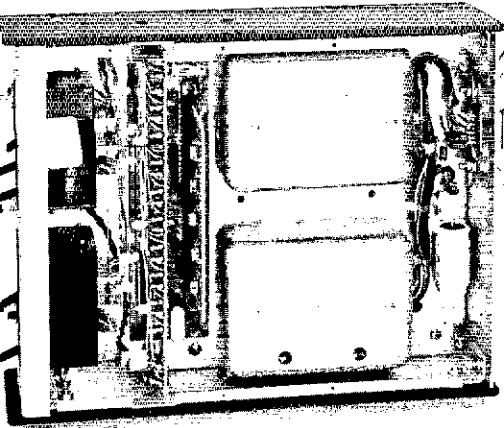
synthesizers were useful in certain frequency-measuring applications, they were all but worthless when used with transmitters and receivers unless very costly preventive measures were taken.

With the advent of small solid-state digital devices, a new approach to synthesizer design became possible. The output of a single voltage-controlled oscillator is coupled to a variable divider chain and compared in a phase detector with a reference oscillator. The error voltage from the phase detector is then used to control the frequency of the VCO. Output frequency is varied by changing the division ratio of the chain by means of controls on the front panel. Another advantage, although of limited usefulness in amateur applications, is that such synthesizers are *programmable*. That is, frequency control from a remote point is possible by digital means and no mechanical coupling is necessary.

The MFA-2 and MFA-22

The synthesizer is available in two basic models. The MFA-2 is a "single" version and provides two modes of operation - simplex or repeat. In the simplex mode the output frequency is the same for transmit or receive. In the repeat mode the output frequency, when receiving, is shifted up to 600 kHz. Modification instructions are included in the instruction manual to reverse the control logic for high-in/low-out repeaters.

Somewhat greater flexibility is obtainable with the MFA-22. Simplex and repeat operations are similar to those of the MFA-2. In addition, a third mode is available, and is called the split mode. Here, either transmit or receive frequencies are selected independently by means of two BCD lever-wheel dial switches. The transmit frequency can be set with one switch and the receive frequency with the other without regard to frequency spacing or relative position. This feature is also handy in the simplex mode (while receiving), since the synthesizer can be set for two channels.



Shown above are two views of the MFA-22 synthesizer. Left photo is of the top view, and the right shows the bottom view.

Either synthesizer (MFA-2 or MFA-22) can be used with a wide variety of fm gear. However, the synthesizer has to be ordered for a specific transceiver model since many different crystal-frequency schemes are used. The synthesizer is compatible with transceivers using transmitting crystals on 6, 8, 12, and 18 MHz and receiving crystals from 11 to 13 MHz and 15 to 18 MHz. Other frequency schemes may be used and the multiplying formula should be included when ordering since extra frequency multipliers are required. Also, if the transceiver uses direct fm modulation of the crystal oscillator, a modulator board for the synthesizer is necessary. If any doubt exists when ordering, the factory should be contacted.

Installation of the synthesizer is relatively straightforward. One channel of the transceiver is modified for synthesizer operation and the output from the synthesizer is connected to the crystal oscillator in place of one set of receive and transmit crystals. Other transceiver modifications include connections to the PTT bus and provisions for powering the synthesizer. Power requirements of the latter are 13.6 volts at 800 mA. No problem will exist if operation is from the car battery, but many transceiver ac supplies will not accept the extra load properly. Heating of the power supply may occur when the synthesizer is in operation. Consequently, a separate ac supply is recommended. Other than the foregoing conversions, no other modifications to the transceiver are required.

Some Conclusions

The RP Electronics synthesizer seems to be a well-designed unit. Good RFI-suppression measures are taken to ensure a minimum amount of spurious radiation and maximum immunity to malfunctions in the presence of strong rf fields. For instance, the outer case is all metal and the top and bottom covers are fastened with a copious amount of

screws to ensure good bonding. Interior shielding is also used to isolate RFI-sensitive areas from the rest of the circuits. Power and control leads going out of the case are filtered adequately by means of ferrite chokes. No problems with the synthesizer were encountered and operation of the transceiver in either the crystal-controlled or synthesizer mode was identical. Of course, this also means if the rig is not working properly with crystal control, synthesizer operation will not be likely to improve things.

Because of the sophistication of the MFA-22, the company encourages owners to get in touch with the factory should any difficulties arise. The synthesizer solid-state design should provide trouble-free service, however. One weak point the writer did note was that the instruction book could be improved. Little information is included on synthesizer-circuit operation, which would be of help if troubleshooting the unit became necessary.

The RP Electronics MFA-22 Frequency Synthesizer

Dimensions (HWD) and Weight:

2-1/2 × 6-3/4 × 10 inches, 3 pounds.

Power requirements: 13.6 V dc, 800 mA (negative ground).

Frequency range: 144.00 to 147.99 MHz in 10-kHz steps.

Available options: Extended frequency range (143.00 to 149.00 MHz), fm modulator, mobile-mounting bracket, 5-kHz readout, and frequency-multiplier stage.

Price class: \$260 for MFA-2; \$325 for MFA-22.

Manufacturer: RP Electronics, 810 Dennison Dr., Box 1201, Champaign, IL 61820.

On the other hand, instructions for modifying the transceiver for operation with the synthesizer are

quite clear and easy to follow. Instructions for using the synthesizer are also very good. — *W1YNC*

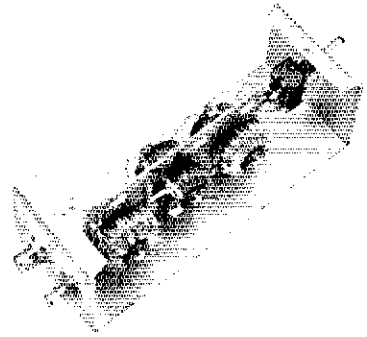
QST

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• New Apparatus

NEW ENGLAND ELECTRONICS ENGINEERING CRUD-O-JECT



It is difficult to find a receiving system today which has all the qualities that one desires, and at the same time stays within economic range of the pocketbook. In many receivers maladies such as 60- and 120-Hz hum, high-frequency hiss and i-f filter leakage often make their way into the audio circuitry, which can be objectionable to some individuals. Engineering a good receiver means keeping costs down *aside* from designing the actual system. The problems that remain in a receiver are often deemed a minor concern by the manufacturer, but for many operators they are something to be reckoned with. The New England Electronics Engineering Crud-O-Ject does a magnificent job in clearing up most of these maladies without rework in the receiver. This passive network interfaces the receiver to the operator's headset or speaker. There are two types of Crud-O-Jects available, each offering the same qualities, but catering to the needs of the ssb- or cw-type bandwidths. The devices are similar in design to those published in *QST* over the past few years. These commercial systems are different from the original models because they provide a low-impedance input and output level, something which is common to most receivers on the market today.

In outward appearance the cw model is very similar to the ssb one. If it were not for the silk-screened CW and SSB indication on the front panel it would be difficult to determine which model was which. The ssb Crud-O-Ject is equipped with a pair of phono jacks for input and output connections; the cw version has one phono jack (input) and one 1/4-inch diameter phone jack for headphones or speaker.

Input and output impedance matching is accomplished by means of a bifilar secondary winding on the corresponding inductors. The impedance, both input and output, measured at the center frequency, ranges from 9.2 ohms on the cw model to 11 ohms on the ssb version. Speakers or headphones from 4 to 16 ohms impedance will terminate the filter nicely and provide proper operation. Selectivity curves for both the cw and ssb versions are given in Fig. 1. It should be noted that, while a significant amount of attenuation is developed at the frequencies of hum and hiss, the nose of the filters will add a substantial amount of selectivity to most receiver filter systems.

The band-pass characteristics of the cw model are approximately 150-Hz narrower than the typical 500-Hz cw crystal filter. This will give a noticeable improvement in overall selectivity and

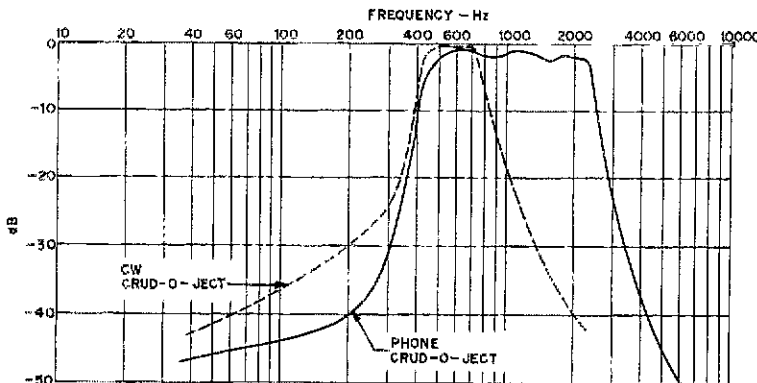


Fig. 1 — Selectivity curves for both the ssb and cw Crud-O-Jects.

will completely eliminate any i-f filter leak-through. Leak-through consists of the high-pitched signals at frequencies outside the skirts of the receiver filter. The ssb Crud-O-Ject serves a similar function by reducing the effects of high-pitched splatter (QRM) or low-frequency rumble on the received signal. If the receiver is equipped with an ssb filter which has a 2.4- or 2.7-kHz bandwidth, the sharper response of the Crud-O-Ject will be dramatic.

Another feature worth mentioning about the cw model is its ability to smooth out a rough-sounding sidetone in a transmitting setup. The harmonic energy developed by some transceiver sidetone oscillators tends to give them mushy tones. The Crud-O-Ject eliminates a major amount of the harmonic energy and provides the operator with a tone which is much more pleasing to the ear. One problem exists here: if the sidetone is well out of the filter passband it will be attenuated somewhat. Usually, increasing the level of the sidetone will overcome this condition. Insertion loss for the cw model was measured as approximately one dB. Most operators cannot hear this

difference in level. Those who detect the difference can compensate for it by increasing the receiver volume slightly. The measured loss in the ssb version was found to be slightly greater than one dB, which may be overcome in the same manner as with the cw model.

The Crud-O-Ject will perform best and will give the user greater operating pleasure *only* when it is terminated properly. If hi-fi type headphones are not used in the station, a simple step-up transformer between the Crud-O-Ject output and your headset will do the trick. If a multitap audio transformer is used, just vary the tap for the loudest volume. Such transformers can usually be found at your local parts emporium. The manufacturer provides a transformer as an optional accessory if you cannot find one locally.

The dimensions (HWD) are 2-1/4 X 2-1/4 X 6 inches and it weighs one pound. Both models are green Hammertone. The price class for the cw model is \$25 and the ssb type is \$30. The address is New England Electronics Engineering, P. O. Box 145, Wethersfield, CT 06109, - *WA1PID*

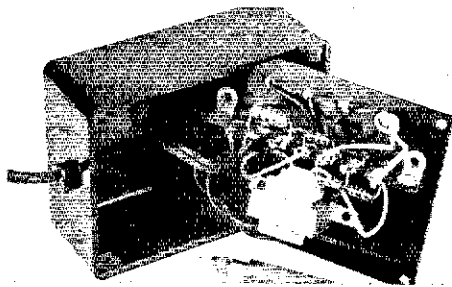
QST ——— QST ——— QST

THE RCA WC-528B QUICKTESTER

The RCA WC-528B Quicktester is used in conjunction with an oscilloscope and the combination permits rapid checking of a number of component types. The applications include checking diodes, bipolar transistors, capacitors, af-range inductors and transformers. Two leads from the Quicktester are connected to the device to be tested and the current-versus-voltage curve is displayed on the scope. While the amount of information obtained from such curves depends to a large extent upon the skill and experience of the operator, the Quicktester is a handy instrument to have around the shack. For instance, one occasionally finds it necessary to determine the polarity of one transformer winding with respect to another. Connecting transformer windings in series or parallel is a case where such information would be required. If the Quicktester is connected across a winding that is not of interest (a primary winding, for example) the polarity of any two identical windings can be found. The two identical windings are connected in series and the waveform across the isolated winding (primary) is observed. This should be a more or less oval pattern. If this series combination is then shorted, a vertical straight line on the scope will appear, indicating that the windings are connected so that the voltages add. This means the polarity of each of the windings is oriented correctly. If the waveform remains unchanged, the polarities of the windings are opposite in phase.

Connecting two identical windings in parallel will yield a vertical straight-line display on the scope if the polarities are reversed on the isolated winding. If the polarities of the identical windings are correctly in phase, no change in the waveform results.

Capacitors also give an oval waveform and ones with high values of capacitance result in an almost vertical straight line. Low values of capacitance will give a horizontal straight line. Diodes give an L-shaped display, as do the base-to-emitter and base-to-collector junctions of bipolar transistors.



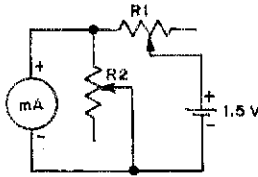
The diode comprising the base-to-emitter junction gives a somewhat different waveform because of the low PRV characteristic between these two elements.

The foregoing are typical of the amateur applications suitable for the Quicktester. Testing of in-circuit devices is also possible with the WC-528B. However, analyzing the resulting waveforms becomes more difficult because of the effect of other components. This procedure would be useful in commercial applications where information regarding such waveforms would be available from other units. Usually, this is not the case with amateur troubleshooting problems and components in question would probably have to be removed from the circuit.†

Detailed instructions are included with the WC-528B and a number of sample waveforms are shown. The price class of the WC-528B is \$15, and it is available through distributors of RCA test equipment. If there is no distributor locally, write to RCA Commercial Engineering, 415 South Fifth St., Harrison, NJ 07029, - *W1YNC*

†[EDITOR'S NOTE: Further discussion of this type of test equipment can be found in *QST* for January, 1975, page 40. Typical oscilloscope displays for conditions most often encountered in equipment testing are offered in this article.]

MEASURING METER RESISTANCE



BY ZEB WILLIAM RIKE, III,* K5BBN

EACH OF US has at one time needed to measure the internal resistance of a meter. This applies to new meters as well as to surplus units. (Have you ever tried to find data for the internal resistance of a meter listed in the usual mail-order electronics catalog?) There is a very good reference in the *Handbook*¹ to a method which may be used to measure a meter resistance. However, certain precautions should be taken to avoid one of the pitfalls inherent in the procedure.

Let us examine a numerical example to illustrate the source of the errors and see what the magnitude of the latter were in one actual case.

The basic measuring scheme taken from the *Handbook* is shown in Fig. 1. Now, this procedure is simple enough to carry out. However, there is one point which can easily be overlooked and the problem might cause sizable errors in the meter-resistance value measured. This error results from assuming that the total current drawn from the battery does not change when R2 is connected. Or, the implied assumption is that the battery and R1 form a constant-current source. This is never true, but this ideal situation is approached as closely as required for any degree of accuracy simply by increasing the battery voltage and the value of R1. (It is also possible to replace the battery and R1 with a constant-current source of the appropriate current rating. However, this is another subject.)

To get on with the example, assume that you have a meter with an internal resistance of 500 ohms (unknown to you, but which you want to measure) and that it has a 0- to 1-mA range. If the voltage is 1.5 volts as shown in Fig. 1, then for a current of 1.0 mA, the total series resistance will

(Continued on page 73)

Fig. 1 — Determining the internal resistance of a milliammeter or microammeter. R1 is an adjustable resistor having a maximum value about twice that necessary for limiting the current to full-scale with R2 disconnected; adjust it for exactly full-scale reading. Then connect R2 and adjust it for exactly half-scale reading. The resistance of R2 is then equal to the internal resistance of the meter, and the resistor may be removed from the circuit and measured separately. Internal resistances vary from a few ohms to several hundred ohms, depending on the sensitivity of the instrument.

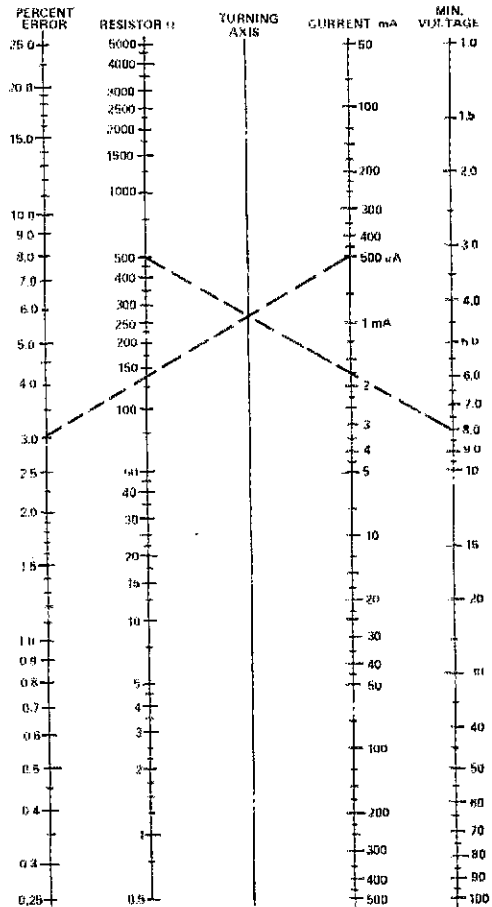


Fig. 2 — Nomograph for determining accuracy of meter-resistance measurements.

* 2033 Coronado Place, Orange, TX 77630.

¹ See the Measurements chapter of *The Radio Amateur's Handbook*, up to the 47th (1970) edition.

Contesting

A Great Emotional Experience

BY ALBERT KAHN,* K4FW

A FEW YEARS AGO as we were preparing to move from Michigan to Tennessee, I was helping my XYL ruthlessly dispose of long collected memorabilia in the attic. Stuff such as old photographs we couldn't identify, faded QSL cards and yellowing logs that exuded exotic and now extinct country names. Among these little treasures were a stack of Playbills.

hour you peel off J's as if you were DX. Along comes a DU and a VR3 for a bonus.

Disappointment. In the closing hours of SS you need a KL7 for a Grand Slam — your first. Finally you hear one loud and clear. You nail him on a short call. Then you realize his section is NNJ and he is KL7 something/2.

Justifiable Pride. A DL says "Best signal from USA."

Chagrin. A G gives you a 459 but 599 to a friend.

Joy. A new country, a new multiplier on one short call.

Despair. The contest is half over and you are going great. You change bands and find you are tuning for "minimum smoke."

Love. You are trying to raise a TA who is 3-5 on the bottom of a pile-up. You hear an "SK" once in a while. A W2 calls in and says, "Go ahead K4FW, he came back to you."

Comedy. A VR4 is putting in a fine signal and laboriously working at 8 wpm. On each transmission he repeats his name, QTH, QSL manager, etc., while 1,000 panting hams are poised to strike. Smack on his frequency a WB8 begins a long CQ obliterating the VR4. When the frequency clears, who does the VR4 go back to? You guessed it, the WB8 who called CQ.

Tragedy. An AC3 shows up on 20. You never even heard one before. Seconds later a W6 calls a long CQ DX on his frequency. You call about the time you think W6 signs. Hooray! The AC3 returns "K4?" The W6 cranks up his CQ machine again. The band is going out and that is the last time you have ever heard an AC3.

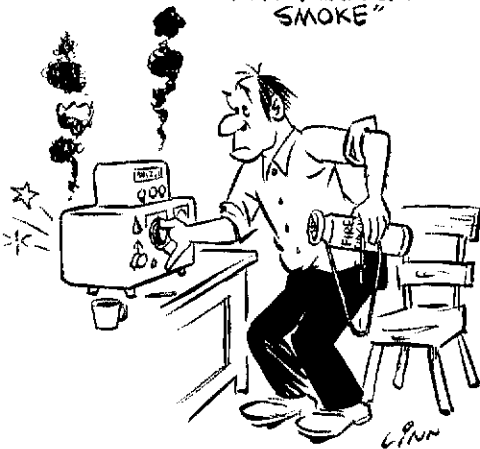
Hate. After a wobbly start in SS you finally find a groove. By Squatter's Rights you stake out a frequency. QSO after QSO fall in line. You are King — the frequency is yours. You own it. (See *Ecstasy.*) Just as you are well along becoming an automatic QSO machine a WØ with a 40 over 9 signal you have just worked, takes over your frequency with a long CQ. String ends, momentum lost. Grrr!

Futility. Up the band, out of the QRM you spot a watery signal calling CQ. Over the pole, perhaps. He signs an exotic call! Eureka, a new country! Only it turns out to be a WB6 after you finally decipher his call sign.

Loves Labor Lost. You are on the prowl for a new multiplier. Wham! You run into a deep pile-up that must mean the rarest of the rare. He isn't signing but working fast. Finally he signs and who is he? A YV you worked early in the contest.

Aggravation. Contest starts, bands terrific. An old friend you haven't seen for 20 years drops in for a visit and stays and stays. A customer calls, wants immediate action. XYL's car won't start. Furnace konks out. House is on fire.

DESPAIR: YOU ARE TUNING FOR "MINIMUM SMOKE"



These are theatre programs that contain sketchy information about the play, ads for expensive liquor, furs and jewelry you wonder who buys. And short biographies of the cast. That was what stunned one, the biographies.

In re-reading these Playbills I suddenly realized that the theatrical training of the actors was only academic. There was not a mention of Ham Radio Contesting — not one!

One of the great philosophers, either Voltaire or Larry LeKashman, W8AB once said that to be a great actor, one must have actually had the emotional experiences he portrays. What better training than *contesting*? Let's take a closer look.

Frustration. Toward the end of a DX contest you hear a new multiplier, an easy one-bounce straight shot. You call and call. Nothing doing, you move up, then down. You zero his last QSO. You say to yourself "skip!" Then he gives a 599 to a new General down the block running QRP and a dipole. After that the DX station goes QRT.

Ecstasy. You aren't doing too well on 21 when suddenly the band opens to the Pacific. For a half

* Old Cartertown Rd., Gatlinburg, TN 37738.

(Continued on page 72)

To EP, or not to EP?

BY HERBERT L. LACEY, JR.,* K4FBG

EP = Emergency Power. It is the ability to produce one's own electrical power during emergency situations. To EP, or not to EP, is the question posed here. Before you answer however, please consider the following:

Justification for Amateur Radio

Section 97.1(a) of the FCC Regulations is quoted here:

(a) Recognition and enhancement of the value of the amateur service to the public as a voluntary noncommercial service, particularly with respect to providing emergency communications. [Emphasis provided.]

There are four other parts under 97.1, but it is not by accident that "emergency communications" is listed first! It ought to be considered by all U. S. amateurs as our major thrust. Some would contend that amateur radio is merely a hobby, thereby sidestepping any attendant responsibility. Fortunately, in this and other things, contending something does not decree it to be true. If we enjoy the privilege of participating in amateur radio, then we should also agree to remain aware of, and be sympathetic with, its justification. We are not true to ourselves, if we accept the former and reject the latter.

Opportunities to Serve

Certainly, radio amateurs do not want to see an emergency situation any more than other people. However, in my judgment, the spirit or intent of the Regulations would direct that we be ready, should an emergency arise. In these days, with Direct Distance Dialing, the need for traffic nets, etc., during normal conditions is smaller than it used to be. That is why we should applaud those faithful workers keeping the nets operating. The training in techniques and the exercising of station equipment is well worth the time and effort. However, the whole "shooting match" is lost if we must rely on commercial power during an emergency. This luxury was not available during the aftermath of the earthquakes in Anchorage and Los Angeles, nor after Hurricane Camille hit Mississippi, et, al., and in numerous other situations. In short, we lose the opportunity to serve — to meet our justification — if we are only as available as our commercial power.

Requirements for EP

First, you need a generator. An assessment of your minimal power needs can be quickly computed. Bear in mind that "minimal" means that

you must eliminate roasting that 23 lb. turkey in the electric oven or drying that load of clothes in the electric dryer, etc. It does, however, include necessities such as some lights, water pump in rural areas, etc., and of course, the station equipment.

There are many good power-generating units available. You can choose from a wide assortment of power ranges, features, etc. However, your minimum functional power requirements must be exceeded in generator capacity by whatever comfortable margin you feel is necessary and affordable.

Second, you *must* have a positive means of disconnecting from the power company feed. Many of you will say that by opening the main circuit breaker or by pulling the main fuse block will disconnect you from the power company. This is only partially true; it is not a *positive* means of disconnection! If the main circuit breaker or fuse block were restored with the generator running, and possibly without your knowledge, the power mains would be "hot" again. There are several things that could happen, listed here in order of decreasing importance.

1. You could kill a lineman who thought he was working on a "dead" line.

2. You could ruin your generator.

3. You could light up the neighborhood.

The last one is charity. The second is futility. The first is stupidity.

Any disconnect that is not a *positive disconnect* is not worthy of your consideration, and further, may even be illegal in your state. Check with the engineering department of your power company. Explain your intent to them and solicit their comments. You probably will be surprised at their interest and cooperation; I was.

A positive means of disconnecting from the power company may be made by installing a double-pole, double-throw, service-capacity switch between the power meter and the fuse/breaker box. It must be service-capacity because all power for the house, both commercial and emergency, will be flowing through it (at separate times, of course).

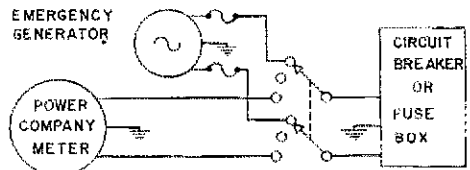


Fig. 1 — A positive disconnect switching arrangement.

As seen in Fig. 1, there is no way to accidentally connect the generator to the power company mains or vice versa.

* 1022 Medlin Dr., Cary, NC 27511.

Installation

Placing the dpdt switch between the power meter and the fuse/breaker box should be coordinated with the service department of the power company. You may be required by local regulation to have that done by a licensed electrician. In any event, *do not* break the power meter seal without power company approval.

After properly coordinating the installation with the power company, pull the meter, disconnect the cable running between the power meter and the fuse/breaker box, at the box end. Do not cut this cable. (If you ever move to a new home, the original connection may be re-made. Then, you have your not-too-inexpensive dpdt switch to take with you.) Connect the power meter cable to the switch. Add a piece of service-cable from the dpdt switch to the fuse/breaker box. The power meter may be reinstalled and sealed. The whole operation may take only minutes, provided the switch is mounted on or in the wall, the additional cable is prepared, power company representative is present, etc.

The generator installation will not be discussed at length here, except to say that safety must be stressed. Care should be taken in planning and installing both the fuel and exhaust systems. Gasoline cans, oil cans, rags, etc., must be kept closed and away from the generator, when it is running. It is recommended that a good fire extinguisher (CO² type) be mounted in the immediate area. Exhaust gases are dangerous and can be fatal in high concentrations for long periods. Therefore, they must be piped to the open air. The question of a muffler to reduce exhaust noise is not very important during an actual emergency. However, if you run the generator for an hour or so monthly — which is a good idea — the neighbors might take a dim view of the extra noise. A muffler system can be fabricated and installed that will reduce noise to a minimum and yet not excessively raise back pressure on the engine. Placement of the muffler outside the house is preferable. That way, the exhaust system will present less of a chance for loose and leaky connections inside the house.

It is wise to protect your generator by installing some fusing between it and the dpdt switch. The fuse/breaker box in the house will not protect the generator; fuses or circuit breakers are cheaper than generators! The additional insurance afforded by protecting your investment is intelligent planning, not an extravagant extra.

Operation

When power fails and after you have found your flashlight, turn off all the high wattage items that were on — dryer, oven, water heater, air conditioner, etc. — and anything else you don't vitally need, such as the TV, most lights, etc. Remember, you will be turning these items off from memory, since you would then be in a no-power situation. Move the dpdt switch to the neutral position, disconnecting from the power company, but not onto the generator. Start the generator. After the engine clears it's throat a bit, move the switch to the generator position.

It is important that you and your family do not inadvertently overload the generator and cause another "power failure." We become quite accustomed to the convenience of electrical appliances and the almost limitless source of power. What was termed a necessity during normal times

might have to be upgraded to a luxury during the use of the EP system.

This kind of quick response to a power-out situation can only be a product of preparation. The EP system should be ready at all times — fuel tank full, plans for obtaining more fuel with minimum trouble, spare fuses, disconnecting high wattage items, etc. The Boy Scouts have it right when they say "Be Prepared."

Caution: Never re-fuel the generator with the unit running. *Close and remove* gasoline and oil cans *before* restarting the generator.

With the EP system functioning, it is possible to check into the extent of the power interruption. If it appears extensive and/or is apt to be lengthy (extensive and lengthy are not necessarily synonymous terms), tune into the frequency of the commonly used traffic net (phone or cw) in your state or section. It is possible that you may be called upon to do what 97.1(a) is talking about. There is no way to pre-determine the future, but someone's life or health may very well depend on some amateurs being ready in such an instance.

Side Benefits

Once the EP system is installed, it need not be reserved strictly for earthquake type situations. After all, when a thunder storm or ice storm takes out the "juice," you are ready. With the EP system, you can handle some lights, the control circuitry on the heating system, and other convenience items very nicely. Having experienced the "great blackout" of November 9, 1965, while living in New York, and hearing more and more talk of blackouts and brownouts, it is comforting to know that only a direct hit by some catastrophe can prevent me from responding with my own electricity.

Sample Configuration

If you are prompted to install an EP system, be aware that you should tailor it to your own needs. The author's dpdt switch is a Square D 82254, 200 A at 250 V ac. The generator is a Penncraft 7 HP/3000 Watt (3750 W Peak) unit. When it is used in the house, it is wired for 220 V ac; for Field Day, it is wired for 115 V ac. A Cutler-Hammer 4141H341, dpdt fused switch is wired between "the big switch" and the generator. It is fused for 20 A in each leg of the 220 V ac line.

Conclusion

In any kind of major decision, especially one concerning money, it is the "net out" or "bottom line" that every person must assess for himself. It is hoped that many radio amateurs will seriously weigh this matter for their situation. While there are some that can afford automatic disconnect/start/stop/re-connect equipment and commercial installation, it is not necessary. A little careful procurement (scrounging!) can reduce the costs to manageable dimensions and improve the "bottom line." In any event, it is hoped that this article might provoke some positive thought and action toward the installation of safe Emergency Power systems.

My thanks to Walt Short, WB4TBO and Bob Hall, WA9TXI/WB4SQE for their objective critiques. As a result, Bob has obtained a generator and Walt is in the wings.

QST

A TRIBUTE AND A CHALLENGE

Commissioner Robert E. Lee Addresses the QCWA Annual Convention¹

GUESS you know I'm not a licensed amateur, and therefore not eligible for membership in the QCWA. However, in about another year I shall have been a member of the Federal Communications Commission longer than any other individual, and shall be approaching the *quarter century* mark of my service on the Commission. Therefore we have a kinship of service longevity, even though not in exactly the same field. . . .

Tonight I would like to state my opinion of the value of amateur radio to our country and also to the world of telecommunication. Perhaps much of what I shall say is known to many of you. However, I dug up a few interesting facts bearing on amateur radio which you may not have encountered before. It is not my intent to chronicle all the good deeds of amateurs over the years. In recent years, however, their performance in emergency situations, deserves high marks; such as during the Nicaraguan earthquake about a year ago, and more recently the "Fifi" Hurricane disaster in Honduras. These instances are plus marks in relation to your occupancy of the spectrum. . . .

During the past 75 years, we have been extremely fortunate in respect to the sunspot cycles, which as you know have considerable effect on radio wave propagation. . . .

"Amateur radio is . . . an indispensable foundation for a professional career in electronics."

Most of our communication developments were occurring during this three quarters of a century. Had it not been for favorable ionospheric conditions, some of our knowledge might not now be available. Thanks to many of you here tonight we have a very sophisticated telecommunication system in the world today. In recent years it has been expanded by the construction of additional multi-channel, advanced submarine cables with several thousand voice-channel circuit capacities, augmented by a satellite communication system with which, of course, you are familiar through its use in bringing television programs to us from any place in the world. All of this is a quantum leap from that first trans-Atlantic transmission back in 1901. Therefore, today we have a new "ball-game" in telecommunication with emphasis being on the newer modes of transmission, utilizing techniques which only a few years ago had not been even envisaged. This is not to suggest that the older methods of communication are passe, because there will be continuing needs for use of the high

frequencies by those countries not so fortunate to possess a satellite earth station or a cable terminal, as well as for back-up facilities. . . .

Amateur radio is a consuming avocation in one's youth; often an indispensable foundation for a professional career in electronics, and a source of tremendous pleasure and interest later in life. As time marches on, we find a critical eye turned on almost every service which uses the spectrum, searching into whether they use the allocation in *their* best interests as well as the public's. Amateurs are not immune to these pressures which come from various sources and directions. You know how much interference there is in your hf bands today, with the ever-increasing "sharing" with other services. In some bands it has gone beyond the bounds of "sharing" because the permitted high-power and high-gain antennas of the high-frequency broadcast service, for example, results in an output from a single transmitter of several megawatts of radiated power. Amateurs with a one kilowatt limit (in the United States) cannot compete with such signals. So you have to dodge around and in between their signals, which are spaced every 5 kHz, or give up in disgust. In the vhf, you know that a proposal has been made to initiate a new Class E Citizens Radio Service in one of your bands from 220-225 MHz. In other vhf and uhf amateur bands, requests are constantly received for temporary sharing of the frequencies for specialized, and often highly classified, purposes.

So, in the tempo of the times, it would be well to realize that amateur radio is subject to scrutiny. You all know about the squeaking wheel that gets the grease. The louder the squeak, the more the grease. The loudness of the squeak depends a lot on how many wheels are squeaking! You may not be aware of it, but the amateur population in the United States is *decreasing* at the present time by about 350 licensees per month. This is happening while all other services are increasing. The Citizens Radio Service is approaching the one million mark. I think this is a serious matter for amateur radio, because it tells me something is wrong. I can't believe that the allure of "ham radio" has disappeared, nor that our youth are so blasé in the space age that they no longer get a thrill out of having their own private laboratory with which to field test their equipment on the air. So, while most other services are increasing their numbers several fold, the median age of the typical amateur is now over 40 years. While I am not in a position to suggest a total cure for this situation, it does seem to me that there are some potential remedies which might increase the "squeak factor" of the Amateur Radio Service. . . .

If I had to ascribe a "merit factor" to domestic use of the spectrum in light of the demand for

¹ EDITOR'S NOTE: For reasons of space, only the highlights of the Commissioner's remarks are reproduced here.]

communication facilities, I would have to say that the *very high* and *ultra high* frequencies are greatest in demand . . . so much so that the Commission has authorized sharing uhf television channels 14 through 20 with land mobile stations, in 13 metropolitan markets throughout the country. The Commission has been engaged for the past few years in rulemaking involving allocation of 900 MHz frequencies to both common carrier and private industry for provision of new communication circuits, because the lower portions of the spectrum are so congested. These are only two examples of the importance of spectrum space for our domestic requirements. There is a philosophy among allocators that says, ". . . if you don't use it, you lose it." I'm not predicting the loss of amateur radio operations in this portion of the spectrum, but I would urge you to engage in long range planning to ensure that the "use it or lose it" philosophy doesn't grab you while you're not looking.

"I would urge you to engage in long-range planning (in the vhf portion of the spectrum)."

Amateur radio has a tremendous value to mankind, not only in this country where we permit and encourage amateurs to participate in emergency communication, but in relation to the other aspects of the "Basis and Purpose" of amateur radio. One of the paragraphs in that Section of the Amateur's Rules and Regulations refers to the,

"Expansion of the existing reservoir within the Amateur Radio Service of trained operators, technicians, and electronic experts."

No one likes to think of our country ever being in a holocaust which would certainly result from a nuclear war. You might be interested, in hindsight, in one of the reasons that the western nations won World War II. Not long ago I was reading a book entitled "The Rise and Fall of the Luftwaffe" by David Irving, which is an account of the life of Field Marshal Erhard Milch. In one portion of the book there was a discussion among several high ranking German officers about the ineffectiveness of their "Wurtzburg" radar, operating at about a half-meter wavelength. At that time the British and Americans had begun air-drops of aluminum foil "window" cut to a half-wavelength of the German radar frequency. They were very effectively jamming the German radar. Both Hermann Goring and Milch accepted that the German electronics industry had fallen far behind that of the Allies. A basic reason for this was that Britain, and particularly America, had actively encouraged amateur radio; while in Germany, amateurs had been systematically persecuted by the Reich authorities. In March 1943, during a conference on the German electronic industry, Goring stated,

"The main blame belongs to Ohnesorge (Minister of Posts) — he never wanted to relax his grip on anything. We smashed up the amateur radio "ham" clubs and wiped them out, and we made no effort to help these thousands of small inventors. And now we need them."

"Without the backing of the United States, amateurs of the world are at a distinct disadvantage. . . ."

Thank God we have always encouraged amateur radio in America, and the work of many amateurs

such as John Reinartz, Bill Eitel and Jack McCullough, and countless others is tribute to the wisdom of that principle.

What about the future of amateur radio? You know that there is scheduled a general World Administrative Radio Conference of the ITU in 1979, at which the entire radio spectrum will be studied, evaluated and considered for reallocation among the various users. In this country we have already begun our investigation of the required spectrum for all our services. This will continue for the next several years, until we decide what the United States' position will be at the conference. No one can say yet what the United States' position will be for the Amateur Service. I know the preliminary proposals to the committee working on the problem are:

- the return of the 160 meter band to amateurs;
- eliminate sharing in the 80 meter band;
- expand 40 meters and eliminate sharing with HF Broadcasting
- establish a new amateur band at 10.1-10.6 MHz;
- expand 20 meters and eliminate sharing with the Fixed Service;
- establish a new amateur band at 18.1 MHz;
- expand the 15 meter band by 100 kHz;
- establish a new amateur band from 24 — 24.5 MHz, and make no changes in the existing ten meter band.

With bands so located, amateurs would have frequencies about every 3 MHz throughout the spectrum, and their communication efficiency would improve dramatically. Only time will tell whether it is possible for these requests to be incorporated in the United States' position at the 1979 conference. That is your first hurdle. Without the backing of the United States, amateurs of the world are at a distinct disadvantage at such a conference. In my experience in ITU conferences, I have learned that there is no substitute for advance preparation. There is no magic that can take the place of planning and liaison with other countries. This is especially true today with the voting structure of the ITU. As long as we determine allocations on a voting basis, which I question, there is just no way to further your proposals.

"There never was a better opportunity to improve your allocation status, especially in the hf portion of the spectrum."

I have reservations whether the United States should continue to support so strongly the ITU as it is now constituted. There are 148 member countries of the Union, around 90 of which regularly attend conferences. Each nation has an equal vote. Many of them are years away from having the kind of sophisticated communications as ourselves, yet frequencies are reserved for the day when they *might* have them. Conversely, countries with great demands for frequencies for amateurs, such as ourselves and a few others throughout the world, find minimal support if any at all from countries which have never fostered amateur radio and have little interest in voting additional allocations. A concrete example of this kind of situation occurred during the recent Maritime Conference when a United States' position on coastal maritime stations was supported by only six other votes. Unless there are diplomatic considerations of overriding importance, I would favor the United States exploring the possibility of

(Continued on page 84)

Strays

Want to Hear the New Oscar?

Oscar 7, the new amateur radio satellite will be within range of stations in the continental U.S. on Saturday evening, February 15. Just tune your receiver around 29.45 MHz at 10 P.M. EST (plus or minus 10 minutes) and you'll hear the band come to life with DX signals! Almost any antenna will do; if you're using a beam, point it toward Denver for best results. Be sure to report your reception to Amsat, PO Box 27, Washington DC 20044. Send an s.a.s.e. and you'll receive an attractive Amsat-Oscar 7 QSL in return.

Nothing seems to emphasize the fact that one is getting older than the beginning of another year. However, there are certain other indicators which are equally significant. So . . . you can be sure that you're really an Old Timer if

- . . . The term "kilohertz" sounds funny to you.
- . . . You beep HI on your auto horn when you pass another car with ham license plates.
- . . . You have a 6-foot relay rack in the basement with a 20-mtr transmitter mounted therein.
- . . . You believe that FM is primarily good for listening to classical music.
- . . . You walk into Allied and ask for an 8 mfd condenser.
- . . . You can remember Allied.
- . . . The word "Rettysnitch" does not sound like a technique for your XYL's needlepoint.

- . . . You remember when Heath manufactured airplane kits — for real airplanes.
- . . . The term MOPA described the kind of transmitter you hoped to build.
- . . . A skywire meant a piece of wire strung between two trees, and not a collection of aluminum plumbing on an oil drilling rig.
- . . . You used an F-1 button as a microphone in your first AM rig.
- . . . You used AM, with no nonsense about which sideband.
- . . . A Novice meant a probationary priest.
- . . . CQ was the signal you sent at the beginning of a QSO, 73 was the signal you sent at the end, Ham Radio was your hobby, and QST was the magazine you read.
- . . . A drain was only the hole in the middle of the kitchen sink.
- . . . You have a pair of earphones which reproduce the same signal in each ear.
- . . . You have a receiver into which these earphones can be plugged.
- . . . You think that 10-4 is the score of a Cubs-Detroit game.
- . . . You remember having read one of the articles mentioned in the "25 Years Ago" column in QST. — *W9IWI in Circuit Board, York Radio Club.*

Changes of Address

Please advise us direct of any change of address. As our address labels are prepared in advance, please allow six weeks notice. When notifying, please give old as well as new address and Zip codes. Your promptness will help you, the postal service and us. Thanks.

<p style="text-align: center;">Coming ARRL Operating Activities for 1975</p>	<p style="text-align: center;"><i>February</i></p> <p>1-2 DX Competition, phone 1-9 Novice Roundup 5 West Coast Qualifying Run 9 Frequency Measuring Test 13 WIAW Qualifying Run 15-16 DX Competition, cw</p>	<p style="text-align: center;"><i>March</i></p> <p>1-2 DX Competition, phone 6 West Coast Qualifying Run 14 WIAW Qualifying Run 15-16 DX Competition, cw 24 WIAW Morning Qualifying Run</p>
<p style="text-align: center;"><i>April</i></p> <p>2 West Coast Qualifying Run 12-13 CD Party, cw 15 WIAW Qualifying Run 19-20 CD Party, phone 28 WIAW Special Qualifying Run</p>	<p style="text-align: center;"><i>May</i></p> <p>1 West Coast Qualifying Run 10 Frequency Measuring Test 14 WIAW Qualifying Run</p>	<p style="text-align: center;"><i>June</i></p> <p>4 West Coast Qualifying Run 12 WIAW Qualifying Run 14-15 VHF QSO Party 25 WIAW Morning Qualifying Run 28-29 Field Day</p>
<p style="text-align: center;"><i>July</i></p> <p>3 West Coast Qualifying Run 4 Straight-Key Night 11 WIAW Qualifying Run 12-13 "Open" CD Party, cw 19-20 "Open" CD Party phone</p>	<p style="text-align: center;"><i>August</i></p> <p>6 West Coast Qualifying Run 12 WIAW Qualifying Run</p>	<p style="text-align: center;"><i>September</i></p> <p>4 West Coast Qualifying Run 6-7 VHF QSO Party 7 Frequency Measuring Test 10 WIAW Qualifying Run 23 WIAW Morning Qualifying Run</p>
<p style="text-align: center;"><i>October</i></p> <p>1 West Coast Qualifying Run 11-12 CD Party, phone 16 WIAW Qualifying Run 18-19 CD Party, cw 27 WIAW Special Qualifying Run</p>	<p style="text-align: center;"><i>November</i></p> <p>6 West Coast Qualifying Run 8 Frequency Measuring Test 8-9 SS, cw 14 WIAW Qualifying Run 22-23 SS, phone</p>	<p style="text-align: center;"><i>December</i></p> <p>3 West Coast Qualifying Run 6-7 160-Meter Contest 13-14 10-Meter Contest 16 WIAW Qualifying Run 18 WIAW Morning Qualifying Run</p>



COLLEGE CREDIT for HAM LICENSEES



BY RALPH R. LEE,* WB4YUY

WB4YUY, a test pilot for Bell Helicopter and now their Washington rep., undertook an interesting and highly promising project on behalf of a local community college — ham radio classes with scholastic credit! Read how this was done, and how it might be applied in your area as well.

A TRAINING program that started as a club project of the McLean (Virginia) Amateur Radio Association has grown into a full-fledged college credit course at the Northern Virginia Community College (Annandale Campus). This article will discuss how this was accomplished, in the hope that similar courses might be offered at other colleges and help add to the ranks of ham radio.

MCARA made a decision in the Autumn of 1972 to conduct Novice and General Classes for any interested parties. The author was asked by the club to initiate and conduct the courses, which were held initially at his QTH. The ARRL's *License Manual* was then and is now used as the prime text book for the classes.

The Novice portion is covered in two evenings, and the Technician General portions in five, each session lasting from 1 1/2 to 2 hours, plus a half-hour question period. This is for the written exams only, and students are expected to spend at least an equal amount of study time on their own. Code practice is left to WIAW and personal oscillators.

Some interesting results came to light immediately. We found that the first 35 students enjoyed a 100% pass rate on their first "go" at the FCC exams, and a fair percentage of the students sitting for General elected to take the Advanced test at the same time. All who did passed — at a saving of \$9. This added a new dimension, and students who appeared to do well in the General class phase were encouraged to try the Advanced as a matter of course.

In the Autumn of 1973, Ethel, K4LMB, Secretary of the Foundation for Amateur Radio, and Editor of *Auto-Call* magazine (both of which cover the metropolitan Washington area) was approached by Reading Black, Director of Continuing Education at the college. The purpose of the meeting was

to see if ham radio classes could be added to NVCC's curriculum. After their discussion, classes in Novice, General, and Advanced Class theory were started immediately — and for college credit to boot!

We have now passed the 150 mark in new and upgraded hams, with a passing rate of about 97%. We have found at the college that several students in the General Class portion are Technicians and Conditionals who want to make sure they stay on the air — either by going for General at an FCC exam point or in being sure that they are not found wanting if called to appear for re-examination.

Larger colleges and universities in the Washington area also expressed interest in running ham classes, but their large overhead would have made it necessary for them to have charged quite a lot for the General Class (in one case \$1,50). The solution seems to be utilizing community colleges, where a Novice course costs \$10; General, \$20; and Advanced \$25 for the entire course. (The price includes the cost of the *ARRL Manual*).

The author feels that if 20 or 30 other community colleges in the country added ham radio courses it could mean two to three thousand new and upgraded hams a year, with the additional appeal of receiving full college credit.

Clubs, colleges, or individuals interested in the NVCC curriculum on amateur radio can write to Dr. Richard V. Ernst, President, Northern Virginia Community College, 8333 Little River Turnpike, Annandale, Virginia 22003.

The NVCC course makes no attempt to usurp or compete with the classes being run by several clubs in the area. The unique offering is that of obtaining college credit while pursuing the greatest of all hobbies — ham radio.

The author is grateful for the wholehearted support of this project by Vic Clark, W4K1C, formerly Roanoke Division Director and now First Vice President of the ARRL.



* 1409 Homeric Ct., McLean, VA 22101.

September VHF QSO Party Results



W8DF/8, Michigan.

REPORTED BY RICK NISWANDER,* WA1PID

AS OFT SEEMS to be the case, poor conditions plagued the September VHF Contest, held September 7-9. Mode and frequency versatility were keys to running up good scores.

Record breakers were sparse this year.

K6YNB/6 broke his own Southwestern Division record by over 2000 points and came in 4th in the country to boot. The gang at WA6UMI/6 shattered the record on the multiop side of the Southwestern Division ledger with a fine 9648 point showing.

The VE3ONT operators, long time participants in the June Party, got together for a try at the September brawl and racked up over 43K to easily set a Canadian Division multiop record.

WAIMUG, the Mt. Greylock Expeditionary Force, broke their own New England Division record with a fine 132K effort. They also set an overall multiplier high of 102.

A list of all-time division leaders for the September Party is shown at right.

Returns were down slightly this year to 231 total entries. Certificates are scheduled for a February 15 mailing.

Top Ten Single op. - W2CRS 26,064, WB2ZVS 25,664, W3HQT 19,448, K6YNB/6 13,135, W2EIF 12,586, W1EUI 10,700, K3ZSG

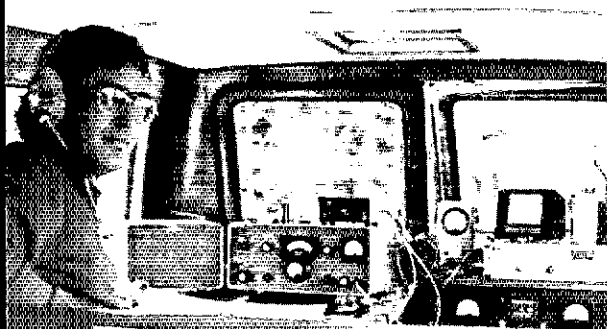
9828, WA2FZW 9087, K8IHI 8651, WB8IGY 8448.

Multiop - WAIMUG 132,396, W1GGM/1 60,673, K2OWR 50,232, WA2SNA/2 47,138, VE3ONT 43,413, WB2DST/2 26,816, WA2BLM 18,765, WA2KHL/2 16,219, K3LNZ/8 14,945, WB2LZD/3 11,000.

Soapbox

Band conditions and activity were both very disappointing. I had to resort to the FM rig occasionally to break the boredom. - (W3ANX). Bad weather prevented multiop with K2LCK in WNY but good conditions at home helped make the weekend worthwhile. - (K2OVS). Nice to see 2-meter AM active again. All those stations who stayed down at 144 missed a lot of contacts up at 145. - (K3ZSG). Enjoyed working the VHF contest on 2-meter AM only. - (WA61WT). Besides a S9 noise level and a bad cold we still had fun. Where were the locals? - (WA0MRH/0). Really impressed with increase in 2-meter ssb activity in Northwest Washington and increase in cw activity on 6 meters. - (K7VNU). The weather was good for a change. - (W1GGM/I). I was really looking forward to working the contest but hurricane Carmen was greeting us down here with heavy winds and rain. - (WB4BS2). May I suggest that the East Coast stations move away from the .095-.115 portion of the band when they are calling CQ to the West? All us folks in the Midwest make it a practice to tune large chunks of the band between contacts. The CQers should move out of the local QRM so they could hear us answering them. - (WB9NLF).

* Asst. Communications Manager, ARRL.



One of three (!) West Virginia multiop entries was K3ERM/8, here operated by W3CJK. This 432 setup was good for 17 sections during the contest period.

QST for

MHz.	50	144	220	432	1215	MHz.	50	144	220	432	1215	MHz.	50	144	220	432	1215
Min. Sections	30	15	3	1		Min. Sections	30	15	4	3	1	Min. Sections	30	15	4	3	1
VE2DFO	10	21				WA2SNA/2*	27	20	14	13		K6YNNB/6	12	13	6	7	
VE3ONT*	33	27	14	12	1	WA2ZZF				15		K6QAX	6	4	5	7	
K1GYT	26	17				WB2CUT		17				WB0CP	8	6	4		
K1MNS*	13	6	2	4		WB2DST/2*	23	17	11	11	2	WBTRW/6*	5	4	4		
W1EUJ	15	13	10	10	2	WB2YQU	14	4	12			W6YKM	11	5	4	1	
W1GGM/1*	21	21	16	18	7	WB2ZVS	24	15	13	12		WA6GYD	6	4	3	3	1
W1JOT					5	K31UV		9	11			WA6UAM	3	3	4	4	2
W1YTW	14	12	10	6		K3ZSG	20	17	1	4		K6QAX	6	4	5		
WA1FFO	21	13				W3ARW/3	20	18	10	8		WA6UMI/6*	7	7	4	5	1
WA1GTP*	16	18		2		W3CGV			2	7		WB8NKO	10	5	4	4	
WA1MUG*	32	22	17	21	10	W3HMU	11	16	8	8		WB6NMT	8	4	3	3	
WA1OUB	18	15				W3HOT	18	20	13	17		WB6OKK/6	11	8	6		
W6FZJ/1					11	W3LUL		22				K7AUO/7*	3	3	2	2	4
K2ARO					9	W3PGA/3*	20	14	5	4		W7FBP/7*	1	1	1	1	1
K2BWR*	18	18	14	9		WA3AXV	19	11	1	12		W7YR	3	3	2	2	4
K2OVS	14	19		12		WA3JUF	13	16	9	5		K8ERM/8*	1	24	5	17	
K2OWR*	28	22	17	17		WA3NNZ		15				K8IH	15	26			
K2RIW				18		WA3NNL*	14	17				K8UOA				14	1
W2CRS	26	19	12	15		WA3OPX	16	17	8	6		K3LNZ/8*	22	16	7	4	1
W2EIF	15	21	12	9	1	WB2LZD/3*	25	15	10			W8DF/8*	9	8	3	4	2
W2OMS				19	5	W4UCH	13	11	9	6		W8NRM	12	1	1	1	1
VK5ZAO/W2	17					WA4SIQ	9	17				W8BGGY	18	10	4	4	
WA2BLM*	19	18	4	4		K6GSS/6*	8	6	5	6		K9UVJ	12	9	3	5	
WA2FZW	19	11		9		K6IBY						W9CSF/9*	7	7			1
WA2KHL/2*	16	20	6	7		K6JKQ	2	2	5			WB9NLF		16			
WA2QLK	20	17				K6OKC/6		10	5			WB0ITA/0	6	2		3	

* Multioperator station

Single Operator

Division

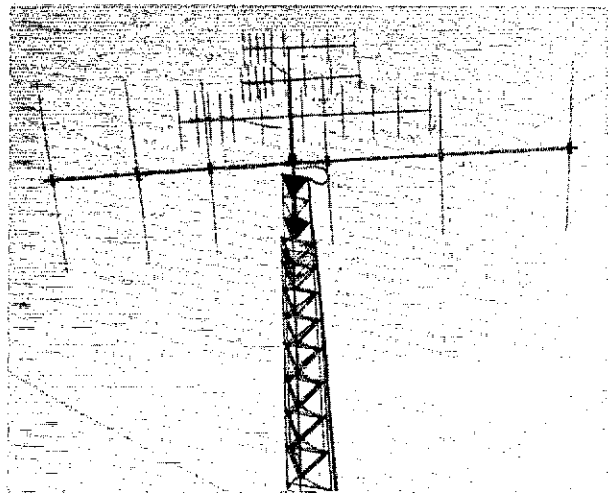
Multi Operator

Call	Score	Year	Division	Call	Score	Year
K3IPM	24,596	69	Atlantic	W3JZY/3	43,080	63
K9KFR	7210	69	Central	K9HMB	29,820	72
W0OHU	1044	72	Dakota			
WB4JGG/4	4860	72	Delta	WB4HEL/4	15,796	72
K8LEE	12,750	72	Great Lakes	WA8PLZ	44,019	73
K2OWR	32,720	73	Hudson	WB2GKE/2	50,480	73
K0MST	4216	72	Midwest	W0LB/0	1290	66
K1WHS	20,242	68	New England	WA1MUG	132,396	74
K7BBO	2940	73	Northwestern	W7DNU/7	5160	73
W6GDO	4256	65	Pacific	K6GSS/6	10,106	72
W4VCC	11,025	64	Roanoke	WA8PLZ/8	65,700	70
W0EVZ	546	64	Rocky Mtn.	W0DK/0	1080	62
WA4NJP	4551	72	Southeastern	WB4EOW/4	3872	73
K6YNB/6	13,135	74	Southwestern	WA6UMI/6	9648	74
K5WVX	4900	72	West Gulf	K5WVX	5181	73
VE3ASO	18,816	73	Canadian	VE3ONT	43,413	74

DIVISION LEADERS

Single Op.	Division	Multiop.
W3HQT	Atlantic	WB2LZD/3
K9UVJ	Central	K9YHB
W0UGR	Dakota	
WB4JGG	Delta	
K8BI	Gr. Lakes	W8BAP
W2CRS	Hudson	K2OWR
WB0ITA/0	Midwest	WA0PBO
W1EUJ	New England	WA1MUG
WA7NAN	Northwestern	K7AUO/7
W6OCP	Pacific	K6GSS/6
W4UCH	Roanoke	K3LNZ/8
	Rocky Mt.	
WA4NJP	Southeastern	W4VQ/4
K6YNB/6	Southwestern	WA6UMI/6
WB5LUA	West Gulf	W5WAX
VE2DFO	Canadian	VE3ONT

The antenna farm at K6QAX, SCV. The 80-foot tower supports 6 on 6, 11 on 2 and 9 over 9 on 220.



VE	WA 2BLM (+WA1PDK K.MOM WA2s LOA ZPD WB2s FZE OZA)	WA 3NTUL (WA3s EOQ FYZ VXI) 3038- 98-31-AB	K6QAX WA6UAP WA6PWT	1650- 85-15-ABC 1232- 40-22-ABCD 72- 24- 3-B		
VEZFO	Quebec 2201- 71-31-AB	18,765-407-45-ABCD N.Y.C.-L.I.	Western Pennsylvania W3FYV W3ANV W3DJM	465- 31-15-AB 369- 41- 9-B 133- 19- 7-A		
CE3EYR CE3FHM/VE3 VE3IGU VE3ONJ (+VE2YU VE3s ASU DXJ EMS FIB (6P))	Ontario 270- 54- 5-B 204- 51- 4-B 152- 19- 8-B (+VE2YU VE3s ASU DXJ EMS FIB (6P))	K2OVS WA2OLK W2TUK K2R1W VK5ZAD/W2 WA2SRH	4 Alabama WB4EOW	San Diego WB6NMT San Francisco W6FAW	972- 43-18-ABCD 10- 5- 3-B San Joaquin Valley W6YKM W6YK5 K6OKC/6 K6JKO WA6CPE WA7PEI/6	
U.S.A.	43,413-453-87-ABCDE	Northern New Jersey WB2ZVS WA2FZW WA2UXW W2QMS WB2CUT WA2GEZ WA2ZZZ WA2GFN/2 WB2VLC WA1TVQ/2 K2OWR (+WA2BAT WB2WIK)	Georgia WA4NJP W4ISS W4VU/4 (K4s AEK CKS WA4BRQ WB4s AEG YWK)	1512- 64-21-ABCD 1274- 93-13-ABD 1040- 36-20-BCD 234- 17- 9-ABC 18- 9- 2-B 10- 5- 2-B		
7	Connecticut WA1FFO W1WHL WA1NI W1FFP W1WEL W1HDQ* WA1SWP WA1GTP (+K1VYU)	50,232-526-84-ABCD WA2SNA/2 (K2BJG WA2s BMS DTJ PJV RIU UPK WB2s FVZ KKO LPX OQQ)	Kentucky WB4YAB WA4JOS W1GXT/4 WB4VLE (+WB9JFT)	2254- 98-23-AB 2- 1- 1-D 2624-164-16-AB	Sacramento Valley WB6NKO Hawaii KH6HOU	1235- 60-19-ABD 6- 6- 1-B
K1EHP/I (+K1s CRK KX WA1s HYN OIH)	5191-179-29-AB WA1EHP (+WA1NBM) 988- 76-1-B	47,138-552-74-ABCD WA2KHL/2 (+WA2UDT WB2s LDE LYP)	North Carolina K41QU WB4DBB WA4ZIA K4ROM WA4GBE WA4B/B4 (K4s LVQ MQG SLC W41ZV WA4s LPV VCC WB4s AMU YFC CCW WN4C/M)	320- 20-16-A 1120- 56-29-AB 936- 75-12-ABCD 896- 64-14-AB 710- 71-10-AB 598- 46-13-AB 240- 20-16-A	Arizona K9DKW/7 (+WB6KI/I) Nevada K7ICW	540- 36-15-AB 299- 22-13-ABC
Eastern Massachusetts K1DAT WA1OLK WA1LXP W6FZJ/1 K1VUT W1JOT W1AAL WA1SCL WA1OAM (+WA1s ONR OZI PBU OWE)	1410- 94-15-AB 1232- 94-13-A 564- 47-12-AB 440- 70-11-D 222- 37- 6-A 102- 8- 6-DE 63- 9- 7-B 12- 6- 2-B 4378-199-22-AB	16,219-304-49-ABCD Southern New Jersey W21LI WR2SPI K2BWR (+K2ZRJ)	Tennessee WB4BSZ WB4NBK	60- 15- 4-AB 4- 2- 2-A	Oregon W7TYR K7HSJ K7AOU/7 (K7s GUH UDV WKJ W7s ADV JIU UDM VOK)	1120- 63-14-ABCD 264- 39- 6-ABCD 240-143-14-ABCD 245- 49- 5-AB 84- 19- 4-ABC
W1YTW	5376-106-42-ABCD	10,561-138-59-ABCD Western New York WR2KLD WA2WVI WB2RJB WB21GU/2 K2JQJ W2WGL WR2BPJ/2 (+K2s II RKW WA2RQK)	Northern Florida WB4BSZ South Carolina WB4NBK	60- 15- 4-AB 4- 2- 2-A	Washington WA7NAN K7VNU WA7PVE W7FPP/7 (+W7s RPT VRM)	1386-197- 7-ABC 468- 52- 9-AB 54- 27- 2-AB 90- 10- 5-ABCD
New Hampshire W1FTU WA1OUB W1GUL W1JSM E1MNS (+K1s HZN PLX YBU) WA1OTF/I (+WA1MFR)	10,700-178-50-ABCD 6,270-190-13-AB 2440-122-20-AB 372- 31-12-B 6,575-248-25-ABCD 880- 55-16-AB	2328- 97-24-AB WB21NS (+WB2s FNO H1L) 481- 37-13-B 3 Delaware WA3QPX WA3KZX W3CGV	Tennessee WB4JGG W4GZX/4 (WA4s JET YIL ZXD WB4SLE)	1743- 83-21-AB 748- 68-11-AB	Virginia W4UCH WA4SIO WB4YF1 K4LHB WB2LAI/4 K4FTO K4MSG W4JVN	4836-107-39-ABCD 3120-120-26-AB 2286-127-19-AB 2280-115-19-ABCD 1035- 69-15-AB 418- 38-11-B 418- 38-11-AB 608- 30- 2-B
Vermont K1GYT W1GAOI W1AJM W1GGM/I (+K1KEC W1MFE WA1s HON LXU MID MSK RIU JHR WB2GLQ WASIOD K9AQP Marty Mary Tag) WA2JHR/I (+WA1JLXU)	7095-165-43-AB 2088-113-18-ABCD 384- 31-12-ABD 6,0673-635-83-ABCDE 21- 4- 3-BCD	19,448-231-68-ABCD K3ZSG WA3AXV WA3JOT WA3NGK WA3KPP/3 W3H1MU K3GAS K3IUV W3GOA WA3KRD/3 W3BRC WA3KFT WA3KFT/3 WB2LZD/3 (+K21HYM)	Eastern Pennsylvania W3HOT K3ZSG WA3AXV WA3JOT WA3NGK WA3KPP/3 W3H1MU K3GAS K3IUV W3GOA WA3KRD/3 W3BRC WA3KFT WA3KFT/3 WB2LZD/3 (+K21HYM)	432- 36-12-B Northern Texas WB5LJA WB9MZ/5 (WB9KPC, opr.) WB5FCR	418- 38-11-B 418- 38-11-AB 608- 30- 2-B	
Western Massachusetts WA1OLK WA1MHB WA1RWU WA1MUG IK1s DOV PKQ RQE WA1s ABV HCU IOJ KVI W2DVO WA2s AYQ PVR SCA W1 SPI WAZ WB2s BXP DRW OFU PDD WOI WB4WVC WA1RUSA)	1950- 78-25-AB 936- 78-12-A 742- 53-14-B 132,396-1164-102-ABCDEF	11,000-205-50-ABC W3ARW/3 (+W3GJ) W3SDZ (+WA3s WID WLV) 4020-134-30-AB WA3RCA (WA3s FOF BCK OVH IYM)	Arkansas K5MWH	432- 36-12-B		
Eastern New York W2CRS WB2DTK WB2YOL WA2RPC W2CXZ/2 WB2DUS W2ABX WA1GH/G/2 WA21OO WA2PNQ K2ARO W2KBB WB2DSI/2 (+K2CBA WB2s BAH BYP DNE JBT QES)	26,064-315-72-ABCD 6091-174-55-AB 3240- 91-30-ABC 3016-116-36-4B 2873-137-21-AB 1035- 69-13-A 832- 64-13-AB 672- 84- 8-B 504- 42-12-A 420- 35-12-AB 318- 12- 9-B 140- 14-10-B 10,669-181-47-ABCD 1872-104-18-AB	3570-170-21-AB K3YFD (W3LW WA3s VUN WAKI) 2040-102-20-AB Maryland-D.C. W3KMY W3HUC W31UL K3MWO WA3NNZ WA3LND WA3SKH W3HFI W3PGA/3 (K3s PHH ROT YZY W3VRD WA3s CNE TFI)	Fast Ray W6BXO K5AM/6 K6C5S/6 (+WA6JUD) Los Angeles WB6OKK/6 W61RW/6 (WA3FVZ K6AWO W6s RLN YZG WA6s RAY VUZ) Orange K61RY WA6UMI/6 (WB6s ASR FSE RIV 3VP)	784- 50-14-ABC 75- 15- 5-A 4075-282-25-ABCD 3275-114-25-ABC W61RW/6 (WA3FVZ K6AWO W6s RLN YZG WA6s RAY VUZ) 224- 16- 7-C 9648-374-24-ABCDE Santa Barbara K6YNB/6 Santa Clara Valley W6OCP WA6GYD WA6UAM	4628-158-26-ABCD Ohio K8HII W8BQY K8FOA K8ZES WB8NRM K8BWP/8 WB8PPL K8CKY WB8NTY WB8AP (K8SUB WB8s GFY GZL)	8651-211-41-AB 9448-256-13-AB 1125- 37-15-DE 686- 40-14-ABCD 680- 25-16-ABCD 468- 52- 9-AB 182- 26- 7-A 174- 29- 6-A 16- 16- 1-B 4642-211-22-AB W8BI (WA8ZUQ WB8s JII OFR QXN W8NRNT)
Illinois WB9NLE W91VI K9KOR W9DIZ W9ARA K9DIB W9LEI	1376- 86-16-B 456- 50- 9-B 423- 47- 9-B 357- 51- 7-B 186- 31- 6-AB 92- 23- 4-AB 75- 15- 5-AB	10,105-218-43-ABCD	West Virginia K3LNZ/8 (K3s AAJ DUA W3JUG WA3NZL W4PS WBUIWG)	13,945-287-49-ABCD E3FRM/8 (WA2CJX K3s ABN FUG RZR VVY W3s AMH ARA CJX K6A3s CGU FUI OIX SDF K. Corbin M. Staley P. Staley)	10,669-181-47-ABCD WAKKJ/8 (+WB8CVC)	

(Continued on page 72)

OSCAR NEWS

Reading the Oscar 7 Telemetry

It is not difficult to decode the Morse Code telemetry from Oscar 7. The beacon signals are fairly strong and are usually in the clear, and because only numbers are involved they are much easier to copy than text sent at the same speed (usually 20 words per minute). Which frequency to listen to, depends upon which translator is operating. When the two-to-ten meter translator is on (Mode A), listen to 29.502 MHz (plus or minus Doppler). When the 432-to-146 MHz translator is on (Mode B), listen to 145.972 MHz.

Telemetry from Oscar 7 comes in the form of 24 three-digit numbers. A complete sequence is referred to as one *frame*. In between the frames, the satellite sends its distinctive identifier "HI" twice. A typical received frame of telemetry might look something like this: HI HI 147 144 176 160 260 201 208 261 385 374 346 347 455 453 458 458 551 501 553 551 601 659 601 650 HI HI. The first digit in each number is called the *line number*, indicating the line position of the telemetry channel following. In each line, the first use of a particular line number is referred to as channel A, the next as channel B, and so on up to channel D. Thus, channel 3C in the example above is 46, and channel 4A is 55.

Each of the telemetry channels contains different information about the spacecraft. For example, channel 2D is the battery charge discharge current. Referring to our typical frame given above, we see that 2D is 6I. To find the battery charge-discharge current in mA, insert this value in place of N in the following equation:

$$I_B = 40 (N - 50) \text{ mA.}$$

In our example, then, the battery is charging at the rate of 440 mA.

Here are the calibration equations for some other Oscar 7 telemetry channels of particular interest:

Channel	Measured Parameter	Measurement Range	Equation
2C	24-hour clock time	0 to 24 hours	$T = 0.253 N$
3D	battery temperature	-30 to 50° C	$T = 95.8 - 1.48 N$
4A	baseplate temperature	"	"
4B	power amp. temp. - 2/10 rptr.	"	"
4C	+ X facet temperature	"	"
4D	+ Z facet temperature	"	"
5A	power amp. temp. - 70/2 rptr.	"	"
5C	modulator temp. - 70/2 rptr.	"	"

Channel 2C is useful in telling when the satellite will change modes, as the switching from one translator to the other normally is done automatically.

Complete information on the Oscar telemetry systems is available to those interested from Amsat, P.O. Box 27, Washington, DC 20044.

1975 Oscar 7 Operating Schedule

Mode A (2 to 10 meters): odd days of the year.

Mode B (70 cm to 2 m): even days of the year.

This means, Oscar 7 will be in Mode A on *odd* numbered days of the *month* during January, April, May, August, November, and December. Oscar 7 will be in Mode A on *even* numbered days of the *month* during February, March, June, July, September, and October. (In all cases, days referred to are GMT days.)

Oscar Performance Notes

1. Because of improvements in the sensitivity of the Oscar 7 70cm-to-2m repeater receiver, the maximum erp needed for the Mode B repeater is 80-100 watts instead of the higher values reported previously. All stations are therefore asked to keep their erp below 100 watts. (If you prefer to use a power amplifier, we recommend that you use very low antenna gain.)

2. The automatic gain control in the two-to-ten meter repeater is set to activate at lower uplink power levels than the repeater in Oscar 6. As a consequence, stations using more than 200-500 watts erp are depressing the gain of the Mode A repeater, with the result that users having lower power are suffering. The 100 watt erp rule (200 watts if using *linear* polarization with Oscar 7) must be adhered to by *everyone* if we are to achieve best results with the repeater.

Oscar 6/7 Orbit Overlap

As this issue is being distributed, the orbits of both Oscars are overlapping. This may produce some unusual communication possibilities — such as space-to-space relay. It may also require some schedule modifications should problems arise. Listen to WIAW bulletins for late info. QST

AMATEUR RADIO PUBLIC SERVICE

NTS RACES AREC

In the Public Interest, Convenience, Necessity NRH

CONDUCTED BY BILL MANN,* WA1FCM

New Traffic Counting and Categories

ONCE UPON A TIME a message was a piece of paper with something written on it, which was then sent by electrical or radio means, copied at the other end and either delivered to the addressee or relayed to another station. Amateurs began to count how many such pieces of paper they accumulated each month and soon the League set up an honor column in *QST* for those who accumulated a certain number or higher each month. This was called the "Brass Pounder's League" and has been so called ever since. In the mid-twenties the BPL traffic totals were categorized into "Originated," "Relayed" and "Delivered" with one credit for each and a total of 100 or more required for BPL. Later the BPL minimum was raised to 200 (or 50 "deliveries"), and later still to 500 (or 100 "deliveries"). The categories were quite simple, at first — an origination was a message started at your station, a relay one which you received and relayed and a delivery one which terminated. There were no "off the air" credits; you received credit only for sending or receiving the message, and if you received, then sent the same message, that was one relayed.

But after a while a relay was counted as two credits, because after all you handled it twice. Then, with emphasis on deliveries, an "extra delivery credit" was added for the first off-the-air credit in history. You got one origination point for starting a message, two relay points for each message received and sent on its way, one point for receiving a message for delivery and an "Extra Delivery Credit" if you had to deliver the message to a third party. This innovation occurred in 1936,

and continued until the late forties, when we adopted our present practice of one point for each function of originating, receiving, relaying or delivering, the latter being an off-the-air function equivalent to the former "extra delivery credit" and receiving, along with originations, extra consideration for BPL.

In recent years, record traffic has declined and much that has remained has been originated by the operator of one station to another operator. Contact with the general public in our traffic-handling thus seemed to be on the wane. Consequently, some concerned traffickers started campaigning for "more credit for originations" to increase the amount of traffic being handled on our nets and to encourage "good" traffic, the kind that involves a non-amateur member of the public. Many proposals were made, some of them rather impractical, a few downright outlandish (the American propensity for extremes), but the one that made most sense seemed to be reflected by the philosophy that if the traffic handler gets an off-the-air credit for delivering a message to a third party, why shouldn't he also get a credit for originating a message *from* a third party? It's extra effort, same as delivering, and it represents equal public contact. Along the same line of thought, why should an operator get an "Origination" credit for starting a message to a crony who is also a ham, thus giving him a better crack at the BPL?

Well, to make a long story shorter, the arguments went 'round and 'round. Giving a separate credit for third-party originations would invite even further abuses of the origination function, it would invite and promote traffic mills, "rubber stamp" messages and we would find our nets,

* Assistant Communications Manager, ARRL.



A request for a special drug needed to operate on a 10-year-old boy in Korea was handled by (l. to r.) W6HDG, W6ANX and W6UOM. See Public Service Diary for details.

Recent EC appointee VE1EJ set up a network for public-service agencies to handle telephone service which had been disrupted by a construction accident. More information can be found in the Public Service Diary.

instead of lacking in traffic, glutted with "junk" that nobody wants to handle, and as a result, instead of having a dearth of traffic we might have a dearth of traffic handlers.

A CD Bulletin poll seemed to indicate a slight majority in favor of the principle of equal credit for originations, and so we have determined to give it a try. Consequently, effective with July traffic (Oct. QST), the following will be the new traffic categories:

Originated - A message originated by a third party other than the owner or operator of the station, filed at the station for subsequent transmission.

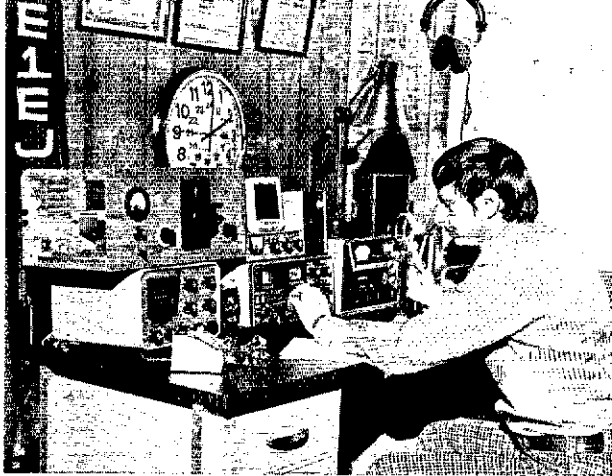
Sent - Any message transmitted by radio to another station for relay or delivery, whether such message originated at your station or was received from another station.

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

Delivered - Any message received at your station that you deliver to the addressee, provided the addressee is someone other than yourself - that is, a third person.

Note that the last two categories above have not changed, except that you may now claim a delivery if the addressee is a member of your family or someone on the immediate premises, but not yourself. The "sent" category is the same as the former "relayed" category except that it now includes messages originated at your station, and messages you originate for yourself no longer count as "originated," only as "sent." The new "originated" category is entirely new, being an off-the-air function at the origination end similar to the off-the-air delivery function at the message's destination. It actually adds extra points beneficial to the amateur who contacts the general public at the origination end, just as delivery makes the contact at that end. Despite the fact that the voting was close, it is felt that making this contact is valuable and should be encouraged at both ends of the circuit.

As far as BPL is concerned, the effect will be to make it a little easier to make the "hard way," (i.e., 500 or more total points), a little harder to make the "easy way" (i.e., 100 or more total originations/deliveries). The requirements for BPL will remain the same as at present. Of course all messages must be written, handled in standard ARRL form on amateur (not MARS) frequencies, and reported to the SCM.



How to count "book" messages if originated in that form? The same principle applies as to counting "book" deliveries. The book form is for convenience in on-the-air handling, and the one-for-three method of counting applies only to "sent" and "received" messages. Thus, if you originate a number of messages each having the same text, you get separate "originated" credits for each of them (if originated from third parties, of course). When you put them in "book" form for transmission, you get only the 1-for-3 "sent" credit.

Please note that the new categories don't go into effect until July; meanwhile, we're operating as before. June QST will carry a reminder. OK? Let's get out and originate some real honest-to-goodness "third party" traffic, in addition to amateur-to-amateur stuff. - WINJM

200 Years Means Opportunities

"To arms! The British are coming!" was the cry that rang out on the 18th of April in 1775. Two-hundred years later, the town of Concord, Massachusetts is planning to celebrate the historic "shoot out" that took place the following day, with amateur radio to play an important communications role.

With the expected visit of President Ford, it is anticipated that upwards of 200,000 visitors will seek to crowd into a rural town whose normal population is 17,000, necessitating a stupendous traffic and crowd control program. Amateur radio, under the leadership of the Public Service Committee of the Minuteman Repeater Association has been assigned the role of coordinating communications. Simultaneously with the Concord event, the MMRA will be providing communications in surrounding towns in conjunction with traffic control.

All in all, this bicentennial celebration promises to be a most interesting event for amateur radio. Is your radio club or repeater association prepared to meet the communications needs of bicentennial celebrations in your area?

The above was abstracted from a press release prepared by WJUVF. How does a radio association get in on the ground floor to serve in the public interest in community projects? It's accomplished



Deliberating at the recent Eastern Area Staff meeting are: top left (l. to r.): W8PMJ, Eighth Region Net Manager; W4SHJ, Fourth Region Net Manager; W48MCR, Eighth Region Net (Daytime) Manager and Continental Traffic Net Assistant Manager; W1NJM, Communications Manager; W4UQ, Eastern Area Staff Chairman. Top right (l. to r.): W2FR, new director of the Transcontinental Corps-Eastern; W2MTA, Second Region Net Manager; W1QYY, First Region Net Manager; WA1SQB, First Region Net (Daytime) Manager. Bottom left (l. to r.): K2KIR, Eastern Area Net Manager; W3NEM, Third Region Net Manager.

by close liaison with public agencies such as police, fire departments, sheriff's office, c.d., Red Cross, etc. The association's leadership, hopefully in cooperation with appropriate EC(s), make contact with local officials and explain what amateur radio has to offer.

Programs to acquaint community officials with club members and their capabilities (and vice versa), can be most beneficial. For example, recently the program for a general MMRA meeting consisted of a police/amateur panel discussion. K1UOD explained what amateurs could offer police in the way of reporting accidents and observing law violations and he demonstrated auto-patch facilities. Representatives from various law enforcement departments and from the Motor Vehicle Department discussed what amateurs should and shouldn't do to be helpful. Later, questions were taken from the audience, with answers supplied by appropriate officials.

Has your radio club, repeater association, or AREC group made a concerted effort to present amateur radio to community leaders? The possibilities for communications in the public interest resulting from close cooperation between your group and local agencies can be personally rewarding as well as fulfilling one of the basic purposes of the Amateur Radio Service. —
WAIFCM

With the AREC

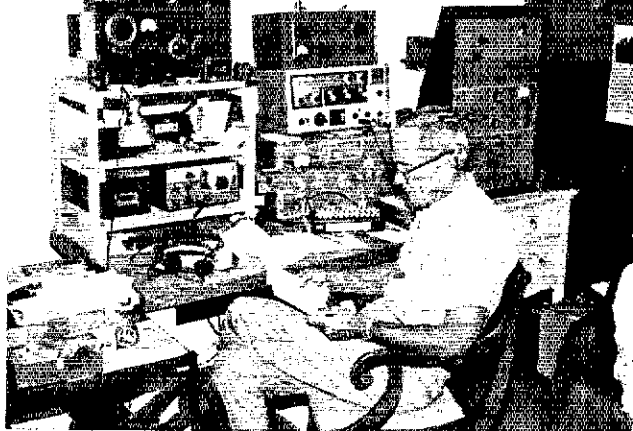
Many AREC groups conduct simulated emergency tests and drills throughout the year to keep them prepared for "the real thing." Accounts received here contain good ideas that might help other such groups generate enthusiasm and encourage participation. For instance, several AREC groups worked together planning a simulated

tornado which hit Chenango, Otsego and Delaware Counties, N.Y., in October, 1974. Drilling together provided a chance to see what other groups do to prepare. Also, they sent a mobile to the "pretend" downed repeater to act as a relay station on simplex to see if a mobile link would be reliable. In May, 1974, the San Luis Obispo, Ca. North County area amateurs found out which band was most suitable for wide range communications by setting up mobiles on 2, 10 and 80 meters, in different areas of their hilly region, and made tests with fixed stations. They also asked the Civil Air Patrol to provide aerial surveys during exercises. Slippery roads was a condition added in the test held in Berkely Co., W.Va. in January, 1972. The National Weather Service worked together with Genesee Co., Mich. amateurs when NWS communications were simulated to be severed in April, 1973. Owensboro, Ky. ARECers got involved in competition with other groups in August, 1974 to see who could handle drills with the most success. The Anderson Co., Tenn. c.d./AREC timed themselves to see how long it took for operators to get set up to "take orders" for tests, in March, 1973.

The St. Charles, Mo. hams have a check list for before and after drills, and a "for your information" sheet on such things as where to locate fuses during emergencies and that the electric box is wired for AC. A map of the county with towns denoted by call signs is handy for use by Dewitt Co., Ill. amateurs.

Some of the tests are real attention getters. An evacuation drill of a high school was held by the Ventura Co., Ca. AREC in October, 1974. A nuclear explosion was simulated in March, 1974 at Norfolk, Va. A large grandstand collapsed on lunch counters in Kempsville, Ont. in September, 1974. A forest fire amidst high winds occurred in October, 1972 in Upshur Co., W.Va. Readings were relayed during a radiological fallout test that was held in September, 1972 by the Wabash (Ind.) Valley ARA. Student nurses and Boy and Girl

Taking care of Station Activities is W5RE, SCM New Mexico. He is also an Assistant Director, Member-at-Large of the Pacific Area Staff and holds an Official Relay Station appointment.



Scouts can be involved in tests as was done in Topeka, Kans., in April, 1973. Search and Rescue missions are assisted with communications by the Boeing Employees ARS (Seattle, Wash.) which involves police, search and rescue units, ski patrols, water department, U.S. Forest Service and National Guard.

After the drill, critiques can be held. The Greensboro, N.C. members taped their activities after a test in November, 1974 so they could evaluate their success afterwards. Problems can be discovered such as the Norfolk, Va., group found in April, 1974: noise pollution at c.d. headquarters and no runners available for delivering messages. They also decided that having mobiles during a nuclear explosion was not realistic as the men above ground would be endangered.

Does this give you any good ideas? We hope so. Now start planning! - WA1STO

■ The AREC program is moving right along. SECs reporting have shown an upswing in their membership files every month except for one so far this year. Last year at this time, 36 sections were recorded as having 11,594 members. This month 44 SECs sent reports which represented 14,564 members. Keep up the good work! Those reporting: Alaska, Alta, BC, Colo, Conn, Del, EBay, EMass, Ga, Hawaii, Ill, Ind, Kans, Ky, Mar, Mich, Miss, Mo, Mont, Nev, NLI, NC, NFla, NNJ, NTex, Ohio, Okla, Org, SV, SDgo, SJV, SBar, SCV, Sask, SFla, SNJ, STex, Tenn, Utah, Va, Wash, WV, WMass, WNY.

Traffic Talk

We frequently get requests from traffickers who suggest we stress this point or that point in the Traffic Talk column. Most popular in the suggestion category is the need for complete addresses on all messages. Sure, when you're sending a message to Aunt Mildred, you'll likely include a full name, address and probably a telephone number. (Don't forget those telephone numbers - they're so simple to obtain by methods indicated at the front of your telephone directory!) But how many of us think to include a complete address when sending a message to another ham or when sending a service message? The delivering station can look up the call in the *Callbook*, you say? Maybe he can, but why cause him extra work which you could probably do more easily?

We've probably all reasoned at one time or another that when sending a service message all that's needed in the address is the call of the originator and place of origin as listed on the message being serviced. Closer examination shows that this may not be true. The place of origin is not necessarily the location of the originating station; it may be the location of the third party for whom the message was originated. Perhaps the originating station is not an active participant in the net which receives the service message for delivery.

Thoughtful amateurs will use complete addresses. The exception might be if you are in direct contact with the ham to whom you're originating the message or if it is going to a net manager or the like that "everyone" knows . . . but be careful.

■ What ever happened to the practice of telling the stations you've just been sent off frequency with how many messages you have for him? He may need to roll another piece of paper into the mill or sharpen his pencil. How about a simple "HR 5" or "Five for you," before sending the traffic? It's a courtesy.

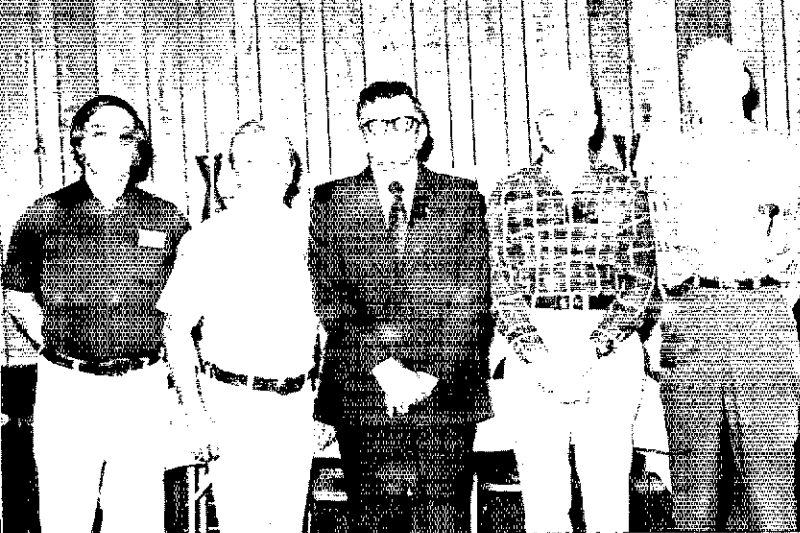
■ Tips for a net control station:

- 1) Call the net promptly at the appointed time.
- 2) Begin passing traffic as soon as possible. Hold "informals" until after the net or at least until after message traffic has been handled.
- 3) Have frequent call-ups for stations to report in. Don't keep stations waiting to check in while several messages or other business is being conducted on net frequency when it is just as practical to break between each message or two.
- 4) On phone nets, allow time at each net call-up for all stations who may want to report in to do so. Too frequently, the first station may list traffic and the NCS jumps right in and directs that station's traffic to be passed without listening for additional stations.
- 5) On cw excuse stations promptly (within a certain agreed time limit) when they are clear of traffic. On phone, stations should notify the NCS (at opportunities provided for by frequent call-ups!) if they must leave the net.

■ *National Traffic System.* On November 16-17, a meeting of the Eastern Area Staff was held at ARRL Headquarters to discuss NTS matters in the Eastern Area and make recommendations regarding same to the Communications Manager. Members present were: W1QYY (1RN), W2FR (MAL), K2KIR (EAN), W2MTA (2RN), W3NEM (3RN), W4SHJ (4RN), W4UQ (Chairman) and W8PMJ (8RN). Observers present included: WA1SQB (1RN(D)), WA8MCR (8RN(D)/CTN), W1N1M, WA1FCM, WA1MSK, WA1POJ, WA1STO, W1YL and WA2CNE.

Business conducted included the following:

- 1) Motions were passed providing that:
 - a) At least one Member-at-Large position on EAS shall, in the future, be filled by an active participant in NTS (D).
 - b) At least one MAL shall be an NTS(D) manager at Region level or above.
 - c) The size of EAS shall not be increased beyond the present 8 NTS managers and 3 MALs.



At the Georgia Single Sideband Association's annual meeting, officers were elected as follows (l. to r.) WA4VWV, director; K4ZYK, vice president; K4JNL, president; WA4AKU, secretary-treasurer; WB4WQL, director.

2) The resignations of WIBJG as MAL and W3FML as TCC Eastern Director were received with regret. W2FR was recommended for appointment as new TCC-E Director (thus relinquishing MAL status). WA1SQB and WA8MCR were elected as new Members-at-Large.

3) A case of apparent non-compliance with NTS managerial responsibility in maintaining liaison to a higher level NTS net was discussed.

4) A proposal to shift the Virginia section from the Fourth Region to the Third was discussed at length. Recognizing that the decision rests ultimately with the Virginia SCM, EAS voted to recommend that Virginia remain in the Fourth Region.

5) Motions to recommend fixed terms of office for NTS managers and to establish fixed terms for EAS Members-at-Large failed to pass.

6) After extended discussion, EAS voted to recommend that the definitions of NTS(D) and NTS(E) nets be as follows: An NTS(D) net is a net which begins its session(s) between 6:00 AM and 5:59 PM local time. An NTS(E) net is a net which begins its session(s) between 6:00 PM and 5:59 AM local time.

7) A review of the status and problems of NTS(D) was provided by WA8MCR, WA1SQB and WA1FCM. A change in NTS(D) schedules proposed by K7LFG (CTN Mgr.) was reviewed. EAS went on record as voicing wholehearted support of the efforts by NTS(D) members and encouraging continued development and growth of the Daytime segment. They further unanimously recommended recognition of NTS(D) members' performance at all levels, including CTN, through appropriate means.

8) The Staff voted an expression of thanks to W3EML for his years of service as Director of TCC-Eastern. They also voted an expression of thanks to W1BJG for his service as MAL, especially for his work in publishing the *Eastern Area Journal* in years past.

9) After W4UQ stated his intention of not standing for re-election as Chairman, W2FR was elected Chairman of EAS for the two-year term commencing at the conclusion of the meeting.

10) A committee consisting of WA8MCR, WA1SQB and K2KJR was appointed to study the objectives of NTS(D), NTS(D) plans and timetable, and make an evaluation of NTS(D) status.

A film of the Xenia, Ohio, tornado disaster was shown and narrated by WA8MCR.

■ *November Reports.* Net certificates for 3RN(D) from Mgr. WB2FWW/3 went to K2BHL, WA3s QYY SVJ VDQ. RN6(D) has its second best month of 1974 this time writes K6GMI, Mgr. Late 8RN net sessions were partially bombed out by long skip, reports Mgr. W8PMJ; he continues, saying that is what we have to expect until old Sol gets more active. New TEN certificates were issued to: W0s OTF VEA, K0s ASR CVD, by W0HI, Mgr. Also TEN annuals went to: W0s BV MA MOQ OF ZHN, K0s AEM AZJ BIX MRI ZXE, WA0s FMD MLE ROK TNM, WB0s CZR HBM HHC, VE4s PG RO. TRN(D) Mgr. WB0HOX says African broadcast station heterodyne necessitated their moving one kHz to maintain communications. She also wants more operators who can represent their section even one day per week. WA9EED, 9RN Mgr. awarded certificates to: K4CQO, W9s CXY DND EI LQN NXG OYL QLW, K9ZTV, WA9QVT/9, WB9s KPX LQC NOZ. A whole batch of EAN certificates were given by Mgr. K2KJR to: W1s BJG EFW EJI EMG QYY UBG, K1s EIR GNV PRB, WA1s FCM GFH HSN MSK, W2s FR GKZ KAT/3 MTA, K2s KTK RYH, WA2s ASM/8 CNE ELD EUO ICU RYD SRQ, WB2s AEH DDQ LZN VPR, W3s EML FAF/8 NEM NNL OKN QU YA, K3s BR CB MVO OIO, WA3s IYS OGM QOZ, W4UQ, K4s FAC IAF KNP, WA4GBC, WB4s GHD OMG OZL RUA, W5VZO/4, W8s BZY/4 IBX JYA, PMJ VDA/4, K8s BPX KMQ, WA8s ETX HGH PIM POS TYF, WB8s ALU JAD MKZ, K0P1V/4, WA0YDJ/4, VE3s AIA AWE CYR DV DVE FAS FXI SB.

Net	Sessions	Traffic	Avg.	Rate	%Rep.
EAN	30	1763	58.8	1,229	98.3
CAN	30	1204	40.1	.954	99.4
PAN	30	994	33.1	.762	96.7
CTN	29	375	12.9	.252	77.5
1RN	60	548	9.1	.415	91.9
2RN	60	580	9.7	.743	97.3
3RN	60	356	5.9	.400	95.0
3RN(D)	26	175	6.7	.300	83.3
4RN	53	577	10.9	.499	86.7
RN5	58	732	12.6	.405	91.4
RN5(D)	29	102	3.5	.112	61.7
RN6	60	717	12.0	.501	99.3
RN6(D)	60	420	7.0	.203	58.0
RN7	58	287	5.0	.367	75.2
RN7(D)	11	10	.9	.067	9.1

RRN	57	386	6.8	.348	88.9
8RN(D)	29	109	3.8	.371	87.8
9RN	60	577	9.6	.410	88.3
TEN	60	520	8.7	.424	88.5
TRN(D)	54	151	2.8	.146	48.4
FCN	60	215	3.6	.370	96.6
TWN	45	241	5.4	.259	59.11
TWND)	20	27	1.4	.065	43.3
TCC Eastern	107 ¹	659			
TCC Central	82 ¹	593			
TCC Pacific	104 ¹	742			
Sections ²	4013	17133			
Summary	5052	28199	5.6		
Record	4487	30541	18.4		

¹ TCC functions not counted as net sessions.

² Section and local nets reporting (130): APSN (AB), APN (Mar.), CMN GBN OUN OPN OQN WOEN (ON), WO-V/UHF (PO), AENB AEND AENM AENR (AL), ASN (AK), AFEN HARC (AZ), OZK (AR), NCN NEN SCN (CA), SSN (CO), CN CPN CSN NVHUTN (CD), DEPN DTN (DE), FAST FMTN FPTN GN NFPN QFN OFTN TPTN VEN (EL), IMN (ID, MT), ILN (IL), IJN QIN TIN (IN), I7SMN TLN (IA), KNTN KTN KYN MKPN (KY), LAN LRN LSN LTN (LA), SGN (ME), MDCTN MEPN (MD), EMRI FMRIPN NENN WMN WMPN (MA), MACS MKN QMN WSBN (MI), MSN MSPN PAW (MN), MTN (MS), ACE JCAN W0AREC MON MOSSB MSN PHD SLEN TLEN WEN (MO), MTN (MT), TCAREC WNN (NE), NJN NJPN NJSN (NJ), NMN (NM), MRA NLI NLS NYS (NY), CN NCSSBN THEN VHTN (NC), BN COAREC-10 OSN OSSBN O6Mtn (OH), OFON OPEN OTWN STN (OK), BSN OSN IOR, CMTN EPAEP&TN PFN PTTN WPA (PA), LFN SDN (SD), TN TNN (TN), TEX TEX-SS FTN (TX), BUN UCN (UT), VNTN VSN VSN (VA), NSN WSN (WA), WEN WVN (WV), BEN BWN WIN WNN WSN WSSN (WV).

Transcontinental Corps

Eastern TCC Dir., W2FR writes that he thought October was bad, but conditions were worse this time than before, yet total traffic was up. Certificates were awarded by Central Dir., K0ALM to WB4DXN, WSUJJ, W0s INH QMY, and WA0TMM. Pacific Dir., K5MAT wishes the sun would get some measles!

Area	Funct. % Successful	Traffic	Out-of-Net Traffic
Eastern	120	89.2	1952 659
Central	90	91.1	1322 593
Pacific	120	86.7	1513 742
Summary	330	89.0	4787 1994

The TCC roster (November): Eastern Area (W2FR, Dir.) W1s NJM QYY, WA1MSK, W2s FR GKZ KAT/3, WA2s USA ICB PJJ UWA, WB2s FLF PYM RKK, W3EML, K3s CB DZB MVU, W4UQ, K4KNP, WB4SGV, W8PMJ, K8KMQ, WA8HGH, VE3SB, Central Area (K0ALM, Dir.) - W4OQG, WB4DXN, W5s GHP MI QU UGF UJJ, K5ETF, W9s CXY JND EI NXG, WA9FD, W0s HI INH LXC QMY ZHN, K0BIX, WA0TMM. Pacific Area (K5MAT, Dir.) - W5s RF TLK, K5MAT, W6s BGF BVB EOT IPW MLE RSY UE VNO VZT, WA6DEJ WB6s AKR OYN, W7s BO GHT GYF KZ, K7s NIIL NIIV QIG, W0LQ, K0DRL, WB0HCK.

Independent Net Reports (November)

Net	Sessions	Traffic	Check-ins
7290 Traffic	40	504	1838
75 Meter ISSB	30	384	1486
Hit & Bounce	30	957	394
North American Traffic	24	218	381
20 Meter ISSB	30	892	254
Ohio Valley Teenage	30	52	329
Mission Trail	30	163	920
IMRA	27	667	1329
Northeast Traffic	21	51	193
Mike Parad	19	60	140

Public Service Diary

Hillsborough Co., FL - Aug. 31, WA4WXI witnessed a two-car accident on U.S. 41. He reported it via Hillsborough Co. RACES

(WA4ZUU) on two-meter fm. - (WB4ALH, EC Hillsborough Co.)

Atlanta, GA - Sept. 5. A truck driver pulled along side WA4WHR and flashed a badge. The man said he was a policeman in pursuit of a suspect and had no radio to call for more help. He had seen the call-letter license plate and antenna. WA4WHR heard K4GQG and W4RHU on 80 meters. He called them and they phoned the police and relayed information from WA4WHR about the suspect's car. The suspect was quickly apprehended. - (K4GQG)

Fulton, NY - Oct. 3. An emergency situation was declared when a snowstorm caused a power outage. K2DUR, EC, made a call on the two-meter fm RACES/AREC frequency, while heading for the Emergency Operations Center. Five units were mobile in the city reporting conditions to the center and two home stations were rounding up more mobiles. Generator power was utilized also and over 18 hours of operating was put in. - (K2DUR, EC Oswego Co. from RA65)

Franklin, NE - Oct. 13. An emergency net was activated by W0PGF after a tornado hit the area. Liaison with Red Cross headquarters in Lincoln was maintained by WA0ASM, and to the sheriff's department by W0PGF. Health and welfare traffic was handled. - (W0PGF, EC Franklin Co.)

Bonne Terre, MO - Oct. 20. A man walked to K0REC's weekend home and said a woman had been injured while hiking in a nearby state park. There was no phone so a call was made via WR0ABC. W0FWY/mobile 0 responded and stopped to call an ambulance. - (K0YTI)

Sulphur Mountain, CA - Oct. 24. K6YLQ and WB6RWY were traveling in a jeep when they hit an oil slick and overturned. WA6MNA and WB6EDG who were traveling in front of them, witnessed the accident and called police via WR6AEP's auto patch. - (WB6RWY)

Greensboro, NC - Oct. 26. W4CS answered a call on 2 meter fm from WA4DLY/mobile 4 whose son had a very high temperature. W4CS directed them to where K4CAW was waiting in a car, and they were led to the emergency room. - (W4WXZ, SCM NC from APOGEE)

BRASS POUNDERS LEAGUE

Winners of BPL Certificates for November Traffic

Call	Orig.	Recd.	Rel.	Del.	Total
W3CII	308	1096	927	126	2457
K0ZSQ		657		657	1314
R0ONK	121	474	424	16	1035
W0RSY	80	516	426	11	1033
W3VR	214	361	310	21	906
K4AIZ	57	356	186	90	689
W0WYX	23	317	66	251	657
K9 PM	29	350	68	209	656
W34AVN/4	22	286	274	12	644
W0PHOX	158	244	222	17	641
WB4GILU	30	217	167	50	524
W6YBV	38	242	213	26	519

BPL for 100 or more originations-plus-deliveries

K1H6AC	218	W40H	131	WA3MYA	107
W6RLE	164	WA0YVI	130	WA3QYY	106
WA0AUX	156	WA8WZF	124	WB4DZL	105
W5TI	152	K1H6ZL	122	K1BDS	104
WB8FTT	146	WA3A1Q	119	WB6PVI	103
VI3G0L	144	W8IBX	114	K1BDS(Oct)	270
WB5MA	140	WA3PT	109	K7NQX(Oct)	146
W82RK1	136	WB4ZMK	108	WN2UI/2(Oct)	109
WA31OP	134			WB4DZ1(Oct)	102

BPL Medallions (see December, 1973 QST, p. 59) have been awarded to the following amateurs since last month's listings: WB5MA

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.

Public Service Honor Roll November 1974

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 S.M.). Please note maximum points for each category: (1) Checking into cw nets, 1 point each, max. 10; (2) Checking into phone/RITTY nets, 1 point each, max. 10; (3) NCS cw nets, 3 points each, max. 12; (4) NCS phone/RITTY 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 RPL, 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.

WB5AMN	67	WB5HUS	49	WB8NH	44
WB0HOX	65	W5MYZ	49	WA9QVJ	44
WA1MSK	61	WB6QYN	49	K9ZTV	44
WA1QJU	61	WA6TVA	49	K01TV	44
WA2DSA	61	W7GHT	49	VF3GJG	44
WB2WVW	61	WB8KKI	49	VE3GI	44
WA3DUM	61	W0011	49	VE38B	44
W5GHP	61	WA01NM	49	WB6VRC	43
WA5IOU	61	VI3GIN	49	W9NXG	43
WA5ZZA	61	W3ECS	48	WB0HCK	43
W7OCX	61	WA2PCI	47	WA0MLI	43
W9MFG	61	WB4CRB	47	WB4OXJ	42
K0BHX	61	W4ROS	47	W4WXZ	42
VE3IRG	61	W5UGI	47	WA4ZDW	42
WA1QKD	59	K6GMI	47	WA5VBM	42
WB4GHU	59	WA0MD	47	W6AUC	42
WB5LYS	58	WB1BX	46	WA6DJI	42
WB5VH	57	WA1MJ	45	W6OAW	42
WA2OVI	56	WA3J1Q	45	WB8111	42
WA3VDO	56	WB81AY	45	WA9KRI	42
WB4FDI	56	W5RKB	45	KL3JDU	42
WB5JRW	56	W1BVR	44	W5SHN	41
VE3IOZ	56	WA1RGA	44	W6RFL	41
WB5GJ	55	WA38SI	44	WA65CY	41
WB5JZO	54	K901Q	44	K701U	41
W5G5N	53	WA1PHQ	44	W1DMS	40
WA5YJA	51	WA3SXI	44	WA11X1	40
WA1POJ	50	WB4DXN	44	W2FR	40
WA44BI	50	W44GS	44	WB2RKK	40
W2OH	49	WB5DXR	44	E10CQ	40
WA3OLG	49	WB6PVH	44	WB4KJ	40
WA3SXU	49	W7DAN	44	WA4GBC	40
WB5BIW	49			WB9KPK	40

* Denotes multioperator station.

- Ventura, CA - Oct. 27. A vehicle was observed to go out of control and roll over by WB6DCK. He made an emergency call on WR6AEP and W6FXM answered and notified police. - (W6PNNM)
- Rochester, NY - Oct. 29. A tunnel being constructed under the Barge Canal collapsed and water flooded low lying areas nearby. W2ECH, WA2ZNC, W2CER, WB2EDT and others stood by on WR2AEL to give assistance. K2ZAA, Communications and Warning Officer for Monroe Co. e.d. worked at the scene. - (WB2WPA)
- Higdon, AL - Oct. 30. A call was received by K4BHG from K4RJW on WR4AIM about a forest fire that was sighted. The fire was threatening mobile homes, and K4BHG called police. - (K4BHG)
- Long Island, NY - Month of Oct. The public-service log of the Long Island Mobile ARC included reporting of 22 vehicle accidents, 37 vehicles stalled, 3 car fires, two brush fires, two inoperable traffic lights, two ill motorists, and one inoperable railroad gate. - (K2QPF, EC Oyster Bay)
- Oklahoma City, OK - Nov. 2. Heavy rains causing severe flash flooding necessitated a nursing home to be evacuated. Red Cross workers were coordinated by area amateurs using two-meter fm. A washed out railroad bridge was reported by WB5CTS. The following day, amateurs coordinated the return of the nursing home patients. - (WA5FSN, SEC OK)
- Washington, PA - Nov. 4. W3TZM/mobile 3 came upon a three-car accident. He called for help on WR3ADG and was answered by WA3OKK who

called police. - (WA3OKK, EC Washington Co.)

- Washington, PA - Nov. 6. A disabled car was seen by WA3FOJ/mobile 3. He called over WR3ADG and WA3OKK/mobile 3 responded. - (WA3OKK, EC Washington Co.)
- Los Gatos, CA - Nov. 6. A medical emergency call from HMIHF in Seoul, Korea was heard by W6ANX. A boy needed a drug before he could be operated on. After numerous phone calls to pharmacies and air lines, WB6BWC, contacted via WR6ABM, agreed to pick up the drug and take it to the airport. - (W6ANX, WA6HAD, WB4SIJ/6)
- Atlantic Provinces - Nov. 7. VE1EJ formed an emergency communications net to replace telephone services disrupted by a construction accident which severed power lines. Thirty stations throughout the four provinces established a network within an hour. By afternoon, Pictou County was still without service. A large volume of urgent phone calls were relayed via the amateurs, as was information coordinating the telephone service offices. - (VE1SH, SEC Mar.)
- Brookfield, P.E.I. - Nov. 9. VE1ABA and VE1AWU/mobile 1 spotted a car accident. They contacted VE1AWL via VE1HI repeater, and police were summoned. - (VE1AIC, EC Prince Edward Island)
- Bathurst, NB - Nov. 11. A man came to VE1VC's camp, 37 miles from Bathurst, saying two boys were lost somewhere in the area. VE1YE and VE1DE contacted police to organize a search. VE1AQH came to the scene, and 4 other amateurs monitored a set frequency and coordinated an air search. The next day the boys located the camp. - (VE1VC)
- Freeburg, IL - Nov. 16. A truck-car accident was witnessed by WA9TZL/mobile 9. He called for help via WR0AGE and WA0ZVJ and W9VOU answered. The police and fire departments were called and the trucker's relatives were contacted. Other stations assisting were W0NWS, WA0NUM and W0ILW. - (WA9TZL)
- Griffin, NY - Nov. 19. Two men spotted an accident and then saw W1DIT sitting in his car along the edge of the road. They asked him to originate a call to the police. He contacted Midwest ARS and was asked to check into East CARS. He then contacted WB2GNR who tried to relay the message, but his phone line was busy. WA2LXO then called and said he would place the call. (W1DIT)
- Hudson, NY - Nov. 19. A cable break caused an 8-hour telephone-service interruption, and WB2DUW took a mobile unit to a telephone office to start a network. W2EIV operated from a hospital and repeater K1FFK was utilized. Six messages of emergency nature were handled. - (W2KHQ, EC Columbia Co.)
- Delevan, IL - Nov. 19. W0JN/mobile 9 reported an accident via WR9AED. State police were called by W9DNI and WA9JIE. - (W0JN)
- Buctouche, NB - Nov. 21. During a snow storm, VE1TV went off the road and put out a call for aid on VE1RPT. VE1ST answered and called for a tow truck. - (VE1SH, SEC Mar.)
- Howard Co., MD - Nov. 21. WA3SWS/mobile 3 saw a fallen tree which had knocked a high tension power line across the road. A man was trapped in his truck under it. Authorities were called by WA3SWS via WR3ABQ - (WA3SWS, EC Howard Co.)
- Prince George's Co., MD - Nov. 22. Telephone lines were knocked out and authorities contacted W3HXF. The Prince George's and Howard County AREC groups were called to order, set up, and were active for many hours. - (WA3SWS, EC Howard Co.)
- Milford Twp., MI - Nov. 23. W8JWQ/mobile 8 witnessed a car hit a bicyclist. He contacted W8VPD and K8SWW who called police. - (K8SWW)
- Bathurst, NB - Nov. 26. Snow blocked city

streets to normal traffic. Police put 4-wheel-drive vehicles into operation and requested 5 two-meter rigs and operators for communications. Participating were VE1DJ, VE1PM, VE1VC, VE1AGZ, VE1AQH, VE1BA, VE1AZR and VE1PL. - (VE1AGZ, EC Bathurst)

■ Washington, PA - Nov. 27. K3DXV/mobile 3 came upon a truck blocking the road causing a rush-hour traffic jam. He called on WR3ADG and was answered by WA3WBO who called police. - (WA3OKK, EC Washington Co.)

■ Owensboro, KY - Nov. 28. The AREC was notified by the fire department of a light plane crash. Four area amateurs were at the scene in minutes and a base station was set up. Activity was coordinated for over an hour by the units. - (W4OYL, Asst. Dir.)

■ Ocean Springs, MS - Nov. 30. A severe auto accident was witnessed by WA4CDK/mobile 5. He contacted WA5WRE via two meters who then called police. - (WB5DCY, SCM MS)

■ Atlantic Co., NJ - Dec. 1. The Atlantic Co. AREC was called upon by the c.d. office to provide communications for the surrounding communities in preparation for a storm. Soon the main highways and the inlet section of the city were flooded. A two-meter-fm base station was set up at city hall and portable units were assigned to trucks and buses evacuating people. Members were sent to the various c.d. offices that were without communications and set up a net. Liaison with the Coast Guard via two meters was maintained. The amateurs were active until the tides and flooding subsided about 7 hours later. - (WB2EYF, EC Atlantic Co.)

■ Shenandoah Valley, VA - Nov. 30-Dec. 1. Fisherville EC, WB4KIT activated the Central Virginia Two Meter FM Net and the Virginia Sideband Net, servicing weather-bound travelers and an airplane crash. The AREC control station, W4PAY, was activated by WA4PBG. The Northern Virginia FM Repeater was alerted and two mobile units reached the disaster area answering calls of mobiles, advising the area was closed. The Fairfax Red Cross Emergency Van was dispatched to the scene and requested the AREC to furnish it with communications support. A back up Red Cross wagon had two amateurs assisting. Enroute, these two vehicles missed the turn-off and communications from the NVFM Repeater guided them all. They returned that night, and the nets continued till the next day. - (WA4PBG, SEC VA)

■ Medina, OH - Dec. 1. The sheriff's department alerted the Medina Co. Two Meter Net after a massive power failure. The net went on emergency-generator power and assisted Red Cross and the fire department also. WR8ABC and WR8ACG were also used. - (W8GSR, EC Medina Co.)

■ Asheville, NC - Dec. 1. K4VMG/mobile 4 called W4FUI via WR4AEV after his car had been sideswiped and the window broken and the police were called. WA4UXS broke in and said he would call the family. An hour later and still no help, WB4LDO again called police. Overhearing this, WA4VHZ drove to the site to patch the window with plastic and had a flat tire on the way. K4VMG then called a repair truck for WA4VHZ while waiting for the police. - (WB4LDO)

■ San Antonio, TX - Dec. 3. An overturned truck was reported by W5PKK to police. The auto patch to WR5ADH was utilized. - (W5PKK)

■ Taney Co., MO - Dec. 4. A house on fire was spotted by WB0LCL/mobile 0 while he was in contact with WA0SFS. The fire department was called and messages to relatives were handled. - (WA0JOG, EC Taney Co.)

■ San Antonio, TX - Dec. 4. W5PKK learned that a burglary was in progress at a nearby store. He spotted the get-away car and kept police informed until they stopped the subjects. - (W5PKK)

■ Lebanon, PA - Dec. 7. WA3THB/mobile 3 and WA3QWW/mobile 3 came upon an automobile

accident and called for help through WR3ACL. Responding was WA3UDJ who called police. - (WA3VUE, EC Reading)

■ Plattsburgh, NY - Dec. 12. While monitoring WR2ADL, WA2HSB heard a call from WA2JJY who had just been involved in an accident. The police were notified and the family was informed via phone patch. - (WA2HSB, EC Clinton Co.)

■ On Nov. 3, Payne Co. (OK) AREC members manned a storm-and-flood control watch over the area. Information on persons evacuated was gathered and relayed as were water level surveys and storm details. - (WA5FSN, SEC OK)

■ Nome, AK, was hit with high winds and flooding damaging buildings on Nov. 12. All telephone communications and power utilities were severed. KL7HAQ flew to the city to assist. Four amateurs stood by after a communications watch was initiated, until power was re-established. - (KL7JDO, SEC AK)

■ Eleven Alaskan amateurs were on standby for an hour after a power outage from Soldotna to the Talkeetna area. Emergency power was used to check with hospital, police and communications centers until power came back on. - (KL7JDO, SEC AK)

■ Chenango Co. (NY) AREC personnel were alerted by the sheriff that there was a possibility of a severe storm coming into the area. A net was activated and several weather advisories were passed. - (K2VIV, EC Chenango Co.)

■ *Special Activities.* On April 13, 1973, WA0RXX called in to Mid-States Mobile Monitoring Service asking for a page turner for a quadriplegic in Kansas. Hearing this, WA0WPP later called the roll for the Handi-Ham System and asked for help getting a page turner. WB0JGL had one he was not using and offered to send it. WB0FMI broke in and said he would be traveling near WB0JGL's home and would stop, pick up and drop it off at WA0WPP's home that night. WA0RXX was informed of the good news. - (WA0WPP)

■ *September.* A hunter patrol was held Sept. 28 for the U.S. Forest Service by members of the San Gabriel Valley AREC. They watched for lost hunters, forest fires, and firearm accidents. (WB6VYX, EC) A 400-mile nighttime road rally was held Sept. 21-22 in southern Ohio. Central Ohio AREC members provided communications by manning the lead car, officials' cars and dangerous spots; they had two net control stations. - (WB8JXS, Asst. EC) *October.* An American Cancer Society Treasure Hunt was held Oct. 5, in Licking Co., OH. An amateur was set up at each clue location relaying car number and time in and out. - (WB8NEC, Asst. EC) The Santa Barbara (CA) AREC provided communications on Oct. 6, for the "Tour De Santa Ynez" bike race. There were 6 accidents requiring ambulances and two-meter fm was used. - (WA6DEI, SCM) A March of Dimes Bike-a-Thon held Oct. 6, was supported by the Denver (CO) Area AREC. Five routes were covered by members using mobile units. - (W0HEP, EC) San Gabriel (CA) Valley AREC members assisted with the Azusa Golden Days Parade on Oct. 12. Communications were provided to the Red Cross first aid trucks. - (WB6VYX, EC) Seventy-five riders pedaled in a Cancer Society Bike-a-Thon which Kansas City (KS) amateurs manned checkpoints for, on Oct. 12. Two-meter fm was utilized. - (WA0PKF, EC) The Ottawa (ON) AREC provided communications for two events Oct. 20. Checkpoints were set up at 4 locations for the Telephone Pioneers' Car Rally, and 4 amateurs manned these. Seven amateurs assisted high-speed car trials at the Orleans Proving Grounds for the Motorsport Club. - (VE3CRX, EC) An American Heart Association Bike-a-Thon was held Oct. 20 in Los Angeles, CA. San Gabriel Valley AREC members assisted by coordinating logistics and giving information on progress of the bikers. - (WB6VYX, EC) Oct. 20, the Miami Valley (OH) FM Association provided communications for an American

(Continued on page 81)



February, 1925

... DXing, some on the really short waves of 20 meters (more or less), is producing so many new international contacts that an expansion of the "intermediate" list is necessary to identify them all. For examples, CH will be Chile, and FN, Finland.

... G2VW goes considerably further down the spectrum with a one-turn coil tuner covering 3 to 5 meters! He warns that American tubes may have capacities different enough so that exact dimensions of his unit should not be held inviolate.

... Considerable attention is paid to component quality and efficiency in this issue - inductances in particular. BuStans has an extensive list of insulating materials with ratings for each; after baking and wax-coating, the hardwoods show up as efficient as most any. Winding coils on celluloid strips, with turns cemented, is another promising technique.

... The Navy wants to establish a 6000-strong radio communications reserve, and calls on President Maxim to seek enlistments by amateurs.

... Secretary of Commerce Herbert Hoover asks Congress for authority to assign wavelengths to each licensed station; the only law on the books, the Act of 1912, failed to make this provision. Congress seems in no hurry.

... Dr. Galen McCaa describes an "anti-static" device he has invented, making a valiant effort to use self-cancellation circuitry, but so far has reduced static volume only to the level of the desired signal.

... "OWLS" (Official WaveLength Stations) are being organized by Don Wallace, 9ZT, and C. M. Jansky, Jr., 9XI.



February, 1950

... WIFTX gains the advantages of break-in without oscillator chirp/clicks by starting a 3500-ke. rig with an 875-ke. continuously running oscillator, then keying a couple of doublers after isolation with a Class A buffer.

... Technical Editor Grammer presents Part I of what will be a classic on low-pass filters to eliminate TVL. FCC's NY office engineer, Bill Kiser, writes so effectively in *Radio-Electronics* about TV servicemen automatically blaming amateurs ("the amateur alibi") that *QST* reproduces the text. Based on League protest, RMA (predecessor of the Electronics Industries Association) has withdrawn a "TV Tips" training film for servicemen which unfairly treated the amateur situation.

... Ed Tilton describes construction of a basic 2-meter converter in great detail. Simplicity is the keynote, and subsequent articles will cover a transmitter, modulator and power supply for a complete beginner's station.

... ARRL is tangling with the Commission again; seems an FCC informal engineering conference of various amateur groups discussed controversial points of Docket 9295 (1950-style "restructuring") and came to unanimous conclusions; but the FCC staff reneged and reverted to several of its original and highly objectionable proposals.

... W7AYB finds the J design an ideal one for a ten-meter non-directional antenna in restricted space.

... A few wartime walkie-talkies showed up on 3885 kc. during a National Guard test, and were promptly closed down by the Army after League protests. - *WIRW*

Contesting (Continued from page 53)

Smuggers. SS is half over. You work an arch rival and are 37 numbers higher than he.

Jealousy. SS is half over. You work an arch rival and he is 37 numbers higher than you.

Fear. Shack cleaned, an early dinner, bands sound great and you are eager to go. You check the rig one last time and note with horror the SWR on your beam is 10:1. You glance out of the window and the sleet storm is getting worse . . .

Then

Serendipity. You quickly notice your 80-meter dipole is connected and your rig is on 20. You switch and all is well.

Surprise. A YA calls you.

Fantasy. A ZA answers a CQ on 80.

Suspicion. Your XYL says "Don't bother about us - I'll have coffee and snacks ready - just have fun." Wonder how badly she smashed the car? Maybe a lot of new clothes.

Apprehension. Distant thunder.

Relief. The clock rolls to 0000 and the contest ends. With all this in my background, I wonder why I am not the Toast of Broadway.

Ambivalence. You've operated 36 hours non-stop. You're bushed and ready for a shower and some sleep - suddenly 20 opens to the Middle East. QST

VHF QSO Party (Continued from page 62)

K9YHB (WA9s EJD HIR IMC WN90DK)	4494-203-21-ABCD	WA0PBO (+WA0s PKT PKG)	Kansas 1020-65-15-ABD
	Indiana		
K9UVI	4640-136-29-ABCD		Minnesota
WB9GMC	530-53-10-A	W0UGR	672-107-6-ABC
WA9MEM	354-59-6-A	W0OHU	552-46-12-B
WB9KVF	72-18-4-A		
K9JNM	30-6-5-B		Missouri
W9CSF/9 (K9s DZE FFX HVV TTX W9BRF W9S(AO) 1875-123-15-ABE)		WB0ITA/0	1001-88-11-ABD
K9JRK (+WA9USE WB9s TLY HYJ)			Nebbraska WA0MRH/0 (+W0E.KBI) 180-20-9-A
	810-90-9-AB		Check Logs
	Wisconsin	W2HF, WA2IUT, K4E10, WA8ZCO, WB8KAY, WB9MJJ.	
W9OH	636-53-12-B		

Hamfest Calendar



FEBRUARY

Florida — The Treasure Coast hamfest is February 15-16, sponsored by the Vero Beach ARC Inc., and St. Lucie Repeater Association, Inc. Community Center, Vero Beach, FL. Speaker, Swappers Row. Tickets and information: Ike Roach, K4QM, Box 3088, Vero Beach FL 32960.

Illinois — The Sterling Rock Falls hamfest is March 9. For info: Don Van Sant, 1001 9th Ave., Rock Falls IL 61071.

Indiana — The Lake County ARC's 22nd annual banquet is February 22, 6:30 CST at the Scherwood Club, 600 East Joliet St., Schererville (2 mi. east of Rt. 41, 1/4 mile North of Rt. 30). Dinner at 7:30 PM, all you can eat, awards, entertainment, gifts, all for only \$10. Guest speaker is ARRL President, W2TUK. For tickets write: Herbert S. Brier, W9EGO, 385 Johnson St., Gary IN 46402. No tickets sold at door.

Indiana — The LaPorte ARC annual hamfest-auction is indoors at the civic auditorium, February 23, beginning at 8 AM CST. Advance tickets at \$1 each from LPARC, PO Box 30, LaPorte IN 46350. Advance table reservations also available at \$3 each. Talk-in on 01/61 and 146.94.

Iowa — The fourth annual hamfest is Sunday, February 23 at the Mount Joy Airport, north of 1-80 (Brady St. exit) on Highway 61. Advance tickets, \$1.50; door \$2. For tickets or info: KØHSC, 1711 West 15th St., Davenport IA 52804.

Maryland — The 19th QCWA annual banquet is March 8 at the Washingtonian Motel and Country Club, Gaithersburg. Ticket reservations: Sam E. Newman, W3HN, 2921 Terrace Dr., Chevy Chase MD 20915. Cost \$10. Main speaker is Bruce Kelley, W2ICE, secretary of the Antique Wireless Assn., on "Sounds of the Past."

Michigan — The Livonia ARC's swap N' swap is Sunday, February 23, from 10 'til 4 at Stevenson High School in Livonia. Talk-in on 146.94 and .52.

Ohio — The Cuyahoga Falls ARC proudly announces the annual auction on Friday, February

COMING ARRL CONVENTIONS

March 21-22 — Michigan State, Muskegon.

March 22-23 — Florida State, Jacksonville Beach.

May 2-4 — Pacific Division, Fresno, California.

July 4-6 — Georgia State, Atlanta.

August 1-3 — Canadian Division, Calgary, Alberta.

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.

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.

28, at the United Electronics Institute, 1225 Orlen Ave. 7 PM to 11 PM. For details write the club at PO Box 106, Cuyahoga Falls OH 44222.

Oklahoma — The Lawton — Fort Sill ARC's 29th annual "Founders Day" hamfest is February 15-16, Montego Bay Motel. Registration info contact Chuck Crawford, K5BYF.

Texas — The VHF-FM Society will hold their spring meeting at the San Antonio Sheraton Motor Inn at 1400 Austin Highway on February 14, 15, and 16. Registration will be held on the afternoon of the 14th. Please contact the reservation manager at the Sheraton for information about your accommodations.

QST

Meter Resistance

(Continued from page 52)

be 1500 ohms, and R1 will be 1000 ohms. Next, we will parallel the 500-ohm resistance of the meter with a 500-ohm resistor, giving a parallel resistance of 250 ohms. Therefore, the series combination of this 250 ohms and the 1000 ohms of R1 gives a total of 1250 ohms, and a current which no longer is 1.0 mA, but $(1.5 \times 1000/1250)$ or 1.2 mA. Thus, by paralleling the meter with a resistance equal to its internal resistance, we have increased the current by 20%, and the meter current will not read 0.5, but 0.6 mA.

Actually, the resistance which would have to be paralleled with the meter to cause the reading to drop to 0.5 mA would be 333.3 ohms, or $(500.0 - 333.3) \times 100.0/500.0 = 33.3\%$ less than the actual meter resistance. Thus, by neglecting the effect of the change in total current caused by the paralleling of R2 with the meter, we have caused a 33.3% error in the measurement of the meter resistance.

A nomograph was designed by the writer based

on an equation which relates meter resistance, full-scale meter current, and accuracy to the minimum battery voltage required to obtain a given accuracy. The use of the nomograph can be seen in the following example. Suppose it was desired to measure the resistance of a 500- μ A meter to 3% accuracy and that the approximate resistance was 500 ohms. First, a line is drawn from 3.0 in the PERCENT ERROR column to 500 μ A in the CURRENT column. Next, a line is drawn from 500 in the RESISTOR column through the TURNING AXIS at the intersection of the TURNING AXIS and the line drawn previously. The minimum voltage required can then be read in the MIN. VOLTAGE column and would be 8.0. Thus, a 9-volt battery would ensure that the current change would be no larger than the amount which would cause a 3% error in determining the meter resistance. If greater accuracy was required, a larger value of battery voltage and series resistance would be necessary. This would ensure that the constant-current-source conditions were satisfied sufficiently.

QST



Correspondence From Members -

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

FRIENDLY HAMS

• I recently completed a 2 month, 7,000 mile trip through Canada during which I operated both portable and mobile VE1, VE2, and VE3. My experiences were so extraordinarily pleasant, I just had to write about them.

First, the Canadian Telecommunications people. Talk about promptness — I sent my request for permission to operate in Canada on a Monday. The permission arrived at my home QTH on Thursday! We should learn a lesson in efficiency and promptness from the Canadians.

Next, the Canadian hams. They are just out of this world! Everywhere I went they gave me a royal welcome. When I had trouble with my trailer in Moncton, New Brunswick, a whole covey of them converged on me to help. One of them used his influence to have a municipal campground that was closed, opened just for me. And then he came to that campground for an eyeball, just to see that everything was all right. In Timmins, Ontario, they have a small but very active 2 meter group. One of them wouldn't take no for an answer and directed me to his QTH for coffee and to visit his family. Another insisted that I visit him and, when I did, I found that he had arranged for a whole group of 2 meter operators to be there just to meet me! And all over Canada they directed me through their cities, filled me in with local history and lore, or just chewed the rag and accompanied me along the road.

This has been one of the greatest experiences in my operating career. I would surely hope that if any of us here in the States ever hear a Canadian ham, we will be half as cooperative and friendly as they were to me. I have written a personal letter to each one of the contacts I made while on this trip. I just couldn't do less. Ham radio is one fine fraternity. — *Daniel W. Willingmyre, WA3SKO, College Park, MD*

FRIENDLY HAMS?

• Being licensed for quite sometime (currently awaiting General) I have had the opportunity to travel coast to coast and personally meet many hams throughout the United States. "The Amateur is Friendly" is definitely a hypocritical statement for many, especially as far as first impressions are concerned. I have found a large portion of the older, more experienced hams to be rude, sarcastic and downright "too good" to be of any help. All too often they think themselves superior to the younger recently licensed hams, and last but not least the general public. They're too darn busy to be of any assistance. Many potential hams are turned away from the world of Amateur Radio by the rudeness of these hams. I know, I was.

I searched for a qualified ham who would be nice enough to give me my Novice exam. Well, after contacting five of them, the 6th one took

enough interest to give me the exam. Let us remember that Amateur Radio does not exist by operation alone. Public service, kindness, and courtesy are necessary for our survival. This also includes helping the beginner, and taking an interest in promotion efforts. — *F.S. Romero, Jr., WN4GNI/WN6NTH, Kissimmee, FL*

TWO-LETTER CALLS

• I am most strenuously opposed to the League's comment on the "2-letter callsign" proposal of the FCC (Docket No. 20092). I am currently studying for the Extra Class exam, and one of the main incentives for me to take this exam is the possibility of getting a 2-letter callsign. I have only been on the air for six years, and have found that a 2x3 call sign is almost worthless for getting through the DX pileups that make 15 and 20 meters sound like the 11-meter band! In addition, I do much vhf work. During the short openings, and during the auroral openings, it is difficult for other operators to discern my long call sign in the ionospheric noise.

It seems to me that the League is more interested in protecting the specialized interests of a select clique of oldtimers than it is in upholding the rights of all amateurs. Very few of the League's officials hold WA or WB prefix callsigns! When the FCC proposes to make an important rule change, why can't the League poll the individual members before sending comment to the FCC? It seems criminal to me that the entire amateur body in this country is represented by a handful of oldsters. Therefore, I am allowing my current ARRL membership and OVS appointment to expire. Perhaps I will join the League in the future, if and only if it becomes truly representative of the general amateur body! — *Philip E. Galasso, WA2HMH, Chief Engineer, WNUH (FM), Allentown, PA*

• You state that the FCC proposal "would have the effect of weakening the incentive structure." If anything, it will *strengthen* it, making the Extra Class ticket more desirable to General and Advanced Class holders who are on the "border line" in motivating themselves to obtain the Extra. Since incentive licensing is involved with self-improvement in the radio art, the above noted amateurs (seeing the possibility of having a two-letter call) will prepare for and consequently pass the Extra Class exam. Weaken? NO WAY!!! — *Gordon Bello, WA1JWQ, Brookline, MA*

• Cancel my membership in the ARRL.

Your comments filed with the FCC relative to the proposed granting of better call signs to those amateurs who have qualified for the Extra license, as published in *QST* of December, 1974, are the reason for this action. Such comments are a good example of the old navy expression "Pull up the ladder, I'm aboard."

On page 37 of the same issue of *QST* you bemoan the lack of interest in ham radio as evidenced by the "static total amateur licensees." Your action in opposing any benefits for the newer amateur should help to remedy this condition. It will drive many of us away from the hobby. — *D. D. MacKay, WB6YUZ, Cmdr USN Ret, San Diego, CA*

A PARADOX

• I consider the ARRL as the only hope for the survival of amateur radio in this time of change and pressures working toward its restriction and extinction. Amateur radio shares a common paradox, the offspring do not honor the parents. — *Helmut E. Nimke, WB2EPA, Tuxedo, NY*

PIPE DOWN WIICP!

• At the Midwest convention when discussing electrical grounds for antennas, Lew McCoy suggested the house water pipe as a good ground. I submit that this is no longer true since plumbing codes require dielectric fittings between piping of different metals (such as iron and copper), and since both gas and water services from street to house are now often plastic piping. Better drive a good ground rod!

Incidentally, Mr. McCoy made interesting, informative presentations. — *Jim Blades, W0CLS, Mitchell, SD*

[EDITOR'S NOTE: Sorry, we stand corrected.]

CB COOPERATION?

• It has been difficult to agree with ARRL and local radio club approaches to cooperation with the Citizens Radio Service. In many instances, separation is an advantage to amateurs, as the former becomes even more unmanageable as time progresses. There is one unique point of agreement where CB and amateur efforts coincide. Rather than continue to allow large political organizations such as the Electronic Industries Association to propose removal of part of the 200-MHz band, and major equipment manufacturers to propose the "Emergency Medical Service" to occupy a portion of the 450-MHz band, why not note the fact that one, unused UHF TV channel — more than likely unused since the inception of that allocation — provides more than twice the spectrum space asked for in both proposals?

Amateurs and amateur organizations simply can not continue to assume a non-aggressive posture. Further, with the removal of the 2-meter band in portions of the Orient and France, as well as the removal of the 1296- and 2300-MHz bands in that country, full cooperation within our country seems essential. Simply noting the fact that the combined might of the CB and amateur service striving in the same direction when it is in the best interests of each, pose a force of considerable magnitude as well worth noting. — *C. Buttschardt, W6HDO, Paradise, CA*

ADDITIONAL BANDS?

• With regards to the upcoming conferences on frequency allocations; I appreciate and expect the League to protect my interests. However, I see no reason whatsoever for the expansion to additional bands. Mention is being made of bands at 10, 18, and 24 MHz. Such a move will only advance the motives of manufacturers and cannot do anything

but obsolete the hard bought equipment that the bulk of us have. Expand present bands, yes! Provide fuel for the production lines, no! — *Raymond E. Albert, Jr., WA2CZI, Mt. Laurel, NJ*

PR PROBLEM?

• The last couple of issues of *QST* have carried articles and letters about ham PR problems and lack of recognition of ham radio by the general public. Recently, I received a sales brochure from a firm that was going to make me an electronics expert. It was addressed to "Mr. E. B. Wonnell," an obvious corruption of my name and call sign. At first, I was going to dismiss it as a computer error like letters addressed to "Mr. Committee." But when I traced the error to its source, I discovered that I had filled in a reader information card of an electronic magazine as follows: Ed. Barry, WN0NNL. I am still getting letters from various electronics firms addressed to E. B. WN0NNL.

Good Lord! If electronics magazines and electronics mail order firms don't know a ham call sign when they see one, amateur radio's PR problems are worse than any of us realize. — *Edward James Berry, WN0NNL, St. Louis, MO*

INTERNATIONAL EXCHANGE

• I am very heartened by the appearance of feature and technical articles by overseas ops in *QST*. I can only hope this reflects a growth of true international understanding, which our hobby can and should contribute to. — *Carl Menne, WB9KYE, Aurora, IN*

MALE DOMINANCE?

• I consider WA3YFU's letter in December "Correspondence" an insult to my intelligence, and it seems to me if he would read W3WRE's very nice column, he would not waste your time, or that of the readers. A short look at the "Haps" column would show when a YL or XYL was elected or nominated.

Personally, I think ham radio has a place for anyone — whether red, yellow, black, or white, male or female. If you can do the job it should be yours. This magazine is not political and should not even consider any such comments from someone who is in complete ignorance of the facts, and evidently would not care enough to check. — *Sandy Roman, WB4SRX, Louisville, KY*

• Four of the top six calls in the BPL listing in the December issue belong to women, and the women handled 47 percent of the total traffic listed. This is a trend that has been going on for some time. The November listing, for example, gave the gals just under 50 percent. Men, it's time for us to rise up and not let this activity for which our American Radio Relay League is named be taken over; we must maintain the League's venerable sixty-year-old tradition of male dominance! Who knows, the ladies may soon be sitting on the Board, and even writing technical articles! — *B. Clark, WB4OBZ, Moncks Corner, SC*

GOOD LAUGH

• Had the heartiest laugh in a long time when I read, "Slang of the West," in "The World Above 50 Mc," page 95, November, *QST*. — *Otto Schulz, VE7CDF, Falkland, BC*

Happenings of the Month

FCC's RESTRUCTURING PLAN

Regular readers will have seen the "Flash" in last month's *QST* about restructuring, as proposed by FCC in Docket 20282. Active operators have heard of little else in on-the-air discussions since the first word from WIAW that the docket was out. Rumors have been rampant, to the point of almost causing panic among operators. Publication of the text in this issue, along with availability from other sources, we hope will clarify the misinformation which has been spread.

Here is the full Notice of Proposed Rule Making. For a summary of the content, see the story in January *QST*. See also the editorial in this issue.

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of	)	RM-1016, 1363
Amendment of Part 97	)	1454, 1456, 1516
of the Commission's Rules	)	1521, 1526, 1535
concerning operator classes,	)	1568, 1572, 1602
privileges and requirements	)	1615, 1629, 1633
in the Amateur Radio Service.	)	1656, 1724, 1793
	)	1805, 1841, 1920
	)	1947, 1976, 1991, 2030, 2043, 2053,
	)	2149, 2150, 2162, 2166, 2216, 2219
	)	2256, 2284, 2449

NOTICE OF PROPOSED RULE MAKING

Adopted: December 4, 1974

Released: December 16, 1974

1. The Commission has before it the above petitions (also listed in more detail in Appendix 1) for rulemaking. Principally, petitioners are seeking amendment to the Rules for the Amateur Radio Service regarding operator classes, requirements, and privileges. Some desire additional privileges for only one specific operator license class, or desire lower requirements for one specific class. Others want more extensive amendments, such as the deletion, or addition, of an entire license class. Some would establish a new "Hobby" operator license class, having no telegraphy skill requirement. Of these, RM-1841, RM-1991, and RM-2053 would have this operator class in the Citizens Radio Service. Since operation of a radio station as a hobby or diversion, i.e., an activity in and of

itself¹, is prohibited in the Citizens Radio Service, we consider such operation to be one more suitable to the Amateur Radio Service. Thus these three petitions are included in this proceeding. RM-1633, RM-1656, RM-1793, and RM-1841 are also included in Docket 19759, but will be considered herein to the extent applicable. Additionally, petitions RM-1947 and RM-2256 contain proposals otherwise pertaining to operator privileges and are included herein for that reason.

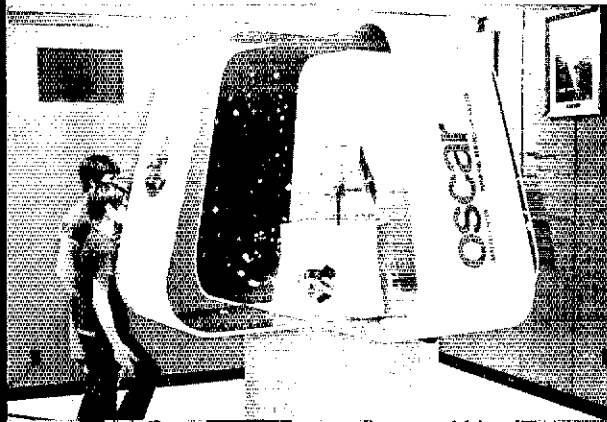
2. RM-1629 relates to the possibility for conducting operator examinations at places other than regular Commission examination points by persons other than Commission employees. Since the entire matter of amateur radio operator examinations will be under consideration in this proceeding, it is also incorporated.

3. The type of amendments requested by the petitioners cover a broad scope of thoughts and ideas. In summary, the salient requests are:

- a. Authorize some, or all, Novice Class privileges to the Technician Class.
- b. Permit a person to hold both a Novice Class license and a Technician Class license.
- c. Authorize some privileges in the 144-148 MHz frequency band to the Novice Class.
- d. Authorize all of the 144-148 MHz frequency band to the Technician Class.
- e. Authorize some privileges in the 28-29.7 MHz frequency band to the Technician Class.
- f. Reallocate the frequency subbands among the various license classes.
- g. Establish new frequency subbands for incentive purposes in the 1800-2000 kHz band.
- h. Authorize Amateur Extra Class operator privileges to Advanced Class operators.
- i. Limit transmitter power privileges for General Class operators to 250 watts on the 3.5 MHz, 7.0 MHz and 14.0 MHz frequency bands.
- j. Limit transmitter power privileges for all operator classes to 300 watts on amateur frequency bands below 30 MHz.
- k. Specify maximum transmitter power in terms of output.
- l. Establish a new Hobby Class license, or a new VHF Telephony Class license having no telegraphy requirements or privileges.
- m. Establish a new Beginner Class and a new Code Class of operator licenses.
- n. Combine the Novice Class license and the Technician Class license into a new VHF Telephony Class.
- o. Establish a new Intermediate Class license and a new Communicator Class license.

¹ See Section 95.83 (a)(1)

Amateur Radio and Oscar are on display to a million people who visit the Kennedy Space Center in Florida each year. Here is the permanent exhibit donated by ARRL to KSC. It covers regular ham radio activities as well as space, with taped narration by Jean Shepherd, K2ORS, and is supplemented by a live lecture given by KSC personnel.



HOW YOU ARE AFFECTED

The FCC proposals should primarily be evaluated as to their overall impact on the Amateur Radio Service. But it is certainly of direct, personal interest to each present licensee to know how his or her own activities might be affected. Accordingly, we present such a summary:

Amateur Extra Class: Would convert to "Extra Class" (without the word "Amateur"). Retains all privileges, including exclusive cw segments, but would have to share with Advanced the present exclusive voice segments, Lifetime operator license. New power limit of 2 kW PEP output.

Advanced Class: Would convert to same class and also to new Experimenter grade without examination. Net effect is to retain all present privileges plus gain use of current exclusive Extra voice bands, and the 2 kW PEP output limit.

General Class: Would convert to same class, and also to the Technician grade without examination. Net effect is to retain most present privileges, but lose use of 29.0-29.7 MHz and be limited to A1, A3 and F3 emissions. New power limit of 500 watts PEP output. Could no longer be principal supervisors of mail examinations, nor the trustee of any club station nor of

any repeater, control, auxiliary link or space station.

Conditional Class: Would convert to General(C) Class, and also receive the new Technician(C) grade without examination. Thus the same situation as just described for General, except license would not be renewable.

Technician Class: Most present licensees attained tickets through the mail exam system and are thus really Technician(C) Class, which would become not renewable. Technicians who took an FCC-supervised exam could renew. In the transition, both would be granted (on application) all Novice privileges without further examination, and either Technician or Technician(C) as appropriate. In the vhf area this would permit 500 watts PEP output with only A1, A3 and F3 emissions (parallel to General Class) where authorized in all bands above 50 MHz. Thus 50.0-50.1 and 144-145 MHz would be newly available. Club and special station trusteeships not permitted, as mentioned for the General Class.

Novice Class: Becomes a five-year renewable license. Application fee required. Same privileges except a new 250-watt *input* limit.

p. Establish a new Advanced Technician or First Class Technician Class license.

q. Discontinue the Conditional Class and Technician Class operator license.

r. Issue the Amateur Extra Class operator license for life.

s. Reduce Element I(B) telegraphy requirement from 13 words per minute to 10 words per minute. Obviously we cannot accommodate all of these requests because some are in conflict with others. We do not believe it is desirable to deal with these petitions on a piecemeal basis, since many are interrelated. Accordingly, we conclude the time is propitious for a review of our entire amateur licensing structure. To this end, we have reviewed the petitions carefully, together with the existing system of operator privileges and requirements, against the fundamental basis and purpose of the Amateur Radio Service. The following represents our best forecast of the direction we should move in this matter.

4. We recognize the desire by some amateurs, and would be amateurs, as expressed in RM-1633, RM-1793, and RM-1976, for a class of amateur operator license having requirements that do not

include a knowledge of telegraphy. Although every amateur radio operator license has traditionally required the applicant to demonstrate some level of proficiency in International Morse Code, goals within the basis and purpose of the Service could be met, at least in part, without this requirement. Moreover, as several of the petitioners point out, the International Radio Regulations do allow the Commission to waive the requirement for an amateur to "... have proved that he is able to send correctly by hand and to receive correctly by ear, texts in Morse code signals ..." in the case of stations only operated above 144 MHz. A survey and analysis³ conducted in 1971 indicated that there may be as many non-licensees interested in amateur radio activities, if not more, than there are persons already licensed in the Amateur Radio Service. The most often mentioned reason for not obtaining an amateur license is the telegraphy requirements. We are aware the need for, and the

² Radio Regulation Annexed to the International Telecommunications Convention (Geneva 1959) Article 41, Section 3(1).

³ A Survey and Analysis of the Citizens Radio Service, P.B. - 204 595.

The "Burned Out Tube Award" of the Pacific Division was presented to Veikko West, K6ORP, chairman of the 1974 Pacific Convention, as is traditional there, by Director J. A. Doc Gmelin, W6ZRJ. That's about how one feels after tackling that job!





Jim McKim, WØCY, is the Midwest Amateur of the Year; Division Director Paul Grauer, WØFIR, at left, makes the presentation at the Division Convention. (Photo inx to WØCEJF)

use of, telegraphy in amateur radio communications is much less on amateur frequency bands above 50 MHz than it is on the amateur frequency bands in the High Frequency (3-30 MHz) and Medium Frequency (.3-3 MHz) range, where spectrum conservation, tolerance to interference, and other factors, make telegraphy an important mode of amateur radio-communication. We believe, under carefully established provisions, a new "telephony-only" type of operator license, limited to frequencies above 144 MHz, could and should be incorporated into the Amateur Radio Service.

5. The present operator license structure is shown in Figure 1. For all intents and purposes there are ten classes of operator licenses available in five ascending levels of operator privileges. Qualification for an operator license is established by means of the various examination elements shown in Figure 1. These may be administered either by a Commission examiner or by a volunteer examiner through the mail examination system. The Amateur Extra (C) Class, the Advanced (C) Class, and the Conditional (P) Class licenses are issued to physically disabled applicants qualifying on the basis of a mail examination administered by a volunteer. The Conditional Class license is issued

(Continued on page 158)

ALIEN BILL BECOMES LAW

President Ford on November 30 signed Senate Bill 2457 amending the Communications Act of 1934 so that aliens can be licensed in the Safety and Special Radio Service and in the Experimental Radio Service. (Prohibitions against aliens holding



licenses in the Broadcast Service and the Common Carrier Service remain in effect.)

The immediate effect of the new law on the amateur service should be to speed up the issuance of reciprocal operating permits to visitors. The bill eliminates "clearance" of such applications with other agencies of the government, a process responsible for most of the delays in the past.

When the amateur rules have been amended to conform to the new law, it will be possible for any alien, regardless of age, immigration status, or prior licensing elsewhere, to take FCC exams and receive a regular FCC license and W or K call. The prior requirement for the filing of a "Declaration of Intention to Become a Citizen" has been dropped from the Communications Act. Thus, youngsters of foreign nationality who have not been eligible because of the "first papers" rule can now get their ham tickets.

The bill was introduced about 18 months ago by Senators Magnuson and Cotton at the request of the Commission. We had given it up for lost, but Congress completed action on it during the "lame duck" session after the elections.

ADVISORY COMMITTEE APPOINTMENTS

President Harry Dannals, W2TUK, has announced the following appointments to ARRL Advisory Committees, effective January 1, 1975:

Contest Advisory Committee - Robert B. Epstein, K8HLR, of Oak Park, Michigan, has been active in CD Parties, Field Day, Sweepstakes and DX contests since 1961 in single operator, multiop/single transmitter, and multiop/multitransmitter categories, single and multiband efforts - mostly in the "Winners' Circle." He has held ORS and OPS appointments; owns a 60 wpm certificate from the Connecticut Wireless Association; holds DXCC with 220 confirmed; is a member of the A-1 operator club; and holds the Extra Class license.

The appointments of W3BQV, K4BAI and new chairman K7NHV have been renewed. Members midway through their terms are WIBGD, WA2BLV, W5RUB, W6PAA, W9LT, WAØCVS, and VE7CC. Hudson Director Stan Zak, K2SJO, is Board Liaison; W1YL continues as staff liaison.

Oldest ham in North America? Fred Bath, VE1LG, of Middleton, Nova Scotia, is 99 years old and still active on the air! (Henry de Greeff photograph)

DX Advisory Committee — Louis A. Muhleisen, Jr., K5FVA, of Jefferson, Louisiana, is an Advanced Class licensee licensed since 1960 and an ARRL Life Member. He holds DXCC both mixed and phone and has served as acting section communications manager for Louisiana. About the time you read this, look for him from one of the Caribbean Islands, furnishing "the other end" for the DX test.

Gary Stillwell, W6NJU, of Fair Oaks, California, was vice director from the Southwestern Division in 1973; holds the Extra Class ticket and is a Life Member of ARRL. He's a member of both the Northern and Southern California DX clubs and has held most officer posts in the latter at various times. He is on the DXCC honor roll; holds the Five-Band DXCC, and is active in contests on cw and phone.

Allen T. Clark, W7YTN, of Seattle, Washington, was first licensed in 1955, currently holds Extra Class and is a life member of ARRL. His mixed DXCC stands at 278, phone at 245, and just fifteen confirmations remain to be gathered for the Five Band version. W7YTN is a past vice president and past program chairman of the Western Washington DX Club. An active contester, Allen also has time for church youth leadership, camping and photography.

Robert W. Wood, K0HUD, of Vermillion, South Dakota, rounds out the appointments to the DX Advisory Committee. He's been licensed since 1956 and holds the Extra Class. Dr. Wood teaches geography (Hmmm, wonder how many new "countries" he can add to the list?) at the University of South Dakota.

Another professor joins the committee, too, as Board Liaison: Southeastern Director Larry Price, W4DQD. WICW remains HQ liaison, naturally.

W3BWZ and K4IKR have been reappointed for new terms. The "holdovers" are W1BIH, WA2FQG, new chairman WA8ZDF, W9NN and VE2NV.

Emergency Communications Advisory Committee remains unchanged with WB2EDT, W3PST, W41YT, Chairman WA4PBG, K5SVD, W6INI, W7IEU, W8ERD, W9QBH, W0PB, VE3DV, Board Liaison W4WHN and Hq. Liaison WA1FCM.

VHF Repeater Advisory Committee: Lewis D. Collins, W1GXT, of Arlington, Massachusetts, has earned his spurs as chairman of the frequency coordinating committee of the Northeast Repeater Association; vice president, New England VHF Association; *QST* author; and Life Member of ARRL. He's been licensed since 1955, currently as Advanced. W1GXT has been operating vhf and uhf since 1965 on 50, 144, 220, 420, 1215, 2300 and 5650 MHz.

Tables turned — ARRL President Harry J. Dannels, W2TUK, here receives a commission as Admiral in the 3900 Club from Marlin E. Gilman, WA0AUX, seated. (A W0CHJ photograph)

Frederick Booth, WA2GCX, of Rochester, New York, is an Extra Class licensee on the air since 1959. He is vice chairman of the Upper New York State Repeater Council, serves as its frequency coordinator, and as chairman of its public relations committee which reviews FCC dockets. WA2GCX also serves as treasurer of the Genesee Repeater Association, WR2ABF.

John Michael Cox, K3GEG, of Bowie, Maryland, is a director of the Maryland FM Association, Inc., an officer of the Maryland Mobileers Amateur Radio Club and is deputy for technical operation of the Mid Atlantic Repeater Council and has assisted in the design, construction and maintenance of several repeaters in the Baltimore-Washington area. Licensed since 1958, he holds the Technician Class License.

John A. Mason, W5NSQ, of Dallas, Texas, is president of the Texas VHF FM Society; past president of the Dallas 2 Meter Repeater Association and author of the May, 1972, *QST* article, "Towards a National Plan for 2-Meter Fm Channels." He is a Life Member of the League, a Technician Class licensee and has been in amateur radio since 1957.

R. B. "Pat" Shreve, W8GRG, of Shaker Heights, Ohio, is an incorporator, director and officer of Lake Erie Amateur Radio Association (WR8ABC). He has designed control systems and written many articles on control and autopatches. He's currently vice president of the Ohio Area Repeater Council and has been EC of Northeast Ohio and an ARRL Official Observer. Licensed since 1954, W8GRG currently holds the Advanced Class.

Jack Forbing, K9LSB, of Fort Wayne, Indiana, is founder, past chairman of the Indiana Repeater Council, serves on its frequency coordinating team, and is editor/publisher of its newsletter. He's also trustee of WR9ACJ and of the CAP repeater in the Fort Wayne area, and is involved in Air Force MARS repeater work, too. Licensed since 1958, he holds the Technician Class license.

K4GHR, and new chairman W6OLD have been reappointed. Members midway through their terms are K7VOR, K0TVO and VE3WT. W0BWJ and W1ICP continue as Board and Hq. liaison, respectively.

QST



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

IARU REPRESENTATIVES ATTEND ITU SEMINAR

Every two years the International Frequency Registration Board (IFRB), one of the permanent organs of the International Telecommunication Union, sponsors a seminar on frequency management and use of the radio frequency spectrum at the Geneva headquarters of the ITU. The purpose of the seminar is to acquaint telecommunications officials from developing countries with the regulations and procedures of the ITU, techniques used in frequency management on the national and international levels, and recent developments in telecommunications systems technology. Many of these officials will be instrumental in establishing the policies of their countries in future international conferences. The seminar provides an excellent opportunity to familiarize them with the amateur radio service and with the benefits their countries would derive from support of our service. Therefore, in recent years IARU headquarters has participated in the seminars with the goal of providing exposure of the amateur radio service to the officials in attendance from developing countries.

The most recent of these seminars was held in September, 1974, and drew 126 participants from 56 countries. IARU headquarters representatives were ARRL Assistant General Manager WIRU and Assistant Secretary K1ZND. Many of the participants visited the station of the International Amateur Radio Club, 4U1TU, and nearly all

attended an IARC-sponsored reception where the officials could chat with amateurs in a social atmosphere. Illustrations of some of the seminar activities accompany this column.

As one of the several dozen radio services which compete for allocations in the radio spectrum, it is important that the amateur radio service make such efforts to enhance its visibility to the people who will play an important role in determining its future.

DX OPERATING NOTES

Reciprocal Operating

United States reciprocal operating agreements exist only with: Argentina, Australia, Austria, Barbados, Belgium, Bolivia, Brazil, Canada, Chile, Colombia, Costa Rica, Denmark, Dominican Republic, Ecuador, El Salvador, Fiji, Finland, France,* Germany (Federal Republic), Guatemala, Guyana, Honduras, India, Indonesia, Ireland, Israel, Jamaica, Kuwait, Luxembourg, Monaco, Netherlands,* New Zealand, Nicaragua, Norway, Panama, Paraguay, Peru, Portugal, Sierra Leone, Sweden, Switzerland, Trinidad and Tobago, United Kingdom,* Uruguay, and Venezuela. Several other foreign countries grant visiting amateurs operating privileges on a courtesy basis; see the list in this column for November 1974 or ARRL headquarters for details.

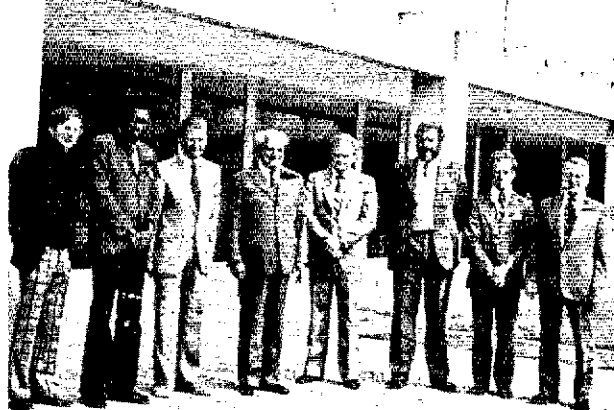
Canada has reciprocity with: Belgium, Brazil, Costa Rica, Denmark, Dominica, Dominican Re-

* Agreement includes overseas entities.

Left photo: During the IFRB seminar Richard C. Kirby, W0LCT, began his service as Director of the International Radio Consultative Committee (CCIR), another of the ITU's permanent organs. Dick is shown here with A. Gromov, Chairman of the IFRB, who opened the seminar. The CCIR is widely regarded as the foremost collection of radio experts in the world. The outgoing Director is Jack W. Herbstreit, W0DW/HB9AJI. Right photo: The reception sponsored by the IARC provided the opportunity for intercommunication between telecommunications officials and amateurs. Engaged in discussion here are (l-r) E. V. Fingall of the Ministry of Communications and Works, Barbados; C. A. Campbell of the Post and Telegraphs Dept., Jamaica; Z. A. Joseph, VP2KZ, Telecommunications Officer, St. Kitts; and WIRU.



Radio amateurs attending the seminar included (l-r) K1ZND, VP2KZ, DK5HM, IARC President OK1WI, LA7OF, G8CUG, G4ALN, and W1RU. Others were CN8BU, TN8AQ, 5A2TU, and 7X2RA.



public, Ecuador, France, Germany (Federal Republic), Guatemala, Honduras, Israel, Luxembourg, Netherlands, Nicaragua, Norway, Panama, Peru, Poland, Portugal, Senegal, Sweden, Switzerland, U.S., Uruguay, Venezuela, and Commonwealth countries.

Third-Party Restrictions

Messages and other communications — and then only if not important enough to justify use of the regular international communications facilities — may be handled by U.S. radio amateurs on behalf of third parties *only* with amateurs in the following countries.** Argentina, Barbados (only U.S. stations /8P), Bolivia, Brazil, Canada, Chile, Colombia, Costa Rica, Cuba, Dominican Republic, Ecuador, El Salvador, Greenland (XP calls only), Guatemala, Guyana, Haiti, Honduras, Israel, Jordan, Liberia, Mexico, Nicaragua, Panama, Paraguay, Peru, Trinidad & Tobago, Uruguay and Venezuela. Permissible prefixes: CE CM CO CP CX EL HC HH HI HK HP HR JY LU OA PT PY TG TI VE VO W or K/8P XE XP YN YS YV ZP 4X 4Z 8R and 9Y4. Canadian hams may handle these same type third-party messages with amateurs in

** By special agreements, third-party traffic is also permissible with amateurs in Australia and the Federal Republic of Germany for traffic regarding amateur satellites, with 4U1TU, and with personnel of Project Hope in Jamaica.

Bolivia, Chile, Costa Rica, Dominican Republic, El Salvador, Guyana, Honduras, Israel, Mexico, Nicaragua, Peru, Trinidad & Tobago, U.S., and Venezuela. Permissible prefixes are: CE CP HI HR KOA TI W XE YN YS YV 4X 4Z 8R and 9Y4.

DX Restrictions

Amateur licensees in Canada are warned that international communications are limited by the following notifications of foreign countries made to the ITU under the provisions in Article 41 of the Geneva (1959) Conference.

Canadian amateurs may not communicate with Iraq, Khmer Republic (except XU1AA), Libya, Pakistan, Somalia, Turkey, Viet Nam (except XV5s AA AB and AC), and People's Democratic Republic of Yemen. Prefixes to be avoided by Canadians include AP TA XU XV YI 3W 5A 6O and 7O.

QST

Public Service

(Continued from page 71)

Cancer Society Bike-a-Thon. Two crews covered the courses using two-meter fm. — (W811C, EC) Ten operators from Santa Clara (CA) section set up stations for a March of Dimes Walk-a-Thon, Oct. 26. — (WA6RKB, SEC) A "Spook Patrol" was held in Baldwin Park, CA by the San Gabriel Valley AREC, on Halloween. Twenty members participated. — (WB6VYX, EC) For 3 hours each evening of Oct. 26-31, 16 Licking Co. (OH) AREC/RACES members assisted the police in a highway safety watch. Overpasses were especially watched. — (W8EOG, EC) A net control station was set up in the Owego, NY, police station, on Oct. 28-Nov. 1 as a base station for a Halloween patrol. Mobiles used two-meter fm. — (W2FWO, EC) A "Witch Watch" was held by the Claremont (CA) AREC, for Halloween. Two, 10 and 220 MHz were used by mobiles. — (WA61DN, EC) The Burlington (ON) ARC cooperated with police on Halloween this year. Fifteen mobiles patrolled the city and 6 minor incidents were reported. — (VE3EFD) "Operation Halloween" was conducted with the Lynchburg (VA) police on Oct. 31. Fourteen amateurs participated in this 14th annual watch. Twenty-five calls were dispatched on two-meter fm. — (W4GCE, EC) November. The Payne Co. (OK) AREC group aided police and c.d. with the Oklahoma State University Homecoming Activities on Nov. 1. Crowd control was handled. — (WASFSN, SEC) Area amateurs were on hand to assist the Newark (OH) Band Parents conduct a high school band contest on Nov. 2. Buses of contestants were directed and coordination between the judges and officials was handled. — (W8EOG, EC) Amateurs helped the American

Legion organize the annual Veterans' Day Parade on Nov. 9 at Owensboro, KY. Five hams were involved. — (W4OYI, Asst. Dir.) A 70-mile car rally was held on Nov. 10 at Ottawa, ON. Radios were set up at each checkpoint and at headquarters to handle instructions, compute scores, and relay information. — (VE3CRK, EC) The Birmingham (AL) Amateur Radio Emergency Service provided back up communications for the American Red Cross during the Veterans Day Parade, Nov. 11. Six stations participated. — (K4AOZ) A message center for the public was set up in a shopping center in Raleigh, NC, by the Raleigh ARS and the Cary ARC. On Nov. 15, over 45 messages were handled. — (W4FMN, EC) December. Personnel of the Montgomery and Green Cos. AREC were assigned to officials and parade units for the Dayton, OH, Holiday Parade on Dec. 1. Intersections were covered and coordination with the police was handled. — (W811C, EC) On Dec. 1-2, the OH-KY-IN VHF Society sent holiday radiograms for shoppers in Cincinnati, OH. A communications van was set up and some of the messages were relayed through Oscar 7. — (W4SCOA, SEC) Two-meter fm support for a national horse trail ride of the Wake Co. (NC) 4-H Club was provided by the Raleigh ARS, on Dec. 7. Ratings and information were relayed using mobile units. — (W4FMN, EC) The Christmas Children's Parade on Dec. 7 was held in Redwood City, CA. Communications were provided by amateurs under the c.d. — (W6DEF, EC) On Dec. 9-13, the Scioto Valley ARC of Chillicothe, OH, sponsored "Operation Santa Claus." Two meter rigs were used to let Santa speak to children. — (WB8EEF)

QST



YL news and views

CONDUCTED BY LOUISE RAMSEY MOREAU,* W3WRE

VE YL Clubs

WHEN THE experimental station 3QT was licensed in 1922, Madeline Cross opened the door in Canada to YL operation as the world's second DX YL. The past 52 years have marked an enthusiastic growth of the YL population in that country. With women amateur radio operators in all provinces, the need for YL organizations increased through their desire to know and work with each other.

The gals in VE3-land were the first to organize through on-the-air meetings called the Ontario cw YL Net that developed into the formal organization of the Ontario Trilliums, with aim of developing a further fellowship and activities of women amateur radio operators.

The Trilliums have introduced a unique public service through their club. TOT members have been active in taking amateur radio into veterans hospitals in the province, then following through with classes in code and theory to give the patients a new form of worldwide friendship through radio.

One of their long-term projects has been work with the blind through classes and, following acquisition of a license, helping these new amateurs in setting up a station and getting on the air. Through their most recent program of making tapes for the blind they are also bringing news of amateur radio to these operators.

The Trillium Weekend that is scheduled each November is a regular club activity to give contacts to those who are interested in acquiring the Trillium Certificate, available to all amateur radio operators.

The Maritime Sparkettes, organized by YLs living in the three Maritime Provinces, are a most active group who, as their Ontario counterparts do, work with the blind people who need assistance in studying for their licenses.

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

One of the major Centennial projects of Canadian YLs was formation of a national YL club. In September 1967, the Canadian Ladies Amateur Radio Association was formally organized with members in every province. CLARA membership is available to all licensed women amateur radio operators who live in Canada.

The club aim is to promote proficiency and fellowship in amateur radio among women, and to further a good relationship between the amateur and the public. With an associate membership open to all YL operators CLARA has a special program to promote worldwide friendship through club members sponsoring DX YLs to bypass international red tape. The major project to increase YL friendship around the world was the introduction, in 1973, of the CLARA sponsored YL-DXCC certificate that is available to all amateurs who submit proof of contact with 100 YLs in 100 different countries.

The story of the YL clubs in Canada is one of close association and friendship among the over 500 YLs in that country, and a story of women who are taking time to assist others by sharing their skills and know how in order that they too may enjoy amateur radio.

DX-YLCC Address Change

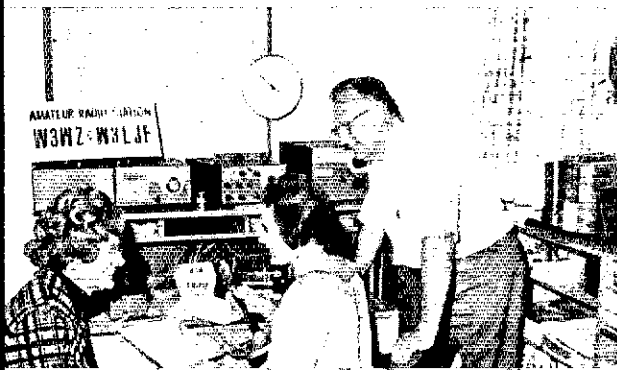
The address of the custodian of the YLRL sponsored certificate DX-YLCC, has been changed. Address all requests for information, or for the certificate to Phyllis Shanks, W2GLB, 3 Honey Lane West, Miller Place, New York, NY 11764.

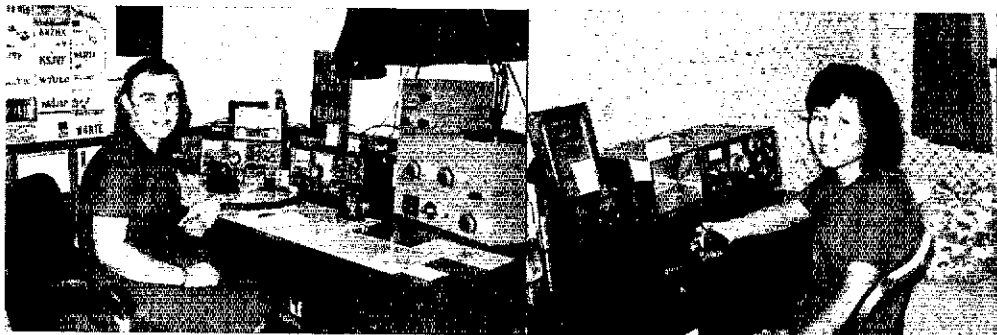
This certificate is available to all amateur radio operators upon submission of proof of contact with 100 DX YLs, not more than two from any one country. The first certificate has been issued to W2QHH.

Project Helping Hand

The communications service that amateur radio so often provides was a helping hand between two continents when assistance in speeding communications between prospective parents in Erie, Pennsylvania, and the "Committee for Adoption of Ecuadorian Children by American Parents" in Ecuador, were assisted by W3LJS, Josi, and W3WZ,

W3LFJ, Josi Jackson, Darleen Magen, HC2YL, Cas Jackson, W3WZ, following the successful completion of bringing 11 Ecuadorian orphans to Erie, Pa.





Left photo: Barbara Newman, VE3BFN, 1975 President of the Ontario Trilliums; right photo: HM1HL, Jae Hee Kim, is studying broadcasting at the Iwaha Women's University of Korea. She is active on 15 meters in particular and is anxious to work YLs in the United States. (JHIBED photo)

Cas Jackson in this country, and Darleen Magen, HC2YL, in Ecuador.

Through the assistance of these amateur stations, contacts with doctors, attorneys, psychiatrists, social workers and the director of the program in Guayaquil, were made in either direct contacts in the station of HC2YL, or through phone patches with their opposite numbers in the Jackson's station in Erie.

Sixty-nine successful contacts resulted in Darleen, HC2YL, Esther Bristow, the director of the committee in Ecuador, and eleven children, ranging in ages from six months to 11 years arrival in Erie, to be united with the families who will adopt them.

Russian YLs

The *Call Book Magazine* began listing the Russian amateur radio stations for the first time in 1974. As with so many countries all the names are listed using an initial as the given name of the amateur. However, using the very broad general rule that "a" and "ska" are feminine endings, "YL News and Views" was able to spot 416 YL calls, and at least 400 more with the "R" prefix that designates Novice stations.

It is suggested that if we are hunting a contact with YLs in these countries, these name endings are a fairly reliable guideline to use.

1975 TYLRUN Officers

TYLRUN the on-the-air club that includes members from the Southwest announces the following women have been elected officers for the year 1975: President, Myrtle Stinnett, WB5FGM; Vice President, Annie Smith, KSJKV; Secretary-Treasurer, Helen Douglas, W5LGY; Publicity Chairman, Cindy Jones, WSZPD. TYLRUN meets twice each Thursday on 3.94 MHz at 1400 GMT, and again on 7.28 MHz, at 1600 GMT.

Present and past officers of Ohio's Buckeye Belles. (l-r) Carol, W8WRJ, 1974-75 President; Jean, WB8FIC, Secretary; Mary, K8ONV, 1973 President; Lillian, K8CKI, Editor of the *Buckeye Burr*.

That YL Voice

After each of the YL contests "YL News and Views" receives complaints from YL participants that they have been bypassed as a contact in the phone section of the contest with the comment, "Sorry OM this is a YL contest!" Those YLs with a voice that could be mistaken ask that we check the call to be sure that it is a YL calling. Our international clubs, YLRL, YLISSB, CLARA, all have a directory available to the membership, and most of the club bulletins list members.

The gals who have a hard time working the phone contests request that a fast check of their calls would add one more contact, and allow them to be able to participate.

Josi Jackson, W3LJF

Shortly after Josi, and OM Cas, W3WZ, were married she decided to move into the shack and share his interest. As a result she has been busy with the major activities of amateur radio — traffic, DX, contests, and rag chewing, but finds that her most gratifying activity is participation in the Erie-Merida, Yucatan, "Sister Cities" program, and the Ecuadorian children's adoptions.

This new area of involvement has brought Josi recognition and gratitude from Mission of Friendship, Special Education Department of Edinboro State College, Foundation for International Cooperation, Gannon Department of Religious Activities, Diocesan Mission Office, and the Committee for Adoption of Ecuadorian Children.

A member of the Radio Association of Erie, and the Presque Isle ARC of Erie, she is also a member of the U.S. Power Squadron where she served as Skipper of the Ladies Auxiliary, and holds the Marine Electronics certificate, and the USPS Certificate of Piloting and Sailing.

When not on the air, Josi's interests are sail boating, both racing and cruising, and canoeing in the rivers of Western Pennsylvania, and flying.

QST



keys are identified as C,E, and S, for clear, enter, and search.

The circuitry for the Contester was built on a 12 x 17 x 3-inch aluminum chassis which slips inside a steel equipment cabinet. All controls and indicators are mounted on the front panel, which is fastened to the end of the chassis.

The power supplies take up the rear section of the chassis. A huge surplus 5-V, 6-A regulated supply is mounted in the center, while the transformers for the positive 250-volt and negative 12-volt supplies are on either side. On the underside of the chassis can be seen the various components for the power supplies plus a small Minibox which houses the triac motor control for the teleprinter.

Most of the logic circuits are included on the logic board, mounted on the front half of the chassis. This board comprises IC sockets glued to perf board. All wiring was done using Wire-Wrap techniques. This type of wiring requires no soldering and is very easy both to wire initially and also to change. Printed circuit boards would make construction much simpler and are in the works, but for the initial debugging, Wire-Wrap made things easy.

Because of the complexity of this device and the fact that each operator would probably want to custom-tailor the circuits to his needs, a construction article was not attempted. If you would like more information, complete schematics and descriptions of each section of the circuit are available from the author. In addition, pc boards for most of the circuits are available.¹

Conclusion

Interesting as the Contester is, it will never replace the good contest operator. There are things that no machine can do, such as copy two or three cw signals at once, which will leave the human operator king for a long time to come.

However, the Contester can greatly aid almost any operator. For one thing, there is less chance of error if the cw is sent by the machine. And the machine is a lot faster when it comes to checking the dupe sheets. In addition, the Contester can act as a second operator, sending the cw and filling in the log at the same time.

One of the nice things about the Contester is that it leaves you with some *time* during the contest. All the while it is sending the cw and filling in the log, you have time to reach for the refreshments or get up and stretch your legs. You have a lot more time to really enjoy the contest.

If the complexity of the device overwhelms you a bit, think of some of the *simple* things which are

possible, using only parts of the circuitry. For instance, a keyboard cw generator has already been mentioned. This requires only the keyboard, the keyboard buffer, one code conversion, and the cw generator. It provides you with a 64-character buffer and an output of perfect code.

Or think of the possibilities if you substituted the 60- (or 100-) wpm data transmitter in place of the cw generator. Now you have an RTTY keyboard with a 64-character buffer and a standard typewriter keyboard. You can type at any speed and there is no need to worry about shifting up or down as on a regular teleprinter; the LETTERS/FIGURES control does it for you.

With a few inexpensive read-only memories, you can have a message bank of preprogrammed cw messages. Simply touch a button and that particular message is transmitted through the cw generator in perfect code. Substitute some 60-wpm circuitry and you have a bank of preprogrammed RTTY messages.

But, of course, there's nothing like building the whole thing and being the first on your block to tell a fellow ham, "Well, Pete, I see my computer worked you in the contest!"

QST

A Tribute

(Continued from page 57)

negotiating more desired resolutions to our problems with other nations having common interests in a roughly parallel state of development, rather than attempt to deal with the entire membership of the ITU.

However, we proceed and whatever the results, amateurs of the future will look back with some judgment as to what was done on their behalf. The QCWA can be an influential force in this planning stage for the future of amateur radio. Recognizing the present transitional phases of communications, there was never a better opportunity to improve your allocation status, especially in the high frequency portion of the spectrum. I don't mean it will be easy nor pre-ordained. But if it is to ever happen, the 1979 conference is the arena for the decision.

Your amateur satellite program is well on its way. OSCAR 7 is due to be launched any day now, if it hasn't already happened. I envisage the day when amateurs will have a global satellite system utilizing near geostationary orbits for their satellites. The areas of innovation have probably passed from the terrestrial sphere to the spacial arena, but that should be no insurmountable barrier to amateur's contributions to future technical developments. Circumstances may well inhibit individual inventions in such a complicated field. But in a professional capacity with the background of amateur radio, innovation can be enhanced and I believe that amateurs will continue to make a large contribution in the technical field.

By now you should know that I believe in amateur radio. I believe it is a valuable aspect of our life. And I shall do everything in my power to assist in its continued well-being, looking toward its further contributions to our national telecommunication requirements. I wish you all the best of success.

QST

¹Information in technical-manual form is available directly from the author at a cost of \$20.00. Printed circuit boards, etched and drilled, with plated-through holes, are also available for most elements of the Contester at a cost of \$9.75 each.



CONDUCTED BY EDWARD P. TILTON,* W1HDQ

YOU MUST NOT be too precise or scientific about birds, trees, and flowers. A certain free margin helps your enjoyment of these things." Walt Whitman's "free margin for birds," expanded upon beautifully by Hal Borland in *Audubon* for November, 1974, set the writer to thinking along similar lines about vhf propagation. Would we be so much happier, if we knew precisely when and to where our frequencies were going to be good for long-distance communication? Doesn't our still considerable "free margin for radio propagation" help to keep the game exciting? Wouldn't most of us prefer to have at least a little mystery about it all?

Not that we are in any danger of losing our free margin in the "World Above 50 Mc." Despite all we've learned in some 50 years about how signals fly, as well as how birds do, and with all the technical sophistication in both bird-watching and hand-watching, we still have plenty to learn in both fields. Neither pursuit seems likely to fade from the scene, having lost its romance and surprises, both exciting and frustrating.

We've been discussing ways to improve our band-opening catching average in this space the past few months, but in the process we may have raised more questions than we've answered. The new WWV format at 14 minutes past each hour has done little more. Interesting though this has been, the general impression we get is that the people who provide the WWV information are none too sure of their ground, either.

Prediction of radio propagation variations is not unlike predicting the weather. Either can be done with a higher degree of accuracy than at any time in the past. But the forecaster in either field is going to look foolish now and then — and for somewhat the same reasons. There are still holes in our knowledge of the sun and its effects on life on this planet. Close watch of the sun, even by the simple methods we've described, does help. By combining this with monitoring the solar flux, via

solar-noise observation or by recording the WWV 14-after transmissions, trends can be spotted and, to some extent, plotted. When spots come around the edge of the solar disk the solar flux index rises. If the spots are growing and active, rather than in a declining phase, there will be rising *F*-layer muf as the spots near the center of the solar disk, and there is a good chance that just after the peak there'll be disturbed conditions and possibly aurora, for a spell. After you've been keeping records for a few months, you'll have some fairly clear evidence of 27-day recurrence trends, and you'll be doing pretty well on predictions of this kind.

But, just when you think you've got it down pat, something may break that you didn't expect at all. But don't feel badly. This happens to the best professional forecasters, too. It has happened to the WWV information at least three times in three months, that we know of.

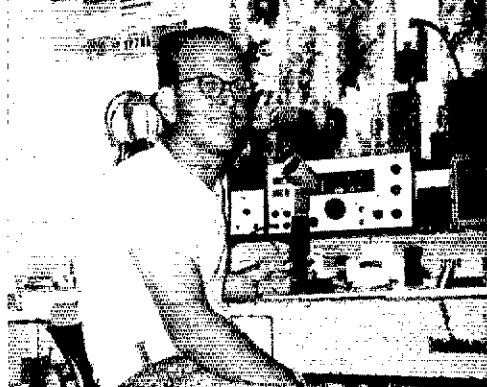
A classic upswing in solar flux, an exceptional *F*-layer muf peak, and a surprise appearance of DX on high-latitude paths came with the passage of a very large sunspot group in early October. The breakup of this, on the steep downward slope of the flux curve, beginning Oct. 14, brought widespread auroral conditions on 6 and 2, and fall *F*-layer activity on 10 and 6. This could have been anticipated (and in fact, it was) from the conditions of mid-September. The end of the period was characterized by a continuing geomagnetic storm for three days, beginning Oct. 14. This was recognized in the WWV information for those days, until it was announced on Oct. 16 that this storm had ended.

By this time the big sunspot group had passed out of sight, and for several days the sun was just a clear bright disk on our projection. WWV was not warning of anything, either, but all of a sudden came an hf blackout, and vhf auroral propagation, on the 17th. No warning of that one, visual or by radio — but generally unsettled conditions remained with us through the end of the month.

* Send reports and correspondence to ARRL, 225 Main St., Newington, CT 06111.

Dave Olean, K1WHS, at the console. Racks at his back contain the heterodyne units and amplifiers, for 50 through 432 MHz.





Ray Clark, K5ZMS, San Antonio, looks pleased here because the Six-Meter International Radio Klub, which he got started only a little over a year ago, now has 628 members in 45 states. Though Ray broke into 6-meter work as KR6RI, Okinawa, he is now better known as "SMIRK No. 1."

On Nov. 6, an unpredicted period of high solar activity and generally disturbed conditions began, again not associated with any sunspot evidence we could see, and not mentioned until after the fact by WWV. This one did not appear to have vhf propagation effects, except that the incidence of E_s propagation on 10 and 6 was unusually high, throughout the whole latter half of November. This was not associated with any solar activity that could be seen by simple observation methods.

December, up to our Christmas deadline, was a poor month for forecasters, as well. On Dec. 5, the 18-after NOAA bulletins on WWV said "geomagnetic storm expected to start Dec. 6" - but on Dec. 6 things were notably quiet, and we heard no more about *that* storm.

On Dec. 7, the solar flux index was up 20 points for a short time around 1400 - but nothing was said to explain this, and the figure was back down again in a few hours, on the bulletins. But at about 1620 Nov. 9, the WWV signal dropped from S9-plus down to barely audible with the hfo on, in a matter of 2 or 3 minutes, and the station was unreadable on any frequency for about two hours. Later that day the information was "minor geomagnetic storm in progress," but there was no warning that it was on the way, nor did they ever say when it ended.

At our deadline (this being completed the day before Christmas) there had been a period of rising solar flux, with the passage of two clearly visible sunspots several days apart. Intermittent "unsettled" and "active" geomagnetic field conditions were reported, but with carefully hedged forecasts at 14 minutes past the hour, meanwhile. We'll leave the forecasting at that, too, but hope springs eternal, and we'll try again when the signs are clearer.

OVS And Operating News

W1GXT, Arlington, MA, says that October-like weather in November brought a later-than-usual spate of coastal tropo to the Eastern Seaboard. Every fall, Lew says, a new group of vhf operators discovers that 144 MHz and up is not confined to "line of sight." This year it was the fm-and-repeater fraternity. The 2-meter regulars who use other modes, and tend to expect coastal DX every fall as a matter of course, had all but given up hope for fall, 1974. It doesn't pay to put too much trust in "seasons" anyway. Some of the best tropo conditions, at least in the middle distances, come in the winter months. And, as the 6-meter faithful

saw in the closing months of 1974, E_s is not merely a summertime diversion. Which is another way of saying that ham radio tends to be what you make it, at any season, and on any frequency.

Like the International 10-10 Net which inspired it, the Six-Meter International Radio Klub (SMIRK) is developing local chapters, with on-the-air gathering times. The New England SMIRK Net meets on 50.125 MHz, Sundays at 8 pm local time, with WA1NNW as NCS.

W1JAA, Chelmsford, MA (ex W6FZJ) waited all through the fall for the famed eastern tropo on 432. When it finally came, in November, he was away from home. With EME going the way it is, and our man-made satellite, Oscar 7, doing so well on 432-146, who needs tropo? As satellites are already doing for military and commercial communications, the moon and Oscar could make the DX concept obsolete on all frequencies. But are we ready for that?

Tidbits from Joe's EME Note No. 4: Several well-equipped 432-MHz EME stations had problems in scheduling during the last of 1974, because of local obstructions. ZESJJ has problems with northerly declinations, VE7BBG at low elevations generally, W1SL at low angles east and west, and W1JAA on low-angle westerly work. Several operators report high noise temperatures at various low elevations, too. W1SL can "hear Hartford", 20 miles away, over intervening hills (including the one where W1HDQ hangs out) but this is not a useful EME heading, fortunately. More SRI (WA6LET) EME coming up, tentatively, Feb. 22 and 23 (perigee), probably simultaneously on 144 and 432. WB6KAP is in charge of coordination. Nautical Almanac now \$5.75, from Public Document Distribution Center, 5801 Tabor Avenue, Phila, PA 19120. HO214, *Tables of Computed Azimuth and Elevation*, will no longer be available when supply is exhausted. Suggested alternative, HO229, *Site Reduction Tables for Marine Navigation* is higher in price but simpler to use. 1975 perigee dates - Jan. 1, 28, Feb. 25 (best of year), March 26, April 23, May 21, June 14, July 11, Aug. 8, Sept. 6, Oct. 4, Nov. 2, 29, Dec. 26. These kinds of info are typical of W1JAA EME Notes, available for SASE, from Joe Reisert, W1JAA, 17 Mansfield Drive, Chelmsford, MA 01824. If you want earlier notes, make the postage at least 20¢. Joe tries to help everyone; help him foot the bill for postage, at least!

WA1OLK, Spencer, MA - Best November ever on 6. Open feedline through the 16th, but found band open for E_s as follows: 17 - 4s at 1700 UT, 20 - 4s at 0120 and 9s (very strong) at 2230, 24 - Florida 4s working short skip to VA and 8 and 9, 0030; Florida again at 2245, 25 - Alabama and Louisiana, after 0000, 26 - Florida, after 0000, 30 - Texas and Louisiana 5s 2330, followed by 4s. Your conductor confirms most of these dates, also feeling that skip was more frequent through the whole fall period than ever before. Bob also caught the 2-meter tropo Nov. 11, but found ssb-cw

activity lacking, other than WA4TTG, S7, on cw, at nearly 450 miles.

K1WHS, W. Lebanon, Maine, found the Geminiids very productive on 6 during the evening of Dec. 13, working many stations in 4, 8, and 9. The usual ionospheric-scatter paths were open continually, from the meteor bombardment, with only the bursting nature of the signals identifying this as other than a normal E session. Dave worked K0MQS and K0DAS, both Iowa, on 144, random. Bursts from W0DRL, 1325 miles, were strong, but there were not enough long ones for complete communication.

WISL, Canton, CT, worked VE7BBG on 432 EME Dec. 1, Tom's tape of the VE7BBG cw is very good, and there's some pretty fair ssb in there, too. WISL may hold the record for *heaviest* antenna in ham radio. His EME system employs a complete Wurtzburg antenna and platform. At least a year of hard work went into getting this massive machine into operating condition, but it is paying off now. The Wurtzburg dish is 29 feet in diameter, fully steerable in azimuth and elevation.

The WISL-VE7BBG combination may give a good indication of the requirements for EME on 432, since VE7BBG has a 20-foot dish, also fully steerable. Both stations are close to optimum in the receiving department.

Here's a switch: W3BHG, Newark, Delaware, hunts states on 2 meters, any mode. Bill worked another Bill, W0PMN, Wichita, KS via the Geminiids, Dec. 14. It was a new state for both parties. No. 36 for W3BHG and No. 30 for W0PMN. W3BHG also ran Geminiids skeds with K5VWW and WB5LUA, trying for Texas, but with no results. Maybe we'd better pass along a couple of addresses: W.A. McEachen, W3BHG, 1121 Maplefield Road, Newark, DE 19713, and W.T. Gilliland, W0PMN, 917 W. 51st Street, Wichita, KS 67217.

The latter is better known as K5FNV/Ø. He needs W1s for all call areas on 144. There are quite a few W1s who need Kansas, too; K1WHS, for one. This would be an interesting gamble, since the distance is close to that magic 1400-mile figure, rarely broken by other than EME methods.

WB2LAI/4 (who should be using a 4 call by the time this is read) and K4MSG have supplied information on a JFET adaptation of the noise blanker that is in the *VHF Manual*, originally built in tube form by Sam Harris, W1FZJ, years ago. We'll run this if there is interest. It's very simple, and has only one drawback — it is easily desensitized by strong signals up to 1 MHz away from the receiving frequency. It does work wonders on bursty line noise, 432-MHz radar QRM, ignition pulses, and any other noise having a low duty cycle, regardless of how strong it may be.

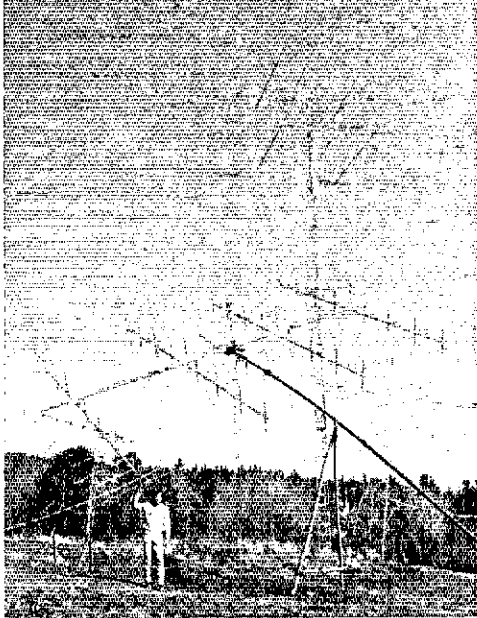
Morning operation on 50 MHz during major meteor showers could be more productive than it usually is. Both Saturday and Sunday morning, Dec. 14 and 15, showed almost E-like propagation resulting from the Geminiids, and even random skeds should produce usable signals on 6, if m.s. procedure used on 144 MHz and higher were used. See page 23, any edition of the *VHF Manual* for promising times and dates. Edition 3 has the most recent information, and still better is available in the W4LTU article, May, 1974. QST. WB4BSZ, Pensacola, FL reports working K8MMM on short but strong and frequent bursts Nov. 3, 1550 UT (Taurids?), but says no other signals were heard around this time. WB4BSZ and WA4BMU, both Pensacola, report frequent F_2 openings during November.

220- and 420-MHz STANDING

WA1MUG	15	5	450	W2DWJ	16	4	570
K1PXE	13	6	700	K2QVS	15	5	734
W1HDQ	13	5	450	K2LGG	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	19	7	800
W4UCH	9	5	543	W4HJZ	15	5	560
K4IXC	5	3	1115	K4SUN	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	W5GVE	7	3	963
K7BBO	5	3	940	W5UKQ	6	2	590
K7ICW	4	2	250	K5UGM	5	2	956
K7HSJ	3	2	400	W5XSD	5	2	850
W8PT	11	6	660	W6FZJ	9		7450
K8HWW	10	5	550	WA6HXW	6	4	7500
K9HMB	20	9	1785	W6DQJ	4	2	360
W0EYE	14	6	1600	K7ICW	4	2	225
WA0QLP	4	2	923	W7JRG	3	2	420
VE2YU	8	3	300	K8DEO	24	8	775
VE2HW	5	2	325	K8IJA	23	7	880
VE3AIB	7	4	450	W8YIO	22	7	650
				W8HVX	19	7	660
				W8CVQ	13	7	625
420 MHz				W8MNT	13	7	600
K1PXE	18	7	1210	W8RQI	10	6	425
K1HTV	17	5	610	W8VHG	10	6	625
W1AJR	16	5	680	W8QOB	8	5	500
WA1MUG	15	5	740	W8WFD	8	5	450
W1SL	14	6	2600	W9WCD	22	9	1725
K3EAV/1	14	6	700	K9HMB	21	8	836
K1BFA	13	5	710	WA9HUV	19	7	780
K1JIX	13	5	620	W9J1Y	15	6	550
WA1JTK	11	4	715	W9AAG	15	5	800
W1HDQ	11	4	380	K9AAJ	12	5	425
K2UYH	24	9	2500	W0DRL	24	9	1425
K2ACQ	24	8	925	W0LER	18	6	1000
W2AZL	21	7	1000	W0EYE	15	5	1700
K2CBA	20	8	2670	W0LCN	13	4	700
W2CLL	20	6	790	K0TLM	10	5	700
K2RIW	19	6	812	W0YZS	9	4	650
K2VDK	18	6	750	VE2HW	6	3	750
W2OMS	18	6	725	VE3DKW	19	7	940
WA2EMB	18	6	720	VE3AIB	9	5	600
WA2FGK	17	6	745	VE3ELV	9	5	520
K2ARO	17	6	740	VE3EZX	7	5	510
W2BLV	17	6	732	VE7BBG	1	1	1125

Figures are states, call areas, and best DX in miles.

WB5FCR, Dallas, answers our January query, "Is A-M Dead?" with a firm "No!" Ray has been doing well with a Heath Sixer, putting 1.5 watts into a 4-element Yagi. He worked K4CSV and K1VHR/4, both Florida, and K4BE1, Alabama, Nov. 30, and covers a 50-mile radius regularly. Those paragraphs brought favorable comment from many sources, incidentally. Most writers seem to agree that the only thing wrong with a-m, particu-



larly for simple-gear work, is its lack of use, these days.

WB5LUA, has his array of four Swan Yagis working nicely. Proof: he sighted it on the rising moon, and immediately heard his echoes. We won't call this "beginners luck," since it resulted from three months of intensive effort in the antenna department. The spacing is 15 feet in each dimension, and each Yagi is fed through an adjustable stub, to tune out reactance, as suggested by W5KXD. Full details of the feed system will be supplied on receipt of SASE by Al Ward, WB5LUA, 1302 Northlake, Richardson, TX 75080.

Al says that optimum headings changed fairly rapidly through the nights of the Geminids shower. He worked K0DAS, Hiawatha, Iowa, on 2-way ssb, 0651 UT, Dec. 15. Early in the morning of Dec. 14 he worked WA4CQG, Auburn, AL on 3980, and set up a 2-meter m.s. sked. When they changed over they found the band wide open for tropo, and Al got State No. 25. "Why do people set up *skeds* on 144.1 for peak shower hours, when any other frequency would work equally well, with far less likelihood of QRM? 144.1 is fine for random CQs — but *why keep skeds there?*" To which this writer adds a fervent "amen!" Even back in the 1950s (long-white-beard stuff again!) it was getting hard to "tell the contestants without a program" during showers like the Perseids and Geminids.

KSZMS, San Antonio, says that 21 SMIRK members now have "worked 100" seals, and four have qualified for "worked 250." A SMIRK Party is in the works for this spring, probably as a warmup for the June VHF Party. Date and details soon.

Ray has considerable correspondence with the far places, and is a valued news source. He heard recently from F08DR, Tahiti, who found the 6-meter going rather thin, through 1974, working only KH6. Since 1972, Rene has worked KH6U, KH6GRU, KH6HMI, WB6KAP, KS6DH, American Samoa, ZK1AA and ZK1MA, Cook Islands, and C21AA, Nauru. Now, if he can just hang on until Cycle 21 peaks . . . ! Rene mentioned hearing HL9WI, Korea, the only far-eastern station heard in Tahiti on 6.

Ray also hears from several JAs, and has word

Antennas grow big and tall in Potatoland East. The bedspring that K1WHS, West Lebanon, Maine, appears to be balancing on one hand is his 120-element collinear EME array. The 72-foot tower, right rear, has four 14-element 144-MHz Yagis, spaced 16 feet each way. Nested inside the 2-meter structure are four 15-element W0EYE-type Yagis for 432. Topping them all is a single 14-element Yagi for 220, 92 feet above ground. Almost hidden from view at the left rear is a 9-element 50-MHz Yagi, that will be up at 85 feet next spring.

from JAIRJU, summarizing the fall DX season on 50 and 52 MHz. Most of the openings were to VK8 and VK4, the more northerly Australian areas, which were worked by Japanese stations Sept. 27, and October 6, 7, 8, 11, 12, 13, 14, 16, 19, and 20. KH6s (Guam) were worked Sept. 28, Oct. 4, 10, 16, and 17 from Japan. The VKs are all above 52 MHz. This makes one wonder what has happened to South American 50-MHz activity. Admittedly, the JA-VK path is ideal for the TE mode, but day after day KSZMS, WA5IYX, and others in South Texas hear evidence of 50-MHz *F*-layer propagation to the south, in the form of commercial harmonics in the band, and repeaters and other vhf transmitters just below the band edge, but nothing comes of frantic calls in that direction on 50 MHz.

As with October, WA5IYX found November the best for 50-MHz openings in his experience. After a quiet first half, the month showed 17 openings on 13 different days (local time; the total would be higher with UT). Only Nov. 20 and 21 exhibited no 50-MHz DX in the second half. Total time open for the month was more than 10 percent greater than the best previous November, 1968. 20 states were heard. December was going even stronger, up through the 17th, the date of Pat's detailed report, which includes almost daily skip on the TV channels. Even the fm band was open often in late November. Pat estimates the *F* layer muf to have reached at least 128 MHz, Nov. 30 (reception of Alabama fm station on 106.7 MHz). The fm band was open from 1455 to 1902, local time, that day.

The advent of 2-meter ssb transceivers (at last!) is demonstrating the real potential of 2-meter mobile, without repeaters. K0KBE has been covering phenomenal distances, running a 140-watt amplifier, and even the 10-watters, mobile to mobile, are working distances that tend to make repeater users sit up and take notice. This is not too surprising when one thinks of the natures of the two modes. Nobody argues that fm is not superior when a fairly good signal is available. This is what made fm go on commercial frequencies, and it makes local fm work a joy in a car, as well. But in areas where the fm signal disappears into the noise, the ssb signal keeps right on going, there being many decibels in favor of the latter, in weak-signal work. On his commuter run, Santa Cruz to Watsonville, WB6JNN reports frequent contacts at up to 45 miles, over mountainous terrain, with 10 watts PEP output. "It's the *only* way to go 2-meter mobile!" says Jim.

W6PO is over half the way to 144-MHz WAS, and he has two of the "hard" ones, Hawaii and Maine, thanks to using the EME route for 17 of his 22 states. Bob worked K1WHS, Maine, in October, and W4WNH/8, Michigan, and K9UIF, Indiana, in November. WAS looks so easy that Bob is counting for DXCC on 144 now, with only 94 to go!

Signals are often not reciprocal on 144-MHz EME, he notes. In skeds with W4HJQ they've had solid signals both ways, but not on the same skeds. It was the same with KH6NS. Bob copied KH6NS well for an hour of calls, with no reports coming back. When they finally made it, signals were weak both ways.

K7CVT, Tucson, AZ, reports that three new stations have appeared on 145.005, ssb, bringing the known Arizona ssb total to 17 stations, W7KFQ, K7CIN, and WA7KAT, Nogales, being recent additions. Wes kept Leonids skeds with W7UBI, Boise, Idaho, Nov. 16. Only two brief bursts were heard until 58 minutes through the sked, when 62 seconds of solid signal permitted a complete QSO. Next day a 1400 sked with K5VWW seemed poor, until at 1433 they had a burst of over two minutes. They completed a good QSO, and K5VWW worked WA7BBM on the same burst.

WA7BJU is going strong on 2-meter EME, with an 8877 amplifier, 8 KLM Yagis, and a low-noise preamplifier. He's worked W8KPY, K8III, and WA7KYZ thus far, and is open for skeds. His Callbook address is wrong. Here's how you write or phone him: Dan Berge, WA7BJU, Rt. 3, Box 212G, Molalla, Oregon 97038. Phone 503-829-8092.

K0DAS, Hiawatha, Iowa, used the Geminids on 144-MHz ssb effectively, working WA4CUG, Alabama, 0500 UT Dec. 13, K1WHS, Maine, 0650 the 14th, and W8SLUA, Texas, 0650 the 15th. K1WHS, WA2BIT, and K2RTH were random contacts. W1JSM was heard calling, after K2RTH, but Rod had to break off for a sked with W7RUC, and was not able to complete the contact for his first New Hampshire. To make matters worse, the sked with W7RUC was inconclusive, yet Rod had heard him well enough for a QSO while W7RUC was working K0MOS. Such are the frustrations of a meteor addict! Rod reports consistent communication with K5FNV/ø (now W0PMN) nightly in November and early December. This is a path of well over 400 miles. K0DAS has 4CX250s feeding a single 13-element Yagi, but will have more bays before long.

WA0MRH, Omaha, caught 50-MHz openings Nov. 18, 24, 26, 27, and 30, and Dec. 8, 9, 13 and 14, his report being dated Dec. 15. Between 0130 and 0230 Dec. 14, John worked Maine and New Hampshire, with apparent multipath effects. W5KHT, Oklahoma City, was worked at 0300. The latter had been working 8 and 9 previously, but the two of them were alone during the 0300 QSO, which appeared to be auroral in nature. (Near the time for 27-day recurrence of the September and October auroras, but who knows?) WA0MRH was aiming at 30 degrees, and W5KHT was loudest when he put his array north. Later WA0MRH heard 8s via m.s.

WA8GUB/ø, Colorado Springs, began operation on 50-MHz ssb Nov. 17, with a 20-watt PEP transceiver and an indoor dipole, working Indiana, Tennessee, Louisiana, Alabama and Texas. California stations were heard. A try was made on 52.525 fm with WB9NLY, near the start of this session at 1950 local time, but signals were weak,

despite more power and a higher antenna for the fm. Back to 50.12, ssb, signals were good again. At the end of the month, Myron put up a 6-element beam, and Dec. 1 he worked XE1FE on cw, the only signal heard that night. K6LWE/5, Slidell, LA, was worked Dec. 8, also the only station heard. WA8GUB/ø is putting on more power and will be open for skeds on fm, cw, or ssb, 52.525, 2-meter simplex frequencies, and your choice at the low end of 6. Write Myron Babcock, 2915 Vanguard Drive, Colorado Springs, CO 80910 - 303-635-0492.

Finally, W0PS, Grafton, ND, says meteors still work between him and W0PMN, Wichita, 740 miles. The two had a "60-second ragchew" Dec. 1, 1147 UT. Besides this one, W0PMN worked W7JRG, for Wyoming, and W3BHG, for Delaware, as reported earlier, to get up to 30 states on 144.

WA6LET EME Test, 144 and 432 MHz

Another WA6LET EME test will be conducted, this time simultaneously on 144 and 432 MHz, February 22 and 23. Facilities, including the 150-foot dish used previously, are being made available by the Stanford Research Institute. Operation will be by members of the SRI Amateur Radio Society (WA6LET) and the UHF Radio Society (W6GD). Some important changes in procedure, in addition to the two-band operation, will be included in this effort.

The 144-MHz operation last May was marred by stations calling out of sequence, on the frequency of transmission by WA6LET. This time they will operate split-frequency, transmitting near 144.19 and 432.19, and receiving 70 kHz or more down the band from each of these frequencies. The simultaneous two-band operation requires special timing of transmitting and receiving periods. Transmissions will be in the first 30 seconds of each minute, and reception will be in the second 30 seconds.

Two 5-hour periods are planned: 0500 to 1000 UT Feb. 22, and 0000 to 0500 UT Feb. 23. During the first period the moon will be setting over the Americas and rising over Australia and Asia. In the second period it will be setting over Africa.

The 144-MHz test will be primarily for stations that did *not* work WA6LET last May. Suggested calling frequencies are 144.1 MHz, plus or minus 20 kHz, for ssb and cw, respectively, and 432.1, plus or minus 20 kHz. The operating period 0000 to 0400 is primarily intended for stations in Europe and Africa, and for US stations with fixed antennas pointed at the European window. The FMO code will be used (T - signals detected, M - letters or portions of calls copied, O - both calls and report copied, MT - nearly solid copy, RRR - confirmation of reception). If signals are strong enough the standard RST and RRR method will be used.

Low-power and one-way tests are planned for the even hour, in which a preamble will be sent, the power will be changed, and a code group will be repeated for 15 seconds, followed by another change. The change may be a decrease or increase in power, or a change in polarization. Anyone participating in these tests is asked to report to WA6LET by mail, postmarked before Feb. 28. Cards will be sent confirming reports, and giving the conditions under which the station operated at the time of reception.

(Continued on page 100)

Silent Keys

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

W1ACL, Allan W. Gordon, Attleboro, MA
 W1AJD, Edward Petrin, Nashua, NH
 W1EAU, Edward L. Greenwood, Rockland, MA
 W1HL, Fred Taylor, Mansfield, MA
 W1INC, John S. Diehl, Chamberlain, ME
 W1KX, Louis J. MacDonald, Plymouth, MA
 W1KZD, P. L. Nicholas, Hudson, MA
 W1NRQ, Robert C. Day, Holyoke, MA
 WB2ACY, Ralph K. Venegas, Jr., East Hampton, NY
 W2ICT, Joseph C. Osowecy, East Rutherford, NJ
 WA2NPA, Harry Heady, Cape May Point, NJ
 W2FIQ, Charles J. Simmons, Hackensack, NJ
 WA2FJZ, Leslie Hughes, Forked River, NJ
 K2UBA, Victor L. Dion, Victor, NY
 W2ZVN, Charles Gallison, Mastic, NY
 W3AKZ, James O. Van Sickle, Poolesville, MD
 W3DAN, R. H. Braue, Huntingdon Valley, PA
 W3DGU, Lewis I. Laury, Pottstown, PA
 W3NUK, James Gerdwin, Turtle Creek, PA
 K3NYT, James A. Grundy, Jr., Upper Darby, PA
 WN3UJH, Lawrence H. Burton, Jr., Bala Cynwyd, PA
 W3UXE, John R. Shute, Upper Darby, PA
 W4ADF, Lloyd D. Watson, Thomasville, GA
 W4BKW, Henry Bocinski, Palm Beach Gardens, FL
 W4CHO, Harold H. Dunn, Greenville, SC
 K4CLK, Gilbert A. Siegmeyer, Ft. Lauderdale, FL
 WA4DXK, Jack M. Hawkins, Clearwater, FL
 K4GFK, Harold I. Gerry, Petersburg, VA
 K4HAQ, W. Olin Schirmer, Vero Beach, FL
 WB4HKN, Stephen J. Kessler, Richmond, VA
 K4KJA, Eugene M. Elliott, Jr., Miami, FL
 W4KFO, John A. Thomson, McLean, VA
 WB4LHQ, Jerry L. Pilcher, Columbus, GA
 W4MZW, Wickliffe J. Morrison, Louisville, KY
 K4RMA, Thomas L. Bailey, Lynchburg, VA
 W5FOG, Clarence E. Scott, Lawton, OK
 WA5JCL, Jimmy H. McKay, Houston, TX
 WA5KEY, Clifton C. Comfort, Kosciusko, MS
 W5LHY, Victor H. Wallace, Shawnee, OK

W5MBP, Clarence W. Roberson, Terrell, TX
 K5PEC, Thomas B. Young, Oklahoma City, OK
 W5WT, Walter D. McCormick, Norco, LA
 WA6EDQ, Donald R. Walters, Exeter, CA
 WB6LXH, Michael L. Smith, N. Highlands, CA
 WB6MYN, Stanley G. Filler, Long Beach, CA
 K6SY, John C. Walter, San Diego, CA
 W6UL, Joseph P. Dockendorf, San Jose, CA
 K7HCP, Frank E. Young, Tucson, AZ
 W7JP, Jack N. Binnicker, Lake Oswego, OR
 K7RTG, Stanley N. Read, Portland, OR
 W7SH, George R. Homan, Tideswater, OR
 W7SJ, Reynold Heatlie, Aberdeen, WA
 W7TA, Guy Z. May, Great Falls, MT
 K7UPY, Charles W. Cauthers, Tahuya, WA
 W7UQI, Emmett "Red" Roberts, Cauty, OR
 K8AEB, Clair E. Mowry, Sr., Ludington, MI
 WB8CNY, Marvin E. Grubb, Bellevue, OH
 K8JPN, Walter V. Corteg, Fopinabee, MI
 WN8LYZ, John R. Gam, Saginaw, MI
 WA8SKT, Steve J. Wurtz, Barborton, OH
 W9BSX, Albert V. Gilbert, Madison, WI
 W9HXG, Allison McNeill, Sheldon, IL
 WA9JTO, Dale S. Nickelsen, Princeton, IL
 W9PTH, Leslie Applegate, South Bend, IN
 K9PYN, LeRoy Enyart, Peru, IN
 W9ROV, Paul V. Reuter, Robinson, IL
 K9SLS, Kenneth Hanson, Racine, WI
 W9FVY, Frank D. Burns, Michigan City, IN
 W9GZ, Charles L. Jennings, New London, IA
 K9GZP, Paul V. Tierney, Parsons, KS
 WA9IGX, Philip R. Harrington, Independence, MO
 W9JRF, Clay R. Nurkka, Nashwauk, MN
 K9LLI, Edmund B. Thompson, Harrisonville, MO
 WA9SUF, William Denver Yancey, Granview, MO
 VE1HC, Howard W. Wyman, Digby, NS
 VF3UF, Clair Imher, Timmins, ON
 VF4HW, William H. Horner, Winnipeg, MB
 VE6FC, Edward L. Ferguson, Edmonton, AB
 VE7MU, Fred Diment, Victoria, BC
 DE1LP, Rudolph Mirche, Schriesheim, Germany

ARRL QSL Bureau

The function of the ARRL QSL Bureau is to facilitate delivery to amateurs in the United States, its possessions and Canada, of those QSL cards which arrive from amateur stations in other parts of the world. All you have to do is send your QSL manager (see list below) a stamped, self-addressed envelope, about 5 by 8 inches in size, with your name and address in the usual place on the front of the envelope and your call printed in capital letters in the upper left-hand corner.

Cards for stations in the United States and Canada should be sent to the proper call area bureau listed below. Recent changes are in bold face.

W1, K1, WA1, WN1 - Hampden County Radio Association, Box 216, Forest Park Station, Springfield MA 01108.
 W2, K2, WA2, WB2, WN2 - North Jersey DX Assn., PO Box 8160, Haledon, NJ 07508.
 W3, K3, WA3, WN3 - Jesse Bieberman, W3KT, RD 1, Box 66, Valley Hill Rd., Malvern, PA 19355.
 W4, K4 - National Capitol DX Assn., Box DX, Boyce, VA 22620.
 WA4, WB4, WN4 - R. R. Baker, W4LR, P.O. Box 1489, Melbourne, FL 32901.
 W5, K5, WA5, WB5, WN5 - ARRL W5 QSL Bureau, Box 1690, Sherman, TX 75090.
 W6, K6, WA6, WB6, WN6 - ARRL W6 QSL Bureau, 2814 Empire Avenue, Burbank, CA 91504.
 W7, K7, WA7, WN7 - Willamette Valley DX Club, Inc., PO Box 555, Portland, OR 97207.
 W8, K8, WA8, WB8, WN8 - Columbus Amateur Radio Assn., Radio Room, 280 E. Broad St., Columbus, OH 43215.
 W9, K9, WA9, WB9, WN9 - Northern Illinois DX Assn., Box 519, Elmhurst, IL 60126.
 W0, K0, WA0, WB0, WN0 - Dr. Phillip D. Rowley, K0ZFL, 5209 Loma Linda Road, Alamosa, CO 81101.
 KP4, WP4 - Robert C. Lum, KP4DNY, P.O. Box 1061, San Juan, PR 00902.
 KV4 - Graciano Betardo, KV4CF, P.O. Box 572, Christiansted, St. Croix, VI 00820.
 KZ5 - Lee DuPre, KZ5JD, Box 407, Balboa, C.Z.
 KH6, WH6 - John H. Oka, KH6DQ, P.O. Box 191, Aiea, Oahu,

HI 96701.

K17, W17 - Alaska QSL Bureau, Star Route, Box 65, Wasilla, AK 99687.
 VE1 - L.J. Fader, VE1HQ, P.O. Box 663, Halifax, NS.
 VE2 - A.G. Daemen, VE2JJ, 2960 Douglas Avenue, Montreal, Quebec, H3R 2F3.
 VE3 - R.H. Buefley, VE3UW, 20 Almont Road, Downsview, ON.
 VE4 - D.E. McVittie, VE4OX, 647 Academy Road, Winnipeg MB R3N 0E8.
 VE5 - A. Lloyd Jones, VE5FI, 2428 Grant Road, Regina, SK, S4S 5E5.
 VE6 - D.C. Davidson, VE6TK, 1108 Trafaldr Dr. N.W., Calgary 47, AB.
 VE7 - H.R. Hough, VE7HR, 1291 McKenzie Rd., Victoria, BC, V8P 2L5.
 VE8 - Frank Van Der Zande, VE8OC, P.O. Box 72, Fort Smith, NWT X9E 0P0.
 VO1 - William Coffin, VO1KM, P.O. Box 6, St. John's NF.
 VO2 - Stan L. Parsons, VO2AS, P.O. Box 232, Gouss Bay, LB.
 SWL - Leroy Waite, 39 Hannum St., Ballston Spa, NY 12020.
 *These bureaux prefer 4-1/4 by 9 1/2 inch or No. 10 business envelopes.
 QSL Bureaus for other U.S. Possessions and for other countries appear in the "IARU NEWS" section of the June and December issues of QST.

YOUR CALL

W1USO

YOUR OWN NAME,
 13 YOUR STREET,
 TOWN,
 STATE & ZIP
 U.S.A.

IS YOURS ON FILE

WITH YOUR
 QSL MGR?

How's DX?

CONDUCTED BY ROD NEWKIRK,* W9BRD

Who:

Speaking of amateur radio's traditions and institutions, as we did in last month's year-opener, we received a welcome letter from one the other day. The many old-time friends and followers of pioneer DX scribe W6QD will be delighted to know that Herb is extremely alive and very well.

Seems like only yesterday we were eagerly devouring page after page of OM Becker's captivating writings in widely circulated *Radio* magazines of the 1930s. W6QD was synonymous with DX journalism in those DXciting days. Herb's engaging style gave rich tone and dimension to a fairly new wireless art. DX and W6QD were made for each other, you might say, and his lofty editorial standards became the yardstick against which future aspiring DX correspondents would be measured.

In fact, one of them, a shrewd young contemporary signing W6CAL, was thus inspired to launch *QST's* "How's DX?" almost forty years ago as W1JPE. By Goodman, now W1DX, recalls that "Ham radio was really *something* out on the coast in the early '30s. DX hadn't been publicized much. It was more or less a testing ground for homemade gear. We knew little or nothing of sunspots and propagation cycles, so we had to do one heck of a lot of listening. And with practically no commercial stuff available you couldn't just buy your way into the game. You had to work for it." The prose of W6QD loomed large in making southern California capital of the pre-WWII DX world.

* c/o ARRL, 225 Main St., Newington, CT 06111.

DXdom lost articulate freshness and class when Herb Becker finally kicked the deadline habit in 1952 to devote full time to personal and business affairs. Like old soldiers, however, ex-DX editors never QRT; they merely QSB a little. You'll find W6QD still holding forth regularly on 14,290 kHz in early mornings with favorite friends. If you go looking for him, better have a compass and sextant along. Herb's big bag right now is salt water DX.

Continued smooth sailing, DROM 'QD!

† † †

What:

As no DX digger needs to be told, it's kickoff time for your 41st ARRL International DX Competition. Page 56 of December *QST* begins detailed announcement. Some rules changes in there, too, so take a close look. One DX band always in for heavy action in that annual affray is old friend.

75 phone whereon "How's" correspondents W9LNU, WAs 2EAB 3SWF, WB2NOM and the aforementioned DX press report the recent availability of As 4KFE 6XB, AP2s AD KS, C31FO, C66EZ, CN8s BD BX CF, CO2s DL FA JA, CRs 3WB 4BS 7JO 7UD, CTs 1DS 1GK 1MK 1ZZ 2AE 2AK 2BM 2BN 3AB 3AF 3AS 3AY, CXs 2AX 2XA 9BT, DJs 2FO 6QT/CT3, DKs 4TP 5AD 5EW 9UB, DLs 2GG/YV 7RT/HB9, DM2C00, DU0s 1JM0 2EL 6DB 8BA, EAs 110 3JE 4AZ 6BZ 6CF 8CR 8HJ 9AQ 9EX 9FB, E10RE1, ELs 2F 2JC 2DL 2VJ 2TW 7D 7F, EP2s DL TW VJ, FC6CXT, FM7WE, FO0RM, FP8s AA DH FYs 7AU 9BH1, Gs 3FJ 3SCZ 3TJW 3TZH 3UBR 4BAN 4CSF, GB2s CCS MAR, GC3YI2, GIs 4CSD 6VU, GWs 4CSU 5XN, HAs 3KHC 9KOB, HB9s ABA ADQ, HCs 1FC 1SC 2JN 2TV 8GI, H18s E1F FVC FVE FHF XAA XAW, HH2WF, HKs 1JJ 3LT 4DF 4DG 4DEG 5BVW 9BKX, HPIs DV CU XIS

3D2EK offers a tropical paradise for your QTH of the Month replete with Telrex and Hygain beams for 40 through 10 meters. How would you like to escape the rest of winter at Bill's sunny Fiji villa? (Photo via WB6OSS)



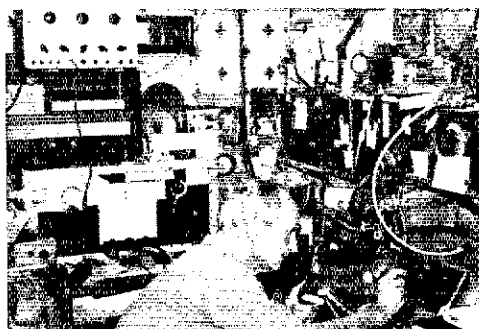


TA11B shares this set-up with TA1HY to help keep Turkey represented on DX bands. That country's reluctance to formally embrace amateur radio results in simple antennae, a QRP accent and not too many QSOs with W/K/VEs under current propagation conditions. (Photo via W5QPX)

XMF, HRs 2GK 2RF 6SWA 0DHX/1, HZ1s AB KE, Is 1BAW 1MOL 2BOX 2PFB 0AG 0AMU, 150FBW, JAs 1BRK 21YJ 0DXG, JYs 3ZH 9GR 91M, K4ERO/HCI, KG4s DS FO, KH6s AQ BZF GKD, KP4s AN AST EAJ FAK, KS6DH, KV4s FC FZ, KX6s BU GS LA, KZ5s JM PW WH, LAs 3NQ 7ZO, LU s 7FFG 9AHW, LXs 1B1 1HH 2HH 0RL, LZ2LQ, MIC, OA4s AIW OS, OD5s GC HC, OE6MKG, OKs 1TY 2OS/0 3YI 0AB 0NJ, OJ0MA, OH2SSS, ONs 4LJ 4UN 5DO, OX3s DL XE, OYs 5NS 7BD, OZ9FJ, PA0s EG GMW, PJs 2CW 8HS 9BB 9BK 91R, PYs 1RO 2FOT 2FUS 6AHU 6AHY 6AMO 7BFN 7BOV 7BRV 8LO, PZ1AP, SMs 5GZ 7EVN 7JZ/SU, SP9KDD, ST2AY, TR5TP, TGs 4FU 7BY 8KT 8KV 9KV 9YN, TIs 2AGF 2CF 8PE, TJ1EZ, TR8DG, TU2DO, UAs 2EC 9BE 9HG 9ADQ 0FGM 0FYL, UI8LAG, UI8AE, UKs 50AF 9ABA 9OAZ, UL7s AW DMF LEZ MAG, UO5GQ, VKs 1MS 2RS 2XT 3OP 3ZB 6HD 6LK 7GK 9XW, VOs 1BV 1CZ 1FG 2AW 2FB, VPs 1AJ 1FF 1PW 1TC 2AGA 2E 2EB 2EJ 2DM 2GAI 2GMB 2GQ 2KH 2LA 2LB 2LZ 2LL 2LPB 2MAW 2MJK 2MM 2MMM 2MSD 2MSO 2MSU 2VBH 2VL 5KG 5WS 5WW 7BC 7DF 7EM 8ML 8NP 9AD 9BC 9BK 9DC 9GE 9GO 9GR 9HP 9 HM, VRs 1AA 4BS, VS6s DO FB, VU2BX, Ws 1UP/VP9, 4EV/VP9, WA1PQ/VP7, XEs 1AAV 1KB 2LK 3LK 3EB 3OK, XF1A, XV5AC, YBs 7AAU 9AAU, YK1AA, YNs 1AZ 6JFD 8JES, YSs 1AG 1MV 2HM, YU2s HA OBY RBL, YVs 2AA 4AGP 4AKI 4TI 5AF 5AHD 5AMW 5ANS 5CVE 5DWO 5EED 5EKX 6YY 7WB 9AF, ZB2CJ, ZC4AK, ZD3s T X, ZE6JJ, ZF1s AK WM, ZKs 1CW 2BD, ZLs 1A1Z 1A1L 1A0Q 1ASY 2AFT 2BAB 2BHx 2BT 3PP 3PX 3SA 4AV 4HJ 4MK

4NH, ZM7AH, ZP5s AL EC, ZSs 2GH 5LB 5MI 6AK 6DN 6DW 6MP 6TE, 3As 2AH 0FY, 3D2CC, 4S7PB, 4X4s NJ UR, 4Z4s GH HF MQ, 4U1TU, 5B4s AP BZ, 5W1AL, 5Z4LW, 6W8s DY FP, 6Y5DH, 7Xs 2AH 2OH 3OM 4MD 0VW, 8J1AB, 8P6s AA AH AQ BU CX, 8R1G, 9G1s DY FF, 9H1s BJ BX CE CW, 9J2s EP WR, 9K2DC, 9L1JT, 9M2s CJ CX DQ FX, 9Y4s MH NP NF and VU

And if you run low on audio, you'll find plenty of radiotelegraphers frolicking around 3500-3600 kHz according to excerpts from the mail of W1SWX, Ks 2HYM 5JVE, WA3SWF and WN4GHU, the latter finding success in the 80-meter Novice slot. Some samples: CM6HT, CN8s CG TC, CP1EU, CTs 2CU 3WA, CXs 1BBL 3BH 4LO 5CB 7BBB 8BBH, DJs 5QG 5QZ SWY SUH, DKs 2IO 3GI 3SN, DL1FF, DM3WVL, EA9EX, EI9J, Fs 5IN 6BPL 8CS 8OB, FG7TG, FK8BV, FP0BG, FY7AA, Gs 3IGW 3IUL 3LTK 3LP 3LNS 3MXJ 3ESF 3RUX 4BNU 4CP 8RL, GD4s AM BEG, HAs 3KHC 3NU 6NW, HB0NL, HC1CW, HG5A, HI8LC, HSs 3RH 4AGN, Z1HZ, 13s GNO SRL, IT9WGI, JAs 1IDU 2AAQ 21YJ 3VUI 7OWB, JD1s ACH YAA, JTIAT, KSLWL/YV6, KC4NL, KG6AAV, KH6s AO U RS, KP4s DJE EAJ EAS, KV4s AM CI FZ, KX6BU, KZ5s BB NG, LU s 1SH 6EF 8AHW 8BAO, LZs 1KCZ 1KSP 2DD 2ZA, OD5EU, OEs 1ZGA 6KL 0J0AM, OKs 1AEH 1KPU 2BDE 3DFE 3WW, OX3s DL YY, OZ1LO, PH1C, PI9JT, PYs 1LW 2FXH 7IE 7PO, SM7WZ, Sps 6FVJ 9CAV, TA2AP, TF3GA, TI2s BEV WD, TR8PB, U4L, UAs 9ADU 9CM 9DO 9JH 9MDE 9SQ 9WS 0AG 0FBS 0FGM 0LH 0LH 0LU, UB5s LI UV, UC2s OAC OAO, UD6s DFY DHQ DHU DHX, UF6s FCI FAG HW, UG6AD, UH8YAB, UI8s AC LAG MV, UI8AH, UKs 2AAL 2PAF 6LEZ 7GAA 71AA 9OBM 9WAN, UL7s AAJ EAJ JW IH JG SJ, UM8s FM MBA NAC QAX, UP2s NV PX, UT5OT, UV3OZ, UW0FB, VKs 2QL 3MR 3OP 3XB 4YP 5LS SNO, VOIKE, VPs 2BKN 2VBU 5CW 5WS 7BA 9BY 9HP, VSSMC, VR1AA, WA1RFM/VP9, YJ8GS, YUs 2CDB 2CDS 3AT 3BBC, YVs 5RT 6AVV, ZB2s A CI, ZD7PS, ZF1AL, ZE2KV, ZLs 1A1Z 1AWR 1VD 2ANK 3GQ 4IE 4NH, ZS5L, 3B8DA, 4N2KJH, 5T5s CI DY, 5Z4LW, 6Y5BF, 9H1BB, 9L1JT, 9M2CX and 9Y4TR. All those Test multipliers are bound to sew up many a 3.5-MHz 5BDXCC century before the affair's conclusion in March. The QSLs, of course, are another matter. Let's turn to that ticklish subject right now. . . .

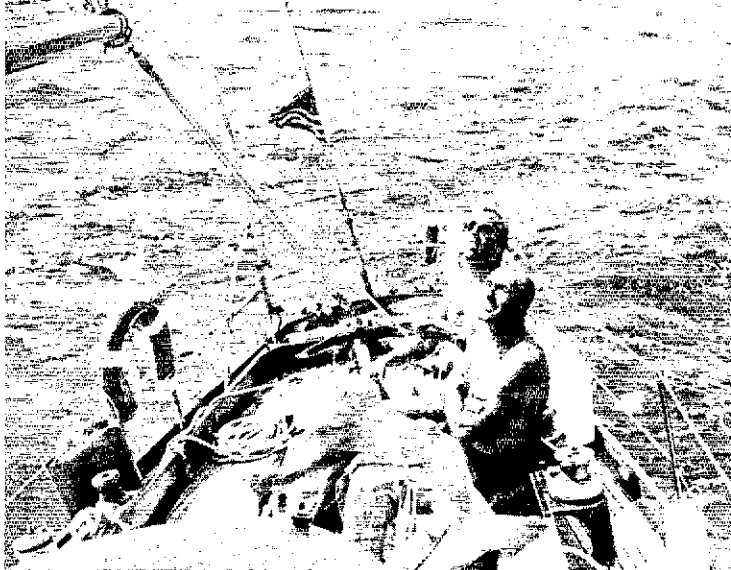


L'ANTENNE

NORTH AMERICA — If mailbag receipts are any indication your "QSLers of the Month" are on the increase. Possibly the softening of propagation conditions gives all of us additional time to discharge confirmational obligations more

FBEM, fifty years a ham, is obviously a DX artist of the old homebrew school. That sign isn't a label for his skyhook. It coincidentally marks a small river near Leo's Cognac QTH. (Photo via G5KPO)

HS1ACH (W00MK) and tillerman 4W1GM take time out from DX to frolic in the Med aboard W00MK's 35-footer. Lyle and Larry have a 12AVQ vertical mounted near the flag with an FT101 handy below. W00MK's XYL is beneath that hat at center. (Photo via W3HNK)



thoroughly. Anyway, Ws 1GNC 1SWX 3U1L 4WFL 7HPI 0MHK, Ks 4BZH 7PFU, WAs 2GMD 3SWF 4HEK 4KDC, WBS 2EEO 2MBM 4ZAG 51CQ 5KUJ 9NME and WN9PHM heartily applaud the QSLing rapidity and reliability of CR5AJ, DL6UR, EA5 4BV 6BI, EI9CC, EL2s FN FO, FG7AO, FK8BX, FL8HM, FO8DR, FW0s DX GA IC, FY7AE, G3RDC, G16YM, HL9WI, HR2FP, IS0AEW, IT9WGI, JH1VOE, KAs 2AD 6DE, KH6s ICR RS, KJ6DI, KL7s CYL FNH, KP6PA, KS6s DH FZ, KX6GS, LAs 4SL 7DB, M1B, OAs 4AOB 6CW, SP2AJ0, ST2SA, SU1MA, TG4SR, TR8SS, VE800, VPs 2LAW 2MJK 2SO 2VBH 2VBK 5CW, VQ9M, VS5MC, VU2s ABC LE, WA10GA/VQ9, XE3BN, YB0ABS, Y18CS, YN1s FWN, WB, ZK1AD, ZL2s AAV BT, ZSs 2AG 5NZ, 3D2s FC RK, ST5LO, SW1AU and SZ4LO, together with QSL tenders Ws 2MIG 5DL 5MHT 5MYA 6KNH 6KTE 6TCQ 6WX 7PHU, Ks 2FJ 3RLY 4SKI 5DEC 9OTB, WAs 3HUP 5ZWC 6MWG 0TAS, DK5IO and OK3YAO. Any commendables at your end? . . . 'ALP! These parenthesized colleagues seek your suggestions toward nailing down pasteboards from holdouts specified: (W10PI) FY7s AA A1 AU; (W4WFL) MP4BJP, TY1UW, WA9CTS/KM6; (W6YKS) AS1AN '72, XZ1E1 '72; (W7OK) KR6FQ; (K2BT) AC3PT; (K7PFU) EP2NO op Nick of '65, F6MV '71, GD2ENK '66, 3V8BC '71, 5A1TT op Dick of '65; (WA1STN) VQ9s R1, R/d of '72; (WA4KDC) KZ5CQ; (WA4HEK) CR6OR, CX1NE, EL2JC, HH2WF, KH2BEF, K1VBS/M1, SV0WEE, 6W8DY, 6Y5BR and 9H1DW; (WA4LPM) CO2AA, EA8EN, FP8BH, LZ2EE, VR6TC; and (WA6CPP) 6Y5JR of '72. Any 'alp? . . . Our services are available as QSL managers for over 100 operators at the DX end, the rarer the better. (Ws 3U1L 5UMK, WB4ZAG and I2LVN) . . . I now handle HH2WF's QSLing but only for contacts on or after November 1, 1974. (W3HNK) . . . Re oddball QSLs, I still have one from "NG", a five-watt cw booflegger whose card gave his full Milwaukee QTH and bragged about working fifteen states plus Canada. How's that for unmitigated gall? But that was back in '24. (W9NN) . . . Finally accumulated enough cards for 5BDXCC but why are 40-meter types so reluctant to QSL? Had to work 163 countries on 7 MHz to get a hundred confirmed. (K2BT) . . . Contrary to some advices I do not act as QSL manager for DX stations. (W00HPU) . . . I've received no logs from FG7XZ since March, 1974, and three letters to Peter have been of no avail. If no log info has arrived by December, 1974, I'll have to forward all QSLs on hand to FG7XZ and resign as his manager. I still confirm QSOs for FL2s DG DS and KS. (WB4SRX) . . . T12WX may be a little slow at QSLing but he does come through. Jim's a busy feller. (WA4KDC) . . . "The

ARRL QSL Bureau System," pp. 63-67, February '73 QST, remains an article of informative importance to all DXers. (W4WFL/1) . . . A newly styled International Reply Coupon is being issued by postal authorities this year. Like its predecessor, it's good for the customary one-first-class rate. The oldies, by the way, will be usable only until January, 1977. (WCDXB) . . . I've already replied to QSLs from a large percentage of the many stations I worked as ZF1TZ last May but I still have quite a few blanks on hand. Anyone still in need should use only my newest QTH as listed in the '75 Callbook. (W4BTZ) . . . I'd like to get my QSLing for W5QFZ/KH6/KP4 '69 QSOs out of the way, all inquiries welcomed. (K7PFU) . . . Be advised that I am QSL manager for no one and am responsible for my own cards only. (WB4NXR) . . . Using attractive U.S. commemoratives on my outgoing envelopes, plus self-addressed envelopes and IRCs, seems to work well for good returns at my end. (K4BZH)

SOUTH AMERICA - Argentine stations with "Z" suffixes seem to be more active lately, and newer DXers may not be aware that they're usually fairly good catches. LU4ZS, for example, radiates from the South Shetlands near Antarctica. (WCDXB) . . . The Arvoredo Island DX-pedition by PY2s ASA AX GOX GQY JQ JY and myself, call(s) unknown at this writing, may QSL with IRCs to P.O. Box 22, Sao Paulo, Brazil. (PY2ZAC) . . . I expect to be active again soon on Easter Island as CE0AE with WA3HUP as my QSL manager. You can't beat Mary Ann for efficiency. Giving her my QSO records over the air daily should help her keep current. Those who worked the old USAF station signing CE0AE years ago probably will never receive legitimate QSLs and I hope to work such unfortunates to set things right. (K2BU) . . . I received FY7AE's card five days after QSO thanks to WA4WTG. (WA4HEK) . . . Huh? French Guiana is my newest QSL jinx, three FY7s worked and no QSLs. (W10PI) . . . Just received my CPI call after operating as CP3BY/1 for some time. I hope to exchange QSLs with all stations worked, direct or via WA0EMS, as I'll be working toward several new awards. (CPIAT)

EUROPE - I'm quite surprised at the number of complaints lodged against U.S.S.R. amateurs for not QSLing. About eighteen months ago I returned to the air with my son's DX60 and have since worked some 250 Russian hams. I've already collected 126 QSLs from them, and a subsequent 85-percent return seems assured. (WN3UFO's OM) . . . Brother Ed of HV3SJ implores that QSLs sent to his station from the Americas, Japan, Australia and New Zealand go only via W6KNH. (K2YFE)



... I'll be trying for Northern California DX Club's California Award from Amsterdam as PA9WRR so I hope all you Sixes remember how to QSL! Friend W6ZM is my Stateside manager. (K6WR) . . . QSOs with 3A2GX over the Christmas period may be QSL'd to the operator, 11AUX. (VERON) . . . Don't blame the French gang for recent slow or absent QSLs. A postal strike over there is the likely culprit. (W9BRD) . . . Those 4K-prevised stations in Antarctica include 4K1A, Molodezhnaya Base; 4K1B, Mirny; 4K1C, Vostok; 4K1D, Novolazarevskaya; 4K1E, Komsomolskaya; 4K1F, Bellingshausen; 4K1G, Leningradskaya; and 4K1H, Russkaya. Each counts ten points toward the RAEM certification, details available from CRC, Box 88, Moscow. (DXNS)

AFRICA - I now manage 9L1JM's QSLing in addition to that of 3F5CJ. Please use the Captiva Island, Florida, address in later *Callbooks*. (W4BAA) . . . SM3CXS will take on QSLing if an when SM2AGD makes QSO connections in visits to 3C, 3C0 and/or TL8 regions. (VERON) . . . Those still needing my K9KGA/6W8 cards should be advised that the Wauwatosia QTH in older *Callbooks* may cause QSLs to stray. Use only my new Madison address. I concluded Senegal operation on September 22, 1974. (K9KGA) . . . Sent A QSL with s.a.s.e. to a Delaware W3 only eighty miles away two years ago without results. ZS2AG's card came through last week in less than ten days, so maybe I'll hit DXCC before WAS. (W3UHL) . . . CR7IZ, sometimes CQ7IZ, promises 100-percent QSLing via bureaus. (DXNS) . . . I'm keeping up to date on 9X5KE QSLing but it appears that one set of logs is delayed or lost in the mails. (WB2EOQ)

OCEANIA - The extensive activity of KX6LA, now WB4KSE/KW6, necessitates insistence on self-addressed stamped envelopes, or s.a.e. plus appropriate International Reply Coupons. Just not enough time here to address others. (K2BT) . . . ZL3OG/c lately of the Chatham Islands does his own QSLing from the home QTH. (VERON) . . . W5ZF, QSL agent for ZM7AH, was temporarily disabled by a fall but the job will be done okay thanks to cooperation by W5MHT. (WCDXB) . . . An extra stamp or two contributed voluntarily to a hard-working QSL manager might help him avoid financial stress along the way. (KH6AQ) . . . Now off we go to the month's QTH catalog, stressing that all recommendations are not necessarily either accurate, complete or official. . . .

CP1AT, P. Urquiola, P.O. Box 2371, La Paz, Bolivia
 CT3s WA WH (via W2AYJ)
 DJ6QT/CT3 (to DJ6QT)
 EL2FN, Box 49, Harbel, Liberia
 EL5F, Box 513, Monrovia, Liberia
 EG7AK/ES7 (via F6RBJ)
 FK0s DX GA IC, FW0s DX GA IC (to WB6LTJ), K6RJR, K6YFZ)
 HP1XJS, Constructora Emkay, Apto. 7300, Panama D5, R.P.

VP5CW, with WA4DRU at rear, is operated by W4ORT at Providenciales in October contest pile-ups. W4SME and WB4EYX also made this Turks & Caicos scene as VO5s WS and WW. In addition to adequate skywires for six bands, the lads rolled out some receiving Beverages for 160.

IT9WGI, P.O. Box, 74, Palermo, 90141, Sicily, Italy
 K7PFU/KH6 (to K7PFU)
 KG6SX, J. Simon, K4KQB, P.O. Box 62, Sterling, VA, 22170
 KH6s GI HC (via W3HNK)
 LU4EGE, J. Ryzdik, P.O. Box 33, Punta Alta, Buenos Aires, Argentina
 OD5IH, Box 3684, Beirut, Lebanon
 OE5CA/YK (via OE5REB)
 OE5REB, Dr. R. Eisenwagner, Airbase Met. Office, A-4063, Horsching, Austria
 P29ES, Box 1486, Lae, New Guinea
 SV0WAA, D. Houghton, Box 775, APO, New York, NY 09291
 TI2DRM-TI2DRM/T16 (via W8VHY)
 VE2s MTA MTB MTC MTD (via VE2BRW)
 VK9s RA XW (via VK6RU)
 VP1CW, Private Bag No. 16, Belize City, Belize
 VP2MGB, R. Bramble, Bethel P.O., Montserrat, W.I.
 VP8s HA LC (via W3HNK)
 VQ9GP, G. Preno, Box 235, APO, New York, NY 09030
 VQ9M, R. Miles, Box 212, Philco-Ford, APO New York, NY 09030
 W5OZU/KP4/KH6 (to K7PFU)
 W8QMG/HK9 (via W8VHY)
 XF1A, S. Avila, P.O. Box 33, Puerto Cortez, Isla Margarita, BC, Mexico
 ex-XW8FF, W. Ellis (WA4FIC), U.S. Embassy, CG-5, APO, San Francisco, CA 96243
 YN1FWN, Nolan, APO, New York, NY 09885
 ZF1TZ, A. Smarr, W4BTZ, P.O. Box 52701, Atlanta, Georgia
 ZM7AH, Via 1, Wernick, W5ZF, 11504 Golden Gate, Albuquerque, NM 87111
 ZS1ANT, Box 28117, Sunayside, 0132, South Africa
 6V8FD, via ARAS, Box 971, Dakar, Senegal
 8Q6s AG AH (via JA0CUV/1)
 A6XR (via G4CHP)
 CF0AF (see text)
 CP3BY/1 (to CP1AT)
 CQ7IZ (to CR7IZ)
 CT7EO (to W1EO)
 ex-DA2DH (to SV0WAA)
 EL6A (via JA1XAF)
 FG7X7 (see text)
 FP0DA (via W1JKJ)
 FP0JD (via W2DEO)
 FR7IG (to DJ4RT)
 FR7ZL/j (via F8US)
 FW0AA (to WB6LTFJ)
 FY7AA (via F2QQ)
 HH2WF (see text)
 HL9TG (via WA7KYZ)
 EX-HS0ISB (via HS1AEZ)
 HT10AA (via DJ8YO)
 HV3SJ (see text)
 JF1HUT (via WB0BQG)
 KC6VE (via W7PHO)
 ex-KR6DH (to SV0WAA)
 ex-KX6LA (via K2BT)
 LU1TR (via LU4EGE)
 LU4ZS (via LU7DR1)
 OD5IQ (via OH2BH)
 OK5KWA (via OK3JE)
 OX3AX (via OZ5DX)
 OX3YB (via OZ4XU)
 PA9AEH (via K3NX)
 PY4ITU (to PY4KB)
 PZ5FB (via W2FCR)
 S2ICW (via JA0CUV/1)
 PA3HB (via WA4ZSF)
 TU2EI (via F5SF)
 VE8MTA (via VE2BRW)
 VP2VAL/mm (via ZL1CC)
 VP5MC (via W4ZMQ)
 VP7BC (to WB4YHN)
 VS9MAS (via G3LQP)
 XW8HP (via JA3VLD)
 YB5NA (to YB5BD)
 Y18GS (to W6NJU)
 YV5ESN (via WB2SFF)
 ZD3R (via G3LQP)
 ZD8MH (to G4DDH)
 ZF1DM (to W2VNY)
 ZK1CL (via WA2YJN)
 ZR1DA (via WA5OCN)
 ZL3OG/c (to ZL3OG)
 ZP5PK (via RCP)
 JB9DL (via WA5ZWC)
 4M6AW (via K5LWL)
 4W1ED (via G4CHP)
 524PI (via W3HNK)
 5Z4RR (via I5RU1)
 6Y5BF (via WB4NXR)
 7P8AT (via JA2KLT)
 7X4MD (to 7X2MD)
 9L1JM (via W4BAA)
 9X5KE (see text)

YN4IM, one of W5QPX's south-of-the-border call-signs, is employed here by Gil at the Bluefields QTH of YN4JAB. Don't be too surprised if Gil makes it over to Nicaragua's Corn Islands one of these days.



Contributors of the preceding glossary are Ws 1CW 1JUB 1OPJ 1SWX 2ORA 3HNK 4WFL 6YKS 7AWH, K7PFU, WAs 1STN 4FIC 6CPP, WBS 2EOO 4BUT 4FYX 4ZAG, Columbus Amateur Radio Association *CARAScope* (W8ZCQ), *CS News-Sheet* (G. Watts, 62 Bellmore Rd., Norwich, N.72T, England), International Short Wave League *Monitor* (E. Chilvers, 1 Grove Rd., Lydney, Glos., GL15 5JE, England), Long Island DX Association *DX Bulletin* (K2KGB), Newark News Radio Club *Bulletin* (M. Witkowski, Rt. 5, Box 167, Stevens Point, WI 54481), Northern California DX Club *DXer* (Box 608, Menlo Park, CA 94025), Southern California DX Club *Bulletin* (W6EJJ), *VERON's DXpress* (PA@s INA TO), West Coast *DX Bulletin* (WA6AUD) and Western Washington DX Club *Totem Tabloid* (WA7ICB). There's space at the wheel for your shoulder. K!

† † †

W h e n c e :

A S I A - You old-timers remember Old China Hand XU2JM of the 1930's? He's returning to action again as YN9JMP. They always come back! (K9UIY) . . . Closed down KA6AJA after about five kiloQSOs with 165 countries and 49 states. I'll be watching for old on-the-air buddies from Hill AFB. (WB0JAI/7) . . . I now have an SB100 and TH6DXX going from Tehran as EP2SN. (WA3BZA) . . . Over the next two years EP2FR intends to spend much time around 14,220 kHz. (W3YMB) . . . Big Okinawa breezes aborted fall contest sessions for many a KA6. (WCDXB) . . . I'm on my third assignment in Vietnam and expect to be active soon with my own XV5 call. I sign WA4FIC when back home. (ex-XW8FF) . . . One BV2B is reported on 14,220 kHz at 0230-0630 GMT with strong signals in Japan. (W7AWH) . . . KASAA and W7PHO rate special recognition for the hospitality of Southeast Asia Net on 14,225 kHz in the afternoons. Plenty of checkers-in gain new countries through their efforts. (WA6CPP) . . . W/K/VEs working 80 meters may not know that India allows single-sideband only in the narrow 3690-3700-kHz segment. When the long skip is in it would be considerable of cw operators to allow them use of this little "window" in their attempts to QSO Statesiders split-frequency to 75. (K2BF) . . . CR9AK hopes to be more active this year in the aforementioned 14,225-kHz Asian group. Another bunch in the orient led by XU1DX, who has raised new highly potent beams, strives to scare up Caribbean stations near 14,175 kHz at 1100 GMT or so. The VP area is about the toughest of all hops from Asia. (WCDXB)

N O R T H A M E R I C A - The 75-meter DX sub-band, 3775-3800 kHz is heavily smeared by focal rag-chewing. Even a 450-foot Beverage on

Europe fails to reduce this hash significantly. (WA1STN) . . . Europeans are tougher from India than they were from old W2FQS but plenty of 160-meter DX is workable from the midwest. Enjoyed an operational visit to 6YSBF in November where some of our old PJOCW gang got together. (W9NFC) . . . The 8th-10th of this month is our group's target date for activating Arvoredo Island (about 46 degrees west, 24 south). Watch for us near 7085, 7250, 14,195, 14,250, 21,295, and 28,550 kHz. We'll use FT101s and various skywires. Cw will be employed when conditions are unsuitable for ssb. (PY2ZAC, ex-K2MVD) . . . Still good pickings on 15 meters for persistent Novices. I recently hooked KZ5ASN, PY1MCC, WO4DXZ and 3D2GA with my mini-gallon and 7-MHz dipole. (WN2WYL) . . . I've been operating XP1AA near 14,210 or 14,347 kHz and expect to have my own OX5 call shortly. (WB8ONA) . . . Nice write-up on KC4NI in the Burlington County (NJ) *Times*. (W6DFO) . . . Using "God Bless California" as phonetics for my suffix seemed to cut through the Kingman Reef pileups generated by those DXpeditioning Sixes. (K2GBC) . . . Southern California DX Club sponsors DX news transmissions Thursdays on 14,265 kHz at 0400 GMT. W6AOA alternates with me in getting out the bulletins. (K6SVL) . . . Enjoyed a pleasant two-week ZF1DM session in November. (W2BVN) . . . After working W1CER's low power from our Turks and Caicos spot I'm getting QRP fever myself. Doug really cuts through! (VP5WS-W4SME) . . . EA4BV was my first trans-oceanic QSO on 40 meters. Surprising what can be worked with sixty watts and a ten-foot-high piece of wire. (WB5KIJ) . . . I've got a ten-foot-high dipole, too, which gobbles up stuff like FG7XL, HI8XB and ZF1WE on 21 MHz. (WB2MBM) . . . The first week of October broke 15 wide open here. ZF1JH's five-watter demonstrates that power doesn't matter much when the band is hot. (WB9NME) . . . November was no great shakes for us 10-meter cw bugs. In three weeks I worked only G16YM, CX8BBH and heard EA4BV, HC1YL, VP8NT and the RTTY of 3B8MS. (K4BZH) . . . HH2WF, KZ5AA and PY1RO were welcomed additions to my 160-meter collection. (W4WFL/1) . . . I enjoy "How's DX?" particularly because of all the comments made by real live hams who aren't necessarily physics majors running super-power to 1000-foot-high beams. (WA4KDC)

QST

OA4AEH, SP9VU/OA4, OA4s AHA and AHZ gather for a DX gabfest in the Lima station of OA4OS. Peter, Lucien, Pedro and Raul each do their share to keep Peru available to the Stateside crowds.



Operating News

GEORGE HART, WINJM
Communications Manager
ELLEN WHITE, W1YL
Deputy Communications Mgr.

ASST. COMMS. MGRS.: *DXCC*, R. L. WHITE, W1CW; *Hq. Station*, C. R. BENDER, W1WPR; *Contests*, F. D. NISWANDER, WA1PID; *Public Service*, W. C. MANN, WA1FCM.
Affiliated Clubs, JIM CAIN, WA1STN

Satellite Operating Awards. Oscar 7 is up and working, as everyone interested already knows. Contacts made through it now count with those of Oscar 6 toward the Satellite DX Achievement Award. However, only one such award per station, and no endorsements are available.

On the other hand, an endorsement of your WAS award is now available for satellite QSOs. Rule 5 traditionally has ruled out satellites for WAS purposes, but an exception is being made for Oscar contacts. If you currently have WAS and qualify for all states via satellite (i.e. Oscar 6 and/or 7) and *prove* it (i.e., submit cards showing it), your certificate can be endorsed accordingly. This is the *only* exception to the rule against using repeating devices for WAS.

CD Bulletin Poll. In the October *CD Bulletin*, a poll sheet was included asking for expression of opinion on ten subjects of interest to the operating fraternity, and especially SCM appointees. The returns, while not overwhelming, were significant and worthwhile, and the analysis, along with the many comments received, continues to indicate that this segment of the membership likes being asked their opinions and expressions of preference.

What is the CD Bulletin? It's a letter from the Communications Manager of ARRL that originates quarterly from the clammy northeast corner of the ground floor of ARRL headquarters, directed at the appointment fraternity with copies made available to affiliated clubs and certain "honorary" recipients. (Directors and Vice Directors get copies of all CD mailings as a matter of routine.) It contains information of various kinds, often of an administrative or organizational nature, but occasionally of a nature of interest to any amateur who participates in ARRL-sponsored operating activities. The current poll covered a number of such

subjects, and perhaps a brief rundown would be of interest:

Two questions concerned affiliated clubs. The first was a proposal to make club stations eligible for CD Party participation provided an eligible person does the operating — an eligible person being an operator eligible to participate from his own station. This seemed to be an acceptable idea to a majority of those responding. But the other question proposed making officers of affiliated clubs eligible, and this was shot down. Let them get appointments, was the principal sentiment.

Field Day was the subject of one question, proposing that the Emergency Communications Advisory Committee participate in rulemaking recommendations along with the Contest Advisory Committee. This seemed to make sense to most CD Bulletin recipients, and so the ECAC has been advised.

Five questions had to do with traffic handling:

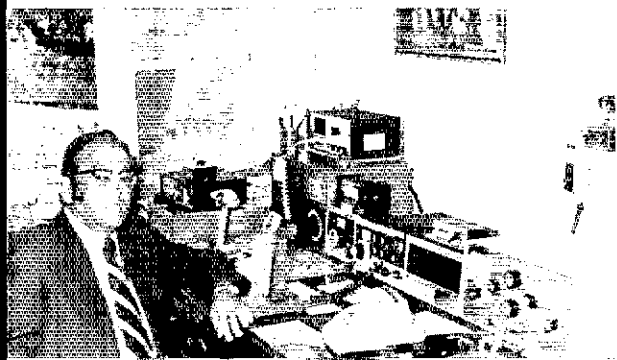
1) In traffic counting, give extra credit for originations coming from a third party, instead of the station operator or owner. This one "got by" through some skepticism, and we expect to implement it. See the Public Service column, this issue.

2) About "book" messages, some of the traffic handlers seemed to feel that the current counting system was unfair and wanted it liberalized, so a question proposed that each *number* in a book message be given a separate count, as though it were a completely separate message. Sentiment on this was about evenly divided, so it will probably be left alone.

3) The "Daytime" National Traffic System has been in operation, with various degrees of success or lack of it, for over a year, and some of its adherents feel it should be made a permanent part of the NTS structure. The CD Bulletin Poll showed that this was a popular sentiment, so it will be done.

New Iowa SCM W0LFF has been licensed since 1932, currently holding Advanced Class license. Max lives in Iowa City and is a retired FAA Air Traffic Control Specialist. He formerly held the calls W9LFF and W9ML1. Max is a member of OTC ROWH and RCC; member and past president of the Iowa City Radio Club and member of the Iowa City Repeater Assn. (also repeater control station). The W0LFF station includes gear for 80-10-2 meters, favorite bands 75/40 ssh. Other hobbies include stereo (building and listening), hunting and flying (private pilot).

OST for



W1AW SCHEDULE

The ARRL Maxin 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 Nov. 28, Dec. 25, 1974, and Jan. 1, Feb. 17, and Mar. 28, 1975.

Times/Days

CST	UTC	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
0740	1340	← CODE PRACTICE ¹ (5-25 wpm) MWF, 35-15 wpm TTh			Oscar ⁹		Details Below	
0800	1400	21/28 cw ^{7*}		21/28 cw ^{7*}		21/28 ssb ^{8*}		21/28 cw ^{7*}
1200-1300	1800-1900	← CODE PRACTICE ¹ (5-25 wpm) MWF, 35-15 wpm TTh			Oscar ⁹		Details Below	
1300	1900	21/28 cw ^{7*}		21/28 cw ^{7*}		21/28 ssb ^{8*}		21/28 cw ^{7*}
1320-1400 ⁴	1920-2000 ⁴	14.290*	14.080*	14.290*	14.080*	14.290*		
1400-1500	2000-2100	7.080*	7.290*	7.080*	7.290*	7.080*		
1500	2100	← CODE PRACTICE ¹ (10-13-15 wpm) Details Below			Oscar ⁹		Details Below	
1530	2130	← CW Bulletin ¹			Oscar ⁹		Details Below	
1600-1630 ⁴	2200-2230 ⁴	7.1 Nov. ^{5*}	21.1 Nov. ^{5*}	28.1 Nov. ^{5*}	21.1 Nov. ^{5*}	7.1 Nov. ^{5*}		Oscar ¹¹
1630	2230	← RTTY Bulletin ³			Oscar ⁹		Details Below	
1700-1800 ⁴	2300-0000 ⁴	CPN ⁶	14.095 RTTY*	3.625 RTTY*	7.095 RTTY*	CPN ⁶		
1800-1830	0000-0030†		CN ⁶		CN ⁶			
1830	0030†	← CODE PRACTICE ¹ (10-13-15 wpm) Details Below			Oscar ⁹		Details Below	
1900	0100†	← CW Bulletin ¹			Oscar ⁹		Details Below	
1930-2000 ⁴	0130-0200 ^{4†}	3.7 Nov. ^{5*}	14.080*	14.080*	7.1 Nov. ^{5*}	14.080*		
2000	0200†	← Phone Bulletin ²			Oscar ⁹		Details Below	
2010-2030 ⁴	0210-0230 ^{4†}	3.990*	50.190*	145.588*	1.820*	3.990*		
2030	0230†	← CODE PRACTICE ¹ (5-25 wpm TThSatSun, 35-15 wpm MWF) Details Below			Oscar ⁹		Details Below	
2130-2200 ⁴	0330-0400 ^{4†}	3.580*		1.805*		3.580*		
2200	0400†	← RTTY Bulletin ³			Oscar ⁹		Details Below	
2230	0430†	← Phone Bulletin ²			Oscar ⁹		Details Below	
2240-2300 ⁴	0440-0500 ^{4†}	7.290*	3.990*	7.290*	3.990*	7.290*		
2300	0500†	← CW Bulletin ¹			Oscar ⁹		Details Below	
2330-0000 ⁴	0530-0600 ^{4†}	3.7 Nov. ^{5*}	7.080*	3.580*	7.1 Nov. ^{5*}	3.580*		

¹CW 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.**
²Phone Bulletins on 1.820, 3.990, 7.290, 14.290, 21.390, 28.590, 50.190 and 145.588 MHz.**
³RTTY 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.
⁴Starting time approximate, following conclusion of bulletin or code practice.
⁵W1AW will tune the indicated band for Novice calls, answering on the caller's frequency.
⁶Participation in traffic nets.
⁷Operation will be on one of the following frequencies: 21.02, 21.08, 21.11, 28.02, 28.08, 28.11 MHz.
⁸Operation will be on one of the following frequencies: 21.26, 21.39, 28.59 MHz.
⁹When an Oscar satellite is in orbit, daily updated orbital data is sent at 18 wpm on cw frequencies.
¹⁰Oscar orbital data for the coming week, on cw frequencies.
¹¹Oscar 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 5-1.3 wpm transmissions. Each tape carries checking references.

5-7½-10-	9:30 PM EST SntTThS	0230 MWFsn
13-20-25	6:00 AM PST	
5-7½-10-	9:00 AM EST MWF	1400 MWF
13-20-25	6:00 AM PST	
35-30-25-	9:30 PM EST MWF	0230 TThS
20-15	6:30 PM PST	
35-30-25-	9:00 AM EST TTh	1400 TTh
20-15	6:00 AM PST	

Speeds	Local Times/Days	UTC/Days
10-13-15	7:30 PM EST dy	0030 dy
	4:30 PM PST	
10-13-15	4:00 PM EST MTWThF2100 MTWThF	
	1:00 PM PST	

Feb. 7: It Seems to Us
 Feb. 11: Correspondence
 Feb. 19: League Lines
 Feb. 27: ARPS
 Feb. 3: World Above
 Mar. 5: YL News

5-BAND AWARDS

(Updating the January 1975 listing.)

SBDXCC: (Starting with number 377),
 DK5PR WA8ZDF K4OD W9ZTD EA8CR
 K4BBK DL7OK.

5BWAS: (Starting with number 190),
 W0INH K8HWW WB5DCY W1UYL
 WA4LPX.

SCM ELECTION NOTICE

**IN A COMMUNICATIONS EMERGENCY,
MONITOR WIAW FOR SPECIAL BULLE-
TINS AS FOLLOWS (times GMT/UTC):**

Phone: On the hour
RTTY: At 15 minutes past the hour
CW: On the half hour

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, CT 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, WINJM, Communications Manager

4) In a similar poll some years ago a proposal was made to combine ORS and OPS, also RM and PAM, to tear down the segregational barriers between cw and phone traffic-handlers by having a single appointment covering both (all) modes. This has kept coming up, so we thought we'd run it up the flagpole again. Alas, again only a minority saluted it.

5) All SCM appointments have terms, but NTS managers at region level and above serve "at the pleasure of the Communications Manager." Some NTSers don't think this is right, and that such NTS net managers should also have terms. But the poll shows that this is a minority sentiment.

That leaves only two questions. One has to do with SCM qualifications, a subject now under study by a Board of Directors committee. It seems that Conditional Class licensees are eligible to run for SCM but not for Director, and there was a feeling that SCM candidates should also be required to hold a General Class license or higher. (Three SCMs currently hold Conditional.) The poll shows that this is a majority sentiment. Since the Board committee studying this will report (or has reported) to the Board at the January meeting, the poll result has been thrown into the hopper. It would appear that FCC's new restructuring docket will muddy this up a bit, but let's just stand by and see what happens.

The remaining question is another retread, proposing an appointment in the emergency preparedness field to parallel ORS/OPS in the traffic-handling field. But not many voters seemed to feel this was a good idea, and so again it was turned down.

To summarize: CD Bulletin pollsters looked favorably on making affiliated club stations eligible for CD Parties, on the ECAC participating in formulation of FD Rules, on redefining traffic categories to give more credit for third-party operations, on requiring SCM candidates to have General Class licenses or higher, and on making the "Daytime" NTS a permanent part of the NTS structure. Thus, a 50% blessing on the proposals made; not bad, as these polls have gone in the past.

These polls are advisory only, and so just because a proposal receives an affirmative nod or a negative shake does not necessarily mean that it will or will not be put into effect. The League does not decide such matters by referendum, and CD Bulletin recipients, being but a small (but very representative) part of the operating fraternity, would hardly qualify in this category anyway. Your elected Board of Directors is all powerful, but usually sticks to matters of policy, and relatively minor administrative matters such as those posed in this poll are decided on by the Communications Manager. So the CD Bulletin poll is just one way of gauging the desires of the operating fraternity. There are quite a few others.

Section	Closing Date	Current SCM	Present Term Ends
B.C.	2/10/75	H. E. Savage, VE7FB	5/1/75
Sac. V.	2/10/75	N. A. Wilson, WA6JVD	5/7/75
L. A.	2/10/75	F. H. Violino, W6INH	5/19/75
Vt.	3/10/75	J. H. Viole, W1BRG	3/1/74
Wash.	4/10/75	M. F. Lewis, W7OGP	7/2/75
N. Mex.	4/10/75	F. Hart, WSRE	7/2/75
Ala.	4/10/75	J. A. Brashear Jr., WB4EKJ	7/1/75

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.

Colo.	C. O. Penney, WA6HLO	2/14/75
Nev.	J. D. Weaver, W7AAI/W6IPC	3/11/75

Balloting results: In the *Maryland-D.C.* Section, Mr. Karl R. Medrow, W3-A, and Mr. W. Page Pyne, WA3FOP, were nominated. Mr. Medrow received 642 votes and Mr. Pyne received 194 votes. Mr. Medrow's new term of office began January 1, 1975.

Code Practice Tapes. At its July '74 meeting, the ARRL Board of Directors directed the Communications Manager to continue to study and, if feasible, to implement a program to provide WIAW code practice on tape cassettes for the membership. This study has continued and is now bearing its first fruit. We have a pilot program in operation consisting of twelve cassettes of WIAW code practice at the slower speeds only, intended primarily for those practicing for their Novice and General Class tickets. At the time of this writing

New A-I Operators
W9IF K9UTQ WB0IEL
13ANO 13CRW 9Q5QR

DX CENTURY CLUB AWARDS

New Members

Radiotelephone listings follow the general-type "New Member" and "Endorsement" listings -- November 1-30, 1974.

W2IYX	216	I0MDP	116	DJ6CK	105	G4BGE	104	DK5MP	102	WB0AEW	101
I7VCA	207	DK6PW	114	DJ9UN	105	WB6RMG	104	DM2CJJ	102	K8PFI	100
WB8FOS	142	13MGN	113	DM2CRJ	105	DK5VC	103	DM2DXO	102	WA4VNO	100
CT1BY	139	JA6CM	109	DM2FRL	105	UA3PN	103	UA9AAP	102	KP4DLC	100
WA4QOQ	137	JA3OSL	108	KP4EAK	105	VF4FW	103	DM3OO	101	UK5IAB	100
CX6CT	127	6Y3RM	107	KX6GS	105	WA0BQ	103	K0ZHD	101	UT5IB	100
W7LR	122	UK3AAB	106	UB5PS	105	A2CFW	102	WA2LUF	101	W3DOS	100
EA6CE	119									WB6CLS	100

W8DFQ	223	I7VCA	206	WB5HGS	164	JA3AFV	107	5R8AR	105	K9YQA	100
W2IYX	209	DJ8PH	202	I61IH	136	EP2MJ	105	WA2MIS	101	KP4EAK	100
I2LPA	208			W7AE	120			DL7KY	100	VE1AYF	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.

W4QCW	345	PY7APS	315	K2HK	300	K4ARP	260	WB4ICV	220	K9UQN	160
W4TM	345	SM6CKU	315	K5EVK	300	K4FJC	260	W6INH	220	UY5OO	160
W9IUV	345	VE3DBI	315	K8PYD	300	W1DAL	260	W7GYP	220	W1EWD	160
OK1FF	340	WB8OC	315	LA9CF	300	W2BBK	260	W8GIO	220	WA1NSJ	160
W2BMK	340	YV5AF	315	W1LFL	300	WA3MBQ	260	WA9WY	220	WB2FVO	160
W7AOB	340	WA3HUP	310	W3KV	300	WB6WIW	260	WA9IC0	220	W5TWT	160
DL7HU	335	WA3IKK	310	W4UMF	300	W0NAR	260	HB9AQW	200	W7OK	160
W5NW	335	WA3KSO	310	W5LUI	300	K6WD	250	WA3DVO	200	K2MGM	140
W1AXA	330	W4BRE	310	WB8EUN	300	K0ARS	250	W45NR	200	UY5OO	140
W1DGI	330	W9ZRX	310	WA9WJE	300	WA3BGC	250	WB4MAR	200	WB9AAQ	140
W6KUT	330	WA8MCR	310	ZF4JS	300	VE3DXV/W6250		WA6GOK	200	W0KMN	140
W1MDJ	325	W0HZ	310	SM6FOC	290	WA7FIH	250	DJ9VP	180	WA0VDX	140
W0CKC	325	SM6A1H	305	W3HNK	290	W0IBZ	250	SM6ARH	180	K2DYZ	120
JA1ZZ	320	VE3AGC	305	W4JD	290	CT1UD	240	JA6MBU	180	K4JFF	120
JA8AA	320	W2FPM	305	K6HTM	280	JA3MXR	240	K68UU	180	K4YOL	120
K1ROE	320	W3CRE	305	K9VOK	280	OZ1AJ	240	LARC	180	K0HSC	120
K4CFB	320	W6AAG	305	VE5KG	280	W9VBV	240	UV3GW	180	KP4DIY	120
K4CIA	320	W6FYR	305	W7DOM	280	K3ZOL	220	VE3GS	180	PY20DN	120
K5LIL	320	W6UMJ	305	OH2HCV	270	K5LMG	220	W7FF	180	VE3FTM	120
W4BRB	320	W9IGW	305	WASVEY	270	SM7AVA	220	WB4TDH	180	VK2BC	120
ZL3OY	320	W9KB	305	WASZWC	270	VE7BZC	220	WA0TAS	180	W3RAB	120
K4ZCP	315	DL6KG	300	W9KB	270	WA1JMP	220	K7NTW	180	W9LVH	120
OH4NS	315									WA3IZI	120

DL7HU	330	SM6CKU	305	K6HTM	280	K2GBC	240	W6G1L	220	W7FF	188
VE2NV	325	DK2BI	300	VE3AGC	280	OZ13IN	240	W7ILR	220	WB9BGI	180
W4UWC	325	VE4OX	300	W2PBI	280	VE3RO	240	WA9WY	220	W5TWT	160
EA7GF	320	WA2VEG	300	W3HNK	280	W1LFL	240	K6WQ	200	VE3GS	140
W6MBD	320	W3CRE	300	W7IQM	280	W6GTL	240	WA9IC0	200	WB4OXD	140
K61XR	310	W6KUT	300	CPIBW	270	DK2MO	220	ZL1A1F	200	WB9AAG	140
W4BRE	310	W6ZC	300	K6HTM	270	18LFL	220	DJ4ZD	180	W0AKT	140
WA3IKK	310	DL6KG	290	VE5KG	270	K4ARP	220	JA6MBU	180	W0JKM	140
WA8ZDI	310	K5FVK	290	W1BAB	270	LU1BAR/W3220		UV3GW	180	K6A5A	120
G3WV	305	K8PYD	290	WA3MBQ	260	WB4ICV	220	VE3DXV/W6180		WAS511	120
K4CFB	305	WB8EUN	290	WB6WIW	260	W5LDH	220	W6MFC	180	W6ID	120

the tapes are not yet on hand, nor do we have any concrete estimate of cost; but this information will be available when you read this, and the tapes will be offered to ARRL members at that cost, whatever it is, plus postage. If you are having trouble copying W1AW and have access to a cassette tape player, drop us a line for further information. If the program is a popular one, it will of course be expanded.

Staff Notes. It is customary in this column to

record changes in key CD staff personnel, and it has been some time since we last did so. A few significant changes have occurred, resulting in more hams on the staff. Probably most significant is elevation of Jim Cain, WA1STN (formerly WA9AUM) to the rank of Assistant Communications Manager with primary functions in the Affiliated Club-Training Aids Branch; but we all know that Jim's versatility won't let him stay in a sequestered niche. Rosalie Cain, WA1STO, has

moved from clerical assistant in DXCC to Communications Assistant in the Public Service Branch; her place in DXCC has been taken by Dave Newkirk, WB9CJS (yes, it's *that* Newkirk). Several turnovers at the Miscellaneous Awards desk (part of the Administrative Branch) have finally resulted in the rehiring of Judy Mann, WA1JCN, to perform much of this clerical function at home (where little

Laurie demands primary attention) until a qualified permanent full time person can be hired. Thus we continue to be fortunate in finding licensed hams for some clerical tasks.

Across lots at W1AW, Jeff Bauer, WA1MBK, left and has been replaced by Chris Schenck, WB2SEZ, keeping the W1AW contingent at three. And so "Time Marches On." - WINJM

The World Above

(Continued from page 89)

Oscar News

Reports on Oscar 7 are coming from everywhere. It is apparent that Mode B (432.125 to 432.175 up, 145.925 to 145.975 down) is working extremely well. Some users of both Oscar 6 and 7 say that 6 is better for Mode A (145.85 to 145.95 up, 29.4 to 29.5 down for 7). Use of right-hand circular polarization for transmitting to Oscar 7 will allow users to pick up an added 3 dB. Following are random excerpts from Oscar 7 reports, mainly Mode B.

Some of our news comes from the VERON *VHF Bulletin*, which is how we first learned of a Mode B QSO between PA0SSB and W0PHD. VE2BYG was also worked by PA0SSB, these being, it appears, the first Oscar 7 QSOs between The Netherlands and USA and Canada.

By the end of November, K7BBO had made 165 Mode B QSOs, and these included JA1KCA, JA1VDV, JA8ARS, JA8DJJ, JA0AIF, SM5LE, G3NHE, and VE2, 3, 4, 6, and 7.

W0PHD, Warren, Minnesota, sent us fax copy from VE4AS, via Oscar 7, orbit 190, and also direct, over a 117-mile tropo path on 432. There are only barely discernible differences in the two modes. The tropo copy is slightly cleaner, with just a bit better definition. Signal strength, on the other hand, appears to be a shade better via the satellite path. VE4AS, you will recall, described his two-band Delta-loop Oscar array in *QST* for November.

W6OAL says that Oscar 6 is being used by a California roundtable to discuss aspects of Oscar 7. Dave uses righthand circular polarization for 2-meter input to Oscar 7, for a stable downlink signal on Mode A.

WA6EXV reports the 435-MHz beacon heard on orbit 1, Nov. 15, for just under 2 minutes, beginning at 1904 UT. Good RTTY copy was obtained on the beacon on this and later orbits. Chuck says he's had a hard time working people on 432, as everyone seems to concentrate on working through Oscar 7, and then drops out when the satellite is gone.

There is much comment regarding the power levels used on 432 for Mode B. WA6UAM, San Jose, has been running 4 watts PEP output on 432, and had 26 QSOs with 7 states, by the end of November. WB6NMT says that there are far too many "alligators" (see November *QST*, p. 95) using Oscar 7. Louis hears lots of 432-MHz signals blocking the uplink, yet their operators have inferior 2-meter receiving arrangements and are unable to hear many of the stations calling them. The "all mouth, no ears" technique is bad enough in any ham work, but it is totally out of place in satellite work, where time and frequencies have high priority. Use of indoor dipoles and omnidirectional antennas for the 2-meter downlink, in

conjunction with high power and antenna directivity on the uplink, is not exactly an optimum approach. Get set to hear 'em first, gang, then use only as much power as is needed for good readability, on the uplink. FCC Rules apply on satellites, too, and so does common courtesy. Incidentally, WB6NMT had all call areas, and VE2, 3, 4, and 7, through Dec. 15, his San Diego location apparently limiting his reception to these areas thus far.

There are many examples of nonreciprocity, what with polarization variations, propagation variables between the bands involved, and so on. Louis says he usually loses the 435-MHz beacon before the big downlink signals go out, and he has heard his own signal (5 watts out on 432) after the 435 beacon has disappeared. Tropo effects are suspected, when the signals disappear for up to as long as a minute, and then reappear for up to 2 1/2 minutes. Testing of tropo effects out over the Pacific is hampered by the satellite being on alternate days - but interesting things should happen if and when satellite orbits coincide with some of that long-haul tropo out over the Pacific.

One other gripe heard: some Mode B users leave their transmitters running while tuning for downlink signals - on the *speaker*, resulting in transmission of receiver garbage through the satellite, in addition to usurpation of a communications channel for a noncommunications purpose. Duplex is fine, ordinarily, where permitted, but we're working with a *narrow band* through the satellite.

QST

Frequency Counter

(Continued from page 29)

The prescaler design was taken from the Fairchild data for the 9582DC amplifier and the 95H90DC counter integrated circuits. No difficulty was encountered in obtaining a stable and sensitive condition.

The specific sensitivity of the LO and HI input circuits is not known. However, it has not been necessary to make any direct connections to equipment to obtain stable frequency readings. For the HF (LO) range, a tuned circuit, coupled to the counter through a five-turn link and coaxial cable, has provided ample pickup of energy. For vhf use an adjustable (up to 48 inches) whip, mounted on a small base and connected to the counter via a coaxial cable, has worked well. Equipment tested with this arrangement ranged from 100-milliwatt hand-held units (27 MHz) to 5-watt (or greater) 2-meter transmitters.

EDITOR'S NOTE: An error exists in one of the drawings in Part I. In Fig. 5, U12 should be a 7430, an 8-input NAND gate IC. In Fig. 6, the time-base chain referred to should read Fig. 4 instead of 7.]

QST

Operating Events

de W1YL

FEBRUARY

- 1-2 *DX Competition* phone, p. 56 Dec.
1-9 *Novice Roundup*, p. 59 Jan.
2 *Two-Meter RTTY Contest*, p. 89 Jan.
5 *West Coast Qualifying Run* (W6ZRJ prime, K6DYX alternate) 10-35 wpm at 0500 UTC (Universal Coordinated Time, calculated as per GMT) on 3590/7090 kHz. This is 2100 PST the night of February 4. 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 and send to ARRL for grading. (Note: ARRL Form CD-9 shows qualifying run schedules for both the WIAW and west coast runs as well as the complete WIAW code practice schedule.)
7-9 *QCWA QSO Party*, p. 89 Jan.
8-9 *Wheat Belt QSO Party, Ten-Ten Contest*, p. 89 Jan.
9 *Frequency Measuring Test*, p. 89 Jan.
13 *WIAW Qualifying Run* (10-35 wpm at 0230 GMT/UTC), transmitted simultaneously on 1.805 3.58 7.08 14.08 21.08 28.08 50.08 and 145.588 MHz. This is 2130 EST 19:30 PM local eastern time) the night of February 12. Underline one minute of top speed copied, certify copy made without-aid and send to ARRL for grading. Please include your full name, call (if any) and complete mailing address. A legal size s.a.s.e. would be appreciated.
15-16 *DX Competition* cw, p. 56 Dec.
22-23 *YL/OM Contest* phone, p. 88 Dec. *French Contest* phone, p. 82 Dec. *Vermont QSO Party*, p. 89 Jan.

MARCH

- 1-2 *DX Competition* phone, p. 56 Dec.
6 *West Coast Qualifying Run*.
8-9 *YL/OM Contest* cw, p. 88 Dec. *BERU*, open to members of the RSCG resident in the UK and radio amateurs licensed to operate within the British Commonwealth or British Mandated Territories, from 1200Z March 8 to 1200Z March 9, cw only, 80-40-20-15-10 meters. Contacts may be made with any station using a British Commonwealth callsign, except those within the entrant's own call area. UK stations may not work each other for points. Contestants are requested to confine their operations to within the lower 30 kHz of each band. Each completed QSO will score 5 points. In addition, a bonus of 20 points may be claimed for the first, second and third contacts with each Commonwealth call area. All British Isles stations (G GB GC GD GI GM GW) count as one call area. Separate logs for each band. Each band log should be separately totalled and should include at the end a check list of call areas worked on the band. Separate band totals should be added together and the total claimed score entered on the cover sheet. Single band or multiband. Single-band entries should show contacts on only one band; details of contacts made on other bands should be enclosed separately for checking purposes. Multiband entries are not eligible for single-band awards. Usual declaration. Address entries to D. J. Andrews, G3MXJ, 18 Downview Crescent, Uckfield, Sussex, England. Entries received after May 12 may be excluded from the contest. Awards.
14 *WIAW Qualifying Run*.
15-16 *DX Competition* cw, p. 56 Dec.
22-23 *Tennessee QSO Party*, sponsored by the Tennessee Council of Amateur Radio Clubs, from 2000Z March 22 to 0600Z March 23, 1400-2200Z March 23. Tenn. stations send signal report and county. Out of state send signal report, state, province or country. Each station may be worked twice each band (phone and cw). Score 1 point per QSO for phone contacts, 1/2 points for cw. Tenn. stations QSO points times sum of states, provinces and countries plus bonus points. Out of state QSO points times number of different Tenn. counties. Suggested freqs.: 3550 3725 7050 7125 14050 21050 21125 28050 28125 3980 7280 14280 21380 28580. Log date/time(Z), stations, band, mode, exchanges and score. Use separate log sheet for each band over 25 contacts. Awards. Bonus points: each mobile station operating outside of home county will receive a bonus of 200 points for each county (making 5 contacts or more). Repeater contacts not allowed. Mobiles compete against mobiles only, portables against portables. Any Tenn. station

soliciting contacts from non-contestants will be disqualified. Portable stations must operate outside of home county. Mailing deadline April 27, 1975. Send s.a.s.e. with log to Dave Goggio, W4OGG, 1419 Javelin Dr., Memphis, Tenn. 38116.

22-24 *Prairie Dog QSO Party*, sponsored by the Prairie Dog Amateur Radio Club of Vermillion, South Dakota. A certificate will be given to those who contact 5 of the 22 club members. The contest will start at 2200Z March 22 to 0400Z March 24. Suggested freqs.: cw 3690 7070 14070 21070 28070, ssb 3955 7240 14285 21390 28550. Check 5 and 2. Novices should check 3710 7110 21110 on the even hour. Exchange RST, state and name. Club members are in competition with each other. Special endorsement for clean sweep. Logs to: Lowell D. Nelson, WB0FVQ, Box 493, Springfield, South Dakota 57062. *BARTG Spring RTTY Contest*, 0200Z March 22 until 0200Z March 24. The total contest period is 48 hours but not more than 30 hours of operation is permitted. Times spent in listening count as operating time. The 18 hour non-operating period can be taken at any time during the contest but off periods may not be less than 3 hours at a time. Off/on times must be summarized on the log/score sheets. Additional categories for multiop. and SWLs. Operation on 80, 40, 20, 15, 10 meters. Stations may not be contacted more than once on any band, but additional contacts may be made with the same station on a different band. ARRL Countries List (and, in addition, each W/K and V/I/O call area) will be counted as a separate country. Messages consist of: time in GMT (this must be a full 4-figure group). The use of expressions same or same as yours will not be permitted. RST and message no. The message no. must consist of a 3-figure group starting with 001 for the first contact made. All two-way RTTY contacts with stations within one's own country will earn 2 points. All two-way RTTY contacts with stations outside one's own country will earn ten points. All stations will receive a bonus of 200 points per country worked including their own. Note: any one country may be counted again if worked on another band but continents are counted once only. Scoring: two way exchange points times total countries worked, add to this your total country points times bonus points times number of continents worked. One log per band, indicate rest periods. Logs must contain all info., and must be received by May 31 to qualify. Send to: Ted Double, G8C DW, 89 Linden Gardens, Enfield, Middlesex, England EN1 4DX. Judges' decision final, no correspondence can be entered into in respect to incorrect or late entries.

24 WIAW Morning Qualifying Run.

29-April 6 *Worked All States Work Contest*, sponsored by the Radio Society of Greater Brooklyn the full GMT period. The winner will be the station to work all states in the shortest period of time. Awards for working all states in the contest period and awards for the novice working the most states, etc. Recommended exchange is report, state and name. Only the no. of states worked, not the no. of QSOs, count. Logs must include a description of your station, time, date, call and state of all stations worked Any band, any mode, any legal power. Logs to F. Grossman, WB2BXC, 9519 Ave. M., Brooklyn, NY 11236.

APRIL

- 2 *West Coast Qualifying Run*.
5-6 *SP DX Contest*.
12-13 *CD Party cw, 11-22 Contest*.
15 *WIAW Qualifying Run*.
19-20 *CD Party phone, Bermuda Contest phone, RTTY WAEDC*.
26-27 *PACC*.
28 *WIAW Special Evening Qualifying Run*.

- May 10, EMT. Oct. 11-12, CD phone.
June 14-15, VHF QSO Party. Oct. 18-29, CD cw.
June 28-29, FIELD DAY. Nov. 8-9, SS cw.
July 12-13, CD cw. Nov. 22-23, SS phone.
July 19-20, CD phone. Dec. 6-7, 160-Meter Contest.
Sep. 6-7, VHF QSO Party. Dec. 13-14, 10-Meter Contest.

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: W3FB. PAM: WA3DUM, PSHR: WA3DUM 61. K3KAJ requests any station helping in an AREC type situation notify him so that the information may be published. W3FEG served as net control for an emergency net on Dec. 1 when high winds and tides caused evacuation of beaches from Howets Beach to Fenwick Island. Among the active stations were K3KAJ, W3PM, WA3SM, WA3JF, W3UO and W3YAH. W3PM and W3DKX provided phone patch link between CD centers in Georgetown and Delaware City. New officers of the De. Repeater Assn. are WA3HFL, pres.; WA3QBD, vice-pres.; WA3VEE, corr. secy.; WA3PI, rec. secy.; WA3QPK, treas. The Del. ARC again ran "Operation Christmas Greetings" from Castle Mall this year. K3GJU headed a group who provided communication for the Del. Enduro Riders via 2-meter fm. Nov. activity: De 2-Meter Net QNI 8, QTC 0. DTN QNI 302, QTC 81. DEPN QNI 85, QTC 6. Traffic: (Nov.) WA3DUM 114, W3EFB 56, W3DKX 54, K3YHR 10, (Oct.) WA3KUD 3 11.

EASTERN PENNSYLVANIA - SCM, Allen R. Breiner, W3ZRO - SEC: W3FB. RMs: K3DZB, W3EML, K3MVO, WA3QLG. PAM: WA3PZO. Appointment of EC for Chester County was made to K3WAC. An OPS was issued to WA3TBG. The application for a repeater for the Whitehall ARC was lost by FCC. Perhaps we should use our Zip instead of our call! K3BFA reports the Berks County C.D. is getting a face lifting with all kinds o' new gear. W3EML is considering eye surgery, the EPA gang is pulling for you Bill. WA3NDQ is back after experiencing bad by-pass caps. The Pack-Ratz repeater now operational on 224.58 MHz via WR3AC/D. Officers of the reorganized Wyo. Valley ARC, K3ETN, pres.; K3OMF, vice-pres.; K3TML, secy. After experiencing rig trouble, WB2RBA found out our OO system is on the ball. Anyone for skiing or skating, WA3ATO sez "Come on up!" Erratic band condx, antennae and RTTY are keeping W3ID busy. New Gear Dept.: WA3TBG a new linear HT-33A and three-element beam. K3DTD added a 328-1 to the shack. EC WA3REY for Lebanon County added number one Harmonic, a boy. AREC members in Dauphin, Schuylkill and Lebanon County met and discussed proper emergency use of the area repeaters. There are still a number of EC appointments available, if interested drop ye editor a line. WA3PLP is now active at the Univ. of Rochester. All amateur club groups are invited to participate in the forthcoming Bi-Centennial Atlantic Division Convention. Get in the know! Drop W3ZD a line and get on the mailing list. The spring dinner-meeting of the Eastern Penna. Section will be held at the Buck Hotel, Feasterville on Apr. 19. Details will appear in Mar. Hamfest calendar. The EPA emergency phone and traffic net meets nightly on 3917 kHz at 2200Z had a QNI of 333 and QTC of 125. The PTIN Training net meets nightly on 3610 kHz at 2230Z had QNI 125 and QTC of 33. The CMTN Novice Net meets nightly on 3720 kHz at 0001Z had a QNI of 101 and QTC of 50. EPA CW net meets nightly at 0001Z on 3610 kHz, no report. Traffic: W3CUL 2457, W3VR 916, WA3QYY 430, WA3AQ 247, WA3VDQ 217, W3EML 181, WA3SXU 140, W3WRE 131, WB2FWW 130, K3OIG 114, W3IPX 95, W3BNN 77, WA3TBG 74, K3MVO 70, WA3PZO 70, WA3SVK 63, WA3QLG 54, W3ZRQ 57, WA3UKZ 51, W3LC 31, W3VA 31, WA3PHQ 30, WB2RBA 27, WA3TVT 26, WA3LWR 20, K3BHU 19, WA3CFU 18, W3AVJ 17, WA3JLF 16, W3ADE 14, W3CL 14, W3ID 13, W3AXA 10, WA3WTE 9, W3HK 8, WA3SVJ 8, WA3TMP 8, W3VAP 8, W3OY 6, WA3VUM 6, K3HX5 5, WA3REY 5, K3DDB 4, K3DTD 4, K3KNL 3, K3NZD 2, K3BFA 1, WA3BJQ 1, WA3CKA 1, W3EU 1, WA3GMK 1, W3GOA 1, WA3NDQ 1.

MARYLAND-DISTRICT OF COLUMBIA - SCM, Karl R. Medrow, W3FA - SEC: K3LFD, RM: W3QU, PAM: K31NM, NCM: WA3RCI, WA3EOP makes the Nov. BPL. WA3NAN geared up and passed live count down data during the launch of Oscar 7. W3QU has the night shift restricting his activities to week ends. WA3RCI uses all the daylight hours for school and work. The Washington Region PON is fast moving to the top with 13 sessions, 122 messages and average QNI of 22.4. MEPN was 22/87/23.2. MDCIN at 17/65/17.0 and the MDD 51/175/4.7. MEPN toppers W3ADO, W3DKX others W3FA, WA3HIV, W3IQN and WA3PRW. The MDD Top Brass W3FA, K3KAJ, WA3DUM and W3EEB. Congrats to all W3FCS won the battle with his traps and the tri-bander is 100%. W3CWC with 100 watts sounds like more with WA3TOP at the mike. WA3SJS has one rig for fone and another for cw. K3ORW is in the wintertime mode. W3F7V made noise in the SS and Del. QSO party. W3DFW manages the Washington Region PON 2015Z on 3905 kHz, week nights and good area coverage. K31NM anticipates more school work coming up. W3ZNF has his two meter antennas and plans an early return. WA3UYF sports new loading coils to boost that 80-meter signal. WN3VGV is still without a vfo. WA3SIY spends his time on 20 and 15 phone patching. W3BHE is back in full swing, and providing public service help for snow bound hunters and the local newspaper. The K3IQG gang are covering the nets in good fashion. W3SMN has 5 mikes and 4 keys on the desk to help him cover all bands thru 450 MHz. WA3JSZ was early for the last FMT by an hour. WA3SEE has the Montgomery AREC meeting every Mon. 2000 local on 146.52 MHz with an average check-in of seven. He is back on six and finds good openings for the new ssb capability. W8BZY/3 opines the new net times mean rough conditions. W3JZY mostly on MARS with side trips to Ind. and Ohio. WA3EOP and W3FA thank you voters for the good section turnout. See you on MDD/3643/ 7 and 9:45 PM local time, daily. MEPN/3920; 6 PM local time MWF and at 1 PM local SS. MDCIN/3920/TTSS/ 6 PM local. Traffic: (Nov.) WA3EOP 219, W3FA 170, W3QU 153, WA3SVJ 134, W3FZV 103, K3IQG 58, K31NM 37, W3FCS 34, WA3SJS 10, K3ORW 5, WN3VGV 4. (Oct.) W8BZY/3 97.

SOUTHERN NEW JERSEY - SCM, Charles E. Travers, W2YPZ - SEC: W2JH. PAMs: WB2JIE, WA2DVE, WA2DSA, WA2DIW. RM: W2JH.

Net	Freq.	Time(PM)	Sess.	T/c.	Mgr.
NJSN	3740	8:15 Dy	50	6	WA2DIW(act)
NJPN	3950	6: M-S	28	286	WA2DVE
WA3N	3695	7: Dy(ea)	30	128	WA2DSA
NJN		10: Dy(ea)	50	81	WA2DSA

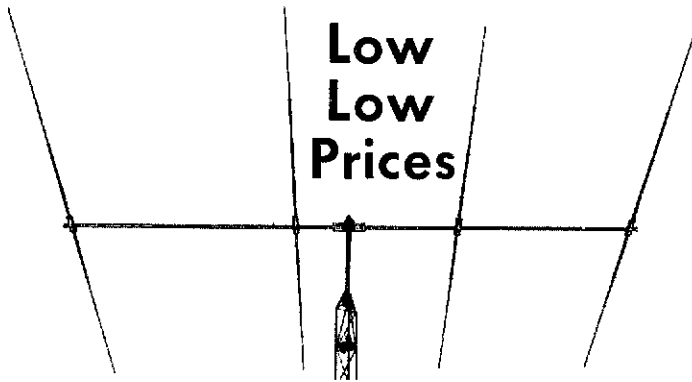
Dec. 1 is a day which will be remembered for the destruction suffered by many NJ areas. Property damage in the millions and always antenna troubles. However, this was an excellent time for our emergency program to swing into action. Our newly appointed EC for Atlantic Co, WB2EYF and his group of AREC members went into action and assisted the Atlantic City CD and Disaster Control Office in providing communications for that office and surrounding communities in preparation for an expected severe storm which hit the area at about 1930 local time. The AREC group set up a two meter fm base station at the City Hall. Liaison with the Coast Guard was maintained via two meters fm. Monte reports 3 drill sessions were held on the AREC Net established by the unit on 146.52 during the month of Nov. Many more members are needed. Again members of the fraternity are urged to contact your SEC W2JH and become involved as a member or an EC for our area. I hope we were ready with a strong organization for a most successful SE1. This is a wonderful opportunity to serve your community. Traffic: W2JH 31, W2ORS 13, W2YPZ 7, WB2EYF 3, W2IU 1.

WESTERN NEW YORK - SCM, G.W. Hippisley, K2KIR - Asst. SUM: Richard M. Pitzeruse. K2KTK. SEC: W2CFP. For net info, see Nov. '74 column. Net reports: ESS: 357 QNI, 125 messages in 30 sessions. Congratulations to W2FR, who joins W2EO on PSNR this month; Howie is the new NTS ICC Eastern Director and was elected chmn. of EAS at its recent meeting in Newington, CT. K2KIR and W2MTA also attended. Some new licenses/upgrades: WN2YDW and YDY, General Class WB2RXL, and Extra Class

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- **M154** 4 ele. 15, 20', 2" OD **\$ 79.00**
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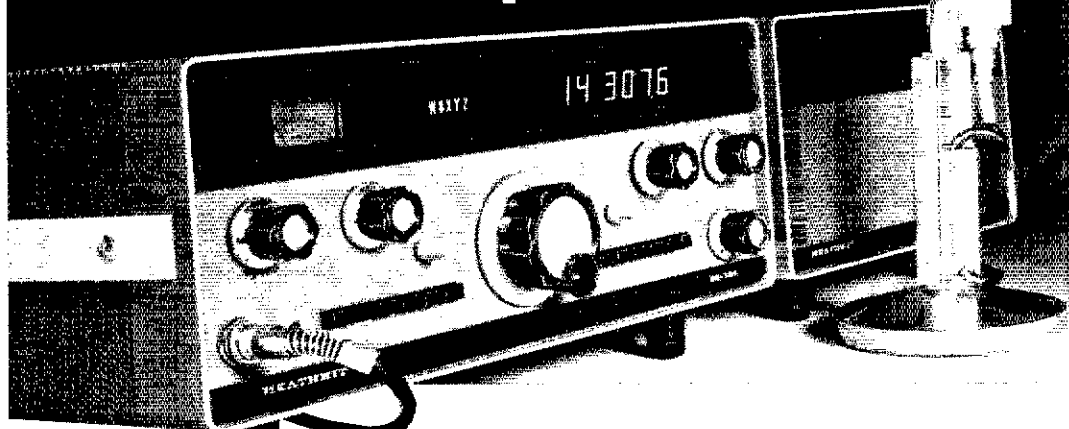
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- Kit SB-104, 31 lbs., mailable 669.95*
- Kit SBA-104-3, 400 Hz CW crystal filter, 1 lb., mailable 34.95*
- Kit SBA-104-1, Noise blanker, 1 lb., mailable 24.95*
- Kit SBA-104-2, Mobile mount, 6 lbs., mailable 34.95*
- Kit HP-1144, Fixed station power supply, 28 lbs., mailable 89.95*

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- Kit SB-230, 40 lbs., mailable 319.95*

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The "634" performs 5 important functions — a 10-minute digital ID timer with visual or audible indicators, an RF wattmeter that reads 0-200 or 0-2000 watts with $\pm 10\%$ accuracy, an SWR bridge, a hybrid phone patch that can be used manually or with VOX control, and a 24-hour digital clock that runs independently of all other functions. It's a must for every well equipped station. Kit SB-634, 14 lbs., mailable 179.95*

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Highly visible 1½x2" CRT detects problems that can reduce the effectiveness of your signal — non-linearity, insufficient or excessive drive, poor carrier or sideband suppression, regeneration, parasitics and CW key clicks. It monitors AM, SSB and CW signals from 80 to 6 meters. Push-pull drive for keystone free trace; automatic sync sweep generator with 3 ranges from 10 Hz to 10 kHz. Can be used as an ordinary oscilloscope from 10 Hz to 50 kHz.

- Kit SB-614, 17 lbs., mailable 139.95*

SB-644 remote VFO

Designed exclusively for the SB-104. It provides split transmit and receive and you aren't frequency-limited in any way — transmit at one end of the band, receive at the other. The "644" even has two crystal positions for fixed-frequency control. The "644" has a linear dial, but the exact frequency is displayed on the "104's" digital readout. The display automatically changes when switching from transmit to receive.

- Kit SB-644, 10 lbs., mailable 119.95*

SB-604 station speaker — response-tailored to SSB

Designed to match the SB-104 in styling and performance. The "604" uses a 5x7", 3.2-ohm speaker. And there's room inside for the HP-1144 power supply. With connector cable and plug.

- Kit SB-604, 8 lbs., mailable 29.95*



DESIGN NOTES

Jim Cooperider
Sr. Design Engineer

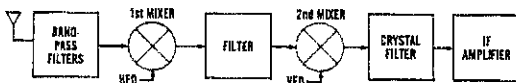
Signal handling techniques in modern receiver design

Outstanding sensitivity has long been held as a receiver specification of prime importance. But it's time to re-examine this view in terms of today's operating requirements. Most amateur bands are characterized by strong signals which can create problems that minimize or mask the effectiveness of very sensitive receivers. In addition, atmospheric noise is so strong on some bands, particularly 80M and 40M, that signals below one microvolt are difficult to receive.

The most prevalent problem caused by strong signals is third-order intermodulation distortion. This is produced by two strong, in-band signals mixing due to nonlinearities in the stages preceding the IF crystal filter and producing an on-frequency signal. In highly sensitive receivers the two signals need be only 50 dB stronger than the desired signal to produce an equivalent output. This kind of distortion makes the band appear to be full of undesired signals and splatter. A similar phenomenon occurs due to cross-modulation, the modulation of the desired signal by a strong adjacent signal. Blocking and desensitization are other ways in which strong signals can mask and diminish performance.

Two measures can be taken to reduce these problems: gain preceding the crystal filter is held to a minimum, and all active devices preceding the

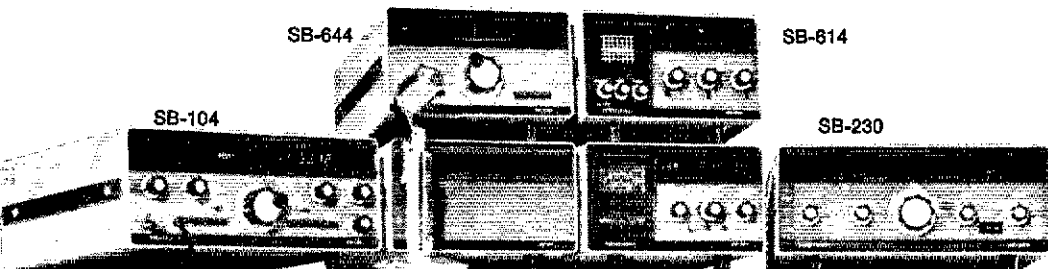
filter are operated as linearly as possible. The SB-104 receiver design incorporates such measures. No RF stage is used; instead, the antenna input is fed directly to diode-selected, computer-designed, broadband presselector filters. These filters require no tuning or adjustment within a band and provide the necessary selectivity to reject the image frequency and other out-of-band signals. The block diagram below illustrates the SB-104 design.



The first and second mixers are MOSFETS. These devices maintain linearity over a wide range of input levels and the conversion gain has been carefully selected to provide good sensitivity without creating problems of excessive front-end gain. With this approach, intermodulation distortion in the SB-104 receiver is typically better than -65 dB so that the undesired mixing signals must be approximately three times the level required in a typical highly sensitive receiver to produce the same level of distortion.

A low noise IF featuring a dual-gate MOSFET and a broadband IC follows the crystal filter and provides sufficient amplification to maintain necessary overall gain. These devices are gain controlled so that the SB-104 is capable of handling signals in excess of 3 volts.

Through use of these techniques, the SB-104 is able to accommodate the wide range of signal levels encountered on the amateur radio bands today.



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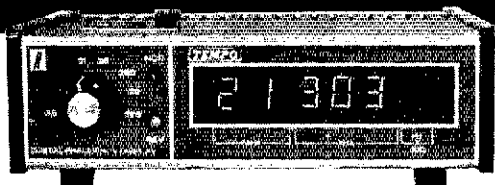
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WB2CTB, Rochester's Mayor declared Dec. 1-7 "Amateur Radio Week" there; K2YAH, RARA pres., and WB2EDT, EC and member of ECAC, appeared on Channel 10. While EDT was on TV, his son (WB2JRX) was busy operating up a storm with NYS, 2RN, EAN, the SS, KC4NI, and the FMT! Tenacity Dept.: WAC for W2QBB after 38 years. And then there's WA2OMN who, after building his own VFO and transmitter for 80 and 40, let the Navy get him; by the time you read this, he'll be in basic training. Sweepstakes news: WA2DRC had 74 (sections) in '74; hope '75 works out correspondingly well. W2FR beat him by a year, tho. Downer-of-the-month: W2ROF's beams (wind storm). Utica's WR2ADA (16/76) moved to the WKTV tower; meanwhile, the latest WR2AFA newsletter treats us to photos of a rather cold-looking site under construction. Other VHF activity reported by WB2VVZ/2, building a 2-meter synthesizer when not working for NCR in Ithaca; WA2HUP, who monitors 6 and 2 daily; and WA2TPR, who heard but didn't work some 6-meter DX. Congratulations to W2DSS, on his 82nd birthday! W2CFP reports that the Tompkins County Radio Club is active IN the air as well as ON the air, and that pretty soon they'll have their own air force. W2RTW talked about antennas and couplers at a recent Elmira ARA meeting. WA2TQF should have his new SB-102 built by the time you read this. How many of you copied the 40 WPM Code Proficiency Run from W1AW Dec. 10? W2FR, K2KTK and K2KIR all copied it "solid" - with three different results. Six EC reports received by W2CFP in Nov.: K3CWD, K2DUR, WA2AIV, W2BYO, WA2HUP and K2DNN. Where's the rest of the reports, gang? Don't forget the Simulated Emergency Test Jan. 25-26. Traffic: W2OE 344, W2FR 321, WA2KCW 187, W2RUF 176, WA2ICB 161, WB2JRX 140, WB2VND 112, WA2HSB 87, W2MTA 77, WA2IPC 70, W2ROF 57, WB2QJX 44, W2FZK 41, W2PUU 33, K2UIR 29, WA2DRC 21, WA2TSR 21, K2OFV 18, K2IMI 13, K2RTO 11, W2RUT 11, W2UYE 10, K2KIR 8, K2KTK 8, W2EAB 5, W2CFP 4, WB2KUN 4, WA2SMM 4, WA2GLA 3, WA2LDA 3, WN2UBW 2, WA2AIV 1.

WESTERN PENNSYLVANIA - SCM, Donald J. Myslewski, K3CHD - PAM: K3ZNP, RMs: W2KAT/3, W3LOS, W3KUN, WPA CW Net meets daily on 3585 kHz at 7:00 PM local time. Pa. Phone Net meets Mon. through Sat. on 3960 kHz at 5:30 PM local time. Keystone Slow Speed Net meets daily on 3709 kHz at 4:30 PM local time. The following appointments have been made in the WPA Section: RM W2KAT/3; SLC W3ZUH; EC: K3ISV and WA3SSU; ORS: WA3RWO and WA3VBM; OVS: WA3TGR; OOs: W3GOJ and WA3RCN. It is with deep regret to announce the Silent Key of W3SPZ. W3AKG had the pleasure of meeting 3D2GK of the Fiji Islands and was able to make contact with his XYL on the islands. The Foothills ARC and Two Rivers ARC had very well attended Christmas parties. WA3UFL reports that Penna. call letter auto license plates are available for \$3.00 instead of \$10.00. A scholarship in electronics technology has been announced by the Penn Technical Institute of Pittsburgh in memory of the late W3SG. The Nittany ARC was awarded a Certificate of Appreciation by the Governor of Penna. for services rendered during Hurricane Agnes. The Mercer Co. ARC meets the 4th Tue. of each month at the clubhouse in the CAP Building, Chadderton Airport, 1110 Christy Rd., Sharon, Pa. at 7:00 PM. I sincerely urge all clubs in the WPA Section to set up Novice code and theory classes in your respective areas. If you need info on how to get an instruction program started, contact me or ARRL for license training aids. Truthfully, there are many potential novices out there just waiting for the opportunity and your guidance to get them started. Let's give them the chance. Check your license expiration date, renew early. I he Pa. Phone Net had 26 sessions, 653 stations check in, and handled 564 messages. The WPA CW Traffic Net had 30 sessions, 356 stations check in, and handled 155 messages. WA3IYA made BPL PSHR credits WA3SWE 44. Traffic: W2KAT/3 437, WA3VBM 114, WA3IYA 113, WA3SWF 89, K3CR 45, W3BJJ 42, K3HCT 29, K3SMB 28, WA3LJP 24, WA3TTS 21, W3KUN 14, W3SAY 12, K3CHD 9, W3ATQ 8, W3BDO 8, K3ZQC 7, WA3JOK 4, WA3JGR 4, K3LVO 2, K3SIN 2.

CENTRAL DIVISION

ILLINOIS - SCM, Edmond A. Metzger, W9PRN - Asst. SCM Harry J. Studer, W9RYU. SEC: W9AES, PAM: WA9LDC. RM W9NXG. Cook County EC: W9HPG.

Net	Freq.	GMT/Day	Ty.
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ILN	3690	0300 Dy	106
Ill Phone	3915	2145 Dy	31
NCPN	3915	1800 MS	108

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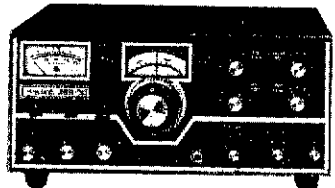
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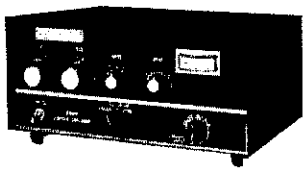
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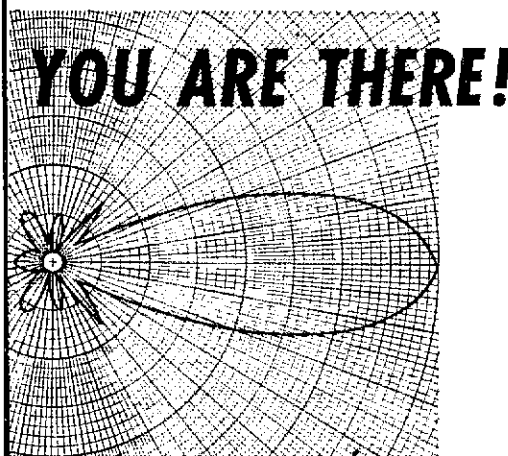
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The newly elected officers of the Northern Ill. DX Assn. are WA9IVL, WA9LZA, WA9QAL and W9WYB for 1973. K9ZFL has passed his Extra Class exam and is waiting for the new certificate license. At the official formation of the Tri-County ARC, WB9IPX and WA9CNN were elected pres. and vice-pres. respectively. Many reports have been received from the Ill. gang reporting very good communications results from Oscar 7. The Rockford Amateur Radio Assn. held their annual Holiday party. WB9HFC, WB9BDP and WB9MJQ were elected the new officers of the Chicago Amateur Radio Club. W9KNT presented a "Discussion of some of the techniques of working DX by Robert Locher" at the last meeting of the Northwest Amateur Radio Club. WB9MUT is now an Advanced licensee. WB9KCC and also K9MFE updated to Advance. Our sympathy to the families and friends of W9ROV, WA9AIL and W9UZE who recently have joined the ranks of Silent Keys. W9RAER is the call of the new repeater in Sterling. The frequency is 146.25-146.85 with open access. New Novice call heard is WN9PSO. WA9PHS passed his General. W9TZL is the call (just received from the FCC) of the Jacksonville Amateur Radio Club station. WB9IWF converted her tech to General Class license. With this column, I am completing my 17th year as your SCM. I have enjoyed them and am looking forward to starting the 18th. To you, the wonderful gang of the Ill. Section, I want to express my thanks for the cooperation I have received and without whose help, I could not have enjoyed those years. Thanks again. Traffic: (Nov.) WB9NOZ 257, W9NXG 231, W9JKV 118, WA9VGV 116, W9OYL 82, W9LNO 78, K9ZTV 68, W9LQN 63, W9IR 57, W9ZAV 52, WA9ULP 48, W9HOT 31, W9AES 30, W9RYU 20, WA9MZS 20, WB9DED 19, WB9KSP 18, WB9IMV 16, W9PRN 16, WB9ELP 14, W9VEY 10, K9MWP 9, K9DDA 7. (Oct.) K9MWP 32.

INDIANA — SCM, Michael P. Hunter, WA9FED — SEC: WA9UMH. PAMs: WA9CAD, W9PMT.

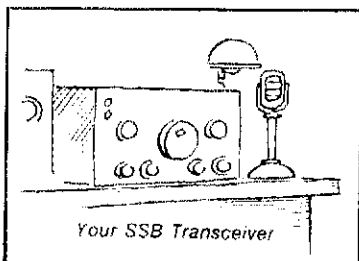
Net	Freq.	GMT/Days	QNT	QTC	Time	Mgr.
ITN	3910	1330,2300 Dy 2130 M-S	3900	554	3022	WA9OAL
QIN	3656	0100,0400 Dy	221	208		WB9OMX
IPON	3910	1300,2130 Su	155	13	210	WB9AEU
EC	3910	2230 1st T				WA9UMH W9PMT

I trust you all had a very Happy Holiday season. With the passing of the New Year, it's a sure thing that warm weather and the hamfest season is not far behind. This should be a highly productive year if all plans go along as well as last year. Congrats to K9SJJ and WA9FUD for getting the cards necessary for DXCC. Congrats to W9LT for a first place single-op finish in the W9 area during the COMFEX contest. Ditto to K9TZH for 20-meter single band honors. W9FC reports that W9KZN and W9NLO have both been in the hospital. We wish them both a very speedy recovery. The activity on the 160-meter contest seemed a bit slow compared with last year although the conditions were generally good. Much good DX is still being had on the low bands during the night hours. Keep the faithful old Sol will rise again. Net activity is about normal for this time of the year. Conditions have not really been cooperating with the late sessions on NTS. Some new faces are emerging on the nets — be sure to make them feel welcome. How about a New Year's resolution to increase our activity for public service and not just our own selfish motives? Traffic: WB9OMX 298, WA9UMH 230, W9FWH 207, WA9QAD 167, W9QIW 106, WB9FOT 87, W9RTH 86, WB9GIR 67, W9UFM 55, W9DKP 44, W9NU 37, K9IQY 37, WA9CYG 29, K9HDP 29, K9RPZ 28, K9CBE 26, W9BUO 25, WA9DKK 25, W9MCJ 22, W9KWB 15, WA9OHX 15, WA9TJS 14, K9FZX 13, W9IGE 13, W9DZC 11, K9RWQ 9, K9DIY 8, WN9PFZ 7, W9HUE 6, W9CNT 5, W9FC 5, K9LZN 5, W9BDP 4, WB8RVV/9 2.

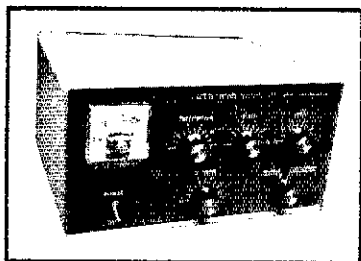
WISCONSIN — SCM, Roy A. Pedersen, K9FHI —

Net	Freq.	Time/Days	QNT	QTC	Mgr.
BWN	3985	1245 M-S	447	306	WA9OAY
BEN	3985	1800 Dy	719	119	WA9LRW
WSBN	3985	2330 Dy	1328	173	K9UIC
WNN	3725	2330 Dy	115	41	WA9ICH
WSSN	3662	0030 M-W-F	50	11	K9KSA
WIN-E	3662	0100 Dy	295	177	W9MFC
WIN-L	3662	0400 Dy	113	54	K9LGI
WRN	3660	0000 Su			K9GSC
WIPON	3925	1801 M-F	570	57	WA9ND

WA9QVT/9 working on solid state VFO for HW-16 and cw nets ORS to WB9NME, K9VSO. WSBN certificates to WB9LIW, WB9HLS. BEN certificate to W9YFW. K9UTQ member of A-1 Op Club. WB9NKC passed General Class exam. I regret to report K9SL a Silent Key. W9RA of Wausau celebrated its 40th anniversary with



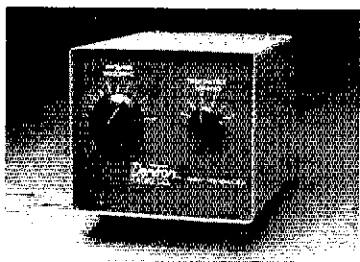
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223.14	223.98	146.16	146.70	52.76	52.64
223.26	224.74	146.19	146.72	52.82	52.68
223.30	224.86	146.22	146.76	52.88	52.72
223.34	224.90	146.25	146.79	52.92	52.79
223.50	224.94	146.28	146.82	52.96	52.80
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		146.52	146.88	53.25	53.08
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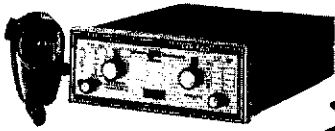


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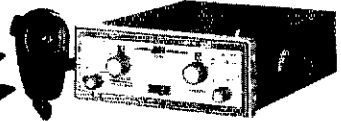
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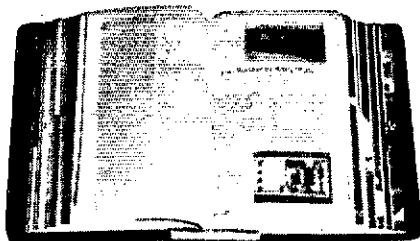
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dinner at Holiday Inn, 87 present, including charter members W9ROM, W9LED, W9FEO, W9FHU. The former Rock River RC of Dodge Co. area has been reorganized, meeting 1st Tue. at Pumpkin Center. WB9MNK and WB9MNL have three-element beam on 20 meters. MNK working on sweep tube linear. MNL using a used HW-101 going for WAS-SSB. All clubs: Please send your new officer list to your SCM. K9CPM made BPL. WB9ICH mgr. for WNN. Explorer Post No. 373 received Memorial call W9CUS. Lots of ham activity at WB9NME's QTH, brother WN9PTX, mother WN9PYY. WA9QVT/9 received 9RN certificate. Traffic: K9CPM 656, W9DND 340, WB9KPX 158, WA9QVT/9 125, K9LGL 88, W9MFG 86, K9FHI 75, WB9NME 69, W9MDU 51, K9UTQ 50, K9VSO 46, WA9LRW 43, WB9ABF 41, WB9IGV 41, K9JPS 36, K9KSA 33, WA9KRF 30, W9KRO 29, W9ESJ 27, WA9OAY 26, W9BKD 24, WA9PKM 23, WB9HLS 19, WB9ISW 16, W9ZBD 16, WB9LSS 15, WB9NMK 11, WN9NRK 11, K9ANV 9, WB9LIW 8, W9WJH 6, WB9NKC 5, WB9IGX 4, WN9PTX 2, WB9HRP 1.

DAKOTA DIVISION

MINNESOTA - SCM, Tod Olson, W0IYP - SEC, WA0DCJ
Chief RM: K0ZXE. Chief OO: WA0PRS. Chief OBS: WB0LOR.

The Minn. Calling Frequency is 3925 kHz

Net	kHz	Time(P)/Days	Sex	QNI	QTC
MSN 1	3685	6:30 Dy	30	222	71 K0ZXX
MSN 2	3685	10:15 Dy	26	104	26 WA0YAH
MSPN N	3945	12:05 Dy	30	874	144 K0FL
MSPN E	3925	5:45 Dy	30	927	121 W0IY
PAW	3925	9A-5 ex-Su	162	3709	105 WA0YV
MWX	3925	6:15 Dy	30	303	305 K0GN

ARRL appointments since Oct. 1. WA0EBE, WB0HOX, K0JTW, WB0JYT, WB0LOR, WB0MHL, K0SXQ, W0DMX OPSs; WB0JGB, W0HW, WB0MNO, WA0PRS OBSs; W0BE, WB0EQA, WB0IWG, K0JTW, WB0LOR, WB0MHL OVSs; K0CYD ORS. If you are interested in qualifying for an appointment see the SCM. The newly elected Dir. of the Minn. HandiHam System are WB0CPC, WA0DCQ, W0GYH, W0GLU. Thanks to retiring Dir. WA0VAS and WA0YVB for their contribution. The WR0ADY repeater group reports 70 subscribers. They now have 3 receivers which link via 420 MHz to the White Bear Lake transmitter. During Nov. the OBS corps read bulletins 100 times to help inform Minn. amateurs. WN0MLB now WB0MLB. Feb. and Mar. are the DX contest months. Try your hand at catching a few new countries; particularly on 40 and 80 meters. K0GKI had an article he wrote about WA0YAH printed in Dec. 73 magazine. K0BAD back in Winona and building a repeater. The Willmar repeater operating on 31/91. The Detroit Lakes repeater operating on 25/85. Traffic: WB0HOX 641, WA0YVT 262, K0CYD 195, W0COMY 145, W0ZHN 122, K0CSI 112, WA0TFC 67, WB0FTL 60, W0IYP 60, K0PIZ 51, WB0CPC 47, K0ZXE 42, K0FLT 40, WA0URW 34, WA0VUP 34, WA0YAH 29, WA0GLI 27, WA0YGE 20, WA0IB 19, W0AA 18, WB0GMK 17, K0WXH 15, WA0CCA 13, WB0MHL 13, WA0RKV 13, WB0LOR 12, K0JTW 10, WB0CYM 9, W0NO 9, WB0LDW 7, K0SXQ 6, WB0GMJ 5.

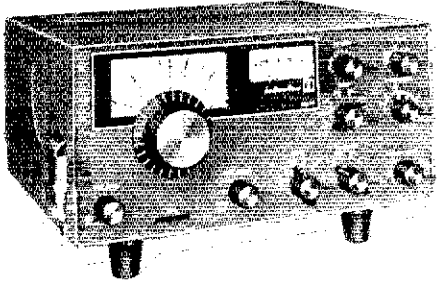
NORTH DAKOTA - SCM, Harold L. Sheets, W0DM - SEC, K0RSA. OBS: K0PVG. OO: W0BF. W0KZT has new Spaulding tower up for DX. WN0NEL, a new Novice in Grand Forks has a HT37 and a 2B on the air. K0RSA is the new SEC. Thanks to WA0AYL for the fine work he did as SEC. WA0VGJ, WA0RWB spent Thanksgiving in NY with WA0RWL. W0DM were marooned for Turkey Day in Rochester. WA0SUF still working on the 40-meter DTRN Net. WB0HHC works with the SD CW net, TEN and CAN nets. WA0MLE resigned as RM. The Forx Radio Club is in the process of reorganization of activities for the coming year. The YL Weather Net will meet on Sun. mornings at 0830 CST. WB0FUC has a code class going at his home as does W0DM. WA0MLE again made the PSHR for Nov. K0PYZJ checks in on 75m to the WX net from Chicago.

Net	kHz	CST/Days	Sex	QNI	QTC	Mgr.
RACES	3996.5	1730 S-S	50	766	80	WB0AT
		1830				WA0SU
YL WX	3995.0	0730 M-F	21	420	415	WA0RWB
		0830 S				

Traffic: WA0RWB 454, WB0HHC 149, WA0SUF 114, WA0MLL 107, WB0WL 36, W0DM 32, WB0FUC 22, WB0BMG 15, W0MX 11, W0HSC 8.

SOUTH DAKOTA - SCM, Ed Gray, WA0CPX - WA0VXN has been discharged from the Airforce at Ellsworth and has returned home to Mass. Dale has devoted countless hours to the growth of two meter FM in Western S.D.; particularly in the area of repeater

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.



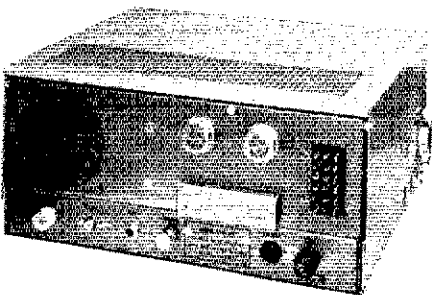
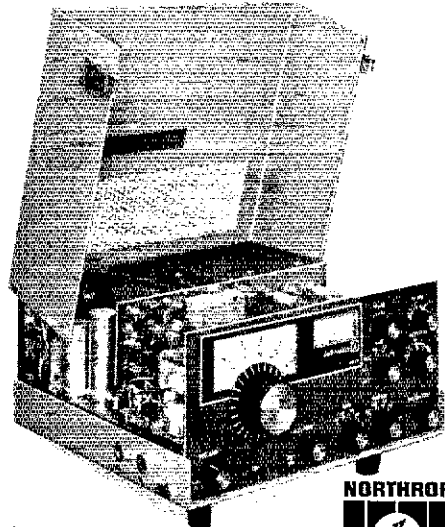
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design and linking systems. He also built the only Autopatch in S.D. A hearty thank you to Dale for his contribution to repeaters in S.D. and we wish him luck in Mass. WAØLP reports working several stations via Oscar 7 on the 432 to 2-meter repeater. He is using about 40 watts out to a J Beam. Please mark June 14 and 15 on your calendar for the S.D. Ham Picnic at Mitchell. Net reports: NJO - QNI 778 and QTC 41; Late Evening - QNI 1385 and QTC 31. Traffic: WØZWL 438, WØØHOJ 149, WØBJV 110, WØØUEN 104, WØKKR 72, WØVRE 48, WØØVQ 8, WØØLJM 6.

DELTA DIVISION

ARKANSAS - SCM, Sid Pokorny, W5UAU - SEC: W5RXU. PAMs: W5FDP, W5POH. RM: W5EIJ.

Net	kHz	Time/Day	QNI	QTC	Mgr.
ARN	3995	0030 Dy			W5FDP
QZK	3765	0100 Dy	198	43	W5MYZ
ANN	3715	0000 Dy	30	10	W5SIF
APN	3937	1200 M-S	741	22	W5POH
M-BIRD	3925	2230 M-F	480	12	
ATN	3995	2330 Dy			W5SDRY

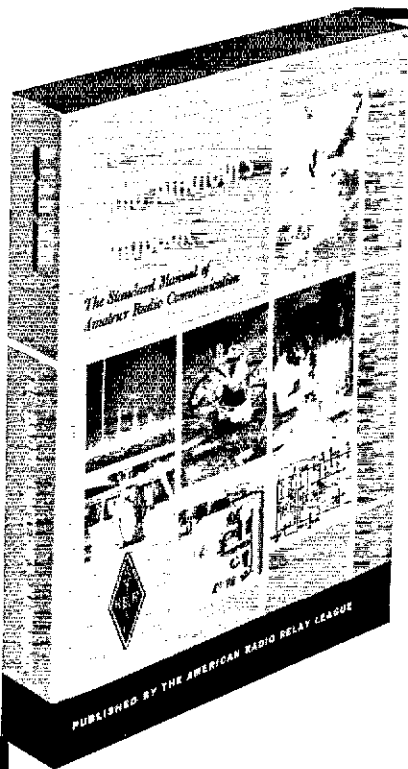
New EC, W5SHY. New PAM, W5POH. Renewed EC, W5STLS; PAM, W5FDP; OPS, W5PBZ, W5VDH; ORS, W5HNN, W5KL, W5RIT, W5RIG. Welcome and congratulation to new Ark. amateurs W5SMYI, W5SM7M, W5SMZN, W5SNAV, W5SNBC and W5SNBU. OZARC of Mountain Home area received repeater license. W5SAGS and will be on 22/82. The film "This Is Ham Radio" will be shown in Hope, Ark. Mar. 4; for more info contact Arvis McKamie, Shover St., Box 688, Hope, Ark. PSHR: W5SIF 55, W5MYZ 49. Had about a two hour session with Delta Div. Dir., W4WHN at Nashville, Nov. 14. Your station reports and any news should be mailed or reported by the 4th of month. Club secy, send list of officers please. Traffic: W5MYZ 94, W5SIF 40, W5TXA 14, W5UAU 12, W5EIJ 9, K5OKQ 7, W5KL 6.

LOUISIANA - SCM, Robert P. Schmidt, W5GHP - Asst. SCM: John Souvestre, W5NYY. SEC: W5TRI, RM: W5ZZA. PAM: W5FKU. VHF PAM: W5KND. New appointments: W5CAU, EC Grant Parish; W5DVS EC Owachita Parish; W5JAH EC Bossier Parish; W5SAD EC Rapides Parish; W5SJO EC Vernon Parish. W5YIH now Area EC, Central La. W5FEZJ and W5MMD ORS; W5SLBR OPS. Congratulations to W5SAD and W5KFA on receiving their LSN Net certificates. At the Dec. meeting of the Southwest Louisiana ARC. Certificates of Merit were presented to W5SKW, outgoing pres., and to the members of this club. W5SKW for his outstanding SET reports, which had the highest score nationally for the past 5 years. New officers of the Southwest La ARC are W5FEPE, pres.; W5NRZ, vice-pres.; W5LVY, treas.; W5KQJ, secy. W5SLBR passed Advanced Class exam. OO KJCTJ/5 of Barksdale, La. transferred to New Mex. The Central Louisiana ARC station W5MSS now has 2-meter equipment. K5RNM doing excellent job as NCS on LTN. W5HXD now active on LTN. LRN the RTTY net moved to Wed. night at 7:00 PM CST effective Jan. 1. Activity on LTN still increasing, average check-in now above 12 per session. LSN, Slow Speed net doing good on their new 5 day a week schedule.

Net	kHz	Time(CST)/Days	QTC	QNI	Mgr.
LAN	3615	7:00&10:00 Dy	178	320	W5ZZA
LTN	3910	6:45 PM Dy	109	392	W5FKU
LSN	3703	8:30 PM M-F	35	95	W5IOU
LRN	3587.5	7:00 PM W	8	19	W5GHP

Traffic: (Nov.) W5ZZA 309, W5GHP 210, W5IOU 186, W5MI 92, W5TQA 78, W5SLBR 47, K5RNM 32, W5YIH 30, W5PRI 28, W5SJO 26, W5FEZJ 22, W5EKKU 20, W5OVN 20, W5SAD/5 13, W5AGM/5 10, W5JAH 1. (Oct.) W5TQA 52.

MISSISSIPPI - SCM, W.L. Appleby, W5DCY - Asst. SCM: C.F. Gibbs, W5LL. SEC: W5FXA. Welcome to new amateurs W5NAY, W5NAB, W5NBN and W5NAS. New IARC pres. K5JLP. W5YBS, W5SRT, K4INY/5, W5NAB all heard VHF-FM. W5NAS now Advance and W5SJE now General. Miss. amateurs received a Letter of Commendation from MIDCARS for Hurricane Curmen Operations. New appointment: W5SHYR ORS/OPS. Welcome to W4KWO/5 and W4KWJ/5 at Hattiesburg and W2DCH/5 at KAEB. W5EIN indicates will be active again soon. Other active stations heard W5FDP, K5CXB, W5EJX, W5AYC/5, W4UZL/5, and K4RNY/5. K8YUW/5 now USN-Ret. W5RUB appointment continues on the CAC. Join us if you can on the MSBN nightley, 3987.5 at 0015Z, MTN nightley 0045Z 3665 MHz, Miss Slo Net MWF 00007 3733 MHz. PSHR: W5SJBW and W5SIUS. Contributions for this column are solicited. Traffic: (Nov.)



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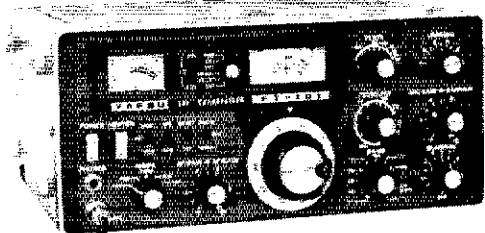
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TENNESSEE - SCM, O.D. Keaton, WA4GLS - SEC: WB4DYJ. PAMs: WB4PRF, K4LSP; RM: WB4NIR.

Net	Freq.	Time(Z)/Days	Sess.	QNI	QTC	Mgr.
TPN	3980	1140 M-F	81	4030	159	WA4EWW W4PFP WB4YPO
		1245 M-F				
		0030 T-Su				
		1400 SSuH				
TCN	3980	0030 M	4	89	3	WA4ZBC
TECN	3980	1300 Su				
TN	3635	0100 Dy	29	263	130	WB4DJU
TNN	3707.5	0100 Dy	29	172	49	WA4GAM
LTVHFH	50.4	0100 TFS	13	183	0	WA4YKN
ETVHFH	145.2	0100 WF	10	42	0	WB4DZG
ELTMN	28.7	0100 WF	11	108	3	WB4NFI
MPTMN	28.8	0200 TF	9	65	0	W4EAY
ACARECN145.28	0100 F		4	95	0	WR4Z5Z
	145.88					
KUARECN145.52	2230 F		3	27	0	WA4ZBC

K4LSP has been appointed PAM of the repeater operations and would like all repeater owners to contact him with any and all information which will enable him to recommend frequency allocations to prevent interference and other matters relating to good repeater activity in this section. Send information to: John Edward Palmer, K4LSP, 4024 Homestead Dr., Kingsport, TN 37663. K4AMC and K4YFC have been appointed as ORSs. Due to conditions beyond my control traffic will not be listed this issue but will be totaled and reported in the next issue.

GREAT LAKES DIVISION

KENTUCKY - SCM, Ted Huddle, W4CID - SEC: WA4GHQ. New appointments: WB4ZML and WA4IGS as ORSs. BPL: WB4ZMK.

Net	QNI	QTC	Net	QNI	QTC
KRN	285	20	KYN	418	327
MKPN	946	60	KNTN	201	97
KTN	1467	207	WKETN	50	13

Traffic is beginning to show improvement with the Holiday count. Christmas and the SET should have provided us with some good months. K4DLA is the new pres. of MIDCARS, WB4SU reports DXCC at 276. WB4FOT is the Blue Grass ARC's new Publicity Officer. Speaking of publicity, K4AVX and WB4EOR have been showing "Ham's Wide World" to school students recently. WN4HXH was recently cited in the Somerset newspaper for his assistance in the Honduras Hurricane. Carl traveled to Honduras to assist! The Somerset Repeater WR4AKI now on as 28/88. The Lake Cumberland ARC Novice class recently had 10 graduates. K4UNW has resigned as KYN Mgr. after several years of capable leadership. OM RM W4BAZ himself will again be taking the helm! License plates are again in trouble! The KY court of appeals overturned our original favorable decision so we must go back to court on the original question of constitutionality. Monitor the nets for details. Traffic: WB4ECB 241, W4BAZ 165, WA4IGS 142, WB4ZMK 135, W4CID 89, WB4ZML 80, WB4WND 67, WA4GHQ 61, K4UNW 61, WB4AUN 50, WB4EOR 40, WA4VZZ 37, K4TXJ 34, WB4WCM 32, WB4FAT 27, WA4FAF 24, WB4REN 22, W4CDA 18, WA4ENH 13, K4AVX 7, W4VOA 1.

MICHIGAN - SCM, Ivory J. Olinghouse, W8ZBT - Asst. SCM. A.L. Baker, W8TZZ. SEC: W8MPD, RM: W8JYA, W8WVY. W8RNT, W8GLC, K8KMQ, W88MI, W88NI. PAMs: K8GBC, K8LNE, W88BYB. VHF PAMs: K8AEM, W8WVY.

Net	Freq.	Time/Days	QNI	Tfc.	Sess.	Mgr.
QMN	3663	0000 Dy	1097	383	90	W8JYA
W8BN	3935	0000 Dy	767	95	30	K8GBC
MACS	3953	1600 Dy	894	281	30	K8LNE
BR/MEN	3930	2230 Dy	389	94	30	W88BYB
UPFN	3972	2230 Dy	508	39	31	W8RIEH
GLETN	3932	0230 Dy	461	44	28	W8SOBB
M1.6M.	50.7	0000 MS	185	33	24	W8SVXE
MNN	3720	2230 Dy	333	87	30	W88JAL

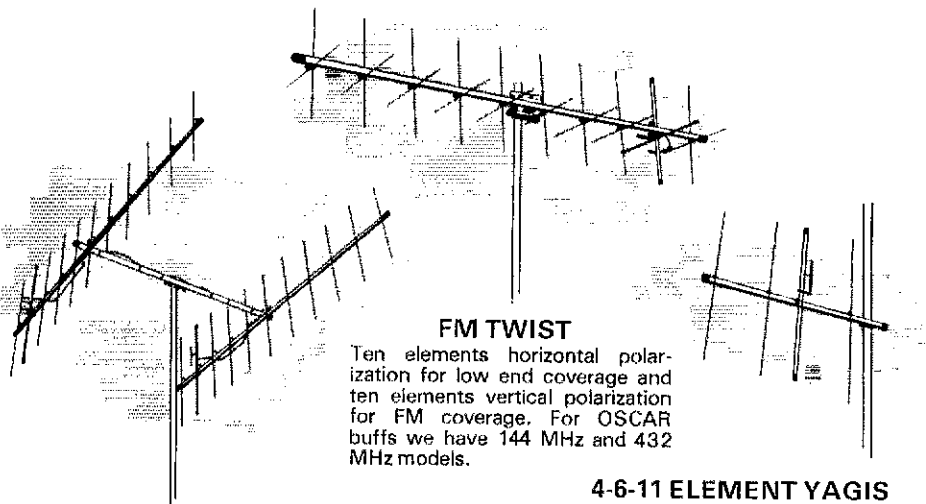
SW Mich. 2M nets 110 QNI and 8 sessions as reported by W8CVC and W8WVY. Silent Keys reported are W8AA, W8CDD, W8GKT and W8UGD. W8CW will soon join the 2-meter fm gang. The Ann Arbor repeater is being used to pass traffic, W88NYQ is waiting for Advanced Class ticket and W88OJO has passed Extra. W88NL performed liaison between QMN and GLET net during snow watch.

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4-6-11 ELEMENT YAGIS

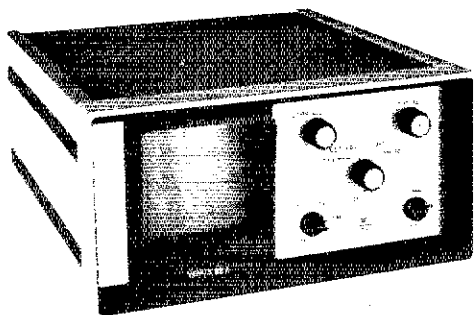
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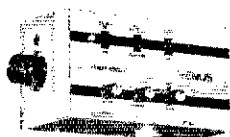
This is a real kit! - not just a collection of assorted electronic parts with a schematic. The Venus SS2Kit is designed to be built by Hams. The finished unit is identical to the SS2 Monitor available prewired, and includes all the famous Venus features such as: ACCUSYNC™ automatic horizontal synchroization. Independent picture controls. Rugged construction. Bezel to accept Polaroid Land Camera adapter.

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SS2 Monitor Wired	349.00
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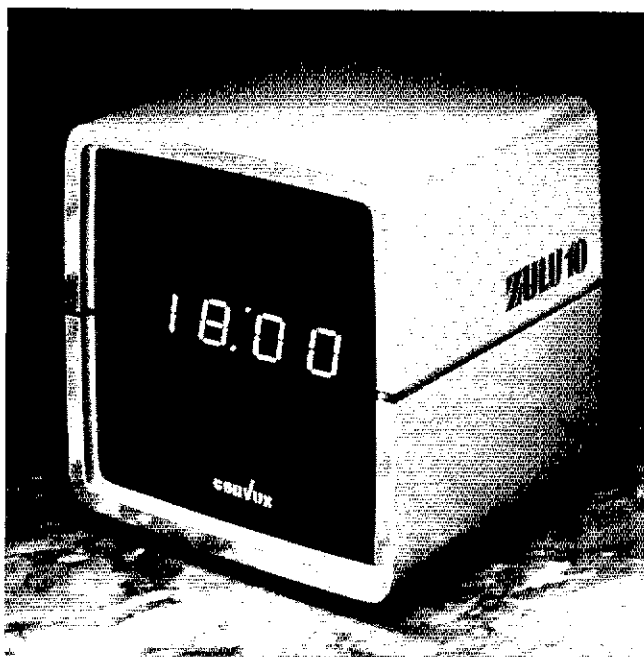
Dec. 2, handled priority traffic. Many Mich. amateurs provided road information during the snow storms by checking into MIDCARS. W8GI's KYL, new W8BICH, Cherryland ARC was active at NWM College Tech. Center during SSA Jamboree-on-The-Air. K8YZW, K8CWR, WA8BLB, W8JUY, W8FVO, W8OKP, W8GL, K8YVO all assisted. The Big Rapids Area ARC elected officers for 1975: K8YHJ, pres.; W8RUV, vice-pres.; Bruce Werner, secy.; John Yax, treas. W8AZI has been real busy, in charge of club meeting programs and in charge of planning for the BR/MEN picnic for next July. W8RTGU has a new auto keyer on the air, W8BTCC working some good DX in the South Pacific on 15 meters. W8UOQ has new 6R-212 and a four-element beam up 30-ft. GCRG furnished communications for the 1974 Horse-a-Thon with WA8HQW, W8RIF K, W8COJ, W8BHJ, W8RWQ, WA8OJ, W8ROGM, W8RTN, W8KCNW and W8THK all taking part. K8AMU again made perfect QNI on the QMN late net. W8CAM began his 19th season of on-the-air code practice on Dec. 2. GRARA elected the following officers for 1975: W8BJCG, pres.; W8BDJS, vice-pres. Bernice Scott, secy.; K8EFK, treas. Traffic: (Nov.) W8SITT 434, K8KMO 257, K8DYI 180, W8RIAD 132, W8BNH 128, W8ZBT 128, WA8WZF 127, WA8RXI 123, K8LNE 108, W8MO 95, W8OW 86, W8BNC 82, W8TZZ 76, W8RMI 72, W8BEG 66, K8WRJ 58, W8RTN 56, W88DKO 48, K8CWO 41, K8JED 37, W8GLC 35, W8BEZ 34, K8GBC 32, K8ZJU 31, W8NOH 29, W8BYB 26, W8BOBR 26, W8NRXS 25, W8BDIS 21, W88NYQ 21, W8IUC 19, W8FU 18, W8BJX 18, K8CIP 17, K8HGA 17, K8FNU 16, W8EOW 16, W8RKA 16, W8UOQ 16, W8UFS 13, WA8CXI 11, W8NSON 11, W8RFE 10, W8TBP 10, WA8CW 9, W8EYM 9, W8FLZ 9, WA8UO 9, W8OBF 8, W8RSWL 8, W8VIZ 8, WA8ENW 7, K8GXV 7, WA8MDK 7, K8PYN 7, K8CKD 6, W8DCN 6, K8LJS 6, W8PFB 6, W8RNO 6, WA8WV 6, W8RKL 5, WA8KHB 5, W8RKB 4, W8QOM 4, W8BANR 3, W8WNX 3, W8YIQ 3, K8AJY 2, W8GVS 2, K8OCP 2, W8PVB 2, K8WLE 2, W8WVL 2, W8JUP 1, W8BKK 1. (Oct.) K8KMQ 185, W8BHB 23, W8ACW 10, W8NRKF 4.

OHIO - SCM, Hank Greeb, W8CHT - Asst. SCM: William K. Shaeffer, W8MCR. SEC: WA8COA, PAMS: W8MOK, WA8VWH. KMS: WA8WAK, W8BKKI.

Net	Secs.	QNI	QTC	Freq.	Time	Mgr.
OSN	30	195	64	3577	2:10	W8BKK
BNR	30	124	166	3605	2:30	K8NCC
OSSBN	81	2431	641	3972.5	2:45/1:50/ 2:00	W8MOD

O6MN 30 400 72 50160 0:200 WA8VWH

Reminder - Mansfield ARC Auction, Feb. 7, 1975, at the Mansfield Army? 7:00 P.M. to? OH-KY-IN VHF Society adopted a program to demonstrate Oscar 6 and 7 to High Schools around the Cincinnati area. They also set up a working station through Oscar 7 at a local shopping mall, and handled traffic through the Satellite. W8RTGU is new Novice in Minster. New officers Buckeye Rag Chewers RG W8B8MI, pres., WA8PCG, vice-pres.; WA8VBK, treas.; WA8ZMU, secy. WA8COA and KRRTI are new Advanced licensees. New officers of Shrine Radio Unit (Cleveland) are W8MXX, pres.; WA8TVE, vice-pres.; K8OIBX, secy. W8MBC is new Hamilton County RAC'S RO. The Sun. Evening 2 Time Net (SFT) meets on 145.35 MHz at 2100 EST Sun., and welcomes check-ins from Northeastern Ohio and vicinity, ssb or am. Apricot Net members provided communications for Cleveland parades on Nov. 11 and 28. K8ONA has been getting publicity releases on ham radio via commercial TV and Radio during the Cleveland newspaper strike. W8UDG and K8ONA were featured on a 30 minute program on WELW radio. W8IGD and WA8FSX returned from a 500 mile mobile trip to the Grand Canyon and west. They talked to W8NLIH, a new ham (W8IGD's octogenarian father), among many others. W8RNDJ is using a homebrew gutter clip mobile antenna on 2-meter fm. W8LI is testing a Kytton to support a 5/8 wave on 16 meters! W8DYF joined the OTC, a very young old timer! W8LI reports working 48 states on 80 meters with a 1-watt homebrew rig. W8IBX made BPL. To keep up to date in ham radio happenings who not encourage one or more members of your club to copy ARR Official Bulletins from WIAW and retransmit them on your local repeater? Two Cincinnati area groups are doing this with good results. Please keep those reports coming in; the more the merrier! YOUR activities, YOUR traffic count, YOUR experimentation is as worthwhile as anyone's. Traffic: WA8HGH 340, W8MCR 254, W8IBX 234, W8PIT 176, W8RNI 166, W8RKKI 166, W8MOK 124, W8MGA 112, W8BOZA 110, W8GVX 84, W8DIL 82, WA8SD 66, WA8VWH 54, W8JD 52, W8CUT 48, WA8YIB 45, W8GOL 38, K8BYB 36, W8TYF 36, W8DCX 33, WA8FTX 32, W8BHL 30, WA8CQ 30, W8RIGW 30, W8OLE 29, W8R0M0 29, W8TIT 27, W8IGD 27, WA8VBZ 27, W8MI 26, K8VMI 26, W8OKZ 25, W8DPV 23, WA9MWF/8 23, W8RGG 22, W8CXM 21, W8BKKI



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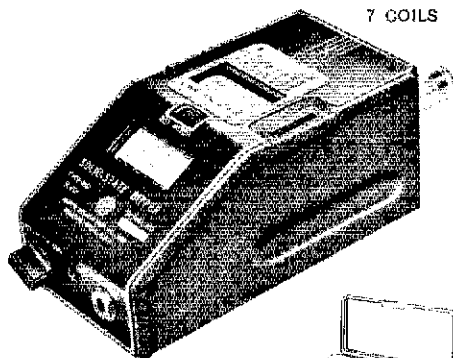
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21, WA8MAZ 21, WA8SSI 21, W8WLG 20, WB8CJU 16, WB8JXS 16, WA8MH0 15, W8HLC 14, K8KWO 13, W8NAL 13, W8RNOT 13, K8KWO 13, W8ARW 12, K8JPE 12, W8BIBZ 11, K8OYR 11, W8BRKA 10, W8UQU 10, W8FLU 9, W8FH 9, W8LT 8, K8RML0 8, W8OUU 8, K8CKY 7, W8BDWL 6, W8WUG 6, W8B8MGW 6, K8DMZ 5, K8GRO 5, W8BCLF 4, W8DYF 4, W8BJXM 4, W8RFSX 3, W8RQXN 3, W8RROQ 1.

HUDSON DIVISION

EASTERN NEW YORK - SCM, Graham G. Berry, K2SJM - Asst. SCM/PAM: Kenneth Kroth, WB2VJB, SEC: W2KGC, RMs: WA2PJL, WB2IXW, WA2EBI, K2DM for RTTY only, Nets: NYS 3.675 MHz daily 0001 and 0300Z; ESS 3.590 MHz daily 2200Z; Novice and Training Net 3.728 MHz Mon-Fri, 2200Z, RTTY 3.613 MHz daily 2300Z; NYSPT&EN 3.925 MHz daily 2300Z; Hudson Div. P/R Net 2nd and 4th Sun, 3.925 MHz 2200Z, Out-of-area QRM still apt to cause minor frequency variations on all nets at all times. Schenectady ARA welcomed new members WN2UMH, WA2DGE, WN2WRR and heard K1ZDN from League Hq on his recent European Trip. Albany ARA's Annual Auction held in Nov. Harmonic Hills RL reports much activity with QRP operations by members. Communications Club of New Rochelle heard K2DEM on "The Amateur and the Law", welcomed new members W2HXX and WA2IPR, heard Division Dir. Candidates K2SJO and W2GKZ. Overlook Mt. Club held on-air meeting in Nov. on 28.650, all modes - idea for other clubs here? K2BQO hit KC4, Navassa using 5 watts; WAIOFP now 44 countries thanks to 12 new QRP contacts, WA2EAB made 6Y5BF on 160 meters, WB2ABJ now has HW-202 for CD operations, W2ECV still running 1/4 watt on 2 meters ERP, WB2TGL reports growing activity on Novice CW net; he's Net Control for Mon. sessions, W2OOJ and WA2EAB did 1 1/2 hour session on Amateur Radio over famed WGY on Nov. 29th complete with phone-in Q and A session, WB2CFE active on 6 am with new rig, WA2VEG sporting 300 pin from DXCC, W2IB picked off W4IB for new call down South, W2OC new Westchester Co. Communications Chief for RACES, Police, Hospital, etc. in New Rochelle, annual Thanksgiving Day Parade had W2DPV in charge of coordination communications, W2IB, W2YLE, WA2FUG, K2IQB and WB2IXW all on fm working crew, Contact W2AZO for details on Northeast Contest Net run by Wireless Institute of Northeast. New calls at Malle Hill HS from last summer's workshop include WB2WYN as General, WN2s WXY and WXT - instructors were WA2UON and WB2CGN. Belated congratulations to K2SJO on reelection as Dir. for another term. Too many late reports coming in - please speed up your reports! Traffic: (Nov.) WB2RKF 339, WB2TGL 54, WB2VVS 34, K2SJM 27, WB2RUZ 14, WA2BRV 13, WB2ELA 4, (Oct.) WA2BRV 18.

NEW YORK CITY-LONG ISLAND - SCM, John H. Smale, WB2CHY - Asst. SCM: Art Malatzky, WB2WFJ, SEC: K2HFX, RM: WB2LZN. PAM: WB2EDW, VHF PAM: WB2RQE.

NLI*	3630 kHz	1900/2200 Dy	WB2LZN Mgr.
NLI Phone*	3928 kHz	1730 Dy	WB2PYM Mgr.
NLS*	3730 kHz	1830 Dy	WB2FDW Mgr.
Clear House	3925 kHz	1100 Dy	WA2DDD Mgr.
All SVC	3925 kHz	1300 Su	W2OF Mgr.
MIC FARAD	3925 kHz	1300 MTWThFS	W2OE Mgr.
ESS	3590 kHz	1800 Dy	K2UIR Mgr.
NYSTPFN	3925 kHz	1800 Dy	WA2RSP Mgr.
MRA	40700 MHz fm	2100 FTth	WB2WEJ Mgr.

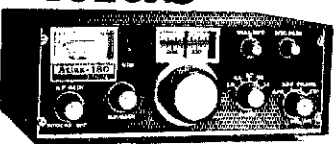
*Denotes section net: all times are local. I hope everyone survived the SET, and that everyone managed to brush up in case the real thing should happen. The following members of "Order of Boiled Owls" operated from Madera in the Q/CW Contest: W2AO, W2AX, W2AY, W2GC, W2IRV, K2JP, WB2CKS, W2GGE; the group operated under call CT3WA. WN2WKH now WA2WKH with an Advanced. Sorry to lose WA2FEI. He just got settled here and now he had to move to L.A., good luck in the new QTH. WB2LZN and W2OCZ have a Model 19 for club station. W2PF was in San Diego for the 1st part of Dec, visiting with old friends. W2GLE now has Extra and is looking for more stations to check into the Huntington AREC nets. WA2JZX also says that new faces are welcome in the Babylon AREC Net. If your club needs a speaker and you want to find out more about ARRL, your SCM is available as a speaker, please contact me for scheduling. WA2HWJ reports the Suffolk County Club repeater call is WR2AGG. Please contact him for further info. Congratulations to following Hall of Science ARC members who have upgraded: WB2NOS, WA2SYI, WB2VLI all to General. The club also made a trip to ARRL the latter part of Nov. WN2STR now a Sgt. with the NYPD. Congratulations. A meeting was held at the QTH of WB2CHY, with most of the net members in attendance. WB2JID and ARC of Stuyvesant High handled holiday



NEWS BULLETIN

NO FIBBIN'—

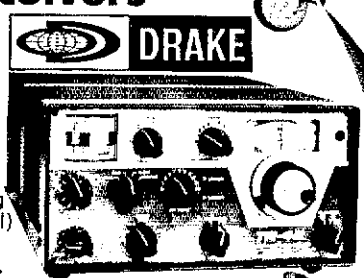
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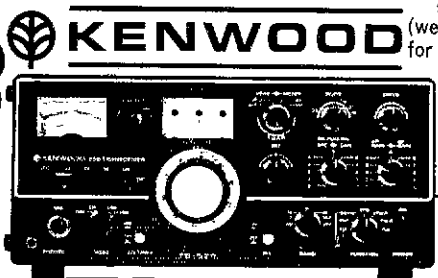
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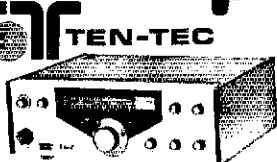
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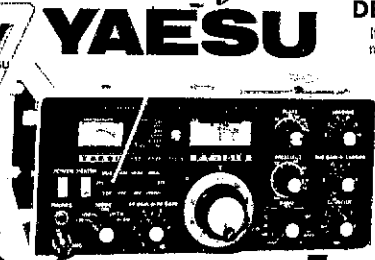
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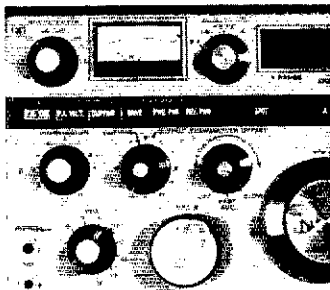
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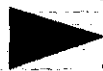
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for students and staff at that school, and they also put up an 80-meter dipole for the club station. WA2SLX has a new squeeze keyer for the cw nets, and speaking of nets, check-ins are needed from all parts of the section. If you can spare one night a week, that would help. New hams in the Eastern part of the Island are WN2WYL and WYK. WN2VNO needs 7 more states for WAS. Rocky Point HS ARC will soon be operational with gear donated from WA2IUT, Nassau Co. ARC now with call of WB2WWP and Swan 700 CX and WB100 and antenna for all hands. Traffic: WB2EDW 321, W2EC 289, WB2LZN 260, W2MLC 95, WA2KVH 76, WA2WKH 54, WN2PQ 53, WB2JJD 29, WA2VEN 21, W2EW 15, WA2JZX 10, W2PI 8, K2FV 3, WA2MAV 4, WA2TFI 4, WB2FKF 3, K2FJE 2, K2VGD 2.

NORTHERN NEW JERSEY - SCM, William S. Keller, III, WB2RKK

Net	Freq.	Time(EM)	Days	Secs.	QNT	QTC	Mer
NJN	3695	7:00	Dy	30	432	128	WA2DSA
NJN	3695	10:00	Dy	30	231	81	WA2DSA
NJSN	3740	8:15	Dy	30	186	63	WA2DHW
NJPN	3950	6:00	Dy	38	465	238	WA2DVE
NJPN	3930	6:00	Su	4	45	8	WB2TFI
NJPN/VHF	146.52	10:00	SuTh	7	74	37	WA2EPI
PVTEN	145.71	8:00	Dy	30	140	4	WA2OPV
PVTEN*				31	155	8	WA2OPV

*Oct. report. SEC: WB2PBO, PAMS: K2KDO, WA2SHT, RM: WA2DIW, WA2DSA, W2ZEP, OO reports received from WA2DNY, K2FK, WB211H, W2TPJ and WB2YGG. W2IHA presented a slide talk by VR6IC at the annual NBDXA dinner on Dec. 6. W2IHM gave an excellent talk on short vertical antennas at the New Providence ARC. Arctic traveler W2ZD spoke on his recent polar travels. Garden State ARA, W2GSA elected W2OND, pres. WA2DJD, vice-pres.; John Hampton, secy.; WA1PCY/2, treas. K2CTJ, chief engr. Meetings are held each 1st and 3rd Tue. of the month at the Shrewsbury Red Cross Building. In County Radio Assn. has nearly completed their repeater which will also have a time slot devoted to ARA. Parsippany-Hills High School ARC WA2WHG is building an SB104. Rutgers ARC, WA2NPP now on 160 meters. The Metuchen YMCA ARC, K2YNT, now has a four-element tribander on a 30-ft. tower. W2CVW has been continuously active in amateur radio for 25 years. He recently visited K4EZH (ex-W2DRV), and is presently experimenting with indoor transmitting loop antennas. WA2SLF has a 114, WB2PBC using an SB200, and WA2RKY has an HXL-1 linear. NNJ welcome W2WTH, a new Novice in Paterson. Congrats to WA2SLF on finishing his WAS, and to WB2HSG who recently worked Calif. and HA-Land using a heater pipe for an antenna. NNJ happy to hear from ex-trafficker WA2TAF who has completed his BA in education and now working at Ft. Gordon, Ga. K2YFF reports activity on KARC, PVTEN, and as a NCS in Air Force MARS. Congrats to K2BZU on attaining the amateur Extra! W2NTUS reports the formation of the NNJ Roundtable Net Tue. 8 PM on 21.15 cw. All are welcome to join. We all wish a speedy recovery to W2LTI. W2CU presented a paper on a broadband 80-meter antenna to the Md. A.M. Radio Club. W2UJD active in Navy MARS. WA2OVV now a member of Army MARS. K2BHL visited VG-Land during Oct. K2EK again reports participation in the recent FMT. WA2FZW and W2NR conducting code practice at 10 PM local time on 145.5 all nights except Mon. WA2GEZ reports excellent conditions to the west coast on 6 meters on Nov. 6, he also worked his first Va. and Maine stations on that band. K2YFF recently worked SD and Okla. on 6 meters. WB2MCZ active on 439 MHz ATV. WA2FZW received the license for repeater WR2A1H/2 which operates on 448.05/443.05 in Clark. Much activity from NNJ during the recent SS and CGWW DX contests. Traffic: (Nov.) WA2DSA 449, K2BHL 172, WA2EPI 155, WA2PCF 153, WA2OVE 145, WB2RKK 122, WA2BSU 117, WA2DVE 111, WA2SLF 72, WB2E1F 68, WB2GA 61, WA2KFE 58, WA2DIW 50, WB2HSG 36, W2CU 33, W2BLM 26, WB2RJ 22, WB2RKK 22, K2ZFI 22, WB2QVA 21, WA2NPN 19, WB2VET 17, W2SHM 15, WB2AEH 14, WB2FIT 12, WA2RYV 11, WA2OCF 9, WB2GPU 9, WA2SRQ 9, WA2OJU 7, WA2CAK 6, WB2NOM 6, WA2UOO 6, W2CVW 5, WA2RGV 5, W2WJ 4. (Oct.) WN2UJD/2 160, W2NKD 48, WB2HSG 31, WN2QHN 30, WB2RJK 18, WA2CAK 7, WB2GPU 7, WA2OJU 5.

MIDWEST DIVISION

IOWA - SCM, Max R. Otto, W0LFF K0SVW, W0QNC, K0LUM, K0QBU and WA0IFV moved K0DDA from Cedar Rapids to Iowa City in spite of an 8 inch snow storm. WR0AFJ on a 19/79 at Burlington. K0FLY new EC for Linn Co., also new Ass. Dir. for the Division. W0GET can be heard in his office with a ru

Clegg

THE 2-METER LINE



HT-146

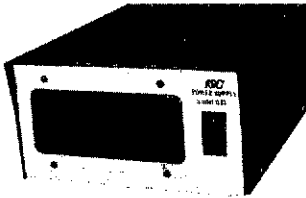
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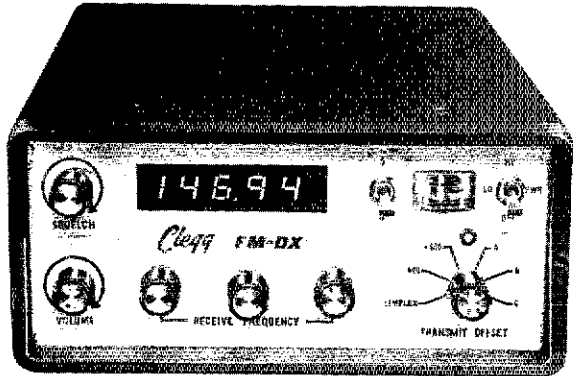
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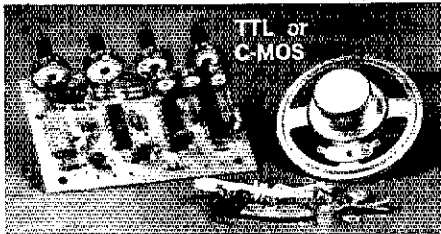


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			40	20	40	20	\$10.50	\$15.50
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		DOUBLE	48	2	2	2	\$20.50	\$26.50
28 to 30	OSCAR SPECIAL	SINGLE	25	2	2	2	\$12.50	\$18.50
		DOUBLE	48	2	2	2	\$24.50	\$30.50
50 to 54	5 METER	SINGLE	25	2	2	2	\$10.50	\$15.50
		DOUBLE	48	2	2	2	\$20.50	\$26.50
108 to 144	VHF AIRCRAFT	SINGLE	20	2.5	2.5	2.5	\$ 9.50	\$12.50
		DOUBLE	40	2.5	2.5	2.5	\$18.50	\$24.50
135 to 139	SATELLITE	SINGLE	20	2.5	2.5	2.5	\$ 9.50	\$12.50
		DOUBLE	40	2.5	2.5	2.5	\$18.50	\$24.50
144 to 148	2 METER	SINGLE	20	2.5	2.5	2.5	\$ 9.50	\$12.50
		DOUBLE	40	2.5	2.5	2.5	\$18.50	\$24.50
146 to 174	HIGH BAND	SINGLE	20	2.5	2.5	2.5	\$ 9.50	\$12.50
		DOUBLE	40	2.5	2.5	2.5	\$18.50	\$24.50
220 to 225	1 1/2 METER	SINGLE	18	2.5	2.5	2.5	\$ 9.50	\$12.50
		DOUBLE	35	2.5	2.5	2.5	\$18.50	\$24.50
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1 thru 30	HF BROADBAND		19-26	3			\$17.95	

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HRT-2. WBØHOX reports 84% for Iowa on DTRN in 1973. WAØAUX responsible for most of this. WØMIE representing a national electronic co. Iowa Repeater Council restructured. WBØCGI, pres.; WØFTM, veep; WØLNC, secy.-treas. This will take some of the workload off KØLKH who with KØVOM, WØLIJ form the Frequency Coordination Committee. WBØIBK, WØFTM make up the Filing & Resolutions Committee. WRØAGZ at Sioux City will be 3/7/77. The witch hunters in Linn County didn't give the gobins a chance. WØs YEY, GGO, HUP; KØs PSC, YLU, VOM, OKZ, FLY; WAØs VUY, VDX, TFV, GCX, ZZG, YRX, ZPG, XWI; WBØs FNI, IUQ, MMT, KFB, IZW all provided mobiles. Riding shotgun WBØQC, WØPKH, WØOCB, KØQVF and WAØYZN. Control WØGQ operated by WØTUL, WØWCY, WØGDU, WØBVO, WBØBPH came in 2nd and 3rd at a tavern selling penny beer. The sheriff was 1st and closed it down. Many Iowa hams have provided road information by checking into MIDCARS on 7258 during snowstorms. WRØAEH at Cedar Rapids now transistorized and voice activated. WAØYJW lost his dipole and beam but watch his smoke in contests with a verticle. WBØAJT, WBØDGF using drop boxes in dorms to boost traffic county. WØIO has new Collins Linear. WBØHOG worked 51 new countries in less than 20 hours. WAØKHF's bulletins now at 2715Z on Afternoon Net.

Net	KHz	GMT(Z)/Days	QNI	QTC	Sevs.	Mgr.
Iowa 75 Meter	3970	1830 M-S	1374	89	26	WAØVZH
Iowa 75 Meter	3970	0000 M-S	1321	44	26	WAØACX
Tall Corn	3560	0030 Dy	240	84	58	KØAZJ
			0400			

Traffic: (Nov.) WAØAUX 361, KØAZJ 198, WØLCX 45, WAØVZH 40, KØASR 37, WAØKHF 12, WBØFEW 10, WØLFF 9, WØMOQ 9. (Oct.) WØIO 46.

KANSAS - SCM, Robert M. Summers, KØBXT - SEC: KØJMF, RM: KØMRI, PAMS: WØGCI, WBØBCL, VHF PAM: WBØEDA. Nets reporting activities for Nov.: QKS: QNI 436, QTC 242 in 60 sessions, KSBN: QNI 782, QTC 115 in 24 sessions, KWN: QNI 542, QTC 154 in 52 sessions. All NCS please take note: A Net Report Should Be Sent To The Net Mgr. On The Very Next Net Session! Send report by mail if you have to but get it in! OO activity appears to have dwindled in Kans. Are you interested in becoming an OO, is an hour or two a week too much to spend on the bands, if not drop your SCM a card and OO information will be sent to you. OVS appointments are at a real good rate now also, with all the VHF activity we have surely some one is doing something on the bands worth telling about. By the time you read this Christmas will be over. I hope you all had a very merry one as well as a joyful New Year. Let's all turn that new leaf and resolve to report once a month to the SCM. Traffic: (Nov.) WØINH 244, WØHI 194, WBØHBM 159, WØCHJ 137, KØMRI 86, WØOF 75, WAØLBB 59, WØPB 58, WØCYH 50, KØJMF 46, WØEIR 43, WBØCZR 35, WØGCI 30, WØBLI 27, KØBKF 26, WBØKWI 26, WØRBO 23, WAØCWH 12, WØMCH 12, WØMA 10, WAØASY 5, WAØSEV 3, (Oct.) WAØASY 4.

MISSOURI - SCM, B.H. Moschenross, WAØFMD - Asst. SCM: Clifford E. Chamney, KØBIX, WØBZ has been appointed an OO. Endorsements: WAØITU as OVS, WØUCK as OO. A reminder that appointments issued after Feb. 1974 are valid for 2 years. WØVZK reports the Saline Co. 2-meter net has switched to FTL New MON member WBØJWM uses a 16-ft. helical on his 3rd floor apartment. It puts out a good signal. KØBIX has been appointed an Asst. Dir. WØJHP is a faithful check-in on MIDCARS. WBØEPH extends thanks to all who assisted with operation of WØØSF at the State Fair. WØKUC is back on 2 meters after an absence of many years. Our sympathy to the families of WØAY and WAØSUE who became Silent Keys. Tru-Lakes ARC repeater (WRØAGT) now on 34/.94. Congrats to WØØMDZ on passing General Class exam; WØDJ (or being HARC Amateur of The Month; WAØPBO on winning HARC homebrew contest. New club officers of St. Louis ARC are KØSGJ, pres.; WØHHH, vice-pres.; WØRUR, treas.; WAØKMF, secy. Missouri Repeater Council officers are WBØKZS, chmn.; WBØBAV, secy.; KØTVO, freq. coord.; WØKLU, treas.; WØOLZ, librarian; KØGAI, special mode coord. Many clubs report holding Novice classes. Keep up the good work.

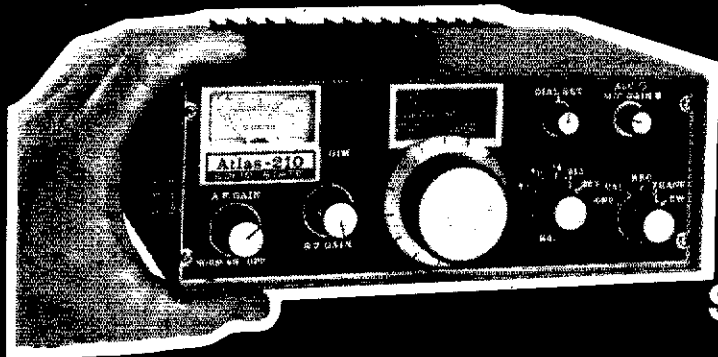
Net	QNI	QTC	Net	QNI	QTC
MOSSB	1282	53	PHD	54	7
MON	216	170	SCEN	38	3
MON 2	141	53	MOAREC	29	0
MSN	64	83	ACE	8	1

Traffic: KØONK 1035, WØBV 141, WBØHSP 124, KØBIX 122, WAØFMD 66, WBØJWM 62, WØOTF 57, WØOUD 56, WBØCKI 34, WØNUB 26, WBØLMW 25, WBØLRX 20, WØPEI 15, WAØKUH 15, WØRTW 14, WØGBJ 12, WØBVL 11, WBØLTD 9, KØRWL 9, WBØQOM 5, WAØFKD 4, WBØFKY 4, WAØJOG 2.

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SOLID STATE SSB TRANSCEIVER

200 WATTS* P.E.P. INPUT . . . 10,15,20,40, and 80 Meters



\$599

...And the companion model, Atlas-215, which covers
15, 20, 40, 80, and 160 Meters.

★ **Frequency Ranges, Atlas-210:** 3700-4050, 7000-7350, 14,000-14,350, 21,100-21,450, and 28,400-29,100 KHz. Model 215 deletes 28,400-29,100 band, and instead covers 1800-2000 KHz.

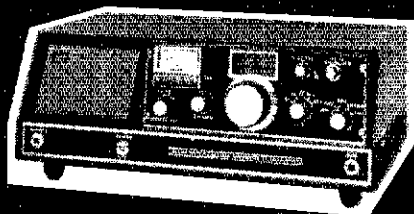
★ **Power Rating:** 200 watts P.E.P. Input and CW Input. *On 10 meters the power rating is 120 watts.

★ The same outstanding performance, reliability, and compact size as the Atlas-180 . . . Only 3½ in. high, 9½ in. wide, 9½ in. overall depth, and only 7 lbs. total weight . . . Operates directly from 12-14 volts D.C. All solid state, modular construction . . . No transmitter tuning (special Braille dial available for blind operators at no extra cost).

★ **Plug-In Design,** for quick removal from mobile mounting, and insertion into AC Console as illustrated.

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Model 210 or 215	\$599
AC Console, 117 volts 50-60 cycles	\$129
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Mobile Plug-in Kit	\$ 44
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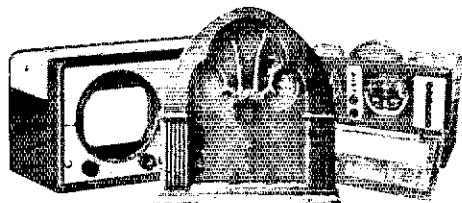
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VINTAGE RADIO SERIES

NEBRASKA - SCM, Dick Dyas, W0JCP - W0JCP has been appointed repeater coordinator. WB0HXA and WB0IIP are assistants. Groups or individuals planning a repeater should contact the coordinator for frequency assignment. The Crete ARC had a large turnout for their annual steak fry. The SCM was the speaker. The Hastings Tribune recently carried an extremely fine article on the repeater station WR0AEX. Fine public relations for HAM radio.

Net	Freq.	GMT/Day	QNI	QTC	Mgr
NEB 1&II	3700	0100/0345 Dy	40	0	WA0GHZ
NSN	3482	0030/0130 Dy	2082	36	WA0LOY
NMN	3982	1330 Dy	1272	24	WA0GWR
WNN	3950	1400 M-S	816	2	W0NFK
AREC	3982	1430 Su	187	2	W0IRZ
CHN	3980	1830 Dy	1495	15	WA0GHZ
SHN	3950	1930 M-S	255	15	W0PL
NAN	3980	2100 M-F	404	10	WA0AUX
160M	1998	0130 Dy	160	101	WA0CBI
Lincoln AREC	16176	0300 M-F	298	4	K0GND

WA0CPL 61, W0SGA 32, W0VEA 23, FA0CXI 21, WA0LOY 19, WA0SCP 17, W0CSW 16, W0PQB 14, W0VYX 14, W0JCP 12, W0PL 12, W0GFO 11, W0PGF 11, W0BTA 10, WA0PCC 9, W0CKK 8, WA0HOQ 8, W0NFK 8, W0BAG 7, W0BERG 7, WA0GHZ 6, WA0OOX 5, W0AEG 4, W0BGMQ 4, W0ZNI 4, W0DMY 3, K0MUF 3, W0BQYB 2, W0W2 2, K0ODF 2, W0RJA 2, K0SFA 2, W0ATU 1, W00CLP 1, W00EE 1, W00AL 1, W0LCE 1.

NEW ENGLAND DIVISION

CONNECTICUT - SCM, John McNassor, W1GVT - SEC, W1DGL, RM: K1EIR, PAM: K1YGS, VHF PAM: W10YE, W10YD.

Net	Freq.	Time/Day	Stn.	QNI	QTC
CN	1640	1900 Dy	50	450	299
CPN	3965	1800 M-S	30	521	216
VHF 2	28/88	2130 Dy	30	300	62
CSN	3725	1730 Dy	29	272	133

High QNI: CN - W1CTI, W1RUR and W1SHO. CPN - W1NCO, W1QME, W1RUR and W1RXA. SEC W1HHR extends thanks to all who worked with him since 1969 - his work as New England Dir. induced him to resign as SEC. My sincere thanks for the wonderful job he has done. Our new SEC is John Lindholm, W1DGL, a regular Traffic Net Operator and an EC of long standing. My thanks to him for accepting the appointment. W1QV congratulates our new Dir. W1HHR and Vice Dir. W1DGL on their election and requests your continued support of this fine team. Conn. Slo Net (CSN) has been included in the heading this month because it has proven to be an established and worthwhile Net - W1SHO as Mgr. does an excellent job and provides a Bulletin to members. W1WEE invites Amers to 145.35 Mon. at 7 PM. Congratulations to: New Dir. W1HHR and W1DGL; W1FYG for Extra Class; W1ATGE and W1JQZQ for General Class; W1NTNR 10 WPM sticker; and to W1RUR for High QNI CN and CPN for Nov. Once again the Dir. and Vice Dir. for New England Division are Conn. section members - please offer your help and try to provide excellent "on-the-air" operating practices as a good example for other Sections to follow! Thanks! Traffic: (Nov.) W1SHO 270, W1AFCM 240, W1AIGH 210, W1AIOE 166, W1AIRY 115, W1AIRU 112, W1AIPH 103, W1CIT 96, W1DGL 66, W1AOPB 42, K1YGS 42, W1NTNR 40, W1KY 37, W1AW 35, W1GY 32, W1RXA 31, W1JCN 27, W1POJ 27, W1IKN 24, W1ASTN 24, W1AIRU 16, W1QV 14, W1ATGE 14, W1AQQU 11, W1YU 9, W1JYP 7, W1JGA 5, W1BDI 4, W1CUH 4, W1BGD 3, W1AISW 1. (Occ.) W1UAX 54, W1AIRU 34.

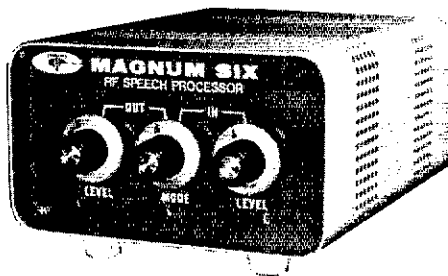
EASTERN MASSACHUSETTS - SCM, Frank L. Baker, W1ALP - SEC W1AOG received reports from ECs: W1s BAB, F1I, F0H, K1s NFW, ZUP, CCW; W1s DXI, PGY, K1UAO is Communication Officer for Area 1 CD at Tewksbury. The following are Silent Keys: K1BGP, W1FAU, W1HL, W1INC, W1RX, W1KZD and V1FHC who many of us knew on the air and in person; all will be missed. W1JUEC is CD Dir. for Middleboro. W1AOWO & K1C1W have their Advance tickets. K1CUW on trip to Hawaii. K4VH, ex-W1GCM has new house in Osceola Hgts, Fla. W1PGY running a class for Novices. W1JAA, ex-W6FZJ worked K0TLM on 432. W1GAG moving to Ariz. W1ESN new vice-pres. and W1PIN new secy. of QRA. K1NQA is in Langdon, ND. New YLs: W1AUER, W1UEK, W1UDP moved to Penacook, NH. W1HY1 in Wareham for winter. T-9 Club met at W1JZF QTH. W1PWF a winner in Worldwide

400% MORE SSB OUTPUT WITH A **MAGNUM SIX**

A QUALITY RF SPEECH PROCESSOR

Collins 32S/KWM	\$ 160
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■ The human voice is a "raspy" signal with high peaks and long, low valleys. If used to modulate an SSB transmitter directly, the low power of the valleys limits the average power output to 12-15% of the transmitter's PEP rating. Operating above this level, the peaks overdrive the transmitter, cause band splatter and poor quality.

■ MAGNUM SIX is the first successful RF speech clipper available. Installed in the IF strip, it "mows" the peaks and discards the clipping harmonics without distorting the voice. This allows the level of the valleys (the average power) to be raised up to 6 db. Astounding signal strength improvements - 1 to 1.5 "S" units - have been reported! Some have even reported improved voice quality!!! The ARRL handbook confirms that RF speech clipping is clearly the best way to increase SSB talk power.

■ MAGNUM SIX operates like a "time scavenger". Average power is increased merely by causing transmission to occur at slightly below, but never over, rated values more of the time. By increasing the duty cycle, MAGNUM SIX pushes the average output from 12-15% PEP "way up" to 50-60% PEP. Operationally this is impressive because of the clean 6 db signal strength improvement. Equipment-wise this is roughly equivalent to operating at continuous AM, or a little below continuous keyed CW ratings. Tube lives are thus not shortened below rated values. On the other hand, they'll no longer be "loafing" on SSB either. So why not

PUT YOUR TRANSMITTER TO WORK FOR THE FIRST TIME IN ITS LIFE. A MAGNUM SIX CAN ADD MORE POWER TO YOUR STATION PER \$ THAN ANY OTHER DEVICE: LINEAR, ANTENNA OR OTHER SPEECH PROCESSOR.

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DIGITAL DISPLAY

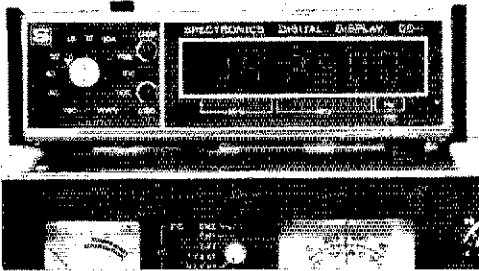
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In addition to indicating operating frequencies, the DD-1 can be used to check VFO drift and linearity. The DD-1 utilizes a crystal time base for long term stability and accuracy to ± 100 Hz.

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- Please send brochure with complete data on the DD-1 readout.

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City _____ State _____ Zip _____

Master Charge and BankAmericard accepted.

RTTY Art contest. K1UIW says 10 open for DX. W1AYG new break of South Shore Club. W1EQH has emergency power generator, and ARCC had a drill on 2 and 6. W1QKD going on 160. W1DMH bought generator for SET. W1QJU Net Mgr. for EMRIPN on 75. W1MX has open repeater WR1ADI on 444.2 MHz in, 449.2 out, reports WB2VG. W1EIH is AFW1EIH in MARS. Middlesex ARC had an auction. K1FFX is on 80- and 2-meter RTTY. W1AIOG has new keyer and cw filter. Waltham RA had an auction. W1LAV has SB301 and SB401; on many bands; worked 912BL. K1GGS is RO for Concord. W1PAZ new ORS, OPS. Endorsements: W1MSK as RM, OPS, ORS, OVS; W1GXT as OVS. W1MHJ has SB-401 and SB-301. Lexington HS ARC, K1JMQ again active with W1GNM as advisor; members: W1NRRV, W1NITZO, W1N1STJ, W1N1TTV. Dorchester ARC applied for affiliation with ARRL. W1N1TRT has three-element beam. W1GUU and W1QOAB helped out on an accident on Rt 128 by relaying to the State Police. W1AGSF improved the logic in the 72-12 repeater. 1200 Radio Club held an Auction W1ARNE and W1AIOG net mgrs. of Atlantic 20-meter SSB Net, freq. 14,285, 1500 ITC. W1AITCP having good luck with DX60B. Quannapowitt RA had a talk on 2-meter fm by K1VTE and W1AGAR; JABMW was present. W1MSK received an area Net Certificate from K2KIR. EAN Mgr., will have an SB-104.

Net	Freq.	Time/Days	QNI	QTC	Mgr.
EM2MN	145.8	2000 M-F	31	39	K1FFX
NFPEN	3945	0830 Su	89	7	W1KKD
EMR1(cw)	3660	1900/2200 Dy	490	343	W1MSK
EMRIPN	3898	1730 Dy	181	165	W1QJU
HHTN	04-64	0.330Z Dy	113	43	W1MYA

New Eng. Chapter, OOTC held a luncheon at Vallee's in Saugus. W1CT gave a lecture on propagation at the Framingham RC. They have a Regency HR2B, 2-meter mobile rig to be used by the members. K1UUM has new mini Quad, HQ-1. W1N1TTS has TX-1 and an RX-1. W1HOB has a 1-watt beacon on 28,150. Massasoit ARA had a "Young Timers Night" and 3 Novices gave a talk on their experiences. Whitman ARC has new sign on their Clubhouse. Wellesley ARA Novice Net on 21120 had 15 QIs, 25 QTC; 10 meter net had 17 ONIs, 6 QTC. Traffic: (Nov.) W1MS 295, W1QKD 275, W1QJU 178, W1DMS 134, W1EMG 94, W1DMH 78, W1APOY 75, W1CE 70, W1EIH 69, W1MX 69, W1MHJ 47, W1UX 40, W1ARGA 39, W1AOWO 36, W1AIFE 26, W1EPE 26, W1ABC 22, W1N1TAM 19, W1AOG 17, W1PAZ 8, W1APGY 7, K1FFX 5, K1LQC 5, W1AIOG 3, W1NF 1. (Oct.) W1QJU 169, W1APGY 44, W1PAZ 11, K1LPI 7.

MAINE - SCM, Peter F. Sterling, K1TFV - SEC: K1CLF, RM: K1MZB. PAM: K1GUP, W1QHG and W1BOL gave a talk on amateur radio at the Kennebunkport men's club. Dick, ex-K1BDQ of Auburn now W3HJZ. K1HHC has formed a new net called the "Ding Bat Net" which meets after the Seagull Net. For more info get in touch with chief dingbat K1HHC. W1BTY back on the air after an absence of 10 years. He is active mostly on 2-meter fm. The Northeast Area Barnyard Net reports 861 contacts for Nov. The Univ. of Maine station W1YA is back on the air being operated by W1KOU. We are looking for people to devote perhaps one nite a week NCSing the Pine Tree Net which is on the way out, but with a little more participation perhaps we can make the net survive. FUN meets every nite on 3596 7 PM local time. Seagull Net meets Mon, thru Sat., on 3940 at 5 PM local time. The HoosierNet meets on 3940 every Sun, at 4 PM local time. I am sorry to report the passing of W1WYE. He will be sadly missed on the bands. A new ham in Maine is W1UEB. Congrats. K1MTJ is all set up for moon bounce and is looking for anyone who would like to make a sked. Want an appointment? Get in touch with your SCM. Traffic: (Nov.) K1MZB 100, W1HOG 55, W1LJHT 43, K1TFV 12, W1N1MW 5, W1GWS/1 3, W1MUX 2.

NEW HAMPSHIRE - SCM, Robert C. Mitchell, W1SWX - SEC: K1RSC, PAM: K1YSD, RM: W1AGCE. Happy New Year to all. K1PQV and XYL had a nice trip to Va. plus a stop at Niagara Falls. VE3ACL and XYL visited K1BCS and swapped license plates. It is with regret that I must record the passing of W1EVN. Howard was an ORS and always available to give a rare Cheshire Co. contact. W1UBG building an HW202 for 2-meter DX. Endorsements: W1BXM, W1LY as OVSs; K1AC, W1MZV as ORSs plus W16MZV/1 as OQ. W1AJSD helped operate W1UBC, Derry Club station, during the SS and CQ contests. K1BCS recuperating from a heart attack. W1DXB getting ready for the new DX season. How about more reports from the phone men and ladies. Traffic: (Nov.) K1BCS 181, W1MXMT 118, W1UBG 50, K1ELMS 17. (Oct.) K1BCS 449, K1PQV 50.

RHODE ISLAND - SCM, John E. Johnson, K1AAV - SEC:

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The IMPROVED CWF-2BX offers RAZOR SHARP SELECTIVITY with its 80 Hz bandwidth and extremely steep sided skirts. Even the weakest signal stands out.

Plugs into any receiver or transceiver. Drives phones or connect between receiver audio stage for full speaker operation.

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● 400 Hz or 1000 Hz center frequency available add \$3.00.

IMPROVED CWF-2BX, assembled and tested \$22.95
 CWF-2, PC board, includes 4 position selectivity switch \$15.95
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The SBF-2BX is a new and different kind of single sideband filter.

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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The MFJ-100BX frequency standard provides strong, precise markers, every 100, 50, 25 KHz to beyond 60 MHz.

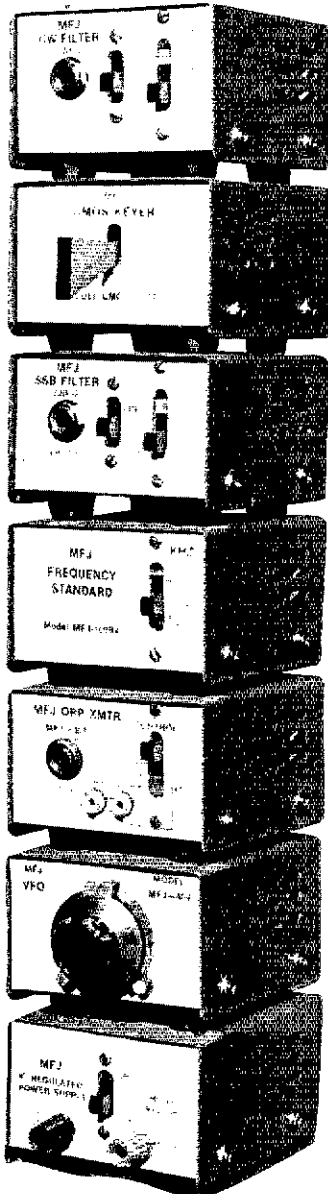
MFJ-100BX, assembled and tested \$19.95

CMOS ELECTRONIC KEYS

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CMOS-440RS, Deluxe, includes sidetone, relay output \$34.95
 CMOS-440, less sidetone, transistor output \$25.95
 (perfect for QRP operation where sidetone is built into rig)

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- 12VDC
- 5 watts input

Add a battery and crystal and you're on!

MFJ-40T, \$19.95
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Stable FET Seiler oscillator provides less than 100 Hz drift per hour after 10 minute.

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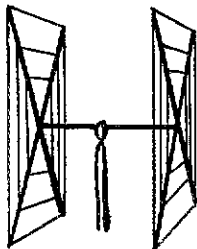
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Thousands sold over the past 25 years. Same design and materials as our contest winner. Unsolicited testimonial: "The Irving ARC has placed No. 1 in the state of Texas for the last three years . . . Most of our points were earned . . . using a Gotham 4 element 20 meter beam."

Each beam is brand new! full size (36" of tubing for each 20 meter element for instance); absolutely complete including a boom and all hardware; uses a single 52 or 72 ohm coaxial feedline; the SWR is 1:1; easily handles 5 KW; 3/8" and 1" aluminum alloy tubing is employed for maximum strength and low wind loading; all beams are adjustable to any frequency in the band.

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This is the Gotham beam that won the New England contest championship by a margin of 5,982 points, as reported in QST! A marvel of engineering, yet full size in every way and absolutely complete, yet priced far, far below any competitive makes, if indeed any are advertised! Scores of great testimonials are on file, telling of tremendous DX performance!

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WIYNE, PAM: WA1RFT, RM: WA1POJ. The newly organized EMRI Phone Net meets daily at 2230 GMT on 3898 kHz. The PAM hopes that RI stations with Phone Traffic will check into the Net with their traffic. WA1OJU is the net mgr. WA1RFT is completing a 160-80 meter cw rig. He is working DX on 40 meters and plans to build a new 40-meter antenna. New Novices in R.I. are WN1s UVB and UE1. WA1UCC received a General ticket, WA1UDK an Advanced and WA1UDQ a Tech. Traffic: WA1POJ 361, WA1RFT 4.

VERMONT — SCM, James H. Viole, WB1RG — SEC: W1VSA.

Net	Freq.	Time/Day	QNI	QTC	Mgr.
VTSB	3909	2300 M-S 1230 Su	646	126	WA1PSK
Carrier	3935	1400 M-S	449	5	W2DSK
Green Mt.	3932	2230 M-S	412	4	W1JLZ
Vt. Phone	3942	1340 Su	66	4	W1RKM

Middlebury College ARC, WA1PCX, officers are WB2CWP, pres.; WN2DRF, secy.; W1SPK, trustee. They are running code and theory classes every week. Erratum: Dec. issue shows W1KNC as pres. of BARC; should be K1NXC. BARC Christmas was big success with largest attendance ever. New repeater in the works in Burlington area with auto-patch capabilities. WA1TXI put new HW202 on the air. WB5SHZ/2 has been transferred to Chanute field, IL WILMO is retired and will have more time for ham radio. Traffic: WA1TXI 34, WILMO 15.

WESTERN MASSACHUSETTS — SCM, Percy C. Noble, WB1VR — SEC: WA1DNB. CW RM: W1DVW. 75-Mtr. PAM: WA1MJE. UHF/VHF: PAM: W1KZS. WMN held 4 sessions with QNI 75. WMAREC (2 mtrs.) held 21 sessions with QNI 132. Berkshire City ARC net held 2 sessions. WM AREC aided Greenfield police with Explorer Scout Post. WMN held 30 sessions with QNI 177. traffic 106. WMPN held 20 sessions with QNI 277, traffic 54 (total of 75 different stations). Both WMN and WMPN had 100% representation on IRNs. W1PUO held another "Free Reg Service" at Univ. of Mass. K1RGO now runs maximum power on ssb. WN1RSY has 46 states and 36 countries! He reports the Eastern Area Slow Net is at 0030 on 3726. With regret we report the passing of WA1DDE, father of WA1LGU. CMARA took first place on FD for Region 1 (New England). HCRA says speaker of the month was Rudy Brodsky who spoke on computers. With regret, another Silent Key W1NRQ. MI. Tom Repeater reports new members K1RPR, W1FYW, K1JRK, WA1UAK, WA1KQL, WA1RXP and WB4IFS demonstrated ham radio at their church bazaar. NOBARC says new officers are WA1HSO, pres.; WA2CSO, vice-pres.; WA1KFN, treas.; WA1DGO, secy.; WB2BXP, tech. vice-pres. V of Lincoln officers are W1CSF, pres.; W1BWB, vice-pres.; WA1PLS, secy.; WA1OTC, treas. Traffic: (Nov.) W1BVR 96, W1DVW 73, WA1MJE 70, W1PUO 61, W1TM 57, W1KK 41, WA1PFE 20, W1ZFB 70, WA1LOUZ 14, K1RGO 10, WN1RSY 10, WA1DNB 6, WA1BXP 2. (Oct.) W1PUO 59.

NORTHWESTERN DIVISION

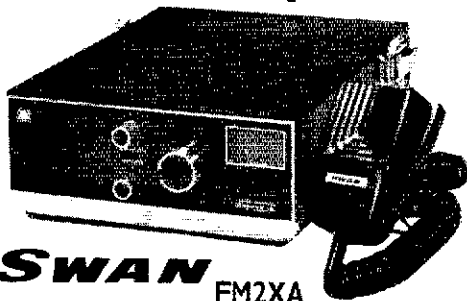
ALASKA — SCM, Roy Davie, KL7CUK — New ECs are KL7IAS, KL7HNO and KL7HMN. PAM KL7HOV reports 575 check-ins, 30 sessions, 39 phone patches, 46 informal messages and 5 OBS this month for the Alaska Snipers Net. NTS liaison is maintained with AKW/AKN to RN7. A card from WN2VNO requests that KL7 stations please write him to arrange a sked for a WAS. KL7DG reports 6 OMs and their XYLS showed up for the second OCWA gathering in Anchorage. KL7HDX and KL7IAS are now back on the air. Thanks to all who participated in the watch for emergency traffic from Nome after the disaster hit them this month. Particular thanks to KL7HAQ. We also want to thank the many stations who participated in the communication drill this month when there was a blackout of commercial power which affected all communities from Homer to Talkeetna. I want to thank SEC KL7JDO for representing me on the serious K1/TVI case on Kodiak and for all the work he did in bringing the case to a happy ending. We now have three repeaters active in Anchorage. 34/94, 22/82 and 16/76. Traffic: KL7GCH 29, KL7JDO 9, KL7HDX 2.

IDAHO — SCM, Dale A. Brock, WA7EYW — SEC: W7JMH. PAM: WA7HOS. VHF PAM: WA7FSI.

Net	Freq.	Time/Day	Sess.	QNI	QTC	Mgr.
EARM	3,935	0200 Dy	30	1134	14	WA7ROI
IMN	3,582	0300 M-F	21	99	35	W7GHT
RACES	3,990	1515 M-F	21	548	15	E7UBC
Ide Silver	3,93	0115 MW				W7IY

W7HZL is wintering in New Mexico. W7BNK is back with us, now living in Geneseo. W7KDB is NCS on the Western Country Cousins.

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SWAN FM2XA 2m FM transceiver, 10 watt, 12 channels w/crystals for 146.34T/.94, .34/.76R and .94 simplex. 12vdc WITH detachable 110vac supply. Extra crystals \$5 each (special order). Add \$5 for shipping in the "48 states".

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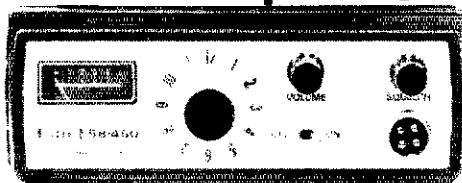
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Reg. \$399 - Now Only \$359.

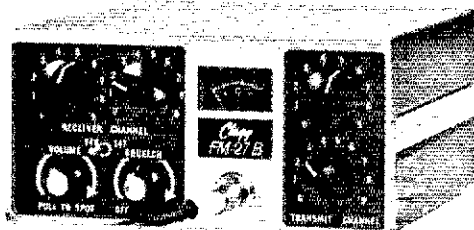
A limited quantity of FLdx-400 Xmtrs. are available for \$319 (Reg. \$339).

SAVE \$120



SBE SB-450, UHF FM Xcvr, 5 watt, 12vdc, 12 channels w/xtals for 449.5T/444.5R & 446 MHz simplex. Reg. \$399 - Now \$279

SAVE \$130



Clegg LATEST MODEL!
FM-27B
reg. \$479 - Now \$349

SAVE \$50

Purchase a Regency HR-2B for the reg. price of \$229 (Without Trade) and we'll give you 10 Free Crystals (reg. \$5 ea.).

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SR-C146A 2w hand-held, 5 ch. w/xtals for 146.34T/.94R & 146.94..... \$298.00

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SR-CPT-3644 Leather case	8.50
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SR-CMA Mobile Charger	13.00
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(5 pair required for C-146A)	

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What is a DX QSL Service?

A QSL service will take your DX QSLing off your hands by forwarding your QSLs to DX stations.

Why can't you do it yourself?

You can, if you have lots of time, money, and all the information on where to send the cards.

But why the W3KT QSL SERVICE?

W3KT has been running his QSL service for over 12 years. In the meantime other such services have come and gone, while W3KT QSL SERVICE keeps getting bigger all the time. There must be a reason.

What is the reason?

The W3KT QSL SERVICE has proven to be dependable and efficient. Handling QSLs is W3KT's full time activity. He is an active DXer. He has 351 countries confirmed and is tied for the top position on the CW/Phone DXCC Honor Roll. He has also earned 5 Band DXCC.

How does this service work?

You send the QSLs for your DX QSOs to W3KT. Do not address them. If the DX station has a stateside (or VE) QSL manager, your QSL will be sent to him with an SASE. The reply which comes back to W3KT will be passed along to your ARRL QSL Bureau. Other QSLs are sent to the foreign QSL Bureaus, or, if necessary, direct. The large volume of cards received makes it possible (and necessary!) to send out your cards promptly.

How much does it cost?

Twenty cards per dollar, if whole dollars are sent, and you need not send all 20 cards at the same time. For sums less than a dollar the rate is 6 cents per card. There is no membership fee.

Why don't you try this service?

Thousands of DXers use it.

W3KT QSL SERVICE
Box 66, Valley Hill Road,
Malvern, PA 19355

K7YWQ is in Desert Hot Springs, Calif. in addition to WA7JFC and W7FHQ. W7IY reports being plagued by rig trouble. The annual SFT scheduled for Jan. 25-26. This is one of the ways we justify our existence; hope we had a record turn-out this year. Traffic: (Nov.) W7GHT 245, K7NHV 72, W7KDB 4, WA7FVW 2, W7FIS 2. (Oct.) K7NHV 10, W7KDB 8.

MONTANA - SCM. Harry A. Roylance, W7RZY - SEC: WA7IZR. PAM: WA7PZO. Following nets are active in Mont.

Net	Freq.	Time	Net	Freq.	Time
MTN	3910	0100	Big Sky	3950	0400
SBCEN	3925	1800	Helena	1676	0230
SBCEN	34794	0300			

MTN had 21 sessions, 24 traffic and 942 check-ins. IMN had 21 sessions, 35 traffic and 99 check-ins. I am sorry to report the loss of W7FEE and K7KME. Both will be missed on the air. ORS, OO and EC certificates were renewed for W7LBK and OO certificate renewed for K7LTV. W7DMW has retired and moved to Fla. W7DXQ quit the cold climate for W6-Land. Looks like we will have another repeater in Central Mont. WA7GFV is planning one which should be on shortly after the 1st of the year. Yellowstone Radio Club had their Christmas dinner on the 13th and was well attended. Hey, if you read QST we are going to have an SET. How about going all out and get on the air. Let's make WA7IZR work a little. Traffic: WA7IZR 45, WA7KMP 29, K4ROT/7 26, WA7PZO 10, WA7OBH 4.

OREGON - SCM, L. Ray Perkins, WA7KIU - SEC: W7HLE. RM: K7OUF. PAM: K7RQZ.

Net	Freq.	Time	QNT	QTC	Sess.	Mgr.
BSN	3908	0130	610	61	36	WA7SSO
OSN	3585	0245	161	107	30	K7OUF
AREC	3993	0300	323	5	10	WA7RWM
Nuclear	50.250		23		4	W7FFE
PDX AREC	146.06/64					WA7EUQ

The U.S. Mail service is more dependable than winter band conditions on 80. Many of the reports I normally receive on the air are not shown this month because of evening band conditions. Local communications certainly are better on the repeaters and VLF during this time of year. Congratulations to new appointees: WA7QDC, WA7UJO, K7IWD, W7DAN for ORSs; K7DUE, WA7ZTD OOs, WA7RQS has been appointed as EC for the Clatsop County/Astoria area. WA7TDU reports the new 16/76 repeater on Scott Mountain is full quieting in some Klamath Falls locations. Reports from K7IUV are that the Hood River/Dalles area should have a new repeater on the line by this Spring. Expect to be 16/76. This will just about complete the repeater coverage from the Calif. border north to Portland and East from there to La Grande on 16/76, 34/94 or 22/82. 04/64 is the combination for the Portland area AREC repeater according to WA7EUQ. Hope we got those repeaters in the SET! Traffic: K7IWD 155, K7OUF 142, W7ZB 131, WA7YEU 50, WA7KIU 20, W7HLE 13, W7IWN 11.

WASHINGTON - SCM, Mary F. Lewis, W7QGP -

Net	Freq.	Time	QNT	QTC	Sess.	Mgr.
NTN	3970	11:30	1812	66	30	W7PWP
NWSSB	3945	18:30	666	30	30	E7OUV
NSN	3700	0300Z	391	120	30	WA7QGP
WSN	3590	18:45	248	95	30	K7OZA
WARTS	3970	17:30	2094	271	30	W7QGP

Have you or your club replied to both the FCC and ARRL on FCC Docket No. 20282-Notice of Proposed Rule Making on Restructuring Amateur Service released Dec. 12, 1974. Comment period extends until June 16, 1975 with reply comments July 16, 1975. You may have disagreed with American Radio Relay League but now is the time for ALL amateurs to pull together. We have too much to lose if we do not. The ARRL is the amateurs only united voice and it is no better than you and I make it. Docket No. 20282 is an FCC docket NOT ARRL. Sorry to report WA7UWL a Silent Key also WA7FDG. Corrections and additions to W7JWP's 2-meter list 147.69/09 to WR7ACD open w/AP. 147.27 in 147.87 out WR7ADF. 146.16/76 WR7ADM, Colville "in house" at W7RIIX and W7SPA. WA7BDD built HAL MKB-1 code-typewriter. K7BBO, K7VWU, W7MCT, K7GWE busy on Oscar 7 2-meter to 10 meters and K7BBO also 432 to 2-meter reports are Oscar 7 not as Oscar 6. Endorsements on your appointments are now for two years. Still need WNs for appointments to OBS. Traffic: (Nov.) K7OXL 78, WA7OCV 72, WA7BDD 65, W7BQ 55, W7PI 54, W7APS 49, K7ZVA 36, K7CTP 32, W7SYS 32, K7OZA 29, W7BUN 28, W7IEU 23, W7PWP 22, WA7RCR 19, W7EBU 5, W7AJB 4, WA7GVB 3, K7VNI 3, WA7WMB 2. (June) K7NWS 722, W7LIO 430, W7CJL 244, WA7ACQ 142.



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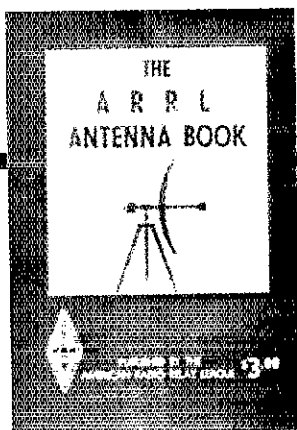
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CD2 Kit	10 channel xmit xtal deck w/switch and trimmers	\$14.95
COR2 Kit	complete COR with 3 second and 3 minute timers	\$19.95
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TX144 Kit	exciter—1 watt—2 meters	\$29.95
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PA144/15 Kit	similar to PA1501H less case, connectors and switching	\$39.95
PA144/25 Kit	similar to above—25w	\$49.95
PA220/15 Kit	similar to PA144/15 for 220 MHz	\$39.95
PA432/10	NEW—similar to PA144/15 except 10w and 432 MHz	coming soon
PA4010H Kit	10w in—40w out—relay switching	\$59.95
PA110/10	10w in—110w out 2 meter amp	factory wired \$179.95
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RPT144	NEW—15 watt—2 meter repeater	factory wired \$595.95
RPT220	NEW—15 watt—220 MHz repeater	factory wired \$595.95
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PACIFIC DIVISION

EAST BAY - SCM, Charles R. Breeding, K6UWR - Asst. SCM, Ronald G. Martin, W6ZF. SEC: WB6RPK. Asst. SEC: WB6DS. RMs: WA6DSI, W6IPW, PAM: WA6YCE. VHF PAM: WA6IUM. WA6GSN has become a new OVS in the section. K5AM/6 moved Berkeley from New Mex., bringing along his OO ability. Being appointed may bring added interest to your ham activity. For information, drop a card to your SCM, OTH on page 6. At the No meeting of the Mt. Diablo ARC, K6LFH gave a most interesting talk on the Amateur Radio Sister City Project. Other clubs may like to contact him for further information on this worthwhile project. MDARC has a new meeting place, Grace Presbyterian Church, Walnut Creek, 8 PM on the 3rd Fri. New club officers are coming for 1975. For the SARO, W6BZ, pres.; K6AY, vice-pres.; W6JE, secy.; W6CMZ, treas.; W6GIP, comm. mgr. Mt. Diablo ARC: W6BSE, pres.; W6PFW, vice-pres.; K5OWG/6, secy.; W6CU, treas. WA6JUD, EC; WA6JLF and WA6AGP, board members. North Bay AR Assn., W6PBU, pres., W6RJJ, vice-pres.; WA6LEB, secy. WN6EUI, treas. Good luck to all. From CCRG the following were listed as new calls in the section: WN6GTQ, WN6GUX, WA6GTU, WN6HHX, WB6HEC, WN6GZG, WN6HFZ, K6RI of the S. Francisco FCC office was the speaker at the Nov. meeting of the North Bay AR Assn. WA6BIW now operating RTTY from Nap. W6IPW back at his traffic activity after a nice three month vacation. Once again W6JXK has made PSHR. Congratulations, Traffic: W6IPW 292, WA6IPI 135, W6JXK 81.

HAWAII - SCM, Pat Corrigan, KH6GQW - SEC: KH6IK. Don't forget the ARRL DX Contest first week end of Feb. and Mr. Leonard Norman of SAROC is continuing to plan a major convention in Waikiki June 6-7. KH6BZF reports that K4KQB and NYL were here for a visit after a trip to the Orient and W8LXY, NYL visited her son here. Lee also says that Radlocall Hon. sig was heard in Sydney, Australia last week of Nov. MUF quite high. WN2VNO writes he would like a KH6 sked. KH6IAC now holds forth on traffic sked on 141J0, 173DZ, KH6IJV, W6FB, et al got 13th WAC. His 1st was as PL3AA in '26, the 9th ever issued. K6XRR/KH6IHO returned from grand tour of Europe. Says he or spotted 4 antennas. Sounds like Charlie Felstead. Rudy is back the DXCC trail on 15/20. KH6HRG sporting new FS-520 and using it in his car. KH6LKG is EC for Windward Oahu, Understand (L) Laduke who used to op at KH6SP got married in Dec. Hon. Club fairly progressive in its response to contest survey. KH6BB still plugging away at getting the shack squared away. As mentioned previously, FWA repeater shifted to standard freq. 146.19. KH6GMP planned to attend SF Div. Conv. in Fla. Traffic: KH6IPI 204, KH6BZF 124.

NEVADA - SCM, Harold P. Leary, K7ZOK - SEC: WA7BE. K6MOX/7 elected as VP and Net Mgr. of Western Public Serv. System for 1975. WA7DSP changed jobs and now in business consulting engineer. Good to have W7RPG back on the bands! Rehams under K7OOP participated in Nev. Day parade. Las Vegas Radio Amateur Club held elections Dec. 8 at club meeting Eldorado High School. W7FDZ is new OO in Reno area. WR7A is open repeater on 34/94 in Las Vegas area. K7YVH returned from hospital on Dec. 8 after surgery. Have a swift recovery. K7RI working DX on 432 fm with GP antenna at 30 watts. K7IO working Oscar 7 Mode B with good success. W7VH doing long range planning on beams. W7JRW has DXCC cards on the wall. W7OK 1 ham visitors from Mass., Ill., Ga. and Ark. W5AR moving to 7-LA. Traffic: W7ILX 110, WA7UEK 71, K6MOX 14.

SACRAMENTO VALLEY - SCM, Norman Wilson, WA6JVD. Secy.: W6SMU. Congratulations to W6GYM who recently received his 350 country sticker for DXCC. W6NJU (Y18GS) just returned from a vacation/DXpedition to KH6, YJ8, 3D2, FK8, VK and and has been appointed to the DX advisory committee by AR. Pres. W2TUK. W6NKR's antenna rotor broke during a recent w storm and sent his 20' and 40-meter beams into the roof. WN6I has a new HW7 with backpack/portable in mind. K6YII has a state 2-meter receiver and 1-watt transmitter. K6FO has WR6AGK duplexer working. W6GO reports a new, open, Mt. V repeater, WR6AGO, operational on 234.94 out and 222.34. Welcome to WA6WOX our new and only OBS. The section represented at the winter Pac. Div. Directors meeting by W6SMU, WA6JVD and WB6AUH (A.D. Public Relations) with club rep. WA6NKO from the GPARS of Chico. A proposal to move Norte County into the SF section is under study. Please mail comments to the SCM and/or Pac. Div. Dir. W6ZRI, K6KWN again wintering in a warmer S. Cal. Closing date for the election the SCM is 2/10/75. Prospective candidates must file a nomination

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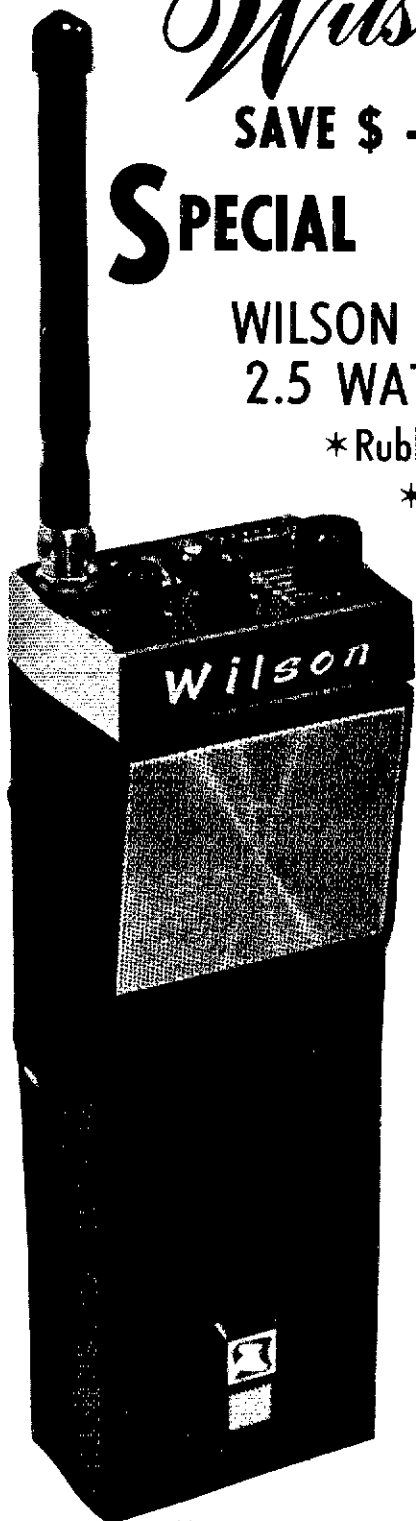
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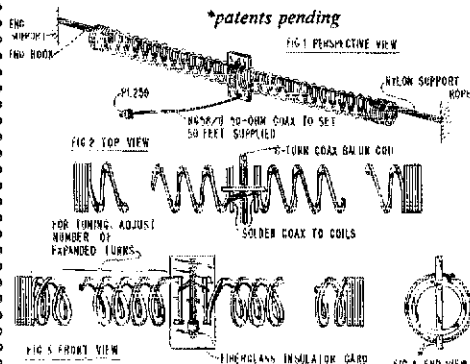
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SAN FRANCISCO - SCM, Thomas Gallagher, W6NUT - W6BIP was honored as the Division's Outstanding Amateur of 1974 at the recent Pacific Division Convention. The Northern Calif. Contest Club is aiming to become "Murphy's West." Contact W6NUT, W6BAIN or W6RGG for meeting information. By this time W6GGR or W6OAI will be your newly-elected SCM. It has been my pleasure to serve you for nearly three years. Traffic: W6LPL 163, W6RNL 125.

SAN JOAQUIN VALLEY - SCM, Ralph Saroyan, W6JPU - WA6RXI has a new 1R22 and is on all bands from 160 to two meters. WA6ABH is net mgr. of AREC net held at US00 GMT on 07-67 Sun. WA6ONI is Net Control. WA6CPP has worked over 2500 counties. WA6VIS and K6PKO are heard on 10 ssb when the band is open. WA6JDB is holding a Novice class at the High School in Firebaugh, and is expecting to have a novice station on soon. The Kern County Amateur Radio Club held their first annual picnic and swapmeet in Bakersfield, on Nov. 17, 1974. The new editor of "Splatter" will be Pat, XYL of WA6ONI. Pat is studying for her Novice license. W6ZWG putting an HW202 together. W6CUA has moved to Kingsburg. W6ASV, recuperating from an operation, chasing DX on 15. W6HQJ is on 50 MHz. K6PKO is on 220. K6JOG lost his tower during recent windstorm. K6HGK heard on 2 meters fm. W6AIE on 2 meters fm. W6ERV chasing DX. W6UBK active in MARS. K6RPH building model airplanes. K6ULR working on fm transmitters. The Fresno Amateur Radio Club meets on the 2nd Fri. of every month in the PGF building. You are invited to attend. Traffic: WA6RXI 49, WA6JDB 4, K2SSX 4.

SANTA CLARA VALLEY - SCM, Jim Maxwell, W6CUF/K6AQ - SEC: WA6KXB, RMS: W6RFF, W6BVB, RPLs for Nov.: W6RSY, W6YBV and W6RFF. Taking over from W6BVB as NCN Mgr. is W6RFF, with WA6BTI Asst. Mgr. Thanks from all to W6BVR for his years of effective service. New appointments are K6GJS as GVS and K6LU as EC West Valley area. WA6UAM very ORV on Oscar 7 ssb with 4W PLP out on 432 and 10 on 145. Over two dozen QSOs have resulted thus far. WA1ABW/1 has OSYed to W1. Heading up the WVARA for 1975 is WA6WLI, ably assisted by K6LU, vice-pres.; WA6WTX, secy.; WA6WEO, treas.; WA6WLR and K6KO, dir. Meetings held on the 1st and 3rd Wed. monthly at the Red Cross in Los Gatos. Returning to SCV for a one year sojourn at IBM is DJ6RX/W6 and family. W6RSY's traffic included 149 due to his regular Hawaii skeds with KH6IAC. W6YBV hopes to combat bum conds on 80 by moving to 160. Over 50 attended a highly successful Pac. Div. Director's meeting with W6ZRJ and W6VZ1 in San Jose in early Dec. K6UQH heard K6ZMW from the SJV on 1296 tropo. W6QNB now independent of commercial mains from 80 thru 10, thanks to the recent addition of a DC converter. Recent additions to the SCV Novice ranks include WN6HLE and WN6IUV in Belmont. W6DEF putting the finishing touches on new SB102. The Santa Cruz Co. ARC provided communications for a Hike-A-Thon in Nov. Participants included K6BDK, WA6UDF, W6BPC, W6BJNN, W6BRWU, W6KHS, W6WGO and K6UJZ with their mobile rigs. Re-elected for another term at the helm of SCCARC is WA6UDE. All other officers also re-elected, except for two new faces on the Board, WA6SVW and WA6ZEM. NCN traffic for Oct.: QNT 787, QCT 586 in 62 sessions. Traffic: (Nov.) W6RSY 1033, W6YBV 519, W6RFF 230, W6YVB 137, W6AUC 69, W6KZJ 60, W6TYA 50, W6VBC 46, W6DEF 44, W6NW 33, W6QNB 23, WA6HAD 22, WA6SCY 17, W6BMTX 8, W6IQU 3, K6WT 2, K6AQ 1, (Oct.) W6ASH 7, (Sept.) W6DEF 50.

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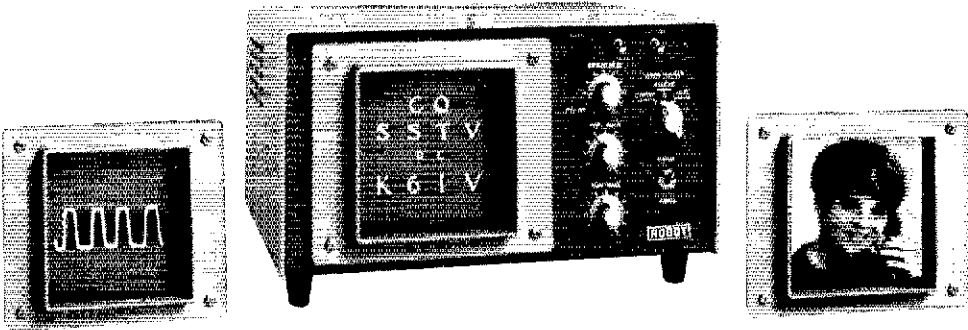
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ROANOKE DIVISION

NORTH CAROLINA - SCM, Chuck Brydges, W4WXZ - SEC: K4FBG, RM: W4FTE, PAM: W4JMG, VHF PAM: K4GHR. The Raleigh and Cary clubs sponsored a traffic operation at Crabtree Mall and put Amateur Radio in the public eye while running 45 pieces of traffic. W4BG1 now in Laurinburg and QNT on CN. Several groups planned practice drills for the SET, FC and area were: K4CJZ/Greensboro, W4NZJ/Salisbury, W4EHP/Fayetteville. K4FTB has recently finished S8200 cooking. Ex-W4EEL now has the call back from his 30s operation, now is W4JG. Alamance ARC bulletin reports NC QSO Party was excellent success, thanks to the K4EG bunch for sponsoring. New officers for the Carolinas-Virginia Repeater Assn. are WA4PLN, pres.; WA4WTX, vice-pres.; W4WDL, secy.; K4CAW, treas. Your SCM attended club meetings in Salisbury and Raleigh. The Forsyth ARC made the equipment move for its exhibit/club station to be housed in the Nature Science Tech.

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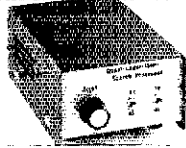
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VIRGINIA - SCM, Robert J. Slagle, K4GR - Asst. SCM: A. Martin, Jr., W4THV. SEC: WA4YIU. Asst. SEC: WA4PBG, RM W4SHJ, K4I2VYK/4, WA4AVN, WA4DHY. PAM: WB4BZX. Asst. PAM: WA9NEW/4. I deeply regret to report the passing of WB4HKN and W4MLI. Note the switcharound in SFC incumbent WB4QBR rounding with WA2QMI at LIVA and keeping LIVA WB4DZL active. VSRN Magazine Session on 3947 at 1330 Su. W4TE spent a week in hospital, OK now. WA4GPM expected back in Norfolk in Dec. WB2LAI/4 expects "4" call in Jan. Hampton Roads Radio Assn. received nice thank you letter from city Chesapeake for providing communications for voting precinct. WR4ACN OBs Tue., Wed., Thur. at 2100, and Sun. 1200. VSRN QNI 1015, QIC 442; VSN 288/100; VNFN 101/33; CV2FMS 458/52. Counties WA4WQG 3072, W4JUJ 2988. WB4FDI phone W4YZC at 3 AM that a KLT was on 80 - YZC got him and is now 5BWAS! Need more QNI on late VN, K4JM and W4DM are quite weary. W4ZM is new NOVARC secy. Thanksgiving storm had VSB and CV2FMSN active - provided help to many stranded motorists. First VP W4KFC busy in SS and DX, and at HQ counting Direct election ballots. WA4AVN/4 in new location and BPL ahead. WA4DHY, RM of VNTN, thanks WA4BUK for his help in making go. WA4CLK has SB 720 on the air. K4VWK should be 2 fm home and mobile soon.

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CVN	50.25 MHz	1900 EST Dy
VFN	3947 kHz	1930 EST Dy
CV2FMSN	01761 WR4ABO	2000 EST Dy
VNFN	7145 kHz	1800 EST Dy
VPON	3905 kHz	1715 EST T

BPL: WA4AVN and WB4DZI for Nov. & Oct. Traffic: (Nov.) WA4AVN/4 644, WB4ZKG 426, W4UQ 293, WB4FDI 17, W4QDUY 167, K4GR 151, K4IAE 135, WA9NEW/4 131, WB4DZ 121, WB4KIT 112, K4MLC 98, K4JM 80, K0PIV/4 78, K4EZL 6, WA4PBG 62, W4SUS 54, WB4QER/4 46, WA4DHY 41, WA4C 40, W4YZC 39, WB4GTH 34, W44VW 31, WB2VYK/4 2, W44YIU 24, WA4SMR 23, W2TPV/4 22, WB4WUZ 22, K4KA 1, W4KIC 13, W4TZC 10, K4VWK 10, W4MK 7, W4DM 4, WA4W 3. (Oct.) WB4DZL 116, WA4CLK 25, WB4GTH 4.

WEST VIRGINIA - SCM, Donald B. Morris, W8JM - Sr. WA8NDY. RMs: W8HZA, W8IWX, PAM: W8DIW, W8IYD. Phone Net Mgr: W8BDQX, CW Net Mgr: W8HZA. W8GSN of Romney (1974 Outstanding Amateur, W.Va.) received nice writeup in the Worldradio News. State Radio Council meeting will be held Feb. at the Route 17 restaurant in St. Albans. K8WMX, Council Pres. needs your assistance for the 1975 State ARRL Convention Jackson's Mill, July 5 and 6. Plan to attend. New Novices, West area, W8NSKV and W8NTIN. W8NQB, pres. of Opequan Radio Society and Editor of Monthly bulletin. WVN Novice Net meeting on 3730 at 2330. W8UUY attending law school, W.V. U. active thru Oscar 7. WVN Phone net, 30 sessions, 828 static passed 148 messages. MARA 2-meter net in 20 sessions, with 1 stations, handled 10 messages. West Va. Repeater Assn. at Charleston conducted Frequency and Modulation checks for area mobile. W8R11 attending Naval Academy. K8MYU placed first, followed WB8DQX and W8BLAI in the MARA 2-meter contest. Traffic: W8BMKL 36, WB8DQX 34, W8IWX 23, W8SPCM 15, K8OEJ 1, W8NNEZ 9, W8CZT 8, W8JM 8, W8LFW 8, W8SPAV 7, K8ZL 7, K8IXO 5, W8AHZ 4, W8GDF 3, W8BLW 3, W8ANDY, W8BSCD 3, W8KWL 2, W8RPKF 2, W8AKG 1, W8CKX 1, W8L 1, W8DUV 1, W8EUR 1, W8BLAI 1, W8BMZI 1, W8BRAE, W8LHX 1, W8UWU 1.

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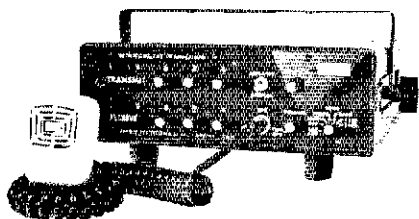
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to W0NUZ who has returned to live in Denver, following several years residence in Calif. WA0YNO reports many Denver area stations are increasing their 10-meter activity. Congratulations to WB0WL who won the Colo, Section in 4-Land QSO Party. He is also enjoying his new 50-ft. tower, two-element Quad, and 4B4VY Accu-keyer. Newly elected officers for Denver area Radio Clubs for the 1974-75 year are as follows: Arapahoe Radio Club WA0BDI pres.; WB0HSZ, vice-pres.; WB0HUC, secy.; K0IQL, treas. Pike Peak Radio Amateur Assn. WB0HCK. pres.; WA0ZCS, vice-pres. WA0YOH, secy.; WA0PJH, treas. Castle Rock Repeater Group W0JGL, pres.; WB0CJX, vice-pres.; W0JRR, secy-treas. Net traffic for Nov.: Columbine QNI 1261, QTC 98, informals 234, 2 sessions, 1517 minutes. SSN QNI 220, QTC 65, informals 15, 2 sessions, 465 minutes. Hi-noon Net QNI 993, QTC 67, informals 208, 28 sessions, 972 minutes. CCN (Oct.) QNI 104, QTC 84, 2 sessions. Traffic: WB0CJX, K0ZSQ 1314, W0WYX 657, WB0HCK 143, W0LQ 72, W0WF 57, W0SIN 45, W0LAE 41, K0PVI 33, W0HXJ 32, W0NFW 21, WB0WL 13, WA0YNO 12, W0MYB 9, W0CAQ 8, W0NNI 4, WA0YED 4, WB0JGT 3, WA0HLQ 2. (Oct.) WB0HUC 105, WB0WL 15.

NEW MEXICO - SCM, Edward Hart, Jr., W5RE - SEC. W5ALR. RM: W6UH, K5KPS, PAM: W6PNY, W5DMG. NMN 3585 kHz daily at 7:30 PM local time had 30 sessions with 168 QON and 170 traffic. New Mex. Road Runner Net meets daily 3940 kHz at 6:00 PM local time. W5SHJ has an off-center loaded 160-meter antenna which is working well. W5FTR, W5YRP, W5AOX, K5I-PO. W5SHJ and others held meeting to make plans for repeater at Silver City. W5TLK has been reassigned to Calif. W5KSS working on RTTY setup. W5RE reported into NMN from Atlanta, Ga. from mobile. K0K11/5 has built a new automatic c.w. identifier. Traffic: W5UH 368, K5KPS 183, W5ENI 137, W5KSL 118, W5PDY 105, W5TLK 78, W5RE 32, W5DMG 27, W5SHJ 181, W5QNH 6, W5SMY 5, W5BWV 4.

UTAH - SCM, Ervin N. Greene, W7EU - SEC: W7GP. RM W7UFM. BCN meets daily at 1930Z on 7272 kHz; 924 check-ins; 21 messages. UCN meets daily at 0130Z on 3575 kHz; 78 check-ins; 28 messages. New officers for 1975 include: Utah Amateur Radio Club: W7KCC, pres.; WA7WKQ, vice-pres.; WA7TSB, secy. Ogden Radio Club: K7ZOF, pres.; WA7QFR, secy.; WA7KPT and WA7FVQ, dir. BYU Club: Dale Jarvis, pres.; John Gardner, 1st vice-pres.; Glenn Dixon, 2nd vice-pres.; Corey Fiedler, secy. Univ. of Utah Club: WA7GWU, pres.; WA7SHU, vice-pres.; WN7VOO, secy. LDS International Radio Net meets on 14,283 kHz at 1900Z daily with W7OHR as NCS. UARC code practice held on 3695 kHz at 1900 MST on Sat., Sun., Tue. and Wed. Over 45 prospective ham attending UARC school being held at Murray High School. Many have already qualified for their Novice licenses. W7JQ, WA7MIH and K7WUP are heard on 2 meters comparing contacts while working Oscar 7. Operation Broadscope demonstrated the preparedness of the Salt Lake County group headed by LC WA7SYU. Exercise was coordinated with all of the Hospitals in the city and co. WA7GWU and his group are checking out a new repeater site a Snowbird approximately 13,000-ft. up with fantastic coverage in parts of 5 states. VHF activity very high with repeaters on 34-94, 28-88, 22-82 and soon the 16-76 one which is about ready to go. The Cedar City repeater WR7AAA being worked by many stations in the Salt Lake Valley making it one of the longest range repeater in the State. Traffic: K7ZVT 47, W7OCK 40, WA7TEH 37, W7KH 34, WA7MEL 34, W7DKB 24, WA7HCQ 10, W7BE 5, WA7ENF 1, WA7SLG 2, W7OHI 1.

WYOMING - SCM, Joe Ernst, W7VB - Wyo. Weather Net 3920 kHz, 6:30 AM MDT M-S. Jackalope Net, 7260 kHz, 12:15 PM MDT and 3920 kHz, at 12:30 PM MDT M-S. Wyo. Cowboy Net 3950 kHz, 6:45 PM MDT M-F. Hope your New Years Resolutions and plans include taking in the Wyo. State Hamfest in Cheyenne the third week end in July the 19th and 20th. Cheyenne and Laramie are working hard to make this a most eventful one. Radio Clubs have been active this winter, and repeater groups have been steadily forging ahead with better facilities and longer periods of the air without down time HI. The long skip was real bad for statewide nets during Dec. Hope the Holidays were good to you and yours, and you make many contacts until the summer static drowns us out. Wyo. news is real skimpy this month, hope to hear from more of you for next month's edition. Traffic: K7WRS 58, W7ZT 45, K7VWA 25, K7JTH 23, W7HNI 20, WA7HAB 19, W7YWW 6, W7IOI 5, W7SOT 4, K7KSA 2.

SOUTHEASTERN DIVISION

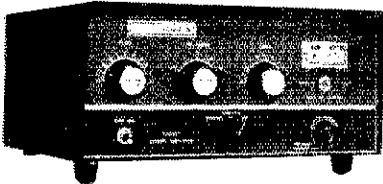
ALABAMA - SCM, James A. Brashear, WB4EK1 - SEC. W4DGH. PAM: W4RQS. RM: W4HI-U. K4UMD says his new TR4

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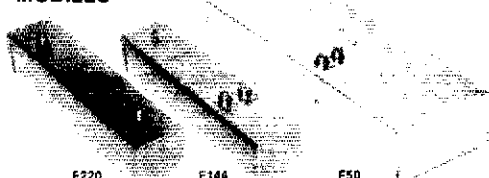
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working fine. He is waiting on Ark. contact to be confirmed so he can apply for WAS. WB4ZQF says the Thanksgiving holiday put him behind on his OBS schedule. K4HJM having trouble getting his 2-meter rig going. Sorry to hear K4JK is leaving the Section for Fla. He reports WB4USM has new tower, beam and rotor and trying to buy a prefabricated hole. WA4IBC operating fm and ssh since WB6CBI been visiting him. They operated WA4ECY in the SS. Put up a 40-meter curtain with 7db gain. WA4VFK working as Communications Officer with highway patrol. The Huntsville ARC, K4BFT, provided communications (in rain and mud) for the Ala. Arabian Horse Endurance ride in Bankhead Park. K4BFT also demonstrated ham radio and originated holiday messages at a local department store. Welcome to: WA4s JTW, JUC, JUJ, JUM, KMM, KMW, LAY, LDN, LDS, LFD, LFR, LFX; WB4s IWU, JUJ, KKV, LDG, LFC, LHX; WN4s IXB, IYA, IOZ, JSK, JVK, JVI, JWD, JWK, JWC, KOB, KOE, LBK, LFB and LHG. Appointed W4RON as ORS and OBS. Endorsed WA4NPL appointment as EC. W4ZWE and W4HFU home from hospital. Ida, XYL of W4RQS recovering from recent surgery. Traffic: W4LNN 181, WB4FZQ 177, WB4EKJ 106, K4BFT/4 77, K4AOZ 71, WB4KSL 67, W4ROS 48, WA4AJA 46, WN4IYW 27, K4UMD 13, WA4DZW 13, WN4EYV 12, K4VF 12, K4CUU 11, W4SVM 6, WB4TVY 5, WB4ZOF 4, K4HJM 2.

NORTHERN FLORIDA - SCM, Frank M. Butler, Jr., W4RKH - SEC: W4IKB. RMs: WB4DXN, WA4WTW. PAMS: WA4IZM/75, W4SDR/40, WB4BSZ/VHJ. New and renewed appts: K4VND, WB4SKJ, WB4DXN, ORSs/UPS: WB4QKG OO; K4CVO FC Citrus Co., K4BDY, WB4BSZ, K4CFV, K4ERD, K4ERD, WB4NJI and K4RZM earned NFPN Net Certificates. WB4GHU made BPL, WB4IHQ and K4LAN planning club contest activities. The AR Gourmet Soc. going strong. WA4BMU worked good 6-meter DX. FLARA considering club project of counter or keyer. WB4JCV doing FB in SS contest until rig went up in smoke. K4SVX sponsors ham club at Woodham H.S. The WR4ACZ receiver site has automatic switchover to batteries, plus signal to notify of power failure. New officers of PARC are W4MMW, W4BVE, W4RKH and WB4SFU. About 35 hams provided quick reporting of election returns using 2-meter fm. WB4NLV did nice job of preparing the Relay Chatter. New officers of Panama City ARC are WA4IZK, WA4AVP, WB4YKV, WA4DEN and K4AHV. W4AFT and W4GGU set up stations to work Oscar 7. Gainesville hams provided communications for air show. WB4PEJ operated 1/4 from hospital on 2 meters. Another Novice class underway at Santa Fe Jr. College, taught by WA4PWF. K4KE honored by Fla. Sheriff's Assn. for work in setting up ham station. WB4PHT, at the Boys' Ranch near Live Oak. WB4ANW won first prize in homebrew contest. New NOFARS officers are WA4UFW, WB4DAD, WN4EEK, WN4FCD, WB4ANW and WB4SCA. WA4HOL made listing in "Who's Who in American High Schools." Traffic: (Nov.) WB4GHU 524, WB4DXN 254, WA4FB 237, K4VPY 144, K4VND 144, W4SDR 143, W4LDM 130, W4WNY 121, W7EM/4 111, W4KX 102, K4CVO 84, WB4DAD 79, WA4HOL 61, WB4FJY 53, W4RKH 46, WA4IZM 40, WB4OMG 21, WB4NJI 18, W4LSR 16, W4LA 14, WB4IHQ 13, WB4VDM 13, W4AFT 12, WA4EYU 11, K4OER 10, W4YSO 10, WA4CRI 8, WB4VAP 7, K4RNS 6, WB4VMP 6, WA4VZF 6, K4FLV 5, WB4NHH 3, (Oct.) W4IA 13.

SOUTHERN FLORIDA - SCM, Woodrow Huddleston, K4SCL - SEC: W4IYT. Asst. SEC: W4SMK. RMs: K4FBF, W4LH, WA4GBC. PAMS: WA4NBF, W4OGX. New appointments: W4AWS and K4NF upgraded to OO-I, K4DAS appointed OO-IV, OOs W4AWS, K4IPI, K4QG, K4QM and WA4UVG all turned in excellent OO reports this month. Interest in OO work in this section has picked up considerably in the last few months. OVS WA4ZLW in Boca Raton reports reception of TV stations KVTO Chan. 3, Othmwa, Ia. and KTVI Chan. 2, St. Louis on Oct. 27. He is putting up an ATV repeater on 427.25 MHz in Boca. OPS K4DRH looking forward to retirement and more time on traffic nets. WB4ALH reports General Telephone ARC Novice course has 3 new graduates: WN4KTC, WN4KYP, WN4LEK. WB4SIZ is newly appointed asst. EC Hillsborough Cty., for 2-meter fm. K4PMK resigned as EC Pinellas County due to work schedule. WB4FEC/4 acting EC Pinellas. K4QG starting 3rd year as treas. of Gator Chapter QCWA. K4TH, ex-K2SGW, now retired and living in Clearwater. We welcome Key West ARC as newly re-affiliated club. Two repeater stations received WR calls: WR4AKU Florida Power employees club and WR4AKV, Tampa Bay Repeater Assn. new Pinellas County machine. St. Petersburg and Brandon Clubs still waiting. Traffic: (Nov.) K4AIZ 689, K4SCL 408, WA4GBC 354, W4LH 318, W4DOS 294, WB4AIK 168, W4WYR 153, W4BM 139, K4SIH 117, W4DVO 96, WB4KSG/4 82, WB4AHJ 51, WA4UOQ 46, W4IRA 39, WB4VYU/4 39, WA4HHD 32, WB4HJW 32, K4QG 31, W4BCZ 29, K4TH 27, WA4BPF/4 26, K4BLM 24, W4GDK 20, W4MML 19,



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SOUTHWESTERN DIVISION

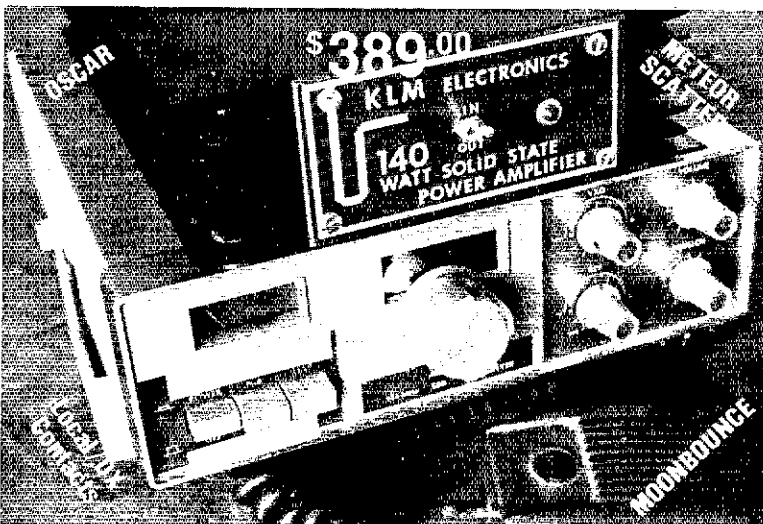
ARIZONA - SCM, Marshall Lincoln, W7DOS - WNTWLS, member of Explorer Scout Post 710 sponsored by the Ariz. ARC of Phoenix, received the Eagle award at a club meeting. New officers of the Post are WAT7WL, pres.; WN7WLS, vice-pres.; WN7WXB, secy.; WA7UQT, treas. Assisting in Civil Air Patrol simulated emergency exercise at Marana Air Park were K7CET, K7NTG, K7WIP, K7ZRL, K7CRN, W7HFR, K7RML, WA7BXQ, K7OBR, W7LAR, W7DR1, W7CAF, WA7HIT, K7WVG, WA7JCK and WA7HEH. With regret, it is reported K7OIX is a Silent Key. K7CVT reports operating through Oscar 7 on its first active orbit via 144 to 28 MHz. The Phoenix Spring Hamfest will be Mar. 8, with the location not determined as this report is written. Ops with ideas for the event are to contact WA7TGB or WA7NXL. Officers relected by the Scottsdale ARC are W7ISA, pres.; W7KIH, vice-pres.; VE2HS/7, secy.; WA7OYX, treas.; W7FBU, board member at large; W7UJF, ARCA rep.; W7DL, SARC SPARC editor. WA7TIL is the new membership chmn, succeeding W7GX, who is retiring. New officers of the Ariz. Repeater Assn. are WA7GEQ, pres.; WA7TGB, vice-pres.; WA7YLM, secy.; WA7VCA, treas.; WA7YM, property custodian; W7JPI and K7UYW, board members. K7BR has been appointed GVS. A7EN traffic: 22 in 30 sessions. Net certificates issued to K7NMQ, K7NTG and WA7KQE. PSHR: K7CC 24, K7MTZ 10. Traffic: K7NHL 294, K7CC 41, WB2WPV/7 32, K7NTG 26, W7DOS 24, K7UXB 14, WA7KQE 6, WA7ICK 5, W7CAF 1.

LOS ANGELES - SCM, Eugene H. Violino, W6INH - SEC; WA6DUC, RMs: K6UYK, WB6OYN. I want to thank Rose Perley of the Telco RC for sending me the article on Citizen's Band "Runaway radio." WA6LTO and WB6NST of the W6IN society won the San Diego "F" hunt. The PARC RC will handle the communications for the annual Western Hemisphere Marathon Championship sponsored by Culver City. The Los Angeles Councilmen have finally put to rest the proposal to restrict antenna heights, this has been a long battle. WA6IDN and WA6WJV have organized 25 men, including city employees in the Claremont and Pomona area. They conducted a Halloween patrol in conjunction with local police. WA6GGK went to the San Diego Convention and came home with a Heathkit SB-303. WA6CFR and YF will soon be leaving downtown El Monte for their new home in China. The QCWA group came away from the Convention with their share of prizes. W6PHE with a new Atlas transceiver and W6MDQ walked away with a super large beam antenna. WB6QFE, K6YNW and W6VLF are conducting beginners classes for the San Gabriel RC at the local park. Congrats to WB6MKA on his recent appointment as area EC; he hopes to further wild AREC into a group of equipped can-doers. The So. Calif. VHF RC supplied coverage of the streets of Norwalk as additional eyes for the County Sheriff on Halloween. It was a huge success this year, with seven units rolling on the streets in contact with City Hall. WA6ARC manned the base station while FC WA6DKC and nine others participated. By the time that you have read this most of the local RC's will have had their Auctions, White Elephant Sales and Attic cleaner Sales, this means all the ham shacks should be nice and clean on the 1st of the year. Congrats to W6KAT on his recent OBS appointment. Don will be especially active on 2 meters. W6VHU reports that the code class has started and WB6QFE reports there are a dozen students learning the code. Those clubs interested in interesting talks should contact Dr. Richter W6VZA; subject, WWV time standards and frequency calibration. The TRW/ARC Nov. Annual Hamfest and Awards Dinner was held on the 9th at the Princess Louise, Redondo Beach; a very good turn out was reported by Pres. W6LRN. WA6IDN very active in the Claremont area AREC, he and WA6WJV doing bang up job recently with heavy recruiting and drills. Congratulations to W6EJ who is now our new Vice Director. K6EA back in the Los Angeles area after a long absence, he spent the summer in Minn. WA6TLV, WB6ZVC and WB6VZI operating contest on 160 meters. Congrats to WA6ZKI on his new Extra Class ticket. W6OAW making arrangements for WPS group at SAROC. Congrats to Tom Strickland on passing his Advanced Class, WN6EGZ back editing the Santa Clarita Bull after a successful operation on both eyes. Traffic: (Nov.) W6INH 264, WB6OYN 207, W6UE 179, W6DOU 137, WA6IDN 111, WA6OTU 80, WA6TLV 42, W6HUJ 38, WB6OYD 27, W6OAW 19, WA6ZKI 17, K6CL 15, WA6TCH 10, WB6VZI 10, WB6YID 10, K6UYK 9, W6FD 5, W6NKE 3. (Oct. WB6OYN 346.

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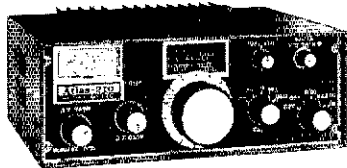
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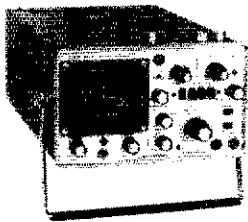
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ORANGE SCM, William L. Weise, W6CPB - Asst. SCM: Richard Birbeck, K6CTD. SEC: WA6TVA. FAM: K6YCI. RM: WB6AKR. New arrival in Orange Section K6HQ, ex-W0HE. Welcome to the area Marion. WB6AKR has moved to his new QTH. Bill is active on 8U with an inverted "Y" and will soon be on 40 and 20. Glad to see you back Bill. Most Radio Clubs have elected new officers for 1975. Please send list of new officers with their addresses and telephone numbers to your SCM. 1975 officers for the Fullerton RC are: W6MN, pres.; WB6KS, vice-pres.; Mike Johnson, secy.; K6ATK, treas. East Whittier RC: WB6GSJ, pres.; WB6KOE, vice-pres.; WA6JQC, secy.; W6GLS, treas. K6YNB reports good success with Oscar 7 on 432 in and 146 out. Had numerous QSOs via Oscar 7. Wayne also says he is on 1296 MHz with high selectivity system. If you haven't tried Oscar 7 - try it - you may like it. WA6TVA is on the 2-meter RTTY net having a ball. Steve says RTTY is the way to go and plans for link-up for the SET. W6QBD, with help from SOCALED has finally gotten rid of his QRN. Hopes it is more or less permanent. K6GMI had lots of rig and antenna problems. Hal was off the air for about fifteen days in Nov. He is now active on DRN6 and other nets. W6BUK reports on a wonderful trip back east. Visited old friends from the 1922 era, the Antique Wireless Assn. annual meeting and visiting old old friends. PSHR: WA6TVA 49, K6GMI 47, WB6AKR 32. Traffic: K6GMI 141, WB6AKR 65, WA6TVA 50, K6GGS 23, W6WRJ 16, W6CPB 12, W6QBD 11.

SAN DIEGO - SCM/SEC, Cy F. Huvar, Jr., W6GBF - Asst. SCM: Art Smith, W6INL. Asst. ECs appointed are WB6PLZ for Central District Ten Meter Net. WB6DGR AREC liaison to SANDRA. SOBARS had his monthly program with K6VV and his very efficient vertical antenna. Ace has done a lot of work on this project with excellent on-the-air results. North Shores ARC started meeting at the South Clairemont Rec. Ctr. with W6HME showing nature films of Grand Canyon and Cascades. Palomar ARC meeting in Vista had excellent film and presentation by CHP officers. F1 Cajon ARC held home brew contest which was won by WA6IIOH, with WN6QVE coming in 2nd; others were WN6WWR, WA6ICTD, K6JPS. Poway ARS hosted WA6KPC of TRW all about automated testing of comm. satellites. Club net Mon. at 2000 on 28.7 MHz. Congrats on affiliation and providing amateurs classes at Poway Adult School. SD QCWA held quarterly dinner meeting with nice turnout to hear Special Agent FBI Whidbee speak about problems in apprehending comm. act violations. New Novices: WN6HND, WN6GZT, WB6HUA. Upgrading are: WB6DQR, WA6TCD, WB6UKI and K6VEA. On-the-air sporting the grand prize is WA6HHX. 73 to WB6URI moving East with parents. W6PSF and YF completed 12k mile auto trip having 200 QSOs in 27 states and 5 provinces. W6R11 says he and K6RUR finished 12 years of QSOs, they're brothers. Daughter Marcia won student prize, WA6ABO now W5ULU and WA6AAM is W5ULT. PSHR: WB6PVH. Traffic: WB6PVH 307, W6R11F 155, WA6DMB 82, W6DEY 37, W6PZU 25, W6GBF 8.

SANTA BARBARA - SCM, D. Paul Gagnon, WA6DEI - The ARCC held the Hope Ranch Park Pumpkin Patrol in Santa Barbara again this year. Comms were maintained with Sheriff's Dept. Participating were W6JPP, WA6HEY, WB6IYW, WB6YFZ, WB6MSC, W6YJO, K6TAZ, WB6FZU, W6GAW and WA6PFF. W6AB, club station for Satellite ARC operated 4 HF and 3 VHF stations on the day of Oscar 7 Launch from Vandenberg disseminating countdown information nationwide. Congratulations and a hearty thanks for a job well done to K6YHK, WB6WVY, WA6CRX, W6OMV, WA6DKY, WB6RXX, WB6HJW, W6OVU, WB6LKK, WA6FIR and WA5SFE. A new Santa Maria AREC repeater is WR6AHZ (28/88). Look for new 450 repeater in Ventura area on 442.325 in 447.325 out. WA6DHS in Baywood has a new Atlas transceiver. The Estero ARC operated a message center at the Gilbratrar of the Pacific Celebration in Morro Bay. Congrats to W6KW on being elected as our Dir. for another term. He celebrated with a new Brimstone 2M rig. WB6TFW is the Advanced and Extra Class instructor for Satellite ARC. WA6DEI spoke and showed slides from around the world at the Satellite ARC. WB6HTK has completed 40M for his SBWAS. W6PRP was over 100K both modes of the SS. A recent report from our SEC showed less than 25% of ARRL members in the section belong to the E.C. League members of all people should be aware of the importance of being prepared and should set the example for others. Let's set the record straight for the upcoming SET by renewing your membership in ARRL, signing up a friend, and volunteer your help to your EC for the SFT Jan. 25. WA6DF1 visited with the Mt. Diablo ARC in Northern Cal. PSHR: WA6DEI 42, WA6LBO 22. Traffic: WA6LBO 108, WA6WYD 86, WA6DEI 60, WB6HJW 4, K6QPH 3

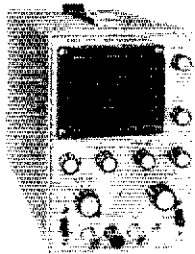
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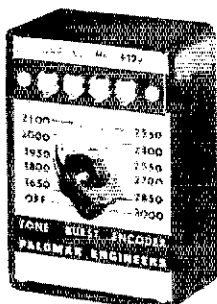
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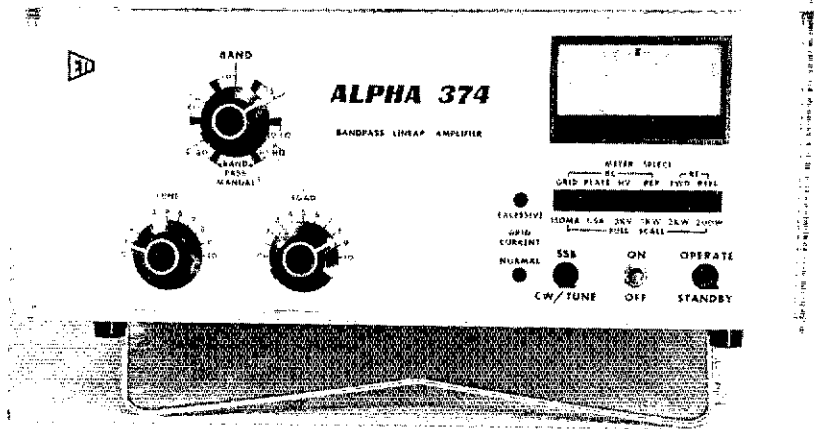
WEST GULF DIVISION

NORTHERN TEXAS — SCM, L.E. Harrison, WSLR — Ass. SCM: Frank E. Sewell, WS1ZU, SEC: K5KQM. RM: WSQU, WSQ reports W5HY came up with Elbert Halind call. HY now at Ft. Worth. W5FIZ reports tower problems. W5SDXB new ORS. SEC: K5QKM reports 100%, 345 members N.Tex. NeTen 4 sessions, 5 check-ins, QTC 3, Cherokee Co. Emergency Net 7137 kHz per W5SHN. Dallas QXWA met Dec. 7. W5PHI now living in Fla. K4KYK. Tyler chapter met Sat, Dec. 14, Spanish Trace Int. W5QPX NTR OO reports 17 observations Nov. W5GSN PAL response from CD-34 card fair. W9EHR/77 working on RM 246. W5EYB and W5GM relected. WSIA 40-meter Eycbank Chm shows 620 check-ins, 56 eyes shipped. WASKHE OO endorsed Panhandle ARC had Christmas get-together at W5UGO's on Shawnee St., 8 PM. K5WPP applied for AREC appointment. NIE reports 75 active members meeting 3910 each Sun. 8:00 AM. WASKZA, Red River Valley ARC, reports license classes start Feb. '75 with 28 members. 2 meters program demonstrated before F75 HS group. W51BW renewed OO appointment for 2 years. W5NGI Denton County ARC designated a continuation of Constructive Night 1st Mon. each month. W5QOZ, former Dallas ARC pres. Charlie Op. "Sweepstake" work reported DARC "clean sweep" on A-3, 1 hour, so-look-out R/WK. (hd). W5SHN unable to accept N.Tex. SEC because of ministerial responsibilities. FtW sez OT night held Jan., lecture on noise bridges plus chile supper Feb. '75 and Civ. Defense program Mar. '75. The Richardson WK reports regular meeting 'PI bldg. Dec. 9 8. PM per K5ZJP and two R/WK contests expeditions into the Caribbean as VP2M5U multi operator single transmitter entries so sez. W5SRXT. Amarillo Repeater Society license arrived, call W5SAFU antenna 60-ft 34-9 deal. Traffic: (Nov.) W5TI 379, W5QU 201, W5SHN 196, W5SBF 191, W5QGE 117, W5SDXB 92, W5ASNSJ 78, W5OWY 6, W5GSN 38, K5QKM 36, W5EJLZ 14, W5LR 11, W5YK 1, W5SMFQ 6. (Oct.) W5GSN 32, W5SDXB 18.

OKLAHOMA — SCM, Cecil C. Cash, WSPML — Ass. SCM/SEC: Leonard R. Hollar, W5ASN. RM OLZ: W5SGWB. RM SS: W5EY. RM OAN: W5KMK. PAM STN: W5SAZS. PAM OTW: W5AOUV. PAM QFON: W5AZOO. Mark your calendar for Sat. Mar. 1 for the Mid-States VHF Repeater Society meeting to be held in Tulsa. This is not just for VHFers come on out you should find something of interest to you. Thanks to K5CAY and others for the work with the new license classes at the Enid ARC. Congratulations to new ECs: W5SAXH, Kiowa Co. and W5SHLR, Muskogee Co. The S&T operation will be over when this goes to press but I do hope you took part. For those traveling southern Okla.-North Tex. area there is a new and mighty I say, a mighty fine repeater, 146.16/146.76 located between Lawton and Wichita Falls which gives real good coverage in both towns, mobile. The Lawton Machine will go back up on 146.28/146.88 when the Fox Char. Charlie gets around to getting our license back to us. Shawnee has new low power (local coverage) machine on 146.31/144.9. W5SBKH of Shawnee has a new twin stack of eleven-element antennas for 2 meters. K5LUJ reports a lot of good signals on 2 meters. The Ada ARC, W5NBA, has a new 250 watt 2-meter rig in addition to their 5 band SB-102 (with phone patch) located in the EOC. Traffic: W5RB 148, W5SGWB 61, W5EJLZ 49, W5SAZS 3, W5SEEY 29, W5SUG 29, W5AZOO 29, W5FKL 18, W5PML 1, W5AFSN 10, W5EAY 8, W5AOUV 6, W5EQR 2.

SOUTHERN TEXAS — SCM, Arthur Ross, W5KR — SEC: W5SCUR. RM: W5UG. PAM: W5HWY. OOs reporting this month: W5RBB, W5LTO, W5AZBN. QVNS reporting this month: W5SHRI, W5GYF. W5GYF says that he is NOT interested in forming a nationwide UFO net as stated in Oct. '74 ONT strays. W5TOP had big time at San Patricio County 160 Meter Shrimp B. QVNS W5BCIT busy with usual semester-end problems. W5B5CUR, RM W5UG and others had grand time at San Antonio ARC Christmas Party. W5SHDS got K5FRK's ICOM 230 worked after the factory failed. W5IBT reports Brazoria ARC provided communications for the March of Dimes Walkathon in Jan. '75. O W5BHV trying his hand at DX and ORP. OPS K5RVF had big time with Hoy Scouts Good Will Day Nov. 3; had help from Post Arch. ARC group. W5UX thinking of moving to Rio Grande Valley — least part time. 1. Islandia ARC (Galveston) had successful auction Tex. Southmost ARC (Cameron County) had successful truck traffic. 1975 officers for ISARC: W5JYJ, pres.; K5OYR, vice-pres.; W5QKH, secy.; W5UDR, treas. Traffic: W5TOP 434, W5UGE 33, W5YBM 212, W5SFMA 193, W5SCUR 166, W5KLV 161, W5L 127, W5AZBN 101, W5AYFA 74, W5SAMN 62, K5HZR 6, W5RBB 45, K5EJL 39, W5FOE 36, W5BJR 34, W5BHO 3, W5TRW 23, W5SGNP 12, W5IBT 12, W5BHV 11, W5ACTJ

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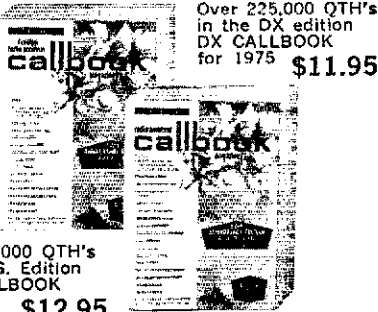
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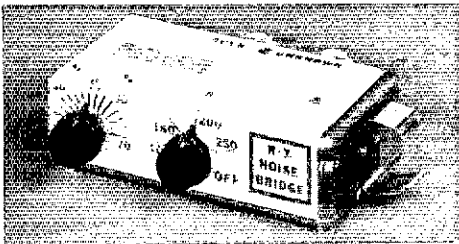
ALBERTA - SCM, Don Sutherland, VE6FK - Asst. SCM: Mrs. Domez Booth, VE6YL. SEC: VE6XC, PAM: VE6ALQ. It was a great pleasure for many of us in the West to meet VE2MS Can. Div. Dir., on his recent swing through the west. The Calgary luncheon meeting with VE2MS was well attended with representation from Lethbridge and Nanton. Of course the Can. Div. Convention in Calgary Aug. 1 to 3, 1975 was discussed, as well as League affairs. EC VE6AGZ has resigned with VE6AVV volunteering to replace him. Best of luck to VE6AVV and congratulations on his appointment to EC for the area. The new executive of CARA is VE6MX, pres.; VE6GH, vice-pres.; VE6AFO, secy.; VE6CCB, treas.; VE6AP, membership secy.; VE6SA, VE6KC, VE6JD, dir. Congratulations to VE6MX on receiving the CARA Ham of the Year Award. VE6AMM does a nice job of representing VE6 on the BCEN. Any volunteers to help on RN7? Traffic: VE6FK 65, VE6AHC 14, VE6ES 14, VE6ASL 9, VE6WN 9, VE6ALQ 6, VE6AVV 5, VE6FV 4, VE6MJ 4, VE6OO 4, VE6YW 4, VE6AFO 3, VE6AUZ 2, VE6AFJ 1.

BRITISH COLUMBIA - SCM, H.E. Savage, VE7FB - British Columbia Amateur Radio Assn., annual meeting resulting in change of officers: VE7HI, pres.; VE7BZH, secy.; VE7AYI, treas.; VE7KC, VE7LL, 1st and 2nd vice-pres. VE7LL our BC Asst. Dir. and EC for Burnaby now a Grandfather. BCEN CW net has a contest for the member who handles most traffic in six months will win a semi-automatic key. Burnaby ARC new officers are VE7BRR, pres.; VE7AVH, secy. VE7ABQ home after Open Heart surgery. VE7PB reports stolen, TS520, TS520 VFO, IC-22, IC-71. Maple Ridge ARC elected VE7BRH, pres.; VE7AAR, secy. We are looking for volunteers for the appointment of Emergency Coordinators anywhere in BC. Traffic: VE7CDF 134, VE7BLO 42, VE7OQ 13, VE7TT 6.

MANITOBA - SCM, Steve Fink, VE4FQ - VE4SW reports the Winnipeg Centennial Award a success as the year closed out. Band conditions on 80/75 have improved greatly and this has been reflected by increased activity on the nets. MTN certificates have been issued to VE4s QJ, XP, TR and VV, VE4TP a new call in Winnipeg, while VE4MA now signs VE6JK in Calgary. Congratulations to VE4FH on a new junior op, and to VE4VV on WAS. MFPN: 30 sessions, 1360 QNI, 65 QTC. Don't forget our traffic nets: MTN 3660 kHz at 0030 GMT and MEPN 3765 kHz at 0100 GMT. Traffic: (Nov.) VE4OW 47, VE4PG 43, VE4TY 11, VE4XP 10, VE4CR 9, VE4DD 9, VE4FK 8, VE4NE 8, VE4EA 7, VE4LU 7, VE4JP 5, VE4HR 3, VE4JK 3, VE4HA 2, VE4HE 2, VE4NC 2, VE4TR 2, VE4AP 1, VE4IX 1, VE4MG 1, VE4PA 1, VE4XN 1, VE4YP 1. (Oct.) VE4FA 5.

ONTARIO - SCM, Holland Shepherd, VE3DV - Your SCM will be taking a break-in-the-sun the latter part of Feb. and hopefully will manage to have someone prepare the column for that month. On Nov. 15 the Ottawa ARC and the QXWA Chapter joined in a social dinner and the awarding of plaques for outstanding service to the club. Guest speaker was the Honourable William Porter, W3AAC, U.S. Ambassador to Canada. Bill surprised some members of his audience by speaking on the pros and cons of the present US-Canada energy crisis, but he followed this by being someone of his experiences as chief US negotiator at the Vietnam peace talks in Paris and what it feels like to be "rare DX". Service plaques were presented to VE3CNI, VE3AMK, VE3CVK, VE3DQ, VE3DPP and VE3FW. This month will see much activity on the public service scene as the Toronto, Belleville and Ottawa AREC members and others provide communication for the Winter Car Rally Feb. 9-10. The week end of Feb. 21-23 will also see the Ottawa OARC and OMVRC and others supply communications for the Canadian Ski Marathon. VE3RL, VE3COK and VE3GAB of Quinte ARC all into fast scan TV and enjoying every minute of it. VE3RL still tueding with VE3RPT over interference caused by high power of VE3RPT. Before it gets any worse I would hope that the problem can be referred to the Repeater Councils for resolution. VE3HZI heading up a project to build frequency counter. Write to George if you would like to get more information for your own club. Following 2-metre mobilers met at home of ONTARS VE3AXR Cardiff to check routes of Winter Rally VE3s GFN, RL, GRD, OZ, HBS, SB, HBR, CGD, HON, CIG. Traffic: (Nov.) VE3SB 390, VE3GOL 294,

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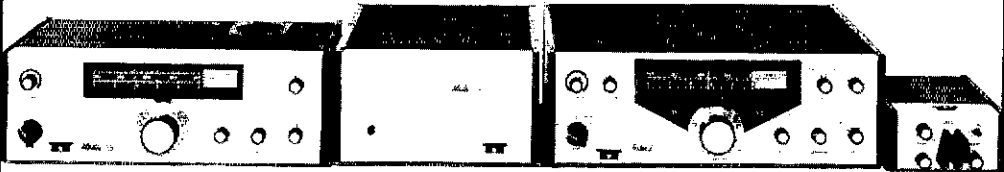
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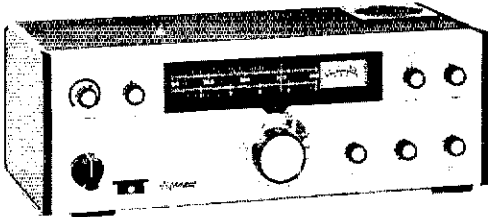
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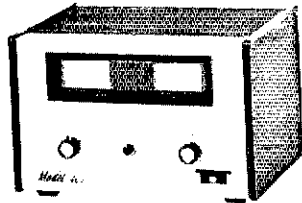
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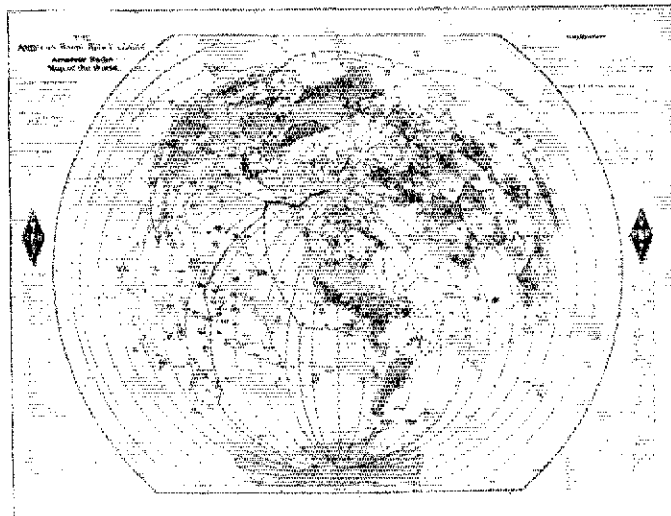
SASKATCHEWAN - SCM, P.A. Crosthwaite, VE5RP - With the help of VE5OH and VE5YR the Prince Albert Club will now be putting out a club paper to keep members up to date with their news. There is a possibility that we may see a new club formed in the swift current area. Saskatoon amateurs will be holding a QSO party Feb. 8, 9, 1975. Starting time 1800Z. Be sure to participate. The Regina club has been participating in the last few contests like the VF contest, and now that Saskatoon is going to host a contest I hope we shall see more of the VE5 amateurs participating in contest work. Good luck and have fun. Traffic: VE5HP 39, VE5TT 18, VE5BO 16, VE5XC 11, VE5WM 9, VE5DN 8, VE5RP 5, VE5CJ 4, VE5UK 3, VE5YK 3, VE5SM 2, VE5VK 2, VE5LC 1. 



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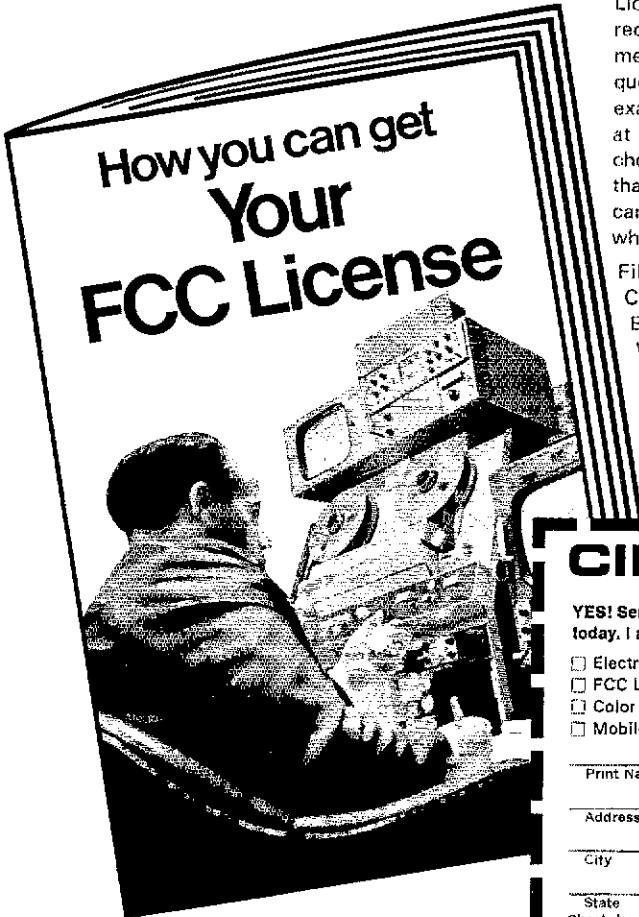
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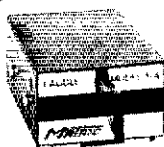
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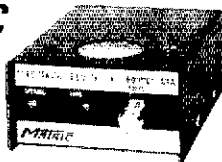
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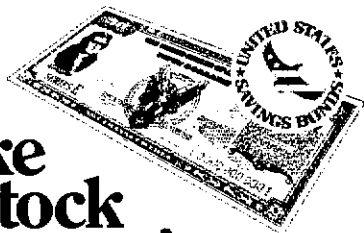
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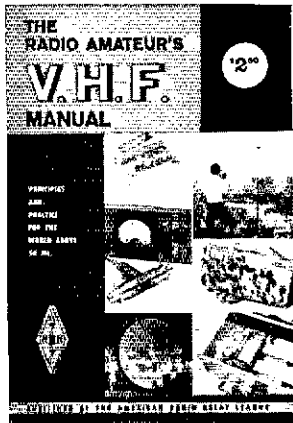
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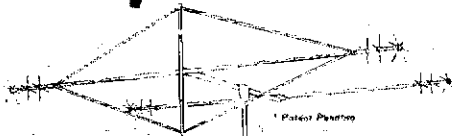
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Happenings

(Continued from page 79)

to applicants qualifying on the basis of a mail examination administered by a volunteer because of distance or other unusual difficulty in appearing at a regular examination point. The Technician (C) Class and Novice Class licenses are issued to applicants qualifying on the basis of a mail examination administered by a volunteer, the normal procedure for these license classes. Except for the Novice Class license and the Conditional Class license, the absence of the designator (C) or (P) following the operator class on the license means the licensee has qualified before a Commission examiner, and is not subject to re-examination. Any licensee qualifying on the basis of mail examination may be required by the Commission to appear before a Commission designated examiner for re-examination. Periodically, a sample number of licensees who have obtained their licenses on the basis of a mail examination are selected at random and asked to appear in order to verify the validity of the mail examination system. Those who do not appear, and those who do not pass the re-examination, are subject to license cancellation.

6. The privileges associated with each operator license class are intended to provide the necessary incentives for amateurs to upgrade their skills. This system has been largely responsible for thousands of amateurs to upgrade, particularly to Advanced Class and to Amateur Extra Class. The current number of operators in each license class is shown in Figure 2. While it is gratifying to see even the limited success of this system toward fulfilling the basis and purpose of the Amateur Radio Service, it is a desirable goal for most amateurs to reach a higher operator class, say the Advanced Class, or even the Amateur Extra Class.⁴

7. An inherent principle in arriving at any new licensing system is a logical relationship between the qualification requirements and the operator privileges authorized at each license class level. For instance, it would not be rational to require an applicant to demonstrate a certain specific proficiency in order to qualify for a particular operator license class which authorized no corresponding privileges requiring that proficiency. Conversely, an operator license class should not authorize significantly more privileges than the requirements for that license class reasonably justify. While we believe there are the means available within the Amateur Service to satisfy the reasonable needs of most United States citizens having a genuine interest in pursuing radio activities within the basis and purpose of the Service, there are basic limitations brought about by practical realities. For example, the vast array of interests and levels of ability among amateurs must be provided for within a fixed number of different operator license classes. The resources available to the Commission for regulating the Service are not unlimited, issuing licenses, preparing and conducting examinations, monitoring the frequencies, enforcing the regulations, etc., are all activities that must be provided by the Commission. In this proceeding, we are moving on the assumption the amateurs' record of cooperation and assistance will continue in the future, and an unduly large increase in the Commission's workload will not be necessary.

⁴ Section 97.1(c) states as one of the principles expressing a fundamental purpose of the Amateur Radio Service: "Encouragement and improvement of the Amateur Radio Service through the rules which provide for advancing skills in both the communication and technical phases of the art."

8. We are proposing in this proceeding to establish a new *Communicator Class* operator license, having no telegraphy requirements nor privileges. Operation under this license would be limited in a manner similar to that of the current Novice Class, except frequency privileges would be above 144 MHz. The objective would be to enable beginners to enter the Amateur Radio Service and, through the experience gained by operation of a low-power radiotelephony station, develop the necessary interest and skill to qualify for higher class operator licenses.

9. Those petitions calling for another new operator license class above the current Technician Class raise significant questions regarding the scope of the Technician Class as presently constituted. For example, in RM-1535, the American Radio Relay League (ARRL) states:

"It is readily apparent from the various pronouncements of the Commission over the years and from the present interests and operations of the Technician Class licenses that the purposes for which the Technician Class was established . . . require review. It is respectfully suggested that any Notice of Proposed Rule Making invite comments and suggestions for major revisions of the Technician Class license . . . In numerous disasters . . . including the Alaskan earthquake in 1964 and the recent Hurricane Camille, the contributions of Technicians in providing internal communications have been valuable beyond estimation. Participation by Technicians in the League's Amateur Radio Emergency Corps (AREC) has grown over the years. The evolution of Technicians as communicators as well as experimenters . . . since the class was established must be recognized."

Although interest in the communication aspects of amateur radio has emerged among the some 49,000

Technician Class licensees, apparently they are not sufficiently persuaded by the additional communication privileges in the High Frequency (HF) and Medium Frequency (MF) amateur bands afforded to General Class licensees to the extent of increasing their telegraphy skill from 5 words to 13 words per minute, the only real difference in qualification between the two license classes. The needs and interests of this group probably are fully satisfied by the operation of an amateur radio station in the VHF (Very-high Frequency) regions and above. Accordingly, we can conclude technological and operational developments by amateurs in the VHF, and possibly in the UHF (Ultra-high Frequency) bands, have reached the point where the interest to amateurs is comparable to, if not already exceeding, that in the MF and HF "shortwave" bands. Therefore, in order to provide meaningful incentives for amateurs interested in this part of the radio spectrum to upgrade their skills, the incentive principles should also be applied for these bands similar to those now in effect in the shortwave bands. A new higher class operator license comparable in requirements and privileges to the Advanced Class, except based upon operation above 29 MHz, may be desirable. Obviously, for this new higher class license, any additional telegraphy skill is not meaningful since telegraphy is not a major communication mode in these frequency bands. However, other modes, such as television, remote control, facsimile, repeaters etc., are very meaningful, and need to be emphasized. Therefore, we are proposing another new operator class license, the *Experimenter Class*, as the means toward fulfilling these needs.

10. We have examined several possible revised operator license class structures in a search for the



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best way to incorporate the proposed Communicator Class and the proposed Experimenter Class licenses. As broad objectives, we desire to 1) preclude, or at least minimize, any adverse impact upon presently licensed amateurs, 2) closely relate requirements to privileges for each license class, 3) provide realistic upgrading steps and incentives, 4) provide the opportunity and flexibility for persons interested only in shortwave radio, or only in VHF and above, or interested in both, to obtain a license and pursue their particular interests. As a result, the structure we are proposing is shown in Figure 3, and the specific proposed rule amendments are given in Appendix II. In general, we favor this structure because it seems to more fully reflect our objectives and to satisfy most of the objectives of the petitioners. Two series of operator license would be offered, Series A and Series B. Amateurs would be permitted to hold *one* operator license permitting privileges in one or both series. For example, an amateur could hold an operator license authorizing Novice Class privileges in Series A and also Technician Class privileges in Series B, a request asked for by several petitioners. Operator licenses in Series A would authorize only privileges on amateur frequencies below 29 MHz, and operator licenses in Series B would authorize only privileges on amateur frequencies above 29 MHz. Operator licenses would normally be issued for a 5 year renewable term, including the Communicator Class and the Novice Class in order to compensate for any increased administrative burdens resulting from the proposed amendments. (Novice Class licensees are currently issued on a 2 year, non-renewable basis, no filing fee). Section 303(L)(1) of the Communications Act of 1934 does allow us to issue an operator license for life, as requested for the Amateur Extra Class in RM-2030. Under our current rules, the operator license⁵ is always combined with the Primary station license which cannot be granted for a term longer than 5 years, a requirement of Section 307(d) of the Act. We are proposing to adopt the request. Our records indicate very few amateurs drop out of amateur radio after they have attained the Amateur Extra Class. The licensee would still be required to renew his station license(s) every five years, so in effect, this proposed rule would amount to eliminating the need to retake the examinations should the amateur neglect to renew his license.

11. Under the proposed license class structure, new Advanced Class licenses and General Class licenses would no longer carry requirements and privileges above 29 MHz. The Experimenter Class and the Technician Class would be the counterpart operator licenses in Series B, and would not carry any requirements and privileges in Series A frequency bands. The current Amateur Extra Class would be shortened in name to Extra Class, and would authorize full amateur privileges in both series. We are proposing to discontinue the written examination and the exclusive telephony segments available only to this class. The material in the current Element 4(B) examination required for Amateur Extra Class would be combined with the material for the current Advanced Class Element 4(A) and, together with other new material, be used in new examination Elements 4(A) and 4(B) for the Advanced Class and Experimenter Class respectively. Material related to the shortwave domain would be used in 4(A) and material related

⁵ Although large certificates are awarded to Amateur Extra Class licensees upon request, the certificates do not satisfy the availability requirements of Section 97.83.

to the other domains would be used in 4(B). After obtaining both the Advanced Class and Experimenter Class, an amateur would then only need pass the Element 1(C) 20 word per minute telegraphy examination to qualify for the Extra Class. Because of this additional telegraphy requirement, the Extra Class would continue to have exclusive telegraphy subband privileges.

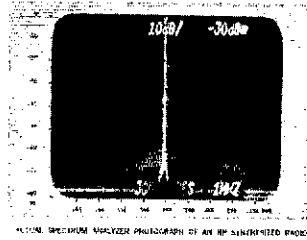
12. Under the proposed license structure, every currently licensed amateur radio operator would automatically be eligible to renew upon application, his current operator license to include privileges in at least one, and in most cases both series without further examination. Table 1 illustrates the highest class, or classes, of operator license that could be obtained without further examination.

13. Both of the proposed license series would be based upon three levels of difficulty: a beginner level, an intermediate level, and an advanced level. Ideally, this type of system would offer a newcomer the opportunity to enter the Amateur Radio Service at the beginner level with a minimum of proficiency, gain the experience and practical knowledge necessary to qualify for the intermediate level, and then move on to the advanced level. The privileges authorized at both the beginner and intermediate levels would be only those necessary to provide the desired experience for upgrading. Similarly, the related qualification requirements would be only the minimum necessary to insure that the licensee understands the privileges, limitations, and responsibilities associated with the license, with particular emphasis on methods for properly evaluating emissions of the type(s) authorized by the license.

14. We are proposing three principal areas of operator privileges: operating frequencies, emissions, and maximum transmitter power. For Series A, the authorized frequency bands would be basically the same as at the present below 29 MHz, except the exclusive telephony segments reserved to the Amateur Extra Class would be also available to the Advanced Class. In Series B, the Technician Class would be authorized all amateur frequencies above 50 MHz, thus gaining additional frequencies 50.0-50.1 MHz and 144-145 MHz. The Experimenter Class would be authorized all above 29 MHz, and the Communicator Class all above 144 MHz. The Extra Class and Experimenter Class would be authorized all amateur emissions. The Advanced Class would be authorized all amateur emissions permitted below 29 MHz. The General and Technician Classes would be authorized emissions A1, A3, and F3. The Novice Class would continue with A1 only, while the new Communicator Class would be permitted emission F3. Related examination elements would contain questions concerning the technical and operational aspects of the emissions authorized.

15. In proposing maximum transmitter power levels, we have taken into consideration a number of factors. Amateur transmitters have not been a significant source of interference to other services, and where there has been a problem, amateurs have been very cooperative. Also, amateurs, by and large, do use the minimum transmitter power necessary to conduct their communications. Therefore, there should be no real problem if the limits were to be increased in some instances. We would like to improve the technique specified in the Rules for determining power. Modern communications requires better methods for determining transmitter power than the "plate voltage times current" method. We are proposing to specify the

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maximum transmitter output in terms of peak envelope power (PEP), except at the beginner level where the emissions authorized do permit a fairly accurate measurement to be made of the input power using the method now specified. Under current rules and practices, the maximum output peak envelope power that could be developed would be on the order of 2000 watts (100% modulated, full carrier, double sideband A3). Specifying this level as advanced amateur practice, and 6 dB (approximately one "S" unit) as intermediate amateur practice (500 watts PEP output) is the method used to establish these proposals. An additional 6 dB lower step (250 watts input approximates 125 watts output PEP for A1 and F3 emissions) would be the beginner level.

16. The requirements for a new license, as shown in Appendix II, are similar to those now in effect, except the content of the various examination elements would be adjusted to more closely correlate with the privileges for each particular license class. While we are not proposing to lower, or increase, the telegraphy speed requirements, we are proposing a modification in the manner of testing. In RM-1724, the petitioner claims most operators must pass through a "code hump" between the speeds of 11 and 13 words per minute. Possibly the 5 wpm rate and the 10 wpm rate require the same skill level. In any event, the 13 wpm rate does require a skill level above that required for a 5 wpm rate. Otherwise there would be no point to have both a Technician Class and a General Class under the present rules, since the two skill levels are the only difference between the requirements. Therefore, we are not proposing any changes in the telegraphy examination speeds.

17. Under the proposed system, the operator license for an amateur qualifying by means of a mail examination on the basis of a protracted physical disability would have the letter (D) inserted following the operator class [example: Advanced (D) Class]. A license of this type would be renewable without re-examination upon satisfactory showing the disability continued, and they could not appear for a regular Commission supervised examination. Otherwise, they would be required to demonstrate their proficiency through re-examination. The operator license of an amateur qualifying by means of a mail examination on the basis of difficulty in traveling to a regular Commission examination point, would have the letter (C) inserted following the operator class (example: General (C) class). The only purpose of this conditionally issued type of license would be to provide a temporary authorization until the person could qualify before a Commission examiner. Hence, these licenses would not be renewable, since it would not be unreasonable to expect a conditionally licensed amateur to travel to one of the many Commission examining points sometime within the five year period. He would then have to successfully complete a regular Commission supervised examination in order to continue as an amateur radio operator.

18. In the best interests of the Amateur Radio Service, and to be fair to all amateurs, we believe that every applicant should clearly establish his qualifications for the privileges authorized by an amateur radio operator license. Overall, our experience indicates mail examinations are not as effective as Commission supervised examinations in establishing qualifications. Because of our experience in re-examining amateur radio operators, and

* See footnote 1, appendix II.

considering the proposed amendments may place additional demands upon a mail examination system, we are proposing some amendments in Appendix 2 intended to improve the system. Only an Extra Class licensee would be eligible to serve as a volunteer examiner for all examination elements. Advanced Class licensees would be eligible to administer examination elements for the General (C) and (D), and Novice Classes. Experimenter Class licensees would be eligible to administer examination elements for the Technician (C) and (D), and the Communicator Classes. Another proposal is to increase the required number of persons administering a volunteer examination. The second person may be the holder of any class of amateur operator license.

19. A specific call sign proposal is not included in this proceeding. However, because of the ramifications of this proposal, some relative comments are appropriate. Existing licensees will be able to retain current call signs if desired, and if authorized for both privileges, the same call sign may be used in both Series A and B. Licensees in Series B entering amateur radio as a result of this proceeding, will be issued a distinctive call sign for operation in that Series. If a later authorization for Series A privileges is granted, the single resulting call sign will reflect the dual Series authorization. Under this proposal, Technician Class licensees could obtain Novice privileges in Series A without examination, and therefore could retain their present call signs if desired. Further details will be contained in the call sign proceeding to be issued.

20. In view of the extensive amendments to the rules requested by the petitioners, and those proposed herein, it is imperative those submitting comments carefully consider the future needs of the Amateur Radio Service. To this end, we are allowing more than the normal amount of time for suggestions and comments to be filed. These proposals represent our best thoughts in these important matters. We are interested in receiving comments from informed amateurs in these areas.

21. Authority for the proposed rule changes herein is contained in Sections 4(i) and 303 of the Communications Act of 1934, as amended.

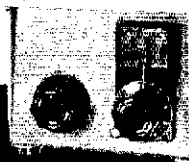
22. Pursuant to applicable procedures set forth in Section 1.415 of the Commission's Rules, interested persons may file comments on or before June 16, 1975, and reply comments on or before July 16, 1975. All relevant and timely comments and reply comments will be considered by the Commission before final action is taken in this proceeding. In reaching its decision on the rules which are proposed herein, the Commission may also take into account other relevant information before it, in addition to the specific comments invited by this Notice.

23. In accordance with the provision of Section 1.419 of the Commission's Rules and Regulations, an original and 14 copies of all comments, pleadings, briefs, or other documents shall be furnished the Commission.

24. All filings in this proceeding will be available for examination by interested parties during regular business hours in the Commission's public reference room at its headquarters in Washington, D.C. (1919 M Street, N.W.).

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APPENDIX I
Petitioners

1. RM-1016 D. McGarrett, Centerreach, New York
2. RM-1363 K. J. Deskur, Endwell, New York
3. RM-1454 S. C. Davis, Manchester, Connecticut
4. RM-1456 W. Green, Peterborough, New Hampshire
5. RM-1516 E. W. DeCloedt, Cupertino, California
6. RM-1521 W. A. Welch, II, Wapping, Connecticut
7. RM-1526 E. C. Lips, Pittsburgh, Pennsylvania
8. RM-1535 American Radio Relay League, Newington, Connecticut
9. RM-1568 E. E. Gooch, Brilliant, Ohio
10. RM-1572 C. DeWitt, Omaha, Nebraska
11. RM-1602 C. R. Clark, Notre Dame, Indiana
12. RM-1615 C. C. Drumeller, Warr Acres, Oklahoma
13. RM-1629 M. K. Gormley, APO, New York, New York
14. RM-1633 W. Green, Peterborough, New Hampshire
15. RM-1656 Ronald A. Reed, West Los Angeles, California
16. RM-1724 R. A. Cowan, Port Washington, New York
17. RM-1793 G. Jacobs, Silver Springs, Maryland, S. F. Meyer, Linden, New Jersey
18. RM-1805 Radiotrician Confederation, Grouse Creek, Utah
19. RM-1841 United CB'ers of America, Detroit, Michigan
20. RM-1920 C. W. Tazewell, Baltimore, Maryland
21. RM-1947 R. R. Dopmeyer, Opelousa, Louisiana

22. RM-1976 Edgewood Amateur Radio Society, Baldwin Park, California
23. RM-1991 U. S. Citizens Radio Council
24. RM-2030 L. E. White, Closter, New Jersey
25. RM-2043 R. E. Heimberger, Shaker Heights, Ohio
26. RM-2053 Hercules Radio and Recording Studio, Daytona Beach, Florida
27. RM-2149 M. R. Wardan, Venice, California
28. RM-2150 W. A. Schroeder, Cherry Hill, New Jersey
29. RM-2162 Falmouth Amateur Radio Association, Woods Hole, Massachusetts
30. RM-2166 W. Brady, Norwalk, California
31. RM-2216 H. M. Krawetz, Sunnyvale, California
32. RM-2219 J. C. Hallford, Ft. Stockton, Texas
33. RM-2256 M. S. Donnell, San Jose, California
34. RM-2284 S. E. Green, et al, Austin, Texas
35. RM-2449 P. Williams, Santa Cruz, California

APPENDIX II

Part 97, of Chapter I of Title 47 of the Code of Federal Regulations is amended as follows:

1. 97.5 is amend to read:

97.5 *Classes of operator licenses.*

(a) The following Series A operator licenses authorize operations in the amateur radio frequency bands below 29 MHz:

(1) *Advanced Class, Advanced(C) Class, Advanced(D) Class.* Licenses to conduct amateur radio communications using advanced level amateur practices.

(2) *General Class, General(C) Class, General(D) Class.* Intermediate grade licenses to conduct amateur radio communication for the purpose of

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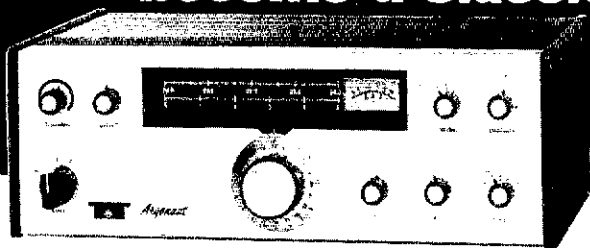


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developing individual proficiency toward qualifying for the Advanced Class license.

(3) *Novice Class*. Introductory grade license to conduct amateur radio operation for the purpose of developing proficiency toward qualifying for the General Class license.

(b) The following Series B operator licenses authorize operations in the amateur radio frequency bands above 29 MHz:

(1) *Experimenter Class, Experimenter(C) Class, Experimenter(D) Class*. Licenses to conduct amateur radio communication using advanced level practices.

(2) *Technician Class, Technician(C) Class, Technician(D) Class*. Intermediate grade licenses to conduct amateur radio communication for the purpose of developing individual proficiency toward qualifying for the Experimenter Class license.

(3) *Communicator Class*. Introductory grade license to conduct amateur radio communication for the purpose of developing individual proficiency toward qualifying for the Technician Class and Novice Class licenses.

(c) The Extra Class and Extra(D) Class licenses authorize amateur radio operation using all authorized privileges, including certain exclusive privileges.

(d) The designator(C) following the type of operator license class indicates the license is conditionally issued because the licensee qualified under the provisions of Section 97.28.

(e) The designator (D) following the type of operator license class indicates the license is conditionally issued because the licensee qualified under the provisions of Section 97.27.

2. 97.7 is amended to read as follows:

97.7 *Privileges of operator license.*

The following operating privileges are authorized by the class of operator license indicated for all new amateur licenses issued after (effective date of new rules). Amateurs licensed prior to the date will receive a new license upon the first renewal after (effective date of new rules).

(a) *Extra Classes*. All amateur radio operator privileges

(b) *Advanced Classes*. All amateur radio operator privileges below 29 MHz, except for frequencies 3500-3525 kHz, 7000-7025 kHz, 14000-14025 kHz, and 21.000-21.025 MHz.

(c) *General Classes*.

(1) Frequencies 1800-2000 kHz, 3525-3775 kHz, 3890-4000 kHz, 7025-7150 kHz, 7225-7300 kHz, 14,025-14,200 kHz, 14,275-14,350 kHz, 21,025-21,250 MHz, 21,350-21,450 MHz and 28.0-29.0 MHz within the limitations of 97.61.

(2) Emissions A1, A3, and F3.

(3) Except for power limitations set forth in Section 97.61, the maximum transmitter output power shall not exceed 500 watts peak envelope power.

(d) *Novice Class*.

(1) Frequencies 3700-3750 kHz, 7100-7150 kHz, (7050-7075 kHz when the amateur radio operation is not within Region 2), 21,100-21,200 MHz, and 28.100-28.200 MHz.

(2) Emission A1.

(3) 250 watts input power to the transmitter final amplifying stage supplying radio frequency energy to the antenna, exclusive of power for heating the cathode of a vacuum tube(s), within the limitations of Section 97.67.

(e) *Experimenter Classes*. All amateur radio operator privileges above 29 MHz.

(f) *Technician Classes*.

(1) All amateur frequencies above 50 MHz.
 (2) Emissions A1, A3, and F3.
 (3) Except for power limitations set forth in Section 97.61, the maximum transmitter output power shall not exceed 500 watts peak envelope power.

(g) Communicator Class.

(1) All amateur frequencies above 144 MHz.
 (2) Emission F3.
 (3) 250 watts input power to the transmitter final amplifying stage supplying radio frequency energy to the antenna, exclusive of power for heating the cathode of a vacuum tube(s), within the limitations of Section 97.67.

3. 97.9 is revised to read as follows:

97.9 Eligibility for a new operator license.

Any citizen¹ or national of the United States is eligible to apply for an amateur radio operator license. A person may be issued no more than one operator license in Series A, and no more than one in Series B. A holder of an Extra Class operator license may not hold any other amateur radio operator license issued by the Commission. The requirements for each operator class are:

(a) **Extra Class:** Applicant shall have successfully completed examination elements 1(C), 2(A), 2(B), 3(A), 3(B), 4(A), and 4(B).

(b) **Advanced Class:** Applicant shall have successfully completed examination elements 1(B), 2(A), 3(A), and 4(A).

(c) **General Class:** Applicant shall have successfully completed examination elements 1(B), 2(A), and 3(A).

(d) **Novice Class:** Applicant shall have successfully completed examination elements 1(A) and 2(A).

(e) **Experimenter Class:** Applicant shall have successfully completed examination elements 1(A), 2(B), 3(B), and 4(B).

(f) **Technician Class:** Applicant shall have successfully completed examination elements 1(A), 2(B), and 3(B).

(g) **Communicator Class:** Applicant shall have successfully completed examination element 2(B).

4. Section 97.13 and headnote are revised to read as follows:


97.13 Eligibility for renewal of operator license.

(a) An amateur radio operator license, other than a conditionally issued license, may be renewed upon proper application, in which it is stated that the applicant is fully qualified in the requirements for the original license of the class being renewed. If the applicant is not fully qualified, the license will not be renewed, and the applicant may apply for a new operator license if and when he qualifies by examination at a later date.

(b) If a license, other than a conditionally issued license, is allowed to expire, application for renewal may be made during a period of grace of 1 year after the expiration date. During this 1 year period of grace, an expired license is not valid. A license renewed during the grace period will be dated currently and will not be backdated to the date of its expiration.


(c) Application for renewal of an amateur radio operator license shall be submitted on FCC Form 610 and shall be accompanied by the applicant's operator license or photocopy thereof. Application for renewal of unexpired licenses must be made during the license term. In any case in

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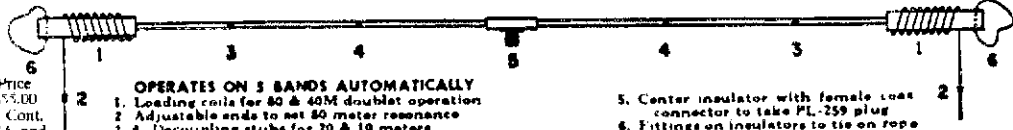
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which the licensee has, in accordance with the provisions of this section, made timely and sufficient application for renewal of an unexpired license, no license with reference to any activity of a continuing nature shall expire until such application shall have been finally determined.

(d) Operator licenses obtained on the basis of Section 97.28 are not renewable.

(e) Operator licenses obtained on the basis of Section 97.27 are not renewable unless the application is accompanied by a current physician's affidavit.

(f) Extra Class operator licenses are issued for the life of the licensee, and do not have to be renewed.

5. Section 97.15 is added new to read as follows:

97.15 *Modification of operator license.*

(a) Application for modification of an amateur radio operator license shall be submitted on FCC Form 610 and shall be accompanied by the applicant's operator license(s) or photocopy(s) thereof.

(b) When only the name of the licensee is changed, or when only the mailing address is changed, a formal application for modification of license is not required. However, the licensee shall notify the Commission promptly of these changes. The notice, which may be in letter form, shall contain the name and address of the licensee as they appear in the Commission's records, the new name and/or address, as the case may be, the primary station call sign and class of operator license. The notice shall be sent to Federal Communications Commission, Gettysburg, Pennsylvania 17325, and a copy shall be kept by the licensee until a new license is issued.

6. Section 97.21 is revised to read as follows:

97.21 *Examination elements.*

Examination for amateur radio operator privileges will comprise one or more of the following elements:

(a) *Element 1(A):* Slow speed telegraphy test in International Morse Code at 5 words per minute.

(b) *Element 1(B):* Intermediate speed telegraphy test in International Morse code at 13 words per minute.

(c) *Element 1(C):* High speed telegraphy test in International Morse Code at 20 words per minute.

(d) *Element 2(A):* Rules, basic principles, and amateur practices essential to beginners' amateur radiotelegraphy operation using the privileges authorized to the Novice Class.

(e) *Element 2(B):* Rules, basic principles, and amateur practices essential to beginners' amateur radiotelephony operation using the privileges authorized to the Communicator Class.

(f) *Element 3(A):* Rules, intermediate level principles, and amateur practices essential to amateur radio operation using the privileges authorized to the General Class.

(g) *Element 3(B):* Rules, intermediate level principles, and amateur practices essential to amateur radio operation using the privileges authorized to the Technician Classes.

(h) *Element 4(A):* Advanced level principles and amateur practices essential to amateur radio operation using the privileges authorized to the Advanced Class.

(i) *Element 4(B):* Advanced level principles and amateur practices essential to amateur radio operation using the privileges authorized to the Experimenter Class.

7. Section 97.23 is revised to read as follows:

97.23 Examination requirements:

(a) The telegraphy test required of an applicant for an amateur radio operator license shall determine the applicant's ability to send correctly by hand using a hand key (or, if supplied by the applicant, a semi-automatic or electronic, hand operated key, other than keyboard type) and to receive correctly by ear, in plain language, messages in the International Morse Code at not less than the prescribed speed, counting 5 characters to the word, each numeral or each punctuation mark counting as 2 characters.

(b) All written examinations for an amateur radio operator license shall be completed by the applicant in legible handwriting or hand printing by means of ink or pencil. Whenever the applicant's signature is required, his normal signature shall be used. Applicants unable to comply with these requirements, because of a physical disability, may dictate their answers to the examination questions and to the receiving code test. If the examination, or any part thereof, is dictated by the applicant, the examiner shall certify the nature of the applicant's disability and the name and address of the person(s) taking and transcribing the dictation.

8. Section 97.25 is revised to read as follows:

97.25 Examination credit.

(a) An applicant for an amateur radio operator license will be given credit for those examination elements required for any other class or operator license held when the application is filed. However, credit will not be given for examination elements 1(B), 3(A), 3(B), 4(A), and 4(B) given under the provisions of Section 97.30 for a class of operator

license other than that being applied for, except for holders of Advanced(D) Class, Experimenter(D) Class, General(D) Class, and Technician(D) Class when qualifying for a license under the provisions of Section 97.27.

NOTE: Credit for examination elements will be given to applicants holding a valid operator license at the time of the adoption of this rule, in accord with the following schedule, during a period not exceeding one year following the expiration date on the current license:

(1) *Amateur Extra Class:* All examination elements.

(2) *Amateur Extra(C) Class:* Elements 1(A), 2(A) and 2(B). Also all other examination elements as if passed on the basis of Section 97.27.

(3) *Advanced Class:* Elements 1(A), 1(B), 2(A), 2(B), 3(A), 3(B), 4(A), and 4(B).

(4) *Advanced(C) Class:* Elements 1(A), 2(A), and 2(B). Also elements 1(B), 3(A), 3(B), 4(A), and 4(B) as if passed on the basis of Section 97.27.

(5) *General Class:* Elements 1(A), 1(B), 2(A), 2(B), 3(A), and 3(B).

(6) *Conditional Class:* Elements 1(A), 2(A), and 2(B). Also elements 1(B), 3(A), and 3(B) if passed on the basis of Section 97.28.

(7) *Conditional Class(P) Class:* Elements 1(A), 2(A), and 2(B). Also elements 1(B), 3(A), and 3(B) as if passed on the basis of Section 97.27.

(8) *Technician Class:* Elements 1(A), 2(B), 3(A) and 3(B).

(9) *Technician(C) Class:* Elements 1(A), 2(A), and 2(B). Also elements 3(A) and 3(B) as if passed on the basis of Section 97.28.

(10) *Novice Class:* Elements 1(A) and 2(A).

(b) Upon request, an applicant for an amateur radio license will be given credit for element 1(A)

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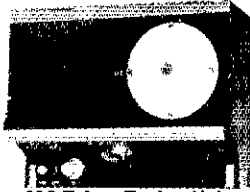


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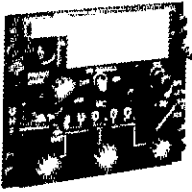
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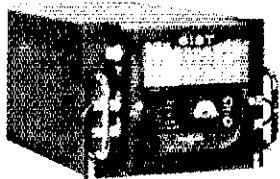
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and 1(B) if within 5 years prior to the receipt of his application by the Commission, he held a commercial radiotelegraph operator license or permit issued by the Federal Communications Commission.

(c) Upon request, an applicant for an amateur radio operator license will be given credit for elements 1(A), 1(B), and 1(C), if he holds a valid First Class commercial radiotelegraph operator license or permit issued by the Commission containing an aircraft radiotelegraph endorsement.

(d) Applicant submitting evidence of having held the Amateur Extra First Class operator license and having held its successor license will be given credit for examination element 1(C) if he so requests. An applicant must present his proof in advance of the desired examination time to the Amateur and Citizens Division, Washington, D. C., 20554, and receive a letter of certification for presentation to the Commission Field Office where the examination will be taken. No credit for the telegraphy requirement will be given without the letter of certification.

9. Section 97.27 and headnote are revised to read as follows:

97.27 Availability of operator license to physically disabled persons.

If it is shown by physician's certificate an applicant is unable to travel to any regular Commission examination point because of a protracted physical disability, a new or renewed Extra(D) Class, Advanced(D) Class, Experimenter(D) Class, General(D) Class, or Technician(D) Class operator license may be issued on the basis of examinations successfully passed under the provisions of Section 97.30. These licenses may not be renewed without a current physician's affidavit.

10. Section 97.28 and headnote are revised to read as follows:

97.28 Availability of operator license to persons residing at great distances from Commission examination points.

(a) A new Advanced(C) Class, Experimenter(C) Class, General(C) Class, or Technician(C) Class license may be issued on the basis of examinations successfully passed under the provisions of Section 97.30 under one of the following conditions:

(1) If the applicant's legal residence, mailing address, and/or any station location or proposed station location are more than 175 miles actual distance from the nearest Commission examining point.

(2) If the applicant is shown by certificate of the commanding officer to be in the Armed Forces of the United States at an Army, Navy, Air Force, or Coast Guard station and, for that reason, to be unable to appear for examination at a Commission examination point.

(3) If the applicant demonstrates by sufficient evidence that he is unable to appear at a Commission examination point because his current temporary residence, for the 12 coming months is outside the continental limits of the United States, its territories or possessions.

(b) Operator licenses obtained under the provisions of these rules are not renewable.

11. Section 97.29 and headnote are revised to read as follows:

97.29 Manner of conducting Commission supervised examinations.

(a) Except as provided by Sections 97.27 and 97.28, examination elements 1(B), 1(C), 3(A),

3(B), 4(A), and 4(B) may only be administered by an authorized Commission employee or representative at locations and at times specified by the Commission.

(b) Examination element 4(A) may only be administered to a person having successfully passed element 3(A).

(c) Examination element 4(B) may only be administered to a person having successfully passed element 3(B).

(d) Examination element 3(A) may only be administered to a person having successfully passed element 2(A).

(e) Examination element 3(B) may only be administered to a person having successfully passed examination elements 2(B).

12. Section 97.30 is added new to read as follows:
97.30 *Manner of conducting mail examinations.*

(a) Unless otherwise prescribed by the Commission, examination elements 1(A), 2(A), 2(B), and any elements administered under the provisions of Sections 97.27 and 97.28 will be conducted and supervised by two proxy volunteer examiners proposed by the applicant and approved by the Commission. The volunteer examiners shall be at least 21 years of age, shall be unrelated to the applicant, and at least one shall hold the proper class of license to administer examinations in accordance with the following schedule:

(1) *Extra Class:* All examination elements.

(2) *Advanced Class:* Examination elements 1(A), 1(B), 2(A), and 3(A).

(3) *Experimenter Class:* Examination elements 1(A), 2(B), and 3(B).

(b) Written examinations shall be obtained, administered, and submitted in accordance with the following procedure:

(1) Within 10 days after successfully passing any required telegraphy examination element, an applicant shall submit an application (FCC Form 610), together with any filing fee prescribed, to the Commission's Office in Gettysburg, Pennsylvania 17325. The application shall include a written request from the volunteer examiners for the appropriate examination papers. The examiners' written request shall include (1) the name and mailing address of the volunteer examiners, (2) the name of the applicant, (3) a statement by the volunteer examiners that the applicant has passed the telegraphy examination element for the class of operator license, if required, under their supervision within the 10 days prior to the submission of the request, and (4) the volunteer examiners' signatures. Examination papers will be forwarded to one of the volunteer examiners.

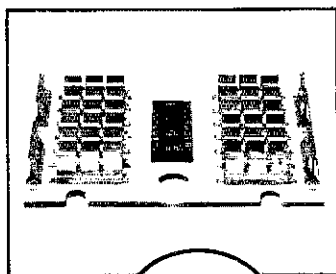
NOTE: When the applicant is entitled to credit for any telegraphy examination element under the provisions of Section 97.25, an application may be submitted without regard to the 10 day limitation. The examiner's request should then state that a telegraphy examination was not administered for that reason. The applicant should furnish details as to the class, number, and expiration date of any license involved.

(2) The proxy volunteer examiners shall be responsible for the proper conduct and necessary supervisions of the examination. Administration of the examination shall be in accordance with the instructions included with the examination papers.

(3) The examination papers, either completed, or unopened in the event the examination is not administered for whatever reason, shall be returned by the volunteer examiner to the Commission's Office At Gettysburg, Pennsylvania, no later than

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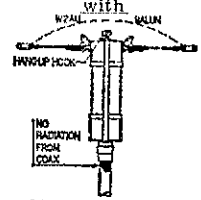
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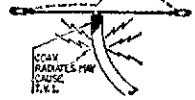
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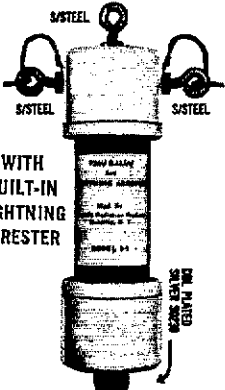
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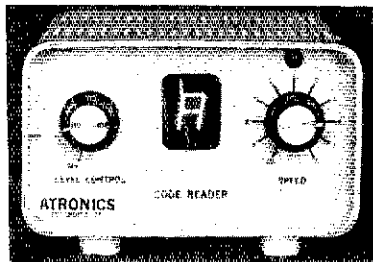
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30 days after the date the papers are mailed by the Commission (the date of mailing is normally stamped by the Commission on the outside of the examination envelope).

13. Section 97.33 is amended to read as follows: 97.33 Eligibility for re-examination.

An applicant who fails an examination for an amateur radio operator license may not take another examination for the same or higher class license in the same series within 30 days.

14. Section 97.35 and headnote are revised to read as follows: 97.35 Additional requirements for licensees holding licenses on the basis of mail examinations

(a) A licensee holding an amateur radio operator license obtained by a mail examination administered by proxy volunteer examiners may be required to appear for a Commission supervised examination at a location designated by the Commission. If the licensee fails to do so, or fails to pass such examination, the amateur radio license(s) involved shall be subject to cancellation. When a license is cancelled under this provision, a new license will not be issued for the same class of operator license as that cancelled.

(b) A holder of an amateur radio operator license obtained on the basis of a mail examination under the provisions of Section 97.27 shall make application for re-examination within one-year upon becoming able to travel to any Commission examination point.

(c) A holder of an amateur radio operator license obtained on the basis of mail examination under the provisions of Section 97.28 shall apply

for re-examination within one-year of when the licensee changes his legal residence, or mailing address, and/or any station or proposed station location within 175 miles actual distance to the nearest Commission examination point, or when a new examination point is established within 175 actual miles distance to the licensee's legal residence, mailing address, or station location.

15. Section 97.38 is added new to read as follows: 97.38 Types of station licenses and eligibility.

(a) The following types of station licenses are available to properly licensed amateur radio operators.

Type of station	Eligible licensees
Series A Primary station.	Extra Class, any Series A Class operator
Series A Secondary station.	—do—
Series B Primary station.	Extra Class, any Series B Class operator
Series B Secondary station.	—do—
Series A Club station.	Extra Class, Advanced Class operator
Series B Club station.	Extra Class, Experimenter Class operator
Repeater station, Control station, Auxiliary Link station, Space station.	Extra Class, Experimenter Class operator
Military Recreation Station	Individual, whether or not a licensed amateur radio operator, who is in charge of a proposed Military Recreation Station

Morse and RTTY from one keyboard?



Meet the two and only.

The HAL DKB-2010 Dual Mode keyboard is one of the most sophisticated products ever offered to the radio amateur. It's an all solid state keyboard that allows you to send either RTTY or CW — with more ease, more versatility than anything you've ever seen before.

In the RTTY mode, you can transmit at standard data rates of 60, 66, 75 or 100 WPM, as well as an optional 132 WPM, 100 baud. In addition to the complete alphanumeric keys, you get 17 punctuation marks, 3 carriage control keys, 2 shift keys, a break key, 2 three-character function keys, a "DE-call letters" key and a "Quick brown fox ..." test key.

In the CW mode, you can send at speeds anywhere between 8 WPM and 60 WPM. You can also adjust dot-to-space weight ratios to your liking. For CW, you have all alphanumeric keys, plus 11 punctuation marks, 5 standard double-character keys, 2 shift keys, a break-for-tuning key, error key, "DE-call letters" key, plus

2 three-character function keys. Output interfacing is compatible with cathode keying or grid-block keying. A side tone oscillator and built-in speaker allow you to monitor your signal — with adjustable volume and pitch controls.

The DKB-2010 also has a three-character memory buffer which operates in either the RTTY or CW mode, allowing you to burst type ahead without losing characters. A 64-character memory buffer is also available as an option. Key function logic in either mode is governed by LSI/MOS circuitry. All key switches are computer grade.

The DKB-2010 is available assembled or in kit form. Should you choose the kit, you'll find construction easy — the unit consists of three assemblies: power supply board, logic PC board, keyswitch PC board, and pre-assembled wiring harness.

Any way you look at it — as an easy-to-build kit, a complete assembly, as a CW keyboard, or an RTTY keyboard, the HAL

DKB-2010 is a real breakthrough for every amateur. It adds a whole new dimension to the exciting world of amateur radio. Once you've used the DKB-2010, you'll wonder how you ever got along without it!

Prices: \$425 Assembled;
\$325 Kit



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Telephone: (217) 359-7373

- Enclosed is \$ _____ (Assembled)
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- Call Letters _____
- Charge Master Charge # _____
- Charge BankAmericard # _____
- M/C Interbank # _____
- Card Exp. date _____
- Please send me the HAL catalog.

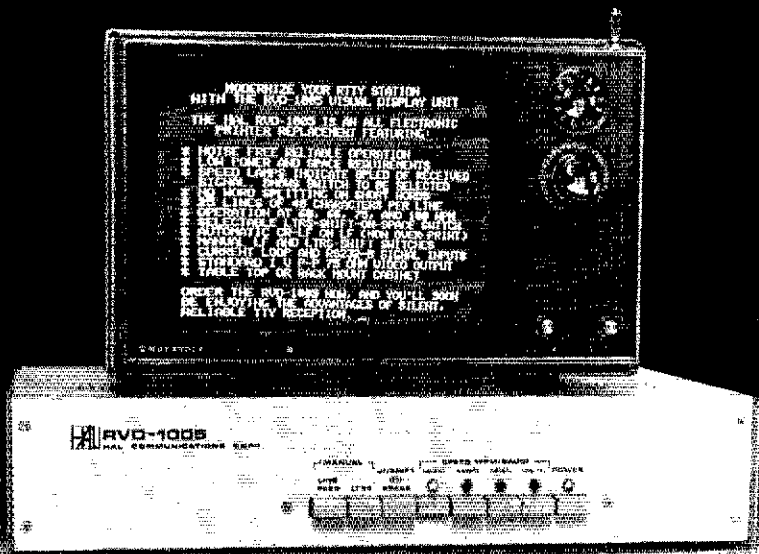
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Address _____

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All prices include U.S.A. shipping.
Add \$10 for air shipment.
Illinois res. add 5% sales tax.

With the HAL RVD-1005, what you see is what you get.



And you get more of what you expect from noiseless, trouble-free all solid-state TTY reception. The RVD-1005 converts the output of any TU into a clear, easy-to-read RTTY readout. The signal can be fed to a TV monitor* or, with slight modification, any standard TV receiver (Just imagine a 23-inch teleprinter!). It's the beginning of enjoyable TTY communications and the end of electromechanical devices with all of their maintenance headaches. The display above points out the many reasons why the RVD-1005 makes all other TTY systems seem obsolete—and it's just part of the HAL lineup of quality, state-of-the-art RTTY components for the serious amateur.

The HAL DKB-2010 dual mode keyboard is another example. It allows you to transmit TTY or Morse—TTY at all standard data rates, and CW

between 8 and 60 WPM. You also get complete alphanumeric and punctuation keys, plus 10 other function keys, a "DE—call letters" key and a "QUICK BROWN FOX..." diagnostic key. In both modes you have a three character buffer for bursting ahead (larger buffers optional); and in the CW mode you can adjust the dot-to-space ratio (weight) to your liking.

When we say what you see is what you get, you can count on getting all that and more, including quality construction throughout. So if you're into RTTY, join the ranks of amateurs the world over who are enjoying this hobby at its best—with professional gear at amateur prices from HAL—the leader in amateur RTTY equipment. Send today for the HAL products you want!

*RVD-2110 9-inch Monitor/TV shown is optional



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Box 365A, Urbana, Ill. 61801
Telephone: (217) 359-7373

- Enclosed is \$ _____ (RVD-1005 Video Unit)
\$ _____ (RVD-2110 Monitor/TV) \$ _____ (DKB-2010 TTY/CW Keyboard)
- Charge Master Charge # _____
 Charge BankAmericard # _____
 M/C Interbank # _____ Card exp. date _____
 Please send me the HAL catalog

Name _____ Address _____ Call Sign _____

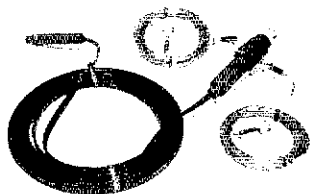
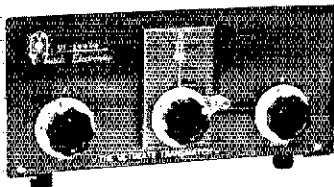
City/State/Zip _____

RVD-1005 Video Unit: \$575. RVD-2110 Monitor TV: \$150. DKB-2010 TTY/CW Keyboard: \$425
All prices include USA shipping. Add \$10 each for air shipment. Illinois residents add 5% sales tax.

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MULTIBAND ANTENNA 10 - 80 M



Similar to the one in Lew McCoy's article
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- Use with any coax or end fed random wire antenna, ideal for apartment dwellers
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12" w 12" d x 5 1/2 h, 12 lbs shipping weight
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- Ready to use. Great on all bands without a transmatch. Even better with the Ultimate Transmatch

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New price effective August 1, 1974
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MODEL 68A, 2000 w P.E.P.

\$44.50 p.p.

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16. Section 97.67(a) & (b) are amended and par. (d) added to read as follows:

97.67 Maximum authorized power.

(a) Within all other limitations specified herein, amateur radio stations shall use the minimum amount of transmitter power necessary to carry out the desired communications.

(b) Except for power limitations set forth in Section 97.7 and Section 97.61, the maximum transmitter output power shall not exceed 2000 watts peak envelope power.

(d) Any transmitter capable of exceeding the power limitations specified herein shall not be operated in the Amateur Radio Service unless there are incorporated adequate measures to insure the limitations will not be exceeded.

This is one proposal under consideration. The Commission is also considering alternatives such as PEP input, average power input, ratios of peak to average power output and limitations on dissipation ratings of final power amplifier devices or a combination of these. Specific comments on the practicality of these proposals, alternate proposals and the practicality of attendant power measuring techniques by amateur stations are required.

We request comments on the need for rules limiting the use of techniques which increase the average power in A3 single sideband suppressed carrier transmissions, without increasing the peak envelope power. The comments should discuss the various techniques utilized for the purpose in the Amateur Radio Service, the engineering standards that must be observed for good amateur practice when using these techniques, the nature of any unnecessary interference that can be caused by the improper use of these techniques, and the capabilities of amateurs to make measurements necessary to proper usage.

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speed up
the pace...



Birth defects
are forever.
Unless you help.
March of Dimes

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 50 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 15 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 15-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 50-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., 2612 Rockingham St., McLean VA 22101. Mamaroneck NY 10543.

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 the Amateur Radio News Service. For information write: Rosemary Wulfs, 9276 Borden Ave., Sun Valley CA 91352.

THE New York Radio Club invites hams to club meetings, 2nd Monday of each month, 8 PM at the Williams Club, 24 E. 39th St., NYC. For information; Box 814, NYC 10028.

ROCHESTER, N.Y. - Hamfest date for 1975 - May 31st, Marriott Inn is new headquarters. Information? Write WNY Hamfest, Box 1388, Rochester NY 14603.

DAYTON Hamvention at HARA Arena April 25, 26, 27, 1975. Program brochures mailed March 10th. Write for information if you have not attended the last two years to HAMVENTION, P.O. Box 44, Dayton OH 45401.

TREASURE Coast Hamfest, February 15-16; sponsors Vero Beach Amateur Radio Club, Inc., and St. Lucie Repeater Association, Inc., Community Center, Vero Beach, FL. Speaker, 844M, Box 3086, Vero Beach FL 32960.

RADIO Expo '75; September 6&7, Fair Grounds, Grays Lake L.L. Seminars, Fleemarket, Manufacturers Exhibits, Camping. Information: Write EXPO Box 1014, Arlington Hts. IL 60006.

QSTs wanted 1917/1929; 300 copies available 1937/1973 acquire with ease. Marconi 12V DT-65 2m/Fm Xceiver offered - \$95. VE2OU, 2785 Valcourt, STE Foy, Quebec, Canada, G1W 1W2.

CASH paid for your unused tubes and good ham and commercial equipment. Send list to Barry, W2LNI, Barry Electronics, 512 Broadway, NY NY 10012.

SPIDERS for boomless quads, Helicar welded aluminum. Al's Antennas, 1339 So. Washington St., Kennewick WA 99336.

VERY in-ter-est-ing! Next 5 big issues \$1. "The Ham Trader," November 11, 60178.

QSLs?? "America's Finest!!!" Samples 60c. Deluxe 75c. Religious 50c. (Deductable). Sukkers, W9DED, Box 218, Holland MI 49423.

PICTURE QSL cards of your shack, etc. from your photograph or art work, 500 - \$13.50, 1000 - \$18.25. Also unusual non-picture designs. Generous sample pack 35c. Half pound of samples 65c. Raun's, 4154 Fifth Street, Philadelphia PA 19140.

3-D QSLs - Hallmark of discriminating operators. Samples 25c (refundable). 3-D QSL Co., Monson 2, MA 01067.

TRAVEL-PAK QSL Kit - Send call and 25c; receive your call sample kit in return. Sameco, Box 203, Wynnanskill NY 12198.

FREE Samples - Stamp appreciated. Samecards, 48 Monte Carlo Dr., Pittsburgh PA 15239.

QSLs, samples 10c. Fred Leyden, W1NZJ, 454 Proctor Av., Revere MA 02151.

QSLs 300 for \$4.65, samples 20c, W9SKR, Ingleside IL 60041.

QSLs "Brownie" W3CJ1, 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 78757.

FRAME Display, and protect your QSLs with 20 pocket plastic holders, 2 for \$1. for \$3, prepaid and guaranteed. Tepabco Box 198T, Gallatin TN 37066.

QSL, SWL, WPE cards. Samples 25c. Log books, file cards, decals. Malgo Press, Box 375, Toledo OH 43691.

QSLs. Second to none. Same day service. Samples armed 25c. Include your call for free decal. Ray, K7HLR, Box 331, Clearfield UT 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 from "Bullet," creative designs, fast service, economical. Send 20c for samples to Bullet Printing Co., Box 3033, Waco TX 76707.

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. Corneilson's, 321 Warren St., N. Babylon, NY 11704.

QSLs 3 color glossy \$4.50, samples 10c. Rutgers Vari-Typing Service, Thomas St., Milford NJ 08848.

CANADIAN Surplus Catalog and flyers \$1. Eteox Electronics, Box 741, Montreal Canada H3C 2V2.

TRANSFORMERS rewound. Jess Price, W4CLJ, 507 Raehn, Orlando FL 32806.

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.

WANTED: tubes, transistors, equipment, what have you? Bernard Goldstein, W2MNP, Box 257, Canal Station, New York NY 10013.

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. Literature. Estes Engineering, 543-A West 18th, Gardena CA 90248.

P.C.'s. Send large s.a.s.e. for list. Semtronics, Rt. 3, Box 1, Fellaire OH 43906.

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. 35 years a ham gear dealer. Collins, Drake, Ten-Tec, Swan, Kenwood, Tenno, Clegg, Regency, Icom, Hy-Gain, and all others. Also \$25,000 inventory used gear. Request list. Cluack, W8UGG, Electronic Distributors, Inc., 1960 Peck St., Muskegon MI 49441. (616) 726-3198. Telex 22-8411.

SWAP-N-Sell ads free in Tradio. Box 4391, Wichita Falls TX 76308.

TOROIDS: 44 and 88 mhy 5/82.75 P.P. M. L. Buchanan, P. O. Box 74, Sequoi CA 94073.

THUMPING Keggers Net meets every night 3927 kc.

WANTED: Hallicrafters SX-88 for parts, any condition considered. K0MNA, 4805 Sullivan, Wichita, KAN 67704.

FOR SALE: R390A receiver - \$400; Bryant keyboard cw keyer - \$75; 40 ft. Rohn No. 6 tower - \$35 (local pickup only); CDR TR-44 rotator - \$60; Hallicrafters TO Keyer - \$25. Wanted: Hallicrafters SX-24 receiver, Heath AT-1 transmitter, in good condition, unmodified. D. Blakeslee, W1KDK, 5 Pettacoat Lane, Broadbrook CT 06016. (203) 623-2595.

NOW PAYING \$2000 and up for ARC-94/618T ARC-102/618T, \$1200 and up for ARC-51/BX \$1500 and up for 430T-1 antenna couplers. We also need these control boxes: C-6287/ARC-51-BX, C-6476/ARC-51/BX, C-7142-2. We also need R-1051 receivers, RT-662/ARC-106 transceivers. We buy all late aircraft and ground radio equipment. Also pack radios. We are buyers not talkers. Bring your equipment in you are paid on the spot. Ship it in you are paid within 24 hours. We pay all shipping charges. If you want the best price for your equipment, call us. D&K Electronics, R.D. 1, Box 35, Milton PA 17847. Phone 717-42-4614, 9:00 am - 9:00 pm.

PREPARE for FCC Exams! Use Post-Check. Original, expertly devised, multiple choice questions and diagrams covering all areas tested over in FCC exams. IBM sheets for self testing. Keyed answers with explanations. General, including section on new Rules and Regulations - \$5.10; Advanced Class - \$4.65; Extra Class - \$4.90; Novice - \$3.35. First class postage prepaid U.S.A. Air mail 25c extra per copy. Now also new Post-Check for Radio Telephone Third Class, elements 1, 2, and 9 - \$9.50. Send check or money order to Post-Check, P.O. Box 3564, Urbandsville Station, Des Moines IA 50322.

TRADE: Gonset G-50 Transceiver, on the air condition, plus Cash. Want new kit AD - 1530 or SB 313. WA0GYX, George, 1107 No. Scott, Belton MO 64012.

COLLECTOR is interested in books, autographs and other information on early radiotelephone pioneers. Ronald Phillips, 1925 Baltimore, Kansas City MO 64108. (816) 842-9009.

WANTED: Master mobile matcher and micro Z-match. S. Kriso K2QMP, box 3338, Wallington NJ 07057.

FOR SALE: National NCX-5 Mk II with AC supply, excellent - \$890; Hallicrafters SX-100, fair - \$25; Morrow CD Monitor - \$5; Johnson Adventurer - \$20; Waters compreamp - \$10; Heath HO-10 monitor scope - \$20. Cash and Carry. A. Hutchins, WA2LHC, 6 Beau Lane, Huntington Station NY 11746.

SBE-34 with calibrator, mike and manual. Mint condition - \$240. Box 867, Weaverille CA 96098. (916) 623-5299.

AMSAT/OSCAR 6-7 slides, set of 5 - \$125 LIB-Off and Equipment. Proceeds AMSAT, K6PGX, P.O. Box 463, Pasadena CA 91102.

WANTED. Make, Model and Serial Numbers of stolen ham gear, for big list. WTUD, 8637 West Grandview, Tacoma WA 98466.

WANTED: Heath SB-640 in good shape and condition, with manual and cables. S.R. Ammos, 1 Amy Court, Verona NJ 07044.

CLEGG FM-27Bs at prices I dare not publish. WONGS, Bob Smith Electronics, 1226 9th Ave. North, Fort Dodge IA 50501. (515) 876-8886.

160 METER top loading section for vertical antenna. Have a big signal on top band, adjustable anywhere in 160 meter band. Mounts on extendable mast or any 1 1/4" section. Highest quality materials. 50 ohm feed. Rated 1 kW. Satisfaction guaranteed. Send \$34.50 ppd or write for free information to Bill Turney, WA9RFF, 1414 East 9th, Hutchinson KN 67501.

WANTED: Back issues Hatrey and Young's "Modern Radio," one through eight, adjustable anywhere in 160 meter band. Mounts on extendable mast or any 1 1/4" section. Highest quality materials. 50 ohm feed. Rated 1 kW. Satisfaction guaranteed. Send \$34.50 ppd or write for free information to Bill Turney, WA9RFF, 1414 East 9th, Hutchinson KN 67501.

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TOWER, 60 ft. crankup, tiltover, steel galvanized, free standing. E-Z Way, was \$4200 new. Base for data. Station Dana Point CA 92629. Jim, K6AIF, 3402 Blue Lantern, Asting - \$395.

BAY Area Repairs. Signal/One, etc. K6BE 415-548-1889.

FOR SALE: 100 T-28 Tri-Fx tower, 5 each 20' sections. Handles 50 lb. ft. of ant. at 100 MPH. Complete with all hardware, etc. except base. Disassembled in storage. \$1650 FOR. Late model Signal One/UKTA, excellent condition, \$895. Write with phone number, W7UR, P.O. Box 1047, Bend OR 97701.

WANTED to buy: Bolex or Bell & Howell 16 MM film Editor/Viewer. Excellent condition throughout. Also, new DVM. Model IM-102, cashiers check for lowest dollar. WA0GYX, George, 1107 N. Scott 3, Belton MO 64012.

COLLEGE forces sale. Station and test equipment. Drake T4XB, R4B, MS4/PS, Hallicrafters HT-33-B linear, Hygain 304HA, 40ZBA, Ham-M, Triex tower LM354, Heath HD-10, HO-10, Tektronix 513 scope, HP200C, plus much more. Send SASE for complete list - WB9GJZ.

MOTOROLA HT220, HT200, Pageboy and Voice Commander service and modifications performed at reasonable rates. Other makes, moire. Hatfield, WA4FRV (804) 272-8403.

HEATHKIT SB-401, \$275; 2 FA SB 301 - \$225 ea. All crystals. Excellent condition. William L. McVey, Box 623 Sitka AK 99835. Phone 747-8598.

WANTED: Collins 180S-1 antenna tuner. Also want Gonset 3211 2-meter linear, or Gonset 903A, or 903A ALC, 2-meter linear. Prefer 903A model, but must be in excellent condition. Sell or trade. Johnson 6N2 Transmitter, \$50. Write, or call collect, Dean Pollock, WA3SSU, RD9, Box 702, Greenburg PA 15601. (412)837-7411.

ATTENTION hams from Arkansas, Conn., Del., D.C., Hawaii, Idaho, Maryland, Montana, New Mexico, Oklahoma, and Rhode Island: I need badly an auto license plate with Ham call from your state. If you can't furnish, or even supply a lead, please write. Thanks John Thomas, K4NMT, Box 198T, Gallatin TN 37066.

MOBILE ops. Please send SASE for info on shielded ignition systems. Summit Enterprises, 20 Eider Street, Yarmouthport MA 02675.

COLLINS KWM2 transceiver. PM2 AC power - \$51.02 mobile mount \$148.11 mobile AC supply - \$760. Bert Shapiro, Apt. 810 - 2076 South Ocean Drive, Hialeah, FL 33009. Phone 923-3233.

FOR SALE: Hallicrafters SX82A general coverage receiver. Recently aligned by repair center, but needs work on second HF stage which was not done to avoid expense. - \$50. W3VDA, P.O. Box 1333, Harrisburg PA 17105.

FOR SALE: Collins 304-H linear amplifier, two each 4CX1000A, 2.5 kW output, p.s., manual, \$1000. Craig Radio, Box 615, Portsmouth NH 03801.

DRAKE 2C, 2CQ, 2AC - \$930; clean and better than new. Gonset IV-6M - \$99. Bank. WA2QVQ, (212) 889-4303, 796-8617, 2530 Independent Av, NY NY 10463.

WANTED: HR060 in working condition or for parts, any condition considered. HR060 coil sets. Ultimate transmatch TP2000A or Umquic wire tuner, K9OKX, 51625 Chestnut Road, Granger IN 46530.

SELL: Six rugged 2 meter TACO model Y 102-J 10 element Yagi antennas 72 ohm output, 3/4" elements, 42" long, 212-152 h.t. - \$25 each or best offer, plus shipping. Neal, 2802 Irtwin, Huntsville AL 35801.

PORTSMOUTH Radio Club requests help for Everett Reese, WA8WVJ, completely burned out restaurant, home, all personal belongings, 60,000 loss and little insurance. Any financial help will be very much appreciated. Send all contributions to Portsmouth Radio Club c/o Trust Department, The Portsmouth Banking Company, P.O. Box 1151, Portsmouth OH 45662.

RME 6900 receiver, good condition - \$140; Apache TX1 & SSB tuner, in working condition - \$95; 200W all-band antenna - \$15. All other above \$20. Will ship F.O.B. Want professional quality shortwave receiver and amateur transceiver with at least 100W AM included with ssb. K1NNC, Cape St., Lee MA.

SELL: complete station, Heath SB-102, SB600, HM-15, HD-15, HO13 ham scan, EV-619TR mike, Gonset G8221 linear. All excellent - \$520, plus shipping. W8CWA, 1730 Friskine Rd., Hemlock MI 48625.

SWAN 350 pwt/speaker, mint condition - \$350. W8VPW (313)565-4178.

SELL: Drake R-4B - \$325; T-4XB - \$375. The pair - \$675. New tubes, PB cond; W8SNMP, A-R College, Philippi WV 26416.

OSCILLOSCOPE for sale: Heath IO-103, 10 MHz, triggered. Excellent condition, used less than three hours, and built by first-phone holder - \$210. Jim Nelson, WA0TUS, Edenwood Gardens, 121 Russell Road, Apt. 105, Cayce SC 29033.

HEATH Electronic keyer, excellent condition - \$22.25 post-paid. Steven Korn, WA2PKE, 12 Sanderson, West Caldwell NJ 07006.

FOR SALE: Drake R-4B immaculate and in excellent operating condition. new tubes, recent factory alignment - \$350. L.W. Marko, W2CVY, 70 Beach Terrace, Wayne NJ 07470.

COLLINS 75S-3R, 3283, 516-F2, 312-B4, 30L1, M.K.E. All cables, manuals - \$1995. Mint. Herb Green, W9AR1, Rte. 1 Eaton IN 47338.

DRAKE R4B - \$325, T4XB - \$375, ACB - \$65. Excellent condition. You ship. Dave Gould, 4230 Jade N.E., Salem OR 97303. Phone (503) 393-7737.

FOR SALE: Best offer, SB-102 and A.C. supply SB630, HA-14 SB-630 Heath keyer. Dan Richter, 507R Raabon, Harrisburg PA 17111.

R4B, mint condition, full 10 meter coverage - \$325. WA2OLC Steven Jacobson, 124 Fort George Ave., NYC 10040.

TRANSCIVER, RIGO 753 with A.C. supply - \$135. W1SPD Stamford CT. (203) 322-6570.

SELL: KWM2 with mobile supply and mount. Best offer. L. Goldner, 11 Cedar St., Lindenhurst NY 11757. Phone: (617) 326-4705.

TOROIDS, 88 or 44 Mh - \$5.00/dozen. Telecommunications Box 4117, Alexandria VA 22303.

CASH, will pay up to three hundred and fifty dollars for mint condition FM-300 Hallicrafters W4AIS, 306 Thronwood Drive, Taylors SC 29687.

WANTED: Heathkit HR-78 RCVR. In first letter quote price and state age and condition, including batteries. K. Wetzel, 73 Fenrick, Ridgecrest CA 93555.

HW101 and power supply. Mint. K8HJL.

DRAKE: R-4A, MS-4, excellent condition - \$250 complete Also 50ft. tower, tilt-over - \$120. Mark Starkebaum, Box 297 Gunnison CO 81230. 641-0460.

FOR SALE: KSR-28, - \$250; HP-524R Counter with plug-in to 200 MHz, \$160; MOT-HT-200, 3494, 94/94 - \$150. Get PM-3 Freq. meter - \$75; Nemo-Clarke 220mhz F.M. rec. - \$50. 220 MHz. final (Ldg 150), \$20; 2-150 with ACPA. - \$300. R4DX, 3032 Radiane Rd., Louisville KY 40220.

HIGH School ham club needs donations of antenna parts, text and gear. Tax deductible. Steve Podell, The Athenian School, Danville, CA 94526.

SELL: Swan 350 transceiver with 117-CX power supply and ACB - \$95. Also SB-200 linear - \$225. All equipment excellent. K6CKX, Coralville, IA 52241. (319) 338-1814.

HEATH HW-32, H.B. A.C. supply, HP13 D.C. supply - \$10 firm. Contact WB2DTU, 259 Elm Avenue, Feanek NJ 07661. (201) 692-1466.

CURTIS EK-39 electronic keyer, Brown Bros. BTL double paddle key, All mint -- \$85, W61G, Latourell, 7350 West 87th, Los Angeles CA 90045.

SALE: Gonsel GSB 101 Linear amplifier, 700 watts dc -- \$125; Heathkit HP-13 mobile power supply -- \$30; Heathkit 6M Lupehbox and 12V mobile supply -- \$20; Heathkit SBA300-3 6M converter -- \$10; Lafayette HA-750 6M xceiver with portable battery pack -- \$50; Midland 13-520 2M receiver 2W 6CH xtals for, 167.75, 94/94, 347.94, 401.00, 147.73/148.73 -- \$190; Sonar 2501 2M xceiver 2W with w-cads and charger; speaker phone, Fred WA2IGP, 1323 E. 65 St., Brooklyn NY 11234.

DRAKE TR3 ultra-clean -- \$300; Genave GTX-2 loaded with xtals -- \$190. Bill Cunningham, 510W 116th Street, Carmel IN 46031.

6 METER, Swan 250, with 117XC -- \$275, A-1, Russell, 19680 Mountview Dr., Maple Hts OH 44137 (216)662-2175.

FOR SALE: Drake Linear Amplifier L4B, Still in packing cartons. Must sell W1CJN, Joseph Schaffhausen, 78 Geer Ave., Norwich CT 06360.

SELL: SB301/401, just reconditioned, SSB-CW-AM filters, manuals, spare tubes -- \$500. Collect atlases, maps, etc. Want CIE or MBS frequency allocation atlas. WA6CPP, Wallace CA 95254.

WANTED: Collins NBFM adaptor, model 148C-1. E.L. Smith, WA9CCZ, 1715 Central, Wilmette IL 60091.

SBE-144 2M FM, new in box, with mobile whiff -- \$125; Antenna -- \$5; Heath IG-72 Audio Gen -- \$25; Telex UM-610 headset/boom mike, -- \$15. F.S. Eggert, Box 2154, Livonia MI 48151.

SB-34, in exclnt condx. New finals, mike, nobilit mnt, brkt, manual, Newtronics Hustler W/ 2 resonators, mast. WB2RQC, Mexico NY 13114.

FRITON II, 252 p.x. cw filter, new August 1974. -- \$595. SB-301 -- \$210, SB620 -- \$90. All equipment new condition. Bruce Bouvier, W2RHE, 2609 Finlaw Ave., Pennsauken NJ 08109. (609)662-6575, after 9PM EST.

WANTED: Swam model 405 external crystal oscillator, or other means for putting Swan 350, xcvr or M.A.S. frequencies. WB5GYJ, 5146 Gawan, San Antonio TX 78218.

WANTED: Galaxy 2000B linear. Must be extra clean. W2DAP, Box 221, Lake Grove NY 11755.

FREE: 12 extra crystals of your choice with the purchase of a new Regency HR-2B at -- \$229. Send cashier's check or money order for same-day shipment. For equally good deals on Collins, Drake, Ten-Tec, Kenwood, Swan, Atlas, Standard, Clegg, Icom, Genave, Tempo, Midland, Alpha, Hy-Gain, Mosley, Cushcraft and Hustler, write to Hoosier Electronics, your ham headquarters in the heart of the Midwest. Become one of our many happy and satisfied customers. Write or call today for our low quote and try our individual, personal service. Hoosier Electronics, R.R. 25, Box 403, Terre Haute, IN 47802. (812) 894-2397.

WANTED: Sockets for 813s, power relay suitable for T/R use in amplifier, or info. Mark London, 104 Hildale Rd., West Hartford, CT 06117.

COLLINS 75S-1, perfect operation, very good condition. W4BVV, (703) 450-4277.

MCQY silver sentinal 9MC Filter, both XTALS -- \$25, Baldwin Fones -- \$10, beautiful 160MTX/CW rig -- \$50. Details, W6B1Z, 528 Colima, La Jolla CA 92037.

SELL: Eimac sockets for 4X150/250/300 -- \$2 each. Want: National right angle drive, K6TVN, 2818 Joaquin, Burbank CA 91504.

DRAKE R4B -- \$350; 74XB -- \$350. Original boxes, cables, manuals. Excellent. Urbans W3HUS, RD 1, Box 103, Malvern PA 19355. (215) 827-7374.

FOR SALE: Electronic counter model 522B Hewlett Packard. Excellent working condition -- \$55. W2GKF, 55 Rummymead Road, Berkeley Heights, NJ 07922.

FOR SALE: Heathkit HW-7 QRP, new, hardly used Hum Mod -- \$75. Heath VFO VF-1 not working -- \$10. A. Vail, 29 Prospect Armitville NY 11701. (516) 691-3642.

COLLINS 32S1 trans, with DX engineering compressor, and 516F-2 power supply for sale. Mint condition -- \$450 FOB. Original owner. Otto J. Supliski, 53 Hayward St., Yonkers NY 10704. (914) 969-1053.

FOR SALE: Hallicrafters receiver SX100. -- \$100 plus shipping. W1MFL, R1, Ellsworth ME 04605.

EXCELLENT condition: Johnson 275w Matchbox w/SWR indicator -- \$75; Heath SB620 spectrum analyzer, 455 kHz, i.f. -- \$95; Good condition, Heath HW-17 2-meter transceiver w/12VDC supply -- \$75. I'll ship. Don Parmentier, 737 Golden Oak Drive, Sunnyvale CA 94086.

QST's, estate of WA2GQJ 1959-1961, 4 issues each, 1962-June 1974 complete, QCs 1959-1972. Complete Cap. Radio Eng. Inst. Course, 19 volumes, Best offer over \$60. Mrs. R. Mitterer, 9 Reynolds Dr., Eatontown NJ 07724.

COMPARING decks, SSB-100F, exc. with two spare finals -- \$100 each; PGE with 6M dynamic mike -- \$110; Apache TX-1, 180 watts, excellent, 6 spare tubes w/\$29 mike -- \$20; Zenith Blaine RDF cost -- \$129, excellent -- \$65; Hammarlund 869 three band Weather Sentry, unused, with AC adaptor, PCB -- \$45, BC-455 w/AC pwr and base Mt. -- \$15; ARC-5 xcr3-6 MHz w/DVNA -- \$8; Heath SWR Mtr AM-2 -- \$10; 15 EIMAC VC-60-32 50 MMF vacuum caps, tested Dec. '74, best bid over \$45, or \$5 each; QST's 1962, thru August 1973 -- \$15. W2ZK, Box 175, Westport NJ 07757.

SB-620 Heath Spectrum Analyzer wanted. Will pay -- \$100 plus UPS shipping. Must be expertly wired and like new condition. WA5WGO, Bob Waldenburg, 2118 N. Claiborne, New Orleans LA 70118. (504) 949-3652 day.

SWAN 350C and 117XC supply -- \$315, Turner 454x mike -- \$10; Hallicrafters HA-1 keyer and Brown BTL paddle -- \$55; Drake TV1000 filter -- \$10. Everything like new. Ship anywhere. WB2CKU, 7 Bowen Pl, Stony Brook NY 11790. Tel (516) 751-8792.

RTTY Video display unit, 60 thru 100 wpm, works on any TV and TU -- \$425. WA8NSH/7, 7802 West Weldon, Phoenix AZ 85033.

CHEAP -- HT-32 in good condx -- \$95 w/manual. FM converters for 6 meters, IRC-10, complete -- \$15 each. Eico 460 oscilloscope -- \$35. Heath metal detector, unused -- \$50; Keyer paddle Brown Bros., -- \$15. Phil Cleveland, WA6WIV, 1253 Dartmouth Ave., Claremont CA 91711. Phone (714) 621-3330 evs.

WANTED: R.M.E., 4301 side band adaptor. Al Schmidt 5790 W. 38th Ave., Denver CO 80212.

136B-2 Noise Blanker for KWM-2, unused -- \$135. Yaesu FTV 650 6 meter transverter, unused \$75. Will trade for clean 312-B4 or 2 meter FM. Wyt Wright, Wesley AR 72773. (501) 456-2649.

WANTED: Vibroplex Presentation Model semi-automatic key (2K Gold-plated base top) and carrying case. Send description and lowest acceptable price. John Mathis, 2412 Pieder 310E, Nashville TN 37212.

SELL: HW-16 and HG10B, good -- \$120. WN2V1Q, Howard, 2951 Falcon Ave., Far Rockaway NY (212) 471-2614.

TUBE tester -- \$15. Bob Gorman, 64 Summer St., Andover MA 01810.

WANTED: Mechanical filter for 75A-4, .5 or .8 kHz. Leland W. Smith, W5KLL, Route 3, Jasper AR 72641.

WANTED: Accessories for HRO-50 Coil sets AA, AB, AC, E3 crystal-calibrator; NFM adapter; select-o-lect; National speaker; L. H. Wendel, WA2OKC, 19 Rossmore Pl, Binghamton NY 13904.

WANTED for cash: Hewlett packard, H.P. 525A plug in. Complete power supply for Henry 4K linear national ANWR2 receiver, new or like new. Any parts for H-30A, 32 ASB printer, Tektronix 635 scope and plugins any shape, or any other parts you have. All subject to my approval. All letters and phone calls answered. Michael D. Harrison, 431 Windsor Pl., Oceanside LI NY 11572. (516) 764-3873.

WANTED: Tri-band beam or equivalent. Prefer deal in NYC Metropolitan area. Will pick up. WB2UWN (212) 653-2697.

MINT HW12A, good mike, new HP 13B - p/s, hustler ant., chain mount -- \$175. Heath tone burst generator -- \$19. Sells: SB220 or SB200. W9DSV, 21 Britton, Hudson F.C. 34568. (813) 858-3391.

SELL: Heath IO-105, dual trace scope, less than 2 months old, needs only to be calibrated as per manual. Must sell -- \$400 or best offer. I will ship. WB2YR/J1, 220 Central St., Apt 8, Stoneham MA 02180. (617) 438-2941.

COMMUNICATOR IV, 2-meters, excellent. -- \$125 or swap for HF CW/SSB rig (2NT, etc). David Rogers, WA7ZYQ, 210 Lauder, Moscow ID 83843.

BETTY Crocker coupons are needed to purchase a new club rig. Send four Betty Crocker coupons to, Talawanda High School Amateur Radio Club, Oxford OH 45056.

SELL: KWM-2A, 516P2 w/waters 3001 (Universal Hybrid coupler. Like new Collins 32V3, 75A2, good -- \$400; Ranger II, new -- \$150; AF-68 transmitter PMR-8 receiver, M-1070 power supply, mint -- \$200; Regency HR-2A, AR2 linear, P-107 AC supply, mint -- \$275; SX-100 receiver w/speaker, good -- \$100; Ilica 6-meter transceiver w/VFO -- \$40; Heathkit HA20 6-meter linear -- \$75; Yaesu electronic keyer, w/xtal, \$50; BC-453 receiver 150-550 KC -- \$15; Ham-M Rotator -- \$65; FC-30 filament choke -- \$11; SB-610 monitroscope -- \$75; PL-172A w/socket -- \$75; 4-1000A w/socket -- \$65; Johnson KW-Matchbox like new -- \$200; 4-125A tubes -- \$125.0. D.W. Langston, W5BBV, 9643 Atacrest, Dallas TX 75227. Phone (214) 288-4046.

FOR SALE: Heathkit SB-100, HP-23-A, SB-600, HPD-21A Mike, HM-102 SWR bridge. Package deal only -- \$310 firm. Mike Farquhar WB8NRG, 1065 Peggy Lane, Wilmington OH 45177. (513) 382-3270.

COLLINS station, ready to operate, 39S-1, 75S-1, 516F-2, manuals and cables -- \$700. W9RYK, 986 Sweetbriar, Galesburg IL 61401.

SELLING my first rig. Good condition. DX-60A smt, HG-10B w/c, HC-110 revr and assorted crystals. Name the price. WB2AYF, Stan Monte, 67-25 Dartmouth St., Forest Hills NY 11375.

WANTED: Collins 30L1 linear in good condition. W8OAR, 3915 Grosvenor Road, South Euclid OH 44118.

STATION W8QOA is helping to celebrate the 12th annual Lawrence Institute of Technology Open House. All stations worked during the open house will receive special QSL certificates. Hours of operation will be, in GMT, 1400, 15 March, to 0200 16 March, and 1400 to 2300, 16 March, 1975. It will be a plus or minus 15kc., 7.125 or 7.25 or 14.31 or 14.11 MHz. 73.

FOR SALE: WD-11 replacement combination new 864 tube with adaptor, few sets for \$7.85 postpaid. Collins 75S3 receiver w/ing emblem serial 12769, excellent condition -- \$365. High voltage filter condensers, transformers, chokes, other miscellaneous clean parts, write SASE, Wanted, Collins 75S-3 round emblem, 31225, 3&W Matchmaster 52 ohm Mosley TA33 St., antique equipment, golf clubs. Shur Co., D.B. Whitmore, W2CUZ, 36 Masterton Rd., Bronxville NY 10708.

TEMPO FMP with crystals and Hustler 5/8 antenna, both excellent - \$140 Gary Carmack, WA7GFT, 4902 E. 18th St., Tucson AZ 85711.

HALLICRAFTERS SR500 xevr, 80-20 meters, 500 watts, ar, dc, ps, speaker, mke, manual - \$295. Gladding 25 2MFm, 251 watt, crystals - \$155. Both UPS. Prepaid. WB9JHS, 6092 Chase, Downers Grove IL 60515.

SELL: Collins 323S, Serial No. 100598, mnt, round emblem - \$650; 516-P-2 \$100; 30-L1 Serial No. 40929, mint, round emblem - \$350; Clegg FM-27B, 6 months old - \$350; Swan SS-15, 6 months old - \$450; Heath twower - \$20. Jay Sewell, W5DWN, 2102 Pecos, San Angelo TX 76901.

PARTS bargains: All items guaranteed, call for fast quote. Ham-2 - \$117; Belden 8448 rotor cable 12c/ft.; 20% off list TH6DXC, 204BA, Classic 33, Ct.36; Sprague 500PF/20KV Doorknob cap - \$1.95; CDE .001/10KV - \$1.95; Raytheon 811A - \$7.95, \$15/pr; write Needs - many odd tubes; Midland 1350B, 13520-Write; Belden 848U (8237) 1bc/ft.; RG8FOAM (8214) 30c/ft.; Amphelco PL255 59c; quote R-4C, T-4XC, TS520. New brands headphones - \$5.50. Vibroplex; Sorensen ACR2000VA AC regulator - \$150; KY65 code ider, - \$5.95; No. 14 stranded antenna wire - \$4.45/c; 15% discount Trix W, MW, Super Mast-FOB Calif; Prieux FOB Houston, Madison Electronics, 1508 MCKINNEY, Houston TX 77002. (713) 224-2688, Nite (713) 437-5683.

DRAKE TR-3, AC-3, DC-3 - \$360. David Kilmay, 5637 Heming, Springfield VA 22151.

WANTED: General coverage receiver, 0.5-30.0 MHz. Prefer Hammarlund HQ-100, Gerard Gxosof, Box 687, FDR Station, New York NY 10022, (212) 754-6610.

WANTED: KWM-2, new or like new. Will pay cash, plus Collins 75S-1 with Waters "Q" multiplier, CW filter, BFO CW crystal. Collins 328-3 recently realigned, calibrated, and neutralized by authorized dealer. Both pieces returned, clean, excellent working condition. All manuals, inquiries answered, Jesse A. Warren, 508 Ronnie Drive, Indian Harbour Beach FL 32937. WB4TKL.

SELL: Deluxe station, SX-115 and HT-32B, mnt - \$525. I'll crate, you ship. W7CTV, 518 North 21st Ave., Yakima WA 98902.

WANTED: B&W 370 SSB receiving adapter, CRT 3ADP1, T.O. 12R-2-AGPL3, FM11-8625-274-12, Violette, Rt. 6, Box 794, Marshall TX 75760.

SELL: QSTs, 1925 to present, All or any part. W0PHY, 2903 Ash, Hays KS 67601.

FOR SALE: Tubes and parts from the early 20's. Also, other equipment. W9EIK, 2418 6th St., Wausau, WI 54401.

CHEAP, pick up only, C.E. 20A - \$25; radio specialty 6 meter bandie talkies 3 watt with 12V/117V p/s - \$20 each including antenna, mic, manual. Leeds Northup wheatsone bridge in beautiful wooden box, 10 turn slide wire .01% - \$50. Dozen 1930's tubes unopened, in original cartons - \$5 each. Bill Avery, Oakland CA 94610. (415) 452-3922, 6-9 evenings.

FOR SALE: Heathkit, SB-401, SB-301, SB-610 mint - \$480. M.H. Klapp, 25 Gladwish Road, Delmar NY 12054. (518) 439-9531.

DRAKE T4XB MS4AC4 including crystals for 160. Clean and works good \$700. K2ZKC, Roger, 6240 Jackson Rd., Breckenridge MI 48615.

SWAN 600-T - \$360; 600-R - \$340, both - \$650. Heath HW12A - \$75; HW101 - \$210; SB102 - \$320; HP23A - \$45; Yaesu FR7X-400SD - \$220; PLDx-400 - \$210, both \$400. All are perfect. W31YQ, 35 Farmway Dr., Richboro PA 18954. (215) 355-2643.

SELL: SB102 with nineteen spare tubes - \$395; HP23A - \$50; HW12A, HW2VA, HW3VA - \$85 each; HP13A with two spare rectifiers - \$60; Ranger with outboard six-meter AMP of tilton design plus coax ant. relay - \$165; BC453 and BC454 on rack mount - \$19; six-meter HACO - \$15; BC604, T20, T21, T21, BC646A, BC103, DM36, PE101C, 2000-1500-1000 V. Power supply, KROHN-HITE Band-pass filter 330-M - \$176; Brute ant. coupler 301A, RME 69 manual alignment operation - \$15; Hustler 5/8 antenna, RMC 69 manual alignment operation - \$40. Carl Frank, W0COS (since 1924), Rt. 1, Rochester MN 55901. (507) 282-0111.

HEATH DIGITAL Depth sounder, used 2 weeks, Ex. Condx. - \$110. WB8CG 2819 Washington Ave., Hurricane WV 25526.

DRAKE R4C, w/3 filters (5 kHz, 1.5 kHz & 6 kHz) & 15 xtals, have box, manual and card. New value as equip'd - \$774. Sell for - \$520. Perfect condition, Leslie Arton, RR2 Box 234, Indpls IN 46231. (317) 839-4124.

WANTED: OPR, man schem, on silver model "700" xmitter 144/240 MHz, Xerox copies ok. Send price to D. Elrick, W9PFX/7, 1829 E. Broadway, Apt. 11, Mesa AZ 85204.

FELREX 5 element antenna model 20M536, 20 meter - \$225. Hallicrafter TO Keyer with a Vibroplex key, new, never used - \$90. WA6RYB, 5950 Arlington Avenue, Riverside CA 92504. Phone (714) 688-0989.

7034/4X150As or 72 9/3CX100A5s (2C39A), surplus, look and test as new, \$4 each, pzd. Johnson 500 mnt. xmting variables, for output pi-net, high power - \$5 pzd. Anateur Radio Components Service, PO Box 546, East Greenbush NY 12061.

WATERS 359 Compressamp - \$15; EICO 368 TVFM sweep generator - \$38; Triad DC to DC transformers - \$450; A3 to DC transistor PS - \$7; Ballantine AC VTVM - \$15; Fluke 803BR differential VTVM - \$35; HP 202AR function generator - \$45; Decade voltage divider - \$20; panel meters, other items K41JT, Rt. 3, B53A, Brevard NC 28712.

MURPHY'S laws - printed 8 1/2 X 11". Four copies one dollar PPD. Russell Small, 224 Pleasant St., Marblehead MA 01945.

FOR SALE: The buy of a lifetime, from original owner, 758-3B with CW filter, 328-3, 516F2 power supply together with DX engineering speech processor. All look and work like new - \$1100. 75A-4 serial No. 3764 perfect condition, with two filters - \$400; National RBL-5 low frequency receiver, fine working order - \$75; prefer local pickup so you can see and hear the gear in operation. Will deliver Collins Gear 100 miles. Donald L. Farrell, 207 Seneca Street, Chittanooga NY 15037.

SB-300 for sale, in excellent condition - \$150. WA1TJO, 11 Pinto Drive, Pittsfield MA 01201. Tel 413-442-3880.

IRD power sources, No. 4165M, 500 W. No. 4164H, 100 W. measure FWD/RCF power with your DC meter. Stan, WA1ECP, 807 East St., Dedham MA 02026.

F4XB transmitter, 160-10 meters 6 @ new - \$400; H4B receiver 160-10 meters, like new - \$350; Heathkit IO-103 triggered scope, new - \$230; DX60B transmitter - \$50; HG10 VFO - \$30; Homebrew linear 4-400As table-top unit (send for photo) - \$175; Homebrew power supply 4000 volts at 1.2 amps - \$150, both excellent. Call Mike WB5YCT (405) 372-8878 or write 6538 Yorktowne, Stillwater OK 74074.

BUY-Sell-Trade, Write for monthly mailer, give name, address, call letters. Complete stock of major brands, new and reconditioned equipment. Call us for the best deal. We buy Collins, Drake, Swan, etc. SSB & FM. Associated Radio, 8012 Conser, Overland Park KS 66204. (913) 381-5901.

SELL: 1922 Government Call Book, 1916 signal book, U.S. Army. Make offer on each. WA4ALG, Rt 1, box 173, Maitland FL 32751.

TELETYPE equipment for sale for beginners and experienced operators. RTTY machines, parts and supplies. Atlantic Surplus Sales, Co. 1902 Mermaid Ave, Brooklyn NY 11224.

FOR SALE: SB401 w/cyl pack - \$245; SB303 w/cw & am filters - \$275; SB 610 - \$65; SB630 - \$70; SB600 - \$15; SB500 - \$125; SB110A w/SBUU & p/s - \$37; (SR-600 cyclone w/fo w/s AC & DC - \$495; HT32B - \$240; HT 33A - \$225; SX115 - \$200; HA2 & 6 wps - \$240; All very clean, mike, 1200W Melrose, Southfield MI (313) 354-3134, 48075.

COLLINS 75A4 serial number 4574, with SSB and cw filters - \$390 W2VW, 181 Ramblewood Rd., Moorestown NJ 08057. (609) 235-1850.

SELL: Hallicrafters HT-37 transmitter and SX-111 receiver and accessories - \$250; Johnson 275 watt matchbox with SWR indicator - \$60; Leo Foley, 109 Wilson Drive, Port Jefferson NY 11777. (516) 928-1678.

Windmills, waterwheels with car alternators perform better with our regulator. Many advantages. Literature 25c. Earle, W6MLV, Box 850 Alpine CA 92001.

NED layout for transmitter page 181, hook "Understanding Radio" will pay. "Howie" WN5LOT, R3, box 112, Comanche TX 76442.

SURPLUS transmitters, receivers, test equipment at up to 95% off current prices. How and where you buy in your area direct from the Department of Defense. Send \$2.00 Western Surplus, Box 138, Dorton CA 94220.

3KW gasoline generator, Kohler 3MM65, 120/240 volt - \$375. K3BKK, 8012 Seminole Ave., Philadelphia PA 19118.

TUBE bargain, three (3) Cetron 572-B used few hours - \$39. postpaid WAAZ, 5819 Fieldston Road, Riverdale NY 10471.

EXPERT Ham Repairs, FCC list, 3 years experience, speedy service. Write for quote. John Llovd, 5081 Woodmont, SLC, UT 84117.

HAVE many old antique and historical articles of ham gear including condensers, meters, xtals. Many suitable for museums. Write for list. W.L. Hoist, W8MD, 1919 Winona Street, Chicago IL 60640.

QST's and ARRL Handbooks prior to 1930 wanted. Ed Kalin WA1LZC, 75 Tumblebrook Lane, West Hartford, Ct. 06117.

WANTED: Hallicrafters SR-400A Cyclone III, K2EG1, Stratford Pl. N. Babylon NY 11703. h

FOR SALE: HQ-129X - \$75 cash. Heath Cheyenne transmitter 80-10 meters, internal VFO, AM and CW, mike, and power supply - \$90 cash. William Martin, 8 Snydam Street, Apt. 2 New Brunswick NJ 08901.

SELL: S/O CK7A, Drake TR-4, Heath HW-32A, SASE for list and price. Want: Curtis EK402A, KM420, KB4200, mercury contactors/relays, Eimac 4CX series tubes, vacuum capacitor (fixed & variable), vacuum relays, RG-35B/U or RG-164 coax type LC & HN coax connectors. Emerald, 8956 Swallow Fountain Vly CA 92708.

KENWOOD Twins - 7599 and 8599 with RF gain modification. Mint condition, all cabling, original containers - \$525. Sam Johnson, W6RX, 5453 Thunderbird Lane, LaJolla CA 92037.

JOHNSON Matchbox wanted. William Lowry, 31 Midwell Watersfield CT 06109.

CALL toll-free: (800) 327-7799. Ask for Bob Hoffman (Jax 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.

DRAKE SPR-4 programmable for any frequency in the spectrum, for sale, first - \$500 gets it. Los Angeles area, phone 324-1084 or write to J.A. Lynch, 820 W-157th St., Gardena CA 90247.

ORIENTAL Carpet with your call letters woven into beautiful hand-woven in Nepal. Your choice color. Magnificent conversation piece. Write David Bryan, WA0EU, 1880 Gage, Topeka KS 66604.

WANTED: Johnson KW matchbox, Rohn 45 & 55 tower sections, Sell Xfour, 3600-0-3600 at 1 amp, 110/220 pri - \$40 job. W0AII, Paul Bittner, 304 W. 17, Grand Island NE 68601.

SELL: HW-100, excellent condx. - \$200, W8QXO, 121 Parana Drive, Newark OH 43055.

HW-22A, HP-13B, 40 meter Hustler ant with bumper mount, factory tested - \$125. WB9CNS, Bob, RRS, Huntington IN 46750. (219) 356-2487.

SELL: SX-28, BC-348Q receivers, Miscellaneous equipment and parts. Send stamp for detailed list. Ed French, Apt. 4, 991 Tollview Ave., Aurora IL 60505.

COLLINS S-line: 32S1, 75S1, 516F2, 312B4, cables and manuals. Original owner, Will sked for XMSN test. Price excluding shipping charges - \$700. W1QFL.

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SELLING: Sonar VFX-680 FM transmitter - \$35; HA-5 heterodyne VFO - \$50; Johnson 275w matchbox with SWR - \$80; Viking Valiant 1 w/VFO - \$100. All mint condition, 4307X, 738 Penfield Ave., Havertown PA 19083. You pay postage.

FOR SALE: Collins power supply 516-2, B&W Codax automatic keyer model 361 - new; Bell & Howell 8MM movie camera - model 418. Leather case, optronic eye, in mint condition. Channel Master tape recorder - model 6306, AC and batteries. All in mint condition, John Rightmyer, W3BDC, Hamburg PA.

SELL: AC and DC power supplies for Galaxy III or V, good condition \$45 each plus shipping. Bill Dycus, 79 Pressley Road, Asheville NC 28805, (704) 298-6440.

WANTED: Berkel ultimate transmatch UPT2000A (W6RQZ) 1330 Curtis, Berkeley CA 94702. (415) 526-7345.

TOWER wanted REZ 75 or better. WRITE W3OOE, 4073 Circle Drive, Allison Park PA 15101.

I WANT to correspond with any amateur who operated in Virginia prior to 1925. I am writing a history of amateur radio in Virginia. I also collect ARRL Certificates, Licenses and QSL cards dated before 1930. WB4FDT, Phil Sager, 3827 N. Abingdon St., Arlington VA 22207.

KWM-2 - \$500; 512 F-2 - \$95; 312B-5 - \$300; KWM-2A - \$300; 301 - \$349; NCX-2000 linear - \$300; Dummy load - \$35; RFTV mod-1 - \$40; H-6-61 - \$40; 522 w/gr - \$35; VAC. variables cond; inquire: W. Ridings, 5301 Rockledge Dr., Buena Park CA 90621.

WANTED: Collins 301-1, round emblem; and filters for 75S-3C 100W, CW 100W, SSB. Contact Ken, WA5JJB, P.O. Box 356, Nederland TX 77627.

COLLINS station: 32S-3, 516F-2, 312B-4, all like new; 76S-1 with Waters notch filter, good operating condition. - \$950 takes all, including manuals, and cables. Gordon Pettengill, WJOUN, 150 Garfield, Concord MA 01742. Nights: (617) 369-1528.

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SELL, Trade: Swan SS-200, all solid state transceiver - \$650; 80mhz CW 100W SSB keyer monitor - \$250; Elicoo SSB-100F SSB-CW-AM transmitter \$140; Drake 1-A receiver - \$115. All mint, with no modifications. Don Burns, 4410 Reading Rd., Dayton OH 45420. (513) 256-0345.

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REGENCY 175 MHz counter. Several two meter Motorola crystals, and others. Write Harry McCollum, 1010 West First, Mt. Pleasant TX 75455.

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Index of Advertisers

ADVA Electronics	182
Alltronics Howard Company	158
Anatone Electronic Supply	108,109,118,120
Anatone License Instruction	153
Anatone Wholesale Electronics	173
American Radio Relay League	
Antenna Book	156
Antenna	114
Handbook	117
Membership	173
Publications	171
Specialized Communications Techniques	4
World Map	154
24 HR	156
Audy Electronics	156
Antenna Supermarket	108
Atlas Radio Inc.	127
Atronics	192
A V Research	168
Autek Research	163
Banjo	164
BIRD	129
Burglarch Amateur Center	121
Caddell Coil Corp.	138
Chegg Division of IBM	178
Cleveland Inst. of Electronics	155
Collins Radio	
Command Productions	159
Control Signal Company	162
Covox Corp.	160
Cover Craft	160
Cubes Company	162
Curtis Electro Devices	169
Cush Craft	119
Dames, Ted	168,169
Dartek Corp.	167
Data Signal	126
Denton Radio Co.	111
Die Mold Products, Inc.	168
Dynam	154
Dynamic Electronics Inc.	168
Ebrhott	151
Emas	159
Electronic Distributors	159
E-Z Way Inc.	144
End-har	146
General Aviation	112,113
G.R. Electronics	168
GOHUM	142
Hai Communications	174,175,183
Hallcrafters	113
Hann Radio Center	141
Harrison	145
Health Company	106,105
Henry Radio	184
Hy-Gain	107
ICOM	5
International Crystal Mfg.	7
Ian Crystal	140
Janel Laboratories	150
Joumen Industries	159
KLM Electronics	147
Larson Antennas	116
Latin Radio	146
Leader Instruments	149
Les, John	166
Logic Newsletter	172
Marsh Devices	112
Mattis	156
M.F.I. Enterprises	151
Milen Mfg. James	177
Mini Products, Inc.	158
Mun. Electronics	176
National Radio Institute	146
New England Electronics	140
New York State	177
Polaroid Engineers	150,152,168
Pickering CodeMaster	169
Polys PMS	147
Radio Amateur Callbook	162
Robot Research	139
R.P. Electronics	161
SARCW	162
Satan Electronics	142
Savoy Electronics	5
Signal One	124
Sylvania Products	160
Space Electronics	159
Spectronics	106,130
Spectrum International	164
Star-Tronics	161
Stephen Horback & Company	141
Swan Electronics	166
Swantek Inc.	
Teletop Corp.	138
Telrex Laboratories	110
Tex Inc.	165
Tucker Electronics Company	153
Unadillo Radiation Company	171
Uniqua Products Company	163
Vgo Gordon Engineering	160
Van Siclie	161
VHF Engineering	155
Vintage Radio	128
W.R.L. QSL Service	144
Webster Radio	148,162
Wilson Electronics	103,117
Wirex	146
Wolf, S.	161
World QSL Bureau	167
Yaesu Muxen USA, Inc.	106,111

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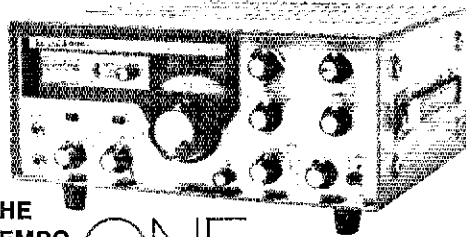
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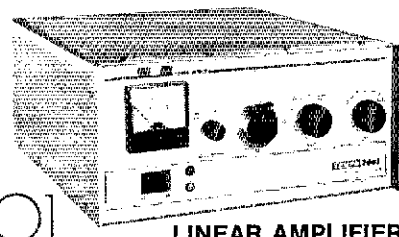
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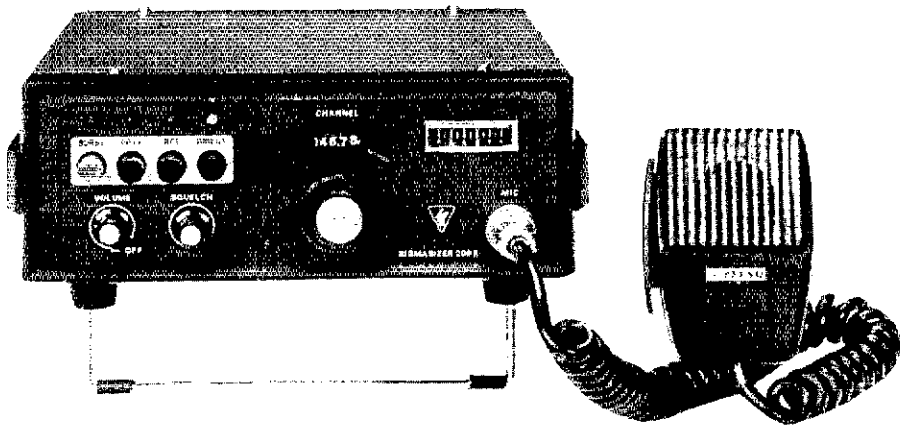
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