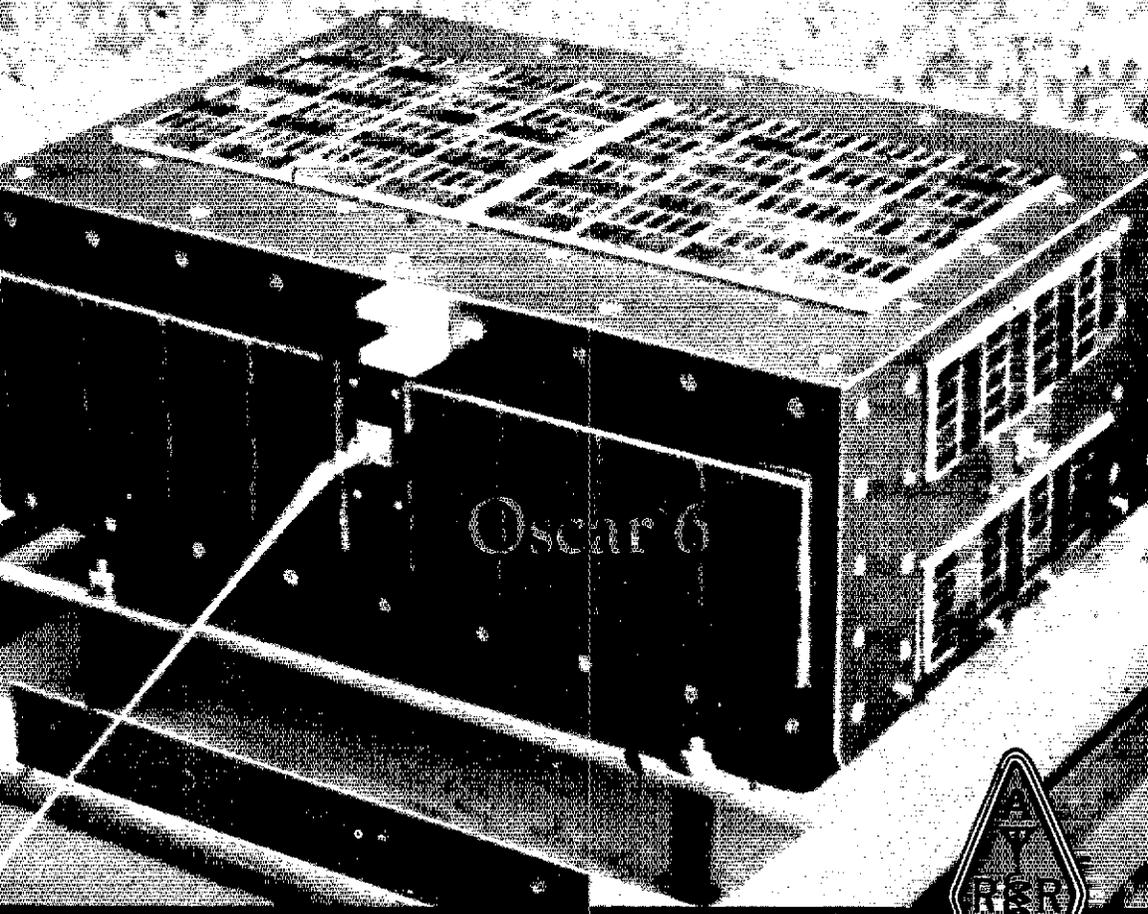


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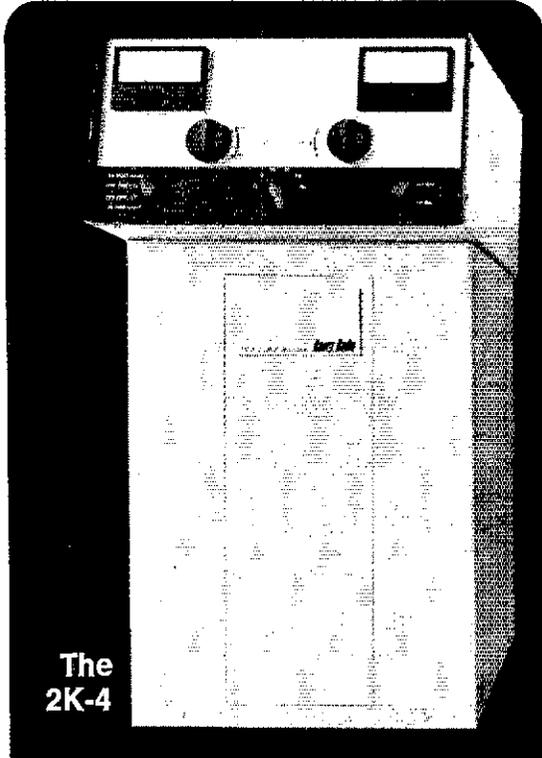
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Subscription rate \$7.50 per year postpaid, U.S. funds, U.S. & Possessions; \$8.50 in Canada; \$9.00 elsewhere. Single copies, 75 cents. Foreign remittances should be by international postal or express money order or bank draft negotiable in the U.S. and for an equivalent amount in U.S. funds.

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

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QST is available to the blind and physically handicapped on magnetic tape from the Library of Congress, Division for the Blind and Handicapped, Washington, DC 20542.

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



OUR COVER

Oscar 6 is tested in sunlight for the first time in W3GEY's backyard as photographed by K3JTE.

QST

DECEMBER 1972
VOLUME LVI NUMBER 12

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

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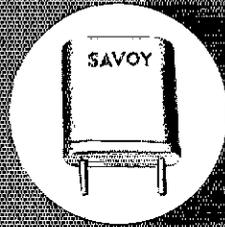
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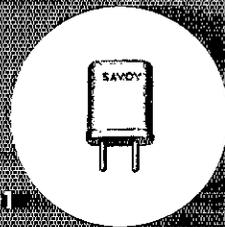
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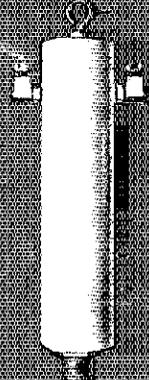


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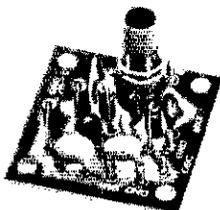
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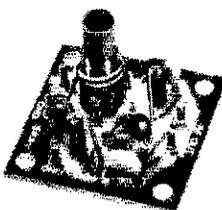
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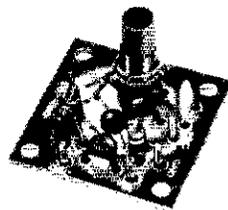
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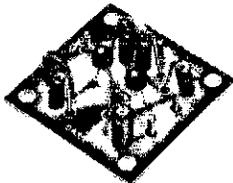
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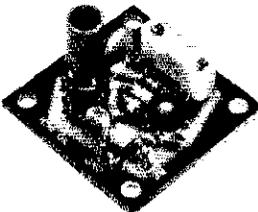
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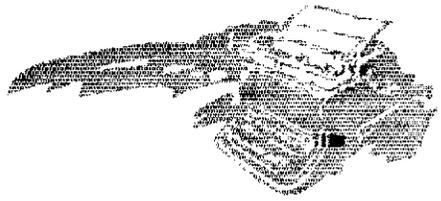
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"It Seems to Us..."



MESSAGE TRAFFIC RESTRICTIONS

THE FEDERAL COMMUNICATIONS Commission has now issued a Report and Order in Docket 19245, the so-called Eyebank matter. It creates a notably different atmosphere for our handling of messages — on behalf of third parties as well as our own internal communications — from what existed the first 60 years of our history. The text of the order appears in "Haps" this issue.

There was little or no mention of amateur traffic-handling in our rules prior to the late 1920s. Yet amateurs had long relayed third-party messages — *no matter what the content* — as an inherent and untrammelled right; indeed, ARRL was initially founded on the concept of an organized traffic-relay system.

Back in 1928, in those glorious days when the complete amateur rules occupied only one mimeographed page, one of various periodic revisions by the old Federal Radio Commission brought forth some startling new language. It denied amateurs the right to broadcast entertainment programs, a move which received general approval; but it also forbade the handling of "any form of commercial correspondence." This latter phrase caused considerable concern as to what effect, if any, it might have on our message traffic procedures. The League took strenuous action. After some months of discussion and debate, no less an authority than the General Counsel of the Commission issued a three-page memorandum opinion, concluding in crystal-clear language:

Both as a matter of statutory construction and sound public policy, it is apparent that the prohibition on amateur stations from conducting any form of "commercial correspondence" should be construed to mean that any amateur radio operator may transmit or deliver from any amateur radio station a message of any kind . . . regardless of the source or text, provided that no pecuniary or other consideration is directly or indirectly paid or promised him.

That statement is the principle under which we amateurs continued to organize and operate message traffic networks and systems for four subsequent decades. The

purpose was — and is — purely and simply self-training in message-handling procedures, primarily so that in event of emergency we'd be better able to perform in the public interest. We accepted the challenge of community projects — providing liaison for parades, sports car races, March of Dimes marathons, and the like; they were both admirable tests of our mettle, and the necessary means for keeping an interested and cohesive group in constant readiness. The content of the messages was not of major importance. Amateurs only wanted raw material input for the traffic mill — *solely for practice.*

But a few years ago FCC blew the whistle. The 30-year-old phrase, "nor for its use," Commission attorneys decreed, actually prohibited us from furnishing amateur communications on behalf of any non-amateur organization. Thus (except in emergency), communications for boat races, election returns, parades, Red Cross, Eye Bank, were outlawed. No matter that those four fateful words were added (ironically, at League request!) to our rules in 1938 for an entirely different purpose. No matter that we'd done all these things openly for years, and publicized them liberally in *QST*. No matter that Commissioners and division chiefs had publicly commended amateurs for such activities. These services were, to our great and sudden surprise, contrary to regulations.

The Commission, however, quickly attempted to reassure amateurs of its belief in the desirability of certain of these activities (e.g., see Chairman Burch's speeches, p. 80, May 1971 *QST*, and "Nor For Its Use," this issue) and wanted to amend our rules to permit their continuance. The aforementioned Report and Order is the final result.

Precisely what effect the new language will have on our traffic activity remains unclear — a natural result when one disturbs language which has stood the test of several decades with no real difficulty. It is perhaps further ironic that no less an authority than former FCC amateur division chief W4GF, in his regular *Auto-Call* column, is obliged to

(Continued on page 48)

League Lines . . .

Two-meter ops, please take special care if and when using the 145.8-146.1 MHz region, so as not inadvertently to get into Oscar during one of its passes. The problem is slightly reciprocal; some of the high-power boys shooting at the satellite around 146.07 have smothered repeater inputs, prompting a move or two. Remember: 100 watts effective radiated power is a maximum for practical Oscar use; anything more than that is inherently violation of the "minimum power" rule.

W1BVR and others caught the typo made in our rush to get the phone-band expansion report into November QST; on page 79, the chart should show 21,270-21,350 (not 21,250-21,270) kHz as the "Advanced & Extra" entry in the November 22 column, and 21,225-21,325 in the ARRL-proposed column.

Can you operate an fm handset while a commercial air passenger? Not without permission of both the airline and the aircraft captain, as we understand it; the latter's okay alone is not sufficient. But whatever the technicality of regs, leave the rig in its case or your bag while in flight. The last thing amateur radio needs is a charge, founded or not, that we interfered with safety-of-life communications.

We understand from SCM VE3DV that the Ontario Amateur Radio Service Net, a day-light operation similar to ECARS, is shifting from 3775 to 3755 kHz. Generally, however, the VE attitude toward U.S. phone expansion is "let's wait and see" before undertaking the counterpart action strongly urged by the Canadian Amateur Radio Federation.

Can an unlicensed person dial an autopatch and legally fire up the repeater to talk with a mobile? Yes, as we understand it from FCC, provided the call is first intercepted by the repeater's control operator and screened before being answered by the mobile. I.e., no landline call on the air until cleared by the control op.

We hear some amateurs have been cited for inadequate ID, when in portable or mobile status. The regulations are -- and have been for several years -- quite clear on this point: Section 97.87 (b) (2) says: "When identifying by telephony, immediately after the call sign, transmit the word "portable" or "mobile," as appropriate, followed by the number of the call sign area in which the station is being operated." When enacted, this was a relief from the earlier requirement for a description of the exact geographical location. But the numeral is always required.

A C&NW Railway bulletin notes a couple of motor vehicle incidents where gasoline in closed cans was in the trunk along with a two-way radio; fumes leaking out filled the trunk space and when the operator pushed the mike button, it caused a spark at the relay contacts -- and explosion. Take heed!

Our regulations are rather voluminous, but even then there are some unwritten laws or gentlemen's agreements (to be observed by the ladies as well!) on certain hf band usages and practices. Most ancient of all: Don't use cw in a phone band (below 29.7) except in emergency. RTTY operators congregate at 3620, and at 090 spots (e.g., 7090) on higher bands. SSTVers use 3845, 7220, 14,230, 21,340 and 28,680 kHz. On 160, Ws and VEs stay out of 1825-1830, to provide a DX window. Observance of such practices helps us all.

A practice in the other direction comes from an occasional idiot who, out of some dislike of ARRL, intentionally QRMs WIAW code practice. The tragedy is that he's not hurting Hq. at all, as is his intention; he's disrupting dozens or hundreds of fellow radiomen who are attempting to improve their code speed, most likely to pass an FCC exam.

Fifty-year-ham awards are being issued by QCWA in fairly large numbers these days. W2WX says he hits 60 this month, and wonders how many others are in the same group?

A Simple Frequency Counter for Receivers

BY JON HAGEN * W7URZ/KP4DNH

FOR MOST AMATEURS and SWLs, a receiver with digital frequency readout would be a bonanza, especially for those using the classic two-dial communications receivers — the HQs, NCs, and SXs. Here is a simple, inexpensive counter which can be connected to the local oscillator of any superhet. It counts the LO frequency but displays the actual received frequency. It works with single- or multiple-conversion receivers, any i-f, and covers the entire frequency range from the broadcast band through ten meters.

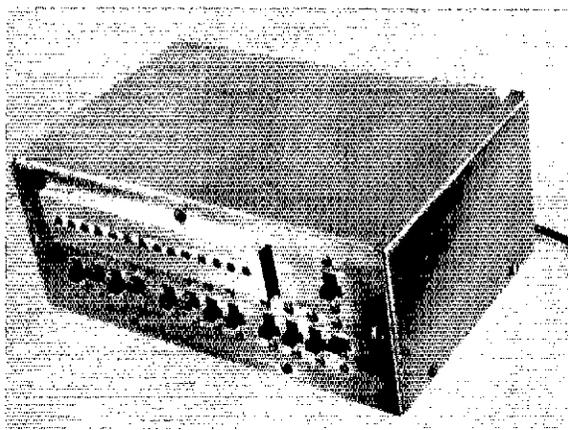
Theory of Operation

Consider a receiver whose local oscillator frequency is 455 kHz below the station frequency. If we monitor this LO with a conventional frequency counter we must add 455 to the display to get our receiver-station frequency. But if the counter is presettable, rather than only resettable, it can begin each new count cycle from 455 rather than from zero. The display is then the actual station frequency, and no mental arithmetic is needed. This counter uses Texas Instruments SN74192 decade IC counters which have the preset feature. The desired preset is selected with front-panel switches. Now consider the more common case where the local oscillator is above the signal frequency. Here we must preset the counter to minus 455. This is accomplished by merely presetting to 1000 — 455 or 545. (If the presets are set to zero, the input frequency will be displayed so the unit can also be used to monitor the frequency of a transmitter.)

Circuit Details

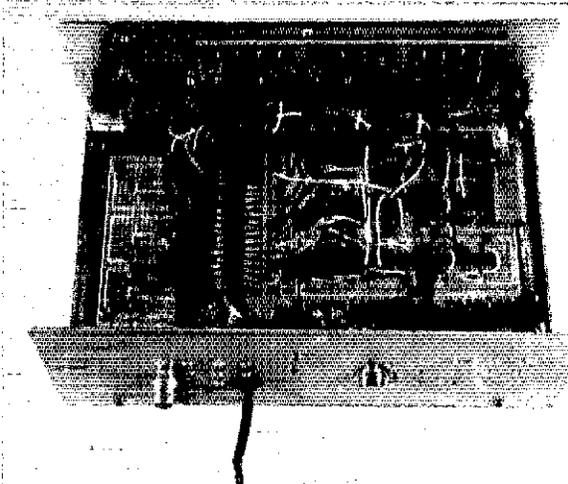
The clock line provides a 20-ms square wave. During the 10 ms when this line is high, the count gate is open and the counters are activated. The display is blanked during the count. During the

* Arecibo Ionospheric Observatory, Box 995, Arecibo, PR 00612.



following 10 ms the count gate is closed. The blanking line is high for the first nine of these 10 ms, turning on the display. This 9-ms pulse is generated by an SN74121 one-shot multivibrator, U7. At the end of the display period a preset pulse loads the counters from the switches. One ms later the cycle begins anew. Each preset switch either grounds the respective counter input to load a zero or applies five volts to load a one. The front-view photograph above shows the switches set to S41.

If the count gate were open for one ms the "1" display would flicker because of the plus-or-minus one-count ambiguity. This flicker is avoided by providing an undisplayed "0.1" stage in the counter and counting for 10 ms. Another SN74121, U1, operates as a Schmitt trigger to shape the 100-kHz



An inside view of the counter. The power supply pass transistor and a BNC connector are mounted on the rear panel of the home-made cabinet. The LEDs are on a small circuit board and project through the front panel.

EXCEPT AS INDICATED, DECIMAL
VALUES OF RESISTANCE VALUES ARE
IN MICROHMS (μΩ); OTHERS
ARE IN MEGOHMS (MΩ OR MΩF);
RESISTANCES ARE IN OHMS,
K = 1000, M = 1000000

BOTTOM VIEW

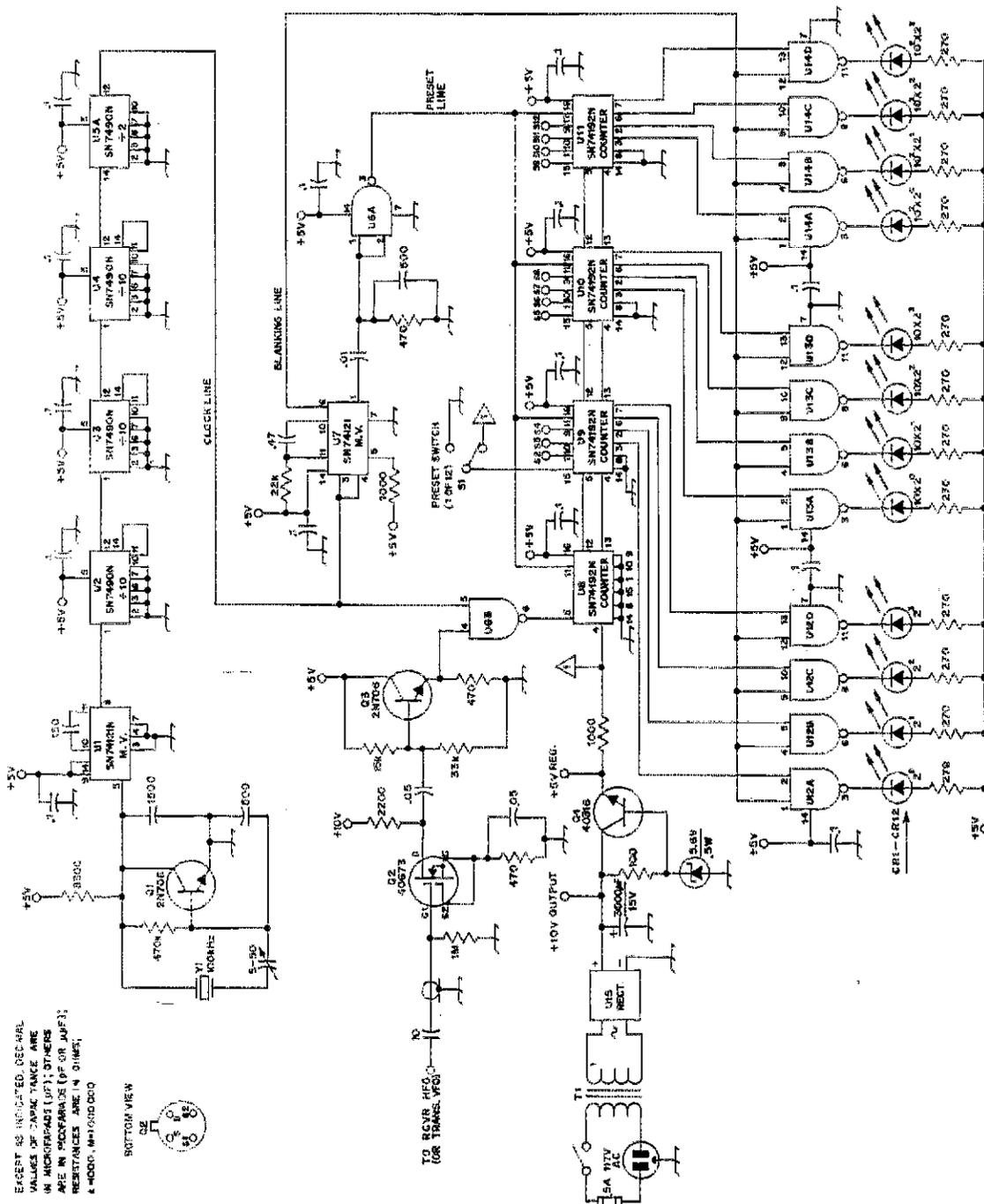


Fig. 1 — Schematic diagram of the simple frequency counter. All ICs are dual in-line package (DIP). Note: The preset switches and light-emitting diodes are shown reversed left to right from the front-panel layout.

CR1-CR12, incl. — Light-emitting diode. See text.
 Q1-Q4, incl. — RCA transistors.
 S1-S12, incl. — Spdt slide.
 T1 — Filament. 6.3-V, 1.2-A secondary (Stancor P-8190 or equiv.).
 U1, U7 — TTL monostable multivibrator IC.
 U2-U5, incl. — TTL decade counter IC (1 section of U5 unused).
 U6, U12, U13, U14 — TTL quad 2-input positive NAND gate IC, 7400 (2 sections of U6 unused).
 U8-U11, incl. — TTL synchronous decade up/down counter IC with preset inputs.
 U15 — Full-wave bridge rectifier, 50 PIV, 1 A (Motorola HEP 175 or equiv.). Four discrete diode rectifiers of the same rating may be used instead if wired in the bridge configuration.

reference signal. After three SN7490 decade counters have divided the oscillator frequency by 1000, it is further divided by two in a single flip-flop, USA (half of an SN7490), to provide the required 20 ms (50 Hz) square wave. The input stage uses an FET to provide a high input impedance. This drives an emitter follower which is biased at the TTL threshold level.

Construction

The author has noticed numerous complaints in *QST* that parts for construction projects are hard to find. Here is one in which all the ICs and most other parts are advertised in *QST* every month! To

keep the total cost below \$20, the author used an 8-4-2-1 binary-coded decimal display rather than any of the widely available numerical displays. If a Nixie or seven-segment display is used, the SN7400 blanking gates can be omitted, since the necessary decoders include a blanking input.

More than three decades can be displayed, but it was felt that nearly any receiver has sufficient dial accuracy to read the megahertz — hence only output from the kilohertz decades were displayed. (To display the megahertz, just add two more stages to the counter.) The LEDs were from Dialight but any LED will suffice. No special precautions are needed with parts placement or lead length.

Operation

To set up the counter, first adjust the 100 kHz oscillator when receiving WWV — exactly as any crystal calibrator is adjusted. Then tune in a station whose frequency is known and flip the preset switches to achieve the correct display. On a single-conversion receiver the switches are now properly set for all bands and need not be touched again. Some multiple-conversion receivers will require different settings for different bands.

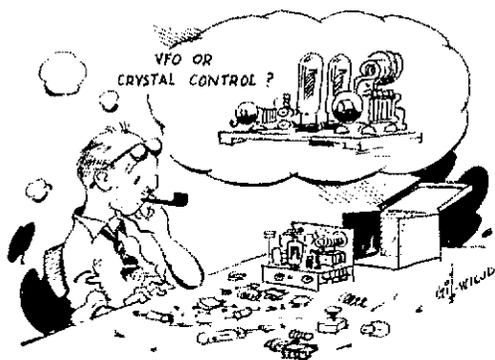
There is no need to know the intermediate frequency (or frequencies) to adjust the preset switches. For example, on its first test, this counter was preset using a nearby broadcast station at 800 kHz. With all the switches set at zero the counter indicated 259. The switches were therefore set to 541, i.e., $800 - 259$, and the display changed to indicate 800. As a check, the receiver was then tuned until the counter read 10 MHz. There was WWV, centered in the passband. (Note that $1000 - 541 = 459$, the actual i-f of the receiver being used.)

QST

Strays

WN8KZB assembled an amateur radio display for his eighth grade science fair in Elyria, Ohio and came up with first prize over thirty other projects in his category! Proud pop WA8TNJ sent the photo, which shows Tony sitting at his FB display station.





VFO Operating Hints for the Novice

VFO Operation with a Crystal-Controlled Rig

BY LEW McCOY,* WHICP

A RECENT CHANGE in the amateur rules, effective November 22, 1972, makes it permissible for the Novice operator to use a variable frequency oscillator (VFO) rather than having his transmitter be crystal controlled. There probably isn't much doubt that there will be a big swing to VFO usage by the Novices, with that thought in mind, it might be well to pass along some tips about this type of operation.

"Swishing"

One thing the Novice should learn immediately about VFO operation is that it is very poor operating practice to move up and down the band, or to zero beat another station, with the transmitter *on*. (It should go without saying that this also applies to higher class license holders!) Aside from being a violation of the FCC rules, swishing up and down the band with the transmitted carrier causes unnecessary QRM to other stations. Learn to use your spotting switch on the VFO or transmitter. If you wish to call another amateur, tune his signal to zero beat on your receiver, turn on the spot switch of your VFO, and bring your signal to zero beat with his. This will put your transmitted signal on the other station's frequency.

There are a few other points about operating ethics that should be touched on. Assuming you call a particular station and he answers some other station, be sure to move your signal off the frequency before going on the air again. By the same token, if you plan on calling CQ be sure to listen first to make certain the frequency is clear. When a Novice operates with crystal control it is true that he may have only one crystal and therefore, only one frequency to use. In such

instances it is difficult to avoid causing interference to other stations using the same frequency. This is no longer true assuming the *other* station uses a VFO. However, simply because the regulations state that VFO use is permitted, it doesn't necessarily follow that *every* Novice will be so equipped. If the station you work is limited to crystal control it would seem gentlemanly to move off the frequency after the QSO, even though you were using it first.

For example, if you should call CQ and the station that answers you *isn't* on your frequency, you can almost assume that his station is crystal controlled. You move to his frequency and work him. It would certainly be polite to move off the frequency after the QSO. Similarly, when you call CQ be sure to listen around your frequency. The Novice calling you may be crystal controlled and he cannot answer on your frequency.

How To Reduce Power

Most of the VFO-controlled rigs on the market today are capable of much more than 75 watts dc input. So a common question arising from the use of VFO-type transmitters will be how to reduce power to meet the 75-watt input limit. Let's talk about ssb-type transmitters first.

While Novices cannot use telephony, the typical ssb transmitter makes a very good cw rig. Stability and keying quality are excellent in most of these transmitters. Adjustment of the power level in most cases is quite simple. Switch the rig to the cw mode, gradually increase the audio gain control (it isn't controlling audio when the rig is in the cw position, but drive to the final amplifier), and bring the plate-current reading of the final amplifier up

*Novice Editor.

Fig. 1 — Typical crystal-oscillator circuit. At A, the unmodified circuit. In order to use this stage with a VFO, the cathode must be bypassed with C1, as shown at B.

to 75 watts input based on the PA plate voltage ($P = EI$). Touch up the final tuning adjustments for maximum rf output and readjust the gain control for the 75-watt level. It won't hurt the transmitter to operate it at reduced input. In fact, the tube life will probably be increased.

Many transmitters with a VFO have two tubes in parallel in the final amplifier. To reduce the power capabilities of such a transmitter merely requires removing one of those tubes.

Some Novices assume that to use a VFO with a crystal-controlled rig one needs only to plug in the VFO. It can be that simple if the existing transmitter has provisions for VFO input. Check the instruction manual for the transmitter. The information should be available there.

One of the more common crystal-oscillator circuits is shown in Fig. 1, at A. If the crystal were removed, and the output from a VFO were fed into the crystal socket, the oscillator stage would be unstable and cause spurious emissions. In order to eliminate this possibility, the cathode rf choke must be bypassed with a .01- μF capacitor, from the cathode pin to chassis ground. An example is shown in Fig. 1 at B.

Some VFOs may not have sufficient output to drive a crystal stage. If this is the case, an amplifier stage¹ is required between the VFO and transmitter.

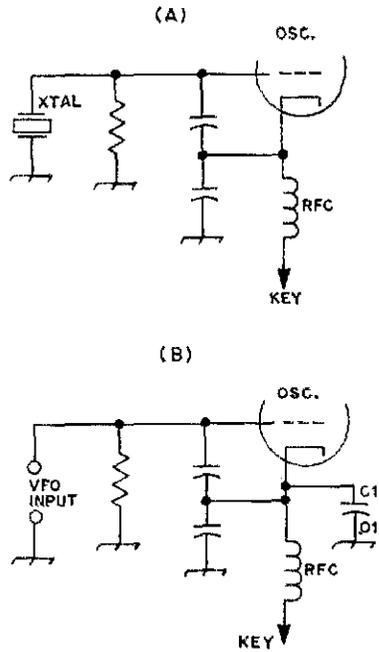
Staying In The Band

Under the former rules, with a reliable crystal there was no real problem for the Novice to stay within his subband. With VFO operation, the Novice must be very careful not to stray out of the band. The FCC rules state in 97.75 that an amateur shall provide for measurement of the emitted carrier frequency. From a practical aspect, this means you can use your station receiver for this purpose if the receiver is accurately calibrated. What is required is a frequency-marker generator that will provide accurate markers to locate the band edges on the receiver dial. A device that provides markers at every 100, 50 and 25 kHz interval is described in the Measurements Chapter of *The Radio Amateur's Handbook*.

28-MHz Operation

Another change in the rules makes 28.1 to 28.2 MHz available for Novice operation. During the height of the sunspot activity or cycle this band is open on a daily basis for world-wide communications. As it happens, we are approaching a sunspot *minimum*, so world-wide conditions will not be as good. However, even under the worst

¹ Anderson, "A Three-Band Neutralized V.F.O. Amplifier," *QST*, Aug. 1964. (This issue is still in print and available from ARRL for 75 cents.)



conditions this 10-meter band has many openings, particularly from the USA to South American and Africa, and across the continent by means of sporadic E or "short skip." Also, ground-wave communications can be excellent to 100 miles if high-gain directive antennas are used. When some hams listen on 10 meters and do not hear activity, they assume the band is dead. This is not necessarily so. Keep in mind that if no one ever transmitted, the band would always seem dead. Don't be afraid to call CQ on 10 meters — you could be pleasantly surprised. QST



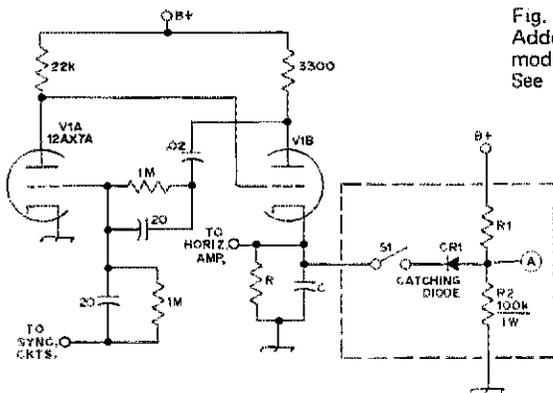


Fig. 1 — A recurrent sweep-generator circuit. Added components, shown inside the dashed line, modify the circuit for triggered-sweep operation. See text for information on added parts.

EXCEPT AS INDICATED, DECIMAL VALUES OF CAPACITANCE ARE IN MICROFARADS (μF); OTHERS ARE IN PICOFARADS (PF OR μPF); RESISTANCES ARE IN OHMS; K=1000, M=1000 000.

Triggered-Sweep Conversion for Oscilloscopes

BY HOWARD MARK,* WAZTNZ

THERE IS a growing tendency these days for amateurs to obtain instruments and test equipment with characteristics that previously could be found only in "laboratory-grade" equipment. Part of this trend arises from the increasing knowledge on the part of the modern amateur, and part from the decreasing costs of precision equipment. Nevertheless, the cost of quality equipment is still high, and it is useful to be able to incorporate some of the features of laboratory equipment in the popular-priced equipment that most of us have.

One such feature is a triggered-sweep time base for an oscilloscope. Most popularly priced oscilloscopes use only recurrent sawtooth sweep-generator circuits, because of their simplicity. Most of these circuits are based on variations of astable multivibrators, which are used to control the charging and discharging of a capacitor. There is a simple conversion which should be adaptable to most circuits of this type to change the recurrent-sweep generator to a triggered-sweep generator.

How It Works

The modification is based on the use of a catching diode to prevent the completion of the

* 55 Parade Pl., Brooklyn, NY 11226.

sweep cycle. To understand the function of this diode, first let us consider the normal operation of a recurrent sweep generator. Fig. 1 shows the circuit of the recurrent sweep generator used in several of the popular-priced oscilloscopes available in kit form. For simplicity, the variable potentiometer and switched capacitors used to control the sweep rate have been replaced by a single resistor and capacitor, labeled R and C. Also for the sake of simplicity, consider the line going to the sync input to be connected directly to ground.

The circuit operation is as follows. At the start of a sweep, the capacitor, C, is charged to a very high positive potential. This is equivalent to V1B having a large negative bias on its grid, and it is cut off. The grid of V1A is at ground potential, and therefore V1A is conducting heavily. This causes a large voltage drop across the 22,000-ohm resistor in the plate of V1A, causing the plate of V1A and the grid of V1B to be at a low potential, confirming our original assumption that V1B is cut off.

Under these conditions, the capacitor, C, will start to discharge through the resistor, R, following the usual exponential discharge curve. To make the sweep linear, the circuit values are chosen so that the capacitor cannot discharge more than a small fraction of its voltage before the potential at the cathode falls sufficiently for V1B to start conducting. When V1B conducts, the voltage drop across the 3300-ohm plate resistor is applied to the grid of V1A through the .02- μF capacitor. The negative-going grid causes V1A to conduct less heavily, making the plate of V1A and the grid of V1B more positive. As the grid of V1B goes more positive, V1B conducts more heavily, and the regenerative action continues until V1A is cut off and the grid of V1B is almost at B+ potential. During this part of the cycle, V1B acts as a cathode follower, and its low output impedance causes capacitor C to charge up very quickly until the cathode of V1B is also at a potential almost equal to B+. When this happens, the plate current of V1B drops, reducing the IR drop across the 3300-ohm resistor. This starts a reverse regenerative action

that results in V1A conducting and V1B being cut off, beginning another sweep. The circuit is designed so that when the voltage across C has dropped almost to the point at which V1B will conduct, a small negative voltage applied to the grid of V1A will start the regenerative action prematurely, and thus the start of the sweep can be synchronized to an external signal.

The triggered-sweep modification described here changes the above action in the following manner. Assume S1 is closed and consider point A to be at a potential slightly above that to which the cathode of V1B must fall to make V1B start to conduct. At the beginning of a sweep, the cathode of V1B is at a higher potential than point A. CR1 is back biased, and the added circuitry thus has no effect upon the sweep. However, when the voltage at the cathode of V1B drops sufficiently so as to be slightly less than the voltage at point A, CR1 will be forward biased, and the resulting current flow will be sufficient to prevent the capacitor from discharging further. If the values of the components are adjusted properly, the voltage at the cathode of V1B will be "caught" just before V1B starts to conduct and recharge C. Under these conditions the circuit will remain quiescent until a negative voltage applied to the grid of V1A causes the regenerative action to begin and start a new sweep. Thus the circuit will sweep only when sync pulses are applied to the grid of V1A, and this is the action of a triggered sweep. The switch, S1, is included so that the circuit may be returned to ordinary recurrent operation when desired.

In order for the modification not to affect circuit operation, especially the timing of the sweep, it is important that the diode, CR1, have as low a reverse current as possible. A maximum value of one microampere should be permitted, to keep the sweep rate within three percent of the rate without the modification. In my circuit I use a 6AL5 vacuum-tube diode to assure the lowest reverse current possible, but there should be no reason why a good, high-back-resistance silicon diode could not be used if the above-mentioned criterion of reverse current is met. The forward resistance of the diode is not a critical parameter, since even several thousand ohms of forward resistance will be negligible when compared to the normal range of resistances found in timing circuits, usually in the one- to ten-megohm range.

The simplicity of the circuit modification causes it to have some disadvantages, which I feel are minor when compared to the advantages of a triggered sweep for a scope. One disadvantage is that there is no provision for blanking the beam of the cathode-ray tube. Thus, if the sweep rate is

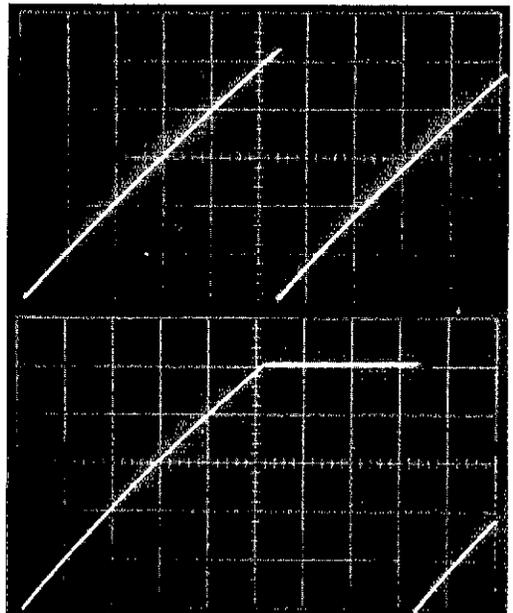
high compared to the repetition rate of the incoming signal, the beam will spend most of its time impinging on the same spot on the face of the cathode-ray tube. This could lead to burning the cathode-ray tube if the precaution is not taken of positioning the beam horizontally so that the point of constant impingement is off the face of the tube. Also in the case of very rapid sweeps, where the sweep is finished before the sync signal has fallen below the triggering level, the circuit will retrigger. Multiple sweeping can occur during the time the sync signal is above the triggering level. This can be minimized by not using faster sweeps than necessary, especially if the sweep time is shorter than the time of one cycle of the sync signal, and also by using the minimum sync signal that will reliably trigger the sweep. Complete elimination of the problem would require considerable additional circuitry, and would defeat the advantage of simplicity of the circuit presented here.

Some of the advantages of the circuit are that the trace is always rock steady. If a sync pulse is missed, the circuit simply waits for the next pulse to start a sweep, instead of sweeping between sync pulses as an ordinary recurrent-sweep generator does. The sweep rate can be set independently of the repetition frequency. This allows the scope to display only part of a signal (for example, a horizontal blanking pulse) and that on an expanded time scale.

Construction

The modification is noncritical, except that CR1 should be mounted as close to the capacitor C as possible, to minimize stray capacitance which will alter the timing on the faster ranges. The

(Continued on page 27)



Oscilloscope photographs showing the sawtooth wave form from a recurrent sweep generator (top) and from a modified circuit for triggered-sweep operation (bottom). The catching diode prevents the sweep in the bottom photo from restarting until a synchronizing pulse is received.

Got an old Heath VF-1 lying around? Here is a simple modification that provides good output with chirpless keying.

New Life for the Heath VF-1, VFO

BY ROBERT M. GLORIOSO,* W1EBW

AFTER BEING OFF the hf bands for several years because of school, service, and settling into a new home, I finally dug my old rig (a DX-40 with a VF-1) out of a corner of the basement, threw some wires over a few trees and proceeded to examine my old haunts, 20- and 40-meter cw.

It took a few days to get all the bugs out of the system, but finally I put out a signal and started working some of the crew who now frequent those bands. However, things were still not "cool," as I got several reports telling me I had chirp, and then it hit me! The old VFO had acted up periodically in the past, especially when it was keyed, and time

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had changed nothing. Changing the 6AU6A or a capacitor or two sometimes had helped, but after changing the tube and obtaining no improvements, I then decided to convert the VFO to an all-solid-state unit.¹

Circuit Changes

Since I wanted to keep the conversion as simple as possible, I stayed with the Colpitts-type oscillator. This allowed me to use the same tuned circuits without drastically disturbing the tracking and calibration circuits of the original VFO. In order to improve oscillator stability, it was decided to buffer the output of the oscillator.

Supply voltage is derived from the transmitter as before, by removing the 0A2, putting another 15,000-ohm, 5-watt resistor in series with the one in the original VF-1, and using a 20-volt Zener diode for supply regulation. Batteries could have been used, but I have a tendency to forget to change them.

The final version of the VFO is given in Fig. 1. The parts marked with an asterisk are new. N-channel junction FETs (2N3823) are used for both the oscillator and the buffer although others such as the MPF102 should work as well. If other FETs are used, the value of C1 may have to be changed to assure reliable oscillation. The silicon diode in series with the source and gate circuits protects the FET under key-up conditions when the VFO is keyed along with the transmitter.

Construction

The construction of the new VFO circuit is quite simple. There are several tie points on the now unused tube sockets to which the new components can be soldered. The Zener diode, the dropping resistor and the associated decoupling capacitor are soldered around the old VR tube socket. The oscillator and buffer are soldered to the old 6AU6A socket.

A three-terminal strip was attached to the power cable clamp in order to accommodate the 1.1-mH rf choke from the oscillator source, the gate return resistors, the silicon diode, and the .005- μ F decoupling capacitor.

Calibration

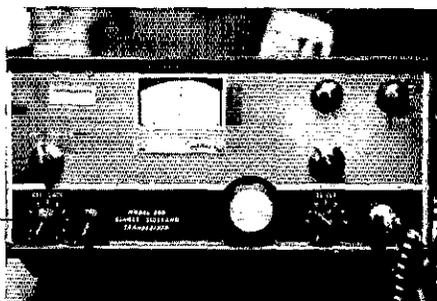
Since the capacitive loading on the tuned circuits with the FET oscillator is different, the VFO requires recalibration. The 680-pF capacitor, C1, caused the resonant frequency to be somewhat lower. The range of tuning available on the lowest band was adequate and recalibration and tracking were easily carried out. On the high band, 7.0 MHz, it was necessary to separate a few turns on

[EDITOR'S NOTE: Basically, the advantage of solid-state devices in a VFO is that of little or no heating, no filament voltages, and much less voltage change from a key-up to key-down condition. All these factors help to improve stability of the signal.]

The tube-socket terminals are used to mount the transistors and related components.

QST for





RF, I-F GAIN
PULL-OFF
PUSH-ON FOR AVC

Add AVC to Your Swan 260

BY STANLEY P. SEARS,* W2PQG

THE SWAN 260 Cynet is a compact ssb station which this writer has used as a mobile rig for about two years. For reasons of economy, Swan did not include an avc system or an audio gain control in their design of the 260. Receiver volume is controlled by an rf gain control.

The disadvantage of having no avc action can be quite startling and disturbing when a strong station appears while you are listening to a weak one, if the receiver gain is wide open, this can be hazardous to a mobile operator who is already sharing his attention with the microphone and routine safe driving practices.

To preclude any disastrous happenings as a result of aural shock, it was decided to install an avc system in the 260. While I had the "patient" on the operating table, a separate audio-gain control was also "sutured" in place. The surgery was so successful that the doctor decided to inform his colleagues of his procedures so that they, too, might perform a similar operation. No anesthetic is necessary as long as power is not applied to the patient during the operation.

Modifications

The operation was performed in the following step-by-step procedure. The high component numbers in Figs. 1 and 2 signify original Swan components, low numbers refer to this modification.

1) Construct the avc terminal board (TB1) as shown in Fig. 1, making sure that diodes CR1 and CR2 are connected with correct polarity.

*188 Concord Drive, Paramus, NJ 07652.

A front view of the Swan 260 after the alteration. The only outward appearance of change is the addition of another control to the right of the original REC. GAIN control.

2) Mount TB1 in the location shown in Fig. 1 using the power transformer (T1602) mounting screw and nut on one end. Solder the other mounting lug to the chassis.

3) Connect a .003- μ F capacitor, C2, from TB1 terminal 4 to pin 5 of V10.

4) Ground pin 1 of TB1 to the T1602 mounting screw.

5) Remove the existing receiver gain control, and note the wiring and component connections for use in step 7.

6) Measure 1-3/8 inches to the right of the present receiver gain control (center-to-center) and drill a 3/8-inch hole for mounting the new rf/i-f control, R2.

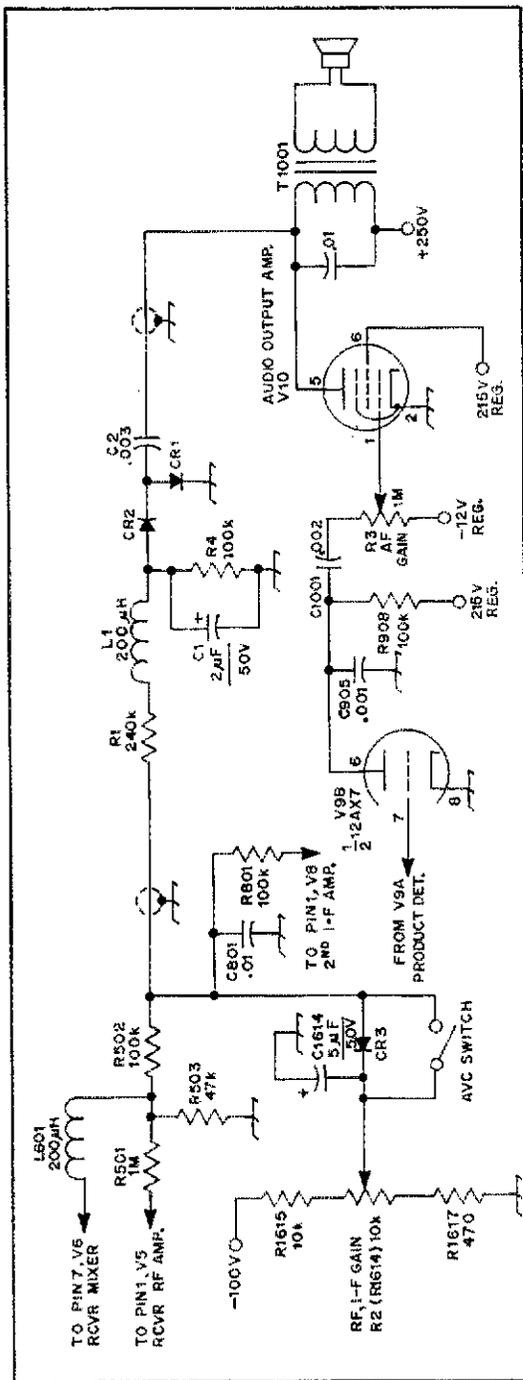
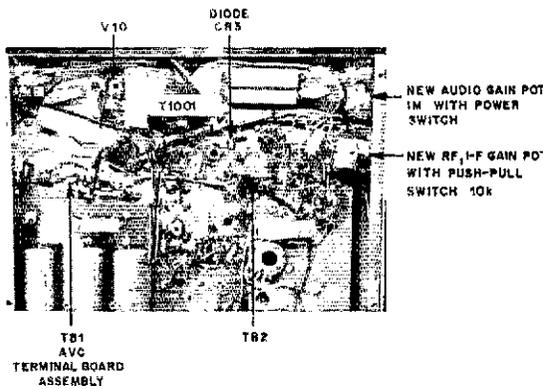
7) Remove any burrs from the hole and install the rf/i-f gain control. This control has a push-pull switch which will be wired for an avc on-off function.

8) Except for the yellow wires used to apply primary power, make connections and install components to the receiver rf-gain control, R2, as originally connected at the beginning of this operation.

9) Connect a wire from the center terminal of R2 to one terminal of the avc switch.



An underside view of the 260 after the modification was made. This photograph and Fig. 1 will aid the builder in location and placement of all parts.



- 15) Connect the yellow wires (with a .0047- μ F capacitor to ground) to the switch terminals of R3.
- 16) Remove the 470,000-ohm resistor from pin 1 of V10 and terminal 3 of TB5.
- 17) Remove the .002- μ F capacitor from pin 1 of V10 and terminal 1 of TB5.
- 18) Remove the violet-grey-white wire from terminal 1 of TB5 and connect that end to pin 1 of V10. The other end of this lead terminates on pin 6 of V9. Remove this end of the wire and reconnect it to terminal 2 of the gain control, R3.
- 19) Connect a .002- μ F capacitor to terminal 3 of R3. Connect the other end of the capacitor to pin 6 of V9.
- 20) Connect a wire from terminal 3 of TB5 to terminal 1 of R3.

Concluding Remarks

This completes the modification and the 260 now has avc and a separate af and rf/i-f gain control. To deactivate the avc, pull out on the knob of the rf/i-f control and operation will revert

(Continued on page 32)

EXCEPT AS INDICATED, DECIMAL VALUES OF CAPACITANCE ARE IN MICROFARADS (μ F); OTHERS ARE IN PICOFARADS (PF OR μ JF); RESISTANCES ARE IN OHMS; K=1,000; M=1,000,000.

- Fig. 2 — A schematic diagram of the modification showing proper connections to the original circuit. The large component numbers are Swan designations. The low numbers refer to this change only.
- C1 — 2 μ F, 50 V.
 - C2 — .0034F, 1 KV.
 - CR1-CR3, incl. — 600 PRV, 750 mA (Motorola HEP 168 or equiv.).
 - R1 — 240,000 ohms.
 - R2 — 10,000-ohm control with push-pull switch. Originally Swan 260 REC. GAIN control, R1615.
 - R3 — 1Meg control with push-pull switch (Mallory Type SU-84 with a US-26 spst switch or equiv.).
 - R4 — 100,000 ohms.
 - L1 — 200 μ H. (J. W. Miller 70F204A1 or equiv.).

The Anatomy of a Solid-State Dipper

BY FRANK D. LEWIS,* ex-WILKV

THE DESIGN of a tunable oscillator to cover the frequency range from 1.7 to 300 MHz is a fairly difficult task. When additional requirements are that the oscillator amplitude should not fluctuate rapidly as the tuning dial is rotated, and that the output amplitude should dip when power is absorbed by an external circuit, and that this dip should be readily observable on an output meter, then the problem becomes interesting, indeed! Achieving these objectives with solid-state active elements and self-contained battery power has posed some relatively complex and difficult problems.

It is a common assumption that an established vacuum-tube circuit or device has had most of the difficulties ironed out of it. This is especially true of well designed commercial grid-dip meters. However, attempts to transistorize such equipment have generally met with little success unless the designer has been willing to examine the problem and design accordingly. Most early transistor dippers performed poorly. These early attempts were made before most of our modern semiconductor devices were available, and before the availability of ferrite beads for damping and filtering purposes. Our

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The author explains many problems common to the design of a smoothly operating solid-state dip meter. A number of cures are offered in this article, many of which are applicable to dippers of different design. The "trial horse" in this instance was the prototype for a commercial instrument.

preliminary efforts to produce solid-state "dippers" were unsatisfactory. The models did not work as well as the vacuum-tube dippers. Also, they did not do the job even well enough to be useful.

Recently, by employing currently available materials, a satisfactory solution to the dip-oscillator design problem has been found. It is the purpose of this article to give an outline description of the working unit and some of the solutions to problems encountered during its design.

The first problem was solved at our laboratory many years ago: selection of a coil-and-capacitor combination which would give satisfactory tuning

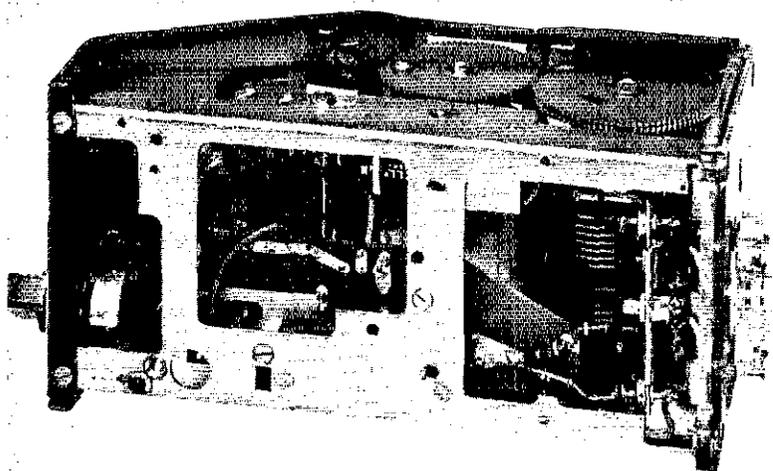


Fig. 1 - Bottom view of the commercial dipper discussed in this article. The 3N128 is mounted in its Teflon socket near the plastic end plate which contains the socket for the plug-in coils (center right). Antibacklash gears are used to drive the dial drum and tuning capacitor. All leads between the tuning capacitor, circuit board, and coil jack are kept as short as possible.

over the frequency range required. A split-stator capacitor with a sturdy frame design, and with low-loss insulation, was teamed with plug-in coils to cover the desired range. Such an LC combination was already available in our tube-type dipper. The use of a split-stator suggests the Colpitts oscillator circuit, with balanced capacitor sections. This circuit was adopted.

VHF Tuning-Capacitor Design

One problem which always arises with wide-tuning-range circuits is that of the inductance of the tuning capacitor. The effect of this inductance is generally noted at frequencies above 100 MHz. In this frequency range variable capacitors often lose their effectiveness. At low frequencies the minimum capacitance of the tuning capacitor joins with the distributed capacitance and inductance of the coil to determine the upper frequency limit of each range. At vhf, the whole process seems to become stubbornly unresponsive. The coils have relatively little stray capacitance, but the other circuit elements, such as the tube or transistor, the resistors, and even the coil socket itself, all seem to impair the tuning action near the minimum-capacitance setting of the tuning capacitor. Most vhf experimenters are all too familiar with this effect. The problem was solved in our case by soldering a small tab between the rotor sections of the tuning capacitor (Fig. 1). The tab reduces the inductance of the connection between the rotor sections (rotor shaft) and allows tuning to a higher frequency than would be possible without the tab. But there is an additional effect above 120 MHz: the position of the tab, as the capacitor rotor is tuned, changes in such a way that it tends to reduce the circuit inductance most at the minimum-capacitance setting. This effect, then, maintains the frequency change versus dial rotation clear to the end of the tuning range at 320 MHz. In fact, the Δf obtained in the two highest-frequency coil ranges is greater than that experienced with previous oscillators using the same coils, but without the addition of the tab. The best part of this effect is the availability of the last 20 percent of the dial rotation for useful tuning.

Choice of Oscillator Transistor

Whenever a transistor was proposed for use in an oscillator at radio frequencies, there were sure to be many free circuit suggestions offered, ranging from recommendations as to the proper type of device to choose, to some pointed remarks about how much trouble would lie ahead! However, it seemed obvious that for this application field-effect transistors with their lower input and feedback capacitances would be worth considering instead of the bipolar variety. On this basis a tentative choice of the 3N128 insulated-gate field-effect transistor (IGFET) was made. When it was found that all of the 3N128s we tried would oscillate well up to 320 MHz, this choice was confirmed. Other FETs may be better or worse, but the choice was made because of the satisfactory performance of a dozen or so samples. We

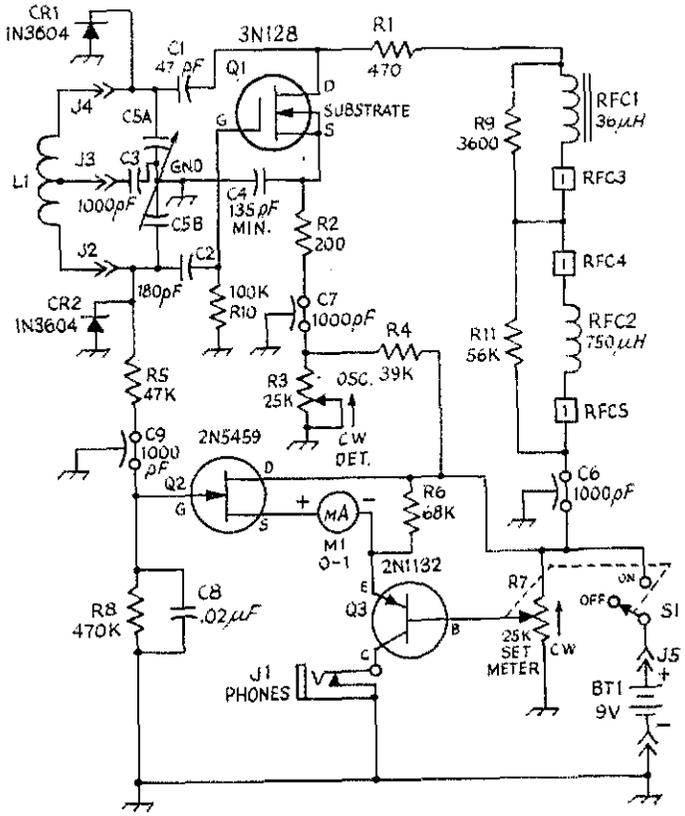
have been completely satisfied with this FET, both from the performance standpoint and from its apparent uniformity in production. Previous experience with bipolar transistors (because of marked differences in their individual characteristics) indicated that uniformity of frequency calibration might be a problem in a production oscillator circuit. It is not a problem with the 3N128.

Ferrite Beads — The Magic Ingredient

Whenever shunt-fed oscillator circuits are designed, it is difficult to design the parallel rf impedance to provide satisfactory performance over a wide frequency range. The difficulty lies in the providing of a high shunt impedance at the oscillator frequency while assuring a low dc resistance to the dc power supply. Most rf chokes work well over relatively narrow bands of frequencies, and some work adequately, if not really well, over a fairly large bandwidth. What is needed is a shunt feed system that works almost perfectly, with no unwanted serious or parallel resonances (suck-out points) over the range from 1.7 to 320 MHz. Some variation in oscillation level versus frequency can be tolerated, but rapid variations or suck-outs can't be permitted. The general approach used to develop the B-plus feed system of Fig. 2 was based on the following ideas:

- 1) Determine the largest value of resistor which could be used in series with the rf chokes while still maintaining oscillation at 320 MHz. With our circuit, this value was approximately 470 ohms.
- 2) Measure the oscillation amplitude versus frequency using only this resistor as the B-plus feed circuit. Our oscillator wanted to quit somewhere around 11 MHz but worked beautifully from there up to 320 MHz. This was encouraging — only 3 more octaves to go!
- 3) The solution to this feed problem has often been to use an rf choke shunted by a resistor, or if all else failed — an rf choke in series with a resistor, and a resistor across this combination. We obtained a stock of commercial rf chokes, and some hand-made models were tried. Even with damping resistors added, substantial variations in oscillator level resulted. At this point we turned to the Edisonian method.
- 4) The Edisonian method — as we understand it — is to take theory as far as it will carry you, then evaluate the various approaches which appear to be open. Choosing one of these approaches, vary one parameter over the entire range of values available, carefully recording the results. We tried an rf choke alone, an rf choke in series with the 470-ohm resistor, and an rf choke with shunt resistor. Then, an rf choke in series with the 470-ohm resistor with a shunt damping resistor, and various portions of the 470-ohm series resistor in various places. The results were encouraging but not satisfactory.
- 5) We next experimented with ferrite beads as damping elements. The results were not spectacular but were somewhat better. We then reverted to Edison's technique — this time, "squared."
- 6) We tried two rf chokes in series, decoupled by ferrite beads and damped by shunt resistors. After

Fig. 2 - Schematic diagram of the final circuit discussed in this article. The circuit is that used in the Millen 90652 dip meter. Resistance is in ohms; k = 1000. Parts numbers are those referred to in the owners manual.



EXCEPT AS INDICATED, DECIMAL VALUES OF CAPACITANCE ARE IN MICROFARADS (μF); OTHERS ARE IN PICOFARADS (pF OR μpF); RESISTANCES ARE IN OHMS; K=1000, M=1000000

this exercise, we had a pretty good arrangement and the "light at the end of the tunnel" was at last visible.

The solution adopted is shown in Fig. 2. The most baffling thing about this arrangement of rf chokes is that none of their series-resonant frequencies seems to be troublesome. What does seem to be important is the arrangement of the damping resistors so that they do not constitute a high-Q vhf resonant circuit. A further problem is the necessity to provide really high impedance at the lowest operating frequencies in order to avoid irregular oscillation amplitude. This was done by installing the 750- μH choke, a value far larger than "instinct" would have indicated, with ferrite beads at each end to discourage resonances at the higher frequencies. Ferrite beads make it possible to provide a shunt-fed oscillator almost completely free from sharp variations in level versus frequency. Other configurations may be possible, but the one selected works well.

The Voltmeter Problem - or "Where Are the Dips?"

Long before the solution to the shunt-feed problem had been found, it had become obvious that an oscillator and a dipper oscillator were not necessarily the same. The problem seemed to be that the rf level did not appear to vary when power was taken out by an external circuit - in other

words, no dips. The first oscillator circuit we tried used a diode clamp on the FET gate and measured the diode current as a dip indicator. Nothing seemed to vary. Finally, the gate clamp was removed in favor of source bias. (When the gate clamp was in use, the gate was always driven positive to the diode conduction level, which turned the IGFET full-on during each cycle.)

The constant-source-bias circuit comprising R2, and the R3R4 combination for setting the bias to a proper value (Fig. 2), began by showing slightly greater dips than the gate-clamp diode circuit had. The indicator circuit was, at that time, still using only one diode as a half-wave rf rectifier. Later, an oscilloscope check, using dc coupling, showed that the level indeed changed, but not very much, and that a different approach would be required to obtain a suitable dip indication. A full-wave rectifier was installed, and it is slightly more effective over the operating range than was the half-wave circuit.

But the dips were only slight at any frequency below 30 MHz. A reason for this was found later. In the meantime, the fact was accepted, and the voltmeter circuit was modified for suppressed-zero operation, using a 2N1132 pnp transistor as an emitter follower to produce a stiffer bias source. The rf diodes provide a dc output of 6 to 8 volts when the FET oscillator is running properly. When a dip is produced by taking power out of the oscillator circuit, this voltage dips by 2 to 15

percent of the steady-state output voltage. The dip sensitivity is least at the lower frequencies.

The suppressed-zero voltmeter operates by biasing the 2N5459 JFET so that it draws no current until this bias value is exceeded. The current drawn when the input voltage exceeds the bias voltage is 1 mA for about +1.5 volts V_{gs} . The gain of the JFET increases somewhat as the gate voltage goes up, so the meter sensitivity is greatest near full-scale deflection. Since the oscillator amplitude is reasonably constant over much of the tuning range of any particular coil, all that is necessary for satisfactory operation is to set the bias for a meter deflection near full scale. The zero suppression then would produce a full-scale dip from about 15 to 20 percent drop in actual level. The final arrangement for zero-suppression is shown in Fig. 2. Conversely, it has the effect of making small variations in oscillation level appear to be relatively large, but it does provide the required dip sensitivity.

Still Another Problem

Just as the voltmeter-sensitivity problem seemed to have been conquered, a new effect was noticed: If the oscillator was tuned to a frequency in the highest range (150-300 MHz), it sometimes stopped oscillating. Eventually, the effect was traced to the small but significant input current to the dc amplifier. Even a Darlington circuit for the dc amplifier, using bipolar transistors, did not stop this effect which occurred when the zero-suppression bias was set low to increase the sensitivity of the meter indication. Fortunately, JFET transistors, suitable for dc amplifiers, do exist with very small input current requirements, and the n-channel 2N5459 seems to solve this problem. But, it is wise to remember that low-power oscillators feeding diode detectors may be modulated by varying the dc load on the diodes — in this case, even to the point where oscillation ceased.

The Q-Multiplier Amplifier Extra Selectivity and Sensitivity

One of the functions of a dipper oscillator should be that of an absorption frequency meter in

the nonoscillating condition. Instead of installing a switch to cut off the battery power to the oscillator while leaving the dc amplifier turned on, it was decided to use the oscillator bias adjustment as a regeneration control. The result is a Q-multiplier-type rf amplifier enabling detection of small signals, from transistor-powered devices for example, with good selectivity and sensitivity. Use of the dc amplifier alone does not improve the selectivity of the tuned circuit. In some cases, the selectivity improvement is quite useful, for example, in the adjustment of ssb exciters or frequency synthesizers in which several signals on adjacent frequencies may be present simultaneously.

Semiconductor Burn-Out Problems

In the consideration of various types of oscillator transistors, it was realized that no matter how much voltage or current the device can stand, someone will put in just a little more than this value, with a resultant failure. Once this conclusion had been reached, it was decided that what would be most helpful would be a good, low-loss socket to enable plugging in the oscillator transistor, which would be the most likely device to fail. Such a socket is incorporated so that a defective FET can be replaced easily. In addition, the full-wave rf diodes provide damping resistance across the tuned circuit, which should help protect the FET. The effect of these diodes on selectivity is nullified by the Q-multiplier amplifier.

The net result, in terms of "bopped" FETs, has been that only four or five have been ruined. These were destroyed from such causes as putting an ungrounded oscilloscope probe on the FET socket terminal, or touching the socket terminals with a voltmeter probe which just happened to touch the battery positive terminal.

Newer JGFETs have been developed with internal protective diodes (3N200, 40673, and others). Our first experience with these new ones indicated that our oscillator socket assembly would require extensive rewiring, so we have postponed this experiment. (The top frequency of the oscillator depends on a low-inductance connection to ground from the source of the FET, for which a special low-inductance bypass capacitor is required.)

Some Things Work, and Some Don't!

At the start of this article, it was indicated that some unsuccessful ideas would be mentioned. Some have been included already. For example, the half-wave diode rf rectifier for the output-level indicator was not as effective as the full-wave circuit. This is a complex matter, and it is probable that the half-wave system could be made to work if enough other changes were made.

In the description of the rf choke system for shunt feed, it was indicated that no available value

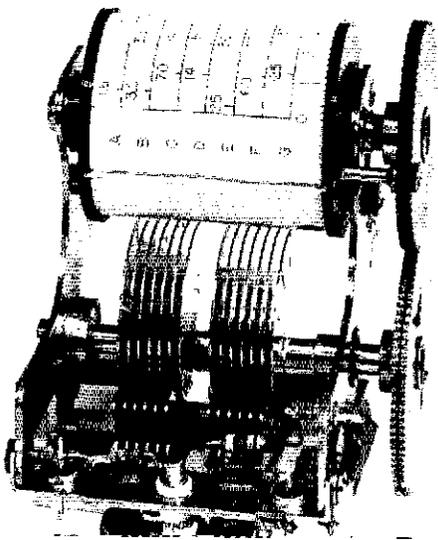


Fig. 3 — View of the dial drum, tuning capacitor, and gear assembly used in the dipper. Note the tab soldered between the rotor plates (see text), visible in the lower foreground.

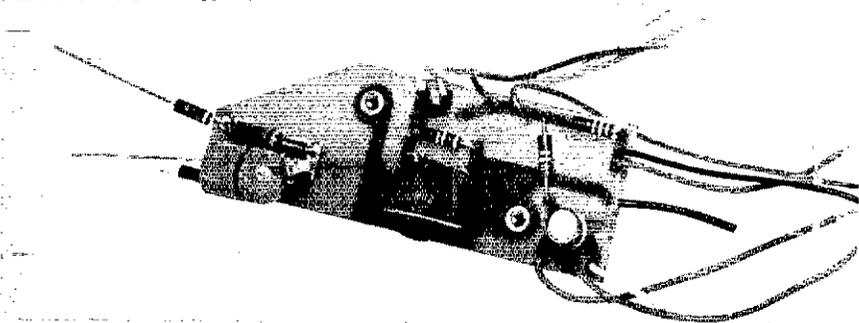


Fig. 4 — Photo of the etched circuit board with rf chokes for shunt feed (left), including ferrite beads on the pigtailed of the chokes. The dc-amplifier parts are on the opposite end of the board (right).

of rf choke used as a *single* choke was successful. This statement holds, even when the ferrite beads were used to attempt to damp the unwanted resonances. An attempt to develop a wide-band rf choke using a cone-shaped powdered-iron core and a shaped winding seemed equally poor. A larger resistor (replacing the 470-ohm one) required more battery voltage, but it appeared that this was an unproductive path to follow. The voltage limits on the IGFET would have been exceeded by the time one octave of extra range had been obtained, with two more octaves left to go. The high-value resistor works for vacuum-tube dippers — not for FET models.

It is obvious that the solid-state dipper which uses a diode rectifier needs a dc amplifier in order to be fully effective. Sensitive meters are not adequate for several reasons: semiconductor diodes do not conduct at zero volts, and hence the meter sensitivity for small diode currents does not increase as fast as one would hope. We tried 50- and 100- μ A meters. Both meters had considerably higher resistance than the 1-mA meter. Aside from increases in sensitivity when the dc amplifier was used, the main change was increased cost. Since the dc amplifier is necessary, and since it allows the highly desirable zero-suppression, the use of meters more sensitive than 1 mA full-scale is unnecessary.

A higher-gain dc amplifier was experimented with. However, unless an FET input is used, the input current required does not go down, even for a Darlington circuit, to the point where it would not load down the diode circuit. The single JFET seemed to offer enough gain.

By far the largest single problem in a dipper oscillator is that of maintaining constant indicated output amplitude while still being able to see a dip when an external tuned circuit is "dipped." At one stage, an effort was made to use a dual-gate FET with a sort of positive-feedback level-control circuit hitched to the detector diode to exaggerate the small dips observed. No practical arrangement of this sort was ever made to work. Most such arrangements add more troubles than they fix. A simple circuit that works is worth infinitely more than a complex one that works.

Now, if you want to indulge in flights of fancy with perhaps a real gain if you come through — try evolving theories to explain why the series-resonant points of the rf chokes are not important, and if that is too easy, try to develop an airtight theory to explain why one dipper oscillator circuit shows good dip sensitivity while another one is poor! Some clues have been sprinkled throughout the foregoing paragraphs, but no guarantee of success is implied.

QET

Triggered-Sweep Conversion

(Continued from page 17)

connection to B+ should use the same line as the horizontal sweep generator uses, to avoid stray signals getting into other parts of the scope.

It should be noted that the relative values of R1 and R2 are more important than their absolute values. For the circuit shown, values of R2 between 100,000 ohms and 1 megohm are satisfactory. R1 should be about 20 percent of the value of R2. Preferably, R1 should be a

50,000-ohm control in series with a 10,000-ohm fixed resistor. For adjustment, start with the control in the maximum-resistance position and slowly decrease its resistance value until the circuit stops sweeping. If false triggering is encountered, reduce the resistance value further. The proper setting is one which will allow the circuit to be triggered reliably, but without extra sweeps caused by noise, changing B+, and so on.

In conclusion, I feel that this is a circuit which will give a maximum return, in the form of operational ease and convenience, for a minimum of input in the form of parts and labor. It is well worth applying to almost any low-cost oscilloscope.

QET

Amateur television was first discussed in QST in 1928, and over 50 article-length treatments of the subject¹ have appeared since — all without exactly setting amateur radio on fire with enthusiasm for this specialized aspect of the game. But within the last five years a combination of factors has launched something of a boom in ATV interest. Proliferation of closed-circuit television has made camera equipment readily available, and relatively moderate in cost. Surplus fm transmitters for the ubf band offer low-cost solutions to the problem of a suitable rf portion for the ATV station, if properly modified and checked for modulation linearity. Here W0MZL shows how the job is done with the widely-available Motorola T44.

ATV with the Motorola T 44 UHF Transmitter

Part I

BY F. R. MCLEOD, JR.* W0MZL/9

ONE OF THE MOST fascinating and fast-growing modes of communication in amateur radio today is the sending of pictures in addition to the voice of the operator. The slow-scan method has attracted many newcomers to television transmission, because its narrow bandwidth permits its use wherever voice modulation is allowed. Fast-scan (entertainment-quality picture) is also popular, having been accelerated by the availability of compact, high-quality closed-circuit TV cameras at moderate cost. Though it may be the largest single

costly outlay, the cost of a camera has not been a deterrent to ATV growth.

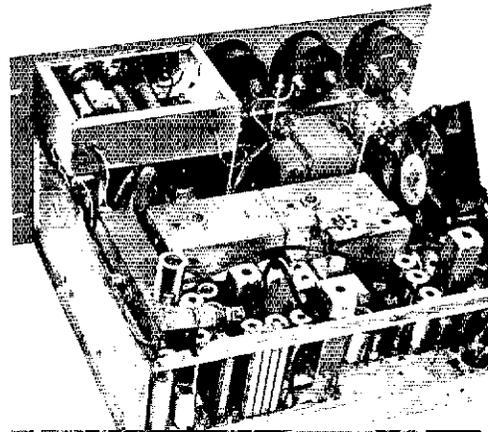
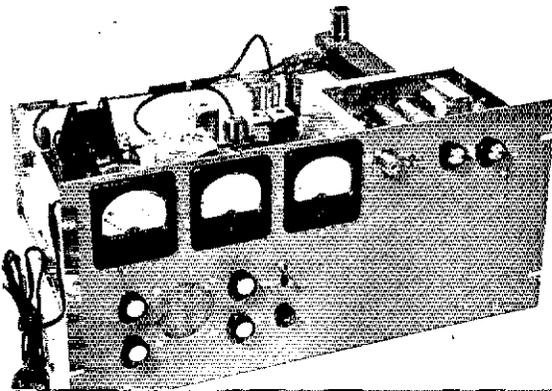
The rf portion of the transmitter has given some would-be ATV enthusiasts trouble, as a good many of them have had no uhf experience and tend to shy away from supposed complexities of construction of a transmitter for the 420-MHz band, the lowest amateur assignment in which fast-scan TV can be used. Most of us first used simple 6J6 and 6AF4 oscillators, described years ago in ARRL publications.² Many such low-powered rigs are still in use, and something of this

¹ A complete ATV bibliography of *QST* articles is available from ARRL Headquarters, Newington, CT 06111. Send stamped self-addressed envelope, business size, with your request.

* 204 East Olive, Prospect Heights, IL 60070 (formerly of Minneapolis, MN)

² Tilton, "Four-Twenty is Fun!" November, 1947, *QST*. Also "Simple Gear for the 420-Mc. Beginner", May, 1949, *QST*. Similar equipment in *The Radio Amateur's Handbook*, 1950 through 1962.

Fig. 1 — Converted T44 transceiver, ready for push-to-look operation in the 420-MHz band. The video modulator is in the upper right corner, as seen in the front-panel view. Looking at the assembly from the back, the power supply is visible, next to the panel. The fan (right side of rear view) is directed at the 6I46 and 2C39 multiplier assemblies. The small unit at the left rear corner is an rf amplifier for the receiver. Panel meters are, 1 to r, 50 μ A, 750 or 1000 volts dc, and 50 mA.



order is likely to be the first ATV transmitter for most beginners, but results with them are likely to be discouraging, once an attempt is made to communicate beyond one's immediate neighborhood. Something having better stability and more power output is then in order.

A small increase in ATV radiated power is accompanied by more improvement in picture quality than is usually expected. The effect is somewhat like the noise-quieting immediately above the threshold of an fm receiver. It happens quickly, once the signal reaches a detectable level.

The eye has an amazing ability to integrate a stationary snowy picture into a recognizable one. Our tests show that large-lettered signs can be read with only a 4-dB signal-plus-noise to noise ratio at the receiver. The observer will rate this as 85 to 90 percent snow. Raising the power four times, as in going from one to four watts, gives a 10-dB S+N/N ratio and a practical signal for ATV communication. The observer will describe this as 10 to 15 percent snow. Another 10-dB increase, for a 20-dB S/N ratio, say with a move from 4 to 40 watts, gives an essentially snow-free picture. Still another 10-dB increase (a 30-dB S/N ratio) gives nearly closed-circuit broadcast quality, probably exceeding the capabilities of the vidicon camera, unless the ham is being "cooked" under high-level lighting.

Most ATV reception is begun with all-channel home TV receivers, with the uhf front ends padded with capacitors to tune down below the uhf TV range into the 420-MHz band. An example of a general-purpose modification of a TV tuner is shown by K1ZJH in July, 1971, *QST*.³

Getting on FM with the T44

The conversion described here modifies the popular Motorola T44 mobile transceiver to operate from the 117-volt power line, and provides an fm transceiver for the audio link. The video is transmitted on the same carrier, using amplitude modulation, as in commercial TV stations. This provides "push-to-look" transmission capability. T44s are available from many sources, with prices varying from \$15 to \$50, depending on condition.

The final form of the entire video transmitter would appear complicated and expensive if presented all at once, so it has been broken into several parts, to simplify the job and ease the blow to the pocketbook. This also allows testing along the way, to avoid pitfalls associated with construction of the entire setup and testing in total.

If your T44 has not already been converted, the first step is to procure crystals for the transmitter and receiver, for the intended operating frequencies. Meanwhile it is well to check operation of the equipment on its original frequencies, using a dummy load and the power supplies and metering circuits described, to be sure that the equipment is in good order before the actual conversion work is started. Then when your ham-band crystals

³ Bertini, "Tunable 440-MHz FM Receiver", July, 1971, *QST*. Also in *The Radio Amateur's VHF Manual*, 1972 Edition, Chapter 11.

arrive the transmitter and receiver can be tuned up on the new frequency (444.0 MHz in the Twin Cities) and you can operate on fm, without the video modulation. This will help in understanding the equipment before attempting ATV work. Information on crystal types and frequencies is given below:

<i>Transmitter</i>	
F=	$\frac{F \text{ (TRAN.g)}}{24 \text{ or } 12}$
Circuit	— Motorola R-24
Temp	— 85 C (for oven use)
Type	— Commercial Standard
Holder	— CS-05
<i>Receiver</i>	
F=	$\frac{F_{\text{Sig.}} - (\text{Mid i-f freq.})}{14}$
Where Mid i-f =	Y2 Freq. — 455
Temp	— 26 C (unless rcvr has oven)
Type	— Commercial Standard
Holder	— CS-05

When picking your transmitter frequency, notice that the 14th harmonic of the receiver crystal frequency falls in the band, usually below 440 MHz. If may be necessary to change both Y1 and Y2 crystals of the receiver, if the 14th harmonic falls too close to the transmitting frequency. Do not be concerned if it is close to the lower sideband, as this will not bother the TV set. Be concerned only with frequencies near the upper sideband.

The camera can now be obtained, and the video modulator added as described. Now we can video-modulate, and with the fm system working as before, operate "push-to-look." Conversion of the T44 to the amateur band was described in *QST* by W8FWF⁴ and WA1FSZ.⁵ A schematic diagram and tuneup information can be found in *FM Schematic Digest* by S. Wolf.⁶ Information given here is mostly concerned with power supply and metering changes needed for and peculiar to ATV, and for increasing the power output above the level normally obtained with these units.

ATV Conversion

The original three chassis modules are kept in their same positions in the conversion. An 8-3/4-inch rack panel is fastened to the power supply chassis, becoming the front. The two plates that hold the modules together and the two rails

⁴ Poland, "Converting Wide-Band FM Equipment for 420-MHz Service", August, 1968, *QST*.

⁵ Clement, "Using Motorola TU-110 Series Transmitters on 420 MHz", September, 1971, *QST*.

⁶ Wolf, S.M., *FM Schematic Digest*, available from the author, 1100 Tremont Street, Boston, MA 02120. Price \$6.50. Reviewed in January, 1971, *QST*, p. 39.

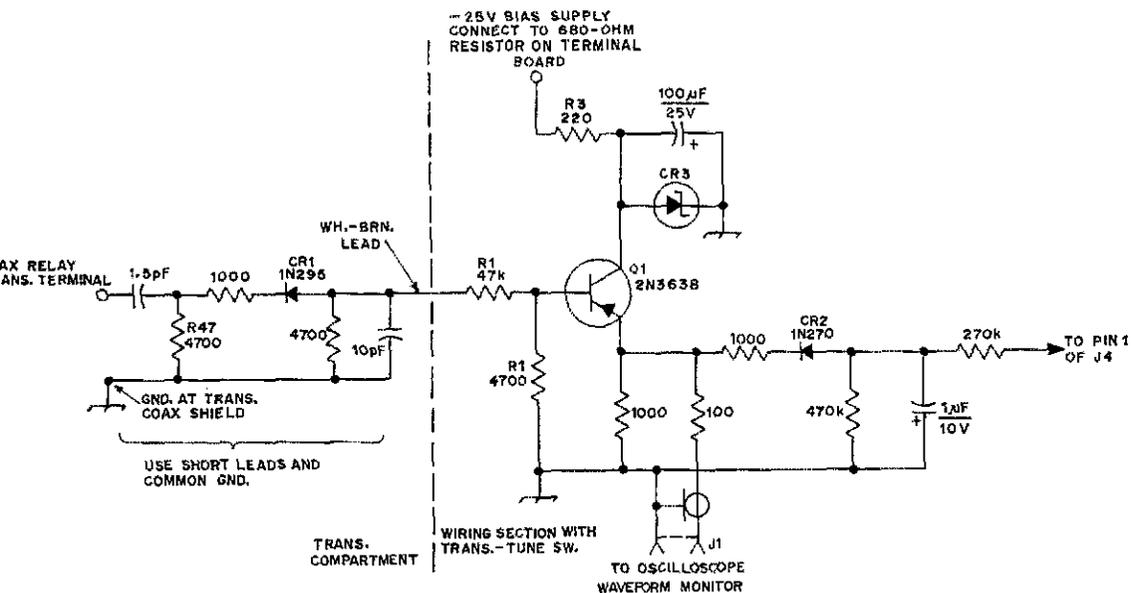


Fig. 3 - Schematic diagram of the waveform monitor and peak-output meter, for the antenna output circuit of the transmitter. All resistors are 1/2-watt composition. Capacitors with polarity marked are electrolytic; others are ceramic.

- C1 - 1- μ F, 10-volt, low-leakage tantalum.
- CR1 - 1N295, glass only.
- CR2 - 1N270, 1N277, 1N34, or 1N295, glass.
- CR3 - 15-volt, 5-percent, 1-watt Zener diode.
- Adjust R3 for 10 to 15 mA of Zener current.
- J1 - BNC receptacle, threaded base, UG-1094/U.

connecting the top of the plates are retained. The panel also fastens to the rail on the power supply side. The photographs show the general placement of parts. As the actual hole positions will vary with different components, no specific dimensions are given for panel layout. The general placement of the meters and video modulator should be maintained, for accessibility.

The original volume and squelch controls were taken from the control head. The speaker on the front panel is optional, as the mobile speaker that goes with the unit can be used. The voltmeter (middle of the three) is also optional, but the 50- μ A and 50-mA meters should not be combined in one metering circuit. The final grid current should be monitored at all times, and not allowed to exceed 50 mA.

You will want to provide a means of cooling the items in your completed unit for stability, longevity, and peace of mind with the higher power level. Get as much air through the 2C39 compartments as you can without excessive room noise and mechanical vibration, which can cause "fan modulation". There have been several techniques and fans used. As can be seen in the photographs, I used the popular Muffin fan and aimed it at the holes in the end of the tripler assembly. The fan is nestled between the two fittings on the coax relay. Much of the air cools the outer metal parts of the 450-MHz assemblies and thus cools the 2C39s by conduction as well as radiation. Some of the air cools the 6146 in its hot little cage. The rest of the spill-over air functions as

a general cooling agent for other hot items, particularly the power transformers, if you have a habit of leaving the ATV picture on for extended periods while someone peaks up a newly ATV-converted uhf TV set. We have found that the 2C39s can take all kinds of punishment. The weak part of the set after conversion is the 6146 in its hot box, as it was designed for brief transmissions.

An rf amplifier is shown mounted at the rear of the chassis in Fig. 1. It is a 417A/5842 grounded-grid stage, connected to the output of the coax relay on receive. The output of the rf amplifier has a coax "Tee" connector, whose two outputs go to the converted TV set and to the T44 fm receiver's antenna input. Careful peaking of the fm input rf circuits and the TV set, along with the rf amplifier's plate-line output tap, can produce some outstanding increases in signal-to-noise ratio. You can tinker with these ideas after you are on the air with ATV, so let's get on with the work at hand. Also, you may want to use a solid-state preamp, as many good versions are now available.⁷

The combination block and schematic diagram, Fig. 2, has the original schematic designations for reference. There are two modifications to the transmitter module: removal of the output filter, Z5, and changing the output metering circuitry.

Remove the bottom cover of the transmitter, being careful not to lose those special screws! Locate the Z5 circuit. It is under the tripler and final stages, in their cathode compartments, fastened to the side of the chassis with screws. One end

⁷ *Radio Amateur's VHF Manual*, 1972 Edition, pages 255 and 294.

has a length of RG-58/U coax going to the output-coupling link, L13. The other lead is a stiff piece of tubing which is the outer conductor of a coaxial line to antenna post of the coaxial relay, and through R7 to the diode detector can, E1.

Before disconnecting either end, notice and remember exactly how the coax shield ends are connected. Observe the short leads at the relay end. Now remove Z5. You will need a fair amount of heat to unsolder the solid tubing end from the ground lug at the coax relay. Be sure to connect the ground exactly as it was on the final coupling link and ground lug. Run the coax tightly along the chassis corner. If the coax raises up off the chassis it couples to the 2C39 cathode lines, causing reduced output and possible oscillation, if the SWR is high. Use ground lugs along the coax as cable clamps, employing screws already in the chassis.

The modified output circuitry shown in Fig. 3 provides for monitoring the waveform of the signal as it goes to the antenna, and also includes a peak sync-tip output-power detector, for peak-power output monitoring. The latter is absolutely necessary for tuning a TV transmitter, as will be seen later.

Components to the left of the dotted line in Fig. 3 should be put inside the transmitter compartment near the transmitter post of the coax relay. They should have short leads and one common ground, as shown at the original point where the length of RG-58/U was soldered to the chassis. Be careful to heatsink the 1N295 germanium detector diode while soldering, and try not to break it when bending the leads, as it is rather fragile. The 1N295 is a video detector diode used in many TV sets.

Components to the right of the dotted line are put in the compartment containing the metering socket and 2C39 grid-bias resistors. The waveform output connector is a UG-1094/U BNC coax fitting, chosen because it fits the 3/8-inch hole in the chassis nearest the side of that compartment.

Operation of the antenna output circuitry is as follows. The 1.5-pF disk ceramic capacitor couples a small amount of the 444-MHz energy across the 4700-ohm resistor, R47. The 1N295 detector diode is isolated from the rf by a 1000-ohm peak-current limiter resistor. Do not reverse these two components in their series connection! The 10-pF capacitor and 47,000-ohm resistor form the load for the detector and provide a video bandwidth. This waveform signal is coupled through a resistive voltage divider to a zero-biased emitter follower. The emitter follower preserves the video bandwidth as detected, and drives a low-impedance coax cable to an oscilloscope. The follower is dc-coupled to the BNC connector so that a dc-coupled oscilloscope can be used to see where zero signal voltage occurs.

The follower also drives a peak detector. This part of the circuit is another germanium diode, that must have a high off-resistance. The high-resistance load is shunted with a high-value, low-leakage capacitor. Whenever the voltage at the

emitter of the 2N3638 becomes more negative than the negative charge voltage on the 1- μ F capacitor, the diode turns on and rapidly charges the capacitor to the new more-negative voltage. When the peak of the signal is reached (on sync tips) and then decreases in value towards zero, the diode reverse-biases and turns off. The 1- μ F capacitor now discharges through the large-value load resistor at a much slower rate than its charge rate. This circuit requires that the internal leakage resistance of the capacitor be very high so that it will not discharge itself faster than the load resistor discharges it. This voltage on the capacitor is read out as relative peak sync-tip power output. The 270,000-ohm resistor takes the signal to the original pin 1 of the metering socket, J4. The signals have all been made negative, to be consistent with normal TV practice.

The Zener diode is used to remove all traces of 120-Hz ripple from the negative bias supply. In this way, any ripple seen on the monitor oscilloscope will be as it is being transmitted. The series resistor between the bias supply and the Zener diode will depend on the value of the bias voltage (which could be anything from 18 to 28 volts). The resistance should be chosen for a Zener current of about 10 to 15 mA. The Zener voltage of 15 shown is not critical and was chosen so that up to 13 volts of peak signal could be seen on the oscilloscope and meter without saturating the 2N3638 and clipping the peak of the signal.

The 1N295 detector diodes are fairly uniform in efficiency at 444 MHz from unit to unit, but if you should happen to have one that is unusually high or low in efficiency, one of the 47,000-ohm emitter follower base resistors should be changed in value. As shown, 8 to 10 volts negative should be obtainable at the peak sync tips, using a 50-ohm dummy load.

R46 in Fig. 2 is shunted out by auxiliary onboard contacts on the coax relay, K1, in the transmit position on most units. Be sure that the 2C39 heater voltage does not change in the transmit and receive conditions to cause the output to drift appreciably. If it does, permanently short out R46.

Lastly, change R32 from 4 ohms to a 50-ohm, 1-percent, 2-watt resistor 

Add AVC to Your Swan 260

(Continued from page 22)

to the original state of performance. Check over the wiring and insure that everything agrees with the circuit in Fig. 2 prior to applying power.

One further change that you may wish to make: The 260 audio as heard through its internal speaker was too harsh and piercing to my ears. To mellow the audio, this writer replaced the .0047- μ F capacitor that is across the primary of output transformer T1001 with a .01 μ F unit. The audio now is much more pleasing. 

Simplified Impedance Matching and the Mac Chart

BY JAMES E. MCALISTER,* WASEKA

IMPEDANCE MATCHING is often considered to be rather complicated, as several equations must usually be solved for the design of any particular type of matching network. By understanding one basic principle and by liberal application of the charts presented in this article, the design of both standard and custom impedance-transformation networks can be handled with ease.

The concept which must be thoroughly understood may be stated as follows: For any parallel combination of resistance and reactance (capacitive or inductive), there exists a series combination of resistance and reactance such that the equivalent parallel and series impedances will be equal. Two equivalent networks are shown in Fig. 1. The series combination of a 1-ohm resistance and a 10-ohm capacitive reactance has the same total impedance as a 100-ohm resistance in parallel with a 10-ohm capacitive reactance. If an impedance bridge were connected to terminals 1 and 2 of both circuits A and B, the impedance in each case would be approximately 10 ohms at a phase angle of -84.3 degrees. For all practical purposes, then, the two circuits can be considered to be equivalents, and, for purposes of analysis and calculation, may be freely interchanged.

The concepts of designing impedance matching networks, as presented here, depend upon this equality of series and parallel networks, and the charts may be used to obtain the actual values of the equivalent components. As an example, a simple matching network can be designed to transform 50 ohms into 500 ohms. The nomogram of Fig. 2 may be used to execute the calculations.

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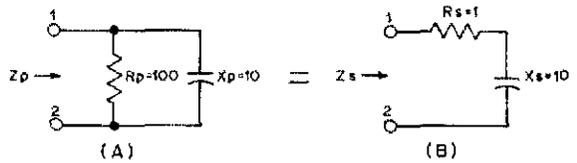


Fig. 1 — Series and parallel circuits which are electrically equivalent.

The initial step is to draw line A between 500 on the X_s - R_p scale and 50 on the R_s scale. The idea is to make 50 ohms look like 500 ohms by placing a reactance in series with the 50 ohms. The line connecting 50 and 500 crosses the Q scale at a value of 3. Note that the smaller resistance in a transformation will always be found on the R_s scale.

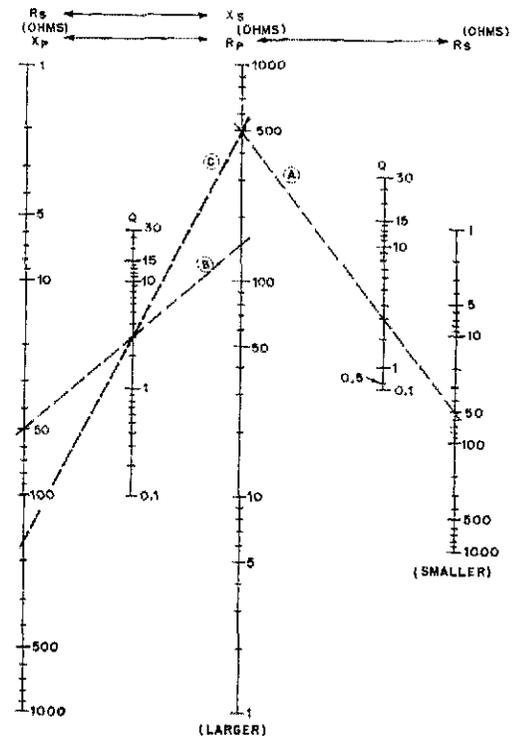


Fig. 2 — Nomograph for determining series-equivalent and parallel-equivalent network values.

Refer to Fig. 3 for a step-by-step illustration of the design. As was shown in Fig. 1, a resistance in series with a reactance can be considered to be a larger resistance in parallel with another reactance. Our problem, then, is to choose a series reactance X_s for our 50 ohms so that it will look like 500 ohms shunted by a reactance X_p . The proper value of X_s can be found by drawing line B between 50 ohms on the R_s - X_p scale and the previously determined value of Q (3), and extending this line to cross the X_s - R_p scale (at 150 ohms). X_s , therefore, is 150 ohms, and may be either capacitive or inductive. Consider it to be inductive for this problem.

Similarly, line C of Fig. 2 is drawn connecting our R_p value of 500 ohms with the Q of 3 to give an X_p value of 170 ohms. This must be the same type of reactance (inductive) as X_s . These equivalent circuits are shown at B of Fig. 3. In our problem, the 150-ohm reactance in series with the 50 ohms has "transformed" the 50 ohms into 500 ohms shunted by a 170-ohm reactance. For our purposes, the two networks at B are exactly the same.

The values on the X_s - R_p scale represent both X_s and R_p , and the calibration of the R_s - X_p scale is used for both R_s and X_p . The Q scale relates R_s to X_s and R_p to X_p . This simply means that if a value of Q is known and if R_s is set on the R_s - X_p scale, X_s (not R_p) will be read from the X_s - R_p scale. If R_p is set, then the resultant value will be X_p . The arrows at the upper left portion of Fig. 2 show the proper conversions.

Impedance-matching networks of this type are designed around one center frequency. At this frequency, a pure resistance of one value will be transformed (or made to look like) a pure resistance of another value. Our transformed value of 500 ohms is shunted by 170 ohms of inductance and does not look like a pure resistance. At the design frequency, the effect of this unwanted shunt inductance can be canceled by placing an

opposite reactance (capacitive) of the same value in parallel with it. The physical result is the formation of a parallel-resonant circuit between the two reactances. Since a parallel-resonant circuit exhibits a very high impedance with respect to the 500 ohms shunting it, all we really see is the 500 ohms. Fig. 3C shows the components which must be added to the 50-ohm resistor to make it look like 500 ohms. These same values could have been obtained using the common equations for the simple L-match network. The point here, however, is to see, step-by-step, how the final network was formed. Once this is understood, networks of any type and of any complexity may be designed by successive applications of the chart.

Designing a Pi Network

The design of a pi network will now be covered, but some of the design details will be omitted. The pi will match 50 ohms to 500 ohms and is schematically represented in Fig. 4A.

The ability of a pi network to reject harmonics depends upon its characteristic "Q" the higher the Q , the better the rejection. A suitable value for Q must be selected before any components can be determined. A minimum value for Q can be determined from the chart by drawing a line between the two resistance values to be matched (line A of Fig. 2 for 50 ohms and 500 ohms). In this example, the minimum value for Q is 3. As previously shown, use of this value will result in an L-section network, rather than a pi. (X_{C2} is an open circuit). There are standard curves available which relate Q to circuit selectivity. Ten is usually a good choice for a medium- Q circuit, and will be used in this example.

The design will consist of three main steps - the parallel combination of X_{C1} and 500 ohms will be converted to a series circuit with a Q of 10; the parallel combination of 50 ohms and X_{C2} will be converted into a series circuit with the same series

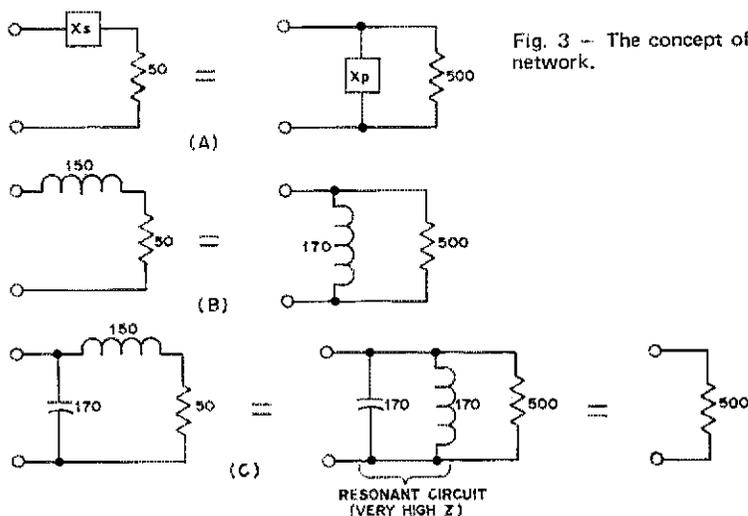


Fig. 3 - The concept of designing an L matching network.

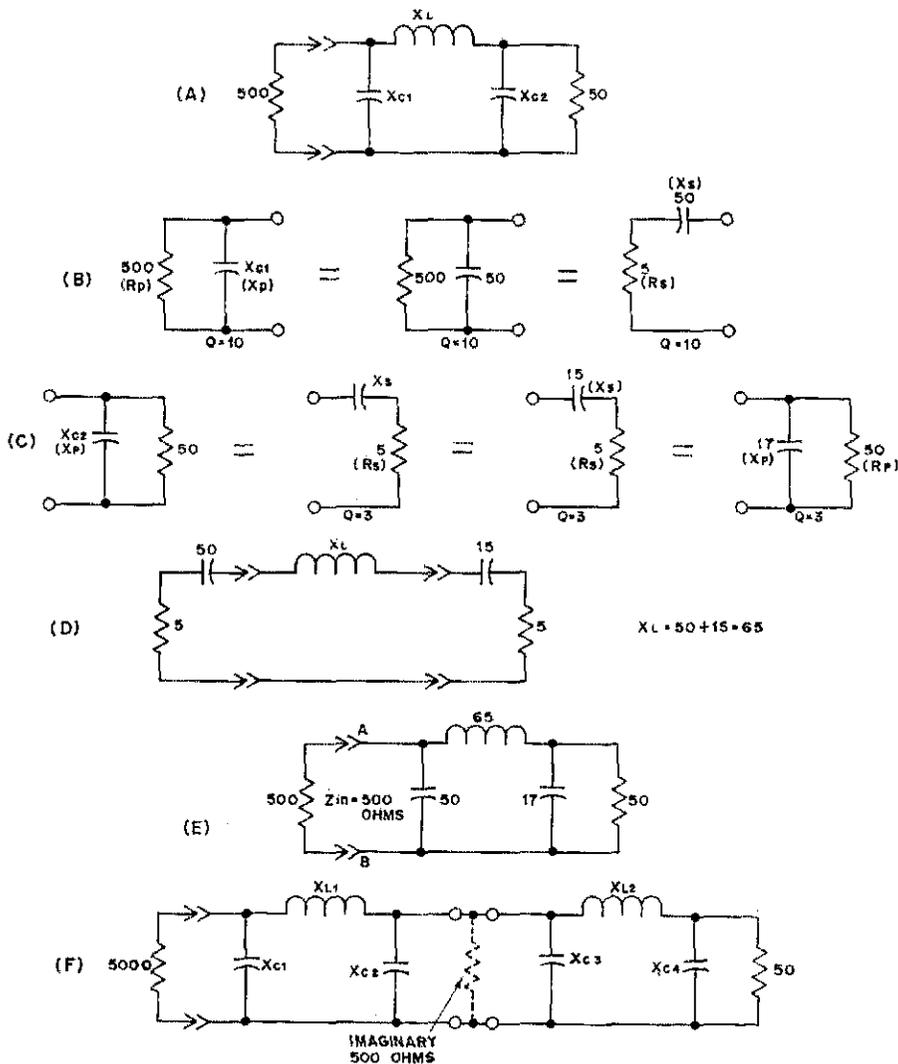


Fig. 4 - The concept of designing a pi-section matching network.

resistance as the first circuit; an inductance will be chosen to cancel the unwanted series reactances.

Fig. 4B shows the first conversion. X_p is found to be 50, using the X_s-R_p and R_s-X_p scales and the chosen Q of 10. R_s is then found to be 5 from the R_s and X_s-R_p scales. Knowing R_s , X_s is then easily determined from the R_s-X_p and X_s-R_p scales to be 50.

Next, as shown in Fig. 4C, the parallel combination of 50 ohms and X_{c2} must be transformed into a series-equivalent circuit having a resistance of 5 ohms. This 5-ohm value will "match" the value of 5 ohms obtained as in Fig. 4B. Using the values of 5 (R_s) and 50 (R_p), a circuit Q of 3 is obtained from the R_s and X_s-R_p scales. Values of X_s (15) and X_p (17) can now be determined from $R_s = 5$ and $R_p = 50$, respectively.

Fig. 4D illustrates the determination of the final component choice - X_L . X_L is chosen to be

65 ohms in order to cancel the effects of the 50-ohm and 15-ohm series reactances, B and C of Fig. 4. The result here is a series-resonant circuit. The complete circuit is shown in Fig. 4E. The 50-ohm resistance now been made to look like 500 ohms - the impedances are matched.

When impedances to be matched are widely separated or Q values are quite high, the design of a single section of pi network may result in component values which cannot be physically realized. If this is the case, a multisection network may be called for. Fig. 4F shows a two section pi network before simplification. The problem can be solved by designing two single-section networks and then combining them. In this example, both 5000 ohms and 50 ohms are initially matched with single sections to an imagined arbitrary, intermediate value of resistance, 500 ohms. The components X_{c2} and X_{c3} can then be combined to give a

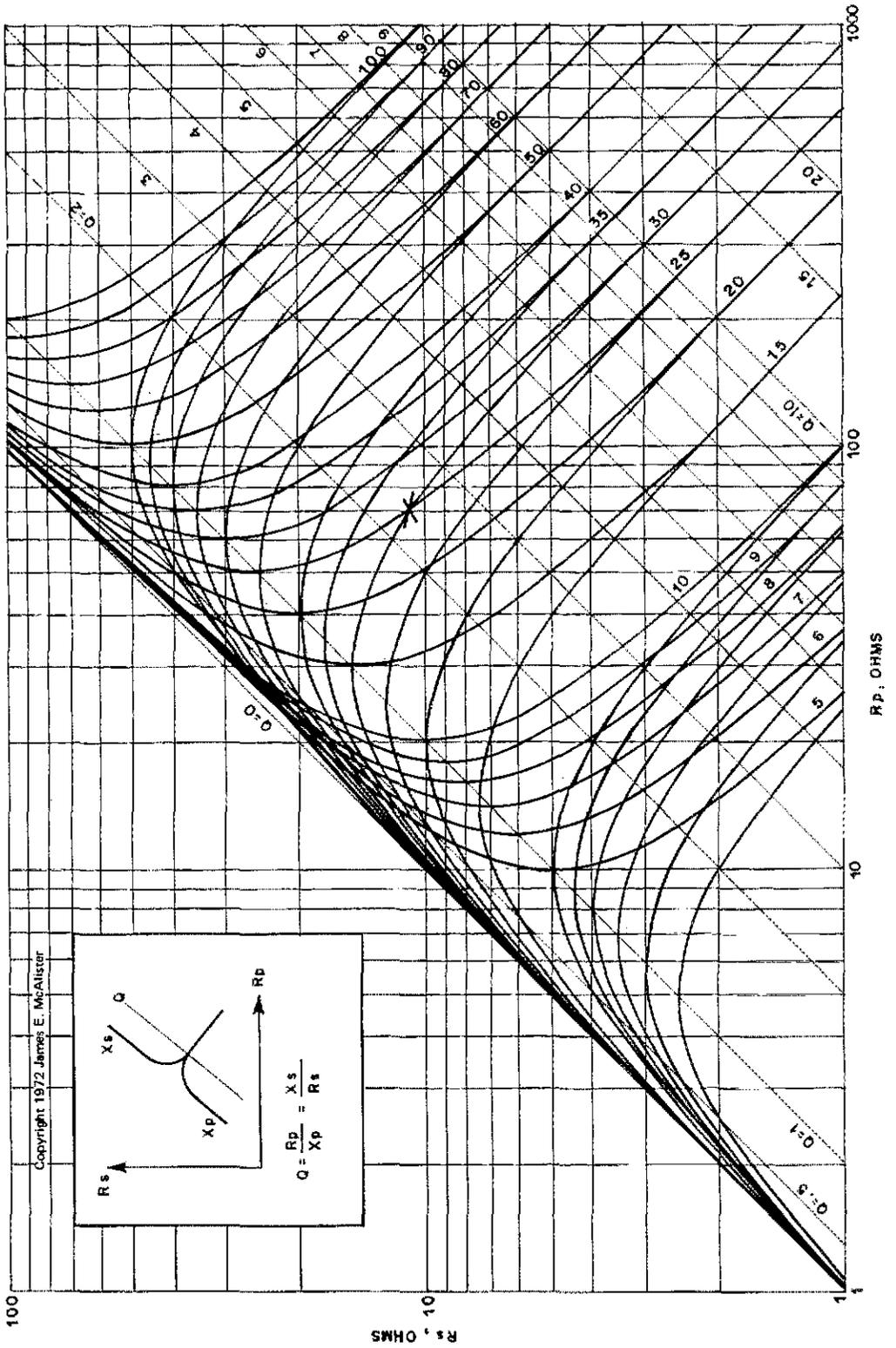


Fig. 5 — The Mac chart.

single component value. Once proficiency has been obtained with the nomogram, it can be employed for almost all impedance matching problems.

Using the Mac Chart for Impedance Matching

The Mac chart, Fig. 5, is simply a family of curves which describe the relationship between R_s , R_p , X_s , X_p , and Q . R_s and R_p are the vertical and horizontal axes respectively, and X_p and X_s are drawn as curves. Values of Q appear as straight diagonal lines. The inset in the upper left corner of the graph will help clarify the location of each variable on the Mac chart. The Mac chart performs the same function as the nomogram. As far as the rapidity of use is concerned, however, the chart is usually much faster and sometimes gives better insight into the problem.

Consider, for example, that a parallel equivalent for the series combination of $R_s = 11$ ohms, and $X_s = 25$ ohms is to be found. First, locate $R_s = 11$ on the vertical scale. The X_s curve of 25 is then located (the X_s curves "point" to the left). The intersection of the proper R_s value and the X_s curve is marked with an X. This point corresponds to an R_p of 70 ohms and an X_p of 30 ohms, as can be seen from the chart. For calculations involving the Q of a circuit, the Q curves may be used.

In order to obtain familiarity with the Mac chart (named for the author), the examples making use of the nomograph could be worked again using the chart. 



December 1922

... The Third ARRL Transatlantic test schedules are this month's feature, with cooperation requested of all hands — by transmitting only at specified periods, and maintaining complete silence in between. Success of the '21 tests has created widespread enthusiasm for the mid-December fracas.

... C.w. has resoundingly passed spark as the mainstay of message traffic nets, by nearly a 4 to 1 ratio; earlier in the year, it was exactly the reverse. Totals of both modes reach a peak figure of 30,000 messages a month in winter, as reported to ARRL.

... With international QSOs now not uncommon, the question of adequate silencing is raised. If 20M works 8AB, is the latter in Ohio, or maybe in France? First-transatlantic'er 8AB (French) proposes a system of prefixes such as A-America; E-England; F-France. It seems agreed an international system of some kind must be devised.

... Northwestern Division Manager Howard F. Mason, 7BK (later to join the QST staff) describes "The Radio Lizz," a flivver equipped for reception (detector and two-step) with 78 feet of wire in a three-turn loop completely around the car — enough to frighten the most doctle passing horse! He says ignition interference is nigh insurmountable.

FEEDBACK

The formula used in the "Standing-Wave Ratios and Directional Wattmeter Readings" by K1PLP in the Hints and Kinks section of the October QST, page 57, and also appearing in November QST, page 33, is incorrect. The formula should read as follows:

$$SWR = \frac{1 + \sqrt{P_r/P_f}}{1 - \sqrt{P_r/P_f}}$$

In the article, "Limited Speech Recognition," QST for October 1972, page 36, there are two errors. The '715 IC should be in a TO package rather than a DIP type. Also, the capacitor connected to pin 2 of U7A should go to a *minus* rather than a plus 15 volts.

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, that we may verify your classification.

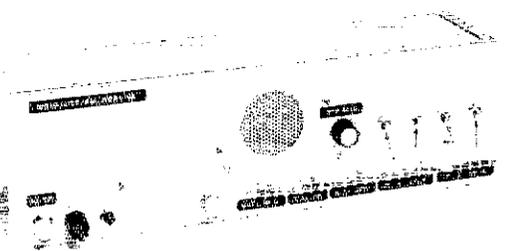


December 1947

... Fresh from the (successful) battle for amateur frequencies at the Atlantic City international radio conference, Editor Warner issues a plea for the invention of a "second spectrum" to alleviate crowding and fill the world's communications needs. By overnight doubling of selectivity capability? By receivers capable of completely discriminating between voice and c.w. so the two modes could operate throughout the spectrum simultaneously? By extension of the microwave frontiers? Maybe even by positive and negative frequencies?! The need is urgent; who has the answer?

... Ever heard of a Q5er? The daddy of this knife-edge peaking i-f amplifier device, WIDBM, shows by curves how the mediocre selectivity of a war-surplus BC-342 can, by addition of a Q5er, beat the pants off current top manufactured receivers for hams. ... Cal Hadlock, WICTW, shows the way to start right on 235 (later to become 220) MHz. Even beam antenna details are included. Not enough of us followed, perhaps because the apparent sophistication of the gear — superhets and crystal control — scared us off.

... "Winds, Waves and Snakes" is a report in detail on amateur stellar communications performance in the hurricane disaster which wreaked havoc on Florida and the Gulf coast. — WIRW



Notes on Custom-Built Repeater Gear

With Emphasis on Reliability and Good Performance

BY DOUG DeMAW,* WICER

THE FOUR-CHANNEL audio mixer/monitor amplifier described here is not intended to be a construction project. Rather, we shall deal with some of the problems in design that are common to various pieces of repeater accessory gear. Whether the audio mixer deck is one that employs tubes, transistors, ICs, or a hybrid combination of the various devices, rf suppression is important. Similarly, if good performance and maximum reliability are desired, derating some of the component parts is desirable. Attention should be given to the matter of transient suppression. Furthermore, steps must be taken to reduce hum levels to the lowest value practical. Shaping of the audio-channel frequency response is another matter of concern, and one that should be a part of the design philosophy. The foregoing criteria inspired the design used in this example.

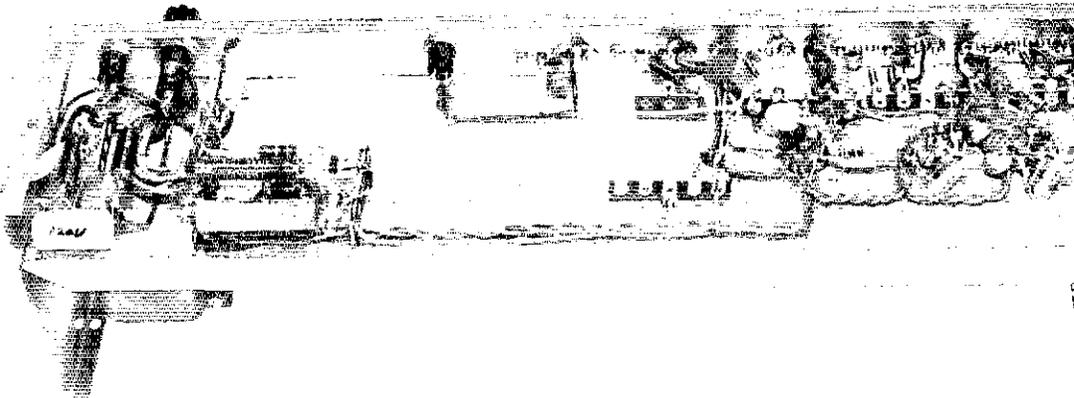
* Technical Editor, *QST*.

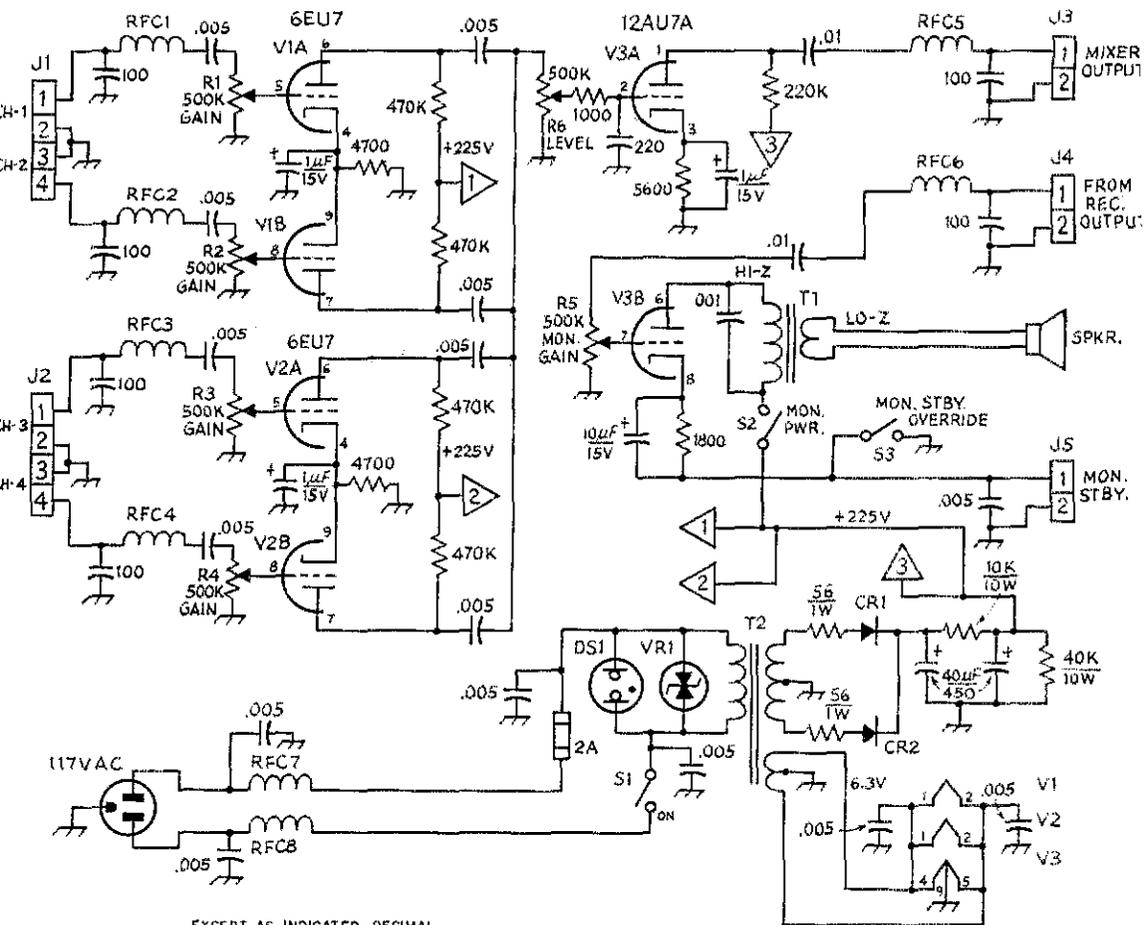
Hum Reduction

The circuit of Fig. 1 was designed for use with a G.E. MTS (mobile telephone service) high-band transmitter and receiver strip at WA1KHK, Hartford, Conn. Though four af channels are indicated, the builder can include as many as are needed. The actual number is not of importance in this discussion. Furthermore, 600-ohm line transformers can be used at the input and output terminals of the mixer if desired, rather than the high-impedance interconnections indicated here. The choice will depend on the particular installation. In the case of WA1KHK, short audio lines are employed between the pieces of equipment, thus making it practical to eliminate step-up and step-down transformers. For long runs of cable it is best to maintain a 600-ohm line impedance to reduce hum pickup and audio losses and to prevent impaired frequency response.

The monitor channel was included to allow amplification of the MTS receiver output to speaker level. (MTS receivers do not have an af power amplifier for operating a speaker.) The

Looking into the bottom of the audio chassis one can see the Thyrector, VR1, at the lower left. The rf decoupling components are mounted close to the terminal points on the connector strips (upper right hand portion of the chassis). Twisted filament wiring is visible in the foreground.





EXCEPT AS INDICATED, DECIMAL VALUES OF CAPACITANCE ARE IN MICROFARADS (μF); OTHERS ARE IN PICOFARADS (pF OR μpF); RESISTANCES ARE IN OHMS; K=1000, M=1000000

Fig. 1 — Schematic diagram of the audio-mixer/amplifier. Fixed-value capacitors are disk ceramic except those with polarity marking, which are electrolytic. Fixed-value resistors are 1/2-watt composition unless otherwise noted. Capacitance is in pF. Decimal value capacitances and that of the electrolytics are in μF . Resistance is in ohms. K = 1000.

DS1 — 117-volt ac pilot-lamp assembly (Calectro E2-420 used here).

J1-J5, incl. — James Millen ceramic terminal strip. (See text.)

R1-R6, incl. — 500,000-ohm audio-taper carbon control.

RFC1-RFC6, incl. — 2.7- μH miniature rf choke (J. W. Miller 70F276A1 or equiv.). If homemade chokes are desired, wind 15 inches of No. 30 enam. wire (close wound) on the body of a 5600-ohm, 1-watt resistor. Use pigtails as solder points.

RFC7, RFC8 — 22 turns No. 22 enam. wire, close wound, on 1/4-inch OD wooden dowel rod or other insulating material.

S1, S3 — Spst pushbutton switch (Calectro E2-144).

S2 — Part of R5 (Calectro B1-689 control with spst switch).

Speaker — Miniature pm speaker (Calectro 3-in. dia, 8-ohm type).

T1 — Output transformer, 10,000 ohms to voice coil (Calectro D1-741).

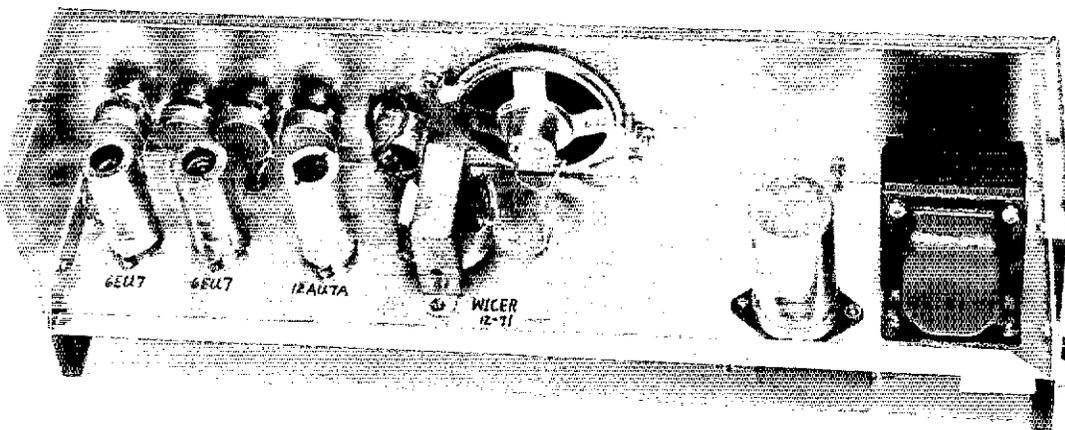
T2 — Power transformer, 500 volts ct at 40 mA, 6.3 volts ct at 2 A. Knight 6K88VG or equiv.

VR1 — G.E. 120-volt Thyrector, No. 6RS20SP4B4.

circuit of Fig. 1 worked well with a Motorola five-pipe Sensicon-A receiver also.

Examination of the circuit diagram will indicate that a center-tapped 6.3-volt filament winding is used to minimize hum. Twisted-pair filament wiring is employed as a further aid to hum reduction. This wiring is routed away from grid and plate

components, as shown in the photo. Type 6EU7 tubes are installed in the mixer part of the circuit. These tubes are designed for use in preamplifier circuits where low hum and minimum microphonics are the criteria. Each 6EU7 is enclosed in an iron tube shield for even greater immunity to hum.



Top-chassis view of the audio-mixer/amplifier. The power supply is built at the end of the chassis opposite the audio input circuitry to reduce hum pickup.

Considerable filtering of the B-plus line is assured by the use of 40- μ F filter capacitors and the 10,000-ohm series resistor which serves as a choke. The power supply is located as far from the audio stages as possible, hence the use of what may seem like an exceptionally large enclosure (a Bud CU-3012A aluminum box, measuring 17 x 5 x 4 inches). An iron enclosure would be even more effective for reducing hum pickup from nearby fields. Those who can endure the rigors of drilling holes in a steel box would be wise to consider the use of a steel chassis and cover for housing the audio apparatus. High-quality shielded audio cable should be used between the various items in the audio system.

Rf Filtering

The aluminum box used in this example is adequate as an rf-tight enclosure. Fig. 1 shows that rf chokes and bypass capacitors are used at the terminals of all incoming and outgoing leads. This audio deck was designed for use in a 2-meter repeater. Therefore, the chokes and bypass capacitors are tailored for that part of the vhf spectrum. Different component values may be selected for the filtering networks in 440-, 220-, and 52-MHz repeaters. A 1000-ohm resistor and 220-pF capacitor are used at the grid terminal of V3A to keep unwanted rf out of that stage. None of the networks have an adverse effect on the audio response of the circuit.

James Millen ceramic terminal strips are used for audio connectors. These were used in the interest of having secure line connections. However, jacks and shielded plugs will offer better rf and hum protection if you're willing to gamble on not having intermittent connectors from time to time. The WA1KHK committee members are dedicated cowards in that regard!

Other Considerations

The power supply is literally "loafing along" in this circuit. As is the case in commercial broadcast

work, ample reserve should be planned if the system is subjected to continuous-duty service. The transformer, T1, becomes only slightly warm to the touch after many hours of "on" time. The rectifier diodes, CR1 and CR2, are protected against surges by means of two 56-ohm series resistors in the secondary side of the transformer. Also, a 120-volt Thyrector clipper, VR1, is bridged across the primary of T1 to prevent equipment damage from spikes appearing on the 117-V ac line. All of the WA1KHK power supplies are equipped in this manner.

Probably the most obvious recommendation is that the frequency response of your audio gear be shaped for communications work. The R and C values shown in Fig. 1 were chosen for a relatively flat band pass from 100 to 2500 Hz. The low-frequency roll-off helps to reduce hum, and is therefore desirable. Af energy above 2500 Hz is of no value in amateur work, and will extend the significant fm sidebands beyond desirable limits. Therefore, it is prudent to attenuate all energy above 2500 Hz.

Though it may be of academic interest only, the 12AU7A (V3) is used for two functions. One half serves as a post-mixer amplifier to provide more than enough gain to assure limiting in the MTS transmitter modulator. An earlier version did not have that stage. Consequently, the transmitted signal had deviation amounts which varied from 2 kHz to as much as 15 kHz, depending upon the deviation levels of the incoming signals. The condition was caused by insufficient af level into the speech amplifier stage of the MTS transmitter. With the circuit shown the signal deviation never exceeds 6 kHz, regardless of the deviation amount peculiar to the incoming received signal.

Audio-gain control R6, Fig. 1, is used to set the overall gain of the mixer/amplifier. A screwdriver-adjust control was added after the photos were taken. The output level of the audio circuit was too great without some attenuation ahead of V3A. Without R6 in the circuit it was necessary to

(Continued on page 48)



Recent Equipment



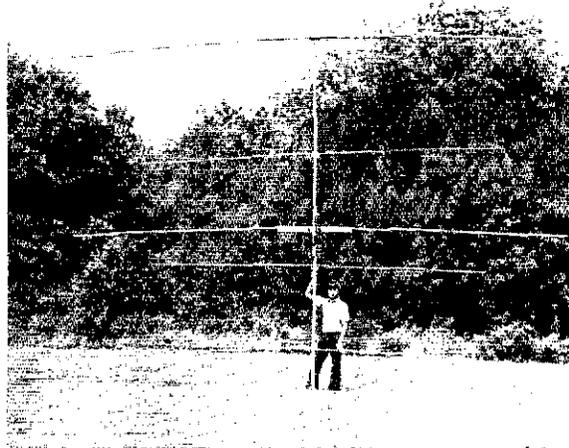
To acquaint you with the technical features of current amateur gear.

Weinschel Engineering System I Triband Yagi

WEINSCHEL ENGINEERING, a designer of rf components and measurement instruments, has developed a three-band antenna system for amateur use. The objective, which Weinschel has attempted to achieve, is reasonable performance at both ends of each amateur band, 20, 15, and 10 meters. To accomplish this goal, they have developed a 6-element array consisting of a 20/15-meter duobander combined with an interlaced 10-meter three-element Yagi. The System I uses one feed line connected to the 10-meter driven element. A parallel untuned line couples energy to the 15/20-meter driven element. Using a separate 3-element antenna for ten meters eliminates the requirement of adding another set of traps to the 15/20-meter radiators.

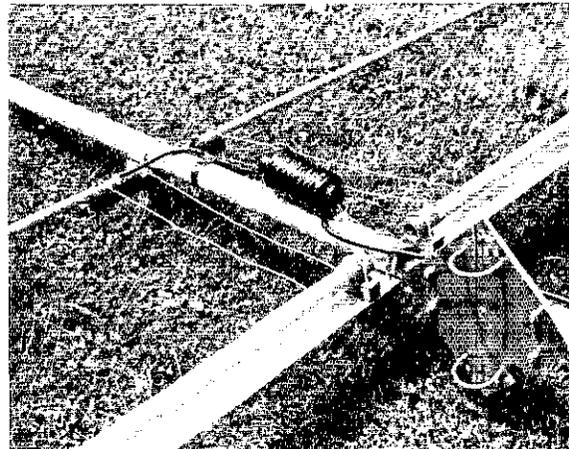
From the mechanical point of view, the Weinschel System I is rugged. As shown in the photographs, the boom-to-mast plate consists of a heavy aluminum plate with two triangular pieces of aluminum clamped to it thus providing excellent holding ability. The vertical edges of the triangle sections are clamped to the mast when the U bolts are tightened, thereby actually "biting" into the mast material. No pinning bolts are needed to hold this plate in place! A sharp edge in the horizontal plane, on the other side of the mast plate, provides similar locking action for the boom. The boom cannot twist.

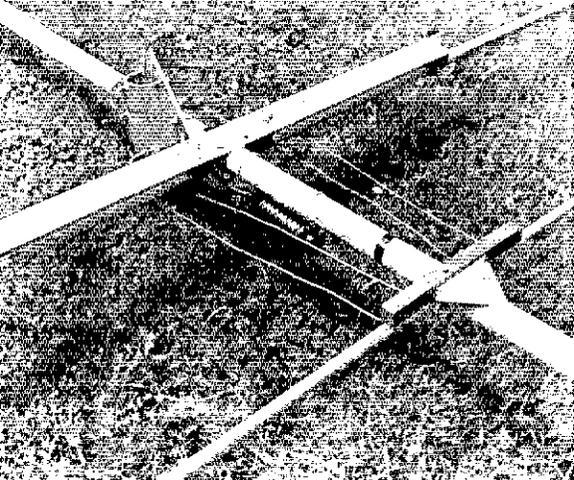
The boom-to-mast plate uses a heavy-duty aluminum sheet with angle sections to lock the mast in position. The coaxial cable connections are shown here. A recent modification by Weinschel has changed the configuration by the addition of a hair-pin matching network. A ten-turn coil of coaxial cable provides decoupling of the outer shield.



WA1JLD holds the System I in an upright position. All six elements are visible.

The driven-element support combines two pieces of 1/8-inch thick aluminum angle stock, back to back. The 15/20-meter driven element is clamped to this support with U bolts which are insulated from the element by means of PVC plastic tubing. The parasitic elements for these bands use aluminum plates and U-bolt hardware. The 10-meter elements (including the driven element) are fastened to the boom in a unique manner. A triangle-shaped aluminum plate is connected to each element at two points approximately four inches either side of the boom. This plate then is connected to the boom using a large sheet-metal screw. The photograph shows this mechanical feature clearly. The purpose is to align the elements horizontally and to keep them in place.





The driven elements are interconnected by heavy aluminum bus wire. The 10-meter element is in the foreground.

The Traps

The System I uses a total of six traps. They are all mechanically and electrically identical since their purpose is to trap only 15-meter energy. No chance of installing one backwards (or in the wrong place)! Each trap consists of 21 turns of heavy aluminum bus wire (wound on PVC tubing which is grooved at the proper pitch) and a capacitor made from aluminum tubing. The capacitor is mounted inside the trap and adds to the overall stability of the element. Each trap is completely sealed against moisture by a heavy-duty sheath which fits like a tight glove. Drain holes are provided in each element to assure that no condensation builds up within the element tubing.

Subjective Evaluation

Determining the actual performance characteristics of an antenna without the use of an antenna range is impossible. Accordingly, this report does not treat the subject of array gain or pattern. The antenna reviewed here was mounted atop a 125-foot tower and tested in several operating activities. The SWR, as measured with a wattmeter, is given in Table I. Front-to-back measurements using a receiver with a calibrated S-meter indicate back rejection on local signals to be on the order of 20 dB for each of the three bands. Measurements were taken in both the phone and cw band segments.

Freq. (MHz)	SWR
14.0	2.0
14.1	1.4
14.2	1.2
14.3	1.8
21.0	1.6
21.1	1.3
21.2	1.2
21.3	1.1
21.4	1.3
28.0	1.1
28.2	1.1
28.5	1.2
28.7	1.3
29.0	1.4

Antenna performance boils down to a matter of opinion, and whether or not the amateur *thinks* it is working. This writer has the "feeling" that the System I *does* work. One thing for sure, the wind and ice are not going to have an easy time tearing it off the tower this winter! — *W1FBY*

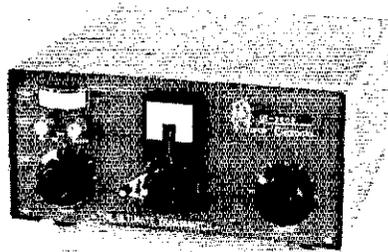
The Weinschel System I Triband Yagi

Freq. Range: 20, 15 and 10 meter amateur bands.
 Power rating: 2kW.
 Assembled weight: 45 pounds.
 Boom length and diameter: 18 feet long, 2 inches diameter.
 Longest element: 27.5 feet.
 Turning radius: 16 feet, 6 inches.
 Wind resistance: 83 pounds at 60 mph (8 square feet).
 Element spacing (approx.): 20 meters, 0.12λ (9 feet); 15 meters, 0.21λ (9 feet); 10 meters, 0.14λ (5.5 feet for reflector, 4 feet for director).
 Mast required: 1-1/2 to 2 inches.
 Price Class: \$140.
 Manufacturer: Weinschel Engineering, Gaithersburg, Maryland 20760.



The traps are effectively sealed against moisture. Drain holes in each element reduce any possibility of condensation retention.

The Murch UT-2000 Ultimate Transmatch



THE MURCH ELECTRONICS UT-2000 is a commercially made version of the Ultimate Transmatch that appeared in July, 1970, *QST* and also in the 1972 edition of the ARRL *Handbook*. The two circuits are identical, but that is where the similarity ends. One has to know the radio retail business rather well to realize what is so different about the UT-2000. Being unable to obtain roller inductors or variable capacitors that met the needs for the unit, Murch decided to manufacture both items. One could say that this is a case of real Yankee ingenuity. Murch has informed us that at some future date the capacitors and inductor will be sold as separate items for amateurs wishing to "roll their own."

The UT-2000 is designed for coax-to-coax or random-wire feed. If balanced feed is desired, a balun is required. The Transmatch covers 3.5 to 30 MHz continuously and includes the MARS frequencies. It should be pointed out the Ultimate circuit requires no band switching.

The UT-2000 shown here was tested at 2-kW PEP on all amateur bands (80 through 10 meters), with both high- and low-impedance loads. In no instance was any difficulty encountered with matching or component breakdown. An end-fed wire that provided an extremely high impedance was easily matched on all bands. The instruction sheet isn't too clear about matching settings of the controls. When using the Ultimate circuit, several different settings of the capacitors and inductor

will provide matched conditions for a given antenna load. One should always use the adjustment that provides the greatest amount of capacitance on the input capacitor and the least amount of coil inductance. This provides the best harmonic attenuation.

Also included in the unit is a Monimatch-type SWR indicator. It uses a 1-mA meter for the indicator and is equipped with a switch for reading forward and reflected currents. — *WHICP*

Murch Electronics UT-2000 Transmatch

Dimensions (HWD) and Weight:

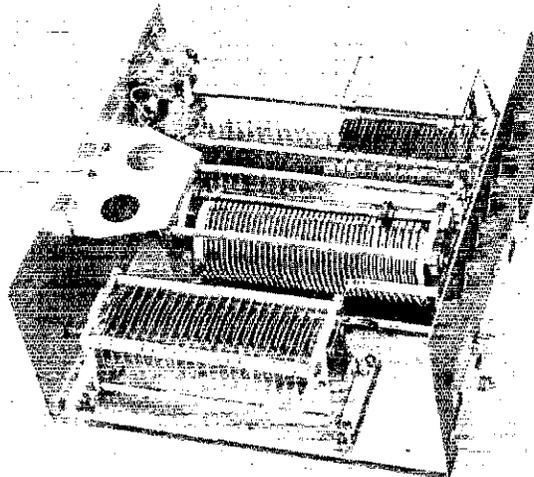
6 × 12 × 12 inches, 8-1/2 pounds.

Power rating: 2 kW.

Frequency Range: 3.5 through 29.7 MHz.

Price Class: \$120.

Manufacturer: Murch Electronics, Box 35,
Franklin, ME 04634.



The input capacitor is at the top. At the center is the roller inductor with the output capacitor at the bottom. The pickup sections of the Monimatch are mounted on the insulated board clamped to the top of the input variable capacitor.

The HAL Devices

1550 Keyer

with Station Identifier



SEPARATING THE "PROS" from the "Ham and Egger's" is often complicated by the fact that one has to be at least a "Ham and Egger" in order to appreciate the difference between the two. To the uninitiated, the HAL Devices 1550 keyer may not seem exceptional, however, even an inexperienced circuit designer would appreciate its economy and novelty.

The keyer features an unusual station identifier, and a few of the highlights follow. Fig. 1 is an abbreviated schematic diagram. The memory matrix consists of two sections, one section for dashes and the other section for spaces between letters. If there were no diodes on the board (except for two to form the STOP signal), the output from the

keyer would be a string of 49 dots, as the clock advanced the address registers from positions 1 through 50 in the matrix. If a diode was present in the dash matrix, when the scanning process reached that position, the BCD converter would pull the line "low" and since all the inputs to the dash NOR gate would be low, a logical "1" results, causing a dash instead of a dot at the output. If a diode was present in the space matrix instead, a similar process would cause a space. If both dash and space positions have a diode, the identifier stops and returns the device to a normal keying function (the diagram shows the scanning process at position 14). Thus, the identification message can have a combination of dots, dashes, and letter

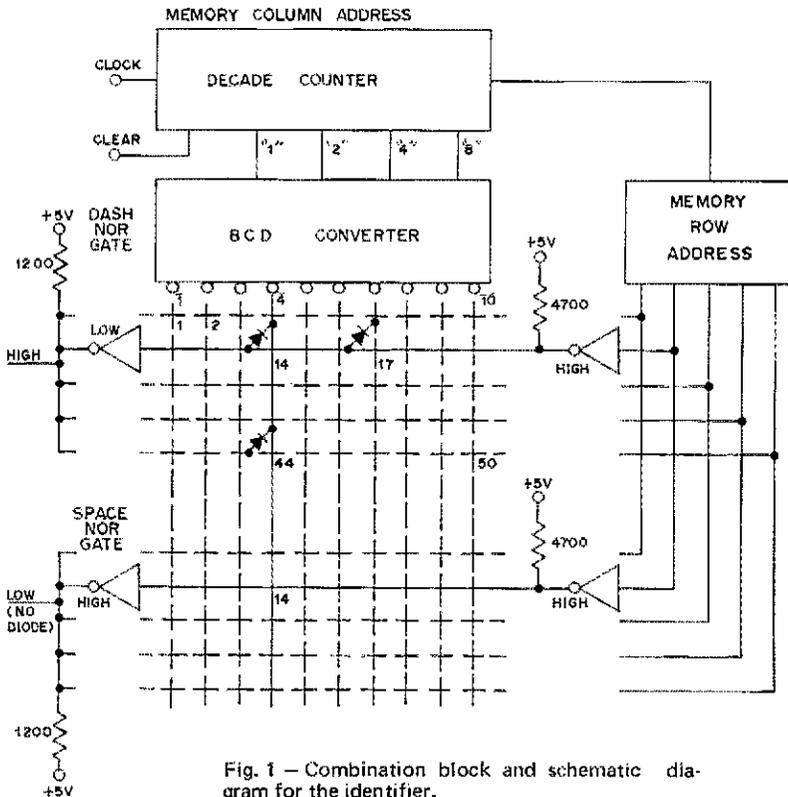


Fig. 1 - Combination block and schematic diagram for the identifier.

Interior view of the 1550 keyer with identifier option. Diode matrix can be seen just above the speaker.

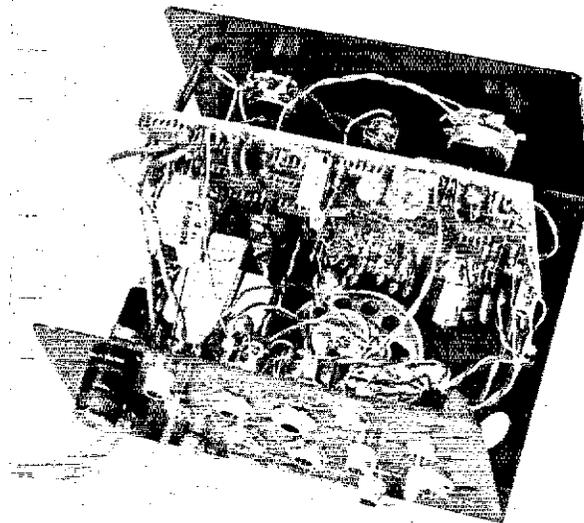
spaces equalling 49. Custom programming of the matrix is done at the factory for each new keyer, or may be changed easily by the operator by relocating the diodes in the matrix as desired. As factory programmed, a typical message is DE W1AW/1. A switch on the rear panel of the keyer provides for selection of an earlier stop signal which shortens the message transmitted to DE W1AW.

As one who still uses a mechanical semiautomatic key, the author was surprised to find that the 1550 was tolerant of even his keying technique. Being comfortable with a new keyer from the start has advantages when changing over from some other type of key. Poor habits that are hard to break later on, can be avoided by not going to a keyer which requires a radically different style of sending, from that accustomed to. One of the reasons the 1550 is easy on a "bug-ist" is the incorporation of a dot-memory feature into the common automatic-dot-and-dash mode of operation.¹ The dot memory operates as follows. If the dot lever is depressed and released while a dash is being sent (dash lever should not be depressed), a dot will be generated after the dash. For example, if the letter "R" is sent at a somewhat faster speed than that for which the keyer is set, a perfect "R" still will be generated at the lower speed. In conventional-mode operation, if the dot was sent before the dash was completed, the last dot would be dropped, and the letter "A" would result. The latter problem accounts for much of the difficulty that a semiautomatic-key operator encounters when going to a conventional keyer for the first time. Since it is unnecessary to exactly time the dash and following dot with a "bug," any imperfections in sending (such as variations in sending speed) which would otherwise go undetected, are rejected by the conventional keyer, and a mistake results. One other mode of operation available is Iambic operation. Here, depending upon which lever makes contact first, either a series of alternating dots and dashes, or a series of alternating dashes and dots results when both levers are depressed.

Some keyers suffer from interface problems. They work with either cathode or grid-block keyed transmitters, but not both. The 1550 makes provision for either one, along with the inclusion of extra output jacks in the event it is desired to key more than one circuit simultaneously.

Other features include a built-in monitor with an internal pitch control and speaker. Front panel controls are for monitor VOLUME and keyer SPEED (which the manufacturer says is approximately 8 to 60 wpm). A TUNE button is provided

¹Should the operator desire conventional keyer operation only, instructions are included for disabling the dot memory along with the Iambic operation.



for closing the keying circuits. Also, of interest to Field Day buffs and mobile operators perhaps, there are provisions and instructions for 12-volt dc operation.

Whether the 1550 keyer is judged from the standpoint of operating or technical expertise, HAL Communications definitely deserves a blue ribbon. *W1YNC*

HAL Devices 1550 Keyer and Identifier
Dimensions (HWD) and Weight:
3-1/4 x 6-1/4 x 5-1/2 inches, 3 pounds.
Power Requirements: 120 V ac.
Price Class: Basic keyer \$65, with identifier option \$90.
Manufacturer: Hal Communications Corp.,
Box 365A, Urbana, IL 61801.

Strays

Ozzie Jaeger, W6AD, AE-29t, reminds the first class of Extras that their "wallpaper" now qualifies for Old Timers Club - FCC began giving exams for Extra in January 1952, 20 years ago!

To commemorate the flight of Apollo 17, due to be launched December 16, WG3SFC will be on the air from prior to launch until after splashdown.

Contacts will be confirmed by a special QSL card. Requests should be accompanied by a self addressed stamped mailing label and sent to: Goddard Amateur Radio Club, P.O. Box 86, Greenbelt, MD 20770.

The following frequencies will be used: Ssb: 3950, 7275, 14325, 21400, 28650 kHz. Cw: 3560, 7060, 14060, 21060, 28060 kHz.

Novice frequencies in each band will be tuned from time to time after suitable calls on the cw frequencies.

QET



Hints and Kinks

For the Experimenter



HAM-M ROTATOR MODIFICATION

Ham-M rotors sometimes develop an intermittent connection at the rotor which causes meter fluctuation at the control box. The arm of the potentiometer is driven by a leaf spring which presses against the bell housing. Eventually the teeth in the leaf spring cut a groove in the housing and two things can happen: The drive mechanism can slip, causing incorrect readings, and the ground contact can cause erratic meter indications.

Both problems can be cured by taking the following steps.

1) Remove the bell housing and mark a point about 3/16 inch away from the center point where the leaf spring has been bearing.

2) Drill and tap a hole at this point (No. 3 drill).

3) Cut a section of a machine screw about 1 1/8 inches long. This screw will be used as a threaded stud.

4) Drill a 3/32-inch diameter hole through the center of the stud (longitudinally).

5) Using an "O" ring washer or a grommet, a brass washer, and a hex nut, tighten the stud into the tapped hole as shown in the diagram.

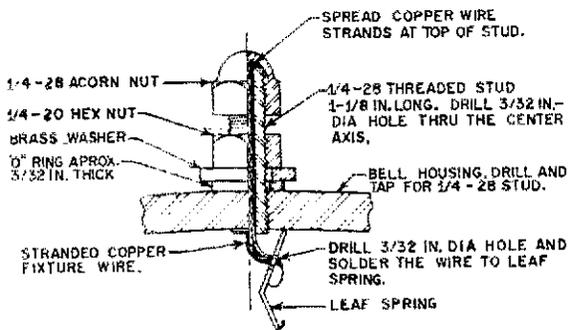
6) Drill a 3/32-inch diameter hole through the center of the leaf spring. Then attach a flexible wire (lamp cord without insulation) to the spring and solder it in place.

7) Pass the flexible wire through the hole in the stud while lowering the bell housing back into place.

8) Cut off the flexible wire approximately 1/8 inch above the stud. Bend the wire over and spread it out on top of the stud.

9) Drop a small flat brass washer into an acorn nut, then tighten it on the stud over the copper strands.

10) Paint the stud and nuts if they are not brass. If it is necessary to disassemble the rotator again, the flexible wire must be replaced. The screws and acorn nut were purchased at a local hardware store. Taps and drills of the proper size cost less than 50 cents each. *George Spencer, VE2MS*



SETTING NBFM DEVIATION

Setting the deviation on a narrow-band (6F3) fm transmitter is generally an uncertain business at best. The FCC rules are quite explicit. Section 97.65(c) states, "On frequencies below 29.0 MHz, and between 50.1 and 52.5 MHz, the bandwidth of an F3 emission (frequency or phase modulation) shall not exceed that of an A3 emission having the same audio characteristics . . ."

Most amateurs don't have access to a frequency-deviation meter, and even if they did there is little agreement on the proper deviation setting which satisfies the FCC requirement. However, there is a technique available to most amateurs which satisfies the letter of the law and requires no specialized equipment (such as a spectrum analyzer). All that is required is an ssb receiver that is capable of receiving the transmitter signal to be checked.

The simple procedure is that of using the exalted-carrier method of reception. That is, tune the nbfm signal as if it were ssb (zero-beat with the carrier), then adjust the transmitter modulation level to a point slightly below the point where the audio starts to get distorted, and the job is done.

The theory behind this technique is that the sidebands in an nbfm signal are indistinguishable from those in a dsb or a-m signal. The only difference between the two is that the sidebands and carrier are 90 degrees out of phase in the fm signal. When we discard the carrier in the exalted-carrier reception, the received signals are identical if (and only if) the fm signal is truly narrow-band. *Lewis D. Collins, K4GGI/1*

AID TO MEASURING CURRENT IN DRY-CELL BATTERIES

I have found that a scrap of double-sided pc board can be a handy aid in measuring current consumption of equipment that uses several dry-cell batteries. It could be used when charging NiCads to measure the charging current.

To avoid having to solder and unsolder connections when making current measurements, I have affixed wires to each side of a scrap of pc board as shown in the sketch. I also tinned each side of the board to retard wear and corrosion and to assure a better electrical connection. I now insert the pc board between any two of the cells, as shown, or better still, between either of the end cells and the battery terminal of the device that I am working on. When the wires from this "probe" are connected to the VOM, plugs to mate with the

(Continued from page 401)

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., P.O. Box 505, Ridgewood, NJ 07451.
 W3, K3, WA3, WN3 - Jesse Bieberman, W3KT, RD 1, Box 66, Valley Hill Rd., Malvern, PA 19355.
 W4, K4 - North Alabama DX Club, P.O. Box 2035, Huntsville, AL 35804.
 WA4, WB4, WN4 - J. R. Baker, W4LR, P.O. Box 1989, Melbourne, FL 32901.
 W5, K5, WA5, WB5, WN5 - Kenneth F. Isbell, W5QMJ, 306 Kesterfield Blvd., Enid, OK 73701.
 W6, K6, WA6, WB6, WN6 - No. California DX Club, Box 11, Los Altos, CA 94022.
 W7, K7, WA7, WN7 - Willamette Valley DX Club, Inc., P.O. 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 - Reggie Hoare, W0QYP, P.O. Box 115, Mitchellville, IA 50169.
 K0, WA0, WB0, WN0 - Dr. Phillip D. Rowley, K0ZEL, Route 1, Box 455, Alamosa, CO 81101.
 KP4, WP4 - Alicia Rodriguez, KP4CL, P.O. Box 1061, San Juan, PR 00902.
 KZ5 - Fee DuFre, KZ5OD, Box 407, Balboa, CZ. Box 407, Balboa, CZ.
 KH6, WH6 - John H. Oka, KH6DQ, P.O. Box 101, Aiea, Oahu, HI 96701.
 KL7, WL7 - Alaska QSL Bureau, Star Route box 65, Wasilla, AK 99687.
 VE1 - L. J. Fader, VE1FQ, P.O. Box 663, Halifax, NS.
 VE2 - A. G. Daxmen, VE2IF, 2960 Douglas Avenue, Montreal 301, PQ.
 VE3 - R. H. Buckley, VE3UW, 20 Almont Road, Downsview, ON.
 VE4 - D. E. McVittie, VE4OX, 647 Academy Road, Winnipeg R3N 0E8, MB.
 VE5 - A. Lloyd Jones, VE5JL, 2328 Grant Road, Regina, SK, S4S 5E5.
 VE6 - D. C. Davidson, VE6TK, 1108 Trafford Dr. NW, Calgary 47, AB.
 VE7 - H. R. Hough, VE7HR, 1291 McKenzie Rd., Victoria, BC.
 VE8 - Yellowknife Centennial Radio Club, P.O. Box 1944, Yellowknife, NW1, Canada.
 VO1 - Ernest Ash, VO1AA, P.O. Box 6, St. John's, NF.
 VO2 - Goose Bay Amateur Radio Club, P.O. Box 232, Goose Bay, LB.
 SWL - Leroy Wate, 39 Hannum St., Ballston Spa, NY 12020.

These bureaus 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.

reduce the input levels by means of R1 through R4, inclusive, to provide the desired level to the transmitter modulator. Without R6 the input controls were turned back to the point where it was nearly impossible to set the levels needed. Also, so little resistance remained in the grid circuits of the mixers that the frequency response was impaired. R6 was mounted on the chassis near V3.

In Closing

Other pieces of repeater accessory gear at W1AKHK are shielded, filtered, and transient-suppressed in a manner similar to that shown in Fig. 1. If trouble-free operation and a clean signal are requisites and they should be — the suggestions given here can be helpful. QST

"It Seems to Us . . ."

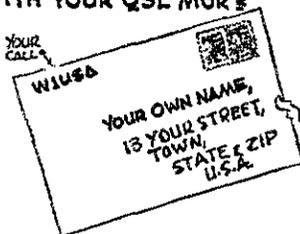
(Continued from page 9)

speculate on possible applications of the new rules, after pointing out the staff at his *alma mater* "appears unwilling at the moment to make even any informal interpretations."

One FCC field engineer was much less timid: he told us flatly that the new rules effectively prohibit amateurs from handling *any* third-party traffic because, sooner or later, someone has a pecuniary interest. *While it is not likely that the new language will be so harshly interpreted, it does seem rather plain that a new and wholly undeserved restraint has been placed on those of us attempting to carry out the Commission's charge to amateurs to provide a "voluntary non-commercial communications service [to the public]."* Each of us henceforth receiving a message, for relay or otherwise, will now — for the first time — have the burden of examining its text carefully to evaluate whether it might involve "material compensation, either tangible or intangible, direct or indirect, to a third party, a station licensee, a control operator, or any other person." May the Almighty grant us the necessary wisdom of Solomon to make such determinations!

[EDITOR'S NOTE: Some readers, and perhaps even an authority or two, might compound the original felony by waving this adjective at us in support of the Commission's current restrictive policy. Let us quickly point out that the noun it modifies is "service," and not "communications." So it is the *service* provided by us, not the type of communications, which must be non-commercial. Thus, in consonance with the 1928 opinion cited, and as we have acted and maintained all the years since, it should apply to, and only to, the *type of service* (i.e., we can't charge for it) and not to the *content of any message traffic handled.* QST

IS YOURS ON FILE WITH YOUR QSL MGR?



Announcing the 1973 ARRL Simulated Emergency Test

January 27-28, 1973

ALL SET FOR the SET? Yes, it will soon be that time again. Local Amateur Radio Emergency Corps (AREC) and Radio Amateur Civil Emergency Service (RACES) groups will be testing their emergency plans under simulated emergency conditions. Traffic handlers will be checking the efficiency of the National Traffic System (NTS) in clearing their messages. All participants will be affirming their own effectiveness during emergency operations. The potential for emergency communications by amateurs will be demonstrated to public agencies served.

The Simulated Emergency Test is not a contest. True, scores are submitted, but this is to allow us to compare our results with previous experiences and to judge our overall performance. Last year's results were good, but as usual, we're looking for improvements. Want to help?

This is your invitation to participate. If your local AREC plans to be active, they will probably welcome your support. Or you may choose to participate in local, section or "higher" NTS nets. Maybe you will elect to support both AREC and NTS activities. Let's be more specific.

Local Activity

If you are an AREC member, make sure you contact your Emergency Coordinator and inform him of your availability. He may enlist your help in preparations for the SET.

You're not an AREC member? Nevertheless, advise your EC of your willingness to participate. If you do not know who your EC is, drop a note to the Section Emergency Coordinator or ARRL Headquarters for information. Your SEC's address is listed on the adjacent page.

If you find that there is no EC for your area, don't give up. Contact your local c.d. officials to

find out if they are planning any local RACES activity in conjunction with the SET. If still nil, perhaps you can arouse the interest of a local radio club or other amateurs in your area and organize something yourself. We will be glad to supply you with our annual SET bulletin to aid in formulating your plans.

National Activity

If you are an active participant in the National Traffic System, advise your net manager(s) as to what days/times you will be able to devote to his net. Again this year, there will be two cycles of NTS each day; the usual evening cycle is supplemented by another complete "round" five hours earlier. In most sections, NTS activity will commence at 2 P.M. local time.

What is NTS? Well, suffice it to say that NTS is a sequential system of nets designed to facilitate handling of medium and long-haul traffic. You can begin activity in NTS by reporting into your local or section net. (See the *Net Directory*, available free of charge from ARRL.) The net manager can describe the role of his net in NTS. **Warning:** if you wish to participate in NTS during the SET, don't wait until the end of January to first check into the net. Without some experience in net procedure and message handling, you will probably be useless to the net during the SET.

Tidbits

We ask that each participant originate at least two SET messages: one to his SEC indicating that he is taking part in the exercise, and one to a friend in his section or region. Just two? No, more messages are certainly welcome, but the emphasis

(Continued on page 63)

Here is a sample SET message in proper form. ALL SET messages should include the word **TEST** in the precedence and the words **TEST MESSAGE** in the text to avoid confusion with normal messages. Note the use of the handling instruction **HXB**.

THE AMERICAN RADIO RELAY LEAGUE							
RADIOGRAM							
VIA AMATEUR RADIO							
CLASS	PRECEDENCE	TO	STATION OF ORIGIN	CLASS OF SERVICE	PLANT/VIA/RT	TIME SENT	DATE
37	TEST H	R	WALPOO	1K	PLAINVIA/CT	1973	JAN 27
TO: JOHN SULLIVAN WILSON 810 CONN WILMINGTON MD COLUMBIA CT						THIS RADIO MESSAGE WAS RECEIVED AT: STATION: _____ TIME: _____ OPER: _____ SEC: _____	
TEST MESSAGE X THIS STATION				PARTICIPATING IN THE 1973 SIMULATED			
EMERGENCY TEST X 73				BILL MANN WALPOO			
RECD		TIME		SENT		DATE	
				WILPWP		JAN 27 1973	

SECTION EMERGENCY COORDINATORS OF THE AMATEUR RADIO EMERGENCY CORPS

The Section Emergency Coordinator is appointed by the SEC to take charge of the promotion of the Amateur Radio Emergency Corps organization throughout the Section. He acts as the SEC's executive in the furthering of provisions for emergency amateur radio communications in every community likely to suffer in case of a communications emergency. One of the duties of the SEC is to recommend the appointment of Emergency Coordinators for the various communities in his Section. Does your locality have an EC? If not, recommend the name of a likely prospect to the SEC. The SEC invites your questions concerning the status of the AREC in your Section.

ATLANTIC DIVISION

Delaware	WA3DUM	James Hicks	9 Mimosa Dr.	Newark 19711
Eastern Pennsylvania	W3FBF	Paul D. Mercado	55 Lindberg Ave.	Broomall 19008
Maryland-D.C.	K3LFD	John Munholland	306 Holland Rd.	Severna Park 21146
Southern New Jersey	W2LWV	James Peck	810 Indian Trail Ave.	Oepiford 08096
Southern New York	W2CEP	David Flinn	866 Ridge Road	Ludlowville 14862
Western Pennsylvania	W3KPI	Henry T. Schneider	1806 Water St.	Westyleville 16510

CENTRAL DIVISION

Illinois	W9RYU	Harry J. Studer	705 Hillcrest Rd., R.F.D. 3	Milan 61264
Indiana	W9FC	Clifford C. McGuyer	2900 East Oak Street	Evansville 47714
Wisconsin	W9NGT	Sherman C. Carr	756 W. Washington Ave.	Hartford 53027

DAKOTA DIVISION

Minnesota	K9LAV	Paul R. Emeoff	1080 E. 3rd Street	St. Paul 55106
North Dakota	WA9AYL	David E. Beach	Apt. 7, 1116-19th Ave., S.	Grand Forks 58201
South Dakota	WA9OVR	Donald E. Ericson	865 Sherman	Sturgis 57785

DELTA DIVISION

Arkansas	WB5CEI	Wes McCullough	Box 403	Barling 72923
Louisiana	W50LU	John A. Dobbs	10934 Effingham Ave.	Baton Rouge 70815
Mississippi	W5FTI	Charles Rogers	5716 Magnolia Dr.	Jackson 39209
Tennessee	WB4ANX	John H. Sanders	2149 Heatherly Rd.	Kingsport 37660

GREAT LAKES DIVISION

Kentucky	WA4GHQ	James E. Odom	401 Carlisle	Lexington 40505
Michigan	W8MPD	Stanley J. Briggs	1885 Pinetree Rd.	Trenton 48183
Ohio	W8OHU	James W. Benson	2463 Kingspath Dr.	Cincinnati 45231

HUDSON DIVISION

Eastern New York	W2URP	Charles A. Starks	1041 Argo Boulevard	Rotterdam 12303
N.Y.C. & Long Island	K2HFJ	Charles Heubel	305-8th Ave.	Ft. Northport 11731
Northern New Jersey	K2KDX	Jack D. Wilk	P.O. Box 1175	Passaic 07055

MIDWEST DIVISION

Iowa	K9LVB	Gregg D. Miller	Box 841	Marsshalltown 50158
Kansas	W0BGX	James Art Sheldon	306 W. 7th	Leavenworth 66048
Missouri	W0ENW	Gregory R. Hibbard	243 GOLF Street	Sedalia 65301
Nebraska	K9UDF	Lynn Kilyeu	406 Henkens Dr.	Chadron 69337

NEW ENGLAND DIVISION

Connecticut	W1HHR	John C. Sullivan	Whitney Rd.	Columbia 06237
Eastern Massachusetts	W1AOG	Donald F. Gupfill	17 Park St. Ct.	Medford 02155
Maine	K1CLE	Allen E. Schack	42 Maple St.	Presque Isle 04769
New Hampshire	K1RSC	John Johnston	P.O. Box 116	Rye 03870
Rhode Island	W1YNE	Gordon E. Fox	13 York Drive	Caventry 02816
Vermont	W1YSA	H. A. Preston, Jr.	RFD 1	Charlotte 05445
Western Massachusetts	W1DNB	Robert H. Phoenix	Box 431, N. Washington St.	Belchertown 01007

NORTHWESTERN DIVISION

Alaska	KL7FNX	William D. Crowl	P.O. Box 4-407	Spennard 99503
Idaho	W4FEWV	Dale A. Brock	1508 Alder Drive	Lewiston 83501
Montana	W7TYN	Joseph D'Arcy	1916 Glasgow Ave.	Anaconda 59711
Oregon	W7HLE	Dwight J. Albright	1678 Orchard Home Dr.	Medford 97501
Washington	W7IWT	Raymond McCausland	2812 Hayton Ave.	Bremerton 98310

PACIFIC DIVISION

East Bay	WB6RPK	Charles Weber	7087 Via Honda	San Lorenzo 94580
Hawaii	KH6BZF	Lee R. Wical	45-601 Luluku Rd.	Kaneohe 96744
Nevada	W7HLEU	E. L. "Mike" Blair	560 Cherry St.	Boulder City 89005
Sacramento Valley	W6SMH	Theodore W. Rast	7812 Winding Way	Fair Oaks 95628
San Francisco	WB6KMI	Clarence F. Field	P.O. Box 415	Sonoma 95476
San Joaquin Valley	WB6RZT	Harry D. Grace	RE. 3 Box 122B	Sonoma 95470
Santa Clara Valley	WA6RKB	Ralph W. Michelson	19150 Portus Dr.	Saratoga 95070

ROANOKE DIVISION

North Carolina	W4LVN	Herschel H. Haney	Box 935	Lumberton 28358
South Carolina	WA4ECJ	Richard H. Miller	1509 Highland Ave.	Camden 29020
Virginia	WA4PBG	Monte E. Cone	317 Van Buren St.	Falls Church 22046
West Virginia	WA8NDY	Delf A. Norona	P.O. Box 523	Buckhannon 26201

ROCKY MOUNTAIN DIVISION

Colorado	WA0OOY	Ken Simcoe	1334 W. 31st Street	Lowland 80537
New Mexico	W5ALR	Rick Goodman	1600 Wisconsin Ave.	Albuquerque 87110
Utah	W7WKE	McCarroll Petersen	4815 Yorktown Drive	Salt Lake City 84117
Wyoming	K7NQX	Glen Blackburn	P.O. Box 164, 1739 E. 22nd St.	Cheyenne 82001

SOUTHEASTERN DIVISION

Alabama	W4DGH	Raymond E. Ringer	Box 1	Valley Head 35989
Canal Zone	KZ3GW	George W. Rae	Box 8	Camboa
Eastern Florida	W4IYT	Andrew C. Clark	41 Lenape Drive	Miami Springs 33166
Georgia	WA4VWV	Stephen D. Smith	5258 Seaton Dr.	Dunwoody 30338
West Indies (P.R.-V.I.)	KP4CB	Paul Girard	URB San Francisco	Rio Piedras, Puerto Rico 00928
Western Florida	W4IKB	G. D. McKechnie	P.O. Box 545	ChIPLEY 32428

SOUTHWESTERN DIVISION

*Arizona	W7CAE	Gary Hamman	2813 E. Campbell Ave.	Phoenix 85016
Los Angeles	WA6QZY	Billy Carpenter	4622 Center Street	Baldwin Park 91206
Orange	WA6TVA	Steven R. Phillips	272 Villanova Rd.	Costa Mesa 92626
San Diego	W6FAI	H.T. Hodgson	3130 So. Bonita	Spring Valley 92077
Santa Barbara	W6JIA	Robert W. Tauxe	2133 Fresno St.	Los Osos 93401

WEST GULF DIVISION

Northern Texas	K5QKM	Joe Alexander	Route 1, Box 3	Athens 75751
Oklahoma	WA3KSN	Leonard Hollar	710 So. 10th St.	Kingsfisher 74750
Southern Texas	K5HXR	James K. Freeman	10702 Aves	Houston 77034

CANADIAN DIVISION

Alberta	VE6KC	Roy Ellis	Box 2, R.R. 1	Ft. Saskatchewan 10B-1P0
British Columbia	VE7FB	Harold E. Savage	4353 West 12th Ave.	Vancouver 6
Manitoba	VE4WC	Claude Hisson	245 Bertrand St.	St. Boniface
Maritime	VE1HJ	E. R. Fraser	40 Murray Hill Drive	Dartmouth, N.S.
Ontario	VE3EWD	Ed W. Doyle	301 Lacasse Blvd.	Teroumsh, Windsor
Quebec	VE2BDM	Jules Provost	Box 125	Pointe Claire 700,
Saskatchewan	VE5CU	W. H. Parker	1008-10th St. E.	Saskatoon

*ACTING SEC

A Daytime National Traffic System

The National Traffic System has operated during evening hours for over 23 years, very effectively. For those amateurs who are active mostly during daylight hours, this addition to NTS may be attractive. Given sufficient support, it will start operating Feb. 1.

Handling Message Traffic Systematically Using Daytime Operators

THERE ARE A NUMBER of very good nets already operating during the daylight hours and participation is substantial. Some amateurs, however, prefer a more disciplined type of operation such as that which already exists in the ARRL National Traffic System. With this in mind, a modified version of the ARRL National Traffic System to operate during the daylight hours is to be tried out. If your principal operation occurs between the hours of 9 A.M. and 5 P.M. local time, and you have an interest in public service operating in the traffic-handling field, read on!

What NTS Is

Traffic in the National Traffic System is all written in a standard ARRL format, and in NTS it follows a systematic handling, from origination point to delivery point. Full details of how the system operates is contained in an ARRL publication entitled *Public Service Communications* and is available free for the asking. No written message traffic in NTS is considered individually. That is, it's all categorized and handled according to its category, so there is no question as to how to handle or what to do with this or that specific message. Thus, NTS is a system of nets for handling of written messages. Some of the messages are from non-amateurs to non-amateurs; some involve a third party at one end only; and some of them are from one amateur to another. It makes no difference; the handling is always standard. Each message follows a sequential flow pattern so that within systematic concepts it will go from origin to destination in a minimum of time. You might think of NTS as a mass transit system for written messages. In transportation, if you travel by private plane or car, you can go direct from origination to destination, usually in less time than commercial mass transportation would make the

trip. You have fewer stops, fewer delays, fewer frustrations – generally speaking. But it is usually a lot more expensive and you are moving just one person or a small handful. Mass transportation moves great numbers of people, but they must follow standard (sometimes circuitous) routes and often change vehicles and experience delays caused by scheduling.

In traffic handling, you have the same sort of a situation. A single message may get through quickly simply by giving it to someone who will "peddle" it on the air for you, maybe spending an hour or more trying to find someone at its destination who will agree to handle it. On the other hand, it may not get through at all simply because a receiving station is not to be found. The odds on NTS are better, because the originating station knows precisely what net to report into, the first relay knows exactly where to find the second relay – and so on, in a sequential order that assures (if the system doesn't misfire) that the message will arrive within 24 hours.

This is an oversimplification and doesn't tell the full story or go into any of the many ramifications; but it should indicate the difference between NTS and casual traffic handling, including most of the present non-NTS nets. No offense! They operate the way they prefer to operate, and many of them do a good job. It's just a difference in the degree of systematization.

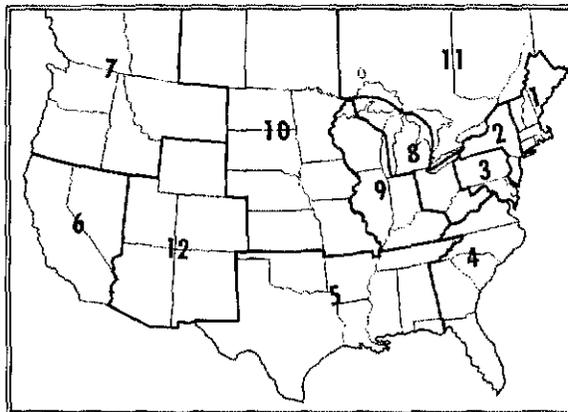


Fig. 1. The Regions of the National Traffic System: They originally adhered as closely as possible to call area and time zone boundaries. Each of the regions already has an evening net, and each will have a daytime net (DRN) under the new addition to the system.

LEVEL

NATIONAL

REGION

SECTION

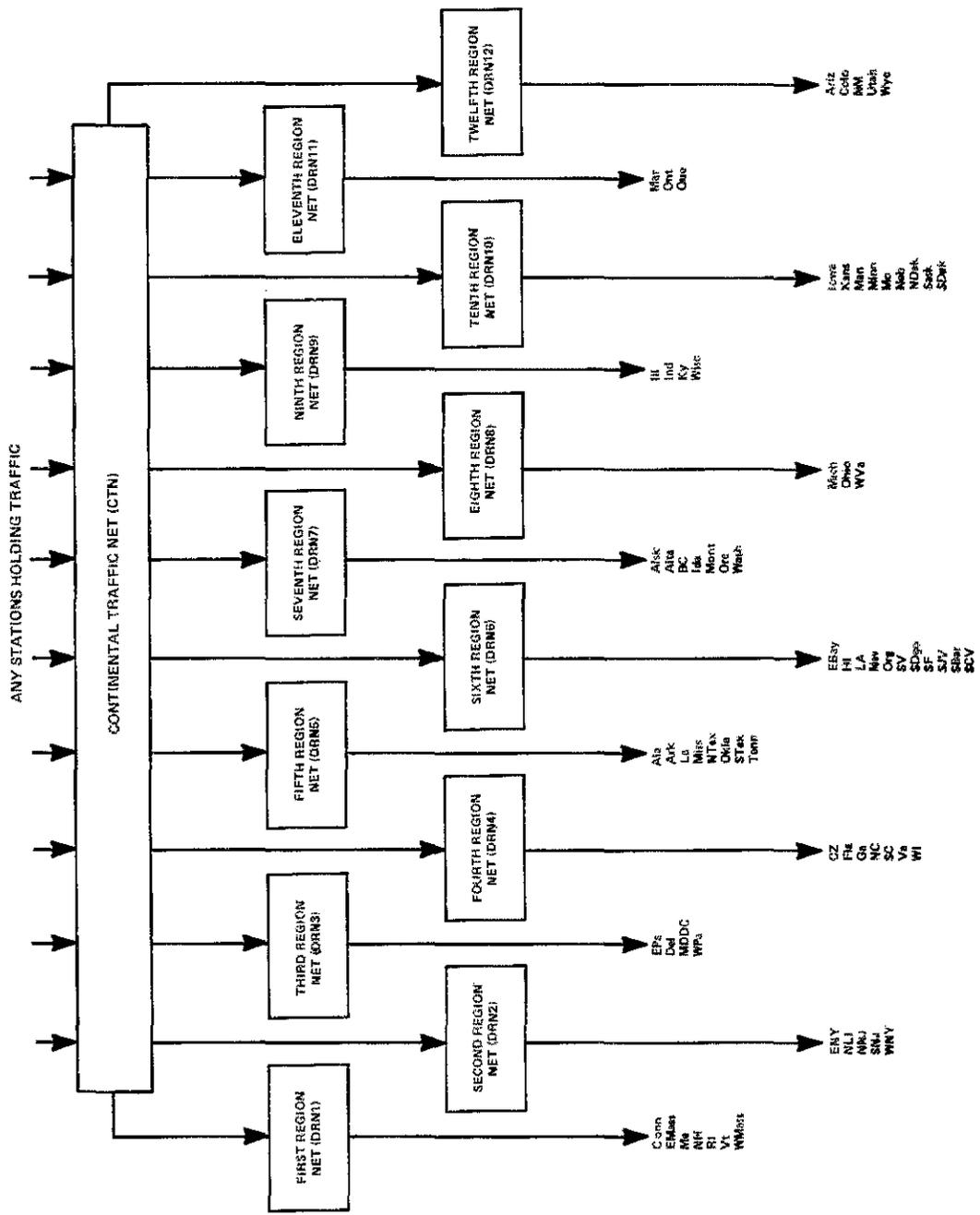


Fig. 2. Chart showing the sequential flow pattern of the Daytime National Traffic System. Continental Net comes first, then the DRNs. Sections have meetings in late afternoon or early evening, interfacing with existing Evening NTS.

The Daytime NTS

A system similar to the evening NTS is being given a trial run during the daytime. We refer to them as DNTS (daytime) and ENTS (evening) and just plain NTS for the whole works. That's right — it's all part of the overall system, and we hope the daytime nets will draw a lot of operators who have not previously experienced the joys of traffic handling. These nets will be open to all who have messages to put into them, and they will be staffed by experienced traffic men who can receive these messages and channel them properly toward destination. We expect that sideband phone will be the mode used most, but participation by either a-m phone or cw is also welcomed. (We hope to have control stations who can handle cw check-ins.) Operating frequencies will be in the phone bands, although they have not yet been selected, since this is being written in early October and we are still in the process of selecting leadership officials. By the time you read this, organization will be well along and some of the nets even may be operating.

But we do know that one of the DNTS nets will be national in scope and will meet at 1700 GMT (9 A.M. PST, noon EST), probably on 20 meters. There will be three net controls, so if you're putting out a signal one of them is almost sure to hear you. This net will be called the Continental Net (CTN) and there will be twelve receiving stations on it, one in each of the twelve NTS regions (see map). If you have traffic for some point outside your region, this is the place to put it. If it's for your own region, you can still put it into CTN but a better place might be your own region net which will operate later in the day. Watch later announcements in the Public Service section of *QST* for times and frequencies. All DNTS nets will operate daily, 365 days a year.

If it's to prove useful and survive, the fledgling DNTS will need traffic. During a major emergency somewhere in the nation — such as the recent Agnes floods — there will be no dearth of this, of course. But during normal times, when all is quiet, this can be a problem. It's a problem on ENTS, at times. So we can set up the organization, staff it and start it operating — and of course some of the staff can supply some of the traffic — but for the real meat of its operation the traffic has to come from an outside source. That means you. Try it.

Fig. 3. This chart shows a sample typical "duty cycle" of the Daytime NTS, assuming DRNs will meet at 4 P.M. local standard. Frequencies and times shown are examples only. When the setup starts to roll, hopefully Feb. 1, they may be very different. Note that some sharing is possible.

Originate a message of greeting to a friend or relative and try it out on DNTS.

You might ask, if we have to generate traffic to keep a setup like this going, why have it? Why go to all the bother to set it up and keep it operating? Well, aside from the fact that a sizable portion of the amateur fraternity get their kicks from handling traffic and reaping the rewards therefrom (BPL and PSHR), just as do the DXers and contesters and vhfers from their favorite specialties, traffic handling experience and training have a very strong emergency communications application. Those who do it regularly for fun are the best ones to do it in emergencies to save lives or to otherwise serve those affected by the emergency situation. Don't knock it. Even if you don't particularly enjoy this type of operation, get some training and experience in it by participating once a week in NTS to keep your hand in, so that in an emergency when someone asks you to handle a *written* communication you'll know how to do it.

Operating Procedure in DNTS

Some of the operating procedure you hear in existing daylight nets is pretty good, and very effective in getting traffic handled. The monitoring systems (WCARS, MWARS, ECARS) also have pretty snappy operating most of the time. Some have felt that NTS procedures take all the fun out of traffic handling by removing fraternalism; but experience indicates that there is as much real fraternalism in a snappy, well-ordered, disciplined net with set procedures that are rigidly adhered to as in any other kind of an operation. Fraternalism in NTS is of the highest *because* of the rigid organizational rules and net discipline, not despite them. Thus, in an NTS net, daytime or evening, you may

(Continued on page 62)

	<i>kHz</i>	<i>GMT</i>	<i>Coverage</i>
CTN	14,300	1700	U.S. & Canada
DRN1	3910	2100	New England States
DRN2	3930	2100	N.Y., N.J.
DRN3	3960	2100	Pa., Md., Del., D.C.
DRN4	7220	2100	Va., N.C., S.C., Ga., Fla., W. I., C.Z.
DRN5	14,280	2200	Ala., Tenn., Miss., La., Okla., Texas, Ark.
DRN6	7260	0000	Calif., Nev., Hawaii
DRN7	14,300	0000	Wash., Ore., Idaho, Mont., Alta., B.C., Alaska
DRN8	7280	2100	Mich., Ohio, W. Va.
DRN9	7280	2200	Ill., Ind., Wis., Ky.
DRN10	14,300	2200	Kans., Mo., Iowa, Nebr., N.Dak., S.Dak., Minn., Man., Sask.
DRN11	7140	2100	Ont. & Eastern Canada
DRN12	7220	2300	N.M., Ariz., Colo., Utah, Wyo.

26th VHF Sweepstakes Announcement

THE JANUARY VHF SS, the first contest of the year, also has the distinction of being the first contest in which the new Northern and Southern Florida sections will see action.

On January 1, 1973 twenty-two counties will move from Eastern Florida to Western Florida. The section names will also be changed - Western Florida becomes Northern Florida and Eastern becomes Southern.

For the benefit of Floridians, the following counties (now in Eastern Florida) will join with the counties now in Western Florida to form the new Northern Florida section: Alachua, Baker, Bradford, Citrus, Clay, Columbia, Duval, Flagler, Gilchrist, Hernando, Lake, Marion, Nassau, Orange, Pasco, Putnam, Seminole, St. Johns, Sumter, Suwanee, Union and Volusia. If you now live in Eastern Florida and your county is NOT one of those listed above your section is Southern Florida. For a fuller understanding (hopefully) of this change, read the Operating News column of this issue.

Read the rules thoroughly and request the appropriate logsheets from ARRL Hq. Unless first class postage is enclosed with your request, the material will be sent via third class mail. Eight cents postage is enough to receive logs for 400 QSOs. Your entry must be postmarked by February 2, 1973 to be eligible for QST listings and awards. Secretary's letters must be postmarked by February 16, 1973. - WA1PID

Rules

1) *Eligibility:* Amateur operators in any ARRL section (see page 6) operating at home, or mobile or portable *under one call*, on or above 50 MHz, are invited to take part. Yukon-N.W.T. (VE8) counts as a separate multiplier.

2) *Object:* Participants will attempt to contact as many other stations in as many ARRL sections as possible.

3) *Contest Periods:* The contest starts at 2:00 P.M. your local time, Saturday, January 6, 1973 and ends at midnight, Sunday, January 7, 1973. Contacts between stations in different time zones can be counted only when the contest period is in progress in both of the zones concerned.

4) *Exchanges:* Contest exchanges, including all data shown in the sample, must be transmitted and received for as a basis for each scored point.

5) *Scoring:* a) Contacts count *one point* when the required exchange information has been received and acknowledged, a *second point* when exchange has been completed in both directions. A section counts only once for multiplier credit regardless of band.

b) *Foreign Entries:* All contacts with foreign countries (such as Mexico and the Bahamas) count for score. All foreign countries are grouped together as one, and a section multiplier of *no more than one* may be claimed for contacts with all foreign stations contacted. Foreign stations may only work stations in ARRL sections for contest credit. Foreign stations will give their country name in the exchange.

c) Final score is obtained by multiplying total contact points by the sum of the different ARRL sections worked (the number in each of which at least one SS point has been credited) plus 10.

6) *Conditions for Valid Contact:* a) Repeat contacts on other bands confirmed by completed exchanges of *up to two points per band* may be counted for *each different station* worked. (Example: K6SSN works K7PXI on 50 and 144 MHz for complete exchanges of 2 points on each band: 2 X 2 = 4 points but only *one* section multiplier.)

b) Cross-band work may not be counted.

c) Portable or mobile station operation under one call, from one location only, is permitted.

d) A transmitter used to contact *one or more* stations may not be used subsequently under any other call during the contest (with the exception of family stations, where more than one call is assigned to one location by FCC/DOC).

e) Contacts with aircraft mobiles cannot be counted for section multipliers.

f) Contacts made by retransmitting either or both stations do not count for contest purposes.

While no minimum distance is specified for contacts, equipment in use should be capable of real communications (i.e., able to communicate over at least a mile.) (See pg. 60 re Oscar.)

7) *Awards:* Entries will be classified as single- or multi-operator, a single-operator station being defined as one manned by an amateur who neither receives nor gives assistance to any person during the contest period. Certificates will be awarded in each ARRL section to the top-scoring amateur in the single-operator classification. In addition, a certificate will be awarded to the top Novice in

EXPLANATION OF VHF SS CONTEST EXCHANGES

Send Like a Standard Msg. Preamble, the NR		Call	CK	Place	Time	Date
Exchanges	Contest numbers 1, 2, 3, etc., a new NR for each station worked	Send your own call	CK (Readability and strength or RST of station worked)	Your ARRL section	Send GMT time of transmitting this NR	Send date of QSO
Sample	NR 1	WA1KQM	59	CONN	1905	JAN 10

each ARRL section where *at least three* such licensees submit valid contest logs. Multioperator work will be grouped separately in the official report of results in *QST*.

When three or more individual ARRL-affiliated club members compete and submit logs naming the club with which they are identified, a certificate will be issued to the leading club member. A letter must be received from the club's secretary itemizing participating members and approximate claimed scores. When fewer than three individual logs are received, there will be no club award or club mention.

A gavel with an engraved band will be offered the ARRL-affiliated club whose secretary submits the greatest aggregate score, provided such scores are confirmed by receipt at ARRL Hq. of the *individual contest logs* from such members. Only the score of a bona fide club member, operating a station in local club territory, may be included in club entries. Claims from federations, radio club councils, or other combinations of radio clubs, will not be accepted, nor can special memberships granted for contest purposes be recognized.

8) *Conditions of entry:* Each entrant agrees to be bound by the provisions of this announcement, the regulations of his licensing authority, and the decisions of the ARRL Awards Committee.

9) *Reporting:* Reports must be postmarked no later than February 2, 1973 to be considered for awards.

Log sheets are now available from your ARRL Hq. *Unless first-class postage is included with your request, log sheets will be sent by third-class mail.* To aid us in getting these forms to you as quickly as possible, please be sure to include with each request a self-addressed and stamped legal-size envelope containing: your full name, call and mailing address complete with Zip code. We suggest a minimum of 8 cents postage attached. This will assure your receiving 5 log-sheets, enough for 400 contacts. Using this as a guide-line you can adjust the postage according to your needs.

10) *Disqualifications:* a) If the claimed score of a participant is reduced by 2 percent or more, the log may be disqualified. Score reduction does not include correction of arithmetic errors.

b) Score reductions may be made for taking credit for unconfirmed QSOs and/or multipliers,

The image shows a sample log sheet for the 39th ARRL International DX Competition. The sheet is a grid with columns for Date, Time, Band, Mode, Call, and Score. It contains several entries, including one for 'ARRL International' and another for '59127'. Below the grid, there are handwritten notes and a signature.

Sample Log Sheet

duplicate contacts, banned countries, and/or other scoring discrepancies.

c) If a participant is disqualified, he will be barred from submitting an entry in the next annual running of that specific contest, (e.g., disqualification from the 1972 phone SS prohibits submission of an entry for the 1973 phone SS, but 1973 cw SS participation is okay).

d) The calls of all disqualified participants will be listed in the *QST* report of the contest.

e) Any participant on the borderline of disqualification but not actually disqualified may receive a warning letter from the Communications Manager.

f) For each duplicate contact that is removed from the log by Hq., a penalty of 3 additional contacts will be exacted. The penalty will not, however, be considered as part of the 2% disqualification criteria.

QST

39th ARRL International DX Competition Announcement

Your wife says that it is snowing outside and she wants you to shovel the walk. CQ Test, CQ Test. She also says that dinner will be ready in 10 minutes. CQ Test, CQ Test. Your daughter whispers in your ear, "Daddy, I wrecked the car." CQ Test, CQ Test. Your 8-year-old son casually mentions that one of the javelins on your antenna is now in the attic. CQ Test, CQ Test. Just as you snag A35FX your wife pulls the plug and says sweetly, "I told you that my mother was coming over this weekend." Good grief.

Sic frait crustulum.

As absurd as it may sound you have another opportunity to endure the same kind of torture

this year as the 39th annual running of the ARRL International DX Competition rears its gruesome head. Put big red circles around the appropriate dates in February and March now. (It may not keep your mother-in-law away but it sure will look pretty.)

The only rules change this year is the inclusion of new disqualification criteria brought to you by the Contest Advisory Committee. Read and heed.

For those of you who are new to the DX Competition the object is simple. If you live in the 48 continental United States or Canada work as many persons outside of that region as possible. If you live outside of that region working stations in

CONTEST PERIODS

Phone		CW	
Starts	Ends	Starts	Ends
Feb. 3, 0001 GMT	Feb. 4, 2359 GMT	Feb. 17, 0001 GMT	Feb. 18, 2359 GMT
Mar. 3, 0001 GMT	Mar. 4, 2359 GMT	Mar. 17, 0001 GMT	Mar. 18, 2359 GMT

will be recognized as a distinct category from multi-multi. The use of electronic or mechanical devices or other methods of simultaneous operation on two or more bands is prohibited. The use of spotting nets (operator arrangements involving assistance through DX alerting nets, etc.) places an entry in the multioperator category.

5) *Contest Periods:* There are four weekends, each 48 hours long: two for phone work and two for cw.

6) *Valid Contacts:* In the phone section, all claimed credits must be made voice-to-voice. In the telegraphy section, only cw contacts count. Cross-band contacts may not be counted.

7) *Exchanges:*

a) *Amateurs in the 48 continental U.S. and Canada.* Cw participants will transmit a three-figure number, representing the RST report, plus their state or province. (The latter may consist of an appropriate abbreviation.) Phone participants will transmit a two-figure number consisting of the readability-strength report plus the state or province. Example: WA8VRB might transmit "579Mich" on cw, "57Mich" on phone.

b) *Amateurs outside the 48 continental U.S. and Canada* will transmit six-figure numbers, each consisting of the RST report, plus three "power" numbers; the power indicator will represent the approximate transmitter-power input. Phone contestants will transmit five-figure numbers, each consisting of a readability-strength report and the three "power" numbers. Example: OZ1LO, with 150 watts input, might transmit "569150" on cw, "56150" on phone. If the input power varies considerably on different bands, the "power" number should be changed accordingly. (Note, KH6 and KL7 are considered as DX.)

8) *Scoring:*

a) *Points:* Three points are earned for each completed two-way exchange. Incomplete QSOs will not count for contest points or multipliers.

b) *Final Scores:* W/K and VE/VO stations multiply total points earned under Rule 8(a) by the number of countries worked on one band plus the number of countries worked on each other band. All other stations multiply total points earned under Rule 8(a) by the sum of the number of continental states and VE/VO licensing areas worked on one band plus the number of states and VE/VO licensing areas worked on each other band.

There are 48 continental states plus VO and VE1-VE8, a possible total of 57 multipliers per band.

9) *Repeat Contacts:* The same station may be worked again for additional points if the contact is made on a different frequency band.

10) *Reporting:* Contest work must be reported as shown in the sample forms. Each entry must include the signed statement.

To aid us in getting these forms to you as quickly as possible, please be sure to include with each request a self-addressed and stamped legal-size envelope containing: your full name, call and mailing address complete with Zip code. We

suggest a minimum of 16 cents postage attached. This will assure your receiving 2 Summary sheets, 2 DX checkoff sheets (required by USA entrants only) and 4 log sheets, enough for 400 contacts. Using this as a guideline, you can adjust the postage according to your needs.

Contest reports must be *postmarked no later than April 23, 1972*, to be eligible for QST listings and awards. All DX Competition logs become the property of the American Radio Relay League and none can be returned.

11) *Awards:* To document the performance of participants in the 38th ARRL International DX Competition, a full report will be carried in QST.

In addition, special recognition will be made as follows:

a) A Certificate will be awarded to the high-scoring single-operator phone and to the high-scoring single-operator cw entrant in each country, in Alaska, Hawaii and in each of the continental U.S. and Canadian ARRL sections (see page 6, QST) from which valid entries are received. In addition, a certificate will be awarded to the high-scoring multi-single and multi-multi station in each W/VE call area and DX country, regardless of the number of entries received.

b) A suitable certificate will be awarded to the operator making the highest single-operator phone score in each ARRL-affiliated club, provided the club secretary submits a listing of a minimum of three phone entries by members of the club and that these scores are confirmed by receipt at ARRL of the individual contest logs from such members. The highest-single operator cw scorer in each club will be awarded a certificate under the same conditions. Only a bona fide resident member, operating a station (his or another club member's) in local club territory, may compete for club certificates. Secretary's letter must be received by June 9, 1973.

c) A personalized plaque will be awarded to the highest single-operator DX phone and cw station (non-W/VE) in Africa, Asia, Europe, North America, Oceania and South America.

d) ARRL will award a gavel to the ARRL-affiliated club submitting the greatest aggregate phone and cw score by its members, whether single- or multiple-operator entries, provided such scores are confirmed by receipt at ARRL of the individual contest logs from such members. Only scores of a bona fide resident member, operating a station (his or another club member's) in local club territory, may be included in club totals.

12) *Judges:* All entries will be passed upon the ARRL Awards Committee, whose decisions will be final. The committee will void or adjust entries as its interpretation of these rules may require.

13) *Disqualifications:*

a) If the claimed score of a participant is reduced by 2 percent or more, the log may be disqualified. Score reduction does not include correction of arithmetic errors.

(Continued on page 63)

OSCAR NEWS

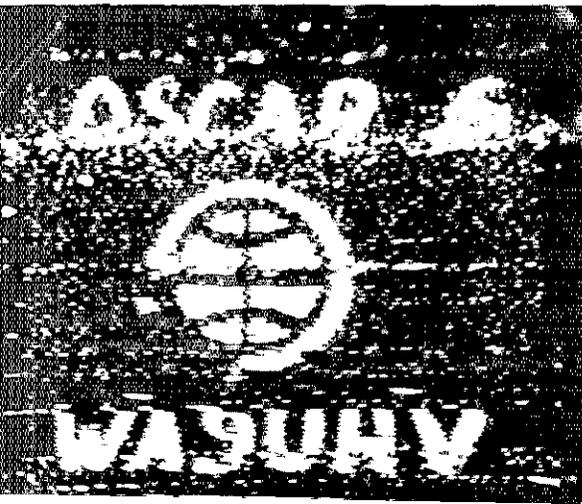
AMID HIGH WINDS aloft at the NASA Western Test Range, Lompoc, California, Oscar 6, the first long-lifetime amateur communications satellite roared into orbit on October 15, as a hitchhiker aboard the Itos-D mission. The launch was extremely successful, placing Oscar into the intended 900 nautical mile circular orbit. Then, the making of history began as amateurs established new records in satellite communication! First Oscar 6 trans-Atlantic, transcontinental, and SSTV contacts are already accomplished facts. Still awaiting claim are Amsat awards for the first Oscar Worked All States and DXCC. The following account by K1ZND describes the exciting activity during the first few weeks of Oscar's lifetime.

Success!

Oscar 6 came to life at 1834 GMT on October 15, as the satellite was separated from its Thor-Delta launch vehicle over the east coast of Africa. As the package approached Europe on its ascending (northbound) path, beacon and transponder signals were heard immediately. The first orbit was also audible in the northern U.S. and Canada. Stations reported heard on the initial pass include DJ8QL, DK2ZF, DL7CL, DL7OY, DL9AR, EA4AO, F7TU, G3LQR, G3PA, G3WSN, KIHTV, K6QEH, K7BBO, SMSLE, W1JSM and W6AB. At this writing, we have not received a claim of "first contact."

SSTV QSO

A notable "first" occurred on orbit 30, October 18, when W9NTP and WA9UHV, both Indiana, exchanged slow-scan television pictures via the satellite. Because of fading and Doppler shift, it is very difficult to get a complete eight-second SSTV frame. W8DX has received identifiable pictures from WA9UHV. Experiments are continuing near the high end of the translator passband, with reception reports welcomed.



SATELLITE DX ACHIEVEMENT AWARD

"1000"

ARRL is pleased to announce the establishment of a new award. The "1000" recognizes 2-way communication via Oscar 6. To qualify, a station must accumulate 1000 points as follows: Each contact with a new station counts 10 points, each new country counts 50 points, each new continent counts 250 points. For example:

15 QSOs =	15 × 10 =	150 points
3 countries =	3 × 50 =	150 points
2 continents =	2 × 250 =	500 points
		800 points

Thus, 200 additional points needed for "1000" award.

QSLs must confirm 2-way communication via Oscar 6, contain a date of Dec. 15 or later, plus usual QSL information. Photocopies of the QSLs are not acceptable. Only one contact per station, regardless of mode. Postage of \$1 is required if you wish cards to be returned via registered mail. When you're about ready to apply for the award, request the appropriate application form from ARRL Headquarters.

How's DX?

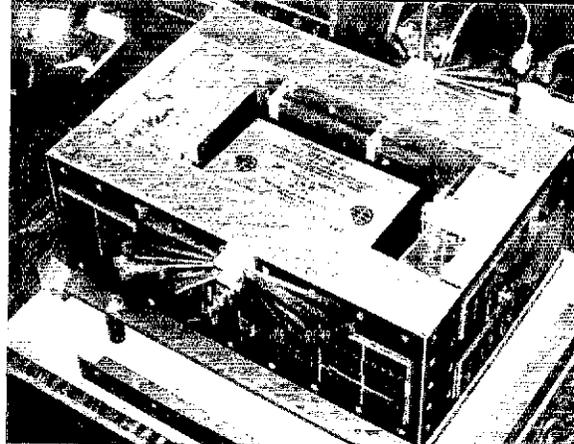
What does a typical Oscar pass sound like? Pretty busy — at any given moment, stations within an almost 2500 mile radius of the satellite may be transmitting and receiving via the translator. About 80% of the activity is on cw, with nearly all of the remainder on ssb. Reports are still sketchy, but let's look at orbit 17, which passed over New York at 0125 GMT on October 17, on the basis of information received so far.

WB2DNN reports QSOs with W4CKB, W1GOP and W9YW; VE2BYG with WA2EMB, W9YW and K7BBO; K7BBO with K1PXE, K4CG and K1VYU; W4WNH/8 with W4CKB; and W2WD with W0MOQ. Others reported heard include K2RTH, W2DEG, WB4s MIY PLL W5s HN HNK SXD K6QEH K7ICW K8DEO K9s UNM ZJW W9s JZV TGB and W0s RLI WWL. No doubt many others were active, too.

First SSTV satellite QSO — the signal of WA9UHV as received at W9NTP via Oscar 6.

QST for

Oscar 6 is shown with top cover removed just prior to launch. The plaque visible in the center dedicates the satellite to the memory of Amsat treasurer Harry D. Helfrich, W3ZM.



The most impressive report received to date comes from K7BBO, Tacoma, Washington. Dave lists 100 QSOs from October 16 to 21, including LA1K, all U.S. call areas but the third, VE2, 3, 6, 7, and KL7. The list includes 56 different stations, with the contacts divided equally between cw and ssb.

A report from DK2ZF, Germany, covers the same period and lists dozens of stations heard, including K1MTJ, VE1RG, and W3LUL, and mentions reception of both beacons (29.45 and 435.10 MHz.)

K2OJD has been licensed for some years as FP0CA, St. Pierre. Rich made a special trip to the island from October 21 to 29 to work through Oscar, only to find the translator switched off for battery recharging much of the time! Despite this, he managed 19 contacts, opening up with his FP0CA call on October 23 and working K6QEH, K2LGJ, W5SXD and WA6ICZ. Before the next pass, the Governor of St. Pierre & Miquelon issued the call FP8AA for the first satellite ground station on this French possession off the coast of Newfoundland. Appropriately, the first contacts were with F9BO and F9FT, followed by G3FOJ, K1HTV, W9YW, VE2DFO, W9TGB, W4CKB, K5BXS, K8DEO, W1JSM, K7BBO, WA8IYF, K1ZND and VE7ANP.

DL6GB lists dozens of stations heard during the first week, including North Americans W1QXX, K2RTH, W4FJ, VE1RG and VE2BYG.

From the Netherlands, PA0JMV reports contacts with K2RTH, K9HMB and VE2BYG during the first three days. By October 21, 34 stations and 17 countries were in the log. (TNX VERON *DXpress*).

QRP!

What sort of two-meter signal is necessary to work through the satellite? Not much: VE2BYG worked 19 states and 7 countries the first week with 50 watts to a ground plane and dipole! Randy points out that the limiting factor is 10-meter reception, not 2-meter transmission.

While a few signals through the translator can be copied with a simple wire antenna, these are often stations running excessive power. Usually, these stations turn out to be the ones using poor ten-meter receiving equipment — they crank up the two-meter power until they hear themselves in the downlink, and in doing so use far more than their share of the satellite power and drive the signals of those playing by the rules into the noise. If you know you're radiating 100 watts in the direction of the satellite and you can't hear your own downlink, either: (1) the transponder is turned off, (2) you're listening on the wrong frequency,

(3) you need a better 10-meter receiver or antenna, or (4) someone else is running too much power and the satellite age is driving the level of the other signals down. Increasing your own power is the solution to *none* of these problems. (See FCC comment in "Happenings of the Month.")

QRM

An irritation during the early passes has been the use of the translator downlink passband of 29.45 to 29.55 MHz by terrestrial stations. Interference is the way of life in the amateur bands, and satellite communication is no exception. We can hardly blame stations who are unaware of the satellite's existence for operating in this segment, and no doubt most of them will move when informed *tactfully* of the situation. Stations should avoid transmitting in or near the ten-meter passband even when the satellite is not in their area, since their ten-meter signals may propagate into areas where the satellite is audible. In addition, it is difficult for most of us to tell the difference between signals arriving via satellite and via the ionosphere, and some minor confusion in reporting has resulted. If you don't have two-meter transmitting capability, your reports of reception via Oscar 6 are welcomed and appreciated; but *please* don't try to contact the stations you are hearing by transmitting on ten.

WIAW Tracking Information

Oscar 6 orbital information will be a feature of WIAW bulletins for the lifetime of the satellite. In addition to those listed in the schedule on page 101, special bulletin transmissions are made Monday through Friday on cw at 1340 and 1900 GMT. Predictions for the subsequent week are



At NASA's Western Test Range, Oscar 6 is mounted aboard the Delta launch vehicle.

transmitted each Sunday at 0200 GMT on RTTY, and at 2100 GMT on cw. Details on how to use this information are on page 61 of October QST.

Because of the heavy usage of the transponder, it is necessary to turn off the satellite transmitters periodically to allow the batteries to recharge. Eventually, a schedule — such as alternate days on and off — will be worked out. In the meantime, WIAW bulletins will keep you informed of the status of the satellite insofar as possible.

VHF SS

Oscar 6 work during the January VHF Sweepstakes is expected to provide an interesting challenge. The normal contest rule prohibiting retransmission has been waived specifically for Oscar 6. Participants are encouraged to note satellite QSOs in their logs and make mention of the total satellite contacts on the summary sheet. A special listing will be made of those achieving Oscar QSOs during the contest. Complete rules appear elsewhere in this issue.

Educational Programs

Is something being done with Oscar in your school? Perhaps, a demonstration of satellite reception with a 10-meter receiver was given, or some other experiments performed. If so, Amsat would like to hear from you. An important consideration in NASA's agreement to provide a "piggyback" launch for Oscar 6 was the educational use which might result. Thus, it is important that Amsat be informed of classroom use of an Oscar receiving or transmitting station in order that a report to the space agency can be prepared. Write to Amsat, c/o Sheldon Glick, WAIHUO, Talcott Mountain Science Center, Avon, CT 06001.

U.S. and German Amateurs May Exchange Satellite Data

On October 5, 1972 FCC released the following public notice:

Information has been received by the Commission that the Bundes Post of the Federal Republic of Germany has no objection to the exchange of third party traffic with German amateurs relating to an exchange of technical data in connection with the imminent launch of Oscar 6 amateur satellite and throughout its orbit period.

Such third party traffic may be directed to other amateur operators in Germany only concerning the subject satellite operation. There is no change in the status of the general conditions relative to normal third party traffic between the Federal Republic of Germany and the United States. The Commission concurs, therefore, with the limited relaxation of third party traffic concerning Oscar 6 and has no objections to American amateur operators engaging in such exchanges of information!

QRV?

Got your two-meter transmitter perking, and your ten-meter beam polished? Then, jump right in! Let Amsat know how you're doing, even if you're just logging calls heard or copying the Morse code telemetry. Send all reports to Amsat Telemetry Department, P.O. Box 27, Washington, DC 20044. Amsat has reporting forms available which they will be happy to stuff into your stamped, self-addressed envelope.

QST

COMING ARRL CONVENTIONS

January 20-21 — Southeastern Division, Miami, Florida.

March 23-24 — Great Lakes Division, Muskegon, Michigan.

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.



DECEMBER

S	M	T	W	T	F	S
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31						

Michigan — The Oak Park Amateur Radio Club's 4th Annual Swap and Shop is Sunday, January 14, at the Frost Junior High School, 23261 Scotia, Oak Park, Michigan. Advance tickets \$1.25; at the door \$1.75. For information contact the Oak Park Amateur Radio Club, 14300 Oak Park Blvd., Oak Park MI.

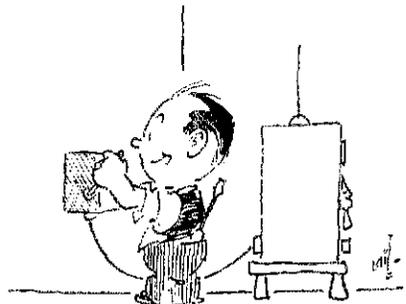
Missouri — The 6th Annual P.H.D. Auction and Swapfest is Saturday, December 9. Doors open at 5 P.M. Auction starts at 7 P.M. The location is 124 South Main St., Liberty MO.

Nevada — The SAROC Convention is at the Flamingo Hotel Convention Center, Las Vegas, Nevada, January 4-7. Technical seminars and meetings, Swan and Hy-Gain Cocktail Parties, Sunday Safari Hunt Breakfast with champagne. Hosted by Southern Nevada Amateur Radio Club, Inc. Write P.O. Box 73, Boulder City NV 89005 for additional details.

Nevada — The National Post Office Net Meeting will be held in conjunction with SAROC at the Flamingo Hotel in Las Vegas, Nevada from January 4-7. For further information contact Herb Guckel, W7FLX, P.O.N. manager, 4617 Rip Van Winkle Lane, Las Vegas NV 89102.

New York — The Yonkers Amateur Radio Club annual dinner is December 13. For further information write Frank Pizzutti, W2QK, P.O. Box 94, Yonkers NY 10702.

QST



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

Nor for its use...

YOU MAY HAVE thought the reason I'm here tonight is that your esteemed leader, K7UGA, leaned on me. Well, he did! But that's only part of the reason. I never pass up an occasion when I can look straight at Senator Goldwater, refer to him as "Mr. President" — and get away with it.

The other part of the reason is my pleasure at helping an organization called The Quarter Century Wireless Association celebrate its first quarter century. Your selection of a name signified equal measures of "chutzpah" and faith in the mission of amateur radio, and I can only say that you were justified on both counts.

It's been a long, productive road since that December evening in '47 at Fraunce's Tavern when, as I understand it, about 50 amateur radio aficionados decided to turn themselves into a national association. Today — 25 years, 5500 active members, 52 chapters, and one Australian affiliate later — you really have cause for celebration, and it's an honor for me to be asked to join in.

Last year some of us also got together, and my message then was one long litany of "viewing with alarm." Typical, I suppose, of FCC high domes. But tonight, by contrast, it is possible to engage in some "pointing with pride" — and we can all share in this new era of good feeling. Many of you contributed valuable comments and suggestions. And the Commission, on the 5th of this month, finally unburdened itself of a long-anticipated Report and Order in Docket 19245, and an associated Notice of Proposed Rule Making in Docket 19605. Both, in my view, represent very substantial steps forward. And I want to spend a few minutes reflecting on what they add up to, for you and for the Commission.

"... Reasonable Groundrules"

Before I do that, however, I just want to say that *this* Federal Communications Commissioner at any rate does not presume to have some godlike, proprietary lock on the radio spectrum. We don't own it. We serve no known public interest by letting it lie idle. All we can do, and *must* do in

fact, is promulgate reasonable groundrules, make sure that all comers have a fair shot at legitimate uses, and keep them out of each other's ears — which is another way of saying that we have to enforce those reasonable groundrules reasonably.

And that, I believe, is what last week's Commission actions signify for the Amateur Radio Service. As you all know, one of the longtime hangups has been Rule 97.39 — the one that prohibits organizations from getting amateur station licenses *and* prohibits an amateur operator from using his station *in their behalf*. This means, in practical effect, that amateur operators cannot use their stations — legally — in behalf of the Eye Bank, or the Red Cross, or the March of Dimes, along with all the traditional commercial businesses.

More than a year ago, we asked for your ideas on whether there should be restrictions on the use of amateur stations by non-amateur organizations, and if so what restrictions. The comments we received covered the whole spectrum — from *no* third party communications to *any* such communications that individual amateurs want to carry. A few comments suggested that amateur radio should be so used, but only when normal communications are unavailable. A number of them suggested that third party communications be allowed for charitable, non-profit organizations, but only during emergencies. And most of the comments readily agreed that it is poor practice to allow obviously commercial organizations to use the amateur service in any way, shape, or form — but there was no consensus as to what *other* organizations should have "in."

The Commission decided to cut the baby in half, neatly we hope, and with as little blood spilled as possible. To prohibit third party traffic altogether would stifle one of the basic purposes of the Amateur Service, which is to provide a voluntary non-commercial radio service. But to allow any and all third party communications would almost certainly cause intolerable and counter-productive congestion in the amateur bands.

In the new rules we have deleted the phrase "nor for its use" — which will leave 97.39 addressed exclusively to who or what organizations may obtain a license. To fill the gap, we added a new section — 97.114 — that has two purposes: it clarifies permissible international third party traffic and, more to the point, it prohibits all commercial third party traffic. Subsection (c) prohibits corporations, companies, associations, and other organizations engaged in commercial activities from using amateur radio facilities. It does not prohibit the use of the Amateur Radio Service on behalf of such organizations as the Eye Bank or the American Red Cross, insofar as such traffic does not relate to the regular business affairs of such

Remarks by Dean Burch, Chairman, Federal Communications Commission, before the Quarter Century Wireless Association, Washington, D.C., October 14, 1972.

organizations. In other words: blood donations and corneal transplants, yes; payrolls and employee benefit plans, no.

The American Radio Relay League, among others, also suggested that the Commission specifically prohibit communications, third party or otherwise, for any purpose or activity contrary to Federal, state, or local law. We did so in last week's Report and Order, and this will give the Commission a handle for the revocation of licenses so abused.

Operator Compensation

Now, there's one more subsection to 97.114 — and this one prohibits amateur control operators or station licensees from receiving any compensation, either salary or reimbursement for non-collect telephone calls, for operating an amateur station for the transmission or delivery of third party traffic. We're well aware that, literally interpreted, this subsection would prohibit the Relay League's longstanding practice of providing compensation to the control operators of Station WIAW — and we understand the reasons for having paid hands. The station operates just about full-time. Its equipment is every bit as complex as a standard or fm broadcast station. And the type of communications it handles — bulletins of all kinds, informational material, and code practice — is highly beneficial both to amateur operators and to the Amateur Service as a whole. It should be encouraged, not prohibited.

As a consequence, along with the Report and Order, we issued a Notice of Proposed Rule Making to resolve this problem. The Commission asked for comments on two different solutions. The first, in

the form of specific proposed rules, would allow any bona fide amateur organization to operate a station and provide reasonable compensation to the control operator when the station transmits material solely related to the Amateur Radio Service. The criteria include weekly operation of at least 40 hours, reasonable efforts to maximize coverage, and 30-day prepublication of normal operating times and frequencies. The other approach would be to create a new class of amateur stations — with a required showing much like the criteria I've just mentioned. During the pendency of the Rule Making, we are waiving the new rules to allow WIAW to continue operations, and other club stations providing similar services may also request waiver.

There you have the latest chapter in the continuing saga of the FCC and the Amateur Radio Service — a hopeful chapter and one that is premised, essentially, on the good faith of all parties concerned. And that really is what keeps our relationship on the tracks. Believe it or not as you will, but the Commission is *not* in business to harass amateurs or any other group of licensees for that matter. We want to keep everyone happy (which clearly is impossible) and let every user of the spectrum have free rein (which also is clearly impossible) — and, failing that, we want to give everyone a fair chance.

That, of course, is about the best we can do. With a little give, a little take, and a lot of understanding on all sides, I believe we at the Commission and you of the amateur service can continue to do business in the public interest.

Thank you for having me here, thank you for listening — and many happy quarter centuries to come!

QST

DNTS

(Continued from page 53)

expect to find clipped, terse, business-like procedure, with a minimum of pleasantries, no time wasted, no phone patches or "informals." This doesn't mean you can't ask questions regarding procedure. It does mean that while a net is in session it sticks to handling the traffic on hand. When that traffic is cleared, the net is "secured" and all hands are on their own. That will be the time to discuss (and cuss) procedures or to pursue other topics of conversation. During the net session, it will be strictly business. If you're not familiar with traffic net operation, ask us to send you a copy of *Operating an Amateur Radio Station*, or invest in a copy of the *Radio Amateur's Operating Manual*. But don't expect to find a roundtable going in DNTS.

How DNTS will Operate

Other details of operation are not yet fully determined, but the map and diagrams (Figs 1, 2, 3) tell some of the story. The map shows the NTS regions, the diagram the sequence of DNTS net operation, and the chart a possible directory of DNTS nets. The Continental Net will have a

representative from each region; this representative will collect all traffic for his region and take it to his Daytime Region Net (DRN), where each section within the region will be represented. The section representative will then have the function of putting this traffic into the section net or local nets. Most of these latter will be already-existing ENTS nets operating in the late afternoon or early evening, and this will be the "interface" between DNTS and ENTS, making it all one system. So the message you put into CTN in the morning will be taken to an afternoon DRN, then to a later section or local net for transmission to delivery location.

But what if you don't get your traffic into CTN and put it, instead, into your DRN? If it's traffic going to another point in your region, no problem. The section representative will handle it to delivery location. If it's to a point in another region, it may be possible to set up a liaison if it's a DRN that meets later. If it meets earlier, then you're in trouble. It will have to go to a section net in your own region and then through the evening system, and probably won't reach delivery location until the next day. There are all kinds of possibilities which we won't go into because they get complicated. Maybe some time in the future DNTS can go on a "full cycle" as ENTS does. For the trial

period, it is a "half cycle" and has a few built-in shortcomings as a result.

How about it, all you retired people, house wives, shut-ins, night workers, students? Want to get in on a new daytime traffic system? If so, watch for future announcements as to exact time and frequencies of DNTS nets. If you're not sure, when you come across a DNTS net in operation, sometime after Feb. 1, give a listen, see if it's not something you'd like to be a part of. **QST**

SET

(Continued from page 49)

(or pressure) should be at the local, section and perhaps region level where the most experience can be gained.

The Simulated Emergency Test affords us an opportunity to review our message drafting and handling techniques. The precedence should be carefully selected to be truly indicative of the importance of the message. Preface all SET message precedences with the word TEST. Use a TEST EMERGENCY precedence very discriminately. Important messages originated by served agencies (usually within a disaster area) would likely carry a test priority (TEST P) precedence. Messages inquiring as to the health and welfare of someone within a disaster area should, logically, be classed test inquiry (TEST Q). Note that P1 and P2 are no longer used as precedences. Most messages will probably be of a routine (TEST R) nature. As an added measure to insure that test messages are not inferred to be real, begin the text with the words "test message". Additionally, all test messages should include the handling instruction HXB to indicate that the message should be cancelled and the originator serviced if the message is not delivered by the end of the SET period.

Last year's SET snagged many ops when some net sessions were run on an "emergency powered only" basis. Many participants complained. But you can bet that emergency-powered stations were a vital part of amateur contributions in Isleton, CA, South Dakota, West Virginia and Agnes-visited areas this past year. If it's necessary in an emergency, it's necessary in the SET. Don't get caught as a non-QNI!

This past year (like so many before) has vividly demonstrated the need for amateur radio communications during emergencies. So often after emergency operations we hear: "We could do much better next time now that we have had experience." Well, friend, here's your chance to gain some experience. Want to help? — WA1FCM.

DX Competition Announcement

(Continued from page 57)

(b) Score reductions may be made for taking credit for unconfirmed QSOs and/or multipliers, duplicate contacts, banned countries, and/or other scoring discrepancies.

(c) If a participant is disqualified, he will be barred from submitting an entry in the next annual

Seasons Greetings from the Hams of the ARRL/QST Staff

Doug DeMaw	WICER
Jean DeMaw	WICKK
Laird Campbell	WICUT
R. L. White	WICW
George Grammer	WIDF
Bob Myers	WIFBY
Bill Mann	WA1FCM
John Nelson	WIGNC
E.P. Tilton	WIHDQ
Lewis G. McCoy	WIICP
Judy Mann	WA1JCN
J.A. Moskey	W1JMY
George Hart	WINJM
A.M. Wilson	WINPG
Lilianna Vitols	WNI0YD
Rick Niswander	WA1PID
Jerry Hall	K1PLP
Murray Powell	W1QIS
R.L. Baldwin	W1RU
John Huntton	W1RW
Tom McMullen	W1SL
Perry F. Williams	W1UED
C.R. Bender	W1WPR
Ellen White	W1YL
Tony Dorbeck	W1YNC
Al LaPlaca	K2DDK
Bill Dunkerley	WA2INB
Al Bloom	WA3JSU
Morgan Godwin	W4WFL
Louise Moreau	W3WRE
John Troster	W6ISQ
Rod Newkirk	W9BRD
Dave Sumner	K1ZND
Bill Smith	K0CER
Maxim Memorial Station	W1AW
ARRL Hq. Operators Club	W1INF

running of that specific contest, (e.g., disqualification from the 1972 phone SS prohibits submission of an entry for the 1973 phone SS, but 1973 cw SS participation is okay).

(d) The calls of all disqualified participants will be listed in the QST report of the contest.

(e) Any participant on the borderline of disqualification but not actually disqualified may receive a warning letter from the Communications Manager.

(f) For each duplicate contact that is removed from the log by Hq., a penalty of 3 additional contacts will be exacted. The penalty will not, however, be considered as part of the 2% disqualification criteria.

(g) Each participant agrees to observe the contest rules as well as all regulations established for amateur radio in his country. Violation of any regulation as confirmed by a single FCC citation or advisory notice or two ARRL-accredited Official Observer reports, may constitute grounds for disqualification. Some examples of practices which can result in disqualification: off-frequency (out of band) operation, harmonics, spurious emissions, low tone reports in logs, key clicks splatter, excessive side-bands. US stations working banned countries, interfering with channels handling amateur emergency communication. **QST**

AMATEUR RADIO PUBLIC SERVICE

NTS RACES AREC

In the Public Interest, Convenience, Necessity ARRL

CONDUCTED BY GEORGE HART,* WINJM

NEW TRAFFIC RULES

DOCKET 19245 IS FINISHED. It has been terminated in a Report and Order issued by FCC on Oct. 11, detailing revised rules pertaining to the handling of third party traffic by amateurs. *The new rules are effective Dec. 1.*

The overall effect of the new rules is restrictive, but no more so than was originally intended in the rules, according to the Commission's statement. The League's position, backed by many years of history in the matter, was that the regulations made no mention of "business" or commercial communications by amateurs, saying only that an amateur station could not be used "for hire." ARRL comments cited a formal opinion of the General Counsel of the predecessor Commission which firmly stated that the sole criterion was not the content of a message, but only whether the amateur received any compensation for handling it. Recent FCC interpretations differed with this, however, and the rules are now being made more specific by the addition of new and reworded sections, plus some proposed new language for Subpart E of the regulations dealing with prohibited practices.

The phrase "nor for its use" is being deleted from 97.39, which has to do with licensing. A new section is proposed in Subpart E, which will more specifically prohibit amateurs from handling business or commercial communications or from doing anything with compensation in mind. We will still, however, be permitted to handle communications without compensation for welfare organizations such as the Red Cross, Salvation Army, Eye Bank and (presumably) civil defense and other govern-

*Communications Manager, ARRL.

ment agencies, provided such communications are not routine business of such organizations. Meaning, for the most part, emergency communications or communications having to do with emergency preparedness.

Even in an emergency situation, FCC says, we cannot conduct routine business communications of commercial organizations which have lost their normal communications facilities. However, where such communications are of a nature vitally affecting the public welfare (not just the company's welfare) in an emergency situation, they can be handled. This will occasionally require some "instant interpretation," a problem we never had to solve under the old interpretation. When faced with such a situation, the usual procedure is to get the job done, worry about its legality afterward. FCC has been liberal about such matters in the past, undoubtedly will continue to be. But don't stretch it too far!

Third party traffic is defined as being any communications between or in behalf of anyone other than the two control operators. This is not an entirely new definition, but it is the first time it has been incorporated in our rules.

Also newly proposed (in Docket 19605) is possible revision of the section on logging (97.103) which requires that logs include a notation of "third party messages" sent or received, including names of all participants and a brief description of the message content. The current provision refers only to "third party" messages and includes both those written and unwritten, but in effect only the latter (e.g., phone patches, "informals," etc.), since the written messages are usually on file anyway. FCC has asked for comments, due by December 20, with reply comments by January 3. It is



On September 30, members of the Tusco RC set up portable and mobile 2-meter rigs to provide communications for the annual Ohio Swiss Festival in Sugarcreek, OH. The club station, W8ZX, was set up at the Red Cross Shelter. Most of the group are pictured here. Back row, left to right: W8YEG, W8DMF, W8BWE, W8KQS, W8KFM and K8CQA. Kneeling: W8LOL, W8SHP, W8LPC and W8E2S. Participants not pictured are: W8LVW MVX, W8s HTR WQT.

WAØSUF was voted Amateur of the Year at the International Ham Fest held at the International Peace Gardens (SD) in July. Lyle holds an Advanced Class license and is very active in RACES and PON nets serving as NCS and working with other nets as well.



already a requirement that the names of third parties participating in communications over your station be included in the log, so the only new requirement is the description of the content of the communications. ARRL will probably comment, but no decision at this writing what that comment will be.

One *priceless* FCC statement we just can't resist quoting: "... to prohibit third party traffic entirely would tend to stifle one of the basic purposes of the Amateur Radio Service but to allow all third party communications would tend to cause increased congestion in the amateur bands." - *WINJM*.

EMERGENCY CRITIQUE

The year 1972 must hold some record for the number of floods occurring in one year. Hurricane Agnes seized much of the East Coast. Out west, the Isleton, California, area was inundated when a dam burst. And centrally, South Dakota was besieged with water during heavy rains. West Virginia and many other parts of the country were subjected to the consequences of high water levels. We have reported much of the amateur's contributions in connection with these disasters. But what do we learn from our experiences?

A survey of reports submitted by participants and observers of Agnes operations yields many comments concerning amateur effectiveness during emergency communications. Critiques have been held. Letters critical of various aspects of amateur involvement have been written. Notes of praise and thanks have been received by participants. Let's take a look at a composite drawn from some of the comments we received concerning Agnes.

1) Someone must take charge to organize and coordinate the activities of the amateurs in his group. Cooperation of all concerned is of paramount importance.

2) Disaster messages, especially those requesting supplies, should be signed by an authorized official.

3) Adequate authorization and clearance to move into a disaster area must be obtained. Once in the area, volunteers should be willing to follow the instructions of the personnel in charge.

4) In many cases, more traffic handling experience and familiarization with standard ARRL message format is needed.

5) Inquiry traffic destined to a disaster area should be accepted very cautiously. Emergency operators are usually occupied with emergency and priority traffic. A deluge of inquiry traffic, which must be handled by the minimal number of amateurs available in a disaster area, can be

detrimental to our public image if replies are not received.

6) Repeaters are a vital part of emergency communications and should have emergency power available to be truly effective.

7) More communication and understanding is necessary with served agencies such as Red Cross and c.d.

8) There is still a shortage of emergency-powered facilities.

Numerous suggestions have been received relating to ways of improving our effectiveness during the proverbial "next time". One suggestion that frequently surfaces is that an organization (or organizations) of amateurs skilled in emergency operations be created which would be prepared to journey into disaster regions with equipment to augment disaster communications.

Another suggestion comes from a doctor who relied heavily on amateur radio communications at Schuyler Hospital in Montour Falls, NY. He has suggested that hospitals should include amateurs in their disaster plans. Amateurs should be aware of the hospital's facilities, such as possible antenna locations, and should participate in disaster drills.

Many Agnes commentators cited the involvement of Citizen Banders as an adjunct to ham efforts. Several suggest close cooperation between the two services, but mention the need of training CBers.

We have presented some general ideas gleaned from the overall view of accounts received. Let's turn to some of the more specific comments by the observers.

"It seems to me that amateur radio could provide one of the greatest services by getting



The Central Ohio AREC was on the scene to provide communications during a train derailment on Aug. 25. Shown here, with a Red Cross van and generator in the background, are (left to right) WB8IHW, W8CRX and W8ERD. See Public Service Diary for more details. (Photo by W8BTW)

personal inquiry messages OUT of the stricken areas. A ham station at a relocation site or just a message pick-up station at evacuation centers and hospitals could provide a tremendous service — and the best kind of publicity for Amateur Radio.” — K4LMB (from *AUTO-CALL*).

“The most rapid and efficient operation was on CW A major factor in the efficiency of the CW operation was that each and every message in and out of the CW net was in precise form.” — W3IAK (from Penn Wireless Assoc.’s *X-MITTER*).

“We shouldn’t underestimate the value of all types of public service projects, even the sailing regatta and parades. They provide us with the experience of working together and getting to know each other better. It really pays off when the chips are down.” — WB2EDT EC Rochester NY.

“Without the use of the repeater, it was impossible to communicate from some of the flooded areas” — K3LLL (from *AUTO-CALL*).

“Autos should be prepared for emergency mobile operation.” — WA3NUF (from *X-MITTER*).

There’s our mini-analysis of thoughts on Hurricane Agnes operations. Same old story, you say? We can’t deny that. But it seems that no matter how well we think we are prepared, disasters always reveal that there is room for improvement. A review of our accomplishments and shortcomings is futile unless improvements are made and REMEMBERED when we are next summoned to provide communications in an emergency. — WA1FCM.

Public Service Diary

On May 19, a dike broke inundating parts of Kamloops, BC. The Kamloops ARC provided communications from the flood site to c.d. headquarters. Eleven amateurs operated a total of approximately 140 hours. — (VE7BHI)

During the evening of Aug. 16, KØGHK informed WAØDHU that the Omaha (NE) c.d.

coordinator had requested 10 mobiles to help supplement a communications blackout resulting from a cut telephone cable. The mobiles were dispatched to various locations and the public informed of their positions in case the need for emergency communications arose. Relief units were sent to relieve the original mobiles at midnight. WØYZV and KØGHK kept abreast of the progress of the operation. The net closed at 0125. It was only necessary to handle one message. Twenty amateurs participated. — (WAØDHU from *HAM HUM*)

At 1700, Aug. 25, a Red Cross official called W8ERD requesting communications assistance during a tank car derailment in Columbus, OH. Since there was a danger of ammonia leakage, it was necessary to have residents evacuated. W8s CRX ERD and WB8s DDE IHW set up at the disaster scene, W8BTW and W8SAHP at the nearest hospital, WA8LUR at the evacuation center, W8IMI and WB8GQW at Red Cross supply warehouse and W8KJM and WA8GMV at Red Cross headquarters. Approximately 20 messages were handled between various officials. Other participants include: W8JMD, WA8s WWM ZTV and WB8GVI. Operation extended well into the night without incident. — (W8ERD, EC Central OH)

While traveling on I-65 near Birmingham, AL, on Sept. 5, W4YYH/mobile saw a car off the road. He called K4OVE on 2 meters who reported the accident to police. — (K4OVE)

A two-car accident was spotted by W4WGR/mobile near Winter Park, FL, on Sept. 13. A call for assistance was sent via WB4QEL repeater in Orlando. The call was heard in Jacksonville by WA4QIM through the WB4QFL repeater. WA4QIM notified the Jacksonville Highway Patrol and assistance arrived at the scene in three minutes. — (W4LSR, WA4QIM)

Another automobile accident was reported by WB2YYB/mobile on the Bronx River Parkway (NY) on Sept. 14. WA2UFU responded to the call through the WB2BLQ repeater and notified authorities. — (WA2UFU)

During the afternoon of Sept. 17, WBØDQE reported into MidCARS requesting assistance in notifying the Coast Guard at New Orleans, LA, of a stranded boat 150 miles SSW of New Orleans. WØIZK called the airport in Des Moines, IA, and was advised by WAØGVH to contact the FAA, who in turn passed the information to the Coast Guard in New Orleans. The Coast Guard had the boat in tow by 2230. — (WØIZK)

At 2000, Sept. 17, a Sky Warning was enacted by the Arrow Repeater group. A tornado funnel had been sighted near Clinton, MI, and a tornado watch was officially announced. K8RUR, WA8-VJQ and WB8s HEE ISV were mobiling around the affected areas reporting weather conditions through the WB8CSC repeater, while WA8ZVB in Ypsilanti was reporting on flooding and power failures. Many phone lines were also down. — (K8RUR EC Washtenaw Co.)

The Boeing Employees Amateur Radio Society Emergency Net was activated at approximately 0700 PDT on Sept. 23 to provide communication for the search and rescue operation being carried on at Mt. St. Helens in southwest Washington. Many phone patches were handled for the search parties. — (W7QCV)

On Sept. 27, XE2BY contacted WA7UBS in an attempt to make arrangements for an ambulance to meet a plane from an outlying area of Mexico carrying a young boy who had had his arm amputated. WA7UBS relayed the request for assistance to W6YRK via WestCARS. After unsuccessful attempt to contact the Coast Guard, W6YRK telephoned the Ensanada, Mexico, police to make arrangements. WA7UBS then advised XE2BY that arrangements had been made. — (W6CPB SCM Orange)

During a ground search for a downed plane on July 22 and 23, EC K7CZF was asked to arrange for possible communications between search activities in the Sequim, WA, area and Tacoma, WA. Contact was established on 75 and 2 meters with W7IEU frequently relaying between K7CZF/7 near Sequim and W7s RGD RXS and K7NKZ in Tacoma. Operations were secured on July 23 at 1716Z. — (W7IEU EC Snohomish Co.)

Many reports of non-emergency public service activities have been received for which there won't be space for details. Here's a chronological list. Please keep the reports coming in (with pictures if possible) and we will give details whenever space permits.

May 12-14 - Tour of the Scioto River Valley (bicycle tour), communications provided by Central Ohio AREC/RACES. — (W8ERD, EC/RO)

May 13 - 1972 "Miles for Millions" walkathon, by 29 members of the Hamilton (ON) ARC. — (VE3AYR, EC)

May 27 - Canoe Race on Lake George (NY), by 10 members of the Glens Falls Area AREC. — (K2AYQ, EC)

May 29 - Wisconsin AAA Memorial Day Weekend "Bring 'em Back Alive" Program. More than 34 WI hams participated. — (W9ZBD, EC)

June 3 - "Walk for Community Park," communications provided by 11 mobiles of the WA6-ALV AREC Repeater Net in Redlands, CA. — (W6DZO, Ass't EC)

June 17 - Hudson Valley Fireman's Assoc. Parade in Balston Spa, NY. Again by Glens Falls Area AREC members. — (K2AYQ, EC)

July 1 - Communications for an endurance ride in Vulcan Co. (AB) provided by 8 members of the Vulcan Unit of the ARPSC (VE6AGZ, EC)

Public Service Honor Roll September 1972

This listing is available to amateurs whose public service performance during the month indicated qualifies for 30 or more total points in the time categories below. A delineation of the points awarded for each function is given in the category key at the end of the Honor Roll listing. Please note maximum points for each category. Those making fewer than 45 points are listed with point totals only.

Category	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	Total
Max. Pts.	10	10	12	12	12	20	3	5	5	
WA3QO/	10	10	12	12	17	6				67
WB4SVH	10	10	12	12	17	6				67
WB5DEK	10	10	12	12	12	6				67
WB2AEH	10	10	12	12	12					61
WA2CXY	10	10	12	12	12					61
WA3GSM	10	10	12	12	12					61
WB4KIM	10	10	12	12	13					64
WA8EJX	10	10	12	12	12					61
K0BA/D4	10	10	12	12	12					61
WB1RW	10	10	12	12	12					61
WA3GGM	10	10	12	12	12	3				59
WA2MJG	10	10	12	12	9					58
WA2UCO/2	10	10	12	9	12					58
WA8VSN	10	10	12	12	20	3				57
WA2FD0	10	10	12	12	12					56
WA0GG	10	10	12	12	12					56
WB4V70	10	10	12	12	12					56
W71BK	10	10	12	12	12					56
WA8UH	10	10	6	12	12	1			5	56
WB9AD	10	10	12	12	12					56
W7RJ	10	10	12	9	4					55
WA7JOS	10	10	12	12	16					55
W70CX	10	10	6	12	12					55
K0BV/4	10	10	6	12	12					55
WB8WV	10	10	9	12	12	1				54
W55BM	10	10	12	12	12					53
WB8HUP	10	10	12	9	12					53
K0BK	10	10	12	12	12					52
W3FCS	10	10	12	12	3	8				51
K10XD	10	10	12	6	12					50
WA2RYD	10	10	12	10		3				50
W2DE	10	10	12	12						49
WA3LQV	10	10	12	12						49
WB4PNG	10	10	12	12						49
WB1RU	10	10	12	12						49
WA9LED	10	10	12	12						49
K0MRI	10	10	12	12						49
WA2ICU	10	10	12	12	1					48
W2TPV/0	10	10	12	12	2					48
W8IM	5	10	6	12	9	1				48
K8NQW	1	10	12	12	3	3				48
WB2IK/2	10	10	12	3	12					47
WB2UPG	10	10	12	3	12					47
WA3DUM	10	10	12	3	12					47
WB4RHA	10	10	12	3	12					47
WA6DEI	10	10	12	3	12					47
W7PI	10	10	12	12		3				47
W1YNE	10	10	12	9	12					46
WA3JG	10	10	12	12	2					46
WA6EVA	10	10	12	9					5	46
WB8CMM	10	10	12	12	2					46
WA3QJR	10	10	9	3	12					45
WA2ALI/4	44	WB9BAP	41	WB0BLY	37					57
WB2ELX	44	WB9RY	43	K4IAC	36					56
WA2ELD	44	WB8CSC	40	W6DDE	35					55
WB2NRK	44	WB8FFZ	40	K15X/0	34					54
K3KAJ	44	W6BV	40	W3TN	34					54
K6OIO	44	W1UBG	39	W3YA	34					54
WB4JMH	44	WA8CZA	39	K4KNP	34					54
WB4WHK	44	W2FR	39	W4UQ	34					54
WB4WYX	44	W2RUE	39	W6LYV	34					54
W4ZJY	44	K4BB	39	WB6VKV	34					54
W5ABU	44	W4DUS	39	W6YBV	34					54
K8KOZ	44	W8NEM	39	W7WAH/S	34					54
W7AHT	44	K5MA1	39	WB8AYC	34					54
W7GHT	44	WB8KK1	39	W8BELW	34					54
WB6LC	44	WA8VKT	39	WA10HU	32					52
WB8JEL	44	K8AFM	39	WA2AYC	32					52
WB8NO*	44	W8HU	39	WB6ZVC	32					52
WB4VVB	44	W7ZFT	38	W2MTA	31					51
WB6GHT	42	WB6AKT	38	WB8IM	31					51
W6DAW	42	K8MLD	38	W3APT	31					51
WB2CST	41	WB4SOA	37	WN3RC	30					50
WB4EKJ	41	W6R6E	37	VE4FA	30					50
		WB8WD	37							

* Denotes multioperator station.
 Category Key: (1) Checking into CW nets, 1 point each; (2) Checking into phone/RTTY nets, 1 point each; (3) NCS CW nets, 3 points each; (4) NCS phone/RTTY nets, 3 points each; (5) Performing assigned mission, 3 points each; (6) Legal phone patches, 1 point each; (7) Making BPL, 3 points regardless of traffic total; (8) Handling emergency traffic directly with a disaster area, 1 point each message; (9) Serving as net manager for entire month, 5 points.



Members of the Mt. Diablo ARC have participated in the Walnut Festival Parade in Walnut Creek, CA, for many years. Two-meter rigs were used at each of the gathering points to relay progress reports to parade coordinators. Three of the participants are pictured (left to right) W6NSAI, W6LW and VE2AQV/W6.

July 2 - Northwest Marathon Assoc. boat race near Tacoma, WA, by 6 Tacoma area hams. - (W7IEU, EC)

July 4 - Fifteen AREC members furnished communications for a parade in Redwood City, CA. - (W6DEF, EC)

Aug. 9-13 - More than 45 hams participated in a ham public relations booth at the Hamilton Co. (OH) Fair. - (W8COA, EC)

Aug. 12 - Communications for a marathon in Terre Haute, IN, were supplied by 20 members of the Wabash Valley ARA. - (W9KT)

Aug. 26 - A ham booth was established at a shopping center in Little Silver, NJ, and manned by members of Navesink Emergency Net. - (WB2YPO)

Sept. 7 - Communications for Harvest Home Festival Parade in Cheviot, OH, by 13 area amateurs. - (W8COA, EC)

Sept. 15 - Another parade in Redwood City CA, communications by 7 RACES and AREC members. - (W6DEF, EC)

Sept. 16 - Ohio Aerospace Show in Cincinnati, by 23 area hams. - (W8COA, EC)

Sept. 22 - Cincinnati again. This time a high school band contest with 5 amateurs participating in communications. - (W8COA, EC)

Sept. 23 - Fund raising drive for American Cancer Society in Delaware Co. OH. Twenty three hams participated. - (W8ERD, EC)

September SEC reports were filed by 39 SECs, covering 12,738 AREC members. We're starting back up. September 1971 saw 34 SEC reports representing 10,682 AREC members. Since the summer slump should be over, we expect continued increase in numbers. How about reports from some of the strangers in the SEC ranks? Sections reporting: Alta, Colo, Conn, Del, EFla, ENY, EMass, EPa, Ida, Ind, Iowa, Kans, Mar, Mich, Miss, Mont, Nebr, Nev, Nc, NNI, NTex, Ohio, Okla, Ont, Org, Oreg, SV, SDgo, Sask, SDak, Tenn, Utah, Va, Wash, WVa, WFla, WMass, WNY, WPa.

Traffic Talk

Back in January, 1972, *QST*, we ran a picture of Loyd Peek, W7BA, and a review of his significant operating achievements and contributions down through the years. In November *QST*, Loyd was again listed - this time in Silent Keys.

This column seldom runs obituaries, and in fact it is contrary to customary policy. In this case, however, it seems more than appropriate that some mention be made of Loyd's passing from the traffic and amateur radio picture and that we exceptionally express our regret and grief. We suggest you read again the recounting of his achievements in January *QST* (p. 75) and join us in this last vate. - WINJM.

National Traffic System, K2KIR sez Sept. was a quiet month for EAN; few messages, few problems. Central Area Staff Member-at-Large, W9QLW is reportedly in the hospital following a heart attack. W2FR notes the highlight of the month for 2RN was hitting the 100% representation mark. WB2NOM received a 2RN certificate and WB2DDO received his 4th annual certificate. Oklahoma and Arkansas did well on RN5 in Sept. but Alabama representation was down, perhaps because of poor conditions as well as missed skeds, according to acting mgr. KØRAD/4. Word from RN6 is that traffic is way up, vacations over and things normal again. Things seem to be shaping up well on RN7, however participation from Alberta is badly needed. WA4WWT earned a 9RN certificate. W9HRY is hoping for traffic to pick up this fall. VE3AWE is filling in for VE2ERU on ECN.

(Continued on page 86)

BRASS POUNDERS LEAGUE

Winners of BPL Certificates for Sept. Traffic

Call	Orig	Recd.	Rel	Del.	Total
W3CUL	315	879	793	71	2058
KØDNK	117	669	642	12	1440
W4ØVAS	137	420	60	460	977
K3NSN	166	384	384	12	966
W3VR	179	305	277	11	772
W7HI	16	351	321	18	706
KØZG	2	320	-	320	642
W4JHJ	25	268	193	40	526
K5IEY	-	262	262	-	524
KØYFK	-	260	-	260	520

BPL for 100 or more originations-plus-deliveries

W9ZGQ	428	W8HQO	117	W4BAZ	107
W8QCU	133	W4JGU	117	K8NQW	107
W8BWPO	131	W3IN	110	W8CST	104
WN3RCI	123	W4ØAUX	107	WB2UEG	102

More-Than-One Operator Station

W7DK 428

BPL Medallions (see July, 1968 *QST*, p. 99) have been awarded to the following amateurs since last month's listings: WB2LN, K8NQW.

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.

Operating Events

de W1YL

DECEMBER

2-4 Lone Star QSO Party, Telephone Pioneer QSO Party, Indiana QSO Party, p. 117 Nov.

6 W6WV Qualifying Run (W6ZJR, alternate) 10-35 wpm at 0500 GMT on 3590/7090 (new freq.) kHz. 10-35 wpm. This is 2100 PST the night of Dec. 5. Underline correct minute of highest speed copied, certify copy made without aid and send to ARRL for grading.

9-10 160-Meter Contest, p. 67 Nov. **Spanish Contest, Delaware QSO Party,** p. 131 Nov.

12 WIAW Qualifying Run 10-35 wpm at 0230 GMT on 1.805 3.580 7.080 14.080 21.080 28.080 50.080 and 145.588 MHz. This is 2130 EST the night of Dec. 11. Underline one minute of top speed copied, state no aids used (typewriters OK), sign and mail to ARRL with your full name, call (if any) and complete mailing address.

24 HA5-BW Contest, the full 24-hour period GMT; open to single and multioperator stations and SWLs, all bands. Contacts may be made on any mode. Use CQ WW, Exchange RS(T) and ITU zone number. Contacts within continents count one point, between continents 3 points, with HA/HG5 stations 4 points, with HA5 stations 5 points. Multipliers are the different ITU zones contacted. Final score equals sum of QSO points times the sum of different ITU zones. Logs must appear in the usual form, and include a signed declaration. They must be postmarked no later than Jan. 15. Appropriate awards. Send entries to the BRAL Contest Committee, P. O. Box 7, Budapest 134, Hungary.

28 WIAW Qualifying Run (morning), at 1400 GMT (this is 9 am EST). Same frequencies and details as under the Dec. 12 listing.

31 Straight-Key Night (SKN), starts at 8 pm your local time on New Year's Eve, ends 3 am local time on New Year's Day. Rules require use of a straight key. Aim at 7030 and 3530, but spread out as necessary! Call SKN and punchew. Following SKN, we'd like a list of the calls of the stations you worked plus your "vote" for the best straight-key fist heard that night. Reports should be mailed by Jan. 5, please. CQ SKN!

JANUARY

4 W6OWP Qualifying Run.

6-7 VHF SS, this issue, Friendly Firebird QSO Party, 1800 GMT Jan. 6 to 1800 GMT Jan. 7, open to all General Motor's employees and retirees. Call CQ Firebird on phone or CQ FB on cw. Exchange signal report, state (or country) and name plus Firebird members will send a 4-digit number corresponding to his GM operating unit (i.e., 0101 for AC Spark Plug Division, etc.). A cross-reference sheet is available from W9MDW for an s.a.s.e. One point per QSO. Stations may be worked just once regardless of band. Multiplier is the number of different operating unit numbers. Frequencies near: 3.985 7.285 14.285 21.385 50.520 145.440 MHz and near the bottom of each mode band. A trophy to high-scoring non-firebird member. Certificates for working 20 different operating units (with endorsements for each 20). Send logs by Feb. 15 to Dick McClain W9MDW, 1613 Cherry Hill Lane, Kokomo, Indiana 46901. **Hollywood ARC Operation's Day,** celebrating the 2nd anniversary of the club call ST170Z Sat. Jan. 6 to 2300Z Sun. Jan. 7. The club, under the call WB410N, will have at least two transmitters in operation. Frequencies will be 70 kHz up from the band edge on cw and 3930, 7230, 14330, 21430 and 28530 on ssb. Exchange RST and state/province/country plus name of operator. Certificates for those working WB410N both modes as well as working the club on 5 bands. Specials QSLs. Send QSLs with an s.a.s.e. to the trustee, Robert Patten W4OZL, 2311 Nassau Dr., Miramar, Florida 33023.

10 WIAW Qualifying Run.

13-14 CD Party, cw. This is a quarterly event for League appointees and officials, notified separately by bulletin. Check with your SCM (p. 6) to see if you can qualify for an appointment. **YU 80-Meter DX Contest,** from 2100Z Jan. 13 to 2100Z Jan. 14, cw only. YUs will call CQ Test; others use CQ YU. One contact only is permitted with the same station. Scrubs consist of RST plus QSQ no., starting with 001. Scoring (for non-YUs): contacts between stations in the same country 1 point, between stations on the same continent 2 points, between stations on different continents 5 points, with YU stations 10 points. Use a multiplier of 1 for each DXCC country (including your own) and each worked YU prefix. Total score will be the sum of all points times the multipliers. Single and multiop. categories (club stations are considered multiop. in any case). Appropriate awards. Logs with summary sheet should be postmarked no later than March 15 and should be sent to the SRJ Contest Committee, Box 48, 11001 Belgrade, Yugoslavia. The

summary sheet must include the declaration. All participants should compute their scores. In the case of 3 or more non-indicated duplicate QSOs, the participant will be disqualified. The decisions of the SRJ Contest Committee are final.

16-18 OOTC QSO Party cw, starts/ends 2300 GMT. Frequencies 3530-3570, 7030-7070, 14030-14070, 21030-21070, 28030-28070. Logs go to A. D. Bratland, K6EA, 1135 Magnolia Ave., Long Beach, California 90813. Logs must be received no later than Feb. 22.

20-21 CD Party, phone. **Arkansas QSO Party,** sponsored by the No. Ark. AR Soc. of Harrison, during the following periods: 1900-0600 GMT Sat./Sun., 1200-2300 Sun. Ark. stations score 1 point per contact and multiply by the number of ARRL sections worked during the contest period. Out-of-state stations score 5 points per each Ark. station worked and multiply the total by the no. of counties in Ark. worked during the contest period. Stations may be worked once on each band and mode. Appropriate certificates. Suggested freqs. (plus or minus 10 kHz): cw, 3560 7060 14060 21060 28060; ssb, 3960 7260 14320 21360 28560; novice 3735 7125 21110. Ark. stations exchange QSO no., RS(T) and county; out-of-state stations use ARRL section for location. Logs and scores must be postmarked no later than Feb. 15 and sent to the club, c/o Don Banta, W5ZKE, Route 1, Green Forest, Arkansas 72630. Enclose an s.a.s.e. for results. **Louisiana QSO Party,** sponsored by the Lafayette ARC starts 1800Z Sat. Jan. 20 and ends at 2200Z Sun. Jan. 21. All bands, cw and phone. The same station can be worked and counted for QSO points on each band and mode. LA stations score 1 point per QSO (including contacts with other LA stations). All others score 1 point for each contact with a LA station. LA stations multiply total QSO points by the number of different ARRL sections worked. All others multiply total QSO points by the number of different LA Parishes (counties) worked. LA stations give QSO no., RS(T) and Parish. Others exchange QSO no., RS(T) and section or country. Suggested freqs.: cw, 3535 7035 14035 21035 28035; phone, 3920 7270 14290 21370 28600 and 30125. Appropriate certificates plus the K5AGI Trophy to first place (A winner (a permanent possession trophy). In addition, the W5DDL Trophy to high portable operating specialty for the party. Logs must show full info., including claimed score and be postmarked no later than Feb. 17. Mail to the Lafayette ARC, c/o Danny Grutth K5ARI, 123 Normandy Road, Lafayette, Louisiana 70501. For results enclose an s.a.s.e.

23-25 OOTC QSO Party, phone, starts/ends 2300 GMT. Freqs. 3905 7265 14280 21355 28600, plus/minus 5 kHz. Logs go to: G. C. MacConomy W6HJK, Sp. 45, 36770 Florida Ave., Hemet, California 92343. They must be received no later than Feb. 22.

27-28 Simulated Emergency Test, full details this issue. **French Contest,** cw, starts 1400 Jan. 27 and ends 2200 Jan. 28. Exchange RST and QSO no. Three points per QSO with F or DUF countries stations. Multipliers per band/one point for each different department (2 figures, 95 departments) and each different DUF country. Total points times multipliers for all bands equals final score. Note that during these periods, stations in HB, 4U1, LX, ON (and 9Q, 9U, 9X) are active for the contest. QSOs with these stations are good for the contest points and multipliers (22 HB Cantons, 9 ON Provinces, 4U1, LX, 9Q, 9U and 9X). Send your entry to the traffic manager, Lucien Aubry, F8TM, Rue Marceau 53, 91120 Palaiseau, France

FEBRUARY

3-4 DX Competition, phone, this issue. **Ten-Ten International Net Contest,** members only. **VHF Space Net Contest,**

3-11 Novice Roundup.

7 W6OWP Qualifying Run.

9-11 QCWA QSO Party.

10-11 W42DNR "Operation's Day," John Moyle Memorial National FD (VK event).

11 Frequency Measuring Test.

15 WIAW Qualifying Run.

17-18 DX Competition cw, this issue.

24-25 YU/QM Contest, phone. **French Contest,** phone.

March 3-4, DX Competition phone.

March 17-18, DX Competition cw.

June 9-10, VHF QSO Party.

June 23-24, Field Day.

QST



Correspondence From Members -

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

Mobilizing 220

● I propose a 220-MHz activity for motorized radio amateurs. Our automobiles would be equipped with simple gear to transmit continuously on a fixed (nationwide) frequency, sending out beep tones every few seconds. Between tones, the receiver would be "on." When two such automobiles approach, we will hear the other station's beep, knowing that contact is available when desired or when necessary in case help is needed. Automobiles driving in same direction could communicate at any length. Passing automobiles may need to hurry up their QSO, as signals will fade with increasing distance. Receiving equipment should use the i-f/af portion of the automobile receiver, so that beep tone and calls could be received even when listening to fm or bc programs (which then could be killed by grounding that antenna).

Application could also be for airplanes, boats, communication between club and club members, field days, civil defense, public aid, etc. Only a nationwide correlated frequency pattern would lead to success, while locally-defined frequencies would fade away soon. Repeaters should not be used, as they would swamp the individual station, and kill the individual's interest. When fairly successful, i.e. when a reasonable number of amateurs have these stations in operation, monitoring QSOs by officials could prove to bring significant help at locations where emergency exists, at a later date. — *Ernest E. Seiler, WA4RMR, Madison, AL*

RAPP RAPPED

● Now I have seen (and read) everything: Mr. Rapp's letter in October *QST* accusing ARRL of being pro-phone. During 40 years of ham radio I have never, no never, heard of ARRL being pro-phone. Pro-cw yes, but not phone.

This accusation is all the more amazing when you consider that Mr. Rapp is a man of unquestionable honesty, integrity and known for his factual writing. His many articles in the past, highly technical I will admit, have shown that he has a thorough grasp of the subject at hand.

So the only conclusion that can be drawn is that he deliberately programmed the computer *wrong in order to come up with the desired results* as computers don't lie. My faith in Mr. Rapp has been severely shaken and I hope he will find a way to withdraw these unfounded charges. — *Nat Stinnette, W4AYV, Tavares, FL*

● Larson E. Rapp in April, okay.
But allow Larson E. in October? No way! — *W. Karl, W2EGX, Cooperstown, NY*

● I recently read a complaint in Correspondence that since a certain frequency counter can not be used for cw except at zero beat, the company who

produces the counter should not be allowed to advertise it in *QST*.

Mind you I have nothing against cw, in fact I sometimes even use that mode myself. However, I do think the complaint is a little senile. After all I can't use my keyer to operate phone and the same company that produces the counter also sells a keyer. There aren't very many products on the market today that can be used by every one in the world.

I never realized that the phone operators had given the cw men such an emotional complex. — *Rodney L. Harper, WB4PAS, Lexington, NC*

● I've sat here quite quietly for a number of months but upon reading WIOU's letter I could no longer stand it. Is this man insane? Checking his request with a computer would perhaps be in order! Just because *QST* carries a write up on a device meant for ssb doesn't mean they are anti-cw!!! I urge every able-bodied and clear thinking ssb man to write his director and congressman and insist that such devices as keys, electronic keyers, bugs or cw filters not be advertised in *QST*. And imagine the nerve of our League to devote over 10 pages of *QST* to VE2HN's digital CQer! Did you ever bother to look at it, Larson? I hope I've made my point. — *Edwin Grasmann, WA2BOX, Lake Ronkonkoma, NY*

CB "ADJUSTMENTS"

● "League Lines" in October *QST* notes an article in *Electronics Illustrated* concerning a grid-dipper to "help the CBer tune his rig." You state that "Part 95 prohibits a CBer from making any test or adjustments to his transmitter."

My copy of Part 95 says nothing to the effect that a CBer cannot make any tests or adjustments to his radio equipment. The only requirement is that all transmitter adjustments or tests while radiating energy during or coincident with the construction, installation, servicing or maintenance of a radio station in this service, which may affect the proper operation of such stations, shall be made by or under the immediate supervision and responsibility of a person holding a first- or second-class commercial radio operator license, either radiotelephone or radio telegraph, as may be appropriate for the type of emission employed.

Just to say that a CBer cannot make adjustments to his transmitter is not entirely correct, as any CBer with a first- or second-class radio operator license can tune his transmitters. — *Sheldon Datch, Chief Engineer, WPEH A-M-FM, WA4MZZ*

[EDITOR'S NOTE: We're guilty of not completing a sentence. To "Part 95 prohibits a CBer from making any tests or adjustments to his transmitter" we should have continued "which may affect (its) proper operation."]

Silent Keys

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

Ex-W1GAE, James L. Pratt, Burlington, VT
 W1HWC, Robert W. Lewis, Braintree, MA
 K1IOA, Alvin J. Taylor, Wakefield, MA
 W1JKB, Charles W. Lewis, Jr., Wellesley Hills, MA
 W1KFL, Raymond P. Gardiner, Coventry, RI
 W1LS, William F. Kirby, W. Dennis, MA
 WA1PEO, Henry J. Czech, Whitefish Bay, WI
 K1TCC, Thomas P. Browne, Waltham, MA
 W1VE, Christopher J. Dougherty, Springfield, MA
 W2AMB, Fred W. Huff, Toms River, NJ
 W2GMN, Fred C. Read, Woodbridge, NJ
 W2HGO, Charles A. Fogarty, Brooklyn, NY
 W2JXK, Ben Shupack, Malverne, NY
 W2KNL, William Breitenbach, Chazy, NY
 WB2ODA, Robert M. Johnson, West Seneca, NY
 W2SLU, Paul S. Kaparoff, Franklin Square, NY
 W2WVU, Douglas M. Galbreath, Brooklyn, NY
 W2JIM, Leo H. Hyman, Brooklyn, NY
 W3BYU, Joseph M. Parvis, III, Hanover, PA
 W3CR, Charles R. Reynolds, III, Hyattsville, MD
 W3CYG, Rowland S. "Red" Claypool, Conneaut Lake, PA
 W3NQM, Roger H. Campbell, Washington, PA
 W4BV, George F. "Red" Lambertson, Fayetteville, TN
 W4CLI, Alfred Y. Bentley, Alexandria, VA
 W4GL, Stuart E. Adcock, Miami, FL
 W4HMX, Howard C. Gureath, Vidalia, GA
 K4IBZ, Carson L. Deuberry, Memphis, TN
 W4INY, Dr. Sidney E. Buchanan, Concord, NC
 W4PWC, Robert J. Farnum, Miami Shores, FL
 K4UVS, James M. Ryan, Fort Lauderdale, FL
 K4WPW, Walter E. Bickel, Louisville, KY
 WA4YEV, Richard M. Minor, Jr., Oxford, NC
 W5ACL, Myron E. Lawson, Houston, TX
 W5AI, Frank T. Smith, Corpus Christi, TX
 WA5DDB, William R. Bowen, Pampa, TX
 K5JGM, Charles G. Bowers, New Orleans, LA
 W5KVV, James H. Pratt, Houston, TX
 W5RU, Roy L. Alciantore, New Orleans, LA
 K6GKZ, Richard H. Brummel, Sherman Oaks, CA
 W6MZT, Chester A. Woodhull, Redding, CA
 W6PNO, Roy G. Walters, Jr., Santa Monica, CA
 W6STD, Richard R. Stoddart, Los Angeles, CA
 WA7BRB, John W. Blevins, Dragerton, UT
 W7FEQ, James L. Robertson, Eugene, OR
 K7GPZ, Elmer Olson, Phoenix, AZ
 W7GTW, Lewis A. Stanley, Salem, OR
 W7HHJ, John H. Naylor, Jr., Phoenix, AZ
 W7SF, Lee R. Galvin, Scottsdale, AZ
 K7ZUT, Gerald W. Clark, Tacoma, WA
 W8BHI, Wolcott B. Louis, Parma Heights, OH
 W8CQB, John J. Bauer, Clarkston, MI
 K8DBF, Russell F. Klatt, Cleveland Heights, OH
 K8DUH, Adolph T. Mlynarski, Detroit, MI
 W8GVL, Glenn W. Riddles, Bedford, OH
 W8IVC, Frank C. DeHaven, Hudson, OH
 W8PVM, Herbert A. Bennett, Toledo, OH
 K8ROH/W8DXK, Wayne Taylor, East Lansing, MI
 K8VYG, William W. Bushey, Hazel Park, MI
 W8ZA, Charles J. Murray, New Philadelphia, OH
 W9DOG, Wayne L. Walter, Plainfield, IN
 W9EZS, Garwyn S. Diehl, South Bend, IN
 WN9FZH, Phillip S. White, Tuscola, IL
 W9PC, Ralph H. Meyer, Ft. Wayne, IN
 K9QXQ, Michael A. Harrison, Whiteland, IN
 K9TSU, Nestor F. Warren, Chicago, IL
 K0GJY, Ulysses R. Hall, Florissant, MO
 W0NRU, Dr. Gerald A. Rosselot, Leawood, KS
 W0OKN, William A. Fryer, Mountain Grove, MO
 VE1RP, Ralph R. Pattison, Halifax, NS
 VE2BYS, Frank S. Stygal, Laval West, PQ
 VE3DTO, Jack W. Abel, Toronto, ON
 VE3VC, Douglas V. Carroll, Manotick, ON
 VE4RB, E.H. "Doc" Howey, Killarney, MB
 UP2ON, Valdas Simonis, Kaunas, Lithuania, USSR
 4X4AE, Rafael Bernstein, Beer-Sheva, Israel



BENJAMIN HOSKINS PADDOCK
 FBI No. 4,530,829

This man is wanted by the FBI for bank robbery and escape, currently being on the FBI's list of 10 most wanted fugitives. He is 6'4", 245 lbs., large build, medium complexion. His friends call him "Chromedome," "Old Baldy," or "Big Daddy." Glib and fast-talking; has been employed as a service station operator and auto mechanic; been convicted of automobile larceny and confidence game; considered armed and extremely dangerous. QST publishes this announcement at the request of the Federal Bureau of Investigation, because under the name of Patrick B. Paddock in Tucson, Arizona, he was licensed as K7JH from 1959 to 1964. If you have any information, notify the nearest FBI office. QST

STOLEN EQUIPMENT

Stolen from K5LKL: 1 Elmac AF-66, SN 10888; 1 M-1070 power supply; 1 PMR8 receiver, SN 10908; 1 RCA AR88 (8-meter installed by owner); and 1 D-104 microphone. Milton L. Mitchell, K5LKL, 801 E. 15th St., Port Arthur, TX 77640.

The following equipment was stolen from California State University at San Jose, on August 2, 1972: Collins receiver, model 75S3-A, SN 10042; Collins transmitter, model 32S3, SN 101296; Collins power supply, model 516F-2S, SN 23994; Heathkit linear amplifier, model SB200, SN 505-6624; Gonset communicator IV, Model 3341, SN 400080. Ross D. Cade, W6INQ, Equip. Technician, School of Engineering, California State University, San Jose, 145 So. 7th St., San Jose, CA

Stolen from WB4MWQ: Drake TR-22, SN 410912; Dycomm 500ES FM Amp., SN ES-093. William N. Schmidt, WB4MWQ, 5613 B. Westconnett Blvd, Jacksonville, FL 32210.

A Pearce-Simpson Gladding 25 2-meter transceiver, SN 97050510, was stolen from W.B. Roberts, K4GQS, 3713 Marlin Court, Raleigh, NC 27604. QST

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. QST

Bermuda: RSB, Box 275, Hamilton
Bolivia: RCB, Casilla 2111, La Paz
Brazil: LABRE, P.O. Box 2353-ZC OO, Rio de Janeiro/GB
Bulgaria: CRCB, Box 830, Sofia
Burundi: via Zaire QSL Bureau
Canada: See ARRL QSL Bureau in this issue
Canal Zone: Lee DuPre, KZ5OD, Box 407, Balboa
Cape Verde Islands: RCCV, CR4AA, Praia, Sao Tiago
Ceylon: RSC, P.O. Box 907, Colombo
Chagos: via Mauritius
Chile: RCC, P.O. Box 13630, Santiago
Colombia: LCRA, P.O. Box 584, Bogota
Congo: (TNS) QSL Bureau, P.O. Box 2239, Brazzaville
Cook Island: ZK1 QSL Bureau, %Radio Station Rarotonga, Rarotonga
Costa Rica: RCCR, Box 2412, San Jose
Cuba: FRC, Apartado 1, Habana
Cyprus: CARS QSL Bureau, P.O. Box 216, Famagusta
Czechoslovakia: CRC, Box 69, Prague 1
Denmark: EDR QSL-Central, Harry Sorensen, OZ6HS, Ingstrup Hovdegaden 51, DK 9480-Lokken
Dominican Republic: RCD, P.O. Box 1157, Santo Domingo
Ecuador: GRC, P.O. Box 5757, Guayaquil
El Salvador: CRAES, P.O. Box 517, San Salvador
Ethiopia: Telcoms ARC, Box 1047, Addis Ababa
Faeroe Islands: OY-QSL Bureau, P.O. Box 184, 3800 Torshavn
Fiji Islands: QSL Bureau, P.O. Box 184, Suva
Finland: SRAL, Box 306, 00101 Helsinki 10
France: REF, Boite Postale 70, 75560 Paris Cedex 12
French Oceania: RCO, P.O. Box 374, Papeete, Tahiti
Germany: DARC Amateurfunk-Zentrum, P.O. Box 1155, D3501 Baunatal I
Germany: (British Forces only) J. T. Worrall, 3090 Verden Aller, Am Alten Pulvershupen 80
Ghana: GARS QSL Bureau, P.O. Box 3773, Accra
Gibraltar: RAF Amateur Radio Club, New Camp, RAF
Great Britain: (and British Commonwealth): RSGB QSL Bureau, G2MI, 29 Kechill Gardens Bromley, Kent BR2-7NH
Greece: RAAG, P.O. Box 564, Athens-107
Greece: (SV0 only): % Mars Station, APO NY 09223
Greenland: via Denmark
Greenland: (U.S. Personnel) OX5A-E via MARS Director, XP1AA, 1983 Comm. Sq., APO New York 09023, OX4F-H via MARS Director, XP1AB, 2004 Comm. Sq. APO NY 09121
Guam: MARC, Box 445, Agana, USPO 96910
Guantanamo Bay: GARC, Box 12, FPO, New York, NY 09593
Guatemala: CRAG, P.O. Box 115, Guatemala City
Haiti: RCH, Box 943, Port-au-Prince
Honduras: RCH, Apartado 273, San Pedro Sula
Hong Kong: HARTS, P.O. Box 541
Hungary: HSRL, P.O. Box 214, Budapest 5
Iceland: IRA, Box 1058, Reykjavik
India: ARSI, QSL Bureau, P.O. Box 534, New Delhi I
Iran: ARSI, Box 1000, APO New York NY 09205
Ireland: IRTS, QSL Bureau, P.O. Box 462, Dublin 9
Israel: IARC QSL Bureau, P.O. Box 65, Herzlia
Italy: ARI, Via D. Scarlatt, 31, I-20124 Milan
Ivory Coast: ARAI, B.F. 20036, Abidjan
Jamaica: JARA, Red Cross Bldg., 76 Arnold Rd., Kingston 5
Japan: (JA): JARI, Box 377, Tokyo Central
Japan: (KA only): FEARL-M, HQ 5AF, Box 1414 APO, San Francisco, 96525
Japan: (KA6 only) KA6 QSL Bureau, ORC. Ft. Buckner, APO, San Francisco 96331
Johnston Island: KJ6BZ, % MARS Str., Det. 1, 1957 Comm. Gp., APO, San Francisco 96305
Kenya: RSFA QSL Bureau, P.O. Box 30077, Nairobi
Korea: KARL, Central Box 162, Seoul
Korea: (HL9) HL QSL Bureau, Signal Section, USFK/EUSA, APO, San Francisco 96301
Kuwait: Alhalf Nasir H. Khan, 9K2AN, P.O. Box 736, Kuwait, Persian Gulf
Laos: Houmphanh Saignasith, XW8AL, P.O.B. No. 46, Vientiane
Lebanon: RAL QSL Bureau, P.O. Box 8888, Beirut
Liberia: LRAA, Post Box 1477, Monrovia
Liechtenstein: via Switzerland
Luxembourg: R. Schott, 35 rue Batty Weber Esch-Alzette
Macao: via Hong Kong
Madeira Islands: via Portugal
Madagascar: QSL Bureau, P.O. Box 587, Tananarive
Malawi: P. A. Conway, 7Q7BC, Police Hq., P.O. Box 10, Lilongwe
Malaysia: QSL Manager, MARTS, Box 777, Kuala Lumpur
Malta: R. F. Galea, 9H1E, "Casa Galea," Railway Road, Birkirkara
Mariana Islands: see Guam
Marshall Islands: KX6 QSL Bureau, via KX6BU, Box 444, APO, San Francisco 96555
Mauritius: Paul Caboche, VQ8AD, Box 467, Port Louis
Mexico: LMRE, P.O. Box 907, Mexico, D.F.
Midway Islands: KM6BI, Box 14, FPO, San Francisco 96614
Monaco: ARM QSL Bureau, Pierre Anderhalt, 3A2CN, 41 Bd du Jardin Exotique
Mongolia: JT1KAA, Box 639, Ulan Bator
Morocco: AAEM, P.O. Box 299 Rabat
Mozambique: LRFM QSL Bureau, P.O. Box 812, Laurento Marques
Netherlands: VERON, Postbox 400, Rotterdam
Netherlands Antilles: VERONA, P.O. Box 383, Willemstad, Curacao
New Zealand: NZART, P.O. Box 489, Wellington
Nicaragua: CREN QSL Bureau, Apto. 925, Managua
Nigeria: NARS QSL Bureau P.O. Box 2873, Lagos
Northern Ireland: via Great Britain
Norway: NRRL, P.O. Box 21, Refstad, Oslo 5
Pakistan: LARS, P.O. Box 65, Lahore
Panama, Republic of: LPRA, P.O. Box 9A-175, Panama 9-A
Papua: Via VK9 QSL Bureau.
Paraguay: RCP, P.O. Box 512, Asuncion
Peru: RCP, Box 538, Lima
Philippine Islands: PARA QSL Bureau, P.O. Box 4083, Manila
Poland: PZK QSL Bureau, P.O. Box 320, Warsaw 1
Portugal: REP, Rua de D. Pedro V., 7-4, Lisbon
Puerto Rico: Alicia Rodriguez, P.O. Box 1061, San Juan 00902
Rhodesia: RSSR, P.O. Box 2377, Salisbury
Romania: CRC, P.O. Box 1395, Bucharest 5
Rwanda: Box 663, Kigali

(Continued on page 86)

Happenings of the Month

TRAFFIC RULES – “EYEBANK MATTER” PAID OPERATORS AT GROUP STATIONS REPEATER RECONSIDERATION ASKED ENVIRONMENTAL PROTECTION PHONE RECONSIDERATION

TRAFFIC RULES – “EYEBANK MATTER”

Continuing its charge through the file of matters awaiting official action, the Federal Communications Commission has issued a Report and Order in Docket 19245, commonly called, “The Eyebank Matter.”

A bit of background: In the thirties, a rule was added to the amateur regulations (with the concurrence, even enthusiastic support, of the amateur body) to prohibit schools, companies, corporations, associations and other organizations from obtaining amateur station licenses. Radio clubs were an exception; this led to an abuse – the forming of dummy radio clubs under the sponsorship of an ineligible group. This, of course, necessitated further rulemaking during which the words, “nor for its use,” were added to the regulations (now under the designation 97.39). All was well until a few years ago when the FCC staff, in response to specific questions (one of them from the Eyebank; thus the name given to this docket), interpreted “nor for its use” as applying to traffic, *not to licensing as such*. ARRL took exception to this view but FCC persisted. Several citations were issued to club stations during the spring of 1970 for “violating Section 97.39” by handling messages for the National Student Information Net (though no disciplinary action resulted). Comments from the League and individuals, as a result, led to publication of a Notice of Inquiry, Docket 19245 (see page 72, QST for July 1971) and the current action completes the matter.

In brief, FCC deletes the four words from section 97.39; adds definitions of third party traffic and emergency communications; and adopts tough new words relating to pecuniary interest,

commercial and business affairs in Sections 97.112 and 97.114.

For more than forty years, government rules, official interpretations and amateur custom have allowed amateur transmission within the United States of almost any message so long as the operators *handling it* had no pecuniary interest: it appears this freedom has now disappeared! (See the editorial and “Operating News” for further comment.) The text of the Commission’s Order follows:

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

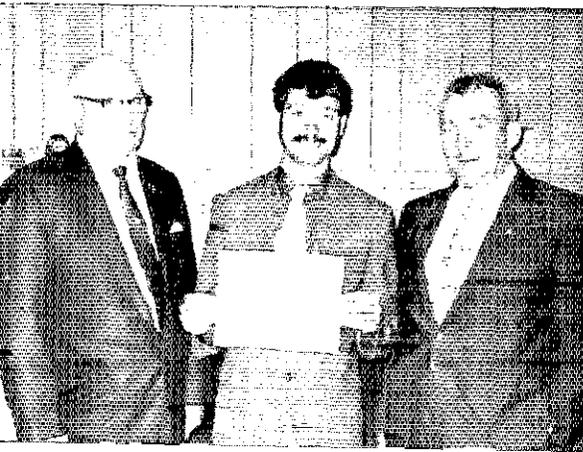
In the Matter of Docket No. 19245
Inquiry into the extent to which RM-1687
amateur stations should be used
on behalf of non-amateur organizations.

REPORT AND ORDER

By the Commission: Commissioner Johnson dissenting; Commissioner Reid absent.

1. On April 25, 1971, the Commission issued a Notice of Inquiry in the above-entitled matter. The Notice which was published in the Federal Register on May 8, 1971, (36 F. R. 8611) requested that comments be filed by interested parties by July 1, 1971. Subsequently, the time for filing comments was extended to August 31, 1971. Seventy five comments were filed by both individuals, amateur organizations, and other organizations which have in the past used the facilities of amateur radio stations.

2. The Notice of Inquiry was the proximate result of Section 97.39 which prohibits certain organizations from both obtaining an amateur station license or having an amateur operator use his station on behalf of those organizations. One of the effects of this rule is to prohibit amateur operators from using their stations on behalf of



The 11th annual John Gore Memorial Scholarship has been presented to Gary S. Barta, WA7BIP, (center) who was first licensed as a Novice when he was 11 and is now working toward a double major in Physics and Electrical Engineering at Washington State. The \$500 award is offered by the Foundation for Amateur Radio, a council of clubs in the Washington, D.C. area. Making the presentation here are Bob Thurston, W7PGY, ARRL Northwestern Division Director and Bill Miller, K4MM, a trustee of the Foundation.

Georgia's Amateur of the Year is Steve Smith, WA4VWV, of Dunwoody who won the honor by: helping to produce an educational TV film on ham radio; DXpeditioning to Navassa, KC4DX; presiding over the Atlanta Radio Club and actively engaging in charity work. At left, Jim Meyers, WB4DMO, past president of the Georgia SSB Association, makes the award. (Photo *tx* to W4REI)



such parties as the Eye Bank, American Red Cross and the March of Dimes as well as commercial businesses.

3. Our Notice requested comments regarding whether any restriction on the use of amateur radio stations by non-amateur organizations is needed. We also requested comments on what those restrictions should be. The Notice further related to the fact that unlimited operation on behalf of organizations (third party communications) could lead to the creation of large numbers of new networks which would create additional unwarranted interference on the amateur bands.

4. The comments received in the Docket suggested many solutions to the problem of which organizations, if any, should be allowed to use amateur radio facilities. The comments covered the full range from no third party communications to any communications that individual amateurs wish to carry. Most of the comments advocated a position between those two positions. Three comments suggested that amateur radio be used on behalf of non-amateur organizations but only when normal communications are unavailable. Many other comments suggested that third party communications be allowed for charitable non-profit organizations but only during emergencies. A majority of the comments agreed that it is not a sound practice to allow commercial organizations to use amateur radio stations but there was no consensus as to what other organization should have use of amateur stations.

5. The Commission believes that the best solution lies between the extremes of prohibiting entirely third party communication and permitting unlimited third party operations. To prohibit entirely third party traffic would tend to stifle one of the basic purposes of the Amateur Radio Service which is to provide a voluntary non-commercial radio service. But to allow all third party communications would tend to cause increased congestion in the Amateur bands. A basic principle permeating our rules and the international radio regulations is that amateur radio shall not be used for any pecuniary interest to any party or for commercial communications. The international rules specifically provide that amateur radiocommunications must be of a technical nature or remarks of a personal character for which, by reason of their unimportance, recourse to a public telecommunications service is not justified. There can be no legitimate reason for an amateur station to carry message traffic of a commercial nature. Radiocommunications, the sole purpose of which is to facilitate regular business or commercial activities, do not enhance the intended purpose of the Amateur Service and should not be allowed except for an emergency communication as defined in our rules.

6. Several comments were received which suggested that the thrust of the Commission's Notice of Inquiry was to censor the Amateur Radio Service. These comments suggested that any categorization of groups, some of which could use amateur radio facilities and others who could not, would be in violation of Section 326 of the Communications Act of 1934 which prohibits censorship of radio communications. It has been established, however, that eligibility restrictions and reasonable rules limiting communications to those consistent with the purpose of the radio service involved are within the scope of the Commission's authority. See, *Lafayette Radio Electronics Corp. v. United States*, 345 F.2d 278 (2nd Cir. 1965). Moreover, it is not only permissible but an affirmative duty of this Commission to classify radio stations and to regulate the nature of the radiocommunication service that is to be rendered by stations in that class. See Section 303(a) and (b). Our rules adopted today regarding commercial third party traffic merely regulate generally the nature of the radio communication service which may be rendered by amateur stations.

7. The Rules adopted today will delete the phrase "nor for its use" which is contained in Section 97.39. The result of this action will make Section 97.39 a rule concerned only with who or what organizations may obtain a license. The amended Section 97.39 will not be directed to permissible communication nor to the use of an amateur station.

8. We are adding a new section, 97.114, which will both prohibit commercial third party traffic and clarify the permissible international third party traffic. As to the provisions of subparagraph (a) concerning international third party traffic, these rules simply incorporate the already existing international rules. As such they make no change in permissible communications and they are therefore considered to be of an editorial nature. Subsection (c) of Section 97.114 prohibits corporations, companies, associations and other organizations engaged in commercial activities from using amateur radio facilities. It will not prohibit the use of the Amateur Radio Service on behalf of organizations such as the Eye Bank and the American Red Cross except for traffic which relates to the regular business affairs of those organizations. Subparagraph (b) will prohibit amateur control operators or station licensees from receiving any compen-

sation including a salary or reimbursement for non-collect telephone calls for operating an amateur station for transmitting or delivering third party traffic. This provision explicitly sets forth the fact that both domestic and international amateur traffic must not be handled with a pecuniary interest in mind.

9. To prevent unnecessary confusion as to what is meant by third party traffic, we are adopting a definition of that term and are making editorial changes in Section 97.79(d).

10. The provisions of Section 97.114(b) and Section 97.112 will clearly prohibit the American Radio Relay League's long standing practice of providing compensation to the control operators of station WIAW. As a consequence, we are today issuing a Notice of Proposed Rule Making in a separate proceeding which would allow in certain instances involving club stations the compensation of control operators. We are also herein granting a waiver of the necessary rules to the licensee of station WIAW to allow the station to continue to operate pending the final action on our Notice of Proposed Rule Making. Any other club station providing similar services as WIAW may apply for a similar waiver. Such requests will be handled on a case by case basis.

11. The American Radio Relay League and several other individuals filed comments which suggested that the Commission adopt a rule specifically prohibiting communications for any purpose or activity which is contrary to federal, state, or local law. We find that this suggestion as it applies to any radio communications including third party traffic, has substantial merit. Therefore, with certain editorial changes, we are adopting their proposal as Section 97.116.

12. Authority for the rule changes adopted herein is contained in Sections 4(i) and 303 of the Communications Act of 1934, as amended.

13. The Commission finds that further Public Notice in regard to the subject matter of this Report and Order is unnecessary. Notice of the general subject matter and of the issues involved was previously given and extensive comments from interested parties have been received and given careful consideration. No public interest would be served by further notice and public participation in this matter.

14. IT IS ORDERED, effective December 1, 1972, that Part 97 of the Commission's Rules is amended as set forth in the attached Appendix.

15. IT IS FURTHER ORDERED, that a waiver of Section 97.112 and Section 97.114(b) is GRANTED to the licensee of amateur station WIAW.

16. IT IS FURTHER ORDERED, that RM-1687 is denied to the extent that it is inconsistent with the rules adopted in this Report and Order and that this proceeding is TERMINATED.

FEDERAL COMMUNICATIONS COMMISSION
Ben F. Waple Secretary

APPENDIX

Part 97 of the Commission's Rules is amended as follows:

1. Section 97.3(w) and (x) is added as follows:

Section 97.3 *Definitions*

(w) *Third party traffic*, Amateur radio-communication by or under the supervision of the

control operator at an amateur radio station to another amateur radio station on behalf of any one other than the control operator.

(x) *Emergency communication*, Any amateur radio communication directly relating to the immediate safety of life of individuals or the immediate protection of property.

2. Section 97.39 is amended to read as follows:

Section 97.39 *Eligibility of corporations or organizations to hold station license*.

An amateur station license will not be issued to a school, company, corporation, association, or other organization, except that in the case of a bona fide amateur radio organization or society, a station license may be issued to a licensed amateur operator, other than the holder of a Novice Class license, as trustee for such society.

3. Section 97.79(d) is amended to read as follows:

Section 97.79 *Control operator requirements*.

(d) The licensee of an amateur radio station may permit any third party to participate in amateur radio communication from his station, provided that a control operator is present and continuously monitors and supervises the radio-communication to insure compliance with the rules.

4. Section 97.114 is added to read as follows:

Section 97.114 *Third party traffic*.

The transmission or delivery of the following amateur radiocommunication is prohibited:

(a) International third party traffic except with countries which have assented thereto;

(b) Third party traffic involving material compensation, either tangible or intangible, direct or indirect, to a third party, a station licensee, a control operator, or any other person.

(c) Except for an emergency communication as defined in this Part, third party traffic consisting of business communications on behalf of any party. For the purpose of this section business communication shall mean any transmission or communication the purpose of which is to facilitate the regular business or commercial affairs of any party.

4. Section 97.116 is added as follows:

Section 97.116 *Amateur radiocommunication for unlawful purposes prohibited*.

The transmission of radiocommunication or messages by an amateur radio station for any purpose, or in connection with any activity, which is contrary to Federal, State, or local law is prohibited.

PAID OPERATORS

That the foregoing matter is a sweeping one is borne out by the fact that it brings into question another practice older than FCC itself: the use of paid attendants at WIAW and its predecessor station, W1MK. Feeling that the new language forbids compensation to "control operators," FCC has issued a waiver to WIAW; offered similar waivers to other club stations carrying out similar services; and released the Notice of Proposed Rulemaking, Docket 19605, which is reproduced below.

In solving one problem, others are often created. Clubs operating stations on corporate property may find themselves confronted with sections 97.112 and 97.114 in respect to people who receive a salary from the sponsoring corporation and who also function as control operators of the club station. Accordingly, such clubs may wish to study the text carefully and file appropriate comments prior to December 20.

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

In the matter of

Amendment of Part 97 to allow the compensation in certain instances of control operators of stations operating in the Amateur Radio Service and modification of the logging requirements regarding third party communications.

Docket No.
19605

NOTICE OF PROPOSED RULE MAKING

Adopted: October 5, 1972; Released: October 11, 1972

By the Commission: Commissioner Johnson dissenting; Commissioner Reid absent.

1. In our Report and Order adopted today in Docket 19245 we established rules regarding the type of third party traffic that amateur licensees may properly handle including the compensation of control operators for transmitting such messages. The Commission hereby gives Notice of Proposed Rule Making concerning the collateral issues of compensation of amateur club station control operators and possible relaxation of the logging requirement for third party communications.

2. The American Radio Relay League operates an amateur station that is engaged in multiple address point to point communications. They broadcast bulletins, informational matter, and code practice of particular significance to amateur licensees. This type of communication is highly beneficial to both amateur operators and the Amateur Radio Service and should be encouraged.

3. The equipment used by these stations is in many instances as complex as a standard or FM broadcast station. As a result, it is impractical to operate these stations with volunteers, especially if the station operates for a substantial period each week.

4. The Commission is considering two different solutions. First, we are proposing specific rules which are designed to allow any bona fide amateur organization to operate a station and provide reasonable compensation to the control operator when the station transmits material solely related to the Amateur Radio Service. The rules, which will be designated as Section 97.112(b), set forth specific criteria which a club station must meet in order to provide compensation to their operators.

Walter Butterworth, W1GM, former district FCC engineer-in-charge at Boston, receives a New England Division Merit Award from Robert York Chapman, W1QV, its director, in appreciation of the friendly assistance furnished amateurs during his tenure with the Commission. Look for a new station from Florida soon! (Photo inx to WITTI)

These criteria are designed to insure that stations compensating their operators are in fact engaged in providing a service to a significantly large segment of amateur licensees. Another solution would be to create a new class of amateur station which will be required, before they will be licensed, to make a showing similar to our proposed rules contained in the attached appendix. Comments are invited regarding these two possible solutions and any other proposals regarding this type of operation.

5. Section 97.103(b)(3) requires that an amateur radio station log include a notation of third party messages sent or received, including names of all participants and a brief description of the message content. The Commission invites comments regarding the usefulness of this requirement and whether it should be modified or deleted.

6. Authority for the proposed rule changes contained herein is contained in Sections 4(i) and 303 of the Communications Act of 1934, as amended.

7. Pursuant to applicable procedures set forth in Section 1.419 of the Commission's Rules, an original and 14 copies of all material requested by this proceeding should be submitted on or before December 20, 1972, and reply comments on or before January 3, 1973. All relevant material will be considered by the Commission. In reaching its decision in this proceeding, the Commission may also take into account other relevant data before it in addition to the specific data invited by this Notice. Responses will be available for public inspection during regular business hours in the Commission's Public Reference Room at its headquarters, 1919 M Street, N.W., Washington, D. C.

FEDERAL COMMUNICATIONS COMMISSION

Ben F. Waple Secretary

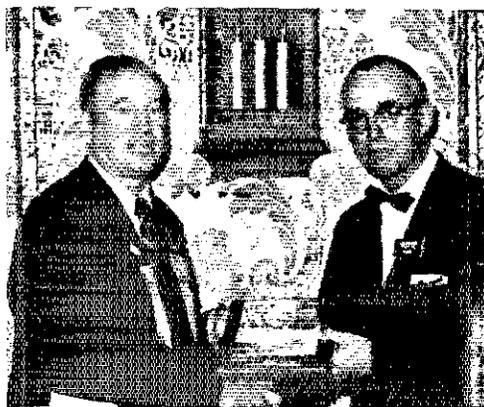
APPENDIX

In Section 97.112, the present text is designated as paragraph (a) and a new paragraph (b) is added to read as follows:

Section 97.112 *No remuneration for use of station*

(b) Control operators of a Club Station may be compensated when the club station is operated primarily for the purpose of conducting amateur radiocommunication to provide code practice transmissions intended for persons learning or improving proficiency in the International Morse Code, or to disseminate information bulletins consisting solely of subject matter having direct interest to the Amateur Radio Service provided:





"The Flashlight Sidebander," by R.P. Burr, W2KQP, won the Cover Plaque for July; at left ARRL Hudson Director Stan Zak, K2SJO, makes the presentation.

(1) The station is operated weekly for a period of at least 40 hours;

(2) The station schedules operations on all allocated high frequency amateur bands using reasonable measures to maximize coverage;

(3) The schedule of normal operating times and frequencies is published at least 30 days in advance of the actual transmissions;

REPEATER RECONSIDERATION

A number of groups and individuals have filed petitions for reconsideration in connection with the "Repeater Docket," No. 18803. A very brief summary follows, roughly in the order received at FCC:

Northern Berkshire ARC, Inc.: To seek relief from rules governing effective radiated power, particularly as concerns 50 MHz.

Wayne Green, W2NSD/1: Six petitions - To drop the requirement for continuous monitoring; To extend authorized frequencies for repeaters to include 440-442 MHz; To permit repeaters in the entire 220-225 MHz band; To permit crossband linking of repeaters; To exempt control operators from responsibility for content of transmissions; To stay the effective date for one year.

Fort Worth Chapter, Texas VHF-FM Society: To seek relief from continuous monitoring of a repeater.

Ben F. Myers, Jr., WBSHFH: To seek relief from continuous monitoring of a repeater; to bring RACES repeater frequencies into line with regular amateur usage; to allow greater power for repeaters than is now authorized on 52 MHz.

North Central Texas 6 Meter Repeater Assn.: To seek relief from continuous monitoring; to seek higher *erp* in the 52 MHz band; and to endorse the requests filed by the Texas VHF-FM Society.

Fort Worth-Tarrant County OCD: To seek relief from continuous monitoring, particularly of repeaters operated as units of RACES.

Roy L. Albright, W5EYB: To seek relief from continuous monitoring, where coded access is used.

Texas VHF-FM Society: To seek relief from continuous monitoring and substitute therefor systems derived from touch-tone pads for controlled activation.

Thomas R. Yocom, WA0ZHT: To seek relief from continuous monitoring, and offering coded access as an alternative.

Michael F. Troy, WA2TYV/WA1DEZ et al (W2KGV, WB2UFK, WB2VUK, WB2TNN, K2LOZ): To stay and set aside most of the provisions of the Report and Order relating to repeaters and remote control stations.

James L. Hudson, WA3JAT: To seek relief from continuous monitoring, substituting coded access.

Ronald P. Mier, WB5AZB: To seek relief from continuous monitoring; to modify *erp* limits, particularly toward 52 MHz.

Naval Communications Command: To permit military recreation stations to operate from locations other than those appearing on the license.

Repeater Committee, Arlington Radio Club, Inc.: To permit temporary operation of repeaters under a primary station license under certain conditions; to drop *erp* limits; to seek relief from continuous monitoring.

Engineers Repeater Group: To seek relief from continuous monitoring; to modify *erp* with respect to 52 MHz; to provide for coded access.

This list is by no means complete, nor does it attempt to cover each of the petitions in its entirety. FCC, incidentally, earlier issued a policy statement (page 10, November *QST*) taking some of the time pressure off existing repeater stations.

ENVIRONMENTAL PROTECTION

FCC is currently studying, through its Docket 19555, the effects of the National Environmental Policy Act on its licensees. The purpose of the docket is ostensibly to control such things as 1200-foot broadcast-station towers, but the language is broad enough to give the League some concern. Accordingly, ARRL asked for an extension of time for filing until October 31, and for replies to comments of others until December 8; the FCC has granted the request. Additionally, the League has now filed these comments taking the position that Congress had not intended the Act to apply to amateurs:

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20054

In the Matter of
Implementation of the National Environmental Policy Act of 1969
Docket No. 19555
To: The Commission

OPPOSITION TO NOTICE OF PROPOSED RULE MAKING

The American Radio Relay League, Incorporated, the nationwide organization of amateur radio operators licensed by the Federal Com-

munications Commission under Part 97 of its Rules, urges and implores the Commission to not become involved in environmental regulation and control as proposed in the Notice of Proposed Rule Making released July 28, 1972 (FCC 72-663, 37 Fed. Reg. 15711), or in any other manner. As will be shown more particularly later in this pleading, Congress never intended the Commission to engage in any such activities, and involvement of the Commission will make impossible achievement of the basic purposes for which it was created as set forth so clearly and succinctly in the Communications Act of 1934, as amended (47 USCA 151 *et seq.*).

The Commission Has Misconstrued The National Environmental Policy Act

1. The Commission's proposal to become involved in environmental regulation and control is based upon two fallacious premises. The first, stated in paragraph 2 of its notice, is that "[i]n its regulatory activities, the Commission approves or disapproves of applications which may involve construction projects by others which may have a significant effect on the quality of the human environment, but does not itself engage in construction activities." The second, stated in paragraph 3, is that "[o]ur purpose has been to fully implement both the letter and the spirit of the environmental statute, consistent with the procedural safeguards set out in the Administrative Procedure Act and the Communications Act . . ."

2. It is most unfortunate that the Commission did not have available when it prepared its proposed rules the Third Annual Report of the Council on Environmental Quality¹ submitted to President Nixon on August 7, 1972, for the report lists every Federal agency involved in environmental regulation and control to any significant extent.² The Federal Communications Commission is *not* included in the list of 16 Federal departments and agencies and 36 offices within those departments and agencies.³ The report establishes beyond a shadow of doubt that the "existing programs and activities" of this Commission are entirely adequate and that further intrusion by this Commission into environmental protection and regulation is not desired and is unnecessary.

3. That the Council on Environmental Quality does not consider the Federal Communications Commission to be directly or significantly involved in environmental matters is not surprising in light of the legislative history of the Act. A review of every bill, every Presidential message, the testimony of every witness before Congressional committees, every committee report, the debates on the floors of the Senate and House, and the Act itself has established that there was not even a single mention of "radio," "television," "broadcasting," "communications," "antenna," "antenna tower," "antenna structure," "Hertzian waves," or "Federal Communications Commission." If Congress ever intended the word "environment," as used in the Act, to include even remotely matters under the jurisdiction and control of the Commission, at least one of these words or terms would have appeared in the legislative history.⁴

4. What, then, is the basis of the Commission's assertion in paragraph 2 of its notice that it "approves or disapproves of applications which may involve construction projects by others which may have a significant effect on the quality of the human environment . . ."? No responsible person

ever has contended that the generation, transmission and propagation of radio communication signals have any effect whatsoever upon the air, water, or soil, i.e., the environment. The only possible connection with the environment is in the area of esthetics. Reference to esthetics appears only twice in the Act, in Sections 101(b)(2) and 202, and then only incidentally. There was no mention of esthetics in the Presidential messages and only one or two passing references to esthetics in the testimony of witnesses. The word does not appear in any of the Executive Orders of the President issued to implement the Act⁵, or in the Index of the Third Annual Report of the Council on Environmental Quality. The absence of any references to esthetics is not surprising in light of the general rule throughout the United States that esthetics cannot be regulated or controlled by statute, ordinance or regulation because there is no readily definable standard. "Beauty is in the eyes of the beholder." The inescapable conclusion is that Congress never intended that the Act encompass esthetics except when incidental to some basic purpose or objective of the Act.

5. The Commission cannot intrude in environmental matters merely by asserting that "[i]n its regulatory activities, the Commission approves or disapproves of applications . . . which may have a significant effect on the quality of the human environment . . ." (Notice, para. 2). It must give the usual meanings to the words "major" and "significantly" of Section 102(2)(C), 42 USCA 4332(2)(C).⁶ The Commission concedes, in footnote 1 of its notice, that "we have not decided many cases in which environmental questions were at issue . . .", and then states that, "[i]n light of recent court decisions, however, we have reassessed our initial position [that it should not become involved] and are now persuaded that it is advisable and desirable to issue specific implementing regulations." What court decisions have led to this about-face? Not one decision is cited, and not one has been uncovered. One can only conclude that someone is engaged in the not unusual role of "empire building." In the absence of more compelling reasons, such as specific requests by the Council on Environmental Quality based upon pollution control, the Commission has no business becoming involved in environmental matters.⁷

Present Procedures Are Entirely Adequate

6. The Act directs that all agencies of the Federal Government cooperate and assist in environmental matters when called upon by the agencies directly responsible for protection of the environment. This is nothing new as far as this Commission is concerned. For many years, it has cooperated closely with the Federal Aviation Agency on airspace matters, with the Department of the Interior on proposals to locate transmitters in national parks, and with the Department of Defense on many matters. In fact, the only case cited in the notice, *Amendment of FM Table of Assignments*, 25 FCC 877 (1970), involved a request by the Department of the Interior for reconsideration of a channel assignment which could only be utilized by locating the transmitter and its associated antenna in the Fire Island National Seashore. After considering the unique circumstances, the Commission withdrew the assignment. The exact same degree of cooperation will adequately solve every significant environmental problem which may arise in the foreseeable future.



Cover Plaques aplenty: holding awards from left are Richard T. Knadle, Jr., K2RIW, for the August winner "A 12-Foot Stressed Parabolic Dish"; Derwin H. Stevens, W1UYK/WA2DHA, for the September choice, "A 4000-Channel Two-Meter Synthesizer;" and Jerry Sevcik, W2FMI, for the June article, "The W2FMI 20-Meter Vertical Beam." Far left is Stan Zak, K2SJO, Hudson Division Director and far right, our president, Harry J. Dannals, W2TUK.

7. Section 101(a) of the Act also directs Federal agencies to cooperate "with State and local governments." This the Commission traditionally has done, as evidenced by its consistent refusal to become involved in construction and application of local zoning ordinances and building codes. Never has this Commission attempted to override an action of a local governmental body or agency. The Act has not preempted for Federal agencies, including this Commission, consideration of such matters which always have been under local jurisdiction.

8. Amateur radio has painstakingly developed a body of law over the years which provides that the installation and operation of an amateur radio station, including its absolutely essential outdoor antenna and supporting structure, is a normal and permissible use of residential property and cannot be restricted or prohibited by zoning ordinances and building codes. *Village of St. Louis Park v. Casey*, 281 Minn. 394, 16 N.W. 2nd 459 (1944); *Appeal of Lord*, 368 Pa. 121, 81 A. 2d 533 (1951); *Wright v. Vogt*, 7 N.J. 1 (1951). Numerous municipalities throughout the United States have enacted zoning ordinances which affirmatively permit the installation, maintenance, and use of amateur radio antennas and supporting structures. The proposed procedures and rules would have the practical effect of nullifying such court decisions, zoning ordinances and building codes.

9. The proposed rules contemplate local public notice of almost any antenna construction. The mischief which would result would be so tremendous as to be beyond estimate. Experience with somewhat similar notice requirements, in which neighbors must be specifically asked, on an individual basis, to consent or object to a proposed antenna has been that unanimous consent almost never can be obtained. The practical effect would be to give each neighbor a power of veto. The end result would be a denial of the due process of law guaranteed by the Fifth Amendment to the United States Constitution and the protections of the Administrative Procedure Act.

10. Unless and until it can be shown that the existing, long established procedures are inadequate, the Commission should not embark upon new procedures. The proposed rules must not be adopted, and all plans to intrude in environmental matters must be rejected.

The Objectives Of The Communications Act Would Be Thwarted

11. The drafters of the notice and the proposed rules appear to have overlooked the purposes for

which the Federal Communications Commission was created. Section 1 of the Communications Act of 1934, as amended, 47 USCA 151, states that the Commission was established "[f]or the purpose of regulating interstate and foreign commerce in communication by wire and radio so as to make available, so far as possible, to all the people of the United States a rapid, efficient, Nation-wide and world-wide wire and radio communication service . . ." Section 303(g) of the Act, 47 USCA 303 (g), directs the Commission to "[s]tudy new uses for radio, provide for experimental uses of frequencies, and generally encourage the larger and more effective use of radio in the public interest." (Emphasis supplied). The national policy of the United States has been to encourage and foster the operation and growth of amateur radio. Congress in recent years has amended the Communications Act a number of times to provide more latitude for amateur radio and has adopted joint resolutions waiving citizenship requirements for special events such as International Boy Scout Jamborees and International Telecommunication Union conferences.

12. Every transmitting station must have an antenna. The size, height and other characteristics of the antenna are dictated by the transmitting frequency and the communication desired. For terrestrial communications, efficiency and effectiveness of a station varies directly with height of the antenna above ground. If the Commission is to fulfill the purposes for which it was established, including those set forth so clearly in Sections 1 and 303(g) of the Act, it must pursue policies and procedures which will clear roadblocks and other obstacles to the erection and maintenance of the indispensable antenna and its supporting structure. The proposed rules and procedures would accomplish just the opposite result. Delays in construction might very well run into years, hundreds of hearings might be required, and millions of dollars might be expended each year by both the government and applicants just to separate legitimate from crank and perhaps blackmail complaints and objections. The Commission should not embark upon such a perilous journey into the unknown without a clear directive from Congress. The legislative history of the National Environmental Policy Act unequivocally establishes no such result was intended or even imagined by Congress.

13. Insofar as amateur radio is concerned, the proposed rules and procedures not only would impose such a costly and time-consuming burden upon most amateurs as to effectively destroy amateur radio as it exists today, but also would negate the intent of Congress so clearly set forth in Section 319(d) of the Communications Act. Section 97.1 of the Commission's Rules provides, in pertinent part, as follows:

Basis and purpose. The rules and regulations of this part are designed to provide an Amateur Radio Service having a fundamental purpose as expressed in the following principles:

- a) . . .
- b) Continuation and extension of the amateur's proven ability to contribute to the advancement of the radio art.
- c) Encouragement and improvement of the amateur radio service through rules which provide for advancing skills in both communication and technical phases of the art.
- d) Expansion of the existing reservoir of the amateur radio service of trained operators, technicians, and electronics experts.
- e) . . .

14. Beginning with the very first radio enthusiast, amateurs have experimented with antennas. Much of the knowledge of the state of the art has come from such experiments. Seldom is an amateur so satisfied with the efficiency or other characteristics of his antenna that he is not considering improvements. In recognition of this fundamental characteristic of the amateur and the experimental nature of the service, Congress has enacted Section 319(d) of the Communications Act specifically exempting radio amateurs from seeking permits for construction.⁸ Although that exemption is noted in the instant Notice of Proposed Rule Making, the Commission has proposed notice and reporting procedures for amateurs far more onerous and burdensome than those necessary to obtain a construction permit in any other service at the present time. How can a 12-year old with a Novice Class license undertake and finance the procedures now proposed by the Commission? The proposals will so stifle the amateur radio service as to make virtually impossible experimentation with new antennas and changes in existing antennas. Once again, the clear mandate of Congress would be negated. Irrespective of what rules and procedures may be adopted for other services, the amateur radio service must not be burdened with any notice, reporting or other procedures.

15. The additional work by the Commission would cost many tens and probably hundreds of thousands of dollars as a substantial enlargement of the staff, additional office space, and additional record keeping would be required should the proposed rules be adopted. The fees already being extracted from radio amateurs, which far exceed the cost of administering the amateur radio service, undoubtedly would be increased. The burden upon many amateurs, particularly the teenagers acquiring their first licenses and the senior retired amateurs, would be increased. Projects and programs which would require enlargement of staffs and facilities and the expenditure of most substantial funds should not be adopted in the absence of a clear unequivocal directive from Congress. As shown above, Congress has not even hinted that this Commission should become directly involved in environmental regulation.

Respectfully submitted,
THE AMERICAN RADIO RELAY LEAGUE,
INCORPORATED
By Robert M. Booth, Jr.
Its General Counsel

October 31, 1972

¹ The Council was established under Section 202 of the National Environmental Policy Act, 42 USCA 4342.

² The Council is required by Section 201 of the Act, 42 USCA 4341, to submit an annual report to the President, who in turn shall transmit an annual report to the Congress. The report must include "(4) a review of the programs and activities (including regulatory agencies) of the Federal Government, the State and local governments, and nongovernmental entities or individuals, with particular reference to their effect on the environment and on the conservation, development and utilization of natural resources; and (5) a program of remedying the deficiencies of existing programs and activities, together with recommendations for legislation." The report is available from the Government Printing Office, Stock Number 4111-0011.

³ See Appendix A, attached hereto. (But not reproduced here — EDITOR.)

⁴ The views of the Federal Communications Commission were not invited by any Congressional committee and were not submitted voluntarily by the Commission.

⁵ Reorganization Plan No. 3 of 1970, 35 Fed. Reg. 15623; Reorganization Plan No. 4 of 1970, 35 Fed. Reg. 15627, Executive Order No. 11472, 34 Fed. Reg. 8693; Executive Order No. 11507, 35 Fed. Reg. 2573; Executive Order No. 11514, 35 Fed. Reg. 4247; Executive Order No. 11523, 35 Fed. Reg. 5993.

⁶ Section 102(2)(C) requires agencies to prepare, for all *major* Federal actions *significantly* affecting the quality of the human environment," a detailed statement of what the environmental impacts will be. (Emphasis supplied).

⁷ Another form of pollution plagues communications, namely, spectrum pollution. In 1968, Congress amended the Communications Act by adding Section 302a giving the Commission broad authority to control the manufacture, import, sale, shipment and use of devices "which in their operation are capable of emitting radio energy by radiation, conduction, or other means in sufficient degree as to cause harmful interference to radio communications."

⁸ Section 319(d) states that "[a] permit for construction shall not be required for Government stations, amateur stations, or mobile stations . . ."

ARRL AGAIN SEEKS 3825-4000 GENERAL PHONE

When the Federal Communications Commission issued its Report and Order on phone expansion and Novice privileges, Docket 19162 (November 1972 *QST*, pages 78-81), it authorized on the 75-meter band only 10 kHz additional space for General and Conditional Class phone.

In the original Notice of Proposed Rulemaking in the Spring of 1971, FCC had offered 3875-4000, an increase of 25 kHz. ARRL, in its comments on the docket, had asked instead that 3825-4000 kHz be opened to Conditional and higher class licensees, on the grounds that these frequencies support most of the organized traffic and emergency work on phone. Yet nowhere in the Report and Order was there any citation of reasons why the League request was not granted. Accordingly, the ARRL Board of Directors by mail vote has authorized the Petition for Partial Reconsideration which appears below:

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

In the Matter of
Amendment of Part 97
of the Commission's Rules
to provide for expansion of
the telephony segments of
the high frequency amateur
bands

Docket No. 19162
RM-1306, RM-1349,
RM-1477, RM-1479,
RM-1544, RM-1550,
RM-1593, RM-1603
RM-1614, RM-1616,
RM-1644, RM-1665,
RM-1695, RM-1723,
RM-1729. Also
RM-1748, RM-1873,
RM-1880

To: The Commission:

PETITION FOR PARTIAL RECONSIDERATION

The American Radio Relay League, Incorporated, pursuant to Section 405 of the Communications Act of 1934, as amended, respectfully requests the Commission to reconsider that portion of its Report and Order in the above-styled proceeding released October 2, 1972 (FCC 72-849), pertaining to the radio telephone sub-bands in the 3,500 to 4,000 kilohertz amateur band. Specifically, the League requests that the frequencies between 3,825 and 4,000 kHz be made available for radio telephone operation by General and Conditional Class licenses instead of 3,890 to 4,000 kHz.¹

In support whereof, the following is respectfully submitted:

The Notice of Proposed Rule Making, released March 1, 1971 (36 FR 4511), invited comments upon revised sub-allocations in the five high frequency (hf) amateur bands. The League's comments were submitted on June 1, 1971. Even though most of the Commission's original proposals, as well as the League's counterproposals, were not adopted by the Report and Order released October 2, 1972 (FCC 72-849), this petition is limited to that portion of the Report and Order relating to the single sub-allocation between 3,825 and 3,890 kHz.

A most severe condition in the radio telephone portion of the 3.5 Megahertz amateur band arose following the adoption of the present incentive licensing policies in 1967 (Docket No. 15928, 9 FCC 2d 814). Until adoption of the Report and Order in that proceeding, the 200 kHz band between 3,800 and 4,000 kHz was available for radio telephone operation by all amateur licensees except those in the Technician and Novice Classes. Virtually all of the phone nets which formed the backbone of the emergency communication capability of the Amateur Service were distributed throughout that 200 kHz. The Report and Order in that proceeding cut in half the size of the band available for phone operation by General and Conditional Class licensees. Upon the effective date of the new allocation, the nets in which Generals and Conditionals participated, along with a high percentage of Amateur Extra and Advanced Class licensees, squeezed into the 100 kHz band.² Only two or three nets remained below 3,900 kHz. The result was to practically double the number of stations operating in the 100 kHz above 3,900 kHz. The overloading has become so severe, both because of general communications as well as net operations, that everyone has suffered intolerable interference at times, and nets often have been unable to fulfill their role even in times of emergency. Unfortunately, the incentive of less interference between 3,800 and 3,900 kHz has been insufficient for some key members of nets to

upgrade their licenses. The result has been that nets have continued to operate in a narrow 100 kHz band.

The discussion so far has been directed primarily to operations by established and organized nets. The experience in disaster after disaster has been that thousands of amateurs actually jump in to help out in handling emergency traffic even though they are not members of any net. This is one of the reasons amateur radio has played such an important role in emergencies almost since its inception. Few communities in the nation have no radio amateur readily available in time of need. Unfortunately, disasters do not occur on predictable schedules. The amateur bands, and particularly the phone sub-bands in the 3.5 MHz band, must be available for instant use in times of emergencies. This is yet another reason why there must be relief for the 100 kHz between 3,900 and 4,000 kHz.

The Commission was aware of the severe overloading of the 100 kHz above 3,900 kHz, and proposed some relief in its Notice of Proposed Rule Making in this proceeding by proposing to increase the sub-allocation by 25 kHz. The League, in its comments, requested that 75 kHz rather than 25 kHz be added. In support, the League submitted the following:

It is most significant that 100% of the CW nets, 95.85% of the phone nets, and 96.83% of all registered [with the League] United States nets are concentrated in the portions of the band available to Conditional and General Class licensees. Even more significant is that 209 of the 219 phone nets are concentrated in only one fifth of the entire band. This concentration occurred after the modified incentive licensing plan adopted in Docket No. 15928 became effective on November 22, 1968, and has become so severe that the effectiveness of many nets has been reduced to a most undesirable level.

The most pressing need in the 3.5-4.0 MHz band is to relieve the overloading of the top 100 kHz. If possible, this relief should be provided without removing any incentives earned and enjoyed by the Amateur Extra and Advanced Classes.

The League is particularly concerned over the lack of significant relief to the overloading of 3,900-4,000 kHz provided by the Commission's proposal. Far more than an additional 25 kHz is required. Accordingly, the League recommends and requests that an additional 75 kHz be provided for phone operation by Amateur Extra, Advanced, General and Conditional Classes rather than the 25 kHz proposed by the Commission.

The heavy participation by Amateur Extra and Advanced Class licensees in net operation makes somewhat less significant the size of the band available for phone operation by those classes. Accordingly, the League recommends and requests that the 100 kHz between 3,775 and 3,875 kHz proposed by the Commission for both classes be reduced to the 25 kHz between 3,800 and 3,825 kHz.

In the seventeen months since submission of those comments, the overloading of the 100 kHz between 3,900 and 4,000 kHz has become even more severe. The importance of phone operation in the band during times of emergency has been further proven by the South Dakota Flood Disaster early in June of this year, in which 236 persons lost their lives, and the Tropical Storm Agnes Disaster later that month in Pennsylvania and New York which left tens of thousands homeless.³ In each disaster, amateur radio phone nets operating between 3,900 and 4,000 kHz were the primary

communication circuits for many days.⁴ In spite of emergency clearing of frequencies by the Commission, severe interference was received at times because some operators simply did not "get the word."

In the seventeen months since submission of the above comments, the importance of rapid communications on frequencies available to the largest number of amateurs has become even more recognized. For example, many midwestern areas are subjected to tornados, often with little or no warning. The extreme importance of the role of amateur radio in preventing or minimizing loss of life from tornados is described in the following report of the League's director for the Dakota Division:

Minnesota amateurs have established a Weather Information Dissemination Service (WINDS) whenever a tornado watch is called for Minnesota. In order to get maximum participation by Generals and Conditionals, 3912 kHz was selected. Most tornado watches occur from 5 PM local time until 11 PM local. During that time of day, conditions are such that amateurs in many areas of the country cause unintentional interference to the WINDS operation.

Data on weather conditions are collected via amateur radio and transmitted directly to the Weather Bureau. An amateur station is set up right next to the RADAR operator and manned during all tornado watches. The weather reports of the amateurs are used by the Weather Bureau to augment their forecasts of tornado movement.

Amateur participation in the WINDS operation numbers 100 to 250 depending upon the specific watch area involved. The severe crowding of activities between 3900 and 4000 kHz in the evening hours renders the operation difficult at best. The crowding interference, coupled with marginal atmospheric conditions, causes a loss of valuable time and information when tornado activity is present.

Similar emergency operations, seldom at pre-scheduled times, exist in other areas as well.

The simple, inescapable fact is that the effectiveness of safety-of-life operations such as WINDS varies directly with the number of participating amateurs. General and Conditional Class operators are indispensable.

One of the major activities of the League since its founding almost sixty years ago has been emergency preparedness. Its Communications Department is staffed by dedicated amateurs who have devoted many years to such work. Each of the sixteen League directors maintains close liaison with the Section Communications Managers and Section Emergency Coordinators in the sections of his division.⁵ Each of the 67 SECs is an expert in emergency preparedness. Without meaning to be disrespectful, it is respectfully submitted that most members of the League's emergency organization have far more expertise in the field than do members of the Commission's staff. The Commission is urged to give full faith and credit to the pleas for relief of the overloading between 3,900 and 4,000 kHz.

In furtherance of emergency preparation, the League has a number of publications and bulletins which normally would not come to the Commission's attention. Two such publications are attached. Appendix A is a copy of the Net Directory which lists all public service nets registered with the League as of July 1, 1972. The list does not include many so-called "rag-chewing" nets, most of all of which operate between 3,900 and 4,000 kHz and cause even more overloading.

Appendix B is a copy of the ARPSC-LO Bulletin of October 1972.⁶ The Commission's attention is respectfully directed particularly to pages 3, 4 and 5 of Appendix B and the reports of the League's Section Emergency Coordinators (SEC) and Emergency Coordinators (EC) and the Amateur Radio Emergency Corps (AREC).

Contrary to expectations of some, the increased interest in and activity on the 144 and 220 MHz bands has not reduced interest in or siphoned off operations from the 3,900 to 4,000 kHz band in most areas of the nation. A study of the Net Directory (Appendix A) discloses the following distribution of phone public service nets throughout the 3.5 MHz phone band: (Showing frequency segment, number of nets, and number of regularly scheduled weekly sessions.)

3,800 - 3,850 kHz	0	0
3,850 - 3,890	2	7
3,890 - 3,900	0	0
3,900 - 3,950	79	295
3,950 - 4,000	73	311
	154	613

Thus, 98.7% of the nets and 98.86% of all regularly scheduled weekly sessions are crammed into a narrow 100 kHz band.

Even though the very first "fundamental purpose" of the Amateur Radio Service set forth in Section 97.1 of the Commission's Rules is "(a) Recognition and enhancement of the value of the amateur service to the public as a voluntary noncommercial communication service, particularly with respect to providing emergency communications," (Emphasis supplied), and even though the League's comments to the Notice of Proposed Rule Making discussed at some length the need for relief from overloading of the 3,900 to 4,000 kHz band so widely used for emergency preparedness and communications, the word "emergency" appears but once in the entire Report and Order of October 2, 1972. Even that reference related only to the desirability of phasing out "full carrier double sideband [am] emission . . . in the lower four HF bands except in an emergency." (para. 7).

The League's plea for relief appears to have fallen upon "deaf ears." The Report and Order clearly establishes that the 10 kHz expansion of the General and Conditional phone band, to 3,890 kHz, was based solely upon the numbers of licensees of various classes without any consideration whatsoever to established operating habits, and the overriding desire to prod General and Conditional Class licensees into up-grading to the Advanced and Extra Classes under the incentive licensing policy:

14. . . With thousands of amateur radio operators upgrading to Amateur Extra Class and tens-of-thousands upgrading to Advanced Class, while the number of General and Conditional Class licensees is decreasing, adjustments to the sub-band allocations must be made in order to return the incentive principle. Additional adjustments will be made periodically in the future as the upgrading movement continues. Allocations follow a pattern of apportionment of the telephony segments into three sub-bands in the case of 3.5 MHz and 21.0 MHz; one restricted to Amateur Extra exclusively; one restricted to Amateur Extra and Advanced; and one available to General/Conditional and Extra/Advanced.



These sub-band apportionments are determined by considering the number of individual licensees in each group having privileges to each sub-band weighted in favor of the higher classes. (Emphasis supplied)

It is respectfully submitted that continued implementation of the incentive licensing program, which the League always has supported, must not be achieved at the expense of emergency communications capability. Experience since full implementation three years ago of the 1967 incentive licensing program has shown that denying Generals and Conditionals access to the 100 kHz between 3,800 and 3,900 kHz does not provide, in and of itself, sufficient incentive to up-grade. It is respectfully submitted that the benefits to be derived from expansion of the General/Conditional phone band down to 3,825 kHz will far outweigh the doubtful benefits to be derived from retaining the 65 kHz between 3,825 and 3,890 kHz for incentive licensing.

Perhaps the League's comments submitted June 1, 1971, concerning the General/Conditional sub-band in the 3.5 MHz band should have been more extensive. However, the proposals of the Notice of Proposed Rule Making were so far-reaching and involved so many considerations that not every aspect could be fully discussed in a document of reasonable length.

Public interest considerations are paramount. It is respectfully submitted that the public interest can be served best by reconsidering the General/Conditional phone sub-band allocation in the 3.5 MHz band and by extending the band downward to 3,825 kHz.

Wherefore, the premises considered, the Commission is respectfully requested to reconsider its Report and Order and amend its rules to make the band from 3,825 to 4,000 kHz available for radio telephone operation by all but Technician and Novice Class licensees.

Respectfully submitted,
THE AMERICAN RADIO RELAY LEAGUE
 By Robert M. Booth, Jr.
Its General Counsel

November 1, 1972

¹ This petition was authorized by 12 of the League's 15 United States directors. The views of

two directors had not been received by the time this petition was prepared. Only one director voted not to petition for reconsideration. The director for the Canadian Division abstained.

² The Report and Order of October 2, 1972, in this proceeding appears not to recognize that amateurs of one class desire to communicate with amateurs of another class. For example, hundreds of Advanced Class operators can be heard communicating with Generals and Conditionals in the 100 kHz above 3,900 kHz every morning. And Advanced communicate with other Advanced in that same 100 kHz. Except perhaps in the sub-bands available only for telegraph (cw) operation by Amateur Extra Class operation, where much of the operation uses cw speeds of 25 words per minute and higher, there is no such condition as "class distinction." This is the reason that occupancy of phone sub-bands cannot be judged merely by the number of licenses outstanding for each class.

³ See detailed reports in *QST* for October and November 1972.

⁴ Shift of net operations to frequencies between 3,800 and 3,900 kHz often is not feasible because of the narrow band frequency characteristics of antennas employing fixed loading. Examples are the multi-band trap vertical (ground plane) antennas, usually roof-mounted which cannot be readily returned, and the trap loaded mobile antennas which have limited adjustment capabilities.

⁵ The United States has 67 sections (including separate sections in the Canal Zone and the West Indies) and Canada has 7 sections.

⁶ ARPSC means Amateur Radio Public Service Corps. LO means League Official.

HAM AND HIS WORLD 1972

Another fine public demonstration of amateur radio has been staged by the members of the Ontario Science Centre Amateur Radio Club, VE3OSC, October 18-22, with the cooperation of all the clubs in the Toronto area. There were nine facets to the show, held in the Great Hall at the Centre:

1. "From this car you can talk to the World." VE3BUI's car with a 5-band ssb rig and fm gear for 50, 144 and 420 MHz was a crowd-pleaser.

2. About 475 messages were originated from VE3OSC - not counting "informals" for Scouts during Jamboree on the Air. 3. Three HW-7 Heath mini-rigs and an HW-32 were assembled during the show, while visitors gaped.

3. Three HW-7 Heath mini-rigs and an HW-32 were assembled during the show, while visitors gaped.

4. Ham radio as an open door for the handicapped was amply demonstrated by members of the CNIB Amateur Radio Club (for the blind) and the Wheel Chair Roundup busily handling traffic.

5. The public got a chance to try International Morse and watch the results on a large oscilloscope and a print-out recorder.

6. The Ontario Trilliums showed how YLs participate in ham radio - and incidentally handled a good chunk of the traffic.

7. Slow-Scan, RTTY and DX chasing livened up things for the permanent station in the Centre, showing off its brand-new console.

8. Beginners were included with several small rigs on cw - Heath, Ten-Tec, Yaesu and home built all being represented. A variety of Morse keys were also on display.

9. All the foregoing were nicely tied together by an Information Centre which not only steered people about, but also screened "Ham's Wide World" and the new Canadian film, "Fine Business;" distributed the VE3OSC pamphlet, "About Amateur Radio"; and answered questions about books, courses and coming conventions. ARRL's and *QST*'s hearty congratulations to all concerned!

EDWARD P. TILTON, W1HDQ, RETIRES

Ed Tilton, W1HDQ, originator of the column, "The World Above 50 Mc." and its predecessor, "On the Ultra Highs," retired on September 28 from full time employment as VHF Editor of *QST*. "Mr. VHF" to large numbers of the 50-and-up crowd, Ed was first licensed as W1HDQ in June 1933 - the convenient suffix to his call was purely an accident, since he had no connection with Hq. at the time. He began writing columns for *QST* in 1939. After wartime service as a field engineer specializing in naval radar, he joined the League staff as vhf editor, but continued with the column (by this time under its present name) until 1960. He continues to keep an eye on the "World Above . . ." as a consultant and local contact-man for Bill Smith, K0CER, who actually writes from South Dakota.

W1HDQ holds 50 MHz WAS No. 9 and was at the U.S. end of the first transatlantic vhf QSO on November 24, 1946, with G6DH at the other end. He has pioneered in tropospheric bending, sporadic-E skip, auroral propagation, meteor scatter and communications through the Oscars. He's a member of Commission III of the International Scientific Radio Union (URSI). The Rochester Hamfest named him "Amateur of the Year 1969" and the Central States VHF Society presented the 1972 John T. Chambers, W6NLZ, Memorial Award in August (see page 114, November 1972 *QST*). Ed is author of *The Radio Amateur's VHF Manual*, revised this year. Good news for program men: W1HDQ is willing to consider some invitations for speaking engagements. Requests should go through the Hq. travel coordinator, WIUED; acceptance will hinge on several factors, some of them a bit unpredictable, but we'll try to oblige where possible.

DOUG CARROLL, VE3VC

We regret to report the death, on September 19, of Doug Carroll, VE3VC, a member of the Canadian Radio Technical Planning Board (which advises the Department of Communications on technical matters relating to radio) and chairman of its committee on ssb planning. He was also president of TMC (Canada) Ltd., and was active in the Electronic Industries Association of Canada,

for instance having served as chairman of the electronic division.

WILLIAM J. SCHMIDT, W0GU

It is also our sad duty to record the passing (on October 7) of William J. Schmidt, W0GU, of Wichita, Kansas, director from the ARRL Midwest Division from 1952 through 1955. Long a radio technician for the Wichita police, Bill was a past president of the Wichita Amateur Radio Club; was chairman of the 1948 Midwest Division Convention; was currently ORS and had earlier been an EC and OBS. His earlier callsign had been W0OZN.

FCC ASKS CONGRESS TO CHANGE ACT

The Federal Communications Commission has asked Congress for amendments to the Communications Act to extend and strengthen its authority so as to include, for instance, unlicensed persons operating in violation of the rules, users of restricted radiation devices and equipment manufacturers. The proposed legislation would also raise maximum forfeitures (from the present \$500 to \$5000) and lengthen the time during which FCC could issue Notices of Apparent Liability (from the present 90 days to three years). It's interesting to note that FCC currently can take administrative action only against licensees; it must proceed through the Justice Department in prosecutions of "bootleggers"!

POWER VIOLATIONS RE OSCAR

Oscar 6 is designed to be used with ground stations having an *effective radiated power* of 100



"Mr. VHF" - Edward P. Tilton, W1HDQ

watts or less — notice that this is *erp*, not watts input or even watts output. In other words, the gain of the antenna must also be considered.

Not only does an overpowered ground station occupy more of Oscar's bandpass than it should, it also causes Oscar to drain its batteries faster than planned. Finally, it appears that a ground station using more than 100 watts *erp* is also violating the amateur regulations:

I am sorry to learn that some stations in the Amateur Radio Service are using excessive power in transmitting to the Oscar 6 satellite, operating under station license WA3NDS. This is clearly in violation of Section 97.67(b) which limits amateur radio stations to "... the minimum amount of transmitter power necessary to carry out the desired communications."

Additionally, since the design of the satellite is such that received signals from these overpower stations cause interference to all other users of the satellite transponder, these stations are also in violation of Section 97.125 which states, "No licensed radio operator shall willfully or maliciously interfere with or cause interference to any radio communication or signal."

I hope these interpretations will be sufficient to assist the self-policing efforts traditional in the Amateur Radio Service. — James E. Barr, Chief, Safety and Special Radio Services Bureau, FCC

IARU News

(Continued from page 73)

Samoa (American): Utulei High School Amateur Radio Club, Pago Pago, Titiula, 96799

Samoa (Western): Director of Post Office and Radio, Post Office, Apia

Scotland: via Great Britain

Senegal: Ch. Tenot, 6W8BF, P.O. Box 971, Dakar

Singapore: SARTS, P.O. Box 2728, Singapore 1

South Africa: SARL, P.O. Box 3037, Cape Town

Spain: URE, P.O. Box 220, Madrid

St. Vincent: QSL Bureau, P.O. Box 142, St. Vincent, West Indies

Surinam: QSL Manager (PZ1AR), SARL, P.O. Box 240, Paramaribo

Sweden: SSA, Fack, S-12207 Enskede 7

Switzerland: USKA, Sonnenrain 188, 6233 Buoron/LU

Syria: TIR, P.O. Box 35, Damascus

Tanzania: Via Kenya

Thailand: RAST, Box 2008, Bangkok

Trinidad and Tobago: T&TARS, P.O. Box 1167, Port of Spain

Uganda: Via Kenya

United States: See ARRL QSL Bureau in this issue

Uruguay: RCU, P.O. Box 37, Montevideo

U.S.S.R.: CRC, Box 88, Moscow

Vatican: HV1CN, Domenico Petti, Radio Station, Vatican City

Venezuela: RCV, P.O. Box 2285, Caracas

Virgin Islands: Graciano Belardo, KV4CF, P.O. Box 572, Christiansted, St. Croix, V.I. 00820

Wales: via Great Britain

Yugoslavia: SRJ, P.O. Box 48, 11001 Belgrade

Zaire: UZRA QSL Bureau, B.P. 1459, Kinshasa 1

Zambia: RSZ, P.O. Box 332, Kitwe

QST

ARPS

(Continued from page 68)

September Reports				
Net	Sessions	Traffic	Rate	Avg. %Rep.
EAN	30	1285	1.236	42.8 99.4
CAN	30	930	.864	31.0 98.9
PAN	30	1138	.868	37.9 100.0
IRN	60	353	.299	5.9 94.4
2RN	60	469	.709	7.8 100.0
3RN	60	389	.457	6.5 96.7
4RN	56	433	.380	7.7 86.9
RN5	60	636	.346	10.6 91.2
RN6	60	808	.482	13.5 100.0
RN7	60	346	.310	5.8 57.8
8RN	60	464	.400	7.7 89.4
9RN	55	290	.304	5.3 82.0
TEN	50	552	.330	9.2 84.6
ECN	60	121	.241	2.2 -
TWN	38	191	.198	5.0 35.2
TCC Eastern	110 ¹	587		
TCC Central	81 ¹	516		
TCC Pacific	110 ¹	785		
Sections ²	2244	8511		
Summary	3023	18304	EAN	7.0
Record	3975	27764	1.357	15.4

¹TCC functions not counted as net sessions.

²Section and local nets reporting (65): AFNB, ALND, AENM, AENT (AL); OZK (AR); IPI, NCN (CA); CCN (CO); BEN, CN, CPN, No. CT ARLC, Nutmeg VHI (CI); DEPN, DTN (DE); EAST, FMTN, EPIN, GN, QF TN, TPTN, VEN, WFPN (FI); GSN (GA); D N (IL); KSBN, OKS (KS); KNTN, KTN (KY); LAN (LA); SGN (ME); MDCIN (MD-DC); WMN (MA); QMN, WSB (MI); MJN, MSPN, PAW (MN); MSN, WEN (MO); NIEPIN, NIN (NJ); NLI (NY); HN, RNR, doMtrN, OSN, OSSBN (OH); EPA, PFIN, WPA (PA); IN (IN); ILX, TTN (TX); BUN (UT); VRN, VSNB (VA); NSN, PSEN, WSN (WA); WVPN (WV); APSN (AB); MTN (MB); GBN (ON); WOV/UH (PO).

Transcontinental Corps

Area	Functions%	Successful	Traffic	Out-of-Net
Eastern	110	91.7	1625	587
Central	81	90.0	1108	516
Pacific	110	91.7	1569	785
Summary	301	91.2	4302	1888

The TCC roster: Eastern Area (W3EML, Dir.) — W1s BJG FJ NJM QYY YNE, K1SSH, W2s ER GKZ, E2KTK, WA2s ICU UWA, W3s CB FML, K3MVO, WA3OGM, W4s SQO UQ ZM, K4s FAC KNP YDL, WA4s OMG SGV, W8s IBX PMI RYP VDA/J, K8KMO, WA8PIM, Central Area (W0LXC, Dir.) — W4s OGG ZJY, WA4WWT, WB4s KPE YCV, W5s MI QU SBM, K6KCB/S, W9s CXY DND HJ INH LCX ZHN, K0s AFM DDA, WA0s IAW MLE, Pacific Area (K5MAT, Dir.) — W5RE, K5MAT, W6s HGF EJJ IPW MLE VNO VZT, WA6DEL WB6VKV, W7s BU EKB EM GHT KZ PI, W9LQ, K0s JSP OTH, WB0AXW.

Independent Net Reports (September)

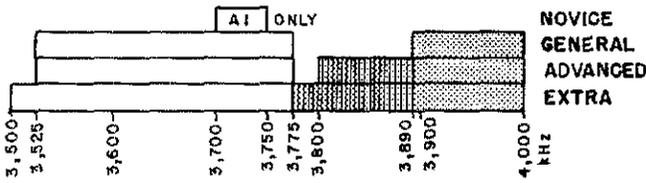
Net	Sessions	Traffic	Check-ins
20 Meter ISSB	21	1370	380
20 Meter No. American Tfc	26	201	447
Colonial SSB System	21	25	61
Clearing House	26	143	336
IMRA	47	522	1688
Mike Farad	26	113	287
All Service	4	25	35
75 Meter ISSB	30	240	1085
7290 Traffic	42	536	1881
Ohio Valley Teenage	30	68	263
Hit & Bounce / MW	30	769	342

QST

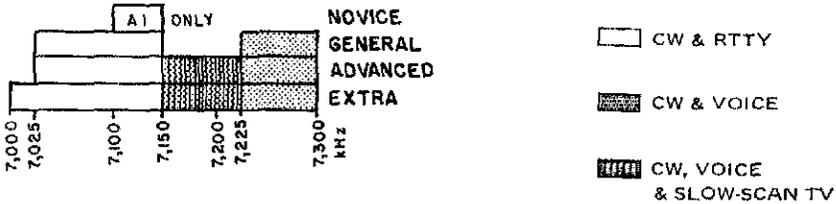
**SWITCH
TO SAFETY!**



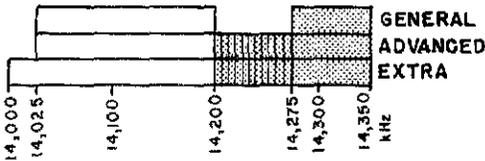
80 METERS



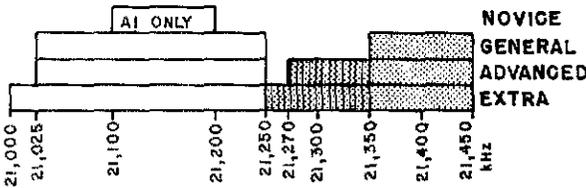
40 METERS



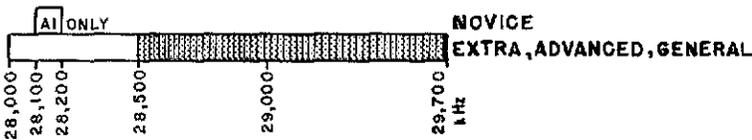
20 METERS



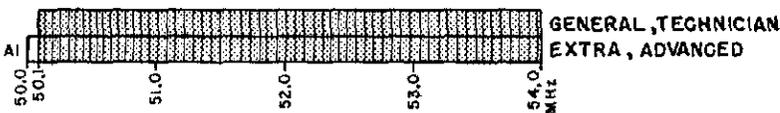
15 METERS



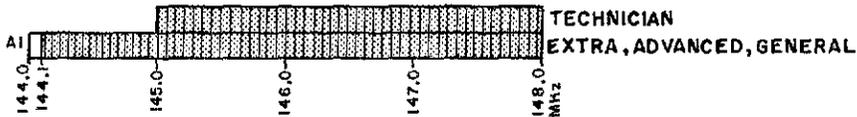
10 METERS



6 METERS



2 METERS



New U.S. amateur suballocations effective November 22, 1972. Conditional Class privileges are the same as General Class. (See page 78, November 1972 QST.) Copies of this chart are available from ARRL Headquarters. Send a stamped, addressed envelope and ask for the "Member's Guide to the U.S. Ham Bands."

The World Above 50 Mc.

1215-1300 1500-1450 3580-3700 5450-5925 10,000-10,500 21,000-22,000 34,000-7

CONDUCTED BY BILL SMITH,* KØCER

Updating The Quadhelix for 1296 MHz

IT'S BEEN a long time since K6UQH described his array of four helical radiators in *QST*.¹ The basic information was continued in the *Handbook* for several years, but without too much evidence of its having been used. The author must have been ahead of the rest of us, for in recent months he's had quite a few inquiries about the antenna. Several of them had to do with modification for 75-ohm feed, prompted no doubt by the availability of quality coax of this impedance from cable-TV sources.

K6UQH decided that he might as well join the 75-ohm group. The helical array was somewhat the worse for having been up for some nine years, so some mechanical refurbishing was done at the same time. Originally the helical radiators were mounted directly on wooden supports. Insulation quality is important in a helical antenna, and Bill got tired of waiting for the wood to dry out, so he had revamped the antenna to use ceramic standoffs some time back. Other than moisture problems, the only trouble encountered resulted from the fact that copper oxide is a poor conductor. Origin-

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

¹Troetschel, A Quadhelix Antenna for the 1215-MHz Band," August, 1963, *QST*. Available from ARRL, 75¢ per copy. Also *Handbook*, 1965 through 1971 editions.

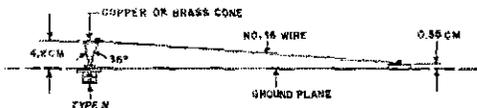


Fig. 1 — Details of one radial feed wire and ground plane for the quadhelix antenna, modified for 75-ohm feed.

al performance was restored when the helices were polished and sprayed with Krylon, to keep them bright for a time, at least. Perhaps silver plating would be worth the time and expense, or maybe enamelled wire would be better than bare. Bill credits WB6NMT with having passed along the suggestion that the helical radiator is a slow-wave structure whose effectiveness depends on current flowing on its surface.

As pointed out in the original article, it is important to keep the phasing lines close to the reflecting plane. For 75-ohm feed, the inner end of each helix should be 0.35 cm (about 5/32 inch) above the ground plane. The cone-shaped metal junction and support at the center of the system should be 4.2 cm (1-5/8 inches) high. Feed wires are No. 16. (see Fig. 1). For other details, see the original article. The *QST* issue is still available in limited numbers, if you don't have it or any of the *Handbooks* in which the antenna was described. — *W1HID*

OVS and Operating News

50-MHz DXers in North and South America are getting reacquainted this fall, as Cycle 20 is still in evidence. From near Miami, W4GDS reports his first fall opening September 14, working LU4MZ and LU8MBH at 1957 GMT. Later that evening, Bob worked LU7MBH on TE. On September 20, TE was again workable to South America from the Miami area as W4GDS worked LU3EX, LU8AHW, both Argentina, and HK3OK, Columbia. The Bogota station was also worked by WB5AEH and W8PFB. WB5AEH heard TI2MQ, Costa Rica, TG9SO, Guatemala, and ZK1AA, Cook Islands, during the same opening.

September 15 K5ZMS/S, San Antonio, worked TG9KI. Ray says South Americans were worked all across the southern United States from Florida to Arizona on October 17th. On the 18th,

K2RIW won the 1296-MHz division of the Sixth Annual Antenna Measuring Contest at the East Coast VHF Society on August 6th with this 12-foot stressed dish measured at 29.7 dB over isotropic. (WB2HJD photo)

QST for



K2RIW's 52-element array of four 13-element Yagis won second place 432-MHz honors at the East Coast VHF Society conference, 20.5 dB over a reference dipole. (WB2HJD photo)

K5ZMS/5 reports that 6 sounded like 20, due to an exceptional E opening, which also featured a Puerto Rico-to-Nebraska contact.

In Puerto Rico, VP2VAI/KP4 reports hearing the following repeaters since August 18: 49,976 MHz, apparently in Caracas, Venezuela; and 50.025 and 50.075 MHz, Bogota, Columbia. Dave heard F-layer backscatter from W4GDS at 1950 GMT, September 14, and the following day heard F2 DX from South America. On the 16th, VP2VAI/KP4 worked LU8AHW on TE at 0133 GMT. The evening of October 4, Dave worked more TE to LU3EX, LU4MZ and LU7MBH. The same stations were again worked two days later. Dave says also that he and KP4AHQ are now on 144 MHz, running 180 watts and good antenna systems, looking for state-side schedules. Anyone want to work KP4 on 2 meters? Write to Dave Ternent, VP2VAI/KP4, Dyne-A-Mark Corporation, GPO Box 856, San Juan 00936. KZ5OD, Canal Zone, has a low-powered a-m transmitter and offers to put it on the air, if there is any interest. Write to Lee at P.O. Box 284, Balboa Heights, Canal Zone.

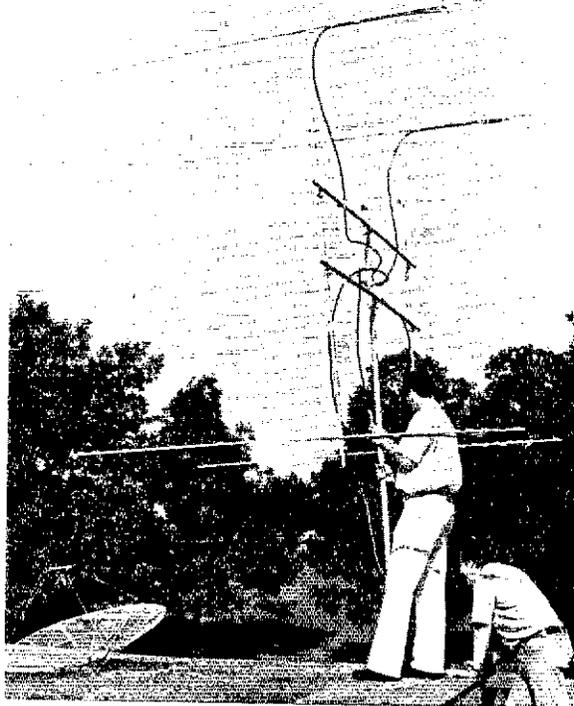
In the Pacific, HL9WI, Korea, says six-meter DX has been very exciting. On September 8, Bill worked DU1JS, Manila, crossband 6-to-20 meters and then worked KG6RA, Saipan, on six for Bill's ninth six meter country. On the 12th, country number 10 was added, KX6HK, in the Marshall Islands. HL9WI worked DU1JS on six meters September 20, DU1JS also worked many JAs the same day and HL9WI worked WA6OYU/KG6, Guam.

Elsewhere, WA1DFL, Mass., worked aurora signals from VE1ASJ to W8s September 13. K4ROM, N.C., caught a 50-MHz tropo opening the evening of September 19 into Michigan, Indiana and Illinois. The best DX was K9QHK, Ill., 500 miles. WA5QCP, El Paso, reported September E as did WA6HXM, Los Angeles.

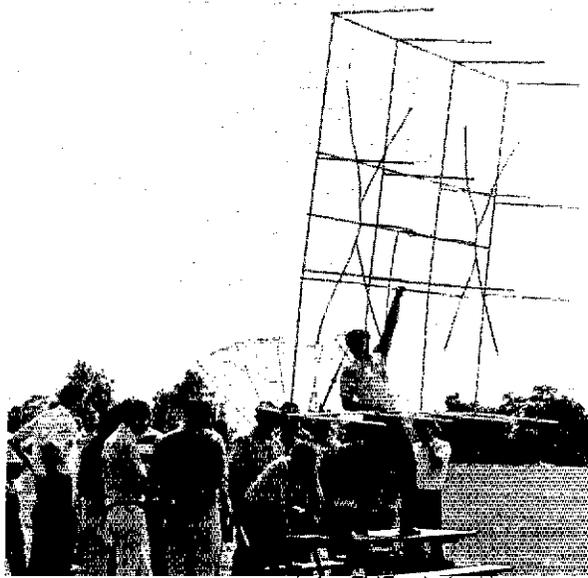
144-MHz meteor scatter DXers were disappointed when the expected Giacobinids shower failed to materialize October 8. While I have not received as yet any reports from Europe, the shower may have been active there. News reports indicate ships at sea in the Atlantic saw slowing-moving flashes in the sky first believed to be flares. The meteor count at K0CER, S.D., as observed on 181 MHz video carrier frequency was somewhat above normal with a peak in the activity between 1415 and 1430 GMT. I know of no reported meteor contacts during the expected shower. Early reports indicate that the October Orionids shower was likewise poor, but K0WLU, S.D., worked WA2PKY, N.Y., October 21.

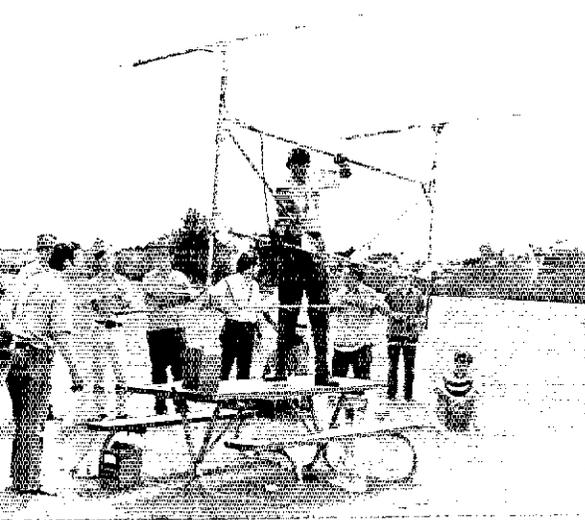
WA2UDT, N.J., echoes previous reports of good tropo during the September contest and adds that WA2PKY is now active on ssb seeking meteor

K2CBA was top-seeded on 432 with his array of sixteen 6-element Yagis measured at 21.3 dB over a reference dipole. (K2RIW photo)



schedules. K1FJM/4, near Miami, says he is operating a ssb beacon on 144.17, using a horizontally polarized omnidirectional antenna, hoping to stimulate 2-meter interest in Florida and the Bahamas. K4MSG, Avon, N.C., reports working Rhode Island, Connecticut and 2s in September on low-power a-m K5BXG says that although the Giacobinids flopped the activity from those looking for the shower allowed him to add state 34 to his WAS score. Charlie worked W4WDH, K4FRH and W4LSQ, all Georgia, on tropo. WA5UNL, Arkansas, reportedly worked W4CKB, Florida, also on tropo October 8. W6PO, San Mateo, does his DXing via the moon. Bob worked SM7BAE, Sweden, September 1, 2, 3, 23, 30 and October 1. During September Bob had a near contact with German DK1KO and worked VE7BQH on the 23rd. Bob is also scheduling W1FZA, N.H., and PY2CSS, Brazil.





K2PPZ's array of four 13-element Yagis placed third with 19.1 dB gain measured over a reference dipole at the ECVHFS. (WA2DMT photo)

WA8LLY, Michigan, sent an interesting account of his September contest activities. Steve says he first noted conditions above normal at 1900 GMT, Sept. 9, hearing W9JDJ on the Wisconsin-Minnesota border. Around 0010 GMT, Sept. 10, Steve worked W0NEN, Kansas City; W0WHP, Iowa, and W0OHU, Minnesota. K2TXB/2 was worked at 0113 followed by K0MQS. A half hour later WA8LLY worked K4PCL/4, Virginia; WB4HEL/4, Tennessee; and W5WAX, Oklahoma, at 0312. Other states worked in the hours following included Arkansas, Oklahoma and Kentucky, bringing Steve to 28 states worked. Now sporting an Advanced license, Steve comments that his eight years as a Technician were frustrating, inasmuch as those able to operate in the 144-MHz segment of the band seldom, if ever, tuned 145 for calls. This may well be a factor in the lessening activity of 2-meter Techs., other than on the fm channels.

While claiming no record, WA9EUA, Oshkosh, Wisconsin, has worked 19 states and Canada on fm simplex and has heard four more states. George does his DXing with a Regency, pushing a pair of



4CX250Bs and a 44-element array at 70 feet. Judging from the amount of sporadic E worked this past summer on fm simplex, I'd bet that some 144 DXers will be equipped for fm next summer. In Europe, EA3PL, Spain, is quite active chasing meteor DX with a pair of 4CX250Bs and 10-element Yagi. Russians UL7IAA, UT5DL and UG6AD are active, as is Czech OK3CDI and German DK5CUI.

220 MHz activity continues to improve. K4GGI/1, Mass., says WA1LXU worked tropo September 27 to Ohio. WA1LXU has a 64-element collinear and 100 watts. Tuesday continues to be 220 night in New England with regulars W1YTW, W1QXX, WA1LXU and W1OOP being joined by K1CQX, W1JVL and K2SRZ from time to time. WB6NMT, Sonoma, has a new array ready for 220 moonbounce: sixteen 10-element Yagis. W6PO, San Mateo, spends some time on 220 attempting to work K7BBO, Tacoma. K7BBO is hearing his echoes on 222 moonbounce with 160 collinear elements. During the September contest he worked K7AUO and W7TYR, Oregon, on tropo. K9HMB, Chicago, continues active on 220 with a big signal. In South Dakota, WA0QLP seeks meteor scatter schedules.

420 MHz is a band where many interests are explored: ATV, moonbounce, fm, tropo, meteor scatter and so forth. K2UYH, N.J., having worked WA6HXW via the moon in August, followed up by working VE7BBG September 24 and October 1. George, W9WCD, Illinois, listened in on the October 1 contact. K2UYH will soon be scheduling W9WCD and Australian VK2ALU. Al says it appears that anyone able to detect 8 or more dB of sun noise on 432 should be able to hear moonbounce signals. Al also continues nightly contacts with W8YIO near Detroit.

Chuck, WA6EXV, Ridgecrest, California, who will be ready for 432 moonbounce soon, managed tropo contacts in September with W6FZJ, WA6NRV and K7ICW. WA6EXV, W6FZJ and K6AEP are running signal polarization tests between horizontal and vertical.

W0LER, Minneapolis, reports a tropo inversion the evening of September 18 extending from North Dakota to Illinois, permitting K0AWU, Grand Forks, to work K9HMB, WA9HUV, W9ZIH and K9ZZH. K0MVC, Minneapolis, worked WA9HUV while W0LER was working W9AAG, K9UYK, W9UNN (10 watts), K9HMB, W9ZIH, WA9HUV, K9ZZH, W8SDJ, K0AWU and W0PHD, all with strong signals. September 23 K0CER, S.D., worked K9HMB, W9LXM, W9WCD and W9ZIH, all Illinois, between 0300 and 0345 GMT, but no other signals were heard. WA0FLS/0, Lawrence, Kansas, is looking for schedules.

VE4MA, says VE4CT, Brandon, Manitoba, has a converter working and a 15-element W0EYE-style Yagi up. He is working on a transmitter. VE4AP is likewise working on gear. Andy says the BFR-90 device looks good for converters and preamps. QST

432-MHz moonbounce - WA2FGK style!
(WA2DMT photo)

QST for

How's DX?

CONDUCTED BY ROD NEWKIRK,* W9BRD

How :

Tried out your new subbands yet? FCC's revision of hf operating boundaries, effective last month, wasn't earth-shaking in magnitude but the impact on mike DX work should be considerable. This is especially true on 75 meters where every kilohertz looms large at this stage of the solar hertz — er, cycle. The more substantial 40-meter shift looks great on paper and should make 7-MHz voice DXing somewhat less impossible. Still a split-frequency proposition when working most of the outside world, though, 7100 kHz being the usual high phone edge.

The chief limiting factor in 40-meter amateur radiotelephony DX, of course, still exists. If you think SWBC is a harassment above 7200 kHz you'll really be impressed by the nighttime mess on 7150-7200. Just to start off, Voice of America runs handy overseas markers on 7160, 7165, 7170, 7175, 7195, etc. Not to be outdone, juggernauts are conveniently found on 7150, 7160, 7165, 7170, 7175, 7180, 7185 and 7195 kHz. These aren't dinky ten-kilowatters into mere quads and Yagis; powers go up to and past half a megawatt into certain beams covering countrysides.

Unfortunately this regrettable noise is legally based and we must put up with it. Glancing over pages of 7-MHz SWBC listings for dozens of countries in *World Radio-TV Handbook* reminds us of a more grievous gripe: those whopping Peoples Republic of China broadcasters on 7010, 7025, 7035, 7055, 7095, etc. Now that the P.R.C. is becoming acquainted with United Nations proprieties can we anticipate relief? They really ought to try ham radio. They'll like it.

† † †

What :

While some of us sit around complaining of QRM there are others who seem to thrive on it. Take W4QCW for example, holder of ARRL

*c/o ARRL, 225 Main St., Newington, CT 06111.

G2MI's potent Yagi perches proudly atop a hamspun wooden tower at our cozy Kent QTH of the Month. This type of structure, so plentiful in DX days gone by, still looks great today. Proprietor Art Milne, after decades of yeoman service to Radio Society of Great Britain and DXers world wide, is easily the game's best known QSL bureau manager and a widely respected international amateur radio authority. (Photo via K2QHT)

5BDXCC No.1. Bob writes, "Had so much fun on that project I couldn't stop. On July 22nd ZK2DX wrapped up double-5BDXCC for me. I still lack one 80-meter card hut with PY0DVG and ZS2MI recently worked for insurance the full 200 QSLs per band should soon be on hand."

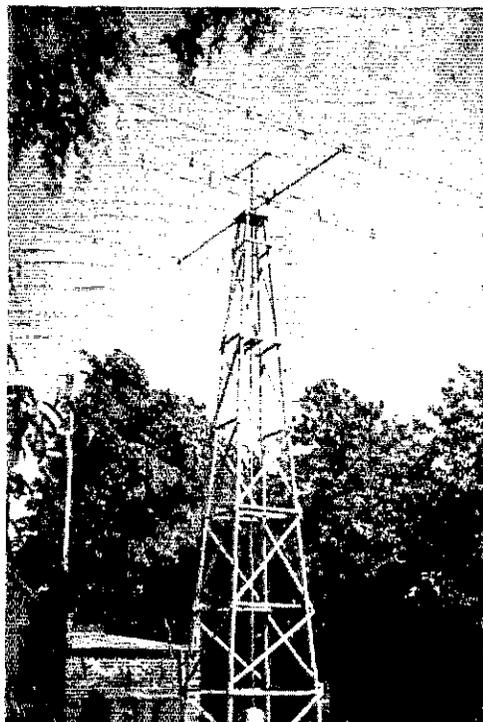
Richmond's *News Leader* heard of W4QCW's wireless accomplishments via the local club press and published commendable coverage. What's after 2X5BDXCC for Dr. Eshleman? Well, we've heard him salting away goodies on 160 cw. When the first claim of a six-band-100 comes through we'll be surprised if it's not from W4QCW, radio amateur DXtraordinary.

† † †

What :

OM Winter is bearing down on us so we might as well stick with the low-band theme this month. The usual Five-Band DX Century Club stopper is 80/75 meters and now is the time to make your move. Long nights and long skip may murder darkness paths on our higher DX bands but plenty of fish are still jumpin' below 7MHz. . . .

80 CW, according to reports from Ws 1SWX 6AM 8FAW 8UM, K2HYM, WAs 2KWB 8YVR 0SDC, VE7s AZY BAF, G3IRM and the DX press, is DXceptionally interesting because of such targets as A35FX, C31s FG FQ, CN8AB, CO2DR, CP1EU, CR7IZ, CTs 1VX 3AS 3AW, CX1AA, DJS





HC1MM in bridal array and WB8ABN, second from left, were wed at Quito in July. Other attending amateurs, from the left: HC1s RF WL GE JJ and FB. Dick, Cal, Dolores, Patricio and Fernando keep in wireless touch with Rick and Maria now back on DX bands as WB8ABN and HC1MM/WB. Note the striking Andean mountainscape in that window reflection.

SQK 6SI 6RX, DLs 100 1RK 1YA 7BD 7NI 8NU/OH0 QJS, DMs 2CH 2DRO 2FBL 3BE 4WEP 4YQI 5GL, EA9EO, EI9J, EL2CB, F3OD, FC0VQ, FG7TG, FK8CD, FM7AD/ES, FO8CR, FP0VQ, FWOAB, Gs 2BJY 2GM 2PL 3GMK 3JKY 3KMA 3LW 3LP 3SWA 4ALE 4AYF 6CJ 8PG, GC2FMV, GMs 3CES 6NX, dozens of HAs including ISB ISX IZU 2KME 2KMK 2MG 6NM 6VD 7KLI 7PW 9OV 9OX 9RH 0LO 0KLU, HBs 9QA 0XHW, H18LC, HKs 3AVK 0BKK, HL9VK, JD1YAA, JE1NEH, KA6AY, KB6DA, KG4CS, KP4DEA, KS6DY, KX6s BB 1Y, LA9OI, LUs 1AZO 2ACQ, LX1BJ, OD5GA, OHs 1LU 1LX 1PG 2BO 2LU 2XM 3IE 4RV 5YX 6KH 6MM 7AA 7NW 7SQ 0MA, scads of OKI-2-3s, 0X 3LP, 0Z4H, PAs 6RU 0ALW 0NMH 0TA 0YN, PW1DVG, Pys 1BTX 0DVG, PZ1AH, SMs 3VF 4CJY 5UH 7CBL 7CMV 0CMP 0BDS, Sps 2KEL 2PAH 4K GK 6ASD 6CZ 6DMJ 6EWQ 6TO 6UK 8EDO 8EMO 8SR 9AAB 9ASS 9DH 9ENV, UAs 1HQ 2EC 4QM 9CM, UC2s AI CK, UF6FAS, UG6AD, UH8s AC CS, UI8MW, UHs 2FAA 5UAR 6DAM 0FAA, UL7s BX GW IH OAG PX, UN1CP, UO50AL, UP2NK, UQ2GW, UR2ZN, UT5SY, UVs 9FN 0IE, UW3YS, VKs 2EO 2VN 6CT 7GK, VPs 2DAE 2ERE 2GVW 2LY 2MK 2VA 2VAS 5BG 5RF 7CQ, VRIs AA W, W4EV/VP9, WA90TH/TF, Y18BD, YO6KBM, Y1s 1BCD 3YU, ZC4CB, ZDs 3Q 8BR, ZK2DX, ZLs 1AH 1UD 2LA 3FZ, ZPs 3A0 3AQ, ZSs 3AW 5LB 6ARS 6AT, 4U1ITU, 5T5CJ, 5X5NK, 7Q7AA, 7X0WW, 8P6DR, 9G1HE, 9H3C, 9L1VW and 9Y4OV, mostly inhabiting 3500-3540 kHz.

75 PHONE is equally DXciting judging from the "How's" mailbag. Ws 6AM 8FAW 8UM, K0FCG, WAs 2APG 2KWB, 8YVR, 0SDC and club sources: A35FX, C21DC, C31s BY FG FK, CEs 2AA 3AQW 8AA, CN8s BB MN, CO2s AA DL FA, CPs 1DN 1EU 6FG, CRs 4BS 6IV, CTs 1BH 2BC 2BG, CX2AX, DK3SS/OHK DL3ZM/YV5, DU6BG, EAs 1ED 6BE 6BG 6BJ 8EM 8GK 8HA 8HJ, EL2CB, ET3s DS GK, F6AGM, FM7AJ, FP0s BG VX, FY7YE, HB9ARV, HC2s NW YL, HH9DL, H18JAN, HKs 1NR 3AVK 0BKK, HP1KC, JY1, JY6AMU, JW1EE, K3WEU/6Y, KCs 4DX 6JC 6SK, KB6DA, KGs 4CS 6JBO 6SL, KH6s HCM II KS, KJ6B, KP4AN, KSs 4BH 6DH, KV4s AB FZ, KX6s AA IO, LUs 2FCB 3DGX 4EQB 7AAC 8AIG 9ABF, LX1BW, M1H, MP4TDM, OA4AGR, OH0VB, ON4UN, OYs 7JD 9LV, PA6AR, Pys 1AH 1HA 2HQ 3APH 3CGP 4AA 4BTK 6SL 7BLV, PZ1s CU GU, TF5TP, TGs 4DX 9MP, TI2AD, TN8BK, UA9BE, Ud6DER,

UH8AE, UI8AA, UO5BS, UP2ER, UR2OI, VKs 2RS 6CF 7RR 9ZB 0JV, VOs 1NP 1AO, VPs 1AA 1AB 1JG 1VB 2AA 2AAD 2DAE 2ES 2GVW 2LI 2LL 2SG 2SU 7BL 8ME 9AT 9HK 9I0 9GI, VRs 1W 4BS, VS6DO, WAs 2BVU/4X 6JZL/TL, WB0FAG/TF, XE1s FFC 1LN, YJ8s DS GH, YN1s FEX FI HF, YVs 4AFG 5ARA, ZC4DS, ZD8s CS RR TS, ZF1GC, ZK1s AA MA, ZLs 1AGO 2AFA 2HT 4MZ, ZPs 3AQ 3CA 5AQ, ZSs 1MH 2MI 3PT 6MP, 3As 2EE 0EN, 3V8BB, 4X4s UF UH NJ, 5W1AU, 5X5NK, 5Z4s KL LW MO, 6W8DY, 6Y3AR, 7X0GM, 8P6s AH AU DI DR, 8R1s G J, 9G1s DY HE, 9H1CD, 9L1VW, 9Q5BG, 9V1RE, 9X5s MS VA, 9Y4s MH and VU, all mostly digging the new U.S. subband segment or just below.

160 rolls right along, too. With the prime top-band DX season barely under way the lads are already jvicing for such game as CX3BH, DA2s XO ZO Djs 3VC 0MR, 1Ks 1KH 3BJ, DLs 5KS 5XF 9KR, EIs 2VGH 8H 9J, EL2CB, EP1BQ, FP0CA, countless Gs GMs and GWs, GC3ZE5, GD3INS, GIs 3RNY 3RXV 3YFY 4BFE 5DX, HB9s CM NL, JA3s AA UI, KP4s ANT CS DLW, KV4EZ, LU8BAJ, two dozen Czechs (the OK-OL crowd really goes for 160), PA0PN, Pys 1DVG 2BJH 2FIO, VKs 5BC 7IB, VP8KE, ZD9BM, ZLs 1AYG 1MQ 3OX, ZP9AY, ZSs 4PB 6KO, 4U1ITU and 8P6DR, some of these even making it on sideband. . . . Hey, it's time for the annual Transatlantic & World-Wide Tests, a 160-meter activity generated by WIBB and associates since back in '32. Test sessions will be held this 1972-'73 season at 1500-1730 GMT on December 24th, January 14th and February 11th. W/K/VEs are urged to call CQ DX TEST during the first 2-1/2 minutes of alternate 5-minute periods beginning on the hour, listening between, until the DX ball starts bouncing. Clock accuracy is a must. Europeans are expected to congregate as usual in the 1825-1830-kHz slot, JAs between 1907.5 and 1912.5, ZLs near 1875 kHz, and VKs at 1802-1805. Remember, these tests are *not* meant to be contests. . . . Out west the lads will hit the 1.8-MHz DX trail in another batch of Transpacific Tests at 1330-1660 GMT on December 23rd, January 13th and February 10th. "Please report results to your favorite DX news source and/or WIBB," suggests Stew, also offering a copy of his latest 160-meter newsletter in response to your self-addressed stamped envelope. You'll find WIBB's thorough top-band reports most interesting reading. . . . Don't forget that the 3rd ARRL 160-Meter Contest cuts loose on the 9th-10th of this month. See W1KQM's recap of last year's affair (page 66, June '72 QST) for a line on the local competition due to reappear. Gangway, 160!

† † †

Where:
NORTH AMERICA - "QSLers of the Month" recommended in mail from Ws 1RML 2VMK 5IB 9YIE, Wbs 2PIN 4UX 4WB 6FKR 9DRE, Ks 3QAP 4EWG 4SD, VEs 1GJ and 7RAF include A2CAB, A35FX, C21TL, CP1JV, CX5BJ, DJ3EZ, DK3EQ, DU1PB, EA0BL, EIs 6S 9N, ET3s GK JH, F6AMK, FG7XC, FM7WN, G3s JVU TXF,

GC3EML, GW5IW, I0IX, IT9s RAN SPW, JA4CX, JD1ABZ, KC4s DS USP, KL7s CZ HIY, KS6CY, KV4EY, LA9MB, MP4s BIN MBQ, OD3FU, ON5DD, PT0MI, SMs 5CBN 7AZX, SV0WU, TGs 4SR 9DX, TI2JO, VKs 2GR 9JW, VPs 2EQ 2KF 2VAM 9BO 9DR, VR4BS, VS9MB, XV5AD, YK1AA, YN0HSM, YV5AE, ZP9AI, 3B8DA, 5U7AS, 5X5NK, 5Z4NR and 9M6AB, plus QSL tenders Ws 1YRC 2RHK, Ks 2BPP 2KGB 9KLR, W48TDY, WGs 2FVO 2ZMK 8ICV, DJ3JV, G3s KDB LQP, JA2KLT, PY2PE, ZLs 2AFZ and 4NH, all enthusiastically applauded for QSL comebacks much quicker than the usual. Any recent kudos candidates in your mailbox? . . . Halp! Parenthesized colleagues need QSL or postal data on holdouts indicated: (W1RML) KD4PP, HS4AGN; (W2VMX) VP1AAA; (W9YIE) 9AIB of '68; (K4SD) EAs 6AR 8GR, HP1LB, OJ0SUF, ZC4TR, 3V8AH, 9M8OFA; (K9DJQ) USAF operators of CE0AE in '70; (K9HLW) HH2LR '59, JT2AY, JZ0A, VP1BJ '70, VO4AP '59, 4U1TU of October 31, 1971, 15 ssb; (VE1GJ) JZ0A; and (VE7BAF) KS6CG. Any 'alp?? . . . We volunteer to serve as QSL aides to ops at the DX end, the rarer the better. (WA4EPH, WB4TNB). . . I manage QSLing for FP8DH who fired up in June. Logs for all contacts to September 6th are on hand. (VE6AYU) . . . My QSL managership for 8P6DW dates from August 1, 1972. (WB6PYI) . . . KS4BH became W6MTE/HR6 after Swan Island's prefix switch. (SCDXC) . . . It's hard to believe that 70 percent of the Eights for whom our ARRL QSL Bureau branch holds DX cards do not want them. Lack of their self-addressed stamped envelopes (s.a.s.e.) indicates this to be true. (W8CFG, CARA)

AFRICA - W3HMK holds logs for all ELICB operation including the period during which W2CTN was handling my QSLs. 5BDXCC hopefuls keep adding to the 8000-plus cards so far received. (EL2CB-W6MNN) . . . I have assumed QSLing responsibility for EL4B as of September 1, 1972, requesting the customary s.a.s.e. from Statesiders. (K7LUH). . . Logs from ZD8US surely take time getting to me. Tell the gang I would like to close the books on Jack's 9Y4US activity as soon as possible. (K8NSA). . . Effective October 1, 1972, I am no longer QSL manager for EA8GK. (K6GAK) . . . I've closed down ET3GK and am back in the U.S.A. QSLs for my Ethiopia activity may be obtained through W2BCU. (WB4RDG/e)

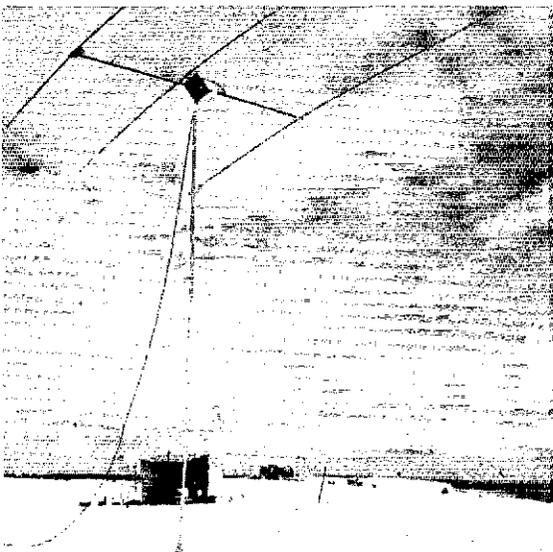
. . . As QSL manager for 912LL my earliest logs date from November 26, 1971. I cannot confirm prior QSOs. Also I'm missing a two- or three-week stretch of log thereafter. When Leo returns to Zambia from Italy I hope to straighten things out. By the way, fellows, make sure your IRCs (international Reply Coupons) are properly validated at point of purchase. (WB2ZHM) . . . K9MKX is designated ZS6ZE's QSL agent for W/K-Land QSOs, G3JXE for others. (LIDXA)

ASI - When my personal effects catch up with me I'll be glad to confirm any of my EP2JA QSOs in response to requests received via the Iran bureau, via my former Tehran address or at my new QTH. (W2JA) . . . I want to be sure everyone wanting my HL9TA QSL receives one and I apologize for delay caused by a change in QTHs. Please apply to my new Jamestown address. (WA2SHU) . . . K6AU disclaims HZ QSLing connections. (W7YF) . . . The prefix block A6 is now assigned to United Arab Emirates, formerly Trucial States (MP4T), by International Telecommunications Union. (DXNS)

EUROPE - A knowledgeable SWL describes his feeling that Russian amateurs are hardly to be directly blamed for tardy or absent QSLs since almost all their outgoing cards must receive a lengthy screening process at the Box 88, Moscow, bureau. Lengthy indeed! (W3RXM) . . . Those needing QSLs for my QSOs from DL4VA, F0UG HBQs XID XJG XKW XMA XTK and 3A0FN should write me at my new location, 4350 Heidelberg, St. Louis, Missouri, 63123. (WA4WME/0) . . . My OY5NS QSL management began this September. I also do QSL honors for OYs 7JD and 9LV. Heavy continuing activity by these three is easing demand for the Faeroes. (W3HMK) . . . F9RM's QSOs from 4U1TU September 9-10, 1972, may be QSLd to his home address. Also note that Malta's 9H5 prefix represents British military personnel. (DXNS)

OCEANIA - I'm sure short-wave listeners to the amateur bands would enjoy much higher verification returns if they would concentrate on reception of radio-telegraphy. I certainly found this to be true during my own SWL days. (VK6HD, I SWL) . . . VK4CAW at last cheered me with his

VK9JW, ambitious DXpeditionary offering of VKs 3JW 4FJ 4KS and 4XY, radiated 11,253 QSOs from remote Meilish Reef in mid-July. John, Roy, Keith and George managed to keep three transmitters in operation 70 percent of their stay. VK4FJ handled cw matters. The location was beset by wild waters, wild winds, wild birds and wilder QRM. (Photos via Ws 4VPD 6ISI)



AXØKW card confirming a 1970 contact. (W51B)
... S.a.s.e. from W/Ks, s.a.e. plus IRCs from
others, are required for VK2BCV/9's Norfolk
Island QSLs via the address listed in last month's
QST. (E. Hamill)

SOUTH AMERICA - Ex-ZP5TT is temporarily
out of QSLs but promises to take care of all
requests as soon as possible. (W4WFL/1) ... QSL-
ing for WA9FAB/KC4 was scheduled to begin last
month on Brian's return to the States from
Antarctica. Mail service out of McMurdo is very
slow. (K9DXO) ... All my current South
American mobile QSOs in conjunction with friend
LU4AC will be confirmed. (WA2EBS) ... If you
should receive QSLs missent from overseas meant
for the bureau route, the best way to get them into
proper channels is via ARRL Headquarters. No-
body should expect you to foot the postage bill
required to deliver them to recipients individually.
Nor is QST space available to list stations for which
you erroneously hold cards. When room for such
lists ever becomes available your inundated ARRL
QSL Bureau Managers deserve first crack!
(W9BRD) ... Lots of specific DX QTH data in
the "How's" mailbag this month. Be mindful that
each item is necessarily neither accurate, complete
nor "official". G'luck! ...

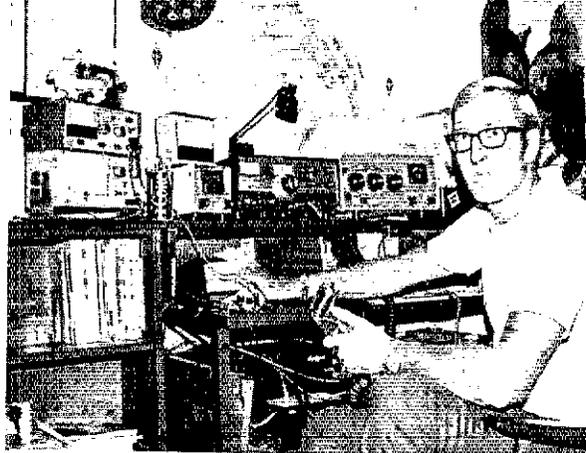
A2CCY, P.O. Box 49, Gaborone, Botswana
A2CEW, D. Johnson (VE4EW), Private Bag 14,
Selebi-Pikuse via Seruli, Botswana (or via
VE4SW)
COBGS, P.O. Box 5, Santiago, Cuba
CPIJV, U.S. Embassy, Bolivia, APO, New York,
09867
CR4BT, M. De Sousa, P.O. Box 145, Sao Vicente,
Cape Verde Is. CR6AD, Dr. N. Henriques, P.O.
Box 40, Cela, Angola
CR6QW, Box 480, Porto Alexandrine, Angola
EL2NY, Susan Neeley (WN7UIG), 416 Hackamore
St., Carson City, NV 89701
EP2WB, W. Bauer, c/o Amateur Radio Society of
Tehran, Box 1000, APO, New York, 09205
ET3JSC, Box 368, Det. 3, APO, New York, 09843
FL8AG, Box 215, Djibouti, T.F.A.I.
FL8DS, P.O. Box 1279, Djibouti, T.F.A.I.
FY0IU, Box 336, Cayenne, French Guiana
GC5AGA-GW5AGA (to K4I)
GC8HT, R. Taylor, P.O. Box 100, Guernsey, C.I.,
U.K.
GW5JW, Penlan, Rhosygarth, Llanilar, Ebery-
stwyth, SY23 4SD, Wales
HBØs X1D XJG XKW XMA XTK (see text)
HC2NV, Box 7034, Guayaquil, Ecuador
HC2YL, Box 872, Guayaquil, Ecuador
HK5MD, F. Cobo, P.O. Box 6149, Cali, Colombia
HP1XMF, Apdo. 6935 or 6931, Panama 5, R.P.

HS1ADQ, P. Vann, MEDDAC, APO, San Fran-
cisco, CA 96346
HS4AGZ, G. Goll, P.O. Box 125, APO, San
Francisco, CA 96386
JAØHOT, H. Yanadori, 1672 Yazu Muramatsu
naha-Kanbara, Niigata, Japan
JY3BZ, Box 1352, Amman, Jordan
JY6HNI, P.O. Box 2353, Amman, Jordan
KC6HC, Box 514, Palau Is., W. Caroline Is., 96940
PAØPMP, P. Patings, Schaikstraat 5, Den Bosch,
Netherlands
PY2s PA PE (via W3DJZ)
SM2AGD/CEØ (via SM3CXS)
SVØWMM, R. Linke, Miller, 1st Baptist Church,
Box 407, Limon, Costa
TI6CBA, Rev. J. Miller, 1st Baptist Church, Box
407, Limon, Costa Rica
TR8VE, P.O. Box 13112, Libreville, Gabon (or via
F6AZI)
VE8MA, OIC, High Arctic Weather Stn., Eureka,
NWT, Canada
VK8ZZ, G. Heming, Box 796, Alice Spgs., N.T.
5750, Australia
VP1ST, S. Turton, P.O. Box 35, Belize, Br.
Honduras
VP2ST, Box 934, St. Vincent, W.I.
VP8MS, P.O. Box 137, Port Stanley, Falkland
Islands
VP9DR, D. Rider, High View Cottage, South Shore
Rd., Southampton, Bermuda
VQ9FOS, P.O. Box 321, Mahe, Seychelles
VR1PA, Box F-82, APO, San Francisco, CA 96401
VR4AA, c/o GPO, Honiara, Solomon Islands
ex-VR4EL, S. Cotton, 10 Emerie Av., E. Mangere,
Auckland, N.Z.
VS5RL, Box 377, Kuala Belait, Brunei
WA2KGY/4X4 (via WB2ZHM)
WB4WTD/YV1, C. Wilcos, P.O. Box 172, Mara-
caibo, Venezuela
XW8ES, P.O. Box 826, Vientiane, Laos
YBØs BY JC, P.O. Box 2761, Djakarta, Indonesia
YS1MSE, R. Sanders, P.O. Box 63, San Salvador,
El Salvador
YU2BHI, Radio Club, M. Marinovica br.1, P.O.
Box 88, 50000 Dubrovnik, Yugoslavia
ZD8AW, c/o Ascension Radio Club, Ascension
Island
ZF1AD, M. Lonneke, WØAAD, Box 810, Kansas
City, MO 64108
ex-ZP5TT, Dr. B. Norman, 3000 Ronna Av., Las
Cruces, NM 88001
ZP9AI, M. McCubbins, 1309 Wyndale Av., Bristol,
PA
3D2AN, Box 184, Suva, Fiji Islands (or via
K6ZIF)
5B4s KP KY, P.O. Box 1152, 8A Zannetos St.,
Nicosia, Cyprus
9G1HG, Box 3247, Kumasi, Ghana
9X5SG, P.O. Box 420, Kigali, Rwanda

Costa Rica's amateurs, though close neighbors to our south, are always eagerly logged by W/K/VEs. At a sunny summer hamfest near San Jose we meet, as numbered, TIs 4AO 5ASG 2EP 2MV 2OFR 2OJ 4PF 2JQK 2OFR's jr. opr., 5JV 5AM 5RSB 2ECB 2LA 2AB and 4VV.



SV0WUU of Athens considers the possibility of a Crete DXcursion in months ahead. Jerry, who signs WA7SIN when home in Montana, sends this photo via QSL manager W3HMK.



C2IGB (via G4ANY) LG5LG (via LA4YF)
 C3ICH (via F8YY) OF3ZDB (via WB6FKR)
 CE3AOF/0 (via SM3CX5) OY5NS (via W3HMK)
 CE6CA/0 (to CE6CA) PJ1AA (via VERONA)
 CN8AU (via VF2AVU) SP3DOI (via W2KF)
 CR3AB (via K3RLY) TA1ST (via JA0CUV)
 DF0MOD (via DJ8UZ) TL8LI (via F6BFH)
 DK0IBF (via DK2TZ) TU2BB (via WA4SPG)
 DU1JMG (via PARA) TY8ABB (via WA4SPG)
 EA8GK (see text) VP2VAM (via VE3GMT)
 EL4B (via K8LUH) VS6FB (via HKARIS)
 ex-EP2JA (see text) W6IUV/HK0 (to W6IUV)
 ex-ET3GK (via W2BCU) W6MTE/HR6 (via K3RLY)
 ET3ZL (via ET3ZU) W0AAD/HR6 (see ZF1AD)
 F0ACO (to K1IXG) WA9FAB/KC4 (see text)
 F0UG (see text) ex-YA1HD (to DK6EA)
 FK8BQ (to F6BBQ) YB0ABE (via K5GUZ)
 FR7AK (via CN8CG) ZC4DJ (via CARS)
 FY7AF (via K3RLY) ZL3KK/c (via ZL4CR)
 G5BAT (to K1IXG) ZS1ANT (via SARL)
 GB3ENF (via G3VZN) ZS6ZE (see text)
 GC3YIZ (via RSGB) 3A0FN (see text)
 GD3RFK (via K4TSJ) 3A0GJ/m (to K1IXG)
 HB0XTL (to F8TH) 7P8AC (via W2LGU)
 ex-HL9TA (to WA2SHU) 8P6JW (via WB6PYI)
 HS5AGG (via W1YFZ) 9G1HE (via VE3FCL)
 KS4KZ (via WA8TDY) 9H5D (via G3PRS)
 KZ5PY (via K0PYB) 9L1VW (via K9QZL)
 9Y4VT (via W3DJZ)

12PHN, JA2HNP, LA2GN, LZ2EE, OD5HA, OH7AA, OK2BNK, OZ8MG, PA0NMH, PY2BCQ, SM6CJK, SP2KFE and 9V1PQ. (REF via W1YL) . . . Eighty-meter operation, as you know, is not allowed in Greece. I have an idea that the band might be made available for DXpeditions to Mt. Athos if enough interested DXers would mail postcards stating "I am interested in working SV on 80 meters" to SV1GA/DL1CU, Postbox 585, D-7 Stuttgart-1, Germany. With sufficient evidence of public interest I believe the licensing authority would seriously consider granting temporary 3.5-MHz privileges. So, if you want an 80-meter SV respond quickly by airmail. (DL1CU via W4WFL/1) . . . New Guernsey quarters should be ready in the spring and I'll once again be active with mike and key. Meanwhile I may operate spasmodically from a temporary location. (GC8HT) . . . F8FE and XYL delighted us with an August visit. (WA3OTO) . . . W7PHO and WA7GRE visited the operational European DX scene. (WWDXA) . . . Austria's OVSV sponsored an international 160-meter cw contest on the second weekend of last month. OEs are permitted 10 watts on 1823-1838, 1854-1873 and 1879-1900 kHz. (OE7s GB XTI) . . . That PA0GMM listed in ARRL DX Test results must be me. Guess I'll have to do it all over again next year! (PA0JMH) . . . The Morokulien Republic QTH of LG5LG, according to LA6s GA and HL, is not a political entity but more like a resort area where LAs and SMs enjoy recreational events. (W2AXR) . . . OH2s BAD BGM and BR signed OH2BAD/0 for some 450 contacts with 60 countries from the Alands in September. (DXNS) . . . Oscar potentialities and international beacon activities give 10-meter DX interest a deserved boost. (QUAX) . . . PA0AA, Holland's "W2AW", emits Friday ham news bulletins and code practice beginning at 1900 GMT on 3600 and 14,100 kHz. There's 45-band RTTY emission at 2030. (VERON)

The preceding suggestions come through the good offices of Ws 1CW 1RML 4WFL/1 51B 6AM 6GSV 7YF 9IGW 9LNO, Ks 3QAP 4EWG 4SD 9DXO 9HLW, WA2YJN, Wbs 2PIN 8HSL 9DRE, VE1GJ, EL2CB, YU2OZ, Columbus Amateur Radio Association CARAscope (W8ZCQ), *DX News-Sheet* (G. Watts, 62 Bellmore Rd., Norwich N. 72T, England), Bar East Auxiliary Radio League (M) *News* (KA2LL), Florida DX Club *DX Report* (K4KQ), International Short-Wave League *Monitor* (E. Chilvers, 1 Grove Rd., Lydney, Glos., GL15 5JE, England), Japan DX Radio Club *Bulletin* (JA3GZN), Long Island DX Association *DX Bulletin* (K2KGB), Newark News Radio Club *Bulletin* (M. Witkowski, Rte. 5, Box 167, Stevens Pt., Wisconsin, 54481), Nigeria Amateur Radio Society *News* (5N2ABG), North Texas DX Association *Bulletin* (W5SZ), Northern California DX Club *DXer* (Box 698, Menlo Park, California, 94025), Southern California DX Club *Bulletin* (W6EJJ), VERON's *DXpress* (PA0 INA TO), West Coast *DX Bulletin* (WA6AUD) and sources previously indicated. Your turn to feed kitty?

† † †

Whence:

EUROPE - 1972 French Contest radiotelegraph results show the Yank scoring order to be Ws 8VSK ITS 5WZQ, WB2JYM, Ws 3ARK 4BJ 8DSO 9K1I 9KXK 3KPI 9HE 4HOS and 3GN with VE1AE taking Canada. F2YS/W2 and W9TLU won and placed in the radiotelephone category, Canadians running VEs 2AFC 3GCO 8YC 4RP and VO1AW. Single-op cw country highs include CT1ZQ, DJ7HZ, EA3HR, G3TFX, GW3INW, HA7LO, I3BLE, JA1ANG, KG4CS, LA9OI, LU5DVO, OH9NV, OK2QX, OZ4HW, PA0JR, SM5BNX, SP6TQ, UAs 2EC 9ACN, UB5VY, UC2OAA, UF6BD, UG6GAG, UI8BL, UO5AP, UQ2IL, UW3EH, VK2BQ, YO8FZ and YU3TAA. Voice victors: CR6KV, CT1ZG, CX2AL, Djs 1XU SQ1/TF, EA8ON, G4ACQ,

OCEANIA - It's likely I'll be operating from Luf island in the seldom visited Hermit group for several weeks next March and April. After departing Port Moresby in November aboard ketch *Pandemonium* we head for Samarai, Milne bay, the Trobriands, New Britain, Talasea, Garove, Manus and thence the Hermits for filming and recording. This is not a DXpedition but a 40-watt transmitter will be on hand for the low cw edges of 20, 15 and 10 meters, also 2000 or 1000 GMT on 14,105 or 14,200. (VK9AR/mcm) . . . YB0ABE 2000 or 1000GMT on 14,105 or 14,200. (VK9AR/mcm) . . . YB0ABE is available from Djakarta almost daily around 1230 GMT near 14,227 kHz. Jerry welcomes all contacts. (K5GUZ) . . . DU1AVN visited my station in September. We succeeded in chatting with DUs 1EN 1JMG and 6RH. (WB9BXQ) . . . VK9BS knocked off for a spell to solve equipment problems. (W3HMK)

(Continued on page 99)

YL news and Views

CONDUCTED BY LOUISE RAMSEY MOREAU,* W3WRE

The Only YL

WE FREQUENTLY GET some curious reactions when people discover that among our other activities we have an amateur radio license. Not long ago, a YL who was the only one in her county was surprised to have a friend ask "Doesn't it seem funny to be the only one?" Here in the United States, as well as other countries, we find many women who are in that category. In some countries there is only a single YL operator.

In Africa, eight countries are represented on the YL map with only one operator. Cameroon's TJIAH; ZS3PD of Southwest Africa; 3B8DC. Mauritius; 5T5YL, Mauritania; 5U7YL, Niger; 7P8YL, Lesotho; 9J2HC, Zambia. And in her recent tour around the world, WA6FSC, now HC2YL, added an additional (if brief) YL touch. Darleen held the calls 5Z4NE, 5X5NE, and 3B9DR, in Kenya, Uganda, and Rodriguez, and when she operated from 5H3LV during a visit she was the only YL contact in Tanzania. There are still 25 countries in Africa that have no YL operators.

In Asia, many names are unidentifiable. At least 15 countries have no YLs listed in the *Call Book* and so far as we can find there are five countries with only one YL. MP4BFC, Bahrain Islands, and MP4QBO, are held by the same woman. VS6FH, in Hong Kong, and Soima Wickramasingh, 4S7YL who has been joined by two other gals in Ceylon, is the only woman with an amateur radio call on Maldiv Islands, 8QAYL; 9V1QC, Singapore, and 9K2BE, in Kuwait.

Princess Muna, JY2, is so far as we know, the only licensed YL in Jordan, but she will not hold that status for long. Her entrance into amateur radio has sparked an interest in her country with some 31 women who are registered in a class for radio operators.

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

In Europe, the YL picture covers all but twelve countries. Again there is a problem of distinguishing names in some so the list may be incomplete, but there are five countries with just one woman listed in the *Call Book*. Sicily, IT1YL; Greece, SV0WIL; Luxembourg, LX1RL; 3A2BY, in Monaco; and TF3YL in Iceland.

While there are no formal listings of woman amateur radio operators at the call 4UHTU, in Geneva, Darleen has operated from that station to give a slight feminine touch to the call, as well as from HV3SJ with "Brother Ed."

There are only 8 countries in North America where radio is strictly "stag," and just four that have the single feminine touch. HK0BHN in San Andreas and Providencia Islands; VP7FA, in the Bahamas; ZF1RF, Cayman Islands, and KG4FD, in Guantanamo Bay.

9M8SPD in Sarawak seems to be the only YL with a permanently assigned call in Oceania. Again WA6FSC did hold the call VR5DL, in Tonga, and, while visiting VR2CC, operated from there to add the YL touch to Fiji for a short time.

But we might add one more to the "only YL" picture in Oceania. On Pitcairn Island, Betty Christian, was instructed in both code and operating procedures by her husband, VR6TC, and passed a test with requirements of cw at 20 wpm for 10 minutes, with only two errors permitted within that period. Thus she was able to operate the commercial wireless station at Pitcairn, and did for several years. Not an amateur, true, but a part of the world wide YL picture.

South America's YL population is large; only five countries have no women operators at all. PJ2JC, Netherlands Antilles; PJ3BR, Surinam; CE0XD, Easter Islands; HC8MP, Galapagos, represent the only countries with just one YL. Operating from Antarctica is an impossible thing unless a gal is on a trip, as was Evelyn Scott, W6NZP, who almost became a permanent resident when she got so busy with the radio from KC4 that she almost missed her boat.

The gals around the world never "feel funny." They are too busy with the *fun* of being the focal point of a "pile up."

WA7NHQ, Mary Gonsalves, and OM WA7ICC were guests of PY1MCC during a recent visit to Brazil. Left-right seated PY2BLL, Director LABRE; WA7NHQ. Standing: PY2CBS, PY2DDS, PY1MCC, and WA7ICC.

QST for





Eila Russell, WA8EBS, 1973 YLRL Vice-president.

CQ YL Supplements

New supplements for the book *CQ YL* are now available, bringing the book up to date through 1973, with YLRL officers, and the 6th YLRL Convention held at Long Beach in May, 1972. The pages are slotted so that they fit directly into the spiral backbone of the book. Requests go to the author/publisher, Louisa Sando, W5RZJ, 4417 11th Street, Albuquerque, New Mexico, 87017. Enclose two 8-cent stamps.

CQ YL is the only existing book devoted exclusively to YL amateur radio activity, as well as the history of YLRL. Copies are available from W5RZJ.

YL Clubs

We receive requests regularly from newly licensed YLs, particularly from those in communities where the feminine amateur radio population is few and far between, asking about YL clubs. For the Novice who is limited to cw operation, there is little opportunity to get such information on the nets, so a quick rundown of the YL organizations might be helpful.

In the eastern United States: WRONE; RI YL; NYC YLRL; Penn-Jersey YL; WAYLARC; Georgia Peaches, SPARCYL, Florida, Chix-on-Six, Buckeye Belles. In the midwest: LARC, HAWK, WHOOT, WHO, TYLRUN GAYLARC. And in the western U.S.: Colorado YLs, Alaska Lassies, Portland Roses, MINOW, BAYLARC, YLRC of LA.

K7YVN, Faye Lyle, first YL to be elected president of any radio club in Nevada, with Governor Mike O'Callahan. Faye was recently installed as President of the Nevada Amateur Radio Assn. (Photo courtesy W7PBV)

December 1972



Carrie Lynch, WA4BVD, 1973 YLRL President.

Canadian YLs have three major clubs: the Ontario Trilliums; Maritime Sparkettes; and the newly organized CLARA, a national organization for all VE YLs from the Yukon to Newfoundland.

DX gals can find a YL club in Japan, JLRS; SAWARC, in South Africa; YLRC Italiano in Italy. Other countries hold on the air net-type meetings, as in New Zealand, and Australia.

For all YL operators everywhere there is YLISSB that meets daily on 20 meters. Organized as a YL group only, they later relaxed the membership rules to include both YL and OM operators.

For women amateur radio operators only, there is, of course, YLRL. Most of the YL clubs are affiliated with this world-wide organization.

1973 YLRL Officers

The women who will preside over YLRL for the year 1973 have interests as widely varied as their locations across the country.

President Carrie Lynch, WA4BVD, will be the administrative officer of this oldest YL Club, planning additional activity. Licensed since 1961, Carrie finds cw her favorite form of operating. A 10-year member of YLRL, Georgia Peaches, CHC, FHC, YLISSB, Carrie is also active in Navy MARS with the call N0RCA. She has earned WAS, WAC, YLCC, A-1 Operators Club, and holds a CP-25 certificate. The OM is WA4FTF.

Vice-president Eila Russell, WA8EBS, is the lady who will set the rules, the dates for the





Need a YL contact in the Philippines? Try Mariecel who operates her father's station with the call DU9FB, on 20 meters almost every morning. Mariecel studies commerce in Manila as a sophomore. (Photo courtesy WB6RJP)

1973 YL SAROC Activity

The annual SAROC Convention to be held at the Flamingo Hotel Las Vegas, Nevada, January 4-7, will include many activities for the YLs who attend, with a special program on Saturday, January 6. In addition to the planned seminars and program, YLRL will sponsor a hospitality booth. It is really the beginning of the convention year for amateur radio, and a great way to climax the holiday season activities.

WA6UBU, Esther Gardner

The OM, Lyle, K6IPJ, told Esther that he would permit her to drive to an International Girl Scout Encampment where she was selected to be a leader, *only*, if she had her amateur radio license. So, since she was a Novice anyhow, and wanted the General Class privileges, Esther took the test. That was the start of a new problem because she worked so many contacts that he had trouble trying to talk to her.

Esther's favorite activities are nets and rag chewing. She has never had the desire to work DX; rather she collects her DX contacts if they happen to be calling when she is on the air, and hear her calling them.

Active in the United Radio Club of the Harbour Area, the Amateur Radio Club of Long Beach, a member of the Mexican club, "Colegas y Amigos," WA6UBU is the 1973 President of YLRC-IA, where she has held all other offices.

Esther prefers phone because she says, although she loves copying code, she is a very nervous sender. She has been active in the Retarded Children's Olympics, the Powder Puff Derby, the March of Dimes and the College Boat Races communications coverage.

In addition to her regular club duties this winter, Esther will be demonstrating amateur radio in some of the Long Beach schools in hopes of helping some of the students. This is an outcome of her former activity in "Operation Library" in which an amateur station was set up in the different libraries in the Long Beach-Harbor Area to demonstrate radio.



Esther Gardner, WA6UBU

1973 YL-OM Contest Rules

Phone: Starts Saturday, February 24, 1973 at 1800 GMT. Ends Saturday, February 25, 1973 at 1800 GMT.

Cw: Starts Saturday, March 10, 1973, at 1800 GMT. Ends Saturday, March 11, 1973, at 1800 GMT.

Eligibility: All licensed OM, YL, and XYL operators throughout the world are invited to participate.

Operation: All bands may be used. Crossband operation is not permitted. Net contacts do not count.

Procedure: OMs call "CQ YL," YLs call "CQ OM."

Exchange: QSO number, RS, or RST report, ARRL Section or country. Entries in log should show band worked at time of contact, time, date, transmitter, and power. (ARRL Section list available for SASE to YLRL Vice-president, or page 6 of *QST*.)

Scoring: A. Phone and cw contacts will be scored as separate contests. Please submit separate logs. B. One point is earned for each station worked. YL to OM, or OM to YL. C. A station

may be contacted no more than once in each contest for credit. D. Multiply the number of QSOs by the number of different ARRL Sections, and/or countries worked. E. Contestants running 150 watts input, or less, at all times may multiply the results of D., by 1.25 (low power multiplier). Ssb contestants running 300 watts pep, or less, may multiply the result of D., by 1.25 (low power multiplier.)

Logs: Copies of all cw and phone logs showing claimed scores and signed by the operator, must be postmarked no later than April 1, 1973, and received by the contest manager (YLRL Vice-president) no later than April 21, 1973 or they will be disqualified. Please remember to file separate logs for each section of the contest.

Awards: 1st Place Phone, OM Cup, YL Cup. 1st Place cw, OM Cup, YL Cup. Second and third place winners in each contest will receive a certificate. The winner of the phone cup is also eligible for the cw cup. Certificates will be awarded to the high place phone and cw winners in each US, VE call district, and country. No logs will be returned. Be sure the copy is legible. Mail logs to Eila Russell, WA8EBB, 4348 West 223rd Street, Fairview Park, Ohio, U.S.A. 44126. 

How's DX

(Continued from page 95)

... VK2BCV/9 pursues his own 5BDXC and reports many unanswered CQs. Has Norfolk Island become so much less desirable? (E. Hamill) . . . A most interesting story on the would-be Republic of Minerva appears in *Linn's Stamp News* for September 25, 1972. (W8IBX) . . . ZM3KK/c, 14,227 kHz at 0430 GMT and 14,008 at 0300, should spread Chathams cheer until spring. (LIDXA) . . . There are dandy DX delicacies haunting the Micronesian net on 14,305 kHz at 0830 GMT. (WCDXB)

AFRICA - I'm scheduled to close EL2CB November 29th after three years and 40,000 log entries. The XYL operated as EL2NY since August 21, 1972, on 21-MHz cw with an HW-16 and 3-element beam. (W6MNN) . . . For the third time in five years amateur licenses are unavailable in Tanzania. This prohibition probably will last until somebody with sufficient influence applies for a ticket and breaks the deadlock. (ex-5H3LV) . . . I expected to start signing A2CEW in early October on 14,180 kHz for Canada, 14,205 for W/Ks, with operation on other bands as well. I intend to remain quite active, especially in contests. (A2CEW-VE4EW) . . . Africa eluded my dipole for four years on 15 cw until I finally caught 9G1HE near 21,200 kHz. ET3JH naturally came right back to me one hour later. (WB4UX) . . . 9U5BB is reported closing for Belgium as Burundi grows rarer, and ZS2M's Sakki expects to keep Marion Island radiational well into '73. (WCDXB)

SOUTH AMERICA - CEs 3AOF/ø 6CA/ø and SM2AGD/CEø offer Easter isle on 80 through 10 meters, one or the other calls being active almost around the clock. (DXNS) . . . San Carlos Radio Amateur Club PY2s joined in a visit to Europe in September. (PY2CA) . . . Stations who

represent new countries for me may qualify for very elaborate QSLs. (PY3ANS) . . . W1YRD and I enjoyed a September visit to YV5s BEP and GJ. (W1GNX) . . . LU4AC and I will operate mobile until January 3rd with a TR-4 and Hustler during my South American vacation. (WA2EBS) . . . I'm logging very pleasant QSOs with U.S. missionary hams serving in Central and South America. (W1RML) . . . 9Y4VT has been busy changing Trinidad QTH from Gasparillo to San Fernando. (W3DJZ) . . . CX2CS mentions that CX4RI likes to catch Novices around 21,100 kHz. (W1CW)

† † †

Stays

Back Copies and Photographs

Back copies of *QST* referred to in *QST* issues are available when in print from our Circulation Department. Please send money order or check - 75¢ for each copy - with your order; we cannot bill small orders nor can we ship c.o.d.

Full size (8 by 10) glossy prints of equipment described in *QST* by staff members (*only*) can be furnished at \$2 each. Please indicate the *QST* issue, page number, and other necessary identification when ordering, and include full remittance with your order - we do not bill or ship c.o.d.

Sorry, but no reprints of individual *QST* articles are available, nor are templates available unless *specifically* mentioned in the article.

Operating News

GEORGE HART, WINJM
Communications Manager
ELLEN WHITE, W1YL
Deputy Communications Mgr.
ROBERT L. WHITE, W1CW; DXCC
GERALD PINARD, *Training Aids*

Florida Restructured. Effective Jan. 1, 1973, Florida will be redivided into Northern and Southern Florida sections, instead of Eastern and Western Florida as now. The new dividing line between the sections will be along the northern boundaries of Pinellas, Hillsborough, Polk, Osceola and Brevard counties. A poll of Florida members indicated this was the way a majority wanted the two sections divided.

The two incumbent SCMs, W4RKH and W4ILE, will continue to serve as SCMs for Northern and Southern Florida respectively, until the end of the terms for which they were elected, after which elections will be based on the new boundary.

The new boundary between the two sections makes the two Florida sections nearly equal in geographical land area and ARRL member population, correcting an inequity which has existed for quite some time. Current literature will be corrected as it is revised, and contest operators, especially those in Florida, are invited to note the change so they will be giving or receiving the correct information where the ARRL section is part of the exchange. This will not, of course, affect the November SS, but will be in effect for the January VHF-SS and for the January and all subsequent CD Parties.

New Regulations. After a long hiatus in action on proposed changes in the amateur regulations, FCC has recently completed a whole series of

actions which vitally affect our amateur operating procedures. The texts of the various "Report and Order" releases and other content of the October FCC public notices are reproduced elsewhere in this and previous issues of *QST* and should be studied carefully by all operating amateurs. They are sweeping and often complicated.

This column will reserve general comment at this time, pending further study of the import and impact of these new regulations. There will be many operating questions that will need answering, and as they come up they will be answered herein or, if they concern public service matters, in the Public Service column.

Which Call to Sign. One specific observation that can be made is that we are now back to the former situation in which an amateur's station uses that amateur's call, not the call of the person doing the operating. This will have a desirable effect, we feel, on ARRL contests and awards, because no longer can an amateur "borrow" someone else's station to work for an award using his own call, or participate in a contest doing so. The achievement of awards or high contest honors must now be done by the licensee operating his own station at its licensed location, or operating portable or mobile from an unlicensed location. When operating a station at a licensed location, the call of that station must be used.

Thus, an amateur's station, like a man's home, is his castle. If you visit him and are permitted to operate his station, you use his call and sign your name in his log. — WINJM

DXCC Notes

The October, 1972, issue of *QST* carried a DXCC Note announcing the addition to the ARRL Countries List of Mellish Reef. Acceptance date for DXCC submissions for Mellish Reef was announced as November 1, 1972. Most unfortunately, serious questions have been raised concerning the operations that have taken place from Mellish Reef and until such time as the validity of the points in question have been ascertained, no DXCC credits for Mellish Reef have been, or will be, made. Therefore, please do not submit any Mellish Reef confirmations for DXCC credits until an announcement does appear in *QST*.

Because of the delay in granting DXCC credits for Mellish Reef, the bottom number for the December submissions for DXCC Honor Roll will be 311 deleted and submissions for that total will be accepted.

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.

Quebec	J. Unsworth, VE2ALE	9/11/72
Orange	W.L. Weise, W6CPB	9/11/72
Ariz.	G.M. Hamman, W7CAF	9/11/72
Mich.	I.J. Olinghouse, W8ZBT	12/10/72

Balloting results: In the Northern Texas Section, Mr. L. E. Harrison, W5LR and Mr. Charles Douglas Roberts, WA5SUY were nominated. Mr. Harrison received 504 votes and Mr. Roberts received 295 votes. Mr. Harrison's term of office began September 15, 1972.

In the Nevada Section, Mr. Leonard M. Norman, W7PBV and Mr. A. Douglas Slagle, W7SJR were nominated. Mr. Norman received 89 votes and Mr. Slagle received 72 votes. Mr. Norman's term of office began October 22, 1972.

In the Kentucky Section, Mr. Ted H. Huddle, W4CID, Mr. J.B. Wathen, III, W4BAZ and Mr. Dennis O'Dell, WB4HUS were nominated. Mr. Huddle received 182 votes, Mr. Wathen received 163 votes and Mr. O'Dell received 26 votes. Mr. Huddle's term of office began October 30, 1972.

In the Utah Section, Mr. John H. Sampson, Jr., W7OCX and Mr. Robert J. Wood, WA7MXZ were nominated. Mr. Sampson received 125 votes and Mr. Wood received 45 votes. Mr. Sampson's term of office began November 10, 1972.

WIAW FALL-WINTER SCHEDULE (Oct. 29, 1972-April 29, 1973)

The Maxim Memorial Station welcomes visitors. Operating-visiting hours are Monday through Friday 1 P.M.-1 A.M. EST, Saturday 7 P.M.-1:00 A.M. EST and Sunday 3 P.M.-11:00 P.M. EST. 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 on Nov. 23, Dec. 25, 1972; Jan. 1, Feb. 19, Apr. 20, 1973. Please note that all times-days are in GMT. Specific operating frequencies are approximate and indicate general operating periods.

GMT	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
0000							
0030							
0100							
0120-0200 ⁴							
0200							
0205-0230 ⁴							
0230							
0330-0400 ⁴							
0400							
0430							
0435-0500 ⁴							
0500							
0520-0600 ⁴							
1400							
1800-1900							
1900-2000							
2000-2100							
2100-2130							
2130							
2230-2230							
2230							
2300							
2345							

¹ CW Bulletins (18 wpm) and code practice on 1.805, 3.530, 7.080, 14.080, 21.080, 28.080, 50.080 and 145.588 MHz.

² Phone Bulletins on 1.82, 3.090, 7.290, 14.290, 21.390, 28.590, 50.190 and 145.588 MHz.

³ RTTY Bulletins sent at 850-Hertz shift, repeated with 170-Hertz shift; frequencies 3.625 7.095 14.095 21.095 and 28.095 MHz.

⁴ Starting time approximate. Operating period follows conclusion of bulletin or code practice.

⁵ WIAW will tune the indicated bands for novice calls, returning the call on the frequency on which called.

⁶ Participation in section traffic nets.

⁷ Operation will be on one of the following frequencies: 21.02, 21.08, 28.02, 28.08 MHz.

⁸ Operation will be on one of the following frequencies: 21.270, 21.390, 28.590 MHz.

Maintenance Staff: W1s, Q1s, WPR.

WIAW CODE PRACTICE

WIAW transmits code practice according to the following schedule. Approximate frequencies are 1.805 3.58 7.08 14.08 21.08 28.08 50.08 and 145.588 MHz. For practice purposes the order of words in each line may be reversed during the 5-13 wpm transmissions. Each tape carries checking references.

Speeds	Local Times/Days	GMT
10-13-15	7:30 PM EST dy 4:30 PM PST	0030 dy
5-7½-10-13-20-25	9:30 PM EST S n T Th S	0230 M W F S n
5-7½-10-13-20-25	9:00 AM EST M W F	1400 M W F
35-30-25-20-15	9:30 PM EST M W F 6:30 PM PST	0230 T Th S

35-30-25- 9:00 AM EST T Th 1400 T Th
20-15 6:00 AM PST

The 0230 GMT practice is omitted four times a year on designated nights when Frequency Measuring Tests are sent in this period. To improve your fist by sending in step with WIAW (but not over the air!), and to allow checking the accuracy of your copy on certain tapes, note the GMT dates and *QST*' practice text (from the issue 2 months previous) to be sent in the 0230 GMT practice on the following dates.

Dec. 11: It Seems to Us
Dec. 12: Correspondence
Dec. 20: League Lines
Dec. 28: ARPS
Jan. 3: World Above
Jan. 5: YL News

SCM ELECTION NOTICE

To all ARRL members in the Sections listed below.

You are hereby notified that an election for Section Communications Manager is about to be held in your respective sections. This notice supersedes previous notices.

Nominating petitions are solicited. The signatures of five or more ARRL full members of the Section concerned are required on each petition. No member shall sign more than one petition.

Each candidate for Section Communications Manager must have been both the holder of amateur Conditional Class license or higher (Canadian Advanced Amateur Certificate) and an ARRL full member for at least two years immediately prior to receipt of petition at headquarters. Petitions must be received on or before 4:30 PM Eastern local time on the closing dates specified. In cases

where no valid nominating petitions were received in response to previous notices, the closing dates are set ahead to the dates given herewith. The complete name, address, Zip code of the candidate and signers should be included with the petition. It is advisable that a few extra full-member signatures be obtained, to insure that it will be valid.

(Continued on page 108)

New A-I Operators, Sept.-Oct. 1972
WA1HAB WB2PSV WB2YYR W3GRS
WA3IYS K7WQJ W7EKB W7SUY W7TLG
K0BAD W0NTW DL2HI DL8PF OK2BMS.

WRQXQ	WB2BBW	W4BKP	251	K4PVZ	G3JAG	DL1LD	W1AM	5N2AAX	W6VBI	JA1SVJ	WSRO
W9QW	WB2PQM	W4YLU	DL1KS	PY1RQO	JA1AAT	EA3NI	W1CNU	W6VBI	WB6MVK	LA1UH	WASWQF
W09LOT	W3ZHU	W5ZWX	K6SVT	SP9ADU	VF4ZX	H89FE	W2IP	204	WB6WV	UC2WP	W6JHV7
W0TDR	W43GTX	W4G6FY	VF5XJ	VF2AYY		JA4OK	WA2CFG	DL3NK	W7QNI	W8TJU	W7K0I
279	W4BA	WB9FJX	W2UBJ	W2UBJ	234	K4ELK	WA2FJW	JA2AN	W7RI	WA8QIY	WRKZO
VF2DCY	W6CLS		W2EFAH	W2BCK		OE1CP	W4OT	K1ZND	W8TEFJ		W9VBU
WA1CJR	W7VRO	260	W5OBM	W51JW		SM7BWZ	W6LUD	K2BG	WB8CCF	197	YUIBKL
W4JII	W8CFG	DJ6X	W6M			VK9KS	WB6ZUC	K2UFM	WA9UFK	W2AAU	183
WB4BDO	WB8EUN	I1FO	WA8TNJ	241		WIGVZ	W7CNU	K6TZX	WA9WXL	W6LV	184
W9LNO	W9NVJ	I2IR		KH3AVK		WISG	W7DH	VP9BK			184
277	W9PII	I3TU	250	K81QQ	233	WA2DHS	ZP5KA	WA1HJZ	200	195	183
DL6KG	WA0DUB	K1TUQ	DJ5JH	K0YDU	PY1FH	W3ES		JA1HRO	DL7CT	G3GNM	DJ4VX
GM3CSM	ZE4JS	K2KNV	DL3AR	KL7BZO	W4AST	WA4DZU		JA1WPX	F2PO	VE3BS	C5CP
WIDS	269	K5SSZ	F2QO	KP4BD	W4SHX	WA5ALB		W6KUZ	G6GH	VE3KP	H89RB
W3JXH	11LCL	K6DYO	G3AWP	PA9XPQ	WA0UFS	WA5RXT		W0JMB	HK7UL	W2PEV	K4DSN
W7LZF	W45TJ	K6OJO	G3KAA	SM6CJ		WA6FYC			JA1VNA	W85JW	K7VPF
W9YT	W5MSJ	K8TVO	G3KMN	VE3MZ	232				JA1VNA	W85JW	K9BWO
276	W6OUN	W1ESN	K4AEB	W1OUS	WA9TFM				JA1VNA	W85JW	W2ELW
VP7NA	W8GMK	W1EZO	K4BBK	W2GA	W0PMA				JA1VNA	W85JW	W2ALOZ
W2GHK/4	W9YGN	W2PNU	K4YXJ	W2YLS					JA1VNA	W85JW	W3YT
W5DRW	W9YGN	W3HNN	K6LOA	WA2CFE	231				JA1VNA	W85JW	W4AOT
W5EDX	268	W43FGS	W1AIA	WB2NUU	OH2ZD				JA1VNA	W85JW	W6PTF
275	F3ZU	W44ZYQ	W1EHT	WB2OWZ	KH2ZD				JA1VNA	W85JW	W7SFF
K9POG	OK3EA	W6TO	W2AH	W4PWG	SP2AJQ				JA1VNA	W85JW	182
WB2IEC	W5LZG	W7YQI	W3BRB	W9DLD	SP6BZ				JA1VNA	W85JW	DJ3LR
WA8HFN	W9UTQ	W8NPF	W3OLW	WA9VIZ	W1GKJ				JA1VNA	W85JW	DJ6BN
274	K5HUY	W8SH	W3ZQ	240	W2MBU				JA1VNA	W85JW	DL1FC
W5YMD	JA2KLT	W9YGG	W4FWG	DK1YK	W2MBO				JA1VNA	W85JW	DL7HT
W6HON	K2ZRO	W9AUCF	W5HJC	DL9TJ	DL8MM				JA1VNA	W85JW	DL9EM
WB6APX	K9CTY	W0A0	W5QIC	I1BUP	JA6BZL				JA1VNA	W85JW	E4GBN
W7DOM	W2ZY	W0A0	W5UCT	K2ZAC	JA8FL				JA1VNA	W85JW	G2NH
W8FAW	W6ISQ	259	W6OMR	K4CKA	K2CA				JA1VNA	W85JW	K8AVR
WA9LZA	267	VE3ADV	W6WJ	K4OMW	WB4DOY				JA1VNA	W85JW	KH6OF
273	K4R1	W2MB	W8IJA	K6PVS	W6EBO				JA1VNA	W85JW	VF2DCW
EP2TW	K4T4	WB2AMO	W8IJA	K6PVS					JA1VNA	W85JW	VF3DK
K0FKR	VE4SK	W4W5F	W8TND	K9ARS	229				JA1VNA	W85JW	W2RK
OH2SF	W85RTG	W4YDD	W9ALI	KP4DLW	K8CMO				JA1VNA	W85JW	W3WI
OH3NY	W8WOJ	W8OA	W9VCC	W1WAI	OH1VA				JA1VNA	W85JW	W4YKH
OK1ZL	265	258	WA9VGY	W2BCK	W9PVA				JA1VNA	W85JW	W6RWX
W3BK	ON5KL	KV4AM	W9VOL	W2BCK	228				JA1VNA	W85JW	WA9YPS
W9UX	VE6ABP	OZ7VK	W0BE	W2MFOF	LASJY				JA1VNA	W85JW	ZS6J
W0YCR	W5NGW	VE3UR	W9QSR	W22KTO	W5LES				JA1VNA	W85JW	181
272	W0MAF	W42LMW	249	W3AG	227				JA1VNA	W85JW	DL9YX
DL1YA	ZL1AMO	W41Q	JA2AH	W3AXW	CT3AN				JA1VNA	W85JW	K4RDE
G2IO	264	W5ACL	LA9HC	W3BBO	WB2JGO				JA1VNA	W85JW	K5KYD
I7WL	H89NL	257	K5GFI	W3FSF	W3DPA				JA1VNA	W85JW	VE6TK
JA1CB	JA8MS	K6TWFU	K4KFD	W3HTW	W4LBP				JA1VNA	W85JW	OK2AOP
ON4PA	K4GLA	SM4CMG	K7YWZ	W3L	226				JA1VNA	W85JW	W1PFG
ON5ZO	K6JB	W4ACDRU	K9WJU	W3POE	K4FKJ				JA1VNA	W85JW	W41JQC
VF3IR	W5LUJ	256	K0PMZ	W4CZS	W54YVQ				JA1VNA	W85JW	W6KHS
W1OR	W6HJA	DJ4PI	K0RTH	W5W1Q	W42TIF				JA1VNA	W85JW	W7VSF
W6CDJ	W8PYL	VE4FU	W8LBM	W6WYU	W6ZYC				JA1VNA	W85JW	W8TFO
271	WA8NTC	YV5BNR	YU3OV	W6FTM	WA9SLD				JA1VNA	W85JW	W8ASVY
DL1OT	263	255	248	W7ETZ	225				JA1VNA	W85JW	W9KYZ
K4MG	DJ4XA	DL9RC	W4DXI	W71WE	DJ9NW				JA1VNA	W85JW	180
K6UFT	VE5KG	K1UDD	247	W8PCS	H89AT				JA1VNA	W85JW	DJ0QT
K9DKU	VE5KO	OH2FS	JA0AZE	W8QBQ	VE2AG				JA1VNA	W85JW	I3SM
PY5ATL	W5FL	VE3GHL		W9NN	W2SJM				JA1VNA	W85JW	K3JFF
W1BGD	WA8TPL	W9ZWH	246	W9NNC	WB2RNI				JA1VNA	W85JW	I1SZE
W3HDZ	WA9UFR	WA9WJE	W1WLZ	WA9LUD	W0LPA				JA1VNA	W85JW	JA8JR
W4DUQ	254	245	W6MEL	239	224				JA1VNA	W85JW	K2JFF
W4GYP	CT1LN	VO1HI		H89KC	DL7MQ				JA1VNA	W85JW	K3YUA
W7VRM	G2MI	W4VJH		K4FP	JA2TH				JA1VNA	W85JW	K4PY
W9DE	JH1CJQ	W3TVB		W8QBQ	K4HMX				JA1VNA	W85JW	K6MP
W9EXE	CX1RY	W4AMSU		VE2AG	K7GYA				JA1VNA	W85JW	K6RSY
W9GXH	DL1BS	W6HIF		W9NN	OZBBZ				JA1VNA	W85JW	K4UEE/6
270	K6OZ	W81UM		W9NNC	SP3DOI				JA1VNA	W85JW	K9ENC
DL6QW	KH6SP	W2ABM		WA9LUD	VF5JI				JA1VNA	W85JW	K9JLJ
F8RU	VE4MP	W5VSI		238	W6HRB				JA1VNA	W85JW	K0ZXE
PI1RR	VO1AW	W7YTN		I1AND	W7GSP				JA1VNA	W85JW	K6CKB
JA3AAW	W1DXB	W8VFK		PY5UG	W8ODV				JA1VNA	W85JW	SM3CJD
K2DNL	W1KGH	WA9QAM		W3JW	W0BA				JA1VNA	W85JW	SP8MJ
K2KGB	W2RSJ	243		237	DJ5BW				JA1VNA	W85JW	LA4HL
K2SHU	WA4HHW	G3JFB		238	I10P				JA1VNA	W85JW	LA9OI
K4CYU	261	SM5BZ		239	K2YUJ				JA1VNA	W85JW	OF8SH
K6BT	JA1BHM	K6YUJ		240	W1AJO				JA1VNA	W85JW	VF1AI
K6PZ	K3OTY	SM6CAW		241	W2HIL				JA1VNA	W85JW	W1CT
K9QIE	K0GXR	W3QOR		242	KR8EA				JA1VNA	W85JW	W1FQV
PI1BTX	SM4BJM	W9QWW		243	W3UHV				JA1VNA	W85JW	W1HA
SM6AFH	SM7TV	245		244	W4SD				JA1VNA	W85JW	W1PL
SM6CVX	SM0MC	DJ5GG		245	W5W				JA1VNA	W85JW	W1STW
VE3FU	W1JFL	DL5GJ		246	W6HPG				JA1VNA	W85JW	W2AQT
VE7IG/VE8	WA1HFN	DL7DE		247	W7BE				JA1VNA	W85JW	W2CPH
W1EOA	W2FB	K3SEW		248	W9ELG				JA1VNA	W85JW	W2FHY
		K4ARP		249					JA1VNA	W85JW	W2NCG
				250					JA1VNA	W85JW	W2NEP
				251					JA1VNA	W85JW	W2ZHU
				252					JA1VNA	W85JW	
				253					JA1VNA	W85JW	
				254					JA1VNA	W85JW	
				255					JA1VNA	W85JW	
				256					JA1VNA	W85JW	
				257					JA1VNA	W85JW	
				258					JA1VNA	W85JW	
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				265					JA1VNA	W85JW	
				266					JA1VNA	W85JW	
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				268					JA1VNA	W85JW	
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				275					JA1VNA	W85JW	
				276					JA1VNA	W85JW	
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				278					JA1VNA	W85JW	
				279					JA1VNA	W85JW	
				280					JA1VNA	W85JW	
				281					JA1VNA	W85JW	
				282					JA1VNA	W85JW	
				283					JA1VNA	W85JW	
				284					JA1VNA	W85JW	
				285					JA1VNA	W85JW	
				286					JA1VNA	W85JW	
				28							

DXCC

WB2VFT	K4ZYU	WA4UFW	W4MGL	152	W3UT	K3QVT	W6QKX	PY7BFN	WA9VGS	WA2HBZ	117
W3HCW	K0QYD	W77F	W4PVD	DJ6OZ	W6INH	K3YVN	W6BUNS	W1CAB	3V8CA	WB2AIO	G3VZN
W4AX	W5KOD	W7NXJ	W4VFE	JA2FDG	W6MYP	K4IQJ	W9QGY	W0BWJ	9Y4KK	WB2WZB	K47CYU
W4DCW	W6BRKH	W91A	W0YVA/4	K5AYA	W9EVD	K4LBJ	YU3TFA	128	122	W32ZQV	K3FJC
W4HU	WA0KTA	WA9AUM	WB4LDT	K6UJS	YV5CUU	K4MRZ		JA3MGX	DJ1OZ	W3CZY	W1RIW
W4LXA		WA9YZN	WB4QFH	K9MMH	VF3HD	K4TXJ		K2VIV	DJ3OZ	W3EAD	WB4OXD
WB4MKB	169	W0SQD	WASSUE	VF3HD	VP9GD	K6BUU	138	W2DGV	WA2MID	W3ZJ/9	116
W5AKI	K8QYG		W6AKM	W62NYK	W0DBC	K7EQM	DL7BI	W2MID	JA8BI/1	WA3AXO	K1LJS
W5PD	W4ZVX	161	W6KOF	W6GOR		K8EJN	DL7BI	WA2YJN	K3TVE	WA3DVO	K85MC
WA5VAQ	W5RY	DL9XX	W6G	W7UIO		K8HBN	DL7BI	W84FOD	K4EJ1	W41GX	DL2AA/W1
WA5ZNY	YU4HA	1ICCC	W6G	W7UIO	151	K9CML	DL7BI	W6KYA	K8NSA	W4KVI	W64CVT
WB5BFZ		IPICLL	W6K	W7UIO	DL3VI	KH6AG	DL7BI	W8PBO	K0IKZ	W4QF	WB2VK
W6NPY	168	JA8ON	W6K	W7UIO	DL3VI	W1CQW	DL7BI	DJ5JT	LA7FJ	W4PWB	ZF1BI
WB6PGK	DJ4FT	K1LBB	W6K	W7UIO	F5QF	W4KVC	DL7BI	G3HDB	W32AR1	W4RNL	
WB6VZI	13EFC	K4KA	W6K	W7UIO	JA4FM	WA4KJR	DL7BI	JA8ARA	UV3TC	W4BONX	115
W7FT	JA4DGG	K4LP	W6K	W7UIO	JA6ANT	WA7GOA	DL7BI	JA8ARA	W3BZN	W4EWCX	DL2UR
WA7CGR	K6UWD	K4NT	W6K	W7UIO	JH1MTR		DL7BI	JA8ARA	W5SDOS	W4ENW	DJ9PO
W8MYB	K8LJD	K6ZXS	W6K	W7UIO	K6R		DL7BI	JA8ARA	W6WDH	W4P4B	G2B90
W8PGW	UA4QO	K9PZD	W6K	W7UIO	K9FHP		DL7BI	JA8ARA	W6WBU	WB4SPG	K34AL
W91-PZ	WA5QFM	OH2LU	W6K	W7UIO	W0PFC		DL7BI	JA8ARA	W6WBU	W5BZK	K7RUC
W9HL	W7D7	OZ5VT	W6K	W7UIO	W9ROK		DL7BI	JA8ARA	W6WBU	W5MDP	K31FC
YU1SJ	WA81YF	UB5LS	W6K	W7UIO	W9RZ		DL7BI	JA8ARA	W6WBU	WASNDM	UY5MVF
		W1ARR	W6K	W7UIO	WA9QAL		DL7BI	JA8ARA	W6WBU	WASNOV	VE3FNM
179	167	W1ARR	W6K	W7UIO	WA9VIY		DL7BI	JA8ARA	W6WBU	W5ZRB	W9MAF
DL9JK	PY1CZR	WA1LDA	W6K	W7UIO	WB9BGJ		DL7BI	JA8ARA	W6WBU	W5YOV	114
H18LC	WA1ANR	WA2BAV	W6K	W7UIO	W8DIA		DL7BI	JA8ARA	W6WBU	W5YOV	DK3SN
JA8JO	W2Q1P	WA2DHF	W6K	W7UIO	W0GKS		DL7BI	JA8ARA	W6WBU	W5YOV	JA2KKA
W2MU	WA3JHB	WB2DZZ	W6K	W7UIO	W0KHC		DL7BI	JA8ARA	W6WBU	W5YOV	JA4DWC
WB4JER		W43CSF	W6K	W7UIO	W0KHC		DL7BI	JA8ARA	W6WBU	W5YOV	OF1LM
W8MXO		W4DWK	W6K	W7UIO	W0KHC		DL7BI	JA8ARA	W6WBU	W5YOV	PY2EZW
WB8AKW		W4DWF	W6K	W7UIO	W0KHC		DL7BI	JA8ARA	W6WBU	W5YOV	W1BUT
		W6QMA	W6K	W7UIO	W0KHC		DL7BI	JA8ARA	W6WBU	W5YOV	W61RD
		W6OMU	W6K	W7UIO	W0KHC		DL7BI	JA8ARA	W6WBU	W5YOV	YU4RYZ
		W6VGF	W6K	W7UIO	W0KHC		DL7BI	JA8ARA	W6WBU	W5YOV	
178	166	W8WHW	W6K	W7UIO	W0KHC		DL7BI	JA8ARA	W6WBU	W5YOV	113
FM7WN	WA51S	W9HE	W6K	W7UIO	W0KHC		DL7BI	JA8ARA	W6WBU	W5YOV	DJ4EJ
KP4CRD	YU1AHI	WA9ZAK	W6K	W7UIO	W0KHC		DL7BI	JA8ARA	W6WBU	W5YOV	DL7JS
PY2DUB	YU1NIG	W0QWS	W6K	W7UIO	W0KHC		DL7BI	JA8ARA	W6WBU	W5YOV	H89ASK
WA4YR		W0QWS	W6K	W7UIO	W0KHC		DL7BI	JA8ARA	W6WBU	W5YOV	KG4AL
WA0EMS		W0QWS	W6K	W7UIO	W0KHC		DL7BI	JA8ARA	W6WBU	W5YOV	UH1K
WA0PKX		W0QWS	W6K	W7UIO	W0KHC		DL7BI	JA8ARA	W6WBU	W5YOV	WB2VXN
VE2DHF/		W0QWS	W6K	W7UIO	W0KHC		DL7BI	JA8ARA	W6WBU	W5YOV	YU3TSM
YV1		W0QWS	W6K	W7UIO	W0KHC		DL7BI	JA8ARA	W6WBU	W5YOV	
177	164	W1WSN	W6K	W7UIO	W0KHC		DL7BI	JA8ARA	W6WBU	W5YOV	112
F8BC	DJ5OK	DL1RB	W6K	W7UIO	W0KHC		DL7BI	JA8ARA	W6WBU	W5YOV	DJ6GW
JA3FGJ	SM5BRS	DL1SOO	W6K	W7UIO	W0KHC		DL7BI	JA8ARA	W6WBU	W5YOV	DJ9CN
W2GRA	SM6ARH	EA3RF	W6K	W7UIO	W0KHC		DL7BI	JA8ARA	W6WBU	W5YOV	DK2JU
WA3HRV	SM6ARH	EL2BZ	W6K	W7UIO	W0KHC		DL7BI	JA8ARA	W6WBU	W5YOV	DK3KU
W8FOF	SM6ARH	G3OIZ	W6K	W7UIO	W0KHC		DL7BI	JA8ARA	W6WBU	W5YOV	DM2ARF
W8OOL	SM6ARH	IL1LA	W6K	W7UIO	W0KHC		DL7BI	JA8ARA	W6WBU	W5YOV	DM2BNI
		K2YFK	W6K	W7UIO	W0KHC		DL7BI	JA8ARA	W6WBU	W5YOV	G3FAS
		K3SLP	W6K	W7UIO	W0KHC		DL7BI	JA8ARA	W6WBU	W5YOV	JA1IZ
		K41-VY	W6K	W7UIO	W0KHC		DL7BI	JA8ARA	W6WBU	W5YOV	JA3AYU
		K41-JC	W6K	W7UIO	W0KHC		DL7BI	JA8ARA	W6WBU	W5YOV	JA3LMU
		K41-N	W6K	W7UIO	W0KHC		DL7BI	JA8ARA	W6WBU	W5YOV	JA61UV
		K5LMG	W6K	W7UIO	W0KHC		DL7BI	JA8ARA	W6WBU	W5YOV	K11JN
		K5YRK	W6K	W7UIO	W0KHC		DL7BI	JA8ARA	W6WBU	W5YOV	K2DFP/3
		K6DR	W6K	W7UIO	W0KHC		DL7BI	JA8ARA	W6WBU	W5YOV	OK1KZ
		K6GKW	W6K	W7UIO	W0KHC		DL7BI	JA8ARA	W6WBU	W5YOV	UB5KGL
		K6MT	W6K	W7UIO	W0KHC		DL7BI	JA8ARA	W6WBU	W5YOV	W09XC/4
		K7DXJ	W6K	W7UIO	W0KHC		DL7BI	JA8ARA	W6WBU	W5YOV	W2DUN
		K81SK	W6K	W7UIO	W0KHC		DL7BI	JA8ARA	W6WBU	W5YOV	W421RS
		K8NOP	W6K	W7UIO	W0KHC		DL7BI	JA8ARA	W6WBU	W5YOV	WA2KEA
		K8YOW	W6K	W7UIO	W0KHC		DL7BI	JA8ARA	W6WBU	W5YOV	WA3DWO
		K9HDP	W6K	W7UIO	W0KHC		DL7BI	JA8ARA	W6WBU	W5YOV	W43HMO
		K0DEO	W6K	W7UIO	W0KHC		DL7BI	JA8ARA	W6WBU	W5YOV	W44RAE
		K0HNB	W6K	W7UIO	W0KHC		DL7BI	JA8ARA	W6WBU	W5YOV	W5VJP
		K1H6HI	W6K	W7UIO	W0KHC		DL7BI	JA8ARA	W6WBU	W5YOV	W54PPZ
		K2SEK	W6K	W7UIO	W0KHC		DL7BI	JA8ARA	W6WBU	W5YOV	W8LNL
		K2PZS	W6K	W7UIO	W0KHC		DL7BI	JA8ARA	W6WBU	W5YOV	W9CK
		K3R8E	W6K	W7UIO	W0KHC		DL7BI	JA8ARA	W6WBU	W5YOV	W9JOO
		K4BVD/6	W6K	W7UIO	W0KHC		DL7BI	JA8ARA	W6WBU	W5YOV	111
		WA0TLT	W6K	W7UIO	W0KHC		DL7BI	JA8ARA	W6WBU	W5YOV	CT2BC
			W6K	W7UIO	W0KHC		DL7BI	JA8ARA	W6WBU	W5YOV	DL6GN
			W6K	W7UIO	W0KHC		DL7BI	JA8ARA	W6WBU	W5YOV	F9ON
			W6K	W7UIO	W0KHC		DL7BI	JA8ARA	W6WBU	W5YOV	111Y
			W6K	W7UIO	W0KHC		DL7BI	JA8ARA	W6WBU	W5YOV	JA1CMC
			W6K	W7UIO	W0KHC		DL7BI	JA8ARA	W6WBU	W5YOV	K7AUZ/5
			W6K	W7UIO	W0KHC		DL7BI	JA8ARA	W6WBU	W5YOV	MP48HM
			W6K	W7UIO	W0KHC		DL7BI	JA8ARA	W6WBU	W5YOV	VE5CJ
			W6K	W7UIO	W0KHC		DL7BI	JA8ARA	W6WBU	W5YOV	VK4QF
			W6K	W7UIO	W0KHC		DL7BI	JA8ARA	W6WBU	W5YOV	WA5UHG
			W6K	W7UIO	W0KHC		DL7BI	JA8ARA	W6WBU	W5YOV	WA6UKR
			W6K	W7UIO	W0KHC		DL7BI	JA8ARA	W6WBU	W5YOV	ZL1BEM
			W6K	W7UIO	W0KHC		DL7BI	JA8ARA	W6WBU	W5YOV	110
			W6K	W7UIO	W0KHC		DL7BI	JA8ARA	W6WBU	W5YOV	CE0AF
			W6K	W7UIO	W0KHC		DL7BI	JA8ARA	W6WBU	W5YOV	CN8DO
			W6K	W7UIO	W0KHC		DL7BI	JA8ARA	W6WBU	W5YOV	DL61U
			W6K	W7UIO	W0KHC		DL7BI	JA8ARA	W6WBU	W5YOV	DK5PD
			W6K	W7UIO	W0KHC		DL7BI	JA8ARA	W6WBU	W5YOV	DL1JS

W8OXO	WB2BBW	W4BKP	251	K4PVZ	G3JAG	DL1LD	WIAM	5N2AAX	W6VBI	JA1SJV	W5RO
W9OW	WB2PGM	W4YUW	DL1KS	PY1BOO	JA1AAT	EA3NI	W1CNU		WB6MVK	LA1UH	WASWU
WA9LOT	W3ZUH	W52XW	K6SVT	SP9ADU	VF4ZX	H89TF	W2IP	304	WB6WAV	UC2WP	W6JHV
W0TDR	WA3GTX	WA6GFY	VF5XJ	VE2AYY		IA4OK	WA2CFG		W7QNI	W87JO	W7K0I
	W4BA	WB9FJX	W2BXY	W2UBJ	234	K4ELK	WA2FJW		W7RI	W8QOY	W7KZO
279	WA5AUZ		WA2EAH	WA2BCK	K6KON	OE1CP	W4OT		W8TFJ		W9VHV
VE2DCY	W6CLS	260	W5QBM	W51JW	PY2CAB	SM7BWZ	W6SUD		WB8RCE	197	YUIBK
WA1CJR	W7VRO	DLJ5IO	W6M1	241	W9MJC	VK9KS	WB6ZU		W7CNI	W2AAU	
W4J1	W8CFG	DJ6GRX	WA8TNT	KR1OQ	WBDAK	W1GCV	W7CNL		W7DHP	W61V	183
WB4BDO	WB8EUN	11F0		HK3AVK		W1SG	W7DHS		ZP5KA		DJ4VU
W9LNO	W9NVJ	I2IR	250	K1QOQ		W4ZHS	W3ES		WA1HJZ	300	DJ4VX
	W9P0I	K1TUO	DJ5JH	K1QDM		W3E5			W6KUZ	DL7CT	G3GNM
277	WA0DUB	K2KNV	DL3AR	KL7BZO		W4AST	W44DZU		W0JMB	F2PO	VE3BS
DL6KG	ZE4JS	K5SSZ	F2QO	KP4BJD		W4SHX	W5SALB			G6GH	HB9RB
GM3CSM		K6DYQ	G3AWP	PA0XPQ		WA0UFS	WASRXT			HK7UL	VE3KP
W1DS	269	K6OJO	G3KAA	SM6CJK			W46FYC			HP1AC	W2PEV
W3JXH	11LCL	K8TVO	K3MNA	VE3MZ						JA1HRQ	WB4SJJ
W7LZF	VF4XJ	W1ESN	K4AEB	VE5JS						JA1WPX	W5YMW
W9YT	W4T5J	W1E2D	K4BBK	W1OQS						JA2CPD	W81ME
	W5MN	WA1ABW	K4IE	W2GA						IA2PH	YU1QBC
276	W6OUN	WB2PWU	K4YXJ	W2YLS						IA2PH	JA1VNA
VP7NA	W8GMK	W3HKN	K6LOA	WA2CFE						JA3BTR	194
W2GHK/4	W9YGN	WA3FGS	W1AH	WB2NUU						K1GXU	DJ4UF
W5DRW		WA4ZYQ	W1EHT	WB2OZW						K3BHO	W8RYFW
W5EDX	268	W6OL	W2AH	W4PGW						K4DXO	
	F3ZU	W7YQI	W3BRB	W9DDL						K4NNE	182
275	OK3EA	W8NPF	W3QLW	W9VIZ						K4RBZ	DJ3LR
K9POG	W1TX	W8SH	W3ZO	W4WEZ						K6AAW	DJ6BN
WB2IEC	W5LZG	W9YCL	W4WEG	DK1YK						K9ZGX	DL1EC
WA8HFN	W9UTO	W9Y9Y	W4WGC	DL9TJ						VE5DP	DL7HT
		WA9UCE	W5HJC	11BUP						VE6VM	DL9EM
274	267	W0AO	W5QJX	DL9TJ						W2DKM	F66BN
K5HYB	JA2KLT	5H3KJ	W5SUCT	JA6BZL						JA2TY	WA3JZR
VU2MD	K2ZRO		W6OMR	K2AAC						K2QBW	G2NH
W6HQN	K9CUIY		W6WV	K4CKA						VE7BXG	K8AVR
WB6APX	W2ZY	259	WB6IUH	K4KPA						W6LBP	KH6FO
W7DOM	W61SQ		W81PA	K6OVJ						F3EA	VE2DC
W8FAW	WB2AMO		W81JA	K0ARS						K3JLB	VE3DK
WA9LZA	W4WSF		WA8TND	KP4DLW						H89T	W2DF
	K4IR		W9AL1	UA3FT						K4CDZ	DJ1OT
	K4TTA		W9VCO	W1WAI						K4LR	UG6AW
	VF4SK		W9VGY	W2BBK						K5TFG	VE3BDV
	WA5RTG	258	W9VOL	W2DT						K5TFG	W02VAE
F2PTW	W8WOJ		W9ZCP	W2MOF						W6WTO	W6KXW
K0EKR			W0BF	W42HLH						W8VRB	W0RCC
OH2SF			W0SQR	W2KTO						K9KXA	W1HED
OH3NY				W3AG						K9LH	WA1HO
OK1ZL	265			W3AXW						K9LH	W1MRO
W3BK	ON5KL			W3BBO						K9LH	W2AXR
W9UX	W5GABP			W3FST						K9LH	W2AXZ
W0YCR	W0MAF			W3HTW						K9LH	W2FWK
	ZLIAMO	257		W3LB						K9LH	W2GZ
272	DL1YA			W3PQE						K9LH	W2JUS
G2IO	264			W4CZS						K9LH	W2JZZ
I7WL	HB9NL			W44YVO						K9LH	W2ZEM
JA1CB	JA8MS			W5W1Q						K9LH	W2ZJW
ON4PA	K4GLA	256		W6ZCF						K9LH	W2ZJW
ONSZO	K6JB			W7ATIF						K9LH	W2ZJW
VE3IR	W5LUJ			W8YUW						K9LH	W2ZJW
W1OR	W6HJA			W8YUW						K9LH	W2ZJW
W6CDJ	WA8PYL			W8YUW						K9LH	W2ZJW
	WA0NTC	255		W8YUW						K9LH	W2ZJW
271	DL1OT			W8YUW						K9LH	W2ZJW
K4MG	DJ4XA			W8YUW						K9LH	W2ZJW
K6UFT	VE5KG			W8YUW						K9LH	W2ZJW
K9DKU	VK5KO			W8YUW						K9LH	W2ZJW
PY5ATL	W5FL			W8YUW						K9LH	W2ZJW
W1BGD	WA8TPL			W8YUW						K9LH	W2ZJW
W3HDZ	WA9UFR			W8YUW						K9LH	W2ZJW
W4DUO		254		W8YUW						K9LH	W2ZJW
W4GYT				W8YUW						K9LH	W2ZJW
W7RYM				W8YUW						K9LH	W2ZJW
W9DE				W8YUW						K9LH	W2ZJW
W9EXE				W8YUW						K9LH	W2ZJW
W9GXH				W8YUW						K9LH	W2ZJW
				W8YUW						K9LH	W2ZJW
270	DL6QW			W8YUW						K9LH	W2ZJW
F8RU	W1DXB			W8YUW						K9LH	W2ZJW
HP1BR	W1KGH			W8YUW						K9LH	W2ZJW
JA3AAW	W2RSJ			W8YUW						K9LH	W2ZJW
K2DNL	WA4HHW			W8YUW						K9LH	W2ZJW
K2KGB				W8YUW						K9LH	W2ZJW
K2SHU		261		W8YUW						K9LH	W2ZJW
K4CYU	F2NB			W8YUW						K9LH	W2ZJW
K6BT	JA1IHM			W8YUW						K9LH	W2ZJW
K6ZP	K3OTY			W8YUW						K9LH	W2ZJW
K9QIE	K0GXR			W8YUW						K9LH	W2ZJW
PY1BTX	KP4BJM			W8YUW						K9LH	W2ZJW
SM6AFH	SM7TW			W8YUW						K9LH	W2ZJW
SM6CYX	SM0MC			W8YUW						K9LH	W2ZJW
VE3EU	W1JFL			W8YUW						K9LH	W2ZJW
VE7IG/VE8	WA1HFN			W8YUW						K9LH	W2ZJW
W1EOA	W2FB			W8YUW						K9LH	W2ZJW

DK3MA F6ACB 11BA 11MSO 18KGG 1PIQNT JA11KA K2VIV WA4NRE K4ZDK/5 W6CPB W6THR WA8OPC YV3UF 3B8CZ	105 DK1LW DK2BM DL7BX DL7DG G3WEV I3CI 16COC K1FAB K65UC LA3NN PY8RW UD6BR VE7BB WA2SQG W4OZF W6GOZF WB6ALQ W8DFL WBFXJ WA8IZY WA9VLI YN1FP	JA3MGY K1VWX K4CPQ K5CEL/4 KR6TG L2ZEE W1FAY W2COF WA4TST WA4WHO WB4PZM W5EL WA6EWI W8BFH W8FTS W9PHZ WA9YEW W0YVA/4 4M1A	101 DK1EE DL8FC EL2BU WA2ALQ WA2XG WA2NDO WB2DLF WB2NIN WB2VKO W3PIX VE2GS VP9GD WA1KOM W1OE W1PNH W2COK W2MCD WA2EJS WB2NRU WASPAU W4SSK W6EOY W7DQ WA7GOO WA7HCQ WA8YVY W9FXZ WA9E2T WA9YZN WA0MHB WA0NBZ WA0ZAX YS1CCK ZD8H 4X4CY 9V1QJ	W2FLH W2GFD W2MOY W2OVC WA2ALQ WA2XG WA2NDO WB2DLF WB2NIN WB2VKO W3PIX VE2GS VP9GD WA1KOM W1OE W1PNH W2COK W2MCD WA2EJS WB2NRU WASPAU W4SSK W6EOY W7DQ WA7GOO WA7HCQ WA8YVY W9FXZ WA9E2T WA9YZN WA0MHB WA0NBZ WA0ZAX YS1CCK ZD8H 4X4CY 9V1QJ
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108 DK1YP DL1CJ JA1ANG OZ1PD UK2BBB VE2CN VE6SB W6SZZ WIAZZ WA4YBV WB4JSZ WA8NNK WA8ZTU WA9CIO	104 WB6ALQ W8DFL WBFXJ WA8IZY WA9VLI YN1FP	102 CR6TP CT1PN DA1SU DK2XV DK3PG DL2BR DL3VV DL9ME H1CWF I6DRF JA8DWU K3YWJ9 K8GRO K8REG KG4EL KH6HDA KR6RH LA5OK OA4AV/2 OZ6GH UA3GG VE6LI W1CWT WAILTJ WAILXE WA2GAV WB2MBP W3IHY W3OJQ WA3IIX W4EMP WA4KLH WB4INE WB4JYX WASFVI WB5EQG W6OSF WA6HYI WA6OHQ W8SDV W9LWJ WA9TZO W0GFU ZF1WF ZS6BLK	100 CF3AB CN8CG DJ2RB DK1FB DK2FH/W8 E18BY EL7BA F6AOY F6AXP F6AJQ G3WBT GK3BE HK4BZQ JA2KPR JA6YG K1DYA/VE2 K2ROU K3NEZ K3YVN K6SE/2 K6TVL K7PMY K7TLB K0IIR LA2PC W1FTX W1SWD WA1AGR
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107 DL6SW DL9PH K2XGQ KG4AL OZ3CE WA2EAN WA3GMN WB4NND W7AVS W0LPA W0QBX	106 DJ1OT DJ7QB DL4VA DL8BV DM2BUD HB9AQF IT9SI JH1OQW K3OVT K6JAD UA1LL UQ2NW VE3EOX WA2HLH W4KJL WB5BLF WASRAS W6LUT W6MDH W9HC YV1YD	103 DJ4PS DJ7BX DJ8VJ DK1ZH DK3ZC DL2ZM F6AZN G3WQA GC3YJZ H55AFJ I1LXA	109 JH1BLX K4AEH OE1GHC OZ1WL VE6HN VP7NO W2YRK W3FSK W3KLR W3TL W4KNW W4RFV W4WOY W4ZAA WB4PBE W51FA W55BX DL2ZM W8KJQ W8KDX ZP5TU 387AI
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Section	Closing Date	Current SCM	Percent Term Ends
Colo.	12/11/72	C.O. Penney, WA6HLO	2/14/73
Ga.	1/10/73	A.J. Garrison, WA4WQU	3/26/72
Idaho	1/10/73	D.A. Crisp, W7ZNN	12/10/72
N.Dak.	1/10/73	H.L. Sheets, W0DM	3/8/73
Mo.	1/10/73	R.J. Peavler, W0BV	3/18/73
S.C.	1/10/73	J.A. Abercrombie, Jr., * K4BMS8/26/74	

* Resigned

Affiliated Club Honor Roll

In these days of raising requirements in one place and lowering them in another, the affiliated club that can maintain its ARRL membership at 100% deserves some special recognition. Headquarters bestows such recognition twice a year in the form of an honorary listing in *QST* and a special certificate.

Each year, as annual affiliated club questionnaires are received, those showing that all their members are also ARRL members are noted and put aside for this special honor. The list below are those clubs who are 100% ARRL according to questionnaires so far received. If your club is 100% ARRL, and is not listed below, it means we do not have your questionnaire form yet; fill it out and send it in, so you will make the next listing of 100% ARRL Clubs in June *QST*. Ladies and gentlemen, our Affiliated Club Honor Roll!

- Chicago Radio Traffic Association, Chicago, Ill.
- Connecticut Wireless Association, Manchester, Conn.
- Corpus Christi Radio Club, Corpus Christi, Texas
- DeWitt County Amateur Radio Club, Clinton, Ill.
- East Kootenay ARC, Cranbrook, B.C., Canada
- Estero ARC, Morro Bay, Calif.
- Fort Bend Amateur Radio Club, Houston, Tex.
- Fountain City Radio Club, Knoxville, Tenn.
- Friendship Amateur Radio Club, Ellicott City, Maryland
- Goldfield Radio Club, Goldfield, Iowa
- Golden Triangle DX Club, St. Petersburg Beach, Fla.
- Hughes Micro-Wave Radio Club, Torrance, Calif.
- Inglewood Amateur Radio Club, Inglewood, Calif.
- IRC Amateur Radio Club, Philadelphia, Penna.
- Jacksonville Amateur Radio Society, Jacksonville, Fla.
- Jefferson Barracks Amateur Radio Club, St. Louis, Missouri
- Kings County Radio Club, Brooklyn, New York
- Long Island DX Association, Freeport, New York
- Louisville Gas & Electric Co. ARC, Louisville, Ky.
- Miami Amateur Radio Club, Miami, Okla.
- Miami Valley Amateur Radio Contest Society, Clayton, Ohio
- Milwaukee School of Engineering ARC, Milwaukee, Wisconsin
- Mueller Brass Co. Employees "Brass Pounding" ARC, Port Huron, Mich.
- Murphy's Marauders, Southington, Conn.
- Niagara Radio Club, Inc., Niagara Falls, New York
- North Alabama DX Club, Huntsville, Alabama
- North Augusta-Belvedere Radio Club, Aiken, South Carolina
- Northern Illinois DX Association, Inc., Western Springs, Ill.
- O.B.P. No. 1 Radio Club of St. Louis, St. Louis, Missouri
- Ohio State University ARC, Inc., Columbus, Ohio
- Orange Amateur Radio Club Orange, Texas
- Phillips Exeter Academy Radio Club, Exeter, New Hampshire
- Potomac Area VHF Society, Fairfax, Va.
- Rock Hill Amateur Radio Club, Inc., Rock Hill, South Carolina
- Sacramento Amateur Radio Club, Inc., Rancho Cordova, Calif.
- St. Louis Amateur Radio Club, Inc., Kirkwood, Missouri
- San Diego DX Club, San Diego, Calif.
- Sarasota Amateur Radio Assn., Sarasota, Fla.
- Scarboro Amateur Radio Club, West Hill, Ontario, Canada
- Southern California VHF Radio Club, Long Beach, Calif.
- Stratford Amateur Radio Club, Stratford, Conn.
- Texas DX Society, Alvin, Tex.
- Three Rivers Radio Club, Breckenridge, Minn.
- Wichita Amateur Radio Club, Wichita, Kans.
- Windblowers VHF Society, Fair Lawn, New Jersey
- York Amateur Radio Club, York, Penna.

Operating News

(Continued from page 101)

Elections will take place as soon after the closing dates specified as full information on the candidates can be obtained. Candidates' names will be listed on the ballot in alphabetical order.

The following nominating form is suggested. (Signers should be sure to give city, street address and Zip code.)

Communications Manager, ARRL (Place and date)
225 Main St., Newington, Conn. 06111

We, the undersigned full members of the ARRL Section of the Division, hereby nominate as candidate for Section Communications Manager for this Section for the next two-year term of office.

You are urged to take the initiative and file nominating petitions immediately.

George Hart, WINJM, Communications Manager

CLUB COUNCILS AND FEDERATIONS

- Amateur Radio Council of Arizona, Mr. Ken Cole W7OZH, Secretary, 5132 No. 18th Ave., Phoenix, Arizona 85015.
- Council of Connecticut Amateur Radio Clubs, Mr. James W. Parker K1V11, Secretary, 17 West Main Street, Niantic, Connecticut 06357.
- Michigan Council of Amateur Radio Clubs, 4626 Stillwell Avenue, Lansing, Michigan 48910.
- Puget Sound Council of Amateur Radio Clubs, 12306 80th Avenue East, Puyallup, Washington 98371.

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: WA3DUM. PAM: WA3GSM. RM: W3EEB. PSHR: WA3GSM, WA3DUM and K3KAJ. BPL: WA3QUJ. New officers DARC: K3YHR, pres.; WA3OYA, vice-pres.; WA3AVD, secy.-treas. The DARC, First State ARC, and Del. Repeater Association are cooperating with "Operation Christmas Greeting" in Northern Del. This type of friendly rivalry should serve as an example for clubs in Del. and elsewhere. W3BDL/3 now is WA3TNP. New tickets: WA3SRP, Technician and WA3RYH, Advanced. W3BHG for states No. 34 and 35 on 2 meters as he worked North Dak. and Ark. on sbv via meteor scatter. Net reports: DTN - QNI 129, QTC 49/47, time 468 minutes. DEPN - QNI 67, QTC 16/15, time 219 minutes. Traffic: WA3QUJ 165, WA3GSM 100, W3DKX 48, WA3DUM 45, K3KAJ 42, WA3IID 27, W3EEB 7, W3GTZ 3.

EASTERN PENNSYLVANIA - SCM, George S. Van Dyke, Jr., W3HK - SEC: W3FBF. RMs: W3EML, K3BR, K3MVO, K3PIE, W3CDB, WA3AFI. PAMS: K3BHU, WA3JPL. OBS reports from WA3AFI, W3ZMN, W3FBE, W3MFY, WA3QOZ, WA3LWR. OO reports from K3RDT, K3OIO, WA3EEC, W3BFF, K3NSN, W3NNC, K3LWQ, W3MFY, W3FTG. OVS reports from WA3PCS, W3MFY, W3CL. PSHR: K3BR, WA3OGM, K3OIO, WA3QOZ. BPLs: W3CUL, K3NSN, W3VR.

Net	kHz	Operates	QNI	QTC	RM/PAM
EPA	3610	7:30 P Dy	345	259	K3BR
EPA	3610	7:30 P Dy (Aug.)	304	262	K3BR
PTTN	3610	6:30 P Dy	163	96	WA3AFI
PFN	3960	5:30 P-M-F	583	510	K3BHU
EPAEP&TN	3917	6:00 P Dy	401	96	WA3JPL

With the phone band expansions some of the phone nets may play a little and try to spread out. More on this when it happens. Net managers should register with ARRL any changes as soon as possible. W3EML reports that WA3OGM is doing well in TCC spot. WA3OGM says PA QSO Party best ever. WA3QLG has his SB-101 working and beam up, thanks to help from WA3OGM. Real ham cooperation! WA3BSV traces his rig problems to his mother's cat called Murphy! WA3IYC now is operating from U of P station W3ABT. W3GMK finally back on after drying out dampness from Agnes. K3LWQ off for a while - having some problem others are having, where do you get spare parts? W3FTG and W3CL both report finishing SB-303 and 401 rigs. W3EU received 50 year certificate from QCWA. Really an OM. W3BPR says he hasn't quit, just on the move more these days. WA3LNL has published a nice report for the EPAEP&TN. W3ZMN is transmitting the ARRL bulletins the day following W1AW on 146.70 MHz at 0030Z (really the same night). K3VMY has passed the Extra Class exam. Traffic: (Sept.) W3CUL 2058, K3NSN 966, W3VR 772, W3EML 471, WA3QOZ 465, WA3OGM 365, K3BR 160, WA3MQP 132, K3PIE 129, K3BHU 89, WA3ATQ 75, K3OIO 70, WA3LNR 50, WA3AFI 37, W3FBF 36, W3HK 34, W3MFY 27, WA3H8T 25, WA3KWU 21, W3ADE 18, W3VAP 17, W3CBH 15, K3KNL 14, WA3QLG 14, WA3CKA 13, WA3PHQ 10, W3BUR 8, W3CL 8, K3KTH 7, K3MNT 6, K3MVO 6, W3OY 5, WA3BSV 4, WA3BJQ 2, WA3IYC 2, W3BNR 1, W3DML 1, W3EU 1, W3FTG 1, W3GMK 1, W3CL 1, K3LWQ 1. (Aug.) WA3PHQ 38, WA3KWU 30.

MARYLAND-DISTRICT OF COLUMBIA - SCM, Karl R. Medrow, W3FA - SEC: K3LFD. RM: W3EZZ. PAM: W3FCS. NCM: W3LDD. BPLs: WN3RCI and W3TN. WN3RIY made BPL for Aug. W3TN says W3ABC puts on a real show about his trip to HC1 and HDB complete with slides. W3BHE says linears do make a difference! W3JPT is hitting the high spots on vhf. WA3IYS is busy building a keyboard. WA3AFQ was K2GAS and back in traffic after 15 years. WA3LQV keeps hopping all over looking for his OBS transmissions. W3EOV is overhauling his mobile gear. WN3RIY has

the DX bug. W3OKN says vacation took care of Aug. work Sept. and it is clear ahead. W3QU is real proud of his 3 passed Novices. WA3RDU is in the forefront of contesting. W3JZY back from visiting all the counties he has worked. WN3RCI has formed a new Novice Net MHN for the after school gang. WA3MLI is back to school and pres. of the Ohio U station WBPZS. WA3OHF takes time off from DXing to help W3WK do the Boy Scout Jamboree. W3BHE reports the Mountain ARC spawned new Novices WN3SYD, WN3SYE, WN3SYF, WN3TAH, WA3TCW, WN3TFX, WN3TFZ, WN3THK, WN3TMO and WN8NPH. WA3SWS thanks WA3EHK and K3IXD for helping him build Novice and General. K3IXD made the conversion from Tech. to General after 15 years - congrats! K3LFD beating the drums for AREC registrants. K3BA back in full swing on all bands. WA3PIG has a nice traffic total. W3ZMN, W3FZV, K3GZK and W3LBC are all in there pitching. K3GZK has taken up with the guitar. WA3MSW keeps regular schedules along with the school load. W3GRM has that automatic message sender perking. W3ECP looks forward to seeing the gang in person at the hamfest. W3FCS has the 2nd session of the MDCTN in full swing. MEPN or MDCTN nightly 6 P.M. and 10 P.M. local time on 3920 is the watchword on tone. W3ZSR is doing a good fight against bad antenna ordinances. K3NCM keeps Dickerson on the map. W3LDD reports W3ADQ, W3HWZ, WA3IIV and W3DKX are MEPN toppers. W3FCS has MDCTN doing 17 sessions, QTC of 43 and QNI 16.8 average. K3BA says the Antietam Radio Assn., expects a dozen prospects for this year's class for Novices with W3SW visiting and providing films. Traffic: (Sept.) WN3RCI 229, W3TN 192, WA3AFQ 83, WA3IYS 82, W3QU 66, WA3PIG 63, W3OKN 44, W3FCS 43, K3BA 32, WN3RIY 31, WA3LQV 30, W3FA 29, WA3MSW 28, W3ECP 18, W3FOV 15, WA3SWS 5, K3GZK 4, W3FZV 3, W3JZY 3, W3GRM 2, WA3RDU 2, W3ZMN 2. (Aug.) WN3RIY 128.

SOUTHERN NEW JERSEY - SCM, Charles E. Travers, W2YPZ - SEC: W2LVW. PAM: W2FJE, RM: W2JI.

Net	Freq	Time(PM)	Sess.	QNI	Tfc.	Mgr.
NIPON	3925	Su 6	4	61	6	WB2FJE
NIEPTN	3950	M-S 6	30	543	192	WA2FVH

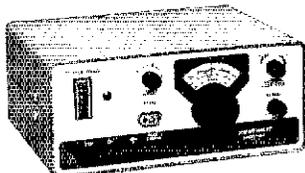
Activity has shown a very fine comeback after the summer vacation period. Congratulations are in order for W2AXJ who passed requirements for the General ticket. WA2OLS was appointed asst. EC for the 10-meter AREC Net of GCARC. WB2FJE is Net mgr. for NIPON and with the help of his staff is doing a very fine piece of work. W2ORS is on the job as usual checking the airways and assisting where necessary. WA2CZA is now a MARS member as well as the leader in activity for Sept. W2ZI reports attendance at the Annual Wireless Assn. Historical Radio Conference in Washington, D.C. Sept. 22, 23, 24. He was presented with a plaque by A. Prose Walker of the FCC - 1971 Antique Wireless Assn. Houck Award. Congratulations. K2ARY reports 4 bulletins transmitted during Sept. on frequency 146.8. Appointments for OBS are available for transmission on other frequencies. Contact your SCM, OPS renewal for Sept. is W2YPZ. K2JIC has acquired new equipment. Affiliated clubs are encouraged to submit news items of club activities for inclusion in this column. Clubs interested in becoming affiliated should contact this office at their earliest convenience. It is a good to report a PSHR for Sept. with WA2CZA filing his report. Traffic: WA2CZA 192, WB2VEJ 184, WB2UVB 30, WA2FCS 20, W2ORS 16, W2YPZ 11, WB2FJE 10, W2IU 9, W2JI 9, WB2SFX 6, K2JIC 4, W2ZI 2.

WESTERN NEW YORK - SCM, Richard M. Pitzeruse, K2KTK - Asst. SCM: Rudy M. Ehrhardt, W2PVI. SEC: W2CFP. Section net listings appear in Apr. QST. Remember fellas, ALL traffic reports for this column that are sent via the air should be sent to W2PVI. If you mail your report, mail it to me. Same is true for PSHR - on the air to W2PVI, via the mail to K2KTK. WA2OMN is busy reworking new antennas and a KWS-1 to go with them. WN2EDN is new CD Net Control for Herkimer Co. The RAGS Hamfest at the Northway Inn went very well despite the lousy weather. W2GLB received her Advanced Class license. Another successful hamfest was the Hamburg International Hamfest. K2KOC already busy with plans for next year. According to W2PVI, K2YEH has added 40 db to his signal - some guys have all the luck. WB2NJE has gone 2-meter fm. WA2ANE again active on 75. W2BSI installing a repeater at Moravia. W2OZR gave a fine lecture on lightning protection to RAVNY.

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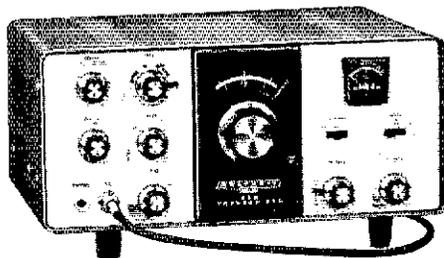
80, 40, and 20-Meter Single-Banders...112.50*

The transceivers designed to get you on the air on a budget. Choice of HW-12A (80-meter), HW-22A (40-meter), or HW-32A (20-meter) models. Full 200 W PEP input SSB. Choice of fixed or mobile operation with optional Heathkit power supplies. Other features are 2 kHz dial calibration, ALC input, S-Meter, VOX and PTT. 15 lbs.



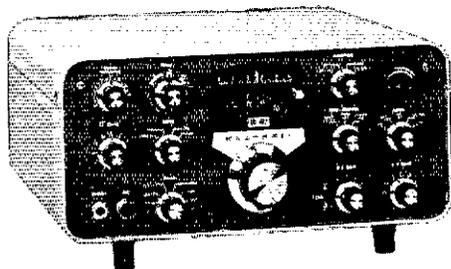
HW-16 Novice CW Transceiver...99.95*

A high-performance 3-band CW transceiver covering the lower 250 kHz of 80, 40, and 15 meters. 75 watts input for novice class, 90 watts for general class. Provisions for VFO transmitter control with Heathkit HG-10B 80-2 Meter VFO. 25 lbs.



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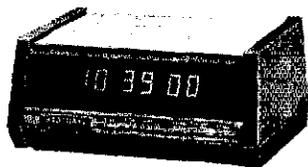
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NEW GC-1005, 6-Digit Electronic Clock...54.95*

New solid-state timepiece with computer logic accuracy and high-visibility cold-cathode readouts tells time to the second. Reads 12 or 24-hour time on 120 or 240 volts, 50 or 60 cycles. "Beeper" alarm automatically sounds every 24 hours; repeating "snooze" switch gives extra 7 minutes sleep. A timely addition to any ham shack...and nothing like it at this low kit price. 4 lbs.



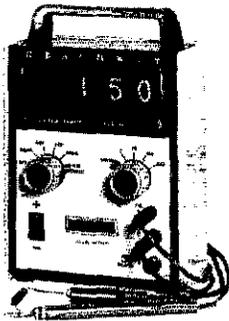
NEW GR-110 VHF Band-Scanning Monitor Receiver...119.95*

Crystal-controlled. Tunes any selected 9 MHz segment of 146 - 174 MHz band - police, fire, marine, ham 2-meter, etc. Manual or automatic scanning with numerical readout. Channel lockout buttons. Priority channel "0" takes precedence in "automatic." Built-in speaker; rear-panel remote speaker jack. 120/240 VAC or 12 VDC fixed or mobile use. Crystal OSC/Mixer signal source for easy adjustment. Order up to 8 Crystal Certificates with kit (\$4.95* ea.). 9 lbs.



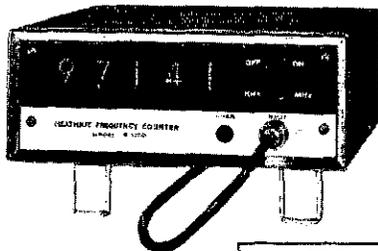
NEW IM-1202, 2½-Digit Multimeter...79.95*

A compact, solid-state multimeter with digital readout - and priced for the average ham. Has four overlapping ranges to measure voltages from 10 mV to 1000 V on DC (either polarity), 10 mV to 700 V rms on AC, 10 uA to 2.5 A on AC or DC current. Five resistance ranges measure from 1 ohm to 2 megohms. Front panel polarity switch reverses inputs without changing lead. 6 lbs.



NEW IB-1100, economy 30 MHz Frequency Counter...169.95*

Gives you 1 Hz to over 30 MHz counting on a full 5-digit readout with 8-digit capability. The lighted overrange indicator makes misreading virtually impossible. Stable time-base circuitry assures accuracy better than ± 3 ppm from 22° to 37°C. Diode protected J-FET gives improved triggering over 100 mV to 150 V input range. Solid-state circuitry mounts on one large board. Another accessory you can count on - from the hams at Heath. 6 lbs.



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WA2PLN gets kudos for his new General. K2KOC did her usual fine job on the PON roster. A 16/76 repeater is being readied in Hammondsport. The Chemung County AREC Assn. elected K2PIT, pres.; WB2DHR, veep; WN2SMM, secy.-treas.; K2DNN, EC trustee. WA2AOG applied for WAS and WAC and is nearing DXCC as is WA2MBP. Sorry to report the loss of Hobe Abbey, ex-K2OAI to Silent Keys. The YLs are doing a good job at license upgrading: WA2PUU has her Advanced and K2JBX has her Extra. Congrats. WA2ROF joins the 2-meter set with an HR-212. The Eastridge High School ARC is a new ARRL affiliate. DX season is rolling around - got those big yags, quads and wires ready? Maybe Santa will put a long john in your stocking. Or if you've been bad, maybe he'll put a long stocking in your john. Traffic with * indicating PSHR: (Sept.) W2OE* 385, WA2ELD* 344, W2FR* 311, W2RUF* 238, WA2ICU* 225, KF2NYS 215, WB2NRK* 143, W2MTA* 92, W2MSM 68, W2ROF 63, WB2EEX* 58, W2HYM 53, WA2PUU 53, WN2ADW 44, W2RUT 44, WB2VND 40, K2OFV 34, K2KTK 32, W2FZK 30, WA2TLB 30, W2FEB 29, WA2AYC* 20, W2EAF 11, WA2ANE 10, K2DMI 10, WA2OMN 10, WA2MPC 8, WA2AOG 7, W2PVI 5, WN2FMO 4, WA2HSB 4, WA3JJJ/2 3, WA2AIV 2, W2CFP 2, WB2FPG 1. (Aug.) W2FEB 72.

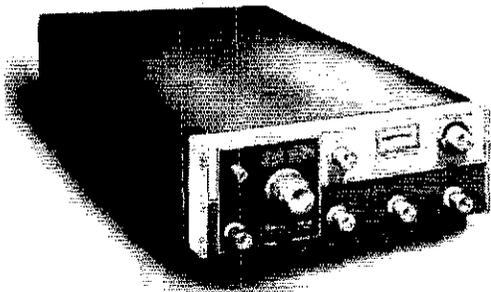
WESTERN PENNSYLVANIA - SCM, Robert E. Gawryla, W3NEM - SEC: W3KPI, PAM: K3ZNP, RMs: W3LOS, W3KUN, WA3IPU. WPA CW Net meets daily on 3585 kHz at 7:00 P.M. KSSN meets Mon. through Fri. at 6:30 P.M. on 3585 kHz. It is with deep regret that we announce the Silent Keys of W3CTN and W3MIW. The Penn State ARC showed the film "Ham's Wide World" at their last meeting and also elected the following new officers: WA3JIH, pres.; WA3JBN, vice-pres.; WA3GYT, secy.-treas.; WA3NLO, WA3FYR and WA3HZP, executive board. The Two Rivers ARC has a new slate of officers with WA3OGS as pres.; WA3PCX, vice-pres.; WA3PHY, secy.; WA3NLE, treas. WA3SOZ received his 20 wpm code proficiency sticker from ARRL. W3ATQ had perfect copy of the 35 wpm test during the MARS contest for which he received a nice certificate. W3NLU now is K3CI. K3CHD was operating his annual stint at locomotive mobile from a train engine. The Etna Radio Club took three first place, one second place and two third place spots in the "Amateur Radio News Service" publications contest. They have a nice newsletter called "Oscillator". Congratulations. W3ELZ built a frequency counter accurate to 75 MHz. WA3RYL built himself a TV camera. Check your license. Don't let it lapse, and for renewal, upgrade your license class. Public Service Honor Roll for Sept.: WA3QOR 45, W3LOS 39, W3NEM 39, W3YA 34. WPA had 30 sessions with 395 stations and 136 messages. Traffic: W3NEM 141, WA3QOR 85, W3LOS 72, W3YA 64, W3KUN 55, K3HCT 39, K3ZNP 30, W3SAY 20, W3ATO 19, WA3LDA 12, WN3SZK 11, WA3EIO 9, W3IDO 6, W3SN 6, K3SIN 4.

CENTRAL DIVISION

ILLINOIS - SCM, Edmond A. Metzger, W9PRN - SEC: W9RYU, PAMs: WA9CCP and WA9PDI (vhf). RM: WA9ZUE. Cook County EC: W9HPG.

Net	Freq.	GMT/Days	Tfr.
LEN	3940	1400 Su	7
ILN	3690	0300/2330 Dy	159
NCPN	3915	1300/1800 M-S	118
Ill PON	3915	2245/1430 M-F	644
Ill PON	145.5	0200 MWF	8
Ill PON	50.28	0200 M	0

New officers of the North Shore ARC of Deerfield are WB9FCI, W9VBV and WB9DEZ. The club meets on the 2nd Mon. of the month. W9RUK received the Amateur of The Year Award at the Hamfesters' annual picnic. W9FX received his Extra Class license. The Rockford A. R. A. held a Novice Nite meeting for their Oct. meeting. K9BRI, W9VHD and WN9GKR are the new officers of the DeWitt County Radio Club. They have added a new room to their Civil Defense room to house a 2-meter rig, etc. RM WA9ZUE gave a talk on NTS etc., at the Chicago Suburban Radio Assn. at their Nov. meeting. The W9DXCC 20th annual meeting held in Oakbrook, Ill. was an FB affair with Robert J. Hajek chairman for the NIDXA. W9KV is again back handling traffic and enjoying it. WA9FXZ formerly of LaGrange, has moved to Mountain Home, Ark. and is now operating under the call WBSHVE. The Wheaton Community Radio Amateurs have a nine month Technical Session set with their monthly meetings and conducted by top technicians in their fields. K2AKI and WB9AXF, ex-Navy Chiefs who have retired now are living in Central Ill. K9UZL is looking for volunteers to check in the Valley VHF Club 6-meter emergency net every Sun. morning and keep it active. Frequency is 50.370. The Sangamon Valley Radio Club, Inc. (Springfield) has a new monthly publication. Traffic



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SWAN SS-200, 200 watt P.E.P.	\$779.00

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SWAN PS-20, 115V AC power supply for SS-200/SS-100/SS-15	\$139.00
SWAN SS-1200, 1200 watt P.E.P. Linear Amplifier (tube type)	\$299.00
SWAN SS-208, External VFO.	\$159.00
SWAN 610X, Crystal Controlled Oscillator.	\$ 53.95
SWAN SS-16B, Super Selective Filter.	\$ 79.95

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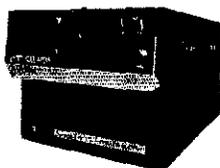
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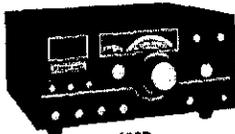
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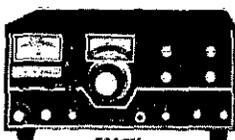
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(Sept.) WA9ZUE 208, W9NKG 136, W9LNO 87, WA9OBR 80, W9AES 63, WB9ELP 58, W9JXV 47, WA9LDC 42, WA9RTB 31, W9TAL 30, WB9FVG 22, W9PRN 20, W9IAD 11, WA9LHU 6, K9WMP 5, W9KV 4. (Aug.) W9FLF 130, W9KV 22.

INDIANA — SCM, William C. Johnson, W9BUQ — SEC: W9FC. RMs: WA9EED, WB9EAY, W9FC, W9HRY. PAMs: K9KTB. (vht) W9HWR, W9PMT.

Net	Freq.	Time(Z)/Days	Tfc.	Mgr.
ITFEN	3910	1330-2300 Dy	334	K9KTB
		2130 M-S		
QIN	3656	0000-0300 Dy	152	WA9EED
IPON	3910	1245-2130 Su	22	WB9AHJ
		2000 S		
IPON VHF	50.7	0100 M-W-Th	10	WA9ULH
	50.2	0200 Dy		
IPON CW	3740	0000 Dy	58	WB9AHJ
Hooser VHF			24	W9PMT

With deep regret I report K9QXQ, W9DCW, W9EZZ and WA9HJO as Silent Keys. The Indianapolis Hamfest Sept. 17 was a great success with about 800 present. WN9KPC is a new Novice. IRCC held their annual fall meeting at the School for the Blind in Indianapolis; W9HPG was the speaker. WB9FJT, KYL of WA9AUM passed her General Class exam. In Sept. QST WN9FJT was the Central Division leader in the 1972 Novice roundup. W9AI reports WA9VJY located in the Mission Bldg. now is W9WE a Memorial station to Noble Watson. On Sept. 30 and Oct. 1, the Indianapolis Radio Club furnished communications for the 9th annual Canoe Regatta held on Fall Creek. All holders of the Ind. Courtesy award should send in names of a deserving ham to keep this award going. W9QLW is home from the hospital. All certificate holders — please send them to me for renewal if needed. EC for Boone County is WB9BUV. Traffic: W9FWH 136, K9KTB 112, W9EJ 104, WA9EED 86, W9HRY 73, W9BUQ 60, WB9AHJ 59, WB9FOT 51, WA9WNH 50, K9C8Y 34, WA9OHX 30, K9RWQ 29, W9PMT 28, K9RPZ 28, WB9BAP 20, K9KFM 20, WA9TIS 20, W9KWB 19, K9YBM 15, K9DIY 18, W9JBO 13, W9EJ 12, WB9FJO 11, W9LG 10, W9UEM 10, WA9AUM 9, WA9ULH 9, W9RTH 8, WA9AXF 7, W9DZC 7, W9HWR 7, W9BDP 6, K9JOY 6, K9ILK 5.

WISCONSIN — SCM, Joseph A. Taylor, W9OMT — SEC: W9NGT. PAMs: K9FHI, WA9OAY, WA9QKP, WA9PKM. RMs: W91UCR, K9KSA.

Net	kHz	Time(Z)/Days	QNT	QTC	Mgr.
WSBN	3985	2300 Dy	942	110	K9FHI
WIN (early)	3662	0000 Dy	238	79	W9UCR
WIN (late)	3662	0400 Dy	108	43	WB9RLM
BEN	3985	1700 Dy			WA9QKP
BWN	3985	1145 M-S	437	306	WA9OAY
WSSN	3662	2330 MWF			K9KSA
WI-PON	3925	1701 M-F	436	85	W9EMC
WI-PON	3697	2330 W	15	4	W9EMC
Wis RACES	3993.5	1300 Su			W9NRP
WIS QCWA	3985	1400 Su			W9NRP

The Wis. Slow Speed Net now back from summer vacation meets on M-W-F at 6:30 P.M. local time on 3662, SW2RN has been dissolved. Oscar 6, the 2- to 10-meter repeater satellite was launched on Oct. 15. Your SCM would like to receive reports from QVS stations and others who are successful in working the repeater. Oct. QST carries details. Your SEC and SCM have decided to appoint asst. SEC around the section to help organize and coordinate our public service communications and to help fill in the gaps where we do not have ECs. If interested in one of these positions drop W9NGT or myself a line. Congrats to K9LGLU, W9ERW and WB9FJO on ORS and OPS appointments. K9GSC will be teaching Novice classes in night school in Baraboo. Traffic: W9ZGQ 410, W9DND 245, W9CXY 225, W9UCR 110, K9FHI 108, W9MFG 91, K9LGLU 55, WB9ABF 32, WA9OAY 27, W9IRZ 24, K9JPS 24, WA9BZW 22, WB9HLM 22, W9HW 22, W9NRP 20, K9UTQ 19, W9GF 12, WB9GGL 12, W9RTP 12.

DAKOTA DIVISION

MINNESOTA — SCM, Casper H. Schroeder, WA0VAS — SEC: K0LAV. RMs: W0ZHN, WA0YAH. PAMs: K0FLT, WA0HRM. We enjoyed the ARRL meeting at Radisson Bloomington Sept. 29, 30 — a very informative meeting for all. Thanks fellows. WN0FYR built a new SB-102, WA0LAW has a new 2-meter fm Drake 22. Oct. 1 through Oct. 7 was declared Amateur Radio Week by the Governor of Minn. An informative message was given by W0BUO, W0PAN, W0TLE on amateur radio and the Handi-Ham system of Minn. This program was carried by WCCO Radio on Thurs. Oct. 5 at 8:30 to 9:00 P.M. Traffic: WA0VAS 977, WA0YVT 172, K0ZRD 172, WA0VYB 127, WB0CNM 125, W0BUC 123, WN0GKH 119, K0GNI

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NORTH DAKOTA - SCM, Harold L. Sheets, W0DM - SEC: WA0AYL. OBS: K0PVG. RM: WA0MLE. OO: W0BF. WB4AYN/0 will be back in Ga. by the time you read this. After many years W0OEL can now be heard again. WA0CSL/0 has joined the 2-meter fm group in NE Ndak. The International Hamfest has been set for July 7-8, 1973 on the American side of the International Peace Garden. WB0IQK is a new call at the Minot AFB with an HW-101 and vertical. The Bismarck Club is planning a training session for beginners this fall and winter. W0DM has his usual classes going full swing. K0PYZ reports activity down his way again. The YL WX Net has started their 8th year of service to the hams and other interested parties on 3994 at 7:30 A.M. local time. WA0GRX and WA0MND will be assisted this year by WA0RWM, WA0CSL/0 and W0LJ when his XYL WA0MND can't be on. W6CK, ex-W0HHN was back in the state renewing acquaintances with W0WWL, W0WIQ and W0CGM as well as the chief engineers at KLMV-TV and K1PM. WA0ELO and WA0MLE continue to do their stuff on TEN putting NDak. in 5th place for QNI for Sept. WA0MLE reports the cw net is doing well. He also will cooperate with K0ZFL to alert all who have QSL cards at the bureau and who have not sent in envelopes.

Net	kHz	CDT/Days	Seas	QNT	QTC	Mgr.
RACES	3996.5	1830 M-F	21	612	39	WB0ATJ
PON	3996.5	1830 S-S	13	331	32	WA0SJB
		0900 S				
Goose River	1990	0900 S	4	64	1	W0CDO

Traffic: WA0MLE 195, WA0SUF 55, WA0ELO 49, W0DM 15, WB0FDT 15, WB4AYN/0 9, W0MXF 8, WA0JPT 6, W0HSC 4, WB0BUF 3, W0CDO 3.

SOUTH DAKOTA - SCM, Ed Gray, WA0CPX - SEC: WA0OVR. RM: WA0TNM. PAM: WA0YAK. The Dummy Load Radio Club, Martin, S.D. is now an ARRL affiliate with WN0GTY as secy-treas. Reports continue to come in about activity during the Rapid City Flood. W0GOH was active handling messages into Rapid City along with K0LXE and K0WIU. Their contact into Rapid City was WA1JZ/0 and his XYL W0DB who has been active on 144 and 432 MHz. Net reports: Morning Net - 546 check-ins and 55 formals; NJQ Net - 424 check-ins and 6 formals; Early Evening Net - 416 check-ins and 11 formals; Late Evening Net - 807 check-ins and 47 formals. Traffic: WA0UEN 106, W0HOJ 66, W0CLS 33, WA0NZA 28, WA0DEM 12, W0DVR 6, WA0BZD 4, K0OFP 2.

DELTA DIVISION

ARKANSAS - SCM, Jimmie N. Lowrey, WASVWH - SEC: WBSFCL. RM: WSEIJ. PAM: WBSFDP. WSEIJ is the new RM for Ark. and Net Mgr. for OZK. Let's all give Lester all the help we can to help him with his job. Congrats to WBSBJD on passing the Advanced. DA1AA/WASSOG has been hearing a few Ark. hams using a mobile whip in Germany, if you have worked DA1AA QSLs go to WASVWH.

Net	GMT/Day	Freq.	Mgr.
OZK	0100 Dy	3790	WSEIJ
Ark Razorback	0030 Dy	3995	WBSFDP
Ark Phone	1200 M-S	3937	W5VEW
Ark Teenage	2100 SS	3975	WBSJWH
Ark P.O.	2130 M-F	3925	W5OEO
Ozark	2330 M-S	3995	WASZKE
DX Info	0045 Tu	3995	WASXW
CAREN	0200 F	146.34/94	W5RXU

Repeaters: WA5SNO Fayetteville, 52.550/53.020: 146.16/76; W5YUT Fort Smith, 146.34/94; WBSKFK Forrest City, 146.16/76; WSDI Little Rock, 146.34/94; W5RHL Jonesboro, 146.34/94. Traffic: WSEIJ 72.

LOUISIANA - SCM, John R. Rivoire, KSAGI - Asst. SCM: Louis A. Muhleisen, Jr., WBSAEH. SEC: WA5OLU. RM: W5GHP. The section will host a Delta Division ARRL officials meeting in New Orleans, Dec. 16 and 17. All amateurs are invited to attend. Congrats to new officers of NOVHFC: WA5KND, pres.; K5EJP, vice-pres.; W5IVF, secy-treas.; K5EJP and W5EBO, board members. JARC hosted an "Oktober Fest" on Oct. 21. BRARC had a breakfast get-together at the Holiday Inn. GNOARC started a memorial plaque in honor of W5RU. LARC discussing hosting a

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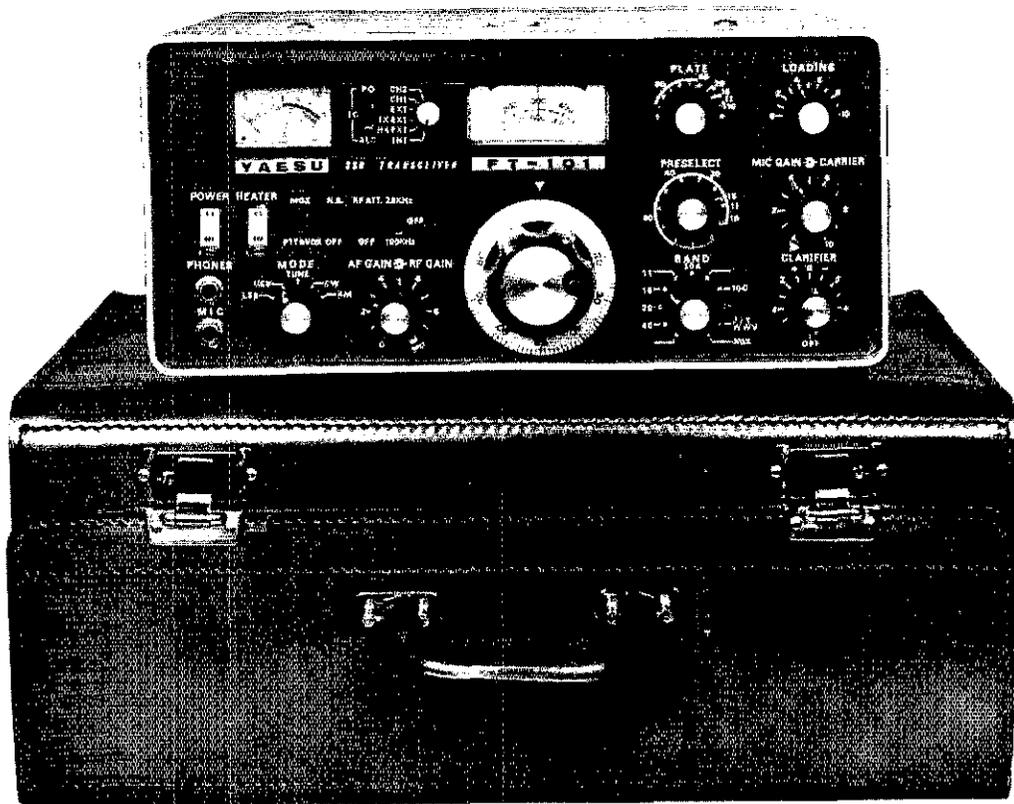
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Delta Division Convention. TCRC planned a "Gobbling Patrol" using 6/2 meters, worked in conjunction with the Monroe & West Monroe city police. The Ruston repeater was fired up for a trial run on .34 - .94. The Lake Charles repeater is back on the air. Get your club to turn out for the Jan. SET. OARC held an auction. ARCSWL furnished communications for the YMBC Air Show. WSRBZ went from Tech. to Advance in one big step. W5JRG working on a new UHF antenna design. WA5YTA received his 1st Phone & Radar endorsement. WB5CIC holds ICC appointment function for Sun. WSML attended the Central Area staff meeting in St. Louis. W5WRG's XYL is WNSHXD. Recent visits: MTA, BRARC, JARC, GNOARC and the Army MARS Region I meeting in Monroe. Make plans to take part in the big La. QSO Party Jan. 20 and 21. There will be a permanent trophy for the first place La. winner and the W5DDL Trophy for the first place portable station plus many other awards. Write K5ARH for details or see the next QST. Traffic: W5M1 226, W5GHP 100, WB5CIC 47, WA5WBZ 41, W5YN 8, W5EA 6.

MISSISSIPPI — SCM, Walker J. Coffey, W5NCB — Asst. SCM: Gene McGehey, WA5JWD. SEC: WA5FH. PAMs: W5JHS, WA5KEY, K5MDX. RM: WA5YZW, WB5DEK. Appointments: ECs: WA5PZI, Forrest Co., WA5SKP, Rankin Co., K5HCL, Washington Co., K5GVV, Warren Co., WA5OHO, Calhoun Co., K5YPR, Jasper Co. Emergency organization now includes over 300 stations as AREC members. Need ECs for Clarksdale, Greenwood, Starkville and Tupelo areas to cover these population centers. Contact WA5FH. Congrats to WB5FML now General. Had nice visit with N.E. Miss. ARA at Ripley. Group is interested in 2-meter fm repeater access. Welcome to new Novices WNSHOU, WNSHQM, WNSHRN, WNSHNZ, WNSHPZ and WNSHSA. Merry Christmas and Happy New Year to all.

Net	Freq.	Time(Z)/Days	QNI	QTC	Mgr.
MTN	3665	0045 Dy	100	54	WA5YZW
MNN	3733	2400 MWF	15	3	WB5DEK
CCSBN	3925	0030 Dy	—	—	W5JHS
CCCHN	3935	0100 Dy	1502	133	WA5ZQP
MSPON	3970	0045 MS	306	136	WA0GVO/5
MSBN	3987.5	0015 Dy	1019	122	WA5UHH

Traffic: W5SBM 209, W5NCB 109, W5AMZ 86, W5EDT 86, WA0GVO/5 68, WA5YZW 60, WB5DEK 55, W5WZ 51, K5YTA 30, WB5BUE 14, WB5EIN 10, WB5AHY 8, W5BW 8, WA5KEY 7, WA5NWZ 5.

TENNESSEE — SCM, O.D. Keaton, WA4GLS — SEC: WB4ANX. PAMs: W4PFP, K4MQL, WA4EWW, WA4NEC. RM: W4ZJY.

Net	Freq.	Time(Z)/Days	Sess.	QNI	QTC	Mgr.
TPN	3980	1245 M-F 1400 SSu& Hol.	50	1288	36	W4PFP
TSSBN	3980	0030 T-Su	27	1106	79	K4MQL
ETPN	3980	1140 M-F	23	521	21	WA4EWW
TPON	3980	0030 M	—	—	—	WB4BHZ
EVVHFN	50.7	0000 TThS	10	45	0	WB4LOB
ETVHFN	145.2	0000 W&F	10	40	0	WB4DZG
ETTMN	28.7	0100 W&F	10	79	0	WA4QXC
EVHFEN	50.7	0100 T	5	20	0	WB4MPJ
MITMN	28.8	0200 T&F	9	61	0	W4PSN
TN	3635	0100 Dy	31	264	148	WB4YCV
TNN	3720	0000 Dy	31	198	67	WB4USG

Mefest '72 was a success, first prize winner was WB4NWW. Due to developments with both parties, WB4USG will remain TNN manager. Knoxville-Oak Ridge area have started the Anderson County AREC CD Net; meets Mon. 0100Z, 2-meter 1m Repeater W4SKH (46.28-146.88, WB4DYJ), mgr., WB4UYB asst. mgr. Plans are underway to organize a joint club meeting of all the middle Tenn. clubs to be held quarterly, the host city will alternate. It is hoped to begin in early 1973. The Tenn. Amateur Radio Ten Meter Operator Society will sponsor the third annual QSO Party Dec. 22, 1972 through Jan. 8, 1973. Traffic: WB4YCV 310, W4ZJY 121, K4CNY 106, WB4USG 85, WB4VZQ 61, WA4GLS 31, W4WBK 31, WB4MPJ 26, W4PFP 25, WN4YDY 19, WB4ANX 17, W4SGI 13, K4SJV 11, WB4DYJ 10, W4CYL 9, WB4NIR 7, WB4TPS 7, WA4CGK 2.

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KENTUCKY — SCM, Ted H. Huddle, W4CID — SEC: WA4GHQ. Appointments: WB4WCM as ORS; WA4GHQ as SEC. Endorsements: W4BTA and K4HOE as ORS; K4TXJ as UO. BFL: W4BAZ.

Net	QNI	QTC	Net	QNI	QTC
KRN	339	30	EYN	259	141
MKPN	529	36			
KTN	1189	120	KPON	78	32

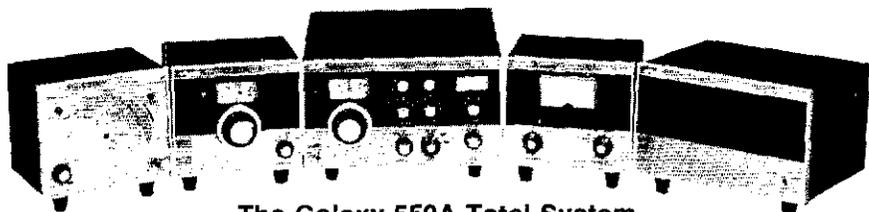
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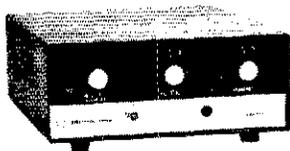
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RF550A contains high accuracy watt meter; calibrated in 400 and 4,000 watt scales; switch for forward or selected power; switch to select 5 antennas or dummy load. Order No. 857 Ham Net \$75.00

RV550A is a solid state VFO. Function switch selects the remote unit to control Receive-Transceive-Transmit frequency independently. Order No. 856 Ham Net \$95.00

SC550A Speaker Console with headphone jack. AC400 power supply will mount inside. Order No. 858 Ham Net \$29.95

AC400 Power Supply is heavy duty solid state to operate GT-550A at full power, on SSB or CW, and with switch selection of 115/230 VAC, 50/60 Hz input voltages. Order No. 801 Ham Net \$99.95

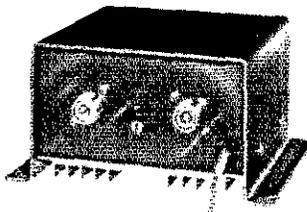


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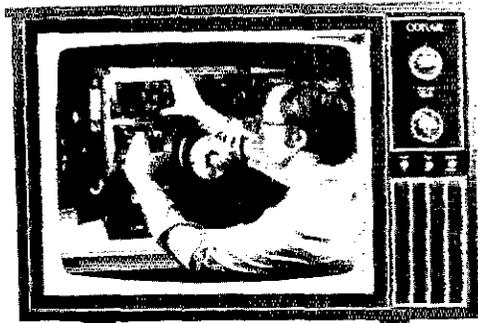
The PA-210 2 Meter 35 Watt Mobile Amplifier

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WASHO began his term as KY SEC in Oct. Jim is scheduling trips around the state to get the ARK program moving. Let him know when your club meets so he can attend and solicit your support. The SEC is a tough one but one which Jim is well qualified to handle. WA4JOS acted as main amateur liaison station in the recent ARKAP exercise providing a vital communications link for this group. Tony organized the Somerset group and set up a fine Comm center with only 48 hours notice! K4AVX and WB4ILA have been conducting Novice classes in Hazard and recently graduated 5 new Novices. WB4BSF is a new ticket in Somerset. K4TXJ recently provided assistance in an auto accident in Louisville through HAMOP repeater. WB4YAF now has his General and is working on a new Special Traffic. WA4JOS 22R. W4BAZ 24S. WB4VCM 27A. WA4UD 6X. K4MAN 6S. WA4VZ 5Z. WB4ZSA 4S. WB4AUN 43. K4EAD 8R. W4CDA 2Z. WA4AVV 16. WA4ENH 14. K4L0L 14. W4ANHO 10. W4OYI 10. W4PVC 10. WB4REN 9. W4BTA 8. W4GCV 8. K4HOE 7. WA4MXD 6. WA4AGH 5. WA4FAF 5. W4NBZ 5. K4AVX 4. W4MANN 3. K4YCB 3.

MICHIGAN - SCM, Harry J. Olinhouse, WKZBT - Asst. SCM: B. Peter Iremi, W8K6Z, SEC: W8MPD. RMs: W8JYA, W8WYL, W8REN, K8KMO, W8GLC. PAM: K8PVC W8KHB, W8HQ5. THE PAMs: K8ALM, W8WVV.

Net	Freq.	Time Class	QNI	QTC	Net	Mfr.
OMN	3663	2300 Dv	718	540	60	W8JYA
W8S6	3945	0000 Dv	597	83	30	K8PVC
BR MEN	3940	2230 S-F	524	63	24	W8KHB
EPFN	2920	2230 Dv	646	61	33	W8HQ5
GLTN	3932	0230 Dv	854	69	30	W8KAI
PNM	3955	1600 Dv	720	717	30	K8LNE
PHANCW	3645	2400 M-S	154	24	24	VE3DFO
M6M	50.7	0000 M-S	174	14	18	W8WVX

W8CVO reports SW Mich. 2-meter net 62 QNI, 2 QTC and 4 sessions. The SW Mich. Weather Net held 3 sessions with 38 QNI as reported by K8ZWR. The new Wolverine 6-meter SSB net had 2 sessions and 18 QNI, reported by K8AEM. W8AQA and W8MQT have no reports of intruders for the month. Regret to report Silent Keys: K8RLZ, W8JYP, W8HKY, W8FX, W8FAM. On Dec. 16 W8RC will celebrate its 40th anniversary with a special club meeting. Blossom Land ARA elected new officers: K8TMK, pres.; W8NDG, vice-pres.; W8R1W, secy.; W8NLY, treas.; W8LRM and W8NED, alt.; W8DFG, trustee. The OMN net elected W8JYA, pres.; W8PDM, secy.-treas.; W8LKY, editor of the Bulletin. Deleted Key: ARC Ham of the Month Award goes to W8HRL and W8KIN. W8KRL has a new antenna and is hunting DX. W8GRJ and W8JYZ are teaching Novice classes in SVARA. W8NTX is Sigma's newest Novice. OMARC club picnic was very well attended. W8YVR now holds Extra Class license. Mich. Novice Net is again in operation with W8BJD as mgr. W8NKP has a new SR-101. Crystal Falls repeater now is ready but not all set yet. The I.P. 75th Annual hamfest for 1973 will be held in the Escanaba-Gladstone area. No further details as yet. W8HCU has a new SR-102. P.O. Net names K8CWO for Amateur of the Month with the Special Award to W8DJS. K8ALM is doing well on vhf with his new 64-ft. tower. W8KHJ is getting his 64-ft. tower up. W8CXS has a new tower and antenna for 6 and 2 meters. K8YLL has a new Magna Pole to put up. W8WLG is teaching General and Novice classes at Marshall High School. Huron Valley ARA is teaching Tech. Novice and general classes this year. A new club, the Arrow Repeater ARC has been formed in Washtenaw Co. W8NLU has a new JH-4 antenna and 60-ft. tower. Traffic: (Sept.) K8KMO 281, W8WZ 224, W8BJP 204, W8RIAD 175, W8IBX 170, W8IZ 136, W8RIM 135, W8PIM 127, W8JYA 120, W8MO 107, W8GLC 104, W8R1W 93, K8LNE 91, K8PVC 66, W8ZBT 65, W8ENW 61, W8KHB 42, W8F8F 40, W8HQ5 39, W8BBY 27, W8NHP 23, W8R1J 22, W8LU 20, K8JED 28, W8UJN 28, W8DDI 26, K8WRJ 24, W8DCN 21, W8DJS 21, K8DYI 20, W8KVI 20, W8NDI 18, W8VXM 15, W8ACW 14, W8UC 14, W8EZ 11, K8GOD 11, W8NOH 11, W8WV 11, W8ZDT 11, W8VLE 10, W8VZ 7, W8R1Q 8, W8RDT 8, W8QRI 8, K8TY 8, W8HLL 7, W8HLL 7, K8AEM 6, K8JMA 6, W8KXI 6, W8WVX 6, W8MCK 5, K8ACD 5, W8TBP 5, W8F5 5, K8HGA 5, W8JST 5, W8NLE 5, (Jan.) K8MPO 209, W8RIAD 57, W8ZBT 48, W8U 47, W8ACW 19, W8NOH 13, W8REL 6, K8AEM 5, W8TBP 4, W8STV 2.

OHIO - SCM, William E. Clusen, W8MF - Asst. SCM: Kenneth L. Simpson, W8ETX. SEC: W8UCU. RM: W8WAK. PAM: K8LBN. THE PAM: W8ADU.

Net	QNI	QTC	Net	Time/2	Mfr.
W8EN	2886	1004	80	1530/2100	K8LBN
				2345	
BN	647	344	60	3377	0000/0300 W8WAK



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Burlingame (94010)
Ham Radio Outlet
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Fresno (93710)
Diamond Electronics
46 E. Shaw
Los Angeles (90054)
Henry Radio
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Amrad Supply
10255 Harrison Street
Pasadena (91106)
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Western Radio & TV Supply
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San Jose (92128)
Ovement Electronics
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Torrance (90505)
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600 Lincoln (80203)
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- CONNECTICUT**
Hartford (06714)
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Sarasota (33579)
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- GEORGIA**
Atlanta (30309)
Ack Radio Supply Co.
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- Idaho Electronics**
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- IDAHO**
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Palos Heights (60463)
Green Mill Radio Supply
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Peoria
Klaus Radio & Electric Co.
8400 N. Pioneer Pkwy (61614)
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800 S.W. Jefferson (61605)
River Forest (601305)
Triggar Electronics
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Henry Radio
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St. Louis (63132)
Ham Radio Center
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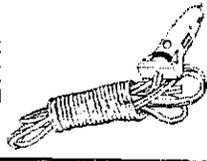
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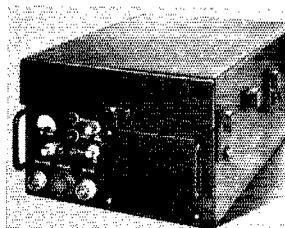
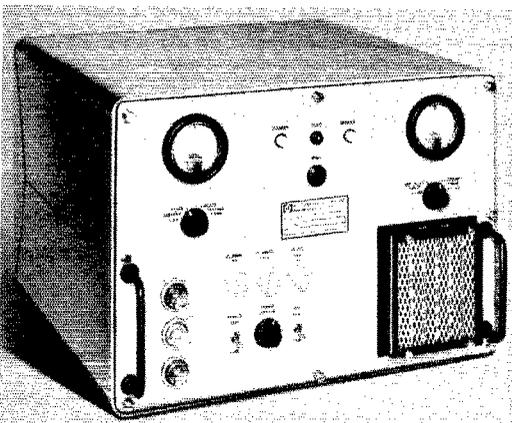
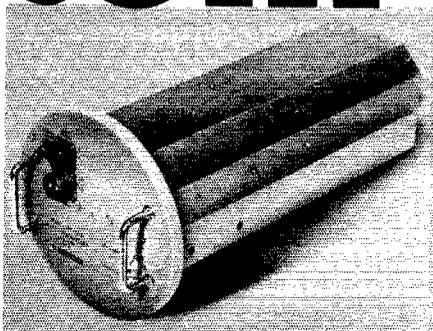
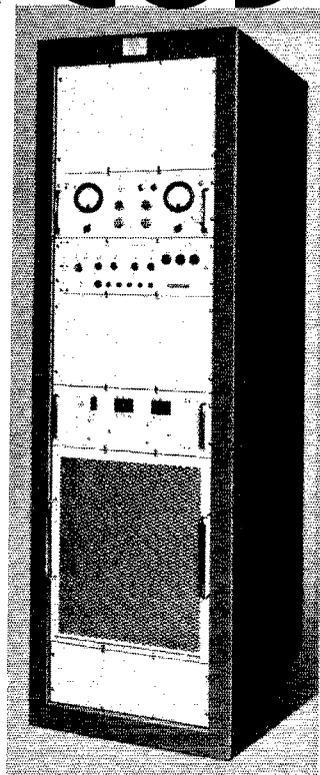
m. weinschenker
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BPLs for Sept. went to WABHQ, K8NOW, W8QCU and W8WPQ. New appointees are W8HUP, W3ZJZ/8, ORS4; W8SKZD, ORS/OBS. W8CSCH has been appointed EC for Richland and Ashland counties. The Ohio Novice Net meets on 3720, Sun., Tue. and Thur. at 2245Z, W8KKI, mgr. According to Warren ARA's newsletter, the Warren Hamfest set an all time record attendance of over 5000. K8ONA's Cleveland Plain Dealer column reports that W8AJW and W8DFL operated 4U1ITU. SW Ohio AREC provided communications for an air show, a band contest and the Harvest Home Festival Parade. Mobile communications were supplied to Cleveland's Columbus Day Parade by the Apricot Net. Central Ohio AREC served in a Caucus Society fund-raising project. W8DYF reports that the Steubenville Area ARC helped purchase 2-meter gear for Red Cross use. The new Summit Co. AREC net meets on 50.88, Tue., Thur. at 8 P.M. The Champaign-Logan ARC has a thriving net on 145.68, Tue. at 8 P.M. W8IWW, in Toledo area's Ham Shack Gossip, promotes the use of the Critical Bias RC's new repeater, 52.68/52.56, for severe weather net operations. Dayton ARA heard W8HB on the subject of Ni-Cad batteries and Columbus ARA heard W8ZDF and K8EHU discuss DXing. W8GPFY, in the Scioto Valley ARA's newsletter, writes that he "left optimistic about the ARRL" after a visit to headquarters and W1AW. The Annual SET is scheduled for Jan. 27, 28. The objectives are to test the local emergency organizations; to test the traffic nets under emergency conditions; to demonstrate ham radio public service capabilities to disaster agencies and the public, and to provide operator training in emergency communications. I urge you to contact your local EC and volunteer your services. If you don't know who your EC is, contact W8OOU or W8IMI. The SET is for every amateur, so if your area has no EC, contact other hams in your area, request a copy of the SET Bulletin from ARRL, and organize a local exercise. Let's make Ohio number one again in emergency preparedness! Traffic: W8PMJ 327, W8MCR 276, K8NOW 243, W8QCU 215, W8ETX 199, W8Y1W 195, W8WPQ 191, W8HQO 161, W8KKI 135, W8WAK 129, W8CUT 125, W8HGH 125, W8UPI 123, W8ASM/8 121, W8MOK 105, W8BDWL 104, W8JD 98, W8VWH 87, W8BNCQ 86, K8MLO 82, W8QZK 82, W8HUP 81, W8MKZ 80, W8JEL 79, W8VND 76, W8VIT 72, W8IMI 70, W8AYC 55, W8FXD 53, W8JGW 53, W8CWD 52, W8EFZ 48, W8OE 44, W3FAF/8 38, W8KVVU 38, K8DHD 37, W8SSD 37, W8GVX 34, W8ADU 32, W8RSH 32, W8YIB 31, W8BFL 30, W8OUU 30, W8TFZ 30, W8CSH 29, W8WEG 27, W8BLLH 26, W8E1W 26, W8SSI 26, W8GGR 25, W8RZD 25, W8VKP 24, W8CLF 23, W8RFT 23, K8UBK 22, W8CHT 21, W8DDQ 21, W8VNU 20, K8BPX 18, W8GRT 16, K8PBJ 15, W8AJC 14, W8LAG 13, W8MHI 11, K8BYR 10, K8DHI 10, K8JDI 10, K8YQ 10, W8FCQ 9, W8YXB 9, W8HEM 8, W8KPN 8, W8MGC 8, W8CXM 7, W8CXO 7, W8MHQ 7, W8STX 7, W8LAM 6, W8NAL 6, K8CKY 3, W8ERD 1, W8ETU 1, W8JBP 1.

HUDSON DIVISION

EASTERN NEW YORK — SCM, Graham G. Berry, K2SJM — Asst. SCM/PAM: Kenneth Kroth, W2VJB. SEC: W2RUP. RMs: WA2VYS, WA2FBL. VHF PAM: WA2YOU. Nets: NYS daily at 0001Z and 0300Z on 3.675 MHz; ESS (10 wpm) daily at 2300Z on 3.590 MHz; NYRTTY daily at 2330Z on 3.613 MHz; NYSPT&EN daily at 2200Z on 3.925 MHz. All appointees are reminded that renewals are due Jan. 1. If you have old-style certificate, please mail in; sticker-type endorsements will be automatic to active stations with newer certificates. Following county ECs looking for registrants: Albany - WA2EAH; Schenectady - W2PKY; Rensselaer - WA2SRW; Westchester - WA2JWL; Ulster - WA2WGS; Dutchess - W2HZZ; Rockland - K2CXO. SEC W2URP still looking for volunteer ECs for Greene, Orange, Putnam Counties. Individual station activities: W2MZV, W2QK, W2EYJ and W2SLQ organizing repair service for all types of ham gear — details from W2QK. New calls in Schenectady area are W2Ns FNB, FMO, FNU, FTK, GMC, FNH, FMN, GMB, FMY, FNC, FND, FNG and FMX. Congrats to all and particularly to W2AMM, Chief Instructor for the group. W2PY won CQ's World DX Phone contest with top U.S. score. W2BZE now operating at WA1PHF for school year. K2HMW back state-side and active. W2RUF reports from WNY Novice Training Net Mon. 7:45 P.M. local time on 3677 — get aboard for top training in traffic handling. On the club circuit: Harmonic Hills held film session on PC Boards and Transistors plus quiz on operating procedures and FCC regulations. Westchester ARA held a "Don't you believe it" evening, with W2RP demolishing popular fallacies. Albany ARA

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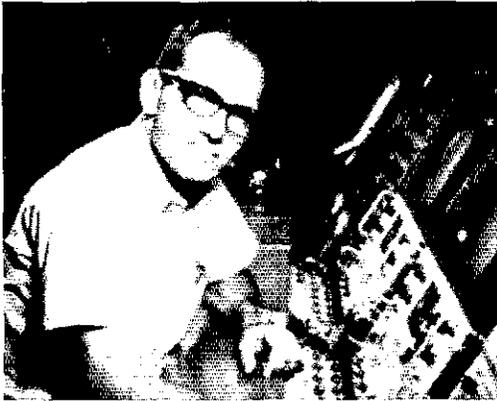
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Q1-98

held vhf evening. Schenectady ARA visited WGY in Sept. Communications Club of New Rochelle saw WA2RAU's Africa travelogue film. Major equipment reorganization at W2SZ, plus Fannin. New appointments: WA2MID as OQ; WA2PIL as ORS. K2HNW renewed as OPS. All section members please note this column "closes" by 8th of month and your activities reports, traffic counts, etc. MUST reach SCM by then for inclusion. Thanks Traffic: (Sept.) W2GPH 88, WA2VYT 83, W2SZ 39, WA2BI 27, WA2WGS 23, K2SJJ 21, WB2AEQ 16, WA2CNE 15, WB2LYC 10, W2URP 10, WA2LIK 7, WB2KLY 5. (Aug.) WB2BWE 6.

NEW YORK CITY AND LONG ISLAND - SCM, Fred J. Brunjes, K2DGI - SFC: K2HTX. RM/PAM: WA2UWA. RM: WB2LZN. VHF PAM: WB2ROF.

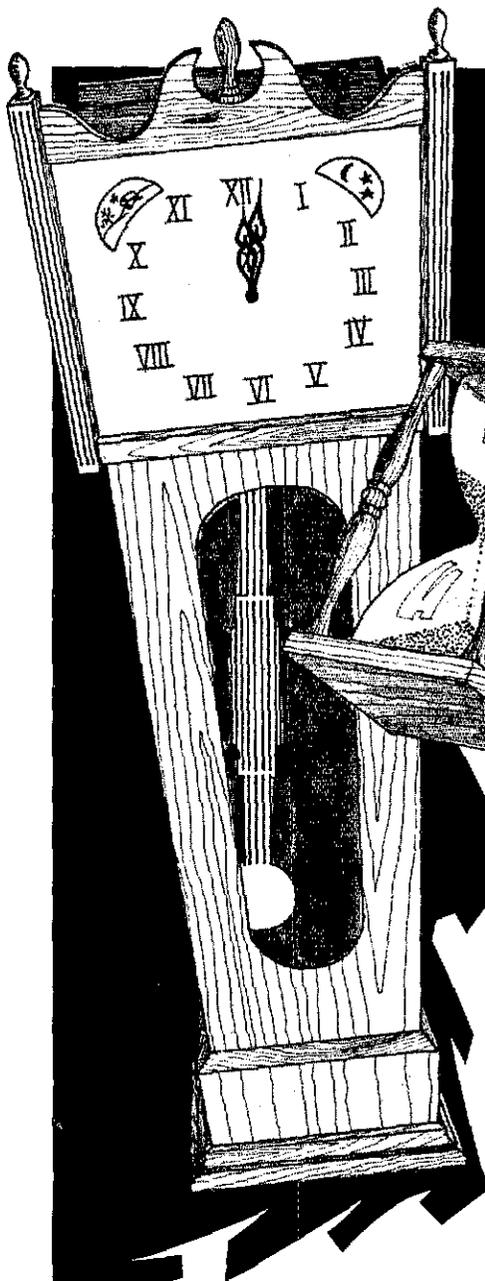
NLI*	3630 kHz	1915/2200 Dy	WB2LZN RM
NLS*	3730 kHz	1830 Dy	WA2CKY Mgr
NLI Phone*	3932 kHz	1600 Dy	WA2CKY Mgr
Clear House	3925 kHz	1900 Dy	WA2VYT Mgr
All Svc.	3925 kHz	1300 Dy	W2OE Mgr
Mic Farad	3925 kHz	1100 Dy	W2OE Mgr
NYSTPTEN	3925 kHz	1800 Dy	K2VCZ Mgr

*Section nets; all times are local. My apologies for a "thin" column this month. Input has been very light, everyone is preparing antennas for the long winter! Enjoyed meeting all of you at the Hudson Division Convention in Tarrytown. The following is a listing of AREC ECs in the NLI section. Keep your local ECs address available for reference in case of an emergency and contact him to volunteer your services for your local community to fulfill your "Public Service" obligation of your amateur license. Richmond Co.: Robert Link, W2VKF 190 Oakdale St., Staten Island N.Y. 10308 Kings Co.: George Meserote, WA2UCP 647 88th St. Brooklyn, N.Y. 11228; Bertha Tomek, WA2GAB 28 Cyrus Ave. Brooklyn, N.Y. 11229; Queens Co.: George Levine, WB2RKB 88-67 193th St. Hollis, N.Y. 11423; Frank Wisniewski, W2LXC 163-10 20th Ave. Beechurst, N.Y. 11357 (10 meters); Ralph Calman, 165-17 72nd Ave., Flushing, NY 11465 (2 meters); Nassau Co.: Everett Gibbs, W2FL 3565 Taft St., Wantagh NY 11793; James Waite, W2ZAF 9 Landau Ave. Elmont, N.Y. 11003 (10 meters); Richard Amy, W2ELK, 2417 Atlantic Blvd., Wantagh NY 11793 (2 meters - Hempstead Town South); Robert Graves, W2UAL 141 Adleigh Drive Albertson, N.Y. 11507 (2 meters - Hempstead Town North); Charles Harrison, K2QPF 179 Cove Edge Rd. Oyster Bay, N.Y. 11771 (Oyster Bay Village); Suffolk Co.: Charles Rankin, WA2IHM 8 Cottal Lane East Northport, N.Y. 11731 (Western Suffolk area); Harold Worketz, WB2YNK Bayberry Lane, Northaven, Sag Harbor N.Y. 11963 (Western Suffolk area); Francis Guyer, W2VSV 301 Newton Ave. Riverhead, N.Y. 11901 (Riverhead Township); Var Field, W2OQI 17 Inwood Rd. Center Moriches, N.Y. (Brookhaven Township); Sidney Cutler, WB2GUB 20 Columbine Lane, King Park, N.Y. 11754 (Smithtown Township); Arthur Ford, W2HAE 56 Gildare Drive East Northport, N.Y. 11731 (Huntington Township). Babylon Township residents should contact WA2HMM who is looking for AREC memberships to support Babylon Township Local delegates to the Northeast Repeater Assn. attended a NERA meeting in Valley Forge, Pa. in Oct. Meeting was to ratify the NERA Constitution and elect officers, in addition to formal comments on the FCC Docket 11803; Repeater phase. Officers are: W1JTB, pres.; W1FSK, vice-pres.; WA2FTS, secy. The local NYC-L section representative is K2AHP of the NY Repeater Assn. (WA2YYQ 28-88). An attempt is again being made to reactivate the 2-meter traffic net on 145.8 by WB2ROF. Support is needed by you to make it work. Traffic outlets are needed in all counties of the section, especially on the village and town level. In addition, more help is needed on the NLI and NLS Nets. Even if you can check in once in a while, it will help! May I wish you all the best of the Holiday Season and success in the coming year! Traffic: (Sept) WB2LZN 265, WB2WFF 234, W2GKZ 142, WB2OYV 90, WB2UF 76, W2EC 70, WA2PLI 48, WA2GLP 24, WN2CGW 15, WB2BY 13, WA2MDX 12, W2PF 8, WA2HMM 7, K2JFE 6, WA2LJS 1, W2FVS 5, W2DBQ 1. (Aug.) WB2UEG 268.

NORTHERN NEW JERSEY - SCM, Louis J. Amoroso, W2ZZ SEC: K2KDO. RMs: WA2UOO and WA2BAN. PAMs: K2KDO and WA2FVH.

Net	kHz	Time (PM)	Days	Secs.	QNI	Tfc.	M.
NJN	3695	7:00	Dy	30	491	197	WA2UO
NJN	3695	10:00	Dy	30	279	68	WA2UO
NJN	3740	8:00	Su	4	5	0	WA2FV
NJFPTN	3950	8:00	Dy	30	543	192	WA2FV
PVTEN	145710	7:30	Dy				K2KD

New appointments: WA2FVH as PAM, WB2CST as ORS and OP. WB2HGV as ORS. Endorsements: WA2DMF, WB2TUL as WA2UOO as ORS. K2CGB, WB2FEH, WA2FVH and K2OQ OPS: K2DQT as OVS. WA2AYU of the New Providence ARC w



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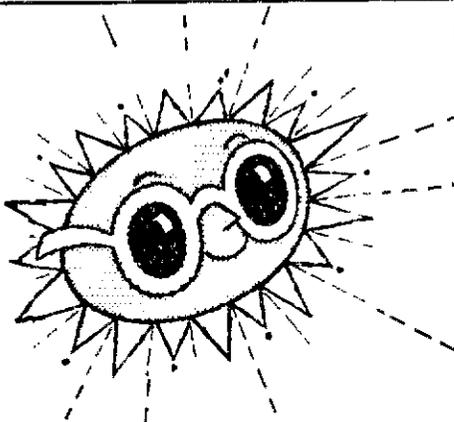
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conduct a Novice class at his home QTH. K2SKV has a new SB-300. K2KDO is looking for help with his PVTEN. Also WA2FVH with the NJSN. W2TPJ bought a new travel trailer since retiring in June and is traveling around the country. W2CVW spent his vacation in RP4-, KV4- and PJ-Land. WA2UDT has a Heath HX-20 driving his vhf ssb unit. WB2KLD moving to WNY and WA2PKY is going to SNI. Congratulations to WN9GEM/2 who passed his General. WA2QJU working on his long wire antenna for 80. WB2HGV received his General and reports 54 countries worked for his DXCC. WA2GTO joined AREC. WN2CSX reports his station struck by lightning. NJN can now claim three generations of the same family in its net with W2ABL, W2ZEP and WA2POL who just received his General. WA2RYD joined Navy MARS. Congratulations and good luck to K2SJO and W2IHA who were elected as Director and Vice-Director of the Hudson Division for the next two years. WB2CUM is moving to North Carolina. WA2FUI is continuing his license classes at W2ODV. WB2FVO passed the Extra. W2FJK passed the first-class Commercial Radiotelephone. W2ZZ is waiting for some 40-meter QSL to complete his 5BDXCC. My sincere thanks and appreciation to all for making this another great year. Merry Christmas and Happy New Year to all. Traffic: (Sept.) WB2CST 283, WB2AEH 173, WB2DDO 152, WA2EUO 151, WA2RYD 129, WA2UOO/2 116, WA2SRQ 110, WA2MJG 80, WB2IKL/2 69, W2ZEP 67, WB2KNS 38, WA2QNT 34, WA2EPI 29, WN9GEM/2 29, W2CU 26, WA2FVH 25, W2ODV 25, WB2CFT 20, WB2NOM 16, WA2NPP 15, W2ZZ 15, K2EQP 14, WA2CAK 13, W2WOJ 4, WB2BCS 8, WA2CCF 6, WA2FUI 6, WB2HGV 6, WB2COV 5, W2ABL 4, K2ZFI 4, W2CVW 2, WA2QJU 2. (Aug.) WN9GEM/2 18.

MIDWEST DIVISION

IOWA - SCM, AJ Culbert, K0YVU - SEC: K0LYB. W0BQJ has retired from the FAA Flight Service Station at Mason City, so maybe we can expect to hear him more often on the bands. W0YLS reports a ham club has been formed in the Dubuque area, the Great River ARC. WA0OTQ has finally gotten an antenna back up, and is to be found on 75 meters when not working as an engineer at the KTVO-TV transmitter. Your SEC and myself had the pleasure of speaking to the Quad City ARC at Rock Island this month, and as a special, we were joined by W4RKH, SCM of Western Fla. for a panel discussion. K0JMA underwent surgery at the Univ. Hospital, but is back burning the ether from Eagle Grove. Congratulations to WA0AUX who recently passed his Advanced Class exam. WA0VDX was in France on business during Sept. W0BWB reports the 2-meter enthusiasts around Fort Dodge making plans for installing a repeater. The Clinton ARC has the following new officers: WA0ODB, pres.; K0YYH, vice-pres.; WA0EFN, secy.-treas. Let's make some plans and a real effort to make the coming SET a real success in Iowa. After all the clamoring, I hope those new phone sub-bands get a real workout. You fellows have good cause to contact the Novices in your area and offer your counsel as these fellows move into the world of VFOs, let's help them avoid the wrath of the OOs and the FCC. Here's wishing you and yours a Happy Holiday Season. TLGN: QNI 149, QTC 96; Noon 75: QNI 1408, QTC 97; Eve 75: QNI 988, QTC 26. Traffic: (Sept.) W0LXC 430, K0DDA 240, WA0AUX 163, K0AZJ 138, W0MOQ 45, WA0VZH 26, K0YVU 13, K0JGI 7, WA0AIW 5, W0IO 5, W0BW 4, WA0YJW 4, WA0ZYF 4, WA0TAQ 1. (Aug.) W0IO 17, W0WSV 5.

KANSAS - SCM, Robert M. Summers, K0BXF - SEC: W0BGX. PAMs: K0JMF, W0BCL. RM: K0MRI. VHF PAM: WA0TRO. Silent Key W0QQT will be missed by many. WA0JTM in the hospital and WA0UMZ recovering from surgery. Pilot Knob ARC: W0NYG, pres.; W0MA, vice-pres.; W0BEC, secy.; WA0HUJ, treas. Kans. Univ. ARC, K0KKU: W0BFGV, pres.; WA0ZTW, vice-pres. Wheat Belt ARC: K0MRI, pres.; K0RXT, vice-pres.; WA0DAV, secy.; W0BFEJ, treas.; W0MVE, act. mgr. Hiawatha ARC: WA0KDC, pres.; WA0VSI, vice-pres.; WA0EKR, secy.; WA0EAF, act. mgr. W0INH reports the Central Area Net has moved operation to 3670 kHz. W0CHJ mobilizing with a new HW-12A. The Lawrence repeater is putting out a fine signal. Members of the Salina Club visited the FCC Monitoring Station at Grand Island Sept. 17. Congratulations are in order to W0GCVR, top ranking out-of-state Novice in the NJ. OSO Party. His XYL also taking her spot in the limelight with WAC and WAS.

Net	kHz	Time/Days	QNI	QTC
OXS	3610	0100/0400Z Dy	427	168
RSHN	3920	1830 Local M-S	803	98
KPN	3920	0645 MWF	191	17
		0800 Su		
KCC	3920/7278	1300 Su	16	3
KWN	3920	1800 Local Dy	450	147

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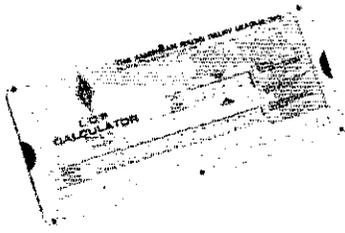
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W0BGX reports 630 ARRLC members with zone activity from Zones 2,3,4,5,7,10A, 13 and 14, 26 sessions, 284 QNT. QKS-88 now in full scale operation MWF and Sun. 8 P.M. Central time on 3735 plus or minus. Traffic: (Sept.) W0HI 294, K0MRI 200, W0INH 123, W0MA 78, K0BXF 74, K0JMF 71, W0LLC 67, W0BGX 65, W0CHI 50, W0UXI 40, K0IPC 36, K0PSD 34, W0CZR 33, W0PB 28, W0GCI 27, K0ZHO 27, W0BBIY 25, W0RBO 17, K0GII 16, W0GVR 12, W0GOL 9, W0PGV 8, W0FSL 8, W0ZTV 8, W0TKJ 4, W0YMK 4, W0OWH 2, W0NYG 1. (Aug.) W0PYM 18, W0TZZ 15.

MISSOURI - SCM, Robert J. Peavler, W0BV - SEC: W0ENV. Appointments renewed: K0DEQ, W0GJ as ORS; W0KHU as OBS, PAM.

Net	Freq.	Time(D)Days	Sess.	QNT	QTC	Mgr.
MON	3585	0100 Dy	26	113	95	K0AEM
MON 2	3585	0345 Dy	24	95	41	K0AEM
MNN	7040	1900 Fry	30	105	41	W0GJ
MSN	3703	1600 Su	4	21	15	K0BIX
MOSSB	3963	2400 M-S	25	1066	105	K0HNE
WEN	28.6	0130 M	4	16	2	K0BIX
PHD	50.45	0130 M	4	65	8	W0KHU

Your attention is called to the renewal of ORS appointment for W0GJ. It marks the start of 43rd year of continuous ORS appointment. W0BTT is now at Northwest State Univ. in Maryville. W0DCK is back at Northeast State in Kirksville after some time in the Navy. New officers of the Student Amateur Radio Club at Northeast State are W0EMF, pres.; W0DCK, vice-pres. and Deanna Cooper, secy.-treas. K0BIX asks clubs to encourage Novices to get on MSN. The PHD Novice Net has started on 7160 kHz, meeting Wed. at 7 P.M. local time. WSSNP has moved back to Missouri and reclaimed his old call, W0JKF. I am glad to report that K0PYM is pretty well recovered after a fall from a tower and a dislocated elbow. Congratulations to: Paul, ex-W0CJB, who passed General Class; and to W0FCY, who passed General and Advanced. Traffic: (Sept.) K0ONK 1440, K0AEM 211, W0BV 208, K0BIX 125, W0GJ 120, W0UD 84, W0CXN 65, W0PZI 25, W0KHU 4. (Aug.) W0CXN 129.

NEBRASKA - SCM, V.A. Cashon, K0OAL - Asst. SCM: Velma Saver, W0GHZ. SEC: K0ODF. Endorsements: W0BOK and W0OOX as ECs; K0HNT, W0LRQ and W0BOK as OPSs.

Net	Freq.	GMT/Day	QNT	QTC	Mgr.
NSN I	3982	0030 Dy	871	26	W0LOY
NFR	3590	0215 Dy	102	21	W0TOD
NMN	3982	1230 Dy	1198	48	W0JUE
WNN	3950	1300 M-S	432	41	W0NIK
AREC	3982	1330 Su	217	3	W0IRZ
CHN	3980	1730 Dy	1080	53	W0GHZ
DEN	3980	2030 M-F	234	12	W0AUX
NSN II	3982	2330 Dy	1124	22	W0LOY

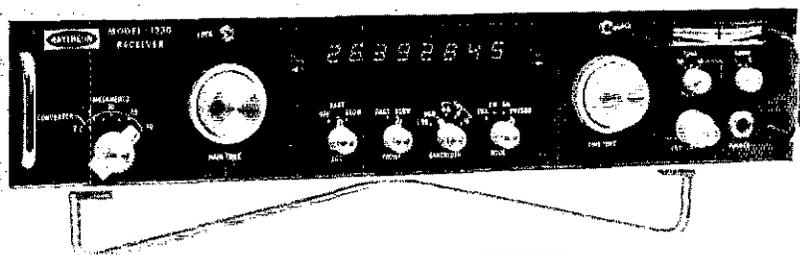
With regret I report W0AW and W0DI have joined Silent Keys. W0BHT awaiting word on higher class ticket. Grand Island RC annual picnic was successful. Net mgrs. and NCSs are to be commended on FB job. Speedy recovery to W0ZUT, K0ULO and W0MJB. W0HIO is new Novice in North Platte. W0YYV helped W0CXH correct rig trouble. W0BBS has moved to Colo. W0MW checked into nets while mobiling in Colo. W0RAM putting up 80-ft. tower. K0ODF set up tower with 75M inverted V and 2-meter GP. W0HHQ moved into his new home and put up 50-ft. tower. Congrats to W0LRQ working 3079 counties. Box Butte Co. 2-meter AREC Net QNT 27, QTC 2. Wish everyone a very Merry Christmas! Traffic: (Sept.) W0LOD 134, W0SCP 75, W0QEX 67, W0CJ 32, K0NEB 32, W0HOP 23, W0IXD 20, W0MW 18, W0TD 16, W0BOK 14, W0YX 13, K0OAL 10, W0DXY 9, W0FQB 9, W0NIK 9, W0FCC 9, W0SQA 9, K0DGW 8, W0JUH 8, W0DMY 7, W0GHZ 7, W0YGY 7, W0POP 6, W0GEQ 5, W0HTA 5, W0LEI 4, W0LWS 4, W0VEA 4, W0WKP 4, W0CWD 3, W0LOY 3, W0CNK 2, K0HNT 2, W0NYM 2, W0YFR 2, W0ZQC 2, K0BDF 1, W0IRZ 1, W0JUF 1, K0ODF 1, K0WPF 1. (Aug.) W0CWD 2.

NEW ENGLAND DIVISION

CONNECTICUT - SCM, John McNastor, W1GVT - SEC: W1HR. RM: K1EJR. PAM: K1YGS. VHF PAM: K1SXF.

Net	Freq.	Time/Day	Sess.	QNT	QTC
CN	3640	1900 Dy	60	531	343
CPN	3965	1800 M-S	30	570	160
VHF 2	145.98	2200 M-S	20	79	20
VHF 6	50.6	2100 M-S	21	127	8

High QNT: CN - W1BYW, W1EJ, W1NLD, W1IGN, W1MRN



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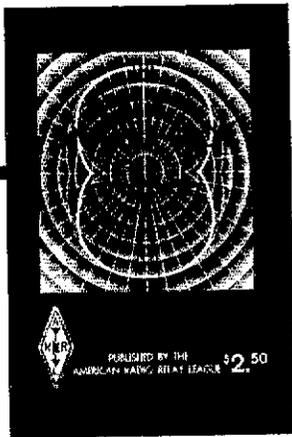
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and W1KV. CPN - W1BFY, W1GVT, W1AINLD, W1AOPB and K1SXF. SEC W1HHR has AREC information for all ECs - please get your Annual Report to him now covering '72 activities. Director W1QV sent complete information on FCC Phone Band changes, be sure club members are fully informed. '73 N.E. Convention will be on Sept. 29 in Hyannis, Mass. The Annual Fall CN meeting at ARRL included presentation of Section Net Certificates by K1EIR and a "Guess Who" CW contest tape by WA1GFH - the new daytime NTS was discussed - see Dec. and Jan. QST for details. Murphy's Marauders Christmas Party Jan. 20 in Meriden. New officers: Meriden ARC: W1FYG, pres.; W1AINBB, vice-pres.; W1OWD, treas.; W1IMYX, asst. treas.; W1ALYT, secy. Insurance City RC 28/88: W1AELA, pres.; W1JJC, vice-pres.; K1GZU, vice-pres.-tech.; W1IHHE, secy.; K1YGS, treas.; K1PAI and W1CHX, exec. comm. Congratulations to: W1WEE, Meriden, W1KVI Storrs and W1DOJ Norwalk - all providing Novice Classes! Sincere thanks for another wonderful year, unlimited help from W1HHR, K1EIR, K1YGS, K1SXF, the ARRL staff and Director W1QV is greatly appreciated. All reports plus many enjoyable QSOs make it more than worth while. Hope Santa Claus brings everything you want! A Very Merry Christmas To All! Traffic: (Sept.) W1BFW 150, W1IFCM 145, WA1GFH 124, W1MPW 100, W1AINLD 97, W1KV 91, WA1GGN 86, K1SXF 6R, W1CTI 51, K1YGS 50, W1GVT 41, WA1OPG 40, W1NPHJ 23, W1RML 21, W1AOPB 19, W1AQLS 16, W1AW 14, W1QV 10, W1BDI 9, W1DGL/1 9, K1EPW 9, W1MTZ 8, W1AINYU 7, W1CUH 6. (Aug.) WA1GFH 119.

EASTERN MASSACHUSETTS - SCM, Frank L. Baker, W1ALP - SEC W1AOG received reports from tECs W1s BAB, LE, K1s DZG, ZUP, NFW, UMP; W1s DXI, MYK who is the new EC for Sharon. W1JKB, K1IOA are Silent Keys. K1EPL is a new OO. W1OMN, W1PJ endorsed as ECs. W1JIT now in Wayland. Ex-W1ONC now is W3GKB. WB2BRZ/1 on 6 in Concord. W1CMU now in Newburyport. W1FSK retired and in Wolfeboro, NH. W1OPE DX on 15. W1WU on 20 cw. W4WED, ex-W1KVH heard up here on 75. OA4BL, OA4GG visited W1MD. W1QV, W1ICP spoke at the Quannapowitt RA meeting with many clubs represented. Many from this section were at the CNEN's annual affair at Saunders Bay, NH. OOTC held a luncheon at Mildred's Chowder House in Hyannis, where W1GM was a guest and honored before he left for Fla., some slides and a talk on Marconi's Wellfleet Wireless Station were given by F.P. Lohr, Park Historian. Keep in mind that the New England Emergency Phone Net meets each Sun. at 8:30 A.M. on 3945 with K1EPL as mgr. K1TVY moved to Bristol, RI. W1AEC held a clam bake. K1AYH teaching in Bourne. W1LAZ, W1ATI, K1IBR, W1AFNM visited ARRL. W1AQGT attending SMU. K1YMW got married. More of their gang on 2-meter fm. K1DZG back in the hospital. T-Y Club met at W1WNK's. W1KDL now in Westwood, has DX-60B. W1NF doing some DXing. South Shore CluW1GM a certificate and W1JMA was present. W1MXV in EMN and applied for ORS. W1JYQ has General and mobile on 6. K1PNB is getting the New England Notice Net going again on 3720 and has recorded code practice at 8:30 P.M. on Mon., Wed., Fri. W1OQU is the RO for Bellingham. QCWA held a picnic in Billerica, W1KID will receive his 50-year award. A group of Raytheon hams had a luncheon to say good by to W1AAC who was going back to Fla., and welcome back to W1AMPH from Tokyo. W1s PBU, OAM, CLR on 2. W1IMYK has his beam working FB with DX. W1A1NRT building a 5-band trap dipole. W1DJC is temporary mgr. for Clearing House Net. W1A1OMM editor of K1JMR news carrier. W1MSB working DX and WAS. W1OMZJ now in EMN. W1SMO, W1IMYK endorsed as ORS; W1EJ as OVS. W1LXU has 100 watts and sixty-four-element collinear array on 220.

Net	Freq.	Time/Days	QNI	QTC	Mgr.
EMN	3660	1900/2200 Dy	410	140	W1MSK
EM2MN	145.8	2000 Dy	122	87	W1OWO
NEEPM	3945	08.30 Su	91	9	K1EPL

W1NTH spoke at the Massasoit ARA on Two Meter FM Repeaters. W1CUY has a new linear for 10. K1UIW has Heath 303 receiver. W1NUP fell from his roof and was in the hospital. Capeway RC met at W1ANB's. W1ALP spoke at the Whitman ARC. W1IHU is new secy. of QRA. W1HX broke his ankle. Framingham RC met at Southboro Police station. W1A1OML has his Advanced. W1UTZ has dipole on 80. W1AAU has retired. Traffic: (Sept.) W1PEX 420, W1A1OWO 122, W1EMG 54, W1IMYK 36, W1AEO 30, W1AMXV 29, W1A1NRT 27, W1ABC 18, W1AOG 14, W1A1DJC 9, W1A1HF 9, K1EPL 4, W1A1OMM 3, W1A1MSB 2, W1A1BNM 1, W1A1QMZ 1. (Aug.) W1AQAH 22.

MAINE - SCM, Peter E. Sterling, K1TEV - SEC: K1CLE. PAM: W1APEN. RM: W1BIG. The New England Chapter of the OOTC held a luncheon at Mildred's Chowder House Sept. 23,

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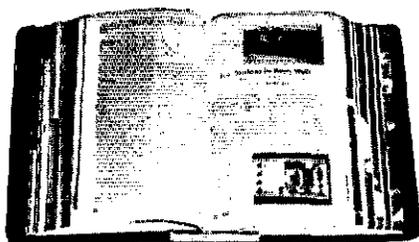
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attending were W1EM, W1CTR, W1SDA; W2s and W4s also attended. K1PWG is the postmistress at Clayton Lake. Ex-WA1PHE now is WB9KJQ and active from Grissom AFB. K1GAX, K1ROE, K1IKT and K1TEV attended the New England DXCC luncheon at Waltham, Mass. The Central New England Net held its annual week end hamfest at Saunders Bay on Lake Winnepesaukee, N.H. A good time was had by all. The Northeast Area of Barnyard Net reports 26 sessions, 769 check-ins for Sept. W1EFW visited W1GU for an eyeball OSO. The New England Novice Net meets on 3720 Mon., Wed., Fri. at 2330 GMT. WA1MZA is on 2-meter fm. K11VJ Bangor is in the Mass. General Hospital. K1VOL living in Bath. W1CTR now has a Valiant 2. W1BHA, W1SFS, W1CTR, W1LW visited K4RO/1 and W1MPP at Waterford, N.H. Traffic: WA1QHU 85, K1GUP 34, K1TEV 9, WA1NMW 8, WA1PEN 8.

NEW HAMPSHIRE — SCM, Robert C. Mitchell, W1SWX — SEC: K1RSC. RM: W1UBG. WA1JSD sends Official Bulletins for the 6-meter gang. WA1MAR has a new Drake T4XB/RB4/C4 combo; he also is net control on the emergency nets. W1UBG reports 138 check-ins and 69 traffic for NHVTN. WA1JNF is mgr. of the NH Traffic Net which meets on Sun. at 2300Z on 3945 kHz. WA1NHF is working in NY state. W1UBG invites all NH stations to check into the NHVTN at 7 P.M. daily on 3685 kHz. WA1FSZ attending UHH and will be on the air soon. K1RSC reports 57 check-ins and 5 traffic the NHEPN which meets Sun. at 0001Z on 3945 kHz. W7TML/1 is ready for the contest season with five-elements at 112-ft. for 10; six-elements at 102-ft. for 15; three-elements at 115-ft. for 20; three-elements at 125-ft. for 40 and an inverted V for 80. W1LB is helping a blind man to become a ham. W1DXB is busy handling K6GJBS (WA1JFM) QSL cards. Welcome to new ham WN1OZA. New Novices are urged to check into the New England Novice net on 3720 kHz. Happy New Year to ALL Traffic: (Sept.) W1UBG 70, K1YMH 37, WA1GCE 13, K1RSC 10, K1POV 8, WA1MAR 5, WA1JSD 2, W1SWX 2. (Aug.) K1YMH 33.

RHODE ISLAND — SCM, John L. Johnson, K1AAV — SEC: W1YNE. PAM: W1TXL. R1SPN reports 30 sessions, 353 QNI, 45 traffic. W1JFF the Newport Club has had a little more time for operating cw while recovering from an operation and is busy working stations who want to earn a certificate for working 5 Newport Club members. W1GBO who is operating portable 5 from Texas contacted W1LPO a station he worked several years ago and had an FB OSO. WN1POJ is the new mgr. for the Eastern Area Slow Net which meets daily at 2330Z on 3.726 kHz. He sends the following Net report: 27 sessions, 239 QNI, 67 traffic. WA3EEC is now attending Brown Univ. and operates from the Providence area. He would like to hear from all his friends in W3-Land. Traffic: W1YNE 125, WN1POJ 101, W1TXL 45, K1QFD 14, WA1HBW 4, WA3EEC/1 4.

VERMONT — SCM, James H. Viele, W1BRG —

Net	Freq.	Time(L)/Days	QNI	QTC	Mgr.
VTPQ	3909	2200 Su	—	—	K1HQB
Carrier	3932	1400 M-S	—	—	—
VTSB	3909	2300 M-S	447	76	W1ZCJ
NHVT	3685	2400 Ly	138	69	W1UBG

Welcome new amateur WN1QYY, Hinesburg. Check in to new N.E. Novice Net on 3720 and give them a hand. New officers of Burlington Amateur Radio Club are W1FIS, pres.; WA1LDT, secy.-treas. K1BKK and W1DQD were reelected to three year terms on W1KQD repeater committee. Kennedy High School in Winooski has twenty students in evening code and theory class. Traffic: K1OXD 45.

WESTERN MASSACHUSETTS — SCM, Percy C. Noble, W1BVR — SEC: WA1DNB, CW RM: W1DVW, UHF/VHF PAM: W1KZS. Novices take note: The New England Novice Net on 3720 Mon., Wed. and Fri. at 6:30 P.M. is a very fine training net. The Sun. morning WM Emergency Net held four sessions with a QNI of 27 (NCs WA1DNB, W1DVW, W1KZS). Total AREC membership is now 99 (approx. one sixth of our ARRL membership). WMN held 30 sessions with QNI of 171 and QTC of 109. Top five in attendance: W1BVR, W1DVW, W1TM, WA1LNF, W1STR. WA1OZY is now General Class and doing well on WMN. Asst. ECs in Berkshire are WA1LUX, W1KVN, W1TM, K1JVM. Berkshire AREC held four drills (two of which were simulated emergency). A Tue. morning YL net is being held at 10:00 A.M. (via repeater K1FFK). Repeater WA1KZ is installing a 100-ft. tower. W1ZPB expects to have an active radio club at Mt. Hermon. From CMARA: Novice classes are being given (contact K1RNG). The 2-meter fm group provided communications for the WTAG Sports Car Rally. From HCRA: WA1NXG gave a talk on 2-meter fm. HCRA 28.7 Wed. at 8:30 P.M. (NCs K1PKZ). From WMARA: WA1KTC has moved to Fla. Simulated emergency drills are being held bi-monthly

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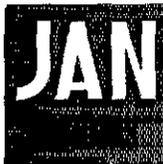
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(no advance notice). SCM: We have been over running West. Mass. allotted space in this column. Just about right this time. Traffic: W1SVR 83, W1DVW 67, W1TM 47, W1ALNF 37, W1ALPJ 21, W1ZPB 20, W1STR 15, W1AJME 5, W1KZS 1.

NORTHWESTERN DIVISION

ALASKA - SCM, Kenneth R. Klopff, KL7EVO - The Arctic ARC ran communications for the annual Equinox Marathon in Sept. Active participants were KL7GOY, KL7GMY, KL7GBG, KL7EUW, KL7HNE, KL7BIL, KL7AG, KL7AZJ, VE6ADP/KL7, KL7GNG and KL7EVO. All stations used the 2-meter repeater for the first time in a communication exercise of this type in Fairbanks. The new semester at the Univ. brought some new blood into our ranks. KL7HNG and KYL W17HNF plus others. One of the newcomers is a cw traffic man from La. Anyone who like a cw traffic net contact me after code practice on 3735 kHz (0500Z ThSat.). A new repeater should soon be on the air in Fairbanks to replace KL7GNG's. KL7DG checked out all check points in the Marathon by participating in the running phase of the event. KL7GQC is handling the Sourdough Net; same time same place. 3915 kHz 0400Z Tue. through Sat.

IDAHO - SCM, Donald A. Crisp, W7ZNN - SEC: WA7EWW. The FARM Net meets at 0200 GMT each day on 3935 kHz. The Idaho RACES Net meets week days at 1515 GMT on 3990.5 and Mon. at 0130 GMT on 3990.5 kHz. WN7TZU is a new Novice in Preston. WN4LPO is looking for an Idaho contact. A tip of the hat to W7FIS, who has not missed a month making an Official Observer report since March 1969. OO's like George are providing a very worthwhile service to the amateur fraternity. Need a program for your club meeting? If so contact your SCM W7ZNN or SEC WA7EWW. These gentlemen will be glad to make a trip to your town and provide a program for your club meeting. FARM Net reports 28 sessions, 972 check-ins, 68 traffic handled. Traffic: W7GHT 284, WA7BDD 32, W7ZNN 22.

MONTANA - SCM, Harry A. Roylance, W7RZY - Asst. SCM: Bertha A. Roylance, K7CHA. SEC: W7TYN, PAM: WA7IZR. The fourth annual VHF meeting was held in Helena Sept. 23 with 43 VHFers participating. It was decided that the following Repeater channels would be used; 34-94, 16-76, 28-88 and 22-82. Units being released to RACES members will have 1 channel on 146.52 MHz. W7LR was appointed as chmn. of the repeater committee with the following as members, W7CJB, W7MKB, K7LDZ, W7DB, WA7BKW, W7IAC, W7TYN, WA6MDL/7 and W7RZY. If you are planning a repeater the committee will be happy to help you pick frequencies which will not interfere with other repeaters. WA7KMP checks into the Minn. Weather Net. WA7OBH is a member of the Intruder Watch. The Billings Repeater Assn. is progressing with their plans for the repeater at Red Lodge. Mont. PON had 428 check-ins, 34 traffic and 29 sessions. Mont. Traffic Net had 1069 check-ins, 38 traffic and 21 sessions. W7OTJ forgot to renew his license, check your date of renewal. Silver Bow County emergency net meets at 0100 GMT Sun. Had many renewals on league officer appointments. WA7JQS and W7LBK are consistent members of the PSHR. Traffic: (Sept.) W7EKB 355, WA7JQS 164, W7LBK 84, WA7IZR 10, WA7KMP 9, WA7OBH 2. (Aug.) W7EKB 154.

WASHINGTON - SCM, Arthur Henning, W7PL - SEC: W7UWT. RM: W7GYF. PAMs: W7GVC, W7MCW, VHF PAMs: K7BBO, K7LRD. New appointment: W7PWP as OPS. Regret to report K7HBO a Silent Key. OO K7GGD worked his 1st OH and SM.

Net	Freq.	Time(Z)	QNI	QTC	Sess.	Mgr.
WSN	3590	0245	342	214	30	W7GYF
NSN	3700	0300	342	122	30	WA7OCV
NTN	3970	1930	1095	101	30	W7PWP
NWSSB	3945	0230	983	45	30	W7OEB

New NTN mgr. is W7PWP succeeding K7VAS who resigned to pursue his studies. Boeing BEARS were activated to provide communications for Search and Rescue operation at Mt. St. Helens - many hours were logged and many phone patches provided for search parties. New Centralia Novice is WN7UDM KYL of K7GHZ. Skagit ARC Salmon bake with W7REC presiding over the barbecue operation had 85 in attendance. W7SAB developing new linear for SSTV says constant duty cycle requires heavy duty linear. SSTV frequencies are 3845 kHz at 9 P.M. local and 7220 kHz at 9:30 local time. Mike and Key Club of Kent issues "Friendship Award" certificates for working 10 club members. Their weekly on-the-air sked is 10:30 A.M. on 3930 kHz. Sun. K7AWB received SBWAS Certificate No. 126. K7AJT reports club name for Lewis County group is SNARC for Sat. night ARC. W7HF celebrating his 60th year as an amateur was guest of honor at the Walla Walla hamfest WA7LQV is QRL running patches for USCG Wachusett at sea and

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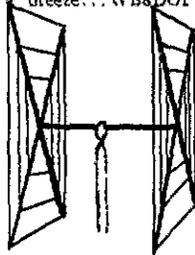
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these two element beams have a full wavelength driven element and a reflector (the gain is equal to that of a three element beam and the directivity appears to us to be exceptional! ALL METAL (except the insulators) — absolutely no bamboo. Complete with boom, aluminum alloy spreaders; sturdy, universal-type beam mount; uses single 52 ohm coaxial feed; no stubs or matching devices needed; full instruction for the simple one-man assembly and installation are included; this is a fool-proof beam that always works with exceptional results. The cubical quad is the antenna used by the DX champs, and it will do a wonderful job for you!



10/15/20 CUBICAL QUAD SPECIFICATIONS

Elements: A full wavelength driven element and reflector for each band.
Frequencies: 14-14.4 Mc.; 21-21.45 Mc., 28-29.7 Mc.

Dimensions: About 16' square

Power Rating: 5 KW.

Operation Mode: All.

SWR: 1.05:1 at resonance.

Boom: 10' x 1 1/4" OD, 18 gauge steel, double plated, gold color.

Beam Mount: Square aluminum alloy plate, with four steel U-bolt assemblies. Will support 100 lbs.; universal polarization.

Radiating elements: Aluminum wire, tempered and plated, .064" diameter.

X Frameworks: Two 12' x 1" OD aluminum 'hi-strength' alloy tubing, with telescoping 7/8" OD tubing and dowel insulator. Plated hose clamps on telescoping sections.

Radiator Terminals: Cinch-Jones two-terminal fittings.

Feedline: (not furnished) Single 52 ohm coaxial cable.

Now check these startling prices — note that they are much lower than even the bamboo-type:

- 10-15-20 CUBICAL QUAD. \$41.00
 - 10-15 CUBICAL QUAD. 36.00
 - 15-20 CUBICAL QUAD. 38.00
 - TWENTY METER CUBICAL QUAD 31.00
 - FIFTEEN METER CUBICAL QUAD 30.00
 - TEN METER CUBICAL QUAD. . . . 29.00
- (all use single coax feedline)

BEAMS

"Just a note to let you know that as a Novice, your 3-EI. 15 Beam got me RI Section Winner and New England Division Leader in Novice Round-up. See June QST, p. 57 for picture of ant. (below). Tnx for a fine working piece of gear. 73e, Jay, WA1JFG"

Compare the performance, value, and price of the following beams and you will see that this offer is unprecedented in radio history! 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; 3/4" and 1" aluminum alloy tubing is employed for maximum strength and low wind loading; all beams are adjustable to any frequency in the band.



- | | |
|----------------------|----------------------|
| 2 EI 20 \$25 | 4 EI 10 \$24 |
| 3 EI 20 31* | 7 EI 10 38* |
| 4 EI 20 38* | 4 EI 6 24 |
| 2 EI 15 21 | 8 EI 6 34* |
| 3 EI 15 25 | 12 EI 2 31* |
| 4 EI 15 31* | *20-ft. boom |
| 5 EI 15 34* | |

ALL-BAND VERTICALS

"All band vertical!" asked one skeptic. "Twenty meters is murder these days. Let's see you make a contact on twenty meter phone with low power!" So K4KXR switched to twenty, using a V80 antenna and 35 watts AM. Here is a small portion of the stations he worked: VE3FAZ, TI2FGS, W5KYJ, W1WOZ, W2ODH, WA3DJT, WB2FCB, W2YHH, VE3FOB, WA8CZE, K1SYB, K2RDJ, K1MNV, K8HGY, K3UTL, W8QJC, WA2LVE, YS1MAM, WA8ATS, K2PGS, W2QJP, W4JWJ, K2PSK, WA8CGA, WB2KWY, W2IWJ, VE3KT. Moral: It's the antenna that counts!

FLASH! Switched to 15 c.w. and worked KZ5IKN, KZ5OWN, HC1LC, PY5ASN, FG7XT, XE2I, KP4AQL, SM5BGK, G2AOB, YV5CLK, OZ4H, and over a thousand other stations!

- V40 vertical for 40, 20, 15, 10, 6 meters \$18.95
- V80 vertical for 80, 75, 40, 20, 15, 10, 6 meters \$20.95
- V160 vertical for 160, 80, 75, 40, 20, 15, 10, 6 meters . . \$22.95

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now going after counties. Traffic: (Sept.) W7PI 706, W7KZ 459, W7DK/7 436, W7AXT 207, W7BUN 189, W7APS 78, WA7OCV 75, W7BQ 62, WA7EDQ 48, K7OZA 43, K7VAS 43, K7WTG 41, W7MCW 40, K7QXL 38, WA7DZL 31, W7QCV 26, W7GYF 19, WA7KNW 11, W7AIB 8, WA7LQV 4, W7NTYZ 3, W7EBU 2, K7EBF 2, WA7LQ 2, W7YGU 2, K7BBO 1, K7VNI 1. (Aug.) W7JEE 59.

PACIFIC DIVISION

EAST BAY - SCM, Paul J. Parker, WB6DHH - SEC: WB6RPK. RM: W6IPW, WA6DIL. W6ZF soon to have two new frequencies for Pacific Division bulletins, 3540 kHz, 7040 kHz, 14040 kHz - ALL on simultaneously with 1 kw, 1st and 3rd Mon. at 8 P.M. PST. WA6IYB busy on WSCARS and WPSS. K6UWR finally got beam up and trying to get up 40-and 80-meter antenna. WB6VEU reports NCN luncheon very good. W6IPW reports traffic routine. W6NDR recently moved to Walnut Creek. W6GIP getting ready for winter with new antenna installation. W6HUY active mobile driving home from work daily. If your code speed is starting to slow down, check in to NCN on a regular basis - daily, 3630 kHz, 7:00 and 8:30 P.M. local time. Congrats to Konocti ARL on recent affiliation with ARRL. Thanks to W6CX, Mt. Diablo ARL for recent service in Walnut Festival. There are 22 new Novices in the section this month, make an effort to contact one on cw. Traffic: (Sept.) W6IPW 217, K6UWR 4, WB6VEU 4, W6ITD 2, WA6IYB 2. (Aug.) W6ZF 5.

HAWAII - SCM, Lee R. Vical, KH6BZF - SEC: KH6BZF. RM: KH6AD. PAM: KH6GJN. WHF PAM: KH6GRU. SRC: KH6FOX. QSL Mgr.: KH6DQ. ECs: KH6s GPQ, BAS, HHG and BZF.

Net	Freq.(MHz)	Time(GMT)/Days
Confusion (Patches)	21.400	0030 AH
WCARS	7.255	All
Friendly	7.290	2030 M-F
Pacific Interisland/ Micronesia	14.305	0800 All
S.E. Asia	14.320	1230 All

Circle your calendar - Don't forget 1973 ARRL SET Jan. 27 through 28, 1973. Contact your SEC for details and be prepared. KH6HF, KH6HDA and KH6CCL recently received their Advanced Class tickets. KH6CCL further reports he's on with an FT-101/R4B outboard to an 88-200 to a triband beam. KH6HC has applied for Life Membership. He recently received WAS and WAC the same month and is busy on the DXCC trails. K2SIL/KH6 and KH6HHG put KH6RS on from the Maui County Fair. KH6HHG reports he is enjoying his new teaching assignment at Maui's Baldwin High. KG6JAR is a new OBS. A recent feature article appeared in the Honolulu Advertiser telling of KH6BWO's first 88 years of adventures. Noticed a void in this month's section news? Ask yourself when was the last time you mailed a report to your SCM? It's your column. May I wish you all the Best of Holidays and a "Mele Kalikimaka" to all! Traffic: KH6BZF 14, KH6HHG 7.

NEVADA - SCM, Leonard M. Norman, W7PBV - K7YVN has revived the NARA club paper "Rag Chew." W7WLV has been on the sick list and looking for gear to get back on the air. W7DNX, WA7HVK and W7IAD have 15 students in their code and theory class. W7PRM and WA7BEU each mobiling with their camper. WA7GVF busy repairing K7UGT repeater antenna. WA7DSP has a mountain retreat. K7ZOK vacationing in W3-Land. WA7KEK is in CX-Land, WA7KEL is in HS-Land, each serving on a Mission for their Church. W7ILX has a new fm rig and building an RTTY unit. SAROC Convention scheduled at the Flamingo Hotel Convention Center, Jan. 4-7, see classified advertising section for additional details. Traffic: W7ILX 58.

SACRAMENTO VALLEY-SCM, John F. Minke, III, W6KYA - SEC: W6SMU. With the 1972 Pacific Division Convention at San Mateo behind us, and the possibility of the 1973 convention at Santa Cruz, any opinion for one in Sacramento Valley in 1974? The last three Sacramento conventions were 1969, 1964 and 1930. W6VD gave a very informative talk on wire antennas to the North Hills Radio Club during the Sept. meeting. This club is the fastest growing club in the Sacramento area. More information may be obtained from pres., W6DZK. Your SCM would appreciate reports from stations who handle written traffic, participate in organized public service nets, ARRL or not. There is no way of knowing this without any reports and I don't receive anything from your net managers. Each individual report helps the section in its standing in regard to the rest of the other 73 sections of the ARRL. The Calif. QSO Party was fairly active this year. Some of the active counties in Sacramento Valley were El Dorado, Lassen, Sierra, Sutter and Yolo. Now that the DX season is here again, any more feelers in regard to

CQ de W2KUW

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APN84, HP612, ARC 51's, Eimac/Varian Tubes 618T3 1/K, 304TL tubes, 490T Antenna Tuners, Collins 51RV 5131 51V4 51Y4 51Z4 621A 728 860E SG2 479 618M, or any other Collins item.

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Tektronix 551	295.00
Tektronix RM17	350.00
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HP200CD	150.00
HP523B Freq. Counter new	150.00
HP120A	150.00
R389 new	395.00
R390A excellent	585.00
R390A new	750.00
HQ180AX	175.00
SP600JX	295.00
GR1205 Unit Osc. to 900 MHz	65.00
GR1606A RF Bridge	350.00
R&S HF Multi Ant. Coup.	125.00
Krohn Hite variable filters model 315A and 330A	175.00 each
B&K model 2602 & 2603 with cond. mike	250.00
Power Design P.S. various E/I Req.	125.00 each
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Ulftek (Perkin Elmer) 2KVA fil. supply 0-40 volts/50 amps.	150.00

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5 Bands—600 Watts **\$589.95**
- SWAN FP-1** Telephone Patch .. **\$48.95**
- External Crystal Oscillator
SWAN 510X **\$53.95**
- VOX Accessory, **SWAN VX-2** .. **\$35.95**
- Audio Notcher/Peaker,
SWAN ICAF/500 **\$59.00**
- IF Noise Blanker,
SWAN NB/500 **\$89.00**
- Inline Watt Meter,
SWAN WM-1500 **\$49.95**
- 117V AC Power Supply,
SWAN 117XC **\$109.95**
- 12-14V DC Power Supply,
SWAN 14-117 **\$139.95**
- DC Converter for 117XC,
SWAN 14C **\$69.95**
- 1200 Watt Linear Amplifier,
SWAN 1200X **\$259.95**
- 2000 Watt Linear Amplifier,
SWAN MARK II **\$679.95**
- SWAN 270B** Portable Transceiver
5 Bands—260 Watts **\$469.95**
- SWAN FM-2X** Transceiver
2 Meter FM—10 Watts **\$299.95**
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144 Channel 2 Meter FM **\$359.95**
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- 5 Band Remote Control Mobile
Antenna, **SWAN 55C** **\$129.00**
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GOLDEN SWAN 1040V **\$69.95**
- Mobile Antenna Bumper Mount,
BMT **\$24.00**
- 2 Element 40 MTR. BEAM,
SWAN MB-40H **\$145.00**
- 2 Element **SWAN TB-2A** **\$89.95**
- 3 Element **SWAN TB-3A** **\$108.00**
- 3 Element Heavy Duty
SWAN TB-3HA **\$125.00**
- 4 Element Heavy Duty
SWAN TB-4HA **\$148.00**

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a section DX club? K6NP is the call of the recently formed local telephone employees club.

SAN FRANCISCO — SCM, Tom Gallagher, W6NUT — Activity reports for Sept. received from W6BWW, WA6BYZ, W6GGR, W6RNL, W6RQ, W6SLX and W6WLV. Humbolt ARC officers are W6SLX, pres.; W6RNL, vice-pres.; W6BWW, secy.; WA6ASQ, treas. The club meets the first Tue. of each month in the CD Headquarters in the Eureka Court House basement. W6GGR's homebrew solid state 2-meter gear is working FB simplex and through the repeater. Tom mobiled through W5, 6 and 7 during Oct. and Nov. W6RNL has a new Gladding 25 on Z. W6SFFU in Mill Valley is the Tel. Co. club's newest graduate. W6SLX is active in the Calif. WX Net. A study is being made by the President's Office of Emergency Planning regarding emergency communications in the SF Bay Area. This includes only Marin, S.F. and Sonoma counties in this section. Amateur radio is expected to play a major role. I would like to hear from section members interested in assuming leadership duties such as RM, PAM, SEC, EC and assistant SCM. The need for emergency communications leadership is particularly critical. See you in the ARRL 160 Contest this month. Happy Holidays to all. Traffic: WA6BYZ 328, W6RNL 26, W6BWW 9.

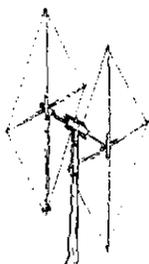
SAN JOAQUIN VALLEY — SCM, Ralph Saroyan, W6JPU — The Delta Amateur Radio Club hold their meetings in the American Red Cross Building, 936 N. Commerce St., on the 3rd Thur. of each month at 8 P.M. All amateurs and those interested in amateur radio are invited. The Fresno ARC hold their meetings on the 2nd Fri. of each month at the PG&E building, and you are invited to attend. WA6HIP has retired and is traveling around the country. While home, he is active on 2 meters tm. The Delta ARC has graduated 10 Novices. WA6ONZ gave a demonstration of Tri-ex towers at the Tulare County Amateur Radio Club. W6KKN has taken his Second class Radiotelephone exam. K6OER is on 2 meters fm. WA6EDQ is on 2 meters tm. W6BVU is on 75 ssb. W6RTZ is heard on 2 meters fm. W6PZW was QRV as OZ2TY last summer. WA6SCE is back on the air and active in NCN and RN6. Anyone interested in handling traffic, check in to the various nets. Help is needed, especially in the SJV. Calaveras County amateurs meet on the 1st Tue. of each month on 3990 kHz. Traffic: WA6SCE 36, WA6JDB 27, WA6CPP 2, W6PZW 2.

SANTA CLARA VALLEY — SCM, James A. Hauser, WA6LFA — Traffic: W6YBV 271, W6BVB 252, W6NW 129, W6KZJ 81, W6AUC 60, W6DEF 58, WA6HAD 14, W6RFF 14, W6OII 10, W6RSY 2.

ROANOKE DIVISION

NORTH CAROLINA — SCM, Chuck Brydges, W4WXZ — SEC: W4EVN. PAM: W4JMC. RM: W4JEF, W4VBM. Several ham demos were in operation this month with Mecklenburg ARS at the Metroline Fair in Charlotte with SSTV and a traffic station and the Forsyth ARC at the Dixie Classic Fair with a booth showing the film "This Is Ham Radio." W4YQJ was featured in the RARR News and placed in the top ten both phone and cw in the ARRL DX Test. Congrats. K4IEP and KYL had a Safari trip to Africa. The Buncombe ARC has classes going with 12 Novices and 19 upgrading their license class. A group from the Carteret-Craven ARC also had Novice classes going and looking for more space to expand. WA4BNO reports several QSOs on 160, he also tried QRP with 5-watt one tube that hooked 24 states and Canada. Lots of activity was noted from the Cape Fear ARS (Fayetteville) which was highlighted with a program by W4KFC and W4ACY. The newspaper also noted ways to procure 2-meter equipment for modification which is a popular method for backing repeaters. Hear Ye-Hear Ye all ECs — please send your monthly reports to W4EVI who consolidates this info into a report for Hdq. During this season of Thanksgiving and giving I want to thank all N.C. amateurs for their fine support and reports and wish everyone a very Merry Christmas. Traffic: (Sept.) W4EVN 142, K4MC 85, W4BGL 51, W4WXZ 54, K4VBG 17, W4MML 15, W4OFO 15, W4JMC 11, W4CES 8, K4BE 5, W44UO 5, W44YNN 5, K4TTN 4, W44HC 2, W44KWC 1, W4TYE 1. (Aug.) W44TNC 22.

SOUTH CAROLINA — SCM, James H. Abercrombie — O W4NTO had an active summer sending warning of rule infractions 25 stations. He also expects to be more active on the air since ju completing a new rig. W44KST is in night school in Daytona Beach Fla. W44LMS finally has his kw matchbox. W44PGG is new Spartanburg from Gainville, Ga. W44MOT is proud owner of a ne HW-101. W44UZA has moved to a new QTH in Laurens. W44UL is a new General in Laurens and hopes to have HW-101 on the moon. W44YOS, W44AST, W44DX, W44EGH and W44EDO are kept alive on 75 meters with regular Sun. morning gatherings on 39.



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★ COMPLETE KITS INCLUDE HARDWARE, WIRE, ALL MOUNTS, BOOM.

★ STRONGER AND LIGHTER THAN ALUMINUM.

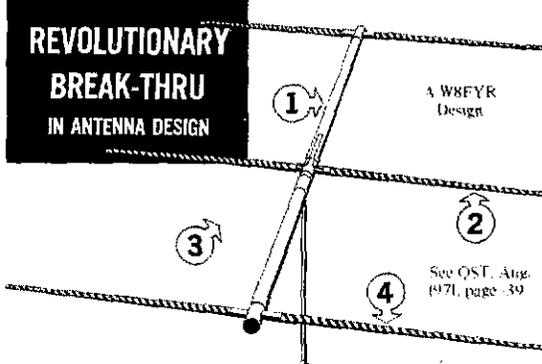
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REVOLUTIONARY BREAK-THRU IN ANTENNA DESIGN



See QST, Aug. 1971, page 39

KIRK'S BRAND NEW ALL-FIBERGLASS HELICOIDAL BEAMS

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2, 3, 4 & 5 ELEMENT - 10-15-20 METER

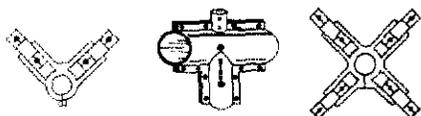
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COMPLETE PACKAGED KITS INCLUDING

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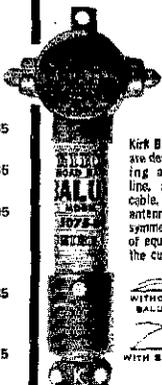
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(1) 1 1/2" Boom to 1 1/2" Mast T-Mount Net \$14.65
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(1) 3" Boom to 2" Mast T-Mount Net \$36.95

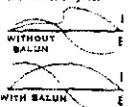
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- QM-2 (2) 1 1/2" Hub Spiders
(Heavy Spider for 8M & 10M)
(1) 1 1/2" Boom to 1 1/4" Mast T-Mount Net \$13.75
- QM-3 (2) 1 1/2" Hub Spiders
(1) 1 1/2" Boom to 1 1/2" Mast T-Mount Net \$14.65
- QM-4 (2) 2" Hub Spiders
(1) 2" Boom to 1 1/2" Mast T-Mount Net \$22.45
- QM-5 (2) 3" Hub Spiders
(1) 3" Boom to 2" Mast T-Mount Net \$36.95



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MODELS 5075-D & 5075-LF For Dipole Antennas Net Wt. 7 Oz.

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Unique in design, Kirk Baluns are produced in two distinctive models: One for Dipoles and one for Beam Antennas.

Application Frequency Coverage & Power Ratings For The Various Models Shown Below

MODEL	APPLICATION	FREQ.	POWER
5075-D	Dipole	3.4-82 mc	2K PEP
5075-B	Beam	3.4-82 mc	2K PEP
5075-LF	Dipole	1.7-10 mc	2K PEP



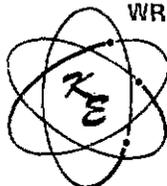
MODEL 5075-B For Beam Antennas Net Wt. 7 Oz.

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kHz. K4QMY promises to become active again. Your SCM enjoyed meeting with many S.C. hams at the Camden picnic and at the Shelby Hamfest. K4IQY now does most of his operating before 9 P.M. — early morning duties at the Post Office. Traffic: K4OCU 41, W4AKC 34.

VIRGINIA — SCM, Robert J. Slagle, K4GR — Asst. SCM: A.E. Martin, Jr., W4THV. SEC: WA4PBG. Asst. SECs: WA4JFF, WB4CVY. PAM: WA4FGC. RMs: W4SQQ, W4HIR, K0PIV/4, W4SHJ. Pleased to announce the appointment of W4SQQ as RM of VN, and W4HIR as RM of VSN. WA4SUF came through with some VSBN history. W4HU recuperating OK after surgery. Eastern Shore ARC's van now operational. W4HIR's antenna farm growing nicely. WN4ATR joined Midwest Novice Net. W4KX sneaked in a vacation and was late with his Aug. report. W4JUJ's counties 2701/WA4WQG didn't include. New officers Woodbridge Wireless Society are W8VDA/4, pres.; K4LDR, vice-pres.; WN4WXX, secy-treas.; W4WRT, act. mgr. W4WIS received his Advanced. W4FEJK back from school for awhile. W4KBY warmed up for a Red Cross demonstration by handling two accident reports an hour before! W5VZO/4 starting 2-meter rig. Director W4KFC's air time suffered from too many trips. New PVRC officers are W4ZM, pres.; W4YZC, secy. WA4SMR reports tough DX with attic dipole. W4TE and XYL K4LMB also vacationed. W4DM welcoming a new season. W4RDV's rig busted — now fixed. WA4UNS reports 880 counties: W4JUJ and WA4WQG take note. WA4EPH working hard on WAS and DXCC.

Net	kHz	Time(Z)/Days
VA Salt Mine Net	3947	0715/1630 M-F
VA Sideband Net	3935	1800/2200 Dy
VA Slow Net	3680	1830 Dy
VA Fast Net	3680	1900 Dy
VA Phone Net	3947	1930 Dy
VA RTTY Net	3625	2000 Dy
VA Post Office Net	3905	2215 T

Traffic: (Sept.) W4HIR 182, W4UQ 158, WB4KSG 128, WB4SGV 109, K4KNP 104, W4SQQ 96, W8VDA/4 65, K4GR 59, WB4KIT 54, WA4FGC 53, W4YZC 53, WB4EIK 52, W5VZO/4 49, K4KA 40, WB4PNY 40, WB4WIS 32, WA4UNS 29, WA4JFF 26, WA4PBG 24, WB4RZW 19, WA4SMR 19, W4RDV 17, K4VIG 14, W4THV 12, W4TE 8, K4GTS 7, K4JM 7, W4MK 6, K4CGY 5, W4FGV 5, W4ZAU 5, K2HBA/4 4, W4DM 4, WB4KBJ 4, W4KFC 3, W4KX 2, WA4WQG 2, W4KBY 1, WB4WLK 1. (Aug.) WB4WIS 24, WB4SIK 21, W4ZAU 7.

WEST VIRGINIA — SCM, Donald B. Morris, W8JM — SEC: WA8NDY. RM: W8BBG. PAMS: W8DUW, W8IYD, K8CHW. Phone Net Mgr.: W8BMV. W8KUQ reports Parkersburg repeater operating 37-97. W8CRO with new antenna and duplexer. Wood County Emergency Net, Sun. at noon, 50.250 with K8JLV, NCS. WN8KML would like to see more stations in Novice Net. W8JZN, ex-W8IBF working 2-meter fm and interested in ATV. With deep regret I report the passing of K8SDI. WA8WCK and WA8NDY were active in the Hancock and Upshur Emergency Drills. KRZPR has new fm rig and frequency counter. WA8SHT, W88CYB, W8HZA, WA8PUS, W8JWX keep WVN cw net running. W88BMV made PSHR and applied for Life Membership. WVN Phone Net with 28 sessions, 294 check-ins, passed 72 messages. WN8KRD formerly ZP5KB, State Radio Council Officers for '72-'73 are W8DUV, pres.; W8JM, vice-pres.; WA8OKG, secy.; K8WMX, treas. W8DUV also is chmn. of the 1973 West Va. State ARRL Convention, to be held at Jackson's Mill, June 30 and July 1. W8MIS Likes 160 cw operation. Active YLs in the State Radio Council are W8DUV, WN8LAI, W88MAV, WA8OKG and WA8WCK. Traffic: W8JWX 68, WA8NDY 37, K8QEW 37, W88BMV 28, W8HZA 20, WA8WCK 14, W8JM 6, W88EK 5, WA8LFW 5, WA8OKG 5, W88CYB 4, W88AKR 3, WA8POS 3, W8AEC 2, WN8KML 2, K8ZDY 2, W8CCKX 1, W88CPU 1, WA8CRW 1, W8BDQX 1, W8BDXF 1, W88DXF 1, W8FZP 1, W8GWR 1, W8HAX 1, WA8ZNH 1.

ROCKY MOUNTAIN DIVISION

COLORADO — SCM, Clyde O. Penney, WA0HLQ — SEC WA0QOY. RM: W0LRN. PAMS: K0CNY, W0LRW, WA0WYP. W0CJH has retired and will soon be leaving our area. He has been a tremendous service to local amateurs through his work in the Empire Radio Club, as well as by virtue of his position of Director of Communications at the State EOC for many years. Our best wishes go with him in his retirement. Congratulations to K0CNY Colo. State RACES RO, who won the 1971, Colo. section Rocky Mountain Division PICON award for his emergency communication work with RACES and the Rocky Mtn. Rescue Group. W0DGM has received a Public Service Award from the Weather Bureau for handling over 3000 weather reports, and K0ZSQ also received

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550	Precision 723 voltage reg.	1.17
555	Timer 2 uSecs to 1-Hour	1.19
558	Dual 741 (mini DIP)	.88
560	Phase lock loops TO-8	3.25
565	Phase lock loops (A)	3.25
566	Function generator (Mini DIP)	3.25
567	Tone decoder (Mini DIP)	3.25
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703C	Operational amp (A)	1.00
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710C	Differential amp (A)	.29
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741C	Frequency compensator 709(A)	.41
741CV	Frequency comp 709 (mini DIP)	.49
747C	Dual 741C (A)	.49
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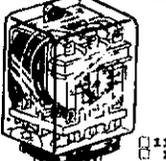
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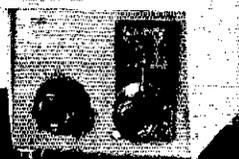
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Public Service Award from the Bureau for her services as Net Mgr. for the Colo. Amateur Radio Weather Net, which averages 54 check-ins per day. WA0WYP, Net Mgr. Hi-Noon net, reports the Hi-Noon Net shifted its frequency of operation to 7240 kHz on Nov. 22. Net traffic for Sept.: Columbine QNI 1019, QTC 63, informals 125, 27 sessions. Hi-Noon QNI 1143, QTC 22, informals 145, 931 minutes. CCN QNI 291, QTC 145, 30 sessions. CTN QNI 123, QTC 31, informals 60, 26 sessions, 568 minutes. Traffic: (Sept.) K0ZSQ 642, K0YFK 520, W0WYX 310, WB0AXW 280, W0LQ 184, K0OTH 159, W0LRW 87, W0LRN 70, WB0HCK 69, W0IW 68, W2TPV/0 57, W0LLA 50, K0JSP 49, WA0WYP 38, WA0NFO 35, W0NZL 29, K0TIV 24, W0GAQ 18, WA0ZWA 18, WB0CCB 16, WB0BSS 11, W0BY 8, WB0DRG 4, W0ONK 4. (Aug. K0OTH 126, K0JSP 76, WB0CCB 37, WA0ZWA 34, K0GEZ 5, K0PHE 3. (July) K0OTH 51. (June) K0OTH 225.

NEW MEXICO — SCM, James R. Prine, W5NUI
 Congratulations to K5DAA and K5DAD on the Rocky Mountain PICON Award announced during the Albuquerque Hamfest Sept. 16. The Mesilla Valley RC now has an fm repeater W5SRW operational on 146.16/76 MHz. W5PDO repeater, Los Alamos is permanently on 146.28/88. W5PDY pruned his antenna with the aid of a Noise bridge and now has a greatly improved signal and no increase in power. The several responses regarding field appointments is much appreciated. WB5CAG is active on 6-meter ssb in Tucumcari with 28 states confirmed for WAS. K5RYH has joined Silent Keys. Special commendation to W0HHV of Pagosa Springs, Colo. and the New Mexico Road Runner Net for expeditious handling of emergency traffic. W0HHV broke the net at 0020Z Sept. 21 with report of a forest fire and all land lines down. W5NON set up a phone patch with the local US Forest Service Fire Marshal and W0HHV gave detailed coordinates of range and township lines. W5NUI placed a toll call to deliver message to Mr. Burt Robert, mgr. of the phone co. in Pagosa Springs, Colo. NCS was WA5WYV. Traffic: K5MAT 244, W5MYM 80, W6MNY/5 68, W5RE 62, W5PDY 40, W5DAD 22, W5NON 24, WA5OH 23, W5YQ 7, WA5MIY 5.

UTAH — SCM, Carroll F. Soper, K7SOT — SEC: W7WKF. RM: W7OXC. W7EM gave a two hour presentation on amateur TV at the Ogden Amateur Radio Club. W7OXC, W7GPN and WA7FVQ gave a one hour presentation on amateur radio over radio station KLO. WA7LES underwent a cornea transplant, results are not known at this time. The 2-meter activity in the Utah section still on the increase, with the repeaters in the Cedar City and Ogden areas in the completion stages. Traffic: W7EM 137, W7OXC 61, WA7MEL 23, W7LLH 17, WA7HCQ 8, W7IQU 8, K7BZN 4, W7HKC 2.

WYOMING — SCM, Wayne M. Moore, W7COL — SEC: K7NOX. PAMS: W7ITZK, K7YUG. OBS: K7NOX, W7SDA, WA7EHA. Nets: Pony Express Sun. at 0800 on 3920; YO daily at 1830 on 3608; Lackalope Mon. through Sat. at 1215 to 7260 (Alt.) 3920. W-net Mon. through Sat. at 0630 on 3920; PO Net 1900 Mon. through Fri. on 3950. A new ham in Casper — WA7JNA, formerly of Billings is an SSTV addict, maybe we will get some slow-scan off the ground in the state soon. WN71WJ, harmonic of W7VEW and K7WUR is probably one of the youngest hams to come along in a long time — 9 years old. W7VDZ has a new beam up — wind took it down several months ago. The Casper Club and the Riverton-Lander club have started their annual code and theory classes. Traffic: W7ITZK 150, W7SDA 68, W7HNI 20, W7BHH 15, K7SLM 15, WA7BPO 9, WA7NHP 8, W7SOT 2.

SOUTHEASTERN DIVISION

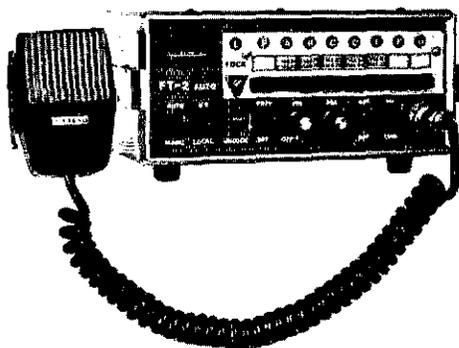
ALABAMA — SCM, James A. Brashear, Jr., WB4EKJ — SEC: W4DGH. RM: W4HUF. PAM: W4WLG. The North Ala. Repeater Assn. recently came up with a generous gesture and if final approval is granted by NARA, the Huntsville ARC will assume operation maintenance, etc. of the K41QU repeater. Welcome to WN4BM and WN4BOA, new hams in the section and to WB4YHK, who recently changed his QTH from Birmingham to Huntsville. WA4YBT gave an interesting talk to the Huntsville ARC on FA communications. Congratulations to WB4ZAG on passing the General Class exam and to WB4WUS, who passed the 2nd Class commercial exam. WB4ZAG has a TR-22 and HW-29A and hopes to have an SB-102 on the air soon. WN4ZQG is working on the 1 wpm code, hopes to try the General Class test. Good luck. K4HJ squeezed in a vacation. He reports interest still increasing on meters. K4UMD reports he bought a new TR-4, also has a Robt SSTV monitor going and has worked stations as far away as Australia. W4WLG working in N.Y. for about 6 months. FL Tuscaloosa ARC set up and manned the club station at the We Ala. Fair. K4IK still is doing an FB job as OO. Our most recent affiliated club in the section is the Calhoun County Radio Assn.

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The Priority-channel feature allows automatic monitoring of a pre-selected frequency. When the receiver stops on a frequency other than the Priority-channel, Auto-Scan will check every two seconds to determine if the Priority-channel is busy. If it is, the receiver reverts instantly to the Priority-channel. Manual or Auto-Scan mode of operation is instantly selectable on front panel. In manual mode, the push buttons function as channel selectors.

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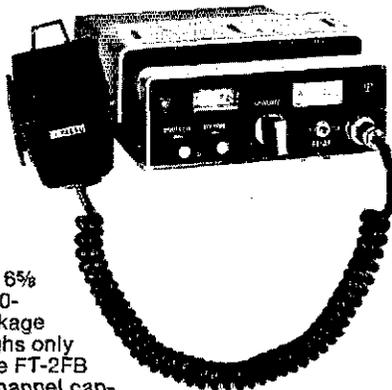
The FT-2 AUTO will operate from either 117 V AC or 12 V DC power sources.

Receiver/transmitter specifications include: selectable 10 Watt or 1 Watt power-output levels; a frequency-adjustable tone-burst generator for repeater activation; 0.3 uV sensitivity for 20 db quieting; 10.7 MHz crystal filter, in addition to a 455 kHz ceramic filter, for superb adjacent channel rejection; adjustable deviation and mike gain controls; Hi-Q slot-coupled resonators used in receiver front end; all solid-state construction, with diode-protected MOSFET input stage.

This exciting new rig is available now. Just send your check for \$329.95 — or use Master Charge or BankAmericard. We'll even include a free anti-theft mounting bracket that locks up your rig when its going mobile.

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This new unit features the same receiver/transmitter specifications listed above for the FT-2



AUTO (without the scan feature), but in a compact 6 5/8 x 2 1/2 x 10-inch package that weighs only 4 lbs. The FT-2FB has 12-channel capability, with illuminated frequency readout. It operates directly from a 12 V DC source. This rugged, handsomely-styled transceiver is yours for only \$229.95. (A matching AC power supply with rechargeable batteries for emergency operation is available for \$79.95.)

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3



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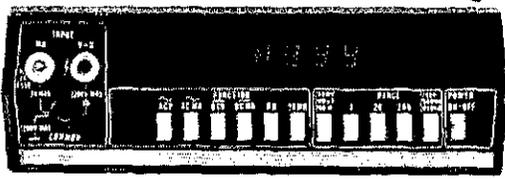



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Weaver, Ala. Don't forget the SET coming up shortly - check with your Net Mgr., EC or SEC if you have any questions. Endorsements: WA4NPL as EC, W4HFU as RM and ORS, W4WLG as PAM, K4EHI as OBS. Traffic: WB4EKJ 111, WB4KDI 111, WB4SVH 95, WB4JMH 66, K4AOZ 45, WB4SON 38, WB4THU 13, WN4ZOG 11, WN4ZOF 8, WB4WUS 6, K4HJM 1.

EASTERN FLORIDA - SCM, Regis K. Kramer, W4ILE - SEC; W4IYT, Asst. SEC; W4SMK, RMs; WB4OMG CW, WA4WIW RTTY, PAMs: W4SDR 40, W4OGX 75. Be watching for SCM election Notice along with Official announcement of our new Fla. sections. Become a League member! Become active in CD affairs. See that your county has an EC. Apply for a station appointment (OO, ORS, OPS, OBS, OVS). Support traffic nets. Report your activities. Participate in contests and such. Appointments: WB4WIO, WB4WTL, WA2AFL/4 as OPSs; WB4WHK as ORS; W4VVK as OVS; WA4WIW as RM RTTY; WB4HKP, WB4INC as OOs; WA4BMC as OVS, (OBS, Renewals: W4DVO as ORS; W4KGI as OPS, OVS; K4CMJ as EC; K4EBE, W4GUJ, WB4QFH, K4BLM as OPSs. Sorry to hear of Silent Key W4JJ who was K4VFF's father. WB4WIO works a bit of traffic along with some DX. WN4AWH and WN4ZOC earned the first QFTN sponsored Novice BPL award. K4FMA is coaching new OD appointees. W4YW is on a 40 cw kick. W4OZF finally got that 50-ft. tower up with a homebrew three-element yagi atop. W4IYT finds time for QFN and GN plus Fla. Skip chores. K4NE is again OOnig. W4VVK asst. EC Duval reports regularly as participant in the Fla. Crown AREC Net and the Jacksonville Training Net. WA4ESS participates in regular AREC drils. K1IAA/4 new traffic man in Miami transplanted from Maine. W4WZR brushed the hotballs off the 6L6 and is one of top QMIs on QFTN. PSHR recipients were: WB4PNG, WB4WYX, WB4WHK, K4FAC, WB4SOA, WA2AFL/4. W4DO building PP4-150A 144 MHz amp. W4FIO holds forth on Lake County Emergency Net 146.97 Sun. at 9 A.M. WA4PDM trustee for Miami Springs ARC recently completed a program that turned out 24 new Novices. Congratulations to Neil Nichols RTTY RM appointee. For into his address 3039 Mango Tree Drive, Edgewater, FL 32032. Fla. DX Club is sponsoring their own year-long contest. See K4KQ for details. Congrats to W4EH new Gator Net mgr., who relieves W4IA. WN4VYU reports 70 QTC filed NOFARS at shopping center exhibit. WA4BMC new OVS/OBS does exceptionally FB Public Service work in West Palm area on vhf. Everyone, remember the SARs! Traffic: (Sept.) WA4JH 526, K4SCL 424, WB4OMG 302, K4FAC 274, WB4JSK 161, WA2AFL/4 130, K0ECG/4 124, W4SDR 118, W4UJ 117, WB4WHK 112, WB4HKP 101, WBBZY/4 93, W4ILE 84, WB4PNG 81, WB4SOA 80, WB4WYX 77, W4NGR 57, W4BM 52, WA4PDM 51, W4VME 51, WB4HJW 49, W4IAD 48, W4GUJ 46, W4YPA 41, WA4BGW 38, K4GJ 37, K4BLM 35, WA4FJA 35, W4IYT 34, WB4AID 32, WA4HHD 32, K4NE 31, W4IA 30, W4LSR 27, WB4OAA 27, W4DQS 26, WA4SCK 25, WA4RUE 23, WB4NGL 20, W4OGX 19, WA4CIO 15, K4EEZ 15, WB4WTL 15, W4YPX 15, WN4AWH 13, W4WZR 13, K4EYN 12, WB4FJY 12, WB4SKJ 12, W4DDW 11, W4NTE 11, W4RHA 11, W4DFP 10, W4EH 10, W4LDM 10, WB4WIO 10, WA4ESS 8, W4VVK 7, WA4VZF 7, WB4GHD 6, W4LK 6, K4OG 6, WA5BRJ/4 5, K4EJW 4, K4DVW 2, WA4EYV 2, W4MML 2, K4SJH 1. (Aug.) WA2HHO/4 22, WB4RLU 18, K4GFW 2.



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Net	Freq.	Time(Z)	QNT	QTC	Mgr.
GSN	3595	0000/0300/1150	806	202	K4BAI
Ga. SSB	3975	0100	793	32	WB4DMO
GTN	3718	2300	-	-	WB4SPB

New officers of the Gremlinn Memorial Radio Club of Newnan, Ga. are WB4BHY, pres.; K4LKV, vice-pres.; WA4VCP, secy-treas. The Northeast Georgia ARC of Athens holds their meeting the first Sun. of each month at 2:00 P.M. in Memorial Park, all interested amateurs are invited to attend. The Athens group recently has formed an Emergency Communications Committee, WA4AON chmn. and he also is pres. of the NE Ga. ARC. W4DQD was successful in making high score for Georgia in the last ARRL DX competition. W4LRR reports that WA4TFB worked Ark. and Fla. during 2-meter opening on Oct. 8. Recent appointments: WA1ABW/4 ORS, W4AMB OBS. Traffic: WB4RUA 192, K4BAI 107, W4EEP 59, W4AMB 54, WB4UIH 49, WA4RAV 48, W4PIM 46, WA4WQU 41, W4CZN 40, W4RNL 34, WB4SOJ 9, W4JM 8, WB4WXX 5, W4FDN 3.

WEST INDIES - SCM, Pedro J. Piza, Jr., KP4AST - KP4DHW bought a new Heath line. KP4ANG is back on 40 with a Cygnet. KP4BJM put up a new tower. KP4RD got a Collins S line. KP4AWM, KP4QM are working hard to get things ready for the 2-meter repeater. KP4MO, KP4GN bought a 2-meter tm gr. KP4CN hoped to be ready for the Oscar project. KP4WT is a great-grandmother. KP4BDL passed his General, congrats. We need

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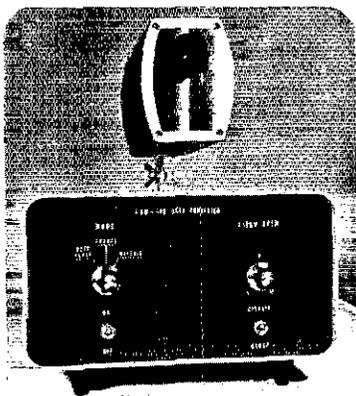
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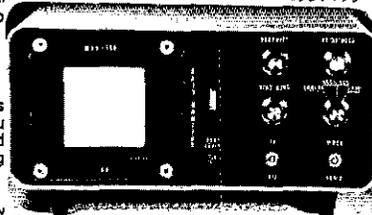
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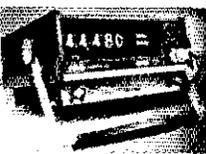
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WESTERN FLORIDA — SCM, Frank M. Butler, Jr., W4RKH — SEC: W4IKB. RM: K4LAN. RTTY: W4WEB. PAM: W441ZM. VHF: W4KGV.

Net	kHz	Time(Z)Days	Sess.	QNT	QTC
WFEN	3957	2300 Dy	30	518	55
QFN	3651	0000/0300 Dy	00	—	—

Pensacola: New appointments: K4BSS as ORS and WA4NAP as OPS. WA41ZM now has .52 capability in all his fm rigs. W4JLW maintains high interest in ARRL affairs. WB4WQB took his fm rig to school at Auburn. WN4BFF a new ham in town. If you are a serious vhf'er, you should be on mailing list for the "VHF Ragchewer." Contact WB4KGV or WB4PKW. The FM Assn., WB4QEQ, is a member of the SE Repeater Assn. (SER). K0BAD/4 appointed permanent RNS Mgr. Escambia County RACES has equipment ordered for a 147.12 MHz District Net. WB4SBD back on OFN. Fort Walton: W4RKH was away for 3 weeks; WB4NHK kept us represented on WFN. W2GVH/4 and WA4MCCY are new to the area. W4JNL/6 writes he will soon be retiring in the FRC area. W4UXW and W4HTT launched their sailboat, Sea Cue. PARC had a good crowd at the Fall picnic, Panama City: Sorry to report one of our oldtimers a Silent Key — W4JJ. He was K4VFF's father. WN4BJD and WN4BJE received their tickets. Bonday: EC WB4PJT is preparing a comm. plan. Marianna: WA4BFC and WB4BOF are new hams here. BOF is the XYL of K4UNT; BFC is the owner of WTYS radio. Crawfordville: WN4ZQC earned a Novice BPL award for his nice traffic total. Traffic: K0BAD/4 227, WA41ZM 36, WB4ONW 15, WN4ZQC 14, WB9ATU/4 12, WB4NHH 10, W4RKH 10.

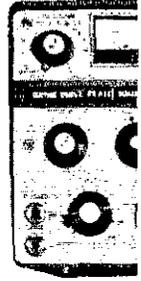
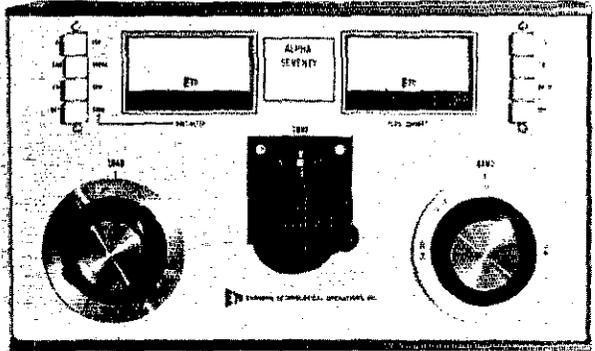
SOUTHWESTERN DIVISION

LOS ANGELES — SCM, Eugene H. Violino, W6INH — Asst. SCM: Leigh S. Jones, W6OLD. RM: W6LYY. WA6MBP program chmn. of the Crescenta Valley Club is planning a transmitter hunt each month, other clubs interested may contact him. W6LPI active in Sun. QCWA Net. K6CNV made 200 countries for DXCC all cw and QRP. W6FU and XYL vacationed in VE-Land. W6FGZ, XYL and son all active in Crescenta Valley Club. Twenty stations of the local AREC group assisted the Dept. of Agriculture on opening day of hunting season. The AREC repeater frequency is now 146.22 in and 146.82 out and still 146.82 simplex. During the recent repeater meeting 46 repeater frequencies were assigned and thanks to the local AREC and the PARC group things went very well. K6HV is new pres. of PARC, W6GOEZ, vice-pres. K6AEH outgoing pres. was very active in the new repeater assignments. W6UTE working downtown, for the city. The Antelope Valley Club is having classes for code and theory; contact W7GAQ/6 or K6LDY. Santa Clarita Club had pot-luck dinner Oct. 14th. The Ramona Club had big night in Sept. when club members and XYLs had dinner for new officer installation. W6MLZ among his many assignments is also Publicity chmn. for the local QCWA chapter. W6KHN promises to have some interesting programs in store for the SGVRC. The Long Beach Club had a big auction in Sept., sorry I had to miss this one. W6BHG starting to check in on QCWA Sun. Net. good work Hank and get well. W6NJU ran for Vice-Director of the Southwestern Division. SCN has need for more members, now that the Holiday season has started, check-ins have been down lately. W6OAW net mgr. for WPSS seen at Santa Maria Convention. W6GGJL still active in Channel City Net. WA6IDN planning on new antenna. W6USY says the Hula Gals in KH6-Land very FB! K6ASK working on 2-meter repeater for SOCON net and hopes to establish VHF RTTY net. WA6UOC planning to check into phone traffic net, also NCS for Swapcars on 7260 kHz. Our thanks to WA6QZY, W6B7XX and W6VYX for their wonderful work on the new 2-meter frequency allocations for this area. K6ICS was again active in the 1000 miles Baja, Calif. road race Nov. 3rd this year. WA6MOD trying for 2-meter WAS and has a good start at it. WN6PE since getting his license in Jan. has WAS and 83 prefixes. Traffic: W6BBO 491, W6INH 298, W6LYJ 109, K6UYK 90, W6BZVC 84, W6OAE 78, W6KKG 68, W6KJ1 62, WA6IDN 45, W6OEO 42, W6KZI 36, W6USY 11, K6ASK 8, W6DGH 6, W6GGJL 4, K6KA 4, WA6MOD 4.

ORANGE — SCM, William L. Weise, W6CPB — Asst. SCM: Richard W. Birbeck, K6CID. SEC: WA6TYA. W6FD worked a couple more stations on his 1931 rig. WA6RRU (ex-6ATE) moved from S.F. to Palm Springs. W6CPB received his DXCC certificate. WA6DBX new OBS sked Sun. and Mon. 7 P.M. 14072 kHz and 7:30 on 3724 kHz local time. W6LYY SCN mgr. reports difficulty in getting net reports. Lets cooperate with Don. WA6YWS reports very good AREC coverage in Inyo Co. WA6RAL/6 says the So. Cal. VHF

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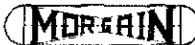
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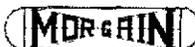


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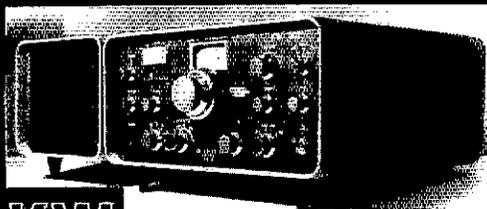
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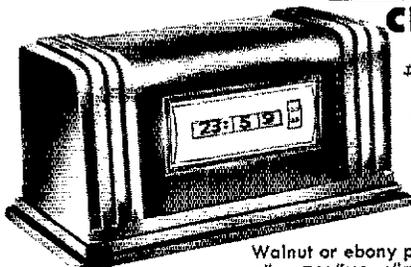
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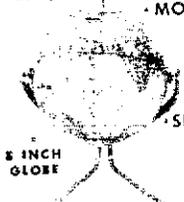
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hidden transmitter is scheduled 3rd Sat. each month. K6YNB made over 11,000 points in Sept. VHF Contest. Good work Wayne. W6BUR visited many friends at Flagstaff Hamfest. W6ISC and W6BVTK enjoyed their recent vacation but are glad to be back in routine. Hope all who attended S.W. Division Convention had a good time, we did. Sorry to report K6GZR as a Silent Key. K6GKN is convalescing after a heart attack - everyone hopes Gene will soon be back on the air. K6YCI purchased a Swan FM2X and will be active on vhf nets. W6QBD reports he busted his sending arm and is rigging up the shack for limited operations. Speedy recovery Woody. W6GZOR spent some time in hospital but is now out and again working on the air. W6WRJ has installed 6-meter fm mobile for RACES activities. Members of the Lee De Forest KC of Hemet provided communications for a fifty-mile bicycle tour in Sept. Communications helped keep track of stragglers. Congrats to WA6HT for high score for Orange section in last CD party. PSHR: WA6TVA 50, WB6AKR 44, WB6JOT 42 and WB6AKR 31 (Aug.). Traffic: WB6VTK 85, WB6AKR 66, W6BNK 66, WA61VA 55, WA6YWS 33, K6YCI 24, W6ISC 19, W6WRJ 14, W6CPB 11, K6GGS 11, W6QBD 2, W6BUK 1.

SAN DIEGO - SCM, Paul C. Thompson, W6SRS - Asst. SCM; Art Smith, W6INI. The San Diego section AREC membership drive is under way. Thanks to all the members who have added their acquaintances to the rolls. Your efforts will make this drive a success. We are again sponsoring the display at the Home Show. Theme is Satellite Communications. Contact WA6HBX to assist. W6LRU is again conducting license classes this year. WB61AX presented a program on EM for the IVARA. El Cajon held their auction with WB6ODR at the block clearing. A recently kidnapped party obtained help at the home of WA6SIW. He just happens to be PRC Hospitality chmn. W6OSD is new SIBARS editor. W6ONM leaving for KH6-Land. W6BH worked MM off coast of DU-Land. WB6LJO now checking into SCN. Nice to see so many of the San Diego section members at the Santa Maria Convention. The AREC meeting held provided many ideas to develop emergency procedures throughout the Division. Those who attended were enjoying every minute and were adding to their technical knowledge at the fine sessions. K1PLP was in the San Diego area prior to the convention. SDFM has changed antenna patterns. Send your comments. Check-ins to SCN are needed from this section. Contact WB6VKV of WA6AMK. PSHR: W6LRU 49, W6BGF 37, WB6VKV 34. Congratulations on your traffic totals. Traffic: WB6VKV 217, W6BGF 210, WA6AMK 209, W6VNO 204, WB6HMY 119, W6LRU 87, W6DEY 38, K6CXR 2, W6TAI 1.

SANTA BARBARA - SCM, D. Paul Gagnon, WA6DEI - SEC; W6JTA. PAM: K6EVO. RM: W6UJ. OVS K6YLO represented repeater WA6SIN at the So Cal Repeater Assn. meeting in Sept. They decided to adopt the Tex. ARRL VHF freq. plan. All So Cal repeaters will now be on standard frequencies. WB6LDG installed an SB-34 in his truck. W6MUL toured VE-6, VE-7-Land and operated 2-meter fm mobile. K6OPH has his tower and beam up at his new QTH in Ventura. OPS WB6PGK is doing a fine job as liaison from SCN to MTN. OO WB7BWZ is back in Santa Maria after TDY in Fla. W6KW erected 75- and 40-meter full wave horizontal loops. W6MLJ has joined Army MARS. W6OAL operated lots of DX from KS6-Land on his last trip. The Pomsetta Radio Club in Ventura has been reactivated due to the efforts of W6MHK and K6VFE. New officers are W6MHK, pres.; K6VBC, vice-pres.; W6MWJ, secy.; WA6OWU, treas. Let's support this club which meets the 1st Thur. each month in Ventura. W6MHK and WA6OWU are using indoor loop antennas and working DX you wouldn't believe. WA6WYD received a plaque from the VCARC in appreciation for his many years as editor of "The Keyer." W6MOF and W6DKQ were our July open CD party winners. W6SSN passed his Advanced exam. New Novices in the section are W6TDA, W6TDB, W6SXXN. W6GSL. W6SPL, W6SNW, W6SPM. K6PYE is getting his RTTY gear on the air. Best Of Season's Greetings to each of you. ARL Sixty-Two and may Santa bring you all a new rig. PSHR: WA6DEI. Traffic: WA6DEI 293, W6JTA 180, WB6MXM 43, WB6PGK 15, W6MOF 4, K6OPH 2, W6KW 1.

WEST GULF DIVISION

NORTHERN TEXAS - SCM, L.L. Gene Harrison, W5LR - Asst. SCM; Frank A. Sewell, Sr., W5IZU. SEC: K5OKM. RM: W5OU. Thanks for vote of confidence you have placed in your SCM. I'll try a little harder this term. It is with regret we announce resignation of RM W5OGZ - increase in job assignment plus travel. W5OU is our new RM. K5OKM is our new SEC. Joe is active on 40 and 80 also 2 meters. W5BOO our stalwart PAM for years needs help. He's active in Waco 2-meter group. Sparky, pres. DARC invited W2TUK to address a North Tex. group prior to Texoma on 27th. All NoTex Clubs invited. Citizens Radio Watch very active; if

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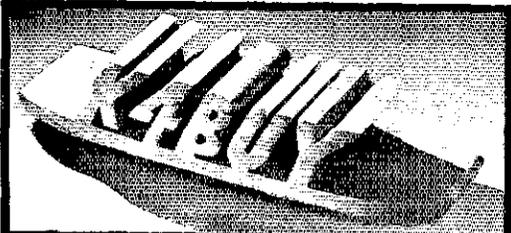
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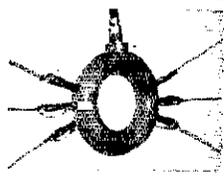
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interested call WASZNY c/o Dallas Police Dept. Bob Coker. Those of you who missed latest CD bulletin suggest review Board minutes of July (20-21) QST and check our minutes No. 11, 22, 23, 27, 40, 49, 56, 60, 64, 66, 68 and 69. OOs W5OPX, W5TI, W5KYD, K5PCW, W5AKHF and W5GSLU/S, W5ARV plus W5APPF Abidene submitted an FB report. Thanks, men. SCM attended CRW meeting Dallas PD and was impressed with seriousness of these people. Temple ARV reports 25 members attended Sept. meeting. IARC may become MARS affiliated and purchase the Helton club equipment. Once again we see where Hamfests "dates" were conflicting so I apologize "Texoma" and "Brownfield" - we are all human. Recommended reading includes W5JJ's technical review in monthly issued Collector and Emitter. FCC adopted amendments Part 97 rules concerning licensing and operation Repeaters Docket 18803 caused many to re-read our books. Come July 1 separate station license required prefix WR. Our OVs including W5SUNK very active. W5TL, pres. Kiloocyte Club F.W. vacation NMEX had nasty fall broke wrist. W5YK wants ORS and EC Limestone Co. W5SDNT was active in National Girl Scout Movement Dallas, Oct. 20-26. W5AVA active with repeater group. W5YK on 7290 kHz. Traffic: W5OU 138, W5SELE 74, K5ABV 63, W5TI 56, W5SHN 26, W5BFW 21, W5IZU 18, W5LR 14, K5ABV 10, K5KOM 10, W5YK 9, W5QZ 5, W5RPG 4, W5SSBK 2. (Aug.) W5QZ 2.

OKLAHOMA - SCM, Cecil C. Cash, W5PML - Asst. SCM: Joseph M. Schlosser, W5SIMO. SEC: W5FSN. RM: W5RB. PAMS: W5MI-X, W5BCWX, K5DLE and WASZRU. I thought by the first of this month net operation would pick up much more than it has. Sorry to lose PAM W5WHV because of his work schedule, but congratulations to his replacement as net mgr. of the OTWXN, the new PAM is W5BCWX. Activity of your SCM for the past month has been pretty slim but hope to see most of you at the TEXIOMIA Hamarama which will be history when you read this. W5JJ reports that on his vacation he visited with a long time friend with whom he had his first unscheduled radio contact 49 years ago. They'll have to get together next year over the golden tea set. Net reports, (you can see where we need to improve):

Net	kHz	Local Time/Days	Sees	QNT	QTC
OPEN	3815	0800 M-Su	4	178	7
OPON	3813	1700 M-F	21	401	109
SIN	3850	1730 M-S			
OTWXN	3913	1745 M-S			
QLZ	3622.5	1900 Dy	30	101	72

Traffic: K5TEY 524, W5RB 58, W5FKL 30, W5MFX 28, W5ZOO 26, K5OXC 24, W5OUV 10, W5PML 10, W5SAZS 4, W5FSN 4, K5ZDB 3.

SOUTHERN TEXAS - SCM, E. Lee Ulrey, K5HZR - SEC: K5HXR. PAM: W5KLV. RM: W5ABQ. Renewed appointment for OO W5NGW. San Antonio Radio Club elected W5ARNV, pres.; K5LLK, vice-pres.; W5NHLX, secy.; W5VFM, treas. Four nominees for SCM So Tex. are W5JVR, W5KR, K5OZF and K5SBR. W5ABQ, K5ROZ and W7WAH/S again made PSRR. W5AGBU/S and W5AZBK have applied for ORS. OO K5FJZ did well on last FMT. Received OO reports from K5HHA, W5AMIN, W5RBB, W5RIY and W5SQW.

Net	kHz	Sees	QNT	QTC
TEX*	3770	60	510	246
TIN*	3961	30	1470	123
7290 Ifc	7290	42	1881	536

*NTS. Traffic: W5ABQ 146, W7WAH/S 89, W5YEA 87, W5FJN 79, W5YXS 77, W5AC 75, W5SCUR 67, W5ZBK 63, W5TFW 61, W5BHW 55, W5TJL 54, K5ROZ 48, W5KLV 36, W5OO 35, W5HWY 35, K5HZR 32, K5RVF 27, W5VBM 20, K5EHL 18, W5BHO 16, W5RBB 13, W5MUM 12, W5S-FNS 10, W5VW 9, W5ACBT 5, W5UKN 5, K5SBR 1.

CANADIAN DIVISION

ALBERTA - SCM, Don Sutherland, VE6FK - SEC: VE6XC. The NARC Golden Jubilee Hamfest, in Edmonton was well organized. I am sure all enjoyed the program. I particularly enjoyed meeting many old friends - VE3CA of Ottawa, station appointees OO VE6HM, VE6MJ and many others. The new officers for ARLA are VE6ASL, pres.; VE6MA, vice-pres.; VE6SA, secy-treas.; VE6ABS, membership. VE6ASL is an OPS appointee. The new editor of VE6 is VE6BB, who, with the fine cooperation of his school's business classes did an excellent job with the first issue. Conditions have picked up considerably on 75, consequently QNT and traffic have picked up on the APSN. Red Deer continues to hold the record for non-participation. The only Alberta City without a net representative. Traffic: VE6FK 49, VE6AD 27, VE6XC 13, VE6FS 11, VE6MJ 8, VE6V 6, VE6AGU 1.

BRITISH COLUMBIA - SCM, H.E. Savage, VE7FB - VE7AXI KC for Victoria reports working FD on his own until generator

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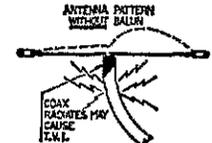
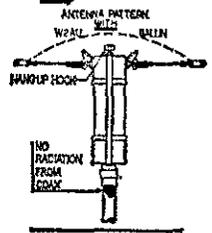
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T-94	.70	.75	.75	.95			.942	.560	.312
T-80	.65	.60	.60	.80	.90		.795	.495	.250
T-68	.45	.50	.50	.65	.75		.690	.370	.190
T-50	.40	.45	.45	.50	.60	.65	.500	.303	.190
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failed 117 contacts. VE7QR took me on a tour of his new radio warehouse, stacks of Yaesu, builder's parts by the millions, real "ham" paradise. VE7TT, our OO and ORS, spent the summer traveling with new trailer and FT-101. VE7US and VE7UR who put in many hours on applications for renewal of license plates moved to Nanaimo. Their efforts compiling the 73 plates should be appreciated by all. BCEN winter schedule, 0300 GMT, 3650 kHz and slow speed operators are welcomed. WA6IQP (ex-VE7ANE) has suffered two severe heart attacks in Calif.

MANITOBA — SCM, Steve Fink, VE4FQ — ARLM held a successful auction Oct. 15. Canadian Director Noel Eaton was the guest speaker at the Oct. WARC meeting. New WARC executives: VE4HE, pres.; VE4BF, vice-pres.; VE4JA, secy.; VE4GL, treas.; VE4FQ, ex-officio. VE4UM now has a new SB-303/401 on the air, and VE4s ZA and ZQ are teaching classes at VE4JTC, the Sea Cadets Club. Congrats to VE4CP on a Jr. op, and we welcome a new OM-YL team to Winnipeg, VE4WS and VE4QQ. Glad to see the return of VE4FA to VE4-Land. VE4CT working hard to put Brandon on 432, and VE4EA has a new 80-meter hook up and is frequenting CAN in addition to TEN. VE4AI could use some help on the Intruder Watch. MTN: 7 sessions, 17 QNI, 12 OTC. MEPN: 30 sessions, 663 QNI, 11 QTC. Traffic: VE4RO 54, VE4EA 33, VE4CR 8, VE4PG 8, VE4JA 4, VE4QJ 3, VE4EJ 2, VE4OP 2, VE4RV 2, VE4BM 1, VE4HA 1.

MARITIME — SCM, W.D. Jones, VE1AMR — Congratulations to VE1AHM on earning the Ross Clemen's Memorial 2-Meter DX Trophy. VE1OC has earned his 2-letter call WAS, No. 77. Congratulations to VE1AH on his 5BDXCC, No. 201. New executives of NSARA include VE1GC, pres.; VE1AAC, 1st vice-pres.; VE1ALB, 2nd vice-pres.; VE1AKO, secy.-treas. ARCOWL had 250 contacts on Field Day with calls from numerous wildlife and "Murphy." 2-Meter activity is due for an upsurge in Western Labrador with 20 NBFM rigs and a repeater in the offing. QTHs of the month, VO2AJ, 807 Carol Dr., VO2JG, 813 Carol Dr., both Labrador City. QRM anyone? ARCON has been a very active club over the summer, taking first place in Nfld. on Field Day, supplying communications for Gander Day celebrations, entering a float in the parade etc. APN reports QNI 77, QTC 70 in 29 sessions. Traffic: VE1ARB 90, VE1AMR 55, VE1RO 46, VE1AM 12.

QUEBEC — SCM, Joe Unsworth, VE2ALE — Thanks to VE2OJ and crew. Appointments and endorsements: VE2BG as OPS; VE2s CP, DR, EC, OI, PJ, RO, UY. DCW as ORS; VE2s BU, HW, YL, APT, BMO as OVS; VE2APF as PAM; VE2BCB as OBS; VE2YU as RM; VE2DCW as OO and VE2BDM as SEC. Others to process. EC Net now 3.652 MHz, mgr. VE3AWE, XYL VE2BFS Jr. Op. in July. VE2s DR, AKH, BBY fishing trip. Mother VE2AFM passed away. VE2AOQ now VE2OJ and antenna farm at Hemmingford. VE2BU had a bad fire at QTH. VE2BDM now at Cap Sante. OQN now 3.535 MHz for winter. VE2s BGF and BVD at VE1UNB for school season. Fairview exposition great success; Westminster club busy with code and theory as well MARC. Possible ATV repeater 3/4 meters from Montreal. QR net 3.775 now very busy. VE2BQM now QTH antenna farm in VE3-Land. VE2BWL has returned to Sherbrooke QTH. Expected to have Radio display at Terre des Hommes summer 1973 with Commercial, Civil Protection and Amateur Radio display. VE2s BEN and BBK now on 3/4 meters and VE2BHH runs duplex on 2 and 3/4 meters. VE2BCL active 75 meters. VE2s BOE and DM new towers and DM a TA-33 beam. Someone getting frequency counter for Christmas from XYL. VE2ALE located local QRN from 75-meter antenna. W1K00 improved into Montreal area (.34/.94). VE2BYH former VE1AKT now VE1ZH/VE2 and VESLD/VE2 back at Hudson for winter. VE2JO spent three weeks in G- and GM-Land. PSNR: (Sept) VE2APT 31. (Aug.). VE2APT 25. Traffic: (Sept.) VE2BP 62, VE2DR 57, VE2EC 54, VE2OJ 33, VE2DLG 19, VE2AJD 10, VE2ALE 9, VE2APT 4. (Aug.) VE2BP 62, VE2APT 15, VE2UY 4.

SASKATCHEWAN — SCM, William H. Parker, VESCU — VESLG and XYL are going to Hawaii. The AREC has been doing some large expanding and getting ready for SET. If you are not a member see your local EC. The Saskatoon Club will host the Hamfest next year and members are now busy on plans. The SATN Net is undergoing changes which should make it better than ever; if interested contact VE5GL. Ham radio is rapidly turning back to the homebrew era. I have seen everything from keyers to complicated transceivers all built at home and without kits. VESDN is a very active man in the North country. Hear VE5BO is feeling better, all the best Barry. Yours truly now is a Life Member. Don't forget we are looking for a full time SCM. I am acting SCM to fill VESBO's remaining term so look around and nominate the man of your choice. It's a big job and takes someone willing to spend a little time to help his fellow hams. Traffic: VESGL 25, VESCU 11, VESKG 6, VE4KS 4.

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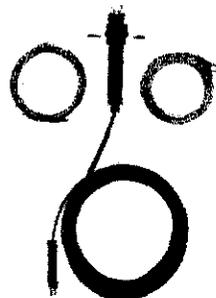
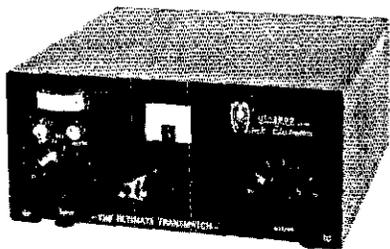
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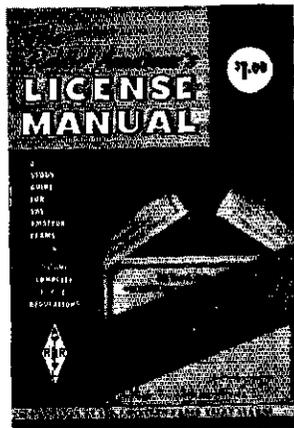
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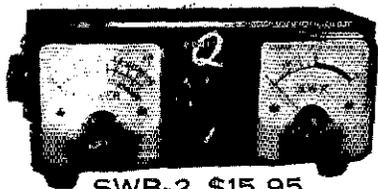
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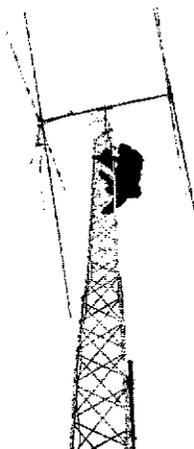
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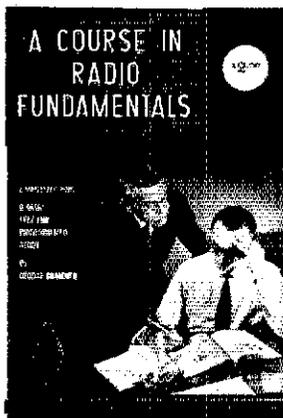
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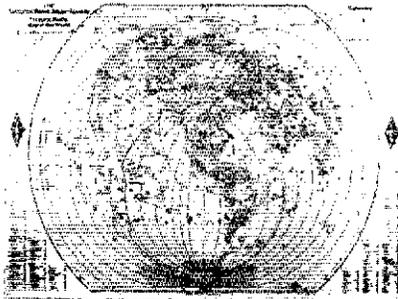


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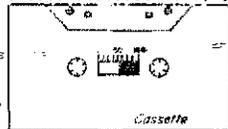


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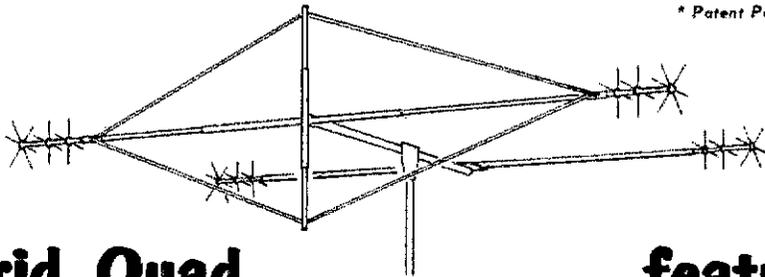
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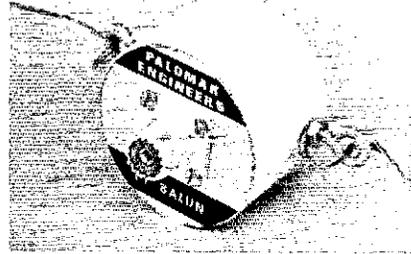
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DATE Set: 16th Annual Warren A.R.A. Hamfest - Sunday, August 19, 1973, Yankee Lake, Ohio. Warren's Fifteen Pamouse Free Family Hamfest was fabulous, thanks to workers, and our exhibitors and contributors like Armies Electronics, REM Electronics, Amateur Electronic Supply, Antenna Specialists, Air Force MARKS, A-J Electronics, ARRL, Bird Corp., Ero Electronics, Calibco Magazine, CQ Magazine, Digital Dynamics, R.I. Drake, Electro-Voice, Greenlee Tool, HAL Devices, Henry Radio/Tempo, Ham Radio Magazine, Hy-Gain Electronics, KW Electronics, L.M. Electronics, Mendelson Electronics, R.C.A., RACES/JD, Radio Publications, Rotel Electronics, Rohm Towers, H.W.Sams, Sen-Tec Crystals, Sharon Electronic Supply, Swan Electronics, Ten-Ten, VHF Communications, Yak Shak.

GREATER Washington DC area Foundation for Amateur Radio offers an information and hospitality service. Special consideration is given to visiting foreign amateurs and a volunteer staff of linguists is available. Contact Hospitality Chairman Bill Parrott, W4URL, 8548 Georgetown Pike, McLean VA 22101. Phone (703) 893-8383 between 8 a.m. and 8 p.m.

CASH paid for your unused tubes and good ham and commercial equipment. Send list to Barry, W2LNI, Barry Electronics, 512 Broadway, NY NY 10012.

WANTED: All types of tubes. Top prices paid for Varian & Emac. Jax Electronics Corp., P.O. Box 414, Orlando, Fla. 32802. For fast action call Toll Free: 800-327-7799. Ask for Bob Hoffman.

WE buy electron tubes, diodes, transistors, integrated circuits, semiconductors and resistors. Astral Electronics, 150 Miller St., Elizabeth NJ 07207, Tel. 201-354-2420

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HAM ticket - Amateur radio license course for Novice, General, Advanced, Extra Class. Write for information, Clayton Radio Co. 220 Mira Mar Av. Long Beach CA 90803.

SPIDERS for boomless quads. Hellare welded aluminum. A1's Antennas, 1339 So. Washington St., Kennewick WA 99336

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TELETYPEWRITER machines, parts, bought, sold, S.A.S.E. for list. Typetronics, Box 8873, Ft. Lauderdale FL 33310

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URGENTLY need: RAK, AN/JRM-6, or solid state VLF receiver; Hustrak recorder and/or tape for signal amplitude recording; for research projects by children. Dr. H. B. Ammons, 411 Keith, Missoula MT 59801. Or call evenings person-to-person collect.

SELLING KWM2, 516F2, speaker, MP1, 301.2, TA33, my own mobile tray, all cables, mike. Package deal only. Demonstrated at my QTH - #1100, HW32A, ACPS, spkr, TA33. Package - \$175. W2MHM (201) 261-9448.

PEARCE SIMPSON Gladding 25s - \$219.95, with 117 vac power supply \$264.90. HiScan Monitor including one xtal - \$105. Antenna Specialists antennas. Bill's Radio, South Rd., Wading River NY 11792. (516) 929-6118.

POINT your antenna accurately! Send SASE for information on how to obtain bearing and distance information to over 400 world wide locations calculated specifically from your own location. W6WAH, D.C. Hildebrand, 1461 Coronel Ave., Vallejo CA 94590.

WANTED: Swinging chokes UTC CG-1C, CG-109, S-38. Budavary, 285 Summit, St. Paul MN 55102.

FREE want ads! Details, plus 4 big issues \$1. Ham Ads, PO Box 46-653Q, L.A. CA 90046.

SELL: Swan 500C, \$345, 117XC, \$65, 14X DC module, \$35, Swan 350, \$265, SR-150, \$275, AC, \$60, DC, \$60, SR-220, \$265, W9HF, \$505 Indiana, Ft. Wayne IN 46807.

COLLINS - Wanted, complete station. KWM2A or 75S, with 3233 plus 30S1, 312B4, 312B3. Will pay top price if serial numbers reflect 1970, 1971 or 1972 vintage. John Bess, W2YIX, 155 W. Bayberry Rd., Islip NY 11751.

WANTED: QST magazine 1916-1922. Paul Kluiwe, Edmore MI 48829.

SCALERS. Complete units. 260 MHz unit \$70. High sensitivity 280 MHz unit \$90. Add Calif tax and \$1.50 shipping. Guaranteed. W6PBC, Belmont Spectrum Research, 1709 Notre Dame, Belmont CA 94002.

AWARDS Hunters - Five band awards log book for DXCC, 5BDXCC, 5BWAS. Easy to read and easy to use. Send \$2 to Five Band Publications, Box 264, Lyndhurst NJ 07071.

WX satellite picture rig complete. Yours for only \$275 complete. Larry Payne, KBUNT, Walnutight AR 99782.

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FM Motorola D41, converted to 52.625 MHz. PL boards, 115 vac supply, crystals, \$118. Motorola portable P33-RAM, 5 watts Nicad/6/117 vdc supply, 146-34-94, accessories, crystals, manual, \$135. L.S. Higgins, #22 Old Hecloy Trail, San Antonio TX 78230. Phone 225-8836. Shipped prepaid cash with order.

HAMMARLUND SP-600X in case with product detector, mint, \$325; Clegg 99'er with 4 crystals, good, \$65; Heath GR54 all band receiver, mint, \$85, or best offer on any item. Will pay postage in cont. U.S. W8ANL, 1305 kunnymead Ave., S.W., Decatur AL 35601.

SELL Mobile Mount 351-D2 for KWM2, excellent condition, \$60. Paul Huston, W9GCQ, 223 Lucan Dr., Iowa City IA 52240.

SELL Heath DX-60B with Novice crystals, \$60; Heath HR-10B with HRA-10-1, \$60. Fred Brinkmann, WA2RQX, 8 Condict St., Morris Plains NJ 07950.

DRAKE R-4, excellent, \$275; Ranger II, mint, \$110. J. Russell, W2APG, 27 Herie Dr., Pequannock, NJ 07440.

SELL DX-100B and SB-10 adapter; SX-111 revr; sixer, coax, other goodies. Best offer. Doug Struck, WA3CTP, 200 Lamp Post Lane, Camp Hill PA 17011.

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MUST sell Ten-Tec RX-10, Aneco AG-1 transmitter, AG-6 tuner, 3-meter am transceiver, Ringo ant, with coax cable, Wnypar Digital Counter, many extras, \$75. John Pavone, WN2IBP, 18 Coconut Dr., Commack NY 11725.

CAPACITORS 10M 2500 volt oil-filled. New \$8, plus shipping. 8 lbs. Heavy duty ceramic bar capacitors for 1000's of uses, \$5. Postpaid 48. New. K4VCP, 2537 Canaday Rd., N.E., Roanoke VA 24012.

TRADE Leica II F, 50mm, Elmar F3.5, 35mm, Elmar F3.5, 35mm, Canon F2.8 and multifocal viewer, all mint. Want all and \$65 transceiver and ac supply or receiver-transmitter combo. W2GMO, 70 Balsam Lane, Princeton NJ 08540.

SERVICE and repair for Hammarlund receiver and transmitter. Sale HQ110A-VHF, HQ170, HQ170A-VHF, SPC 10, 800 Hz. filter for SP600. Contact C. Osteen, Box 152, Mars Hill NC 28754.

WANTED: CK7 or CK7A in good condition. State price and age. D. Snowden, WA5ZSL, AFAT2 DET4, Box 602, APO SF 96205.

COLLINS S/line 3283, 7433, 816F, 312B4, DL-1, G-10-D Mic, superb condition. \$1450. takes all. T. Gosman, 143 Roxton Rd., Plainville NY 11803.

WANTED old antenna insulators for my collection. Please describe and price, or will make offer. Walt Lehnert, 5209 Minnehaha Blvd., Minneapolis MN 55424.

SERVICE manuals most Hammarlund equipment since 1930, \$5, each postpaid. Will align your Hammarlund receiver to original specifications. 15 years factory experience. Wayne Cordell, K4HCS, Blue Ridge Communications, Rt. 3, Weaverville NC 28787. (704) 645-7070.

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SALE: Hallcrafters SX111, National NC183D communications receivers. Knight K4635 oscilloscope, HP211A square wave generator, Heath VTVM, bug key, All excellent condition. Dana Geiger, 420 West End Ave., NYC NY 10024.

SELL Swan 350, like new with ac supply, \$295; KWM/2, like new, with ac supply, \$590 FQB, Mel Fraggasi, W9IEF, 757 Deerfield Rd., Deerfield IL 60015. (312) 946-1800.

DRAKE 2-NT. Used little. Absolutely mint. Original carton, cables, manual, 5 xtal. \$120. plus shipping. Carrier's ck. M.O. only. Pat Murray, WN5EFI, 12 Redbud, Conway AR 72032. (501) 329-2949.

FOR SALE: Collins K-391/URR receiver, excellent condition, with power supply for Autune, speaker, cables, original operating and maintenance manual and complete set of tuning spurs. W.T. Cunningham, 676 Park Ave., East Orange NJ 07017. (201) 875-5536.

SELL New Tempo-One transceiver with ac supply, \$325. 7bA-4 500 Hz C.W. filter, Ferner Knob and Collins noise blanker, \$345. Aron G615, 2-meter, 7-2 channel, \$30. G. Zielinski, W9OHH, 621 E. Park, Villa Park IL 60181. (312) 279-8057.

WANTED: SB1 oscilloscope display tube. Tom Turner, Jr., 2504 Montview, Huntsville AL 35803.

HEATHKIT HW-12, excellent, \$45, plus shipping. WA1MKP, Box 446, Woods Hole, MA 02543.

YAESU FTDX-560, \$350. W0DKX/4, 2941 Redron, Winston-Salem NC 27106.

CANADIANS: Heathkit HW16, HG10B VFO, both for \$160. Stocked, 34 Bedford Crescent, Ottawa K1K0E5.

SELL: Yaesu FTDX-560 matching speaker and mic, \$362; PV400S, \$75; 3 Novice xtals, \$15. WA7QZG, Box 1364, Tubac AZ.

FOR SALE: Drake 2-B receiver and 2-BQ speaker-Q multiplier, \$160. Edward Wise, 1534 Chilton Rd., N.E., Atlanta GA 30329.

QSTs 1965 through 1972. 77 magazines, a few duplicates, a few missing, \$20 FOB Oklahoma Louisiana, Ft. Dornmeyer, Box 101, Wadena MN 56482. (218) 631-4559.

SELL: Drake 2-C, 2-CQ, calibrator, 2-NT, EICO 722 VFO, \$325. Will ship. Tom Beltran, W9PHH, 1704 Second Ave., East Williston ND 58801.

FOR SALE or trade 2 MTR MT33 G.E. Prog. Line four freq. full of crystals with Larson 3DB gain mobile antenna, \$200, or swap for all hand H.F. sbx transceiver. George, WA7MZ1, Payson UT. Box 202, Globe AZ 85901.

FOR SALE: Heath HW-16 with 8 xtals, \$95; Ten-Tec KR-1 keyer, \$25; Cesco Reflectorometer with coupler, \$25. All equipment mint condition. Will sell as package with 50 feet RG-8/U coax for \$40. W8MZU, 14 Farmers Rd., Great Neck NY 11024. (516) 487-2744.

SKILL: Prop Pitch Rotor and spare motor, both unused, \$100; Hammarlund HQ215 and speaker, \$195; Hallcrafters SX-71 with Heath Q multiplier, manuals, make offer. W2PQA, John Long, 138 Dogwood Dr., Oakland NJ 07436.

COLLINS, priced to sell: 7583, \$375; 3253 and 5-16FZ, \$400; 301 B 4, \$110; 301 I, \$825; Gonset Comp. 1V 2 meter, \$60; Remy JK, Prop, WA4GZ, P.O. Box 1907, Ft. Myers FL 33902. Phone (813) 936-1726.

FOR SALE: 32S1 No. 11316, 516FZ, \$450; 75S1 No. 11906, \$250; 32S3 No. 11,000, 516FZ, 312B4 (round emblems), \$950; RAA, TAX, ACB, \$600; R4B, \$325; AC4, \$85; KWM1, 516F1, \$250; KWM1, 516F1, 351D1, \$300; R389, \$395; R390, \$95; Henry JK, \$375; 400; 75A, \$30; 21, \$60; Blanker, \$395; NC12000, new spare R122, \$250; Eico 751 p.s. (new), \$50; TBS50A, p.s., \$25; Kenwood T6115, P5115 (sealed cartons), \$450; Filters: F45B2N1, \$25; F45B2N2, \$35; F500B14, \$50; F500B60, \$40; James Craig, 29 Sherburne Ave., Portsmouth NH 03801. (603) 436-9062.

DYNACO FM-5 tuner, New guaranteed, \$145. Henry Martin, WBDYA, Box 1275, Bluefield WV 24701. Tel. (304) 927-9254.

FOR SALE: HA14 linear, ac supply, dc supply (Needs some II), \$175. Charles Clark, WA9POR, 416 Pine, Moweaqua IL 62550.

SELL: Ten-Tec PM 2B xcvr., antenna tuner, power supply, xtals., \$50. Ralph Uttaro, WN2IBW, 118 First Place, Brooklyn NY 11231.

COLLINS S-Line receiver, transmitter, and all accessories in like new condition. See s.a.s. for complete details. H. Slutsk, 100 S. Doheny Dr., Los Angeles CA 90048.

HEATHKIT Apache transmitter with SB-10 sideband adaptor, \$125; Hallcrafters SX-110 receiver, \$85; Heathkit HD-15 phone patch, \$18; or entire station, \$210. K4CGQ, 322 Fortress St., Sawyer AB MI 49843.

SELL: Complete brand new 58.4 MHz. Blue Max Mark II 6 channel model radio control system (mode 2) with Falcon 56-inch span airplane, OS.35 engine, 4 months old, mint; retails \$300, sell \$200 or trade for mobile sb rig. Bill Baker, WB4ORJ4, 1708 Ashford Ln., Columbia SC 29210. (803) 772-3159.

WANTED: Complete set of QST from approximately 1940 to 1971. Write: John H. Garrett, W5WC, 7636 Harwin St., Houston TX 77036.

QUAD-New Hy-Gain by-quad, mint condition, intact, 80% assembled. Cannot mount on my 150 year old house. Original \$39.95. Asking \$10. Will deliver. EFA, S4, DEL. Bays, 8511 Navajo St., Philadelphia PA 19118. Phone (215) 242-9135.

WANTED used NCL 2000 for Xmas. Advise condition, quote price. Hank, W1HGZ, 22 Edward Ave., Milton MA 02186.

TELEFX model 536 5el 20m beam, \$250; Swan/Hornet TB4H 4el 1/2 band beam, never used with warranty, \$130 or best offer. Deliver within 100 mi. Bartholomew, K2EFA, 742 Chatham Rd., Somerdale NJ 08083.

MERRY Xmas and Happy New Year from W0GVU. Heard around the world since 1913.

SELL: New Swan 412 mobile supply, \$75; Johnson 540 handheld with 94 xtals, \$150. Fischer, K0RVN, Rt. 4, Box 217, Waseca MN 56093.

URGENTLY needed: Equipment for Missionary support net to handle messages to 30 Bible translators in Liberia. Need towers, linears, beams/quads, transceivers. Donated gear welcome or send absolute lowest price. Also need Novice and other used equipment to prepare translators before they go to the tribes. Please help if possible. Gift tax deductible. Ambassadors For Christ Net, Box 366, Concordia Seminary, Springfield IL 62702

RETIREMENT check too small. For sale, one each: Eico model 460 oscilloscope, \$75; Eico model 955 in-circuit capacitor tester, \$20; BC221T frequency meter, \$25; Heathkit model IP12 variable battery eliminator, \$35; Heathkit model IP22 regulated power supply-400V, \$50; Heathkit model HO10 monitor scope, \$40; Heathkit model HO13 ham scope, \$50; Heathkit HD15 Hybrid Fone Patch, \$12; Heathkit HM15 Reflected Power Meter, \$15; Heathkit LB28 impedance bridge, \$45; Heathkit "Q" Meter, \$45; Heathkit IP22 electronic scope switch, \$15; Clemens SG83 signal generator, \$30; Collins OLI 100 watt dummy load, \$10; Heathkit electronic key (minus key), \$10. W4QPH, 1549 Mindful St., Deltona FL 32763.

CONTACT us for new or reconditioned Collins, Kenwood, Tempo-One, Drake, Galaxy, Hy-Gain, Mosley, Henry linear, towers, antennas, rotators, other equipment. We try to meet any deal and to give you the best service, best price, best terms, top trade-in. Write for price lists. Try us, Henry Radio, Butler MO 64730.

HALLICRAFTERS SR-2000 mint condition. Make offer. K1EYN, Rick, 6 Maple St., Marblehead MA 01945. (617) 631-1315.

WANTED: Transistorized power supply and modulator for Clegg Thor G, Ron Guss, WA3RQP, 55 E. Pleasant Grove Rd., West Chester PA 19380.

SB-300, SB-400 (updated to SB-401) for sale, \$475, good condition. Also A-2516 receiver, \$150, 1 year old, original box. Write Erik Pup, WA1PND, SXS, South Kent CT 06785.

FOR SALE: Model 19 teletype, \$75. Ed Luck, 1710 Yuhara Place, Madison WI 53704.

SELL: Eico 315 r.f. generator, 488 electronic switch, 950-B resistance-capacitance-comparator bridge, 377 a.c. generator, 460 oscilloscope, 232 v.t.v.m. Heathkit HO-13 hamscan, C-D AR-22 rotor and control box. All good-to-excellent condition, with manuals. Send quotation s.a.s. to Rex Byle, WA9JWV, 3312 W. Vera Ave., Milwaukee WI 53209.

WANTED: Hammarlund HC-10. WA@PSA, 215-1/2 Main, Ames, IA 60010

"DON and Bob" guaranteed buys: SBE144, \$209; Gladding 25, \$212.50; SBE460, \$439; Standard SRC146A, w/ntc; SBF SSTV monitor, camera (390.50), \$85; Hy-Gain TH6DX, \$139; Eico 109, 400 rotor (229.00), \$179; 204BA, \$129; Mosley CL38, \$124; Ham-M, \$89; TR44, \$59.95; CDE parts stock; Mallory 2.5A/1000P/V epoxy diode, 29 cents ea.; 19 cents/1000 up qty.; Leader 810GDM, \$49.95; MOTMC1709CG on amp TO5, 39 cents; write quote Drake, Triex, Eimar, Leader test, Clegg FM27A. Shipping charges collect. Master Charge, B.C. Warranty guaranteed. Madson, Electronics, 1508 McKinney, Houston TX 77002. (713) 224-2668.

AN-SRR-13 RCA receiver, \$75; Boehme cw keying head and performer, \$75; Elektronix 124, \$25; data pulse generator, \$20; Berkeley counter, \$20; L.C.R. bridge, \$18; Ballantine meter, \$10; T.L.C. ph generator, \$15; bur key, \$8; swr meter, \$5; light meter, \$5; cw filter, \$5; electronic thermometer, \$6; 4 mike mixer, \$4. W6dX, 14945 Dickens St., Sherman Oaks CA 91403.

HEATH IG-52 TV alignment generator, \$40; Heath sixer, \$25. Bob perfect, Tom, K3KH, 100 Rosewood Ave., Balto MD 21228.

CERTIFIED, reconditioned Lampkin 105B and measurements P.P.M. meter, \$200 for the pair, A-1 shape. Nick Swan, Route 2, Ludington MI 49431. (Will ship).

P.C.'s for most construction articles seen in Ham periodicals. Also P.C.'s from your artwork. Write: D.L. McClaren, W8URX, 19721 Maplewood Ave., Cleveland OH 44135.

HAMMARLUND HXL one, with new pair Cetron 572B tubes, \$160; Swan 505 ac power supply, \$320; Omega-T, \$10; Eico-Voice, 665 ntk, \$32. All in excellent condition. W9EKD, Cliff Alsop, 5927 Primrose, Indianapolis IN 46220. Phone (317) 255-4860.

JOHNSON Viking Ranger II, \$175; Lafayette HA-225 communications xcvr. and National NC-190. Make an offer. All in good condition. Must sell, license expired, Dana Caldwell, 22 Morningstar Dr., Danvers MA 01923.

BEAM, 203BA monoband, 2 years old, manual Pickup, \$30. W2NKS, Box 4006, Jersey City NJ 07304.

NCX-5 MKII with JCCX-A supply, excellent, \$300 plus shipping. William Coleman, 2356 Haymaker, Monroeville PA 15146.

HALLICRAFTERS SX-101A with speaker, mint, \$160; Hallcrafters HT-37, mint, \$150; Hallcrafters HA-2 two meter transverter with P-26 ac supply, excellent, \$125; Johnson Ranger I, very good, \$50; Johnson 6N2, very good, \$50. All units electrically perfect, include manuals. Jeffrey Hopkins, 1520 Bayview Dam Rd., Point Pleasant NJ 08742 or call (201) 999-7603.

FOR SALE: Johnson Invader 2000 I KW - sbs CW-AM, mint condition, \$390; NCX500 with ac and dc power supplies, excellent condition, \$350. W8ZJL, 6684 Cranberry Lake Rd., Clarkston MI 48016. Phone (313) 625-3754.

DX100B and SB10 with manuals, \$75. W0NMM, 1956 Bookbinder Dr., Creve Coeur MO 63141.

SWAP 2 new PL175A tubes for 2 new 7094 tubes. W4BBP, 4243 Lowless Dr., Ellenwood GA 30049.

TELETYPE Model 19 for sale, sync motors, geared for 60 wpm; clean, in good condx; \$150. Also Model 14 receive-only typing reperf, governed motor, 60 wpm, exc. condx; \$50. Will ship. Jerry Hall, K1PLP, 181 Bannfield Rd., Wethersfield CT 06109.

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RTTY: Sell or trade two excellent Model 15's, TD, Typing reperf; converter has scope, three filters and electronic keying; teletype tool kit, several almost complete 15's, loads of parts. Pick up only. W510, 1303 E. Richards, Sherman TX 75090. (214) 892-9697.

FOR SALE: Hammarlund HQ-180 receiver, HX-50 sbs, am, cw transmitter, Heath phone patch and D-104 microphone, \$340 for the lot. Must pick up. W2VSC, 5 Surryhill Place, Huntington NY 11743. (516) 369-3885.

SELL Drake R-4-B and speaker, \$350; 2B, \$180; MN 2000, \$150; SB610 sig monitor, \$50; HD 15 patch, \$15; SB 200 linear, \$150. Doug Turnbull, WA1QYT, 75 C Greendean Ave., Middletown RI 02840. (401) 847-8000.

MODEL 721-APO spider quad antenna, 14.21, 28 MHz, good condition, \$50. W7JKG, 103 E. Bartlett, Selah WA 98942.

SELL Gonset G76 with ac supply, \$120. Need Matchbox KE9EC, 427 Yuca Rd., Fallbrook CA 92028.

JOHNSON matchbox no SWR, \$21. W0BHA, Robb, Birdland MN 55310.

SELL: E.E. and other technical books. S.a.s. for list. Roger A. Balm, WB9BDP, 2753 W. Coville, Chicago IL 60645.

SALE: 72 year old ham cleaning out; tubes, meters, complete years of QSTs. Everything dates prior to 1930. Too much to list. Send stamped envelope for list to C.S.H., P.O. Box 711, Millville NJ 08332.

SIDE BAND transmitter, B+W 5100 with 5158, \$115; Hallcrafters SX-2R, \$45. Wanted: 12vdc power supply for SB101 and HA-14. Gary Kaser, W8KME, P.O. Box 278, Iawnton MI 49065. (616) 624-5961.

SELL: HW-100 with ac supply, 25 khz calibrator, cw filter, \$225; R-274 gen coverage rvy, \$100; 2m FM Motorola 140D 3T-2R, \$75; U43GGT 2T-2R, \$90. Both with accessories and crystals. John Boston, WR4RUA, Box 354, Calhoun GA 30701. (404) 629-3048.

COLLINS 3253, 7553C, 312B4, 3011. Newly purchased. Not a blemish. 20% off new price. Len Hoops, W5JTA, 1704 Glenn, Fort Worth TX 76131.

RRAND new Swan 270B transceiver, factory sealed carton, \$365. W6BHH.

HA-1 To keyer, excellent condition, \$45. W6WY. Tel. (213) 861-4189.

E.F. Johnson FM 540 Handy-Talkie two channels, equipped with 94194, complete with carrying case. See QST June 1971 for details. Unit shipped ppd upon receipt of certified check or M.O. for \$175. WINTH, 34 Brookhaven Rd., Grotton CT 06340.

FOR SALE: Transmitting oil filled capacitors 100MFD 3300 VDC. \$35. Ham-M rotators \$80. Raytrack speech processor \$75. L-104 mic, \$20, oil filled capacitors 4MFD 4000 VDC, \$20; 2 meter converter-Terratt Criterion, \$20. Wes Minear, WA9FHK, (312) 832-0472.

MANUALS for govt. surplus - only \$6.50 each: R-390/DRR, HRM-25D, AR-100, RCK. Hundreds more. Send 50 cents (coin) for large list. Sam Consalvo, W3IHD, 4905 Roanne Dr., Washington DC 20021.

HEATH SR-101, cw fil, HP-23 PS and SB-600 speaker, all mint, \$395; Tri-EX H-471 heavy duty tower, \$275; Ham-M rotator, \$55; Hy-Gain DE 10-15A beam, \$40; 3 El 20M beam, \$30; 2eters 300A phone patch, \$45; keyboard for keyboard keyer, \$23. Prefer local So. Cal. deal. prices FOB. WA: Alpha 7, amplifier, Drake MN-200Q, vacuum relays, Hi-Power transmitter parts - what have you? WA6BUS, 8956 Swallow Ave., Fountain Valley CA 92708.

SELL Ham-M with control, \$40; Model 15, \$20; Collins noise blanker \$39; Lycopom 2 meter amp, \$70. WA10QC, 32 Parlor Rock Rd., Trumbull CT 06611.

HW 22A, HP13A, GH12A, 40 meter rig. New in Feb. '72, \$150. WA8BQM, 8405 Dixie Hwy., Fair Haven MI 48023.

TELETYPE - Model 19, \$50. (No T.D.). Pick up only. ST-3 T.U., \$50. Pete, W3DUD, (301) 552-2452.

CRYSTALS Airmailed: QST "Novice Special" - Active-accurate, FT-243, five or more (band mix ok). Our frequency choice (scattered) 40M-15M \$1.25 each, 80M \$1.69. Less than five: 40M-15M \$1.50, 80M \$1.75. "Novice QRM Dodge Packages" - three FT-243, plus minus three kilocycles of ordered center frequency - 30M \$4.95, 40M or 15M \$3.95. Airmail 15 cents/crystal, 1st-cl 10 cents. General Purpose: FT-243 .01% 32pt, 3500-3600 kilocycles \$1.90, (five @ \$1.75 each), nets, (ten same \$1.45), 1700-3499 \$2.95, .005%, add 50 cents/crystal. Free info-order sheet. "Crystals since 1933." Bob Woods, W9LFS, C-W Crystals, Massfield MO 65766.

WANTED: HWA-17-1 dc supply. Sell: Vibronlex Champion bus. Jeff Hartley, WB8JW, 416 South Rosemont, Martinsburg WV 25401.

SWAN 250C and 117cc, \$295; Hallicrafters SR150 and PS150, \$295; Drake AC3, \$45. All in good condition. Philip Schwebler, W9CGG, 4536 N. 50th St., Milwaukee WI 53218.

MERRY Christmas from W4HHK, W4UDQ, and WN4ZAD. Box 430, Colverville TN 38017.

NC303 with manual, \$200. You pick up. WA2MOR, Larry Kaufman, 619 Mace Ave., Bronx NY 10467.

HEATH SB-301, all filters, \$250; Hallicrafters HT-40, \$25; Lafayette HA-350, matching speaker, cal., \$75. Stephen Cuccio, 75 Roanoke Pkwy., Saddle Brook NJ 07662.

WANTED: KFMR 4000 YCT at 300 Ma; power supply 2000 VDC at 500 Ma. K2ARQ, Edna Dr., Hyde Park NY 12538.

SWAN 500 all band transceiver, with Braille dial and jack for audible tuning aid, \$295; Swan 250, 6 m transceiver, with Braille dial, \$195; Swan 117XC power supply, \$85; Swan vox, \$17.50; Swastiana, all band mobile antenna, model 48, \$25; DP2 capacitor portable antenna, 2m-40m, \$17.50; D104 mike with stand, \$17.50; Vibrator transistorized compressor amplifier, \$17.50. All in excellent condition. Selling because of transfer from area. Jim Stevenson, 412 No. Mission Dr., San Gabriel CA 91775.

MANUAL for Radio Amateur Civil Emergency Service, \$2.00. Fagleaf Research, Box 237, Bethany OK 73008.

SIGNAL/one/Alpha 77: Cx7 factory modified to CX7A, \$1395; CX7A less than 3 months old, \$1795, new \$2395; Alpha 77, \$1795; Demonstrator, \$1595. Top trades. Payne Radio, Box 521, Springfield TN 37172. Days (615) 384-5573. Nites (615) 384-5643.

HALLICRAFTERS HT-40, NC-183D, HG-10B, relay, key, harmonics filter, 1 1/2 meter homebrew beam, 2 meter receiver and xmtr (surplus), \$225 or swap for 80-10 xcvr and P.S. You ship or pick up. WA3RVJ, 9 Summer St., Bradford PA 16701. (814) 365-5168.

NCX-3 and ac power supply, good condition, \$220; 14V Ct. never used, \$30. Richard Harker, WB9PWG, 1A St. James Ct., Chico CA 95926.

SB-34, \$225; HP-13, \$50; both in excellent condition, both used very little. Jay B. Rusgrove, W1LNQ, 80 Boy St., Bristol CT 06010.

HEATHKIT DX60B, \$55; Hammarlund HQ110A/C, \$125. Mint condition, extras. Matt, WB2ORO, Massapequa NY 11762. (516) 734-8168.

FOR SALE: HW12, \$65; U11 supply, \$30. Guaranteed in good physical and working order. J. Beavers, #6 Berkshire, Little Rock AR 72204.

COLLINS 511-4. Serial 3333, product detector, 3 filters, excellent, \$500 or best offer. W6SVX, 306 W. Amberst, Melbourne FL 32901.

SWAN 600C, 117XC supply both immaculate, \$400. Thos. Liland, W2RFU, 272 Cedarhurst Ave., Cedarhurst NY 11516. Tel. (516) 569-1687.

SELL: Collins KWM-1, mint condition, with 516E-1 dc supply and homebrew ac. Best offer. Ed Gerber, 1706 Willowbridge Rd., Joliet IL 60435. (815) 725-2900.

WANTED: LDP Lulu 6 meter receiver. WB4BED, John Keramidas, 1833 Lake Howard, Winter Haven FL 33880.

APACHE TX-1, excellent condition, \$75. Jim, W6GONK, (213) 793-9011.

MOST sell mint Drake 2B-2BQ, \$175; nearly new DX-60B wired PTT with \$25 worth xtals and mike, HG 10B VFO, \$80. Laurence Winted, 216 Taige Hall, Colledgeale TN 30715.

NOVICES! Here's your complete station: Hammarlund HQ-170A receiver, Globe HB-303 transmitter with crystals, relay, manuals. Best offer. Paul Chesloff, WB2ZJB, 123 Knoll Terrace, West Caldwell NJ 07006.

WA2OAK, oldest ant killer in the Bronx, sends regards and best wishes for a healthy happy New Year and extends same for Merry Christmas and Happy Chanuka to all and 73 in '73.

SACRIFICE: Good condition with manuals: Viking II (needs 807A), \$10; Heath DX-40, \$10; Heath VF-1, \$5; Heath HG-10B like new, \$20. Must pick up, no shipping. Following will be given to bona fide ham: superreg and power supply, 2 multiplier, line regulator, homebrew xcvr for parts, Hugh Maddocks K1U08, 27 Myers Ct., So. Burlington VT 05401. (802) 862-8771.

TV Camera. Solid-state. Self contained sync generator and microwave transmitter with subcarrier for audio channel. Ac or Nicad powered. Adjusts automatically to light changes, 10 to 1 zoom. Instruction manuals. Search videos, bars and circuit boards, \$900. W2RLG, 42 Union St., Matawan NJ 07747. Tel. (201) 566-9238.

FOR SALE: Drake L4 linear amplifier, mint condition, \$450; Johnson Ranger II transmitter, good condition, \$75; Johnson KV matchbox, good condition, \$75; Ameco Model PT preamp, mint condition, \$35. E. Carsh, K1UCY, 47 Klefer Rd., Southington CT 06489. Fone 628-6813.

KWM-1, 516F-1 ac supply, \$300; Apache TX1, \$50; Lafayette semi-auto bug, \$10; Simpson 458 scope, \$50; QST all of 65, 67, 68, 69, 70, 71, \$15 plus shipping. G. Jeck, W2CYU, 968 Vail Rd., Pampunary NJ 07054.

SELL: Heath SB-300 receiver with cw, am filters, \$175; DX-60B, \$50. Both in excellent condition and perfect working order with manuals. WB4WME, 106 Colby Rd., Oak Ridge TN 37830. (615) 482-1836.

LAMPKIN professional two-way frequency meter 105B, \$95; mint National HFS with power 27-255mc, \$75; Amplydne 621 transmitter 6-2-220, \$175; trade VHF/UHF gear, list SASE. WA4PI, Box 4095, Arlington VA 22204.

RTTY-(2) CV-89 converters, (1) CV-89 comparator, all for \$300. Model 15 page printer, \$50. Will ship. WA1KNE, 7 Thierault, Salem NH 03079.

HEATHKIT HW-12, HP-23, HRA-10-1 calibrator, GH-12A microphone. Best reasonable offer. Blair Bates, WA3BSV, 532 Locust, Hazleton PA 18201.

HEATH HW101 with cw filter, HP23A, HDP-21A, SB600, \$325. WB2KZH, 30 Glenn Ave., Lakewood NJ 08701. 364-6174.

WANTED: Two 60W ac power supplies for Motorola base station. C.E. Brown, WB4OOT, Cataula GA 31804.

N.Y.C. Hams Needed: Volunteers to operate new modern KW amateur station part time during Tue-Sat 10-4 Sunday 1-5 demonstrating to public. Have time-want to help young people? Here's your thing - call Bob Reiley, Hall of Science of the City of New York, Box 1032, Flushing NY 11352. Phone (212) 699-9400.

HW-17 with dc supply and fm adapter, \$150 or offer; HR-10 with CALL, \$65 or offer. Bill Thomas, 1855 E. 18, Loveland CO 80537.

HALLICRAFTERS SX 62-A general receiver, 6 bands includes broadcast, FM and calibrator, 550 MC. to 108 MC. Excellent condition, \$150. K1PNL, Tel. (203) 583-5433.

MUST sell for college Heath DX-60, \$55; HR-10B, \$70; HG-10, \$25. All in excellent condition. WB2DZK, 110 Buttecrop Lane, Huntington NY 11743.

JOHNSON Invader 2000, \$450; Hallicrafters Rec. SX 115, \$225; HRO 60 Rec., \$200; Johnson phone patch, \$15, all before like new. Hallicrafters Rec. S-38, \$20, antique GE wire recorder Model 51, \$25, and others; Bausch-Lomb Ballomatic 500 35 mm projector, \$50. W6IGI, Harold Treloar, 4207 Calle Mayo, San Clemente CA 92672.

SACRIFICE: SB-400 with all crystals, SB-301 with cw filter, SB-200 with new finals, Shure 444T with pre-amp, new! All cables supplied. Only \$550 (package only). Call or write J.L. Painter, WB4ZUG, Ga. Tech., Box 34555, Atlanta GA 30332. Tel. (404) 894-6097.

ENTIRE station: HW101 and HP23A factory aligned, \$300; HD10 keyer, \$20; complete two meter fm rig; Regency HR-2A, Hustler 5/8 mobile whip and ring, \$230. Offers welcome. Jim Koehler, WB8FEZ, 2602 Cramer Hall, Ferris State College, Big Rapids MI 49307.

DRAKE R-4 receiver with MS-4 converter, \$290; Elmac AF-67 with homebrew ac supply, \$75; BC-312, \$30; Morrow 5BR2 converter, \$25. W9MRA, David Lippman, Rt. 3, New Richmond WI 54017.

GONSET G-50 6 meter 50 watt am xcvr, built in ac supply, VFC supply, with mike and P1 filter. Excellent condition, \$135 will ship. Lewis Schefler, Rt. 2, Palaski Estates, Waynesville MI 65583. Phone (314) 336-5665.

LATEST Collins S line kilowatt complete station with tower, etc. Half price. W2BYQ, 8 Somerset Dr., No., Great Neck NY 11020. Phone (516) 487-1931.

2 METER marker luxury with mike, ac and dc cords. Mint condition. Moving from 2 meter area. \$200. Karl Moellmer, 46-269 Housa St., Kameo HI 96744.

LAFAYETTE HA-410 abt 3 hrs. on the air. Perfect and in original carton with schematics. Really mint. WA9VPP, Box 300, Baxter Springs KS 66713.

VIVITAR 90-230 mm T-4 zoom, Minolta adaptor, case, excellent. Sale or trade for ham gear. WN8GLS, 221 West Second, Chillicothe OH 45601, (614) 773-1434.

IONUE IC-20 and IC-3P supply. New in May. Excellent, with xtal, mic, etc., \$250 or offer? WB2AIO, Dennis Bookmiller, 309 Roycroft, Snyder NY 14226.

"HOSS Trader Ed Moory" says he will not be undersold on Cash deals! Shop around for your best price and then call or write the "Hoss" before you buy New Regency HR-212 two meter FM transceiver, 20 watts, amateur net, \$259; Factory authorized dealer for new Drake Collins, Hallicrafters, and more; write for quote. New Rohn 50 ft. foldover tower, preaid, \$239; New Mosley CL-33 and demo Ham-M rotor, \$215; Used equipment: Like new "demo" Collins 75S-3C, \$795; "Perfect" L-4-B linear, \$525; MN-2000, \$149; R-4-B, \$349; T-4-XB, \$375; Ham-M, \$85. Moory Electronics Co., P.O. Box 506, DeWitt AR 72042. Tel: (501) 946-2820.

CASH for srb gear, working or in need of repair. Elvin Miller, 5005 Indiana, Ft. Wayne IN 46807.

SELL: All good condition: SB-110A with PS, \$275; HT-40, \$60, G-50, \$100; CN-50 with PS, \$50; SB-610, \$75; SB-620, \$125; Telex 6M 6 Ele., \$25. K8ZUK, 812 Kossuth St., Sidney OH 45368.

DRAKE TC-2, SC-2 converter and CPS-1 p/s in CG 1 console. Mint with book, original boxes, \$325. Fred Copeland, WA2EDC, 46 Strathmore Dr., Cherry Hill, NJ 08003.

GOING mobile. Sell Collins 32S3, 516F-2, 75S-3, 312B-3. Excellent condition, \$900. Roy Bennett, 34 Holly Court, Conroe TX 77301.

SELL: Swan 350, 117XC PS, new finals, \$295. Will ship prepaid original cartons. Mort Feldberg, 8902 Mansfield, Morton Grove IL 60053.

HEATH DX-60B with HG-10B VFO. John Arthur, WA2LMZ, 47 Summit Rd., Murray Hill NJ 07974. (201) 464-1205.

FREED-Eisemann antique receiver with 01A tubes for sale, make offer. K4JA, Box 187, Orange VA 22960.

HEATH for sale. SB100, SR200, SB600, AP23A, HP13A, GH12A and HD9A, \$610. WA1BSX, (203) 354-3408.

SELL: Hammarlund HG-110C with speaker, excellent condition, \$100. L. Boyd, 112 Colby Rd., Oak Ridge TN 37830. (615) 482-2874.

SELL: Heath DX-60B and VF-1 (VFO), \$80. WEBNAS, Pete, 2354 Twin Lakes Dr., Ypsilanti MI 48197.

SWAP: Brand new Regency HR-2A for Heath SB-401. K5SBR, Box 3037, Galveston TX 77550.

SELL: Linear amplifier, pair 813's in G.G., SWR meter, antenna tuner mounted in rack, plus 3000 watt power supply. "Homebrew" - asking \$175 for all. Also, complete Collins S-Line station, 32 S-1, 75 S-1, 516 F-2 pwr, 312 B control, SM-1 mic, \$675 furw, Herb Smith, 31099 Pinetree Rd., Cleveland OH 44124.

SALE: Hewlett-Packard 803A VHF bridge and HP 417A VHF detector, measures impedance magnitude and phase from 50 to 500 MHz, new condition, \$275; Tektronix Type H scope plug-in, \$65; Dumont 5-inch scope camera, Polaroid back, \$95. WA3HPZ, Wachs, 14415 Pecosan Dr., Rockville MD 20853.

SALE: Drake T4XB transmitter, R4B receiver, ac power supply and MS-4. Good condition, \$700. K4FKR/4, 626 E. Walnut St., Stateville NC 28677. Phone (704) 872-6761.

SB-400 with xtal pak, 200; NC303 revr with 6M conv and xtal cab., \$185. Mint condition, manuals. WA9ZLL, 3061 Avalon, Springfield MO 65804.

COLLINS 32S-3, \$600; 75S-3A, \$450; KWM-2, \$625; 516F-2, \$75. John Blackman, WB2DOE, (201) 568-1264.

FOR SALE: Galaxy R-530 receiver, all filters, like new, \$750; Collins R-300UR receiver, excellent, \$650; Hammarlund SP-600MX receiver, excellent, \$250; wind velocity indicator complete, \$25; Ameco PCL preselector, \$20; 140 ohm, 3K 5% non-inductive resistors, \$15 each; TMC dummy load 5kW, 70 ohm, \$35. Many high power linear components, vacuum variables, transformers, meters, etc. U.S. import duty exempt on all items. M. Powell, Jr., VO1HH, Box 5000, Carbonear, Nfld., Canada.

DRAKE TR3-AC3, excellent condition, break-in cw, receiver offset tuning, \$400 or best offer. James McAlister, 10 Leacrest, No. Little Rock AR 72116.

SELL 75A4 sn 1040, \$285, U ship. Dale M. Johnson, 15800 Buchala Rd., Lot No. 78, Burnsville MI 55377. (612) 435-8895 mornings.

PRINTED circuit negatives made. SASE and quarter for information/prices. P.C. Negs Systems, 186 80th St., Niagara Falls NY 14304.

DRAKE R4B, \$350; Drake 2MT, \$100; Heath HM-15 Tunnel Dipper, \$15; Ten-Tec PM1, \$25. Trede, Box 236, Setauket NY 11785.

SELL: Lafayette HA-460 6 meter transceiver, \$85. Also Lafayette HA-650 portable 6 meter transceiver with batteries and ac supply, \$75. A. Hughes, 145 Pinckney St., Boston MA 02114. (617) 742-0029.

CLOSING Out Sale! All mint condition with manuals. (Estate, W0LZ), Pickering K-B-1 code typer, \$175; R-4B and T-4-XB with ac, \$700; L-4B, \$400; MN2000, \$85; Galaxy V with ac \$225; Marker Luxury 2M FM mobile complete, \$225; Heath GR-64, SB-620, HO-10, IO-2, J6-72, J6-102, JT-24, JT-12, J6-88, JT-21 and more. SASE for complete list. M.O. or certified check. Shipping extra. Ruby B. Swanson, Exec., 193 20th Ave., S.W., Cedar Rapids IA 52404.

QST 1931 - 1972, CQ 1953 - 1962. SASE for list. Pre-1947: 50c, later 25c each, plus shipping. Rountree, 4905 Westfield, Austin TX 78731.

FOR SALE: Mini-Products beam 40/10 meters, \$25; NC-200 ssb transceiver, \$150; ac power or dc power pack for same, \$25; VHF 1 watt walkie-talkie with xtals for 146.94/146.94 and 146.34/76, \$115; Gladding 25 with latest factory mod., \$200. WANFS, Box 186, Terra Ceia, FL 33591.

BOOKS: Brand new, cost me over \$55. (SAMS) Ref. data for radio engineers (5th edition); (RCA) Phototubes and photocells, power circuits dc to microwave, linear integrated circuits, hobby circuits manual; (Odyssey) Dictionary of electronics signs, symbols, and abbrev. (747 pages). All postage paid, 1st MO, for \$37 takes all. All will sell separately, write R. Schaefer, K6OSB, Box 215, Lone Pine CA 93545.

SIMPSON Model B 2M-FM transceiver, \$225. WA2TMT, NNJ, (201) 667-8689.

NEW HQ-215, \$245. WIKO, 211 Circuit St., Hanover MA 02339.

EQUIP. for sale: HW101 ac dc power supplies, min. \$275; complete 6 meter station HR170, HX30, Gon913, min. \$175; BC 348 rec. E. Miller, K2JPZ, MO5-8529.

WANTED: unused connectors. Air Industry, 5643 W. 623rd Place, Chicago IL 60638.

160 meter thru 10 meter 100 w input cw can be modulated g 90 with ac pwr, mint, \$50 or best offer. Sell HW32 with ac pwr and PTT turner mike, mint, \$100 or best offer. Box 8352, Savannah GA 31402.

100 foot self supporting galvanized steel tower, original cost, \$6000, \$500 FOB Old Forge, NY. Johnson Viking 2(120 watt phone or cw) with matching VFO, \$75 FOB; Hallicrafters SX 28 radio receiver with matching speaker, \$95; RME VHF 152A (2-6-10 meter converter), \$35; Globe King 500C (500 watt phone and cw), \$100 FOB. W2TN, Fred Liddle, Old Forge NY 13420.

SELL Heath SB200, 300, 400, 600, 610, 620, 630. Excellent condition. Make offer(s). Sell antique wheatstone perforator WPE-3 in walnut cabinet, 3 rolls tape. Also Boehme tape head puller Model 3E and base drive, took kit, spare parts. Four instruction books, George Sanner, W5LSR, Sparks MD 21152. (301) 771-4845.

YAESU FT-101 owners - Present and prospective, Join the non-profit international FOX-TANGO Club, Send stamped, self-addressed envelope for information and sample Newsletter. Milt Lowens, WA2AOQ, 3977-F Sedgwick Ave., Bronx NY 10463.

FOR SALE: Heathkit condenser checker, \$9; Eico tes. capacitance comparator bridge Model 950, \$9; Eico Model 377 audio generator sine and square wave, \$20; B and W frequency meter Model 300, \$25; Model SG83A Standard signal generator, \$10; Monitoraid Model DR 200 and speaker, \$60; Collins FM2A and supply Serial 170, \$675; SB132 mobile mount, \$25; SB3-DCP 12VDC to 110 ac at 1000 watts, \$90; Johnson standing wave indicator \$20; Shure mobile mike 505C, \$10; Dumont oscilloscope 274, \$60; Webster 1 KW mobile antenna 20 meter coil, \$10; 80 meter coil, \$10. All prices FOB. William Kimball, 61 Hartford Ave., Hopedale MA 01747.

FOR SALE: SB-200 and manual, \$150. WB4LKK, Box 17552, Tampa FL 33612.

DRAKE Receiver R-4B, mint condition, \$325; Hallicrafter Trans HT-40 75W, \$20; Knight SWR Meter, \$10; Low Pass filter Drake 1E watts, \$12; 2 way Mobil Trans. Rec. Motorola converted to 2 mtrs with phone patch 12V Model 13382 2000A, \$100. John W. Randall, WB4LIF, 5361 Trousdale Dr., Nashville TN 37220.

WHOLE station for sale includes: Yaesu FT Dx 400 w spkr, Shure 444-T mic, Ham-M rotor, 60' Rohn tower, TA 33 Jr, RGSB and guy wires, FD-15 phone patch. All less than one year old, in excellent condition, \$825 will consider breaking up station. K10GA, A.P. Milone, 19 Mt. Vernon St., West Roxbury MA 02132. (617) 325-0082.

SB-200 for sale! Spare tubes, KIJJH, Vince, 6 Autumn Lane, Plainville CT 06062. Tel. (203) 747-8335.

VESELE bozdne praznike in sreco novo leto 1973 vsem slovenskim radio amatierjem srom sveta voci. Jozse Zelle, W8FAZ, 1227 Addison Rd., Cleveland OH 44103.

COMPLETE KW station now in use. Drake T-4X, R-4A, MS-4 speaker, Henry 2K-2 linear, Mosley TA-33, Tr-ex self-supporting winch 30 foot tower, Ham-M rotor, Johnson Viking phone-patch, Calrad DM-21 mike, 24 hour digital electric clock and "on the air" sign, B&W KW filter, cable connections, manuals. Must disassemble and pick up, Owner Florida bound. All only \$1200. Excellent condition. Lieberman, W2ZNC, 53 East 38th St., Paterson NJ 07514.

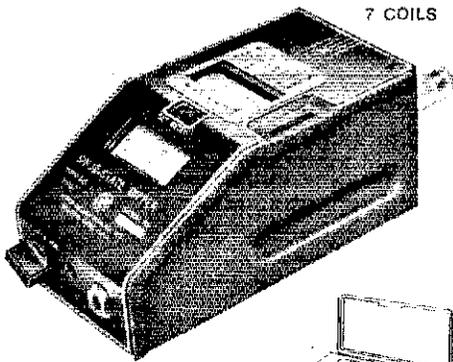
SELL: DX 100/SB-10; DX60A/HG10; HQ110C; 6N2/VFO, Mod. Pwr; HW 17A/Preamp/Filter TR 106/VFO. All good, some excellent. Make offer, WA3EY, 12703 Cedarbrook Ln., Laurel MD 20810. (301) 776-8120. Will deliver to Baltimore-Washington area.

MATCHED combo KWS-1 and 75A4 high serials top condition, one owner, \$975. One Hewlett-Packard 524-D counter, \$500. Cash and pickup only. W2ADD.

SELL: Hallicrafters SR-400 transceiver and ac supply. Best offer/no trades. JSH, WA2OHP, 29 Maple St., Brooklyn NY 11225. (212) U6-7782.

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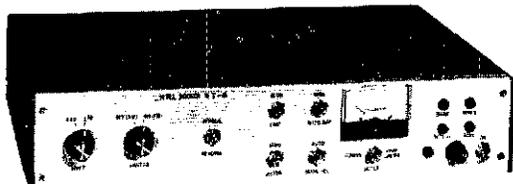
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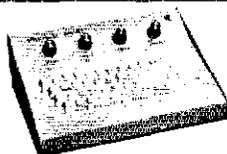
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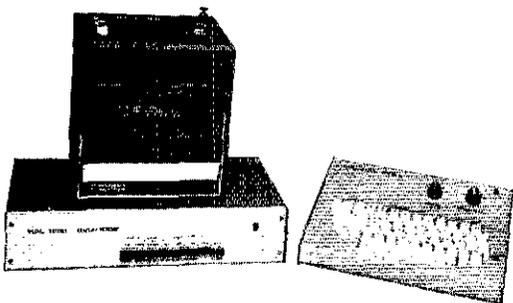
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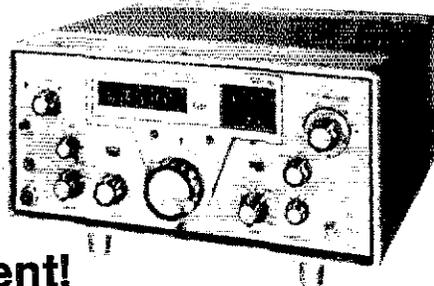
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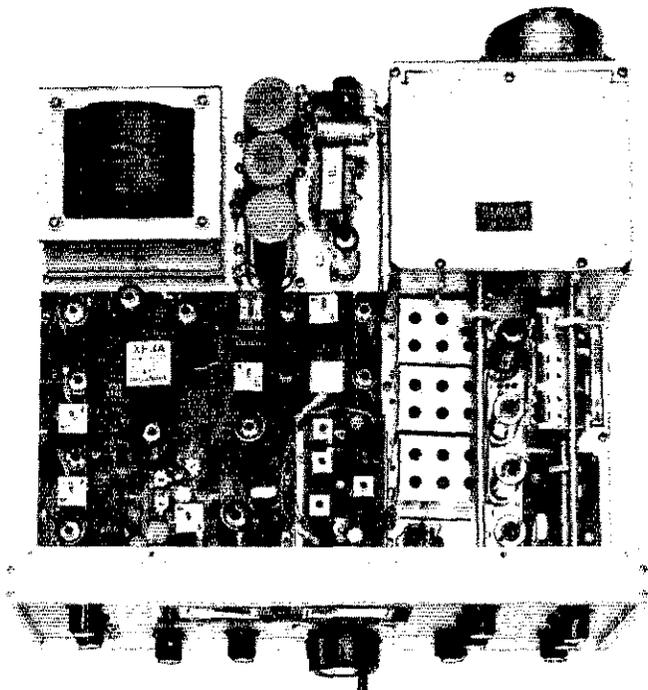
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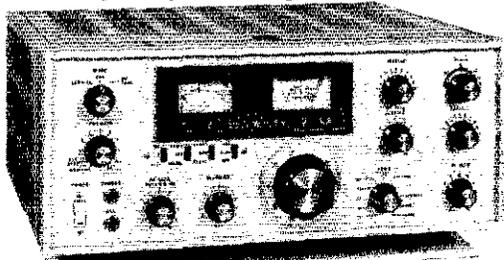
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