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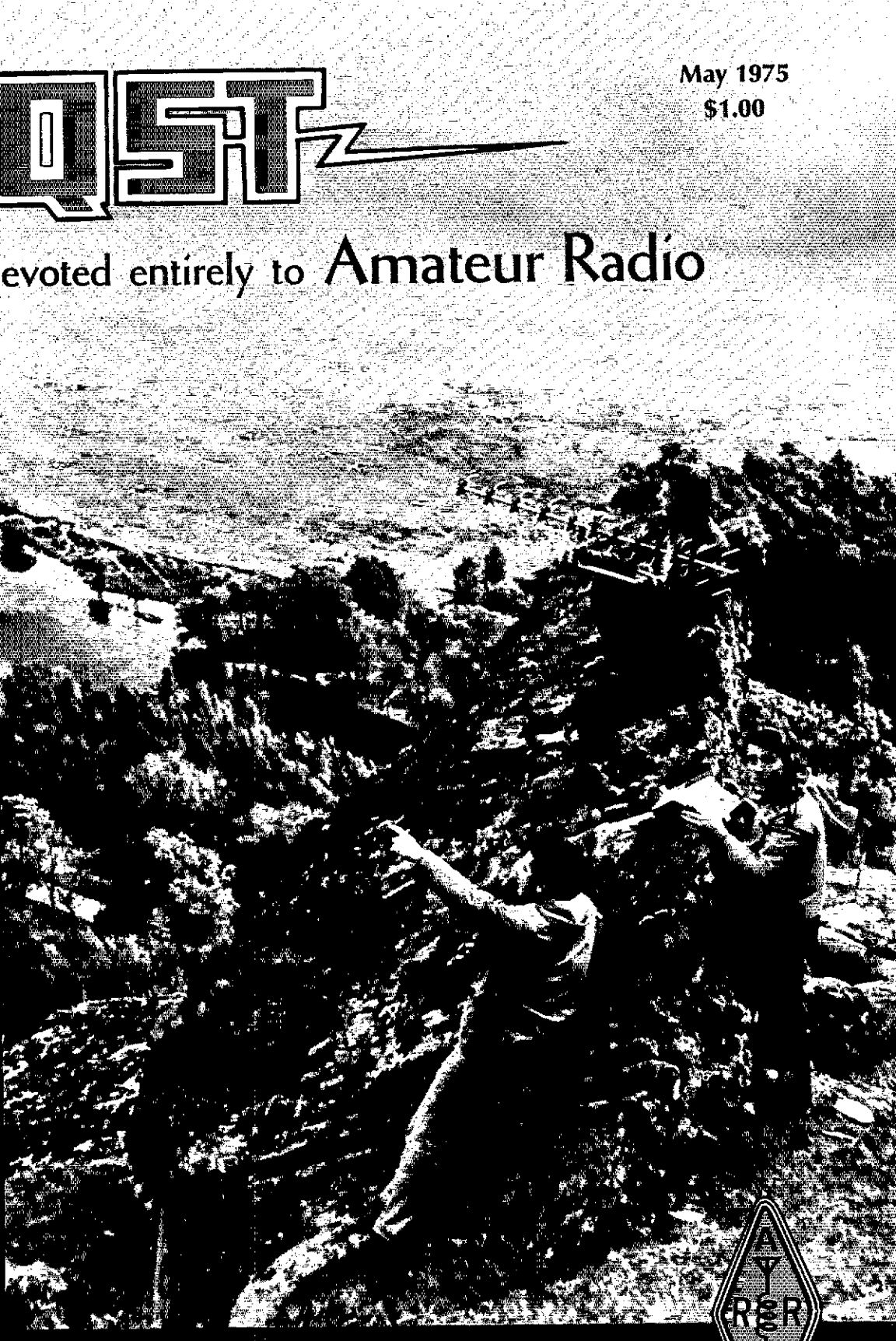

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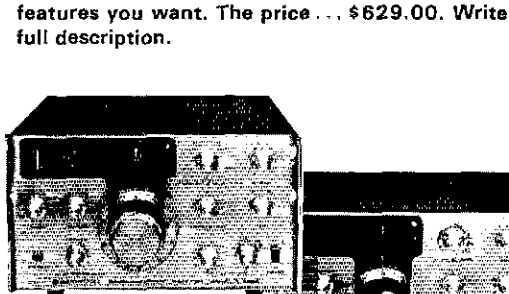

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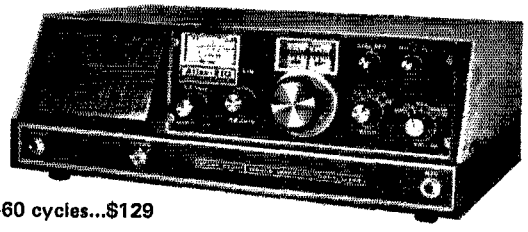

FREQUENCY RANGES, Atlas-210: 3700-4050, 7000-7350, 14,000-14,350, 21,100-21,450, and 28,400-29,100 KHz, Model 215 deletes 28,400-29,100 band, and instead covers 1800-2000 KHz.
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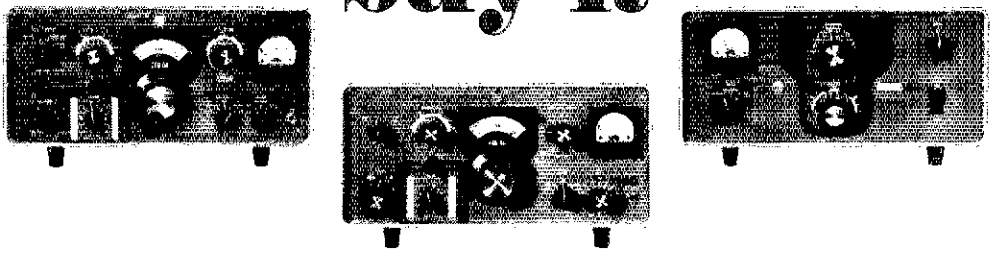

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QST

May 1975

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OUR COVER: Amateur radio aids education in Rannoch, Scotland. See page 47 for details on the Oscar Education Program.

— CONTENTS —

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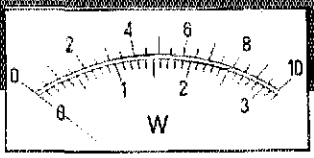	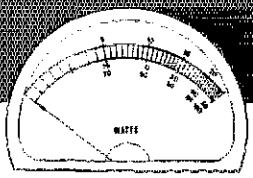
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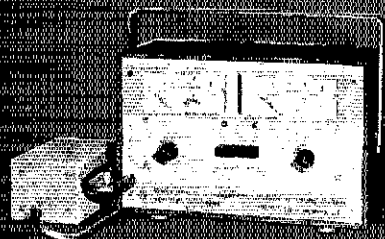

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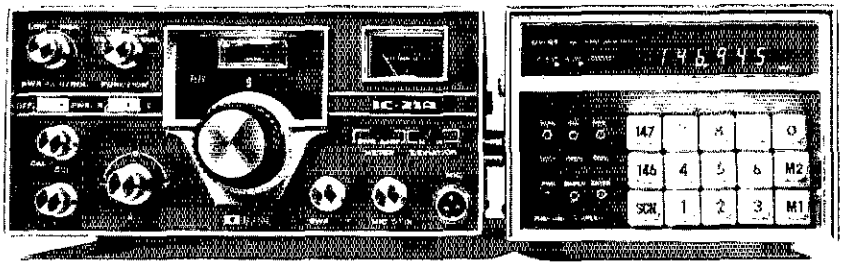

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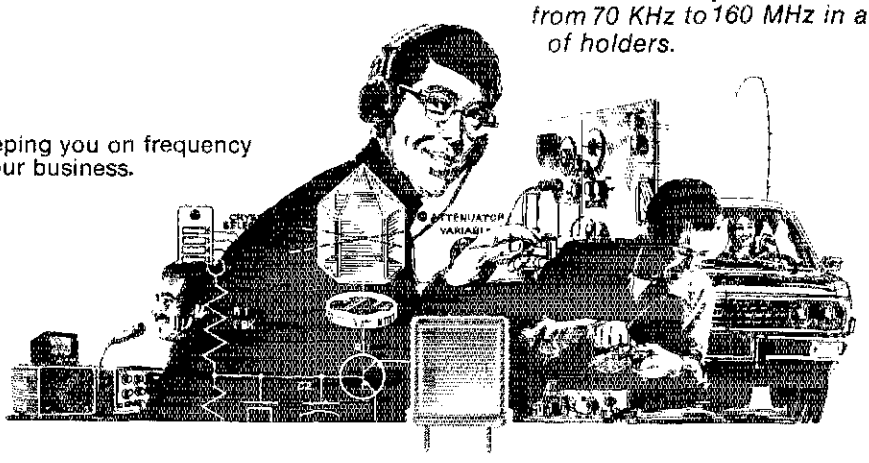

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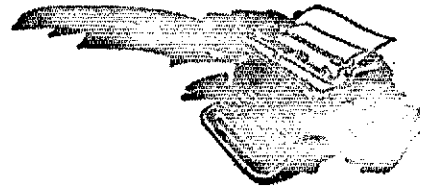
* Member Executive Committee

"It Seems to Us..."



FRAGMENTATION AND TOLERANCE

AS YOU READ THIS, the Hq staff (with some edp assistance) will be in the midst of tabulating the opinion survey, copies of which were mailed to the entire U.S. membership in early March. At its meeting in mid-May, the Board will have an opportunity to consider the results of this opinion survey and thus be guided in seeking an official ARRL position with respect to the restructuring proposals (Docket 20282) announced in mid-December by FCC. Results from these actions will likely set the pattern for amateur licensing in the U.S. for a number of years to come. The analysis of the survey and the subsequent response to the Commission proposals will not be easy tasks, because of the wide variety of interests and enthusiasms displayed by our members.

Indeed, one characteristic of amateur radio that continues to cause us some concern is fragmentation, the splitting up of amateur radio into a myriad of narrow interests which sometimes divide us internally and weaken the strength and unity which we must display externally.

This fragmentation manifests itself in many ways. Editorially, *QST* already has a number of columns for specialized interests, such as DX, vhf, YLs, repeaters, traffic, and so on. In the past there have been other special columns which existed for a while and then fell by the wayside. During the course of a year we usually receive several requests that *QST* contain columns for Novices, television, teletype, specialized nets, Canadian news, radio control, etc., etc. And, of course, the content or suggested content of *QST* is indicative of the overall interest and activity of our members.

In one respect, this fragmentation is healthy. Through an exercise in semantics you can rework the word "fragmentation" and come up with the explanation that one of the strengths of amateur radio is that it has many different facets, and it has appeal to people with a wide variety of interests in communications. This is indeed a valid argument, and one we generally make when explaining to a layman why amateur radio can be similarly attractive to peasants and kings, ragchewers and experimenters, introverts and extroverts.

So, it is not that aspect of fragmentation that causes us concern.

It's normal for people with similar interests to cluster together, so it's not surprising that within amateur radio we find phone patchers, service-net devotees, DXers, and so on, occupying different parts of our hf bands, and moonbounce, television, and fm enthusiasts doing the same at vhf. That doesn't bother us. What *does* bother us, and what *does* weaken the image of amateur radio that we present to the world, is the on-the-air intolerance exhibited by some of us for those who have different interests from our own.

Okay, so not everyone is interested in what WestCARS, EastCARS, MidCARS, and the other service nets are trying to accomplish; does this mean you should get in the way of the hundreds of amateurs who *are*? You say you're not interested in 160 or 75 meter DX; does that give you the right to have a local ragchew in the middle of the narrow slices of those bands agreed upon internationally for this purpose? So the mode you're using on 420 MHz is incompatible with what other people are doing in your area; should you park right on top of them instead of finding some other place to operate in this 30-MHz-wide band?

Presumably there is some sort of obscene delight in spoiling for others the enjoyment of their (our!) hobby. But this venting of our personal displeasure over the operations of a group that we don't happen to be a part of can have serious side effects. The long-term consequences of such activity can be far more damaging to the amateur radio service as a whole than the short-term "fun" of interfering with someone else.

We face right now and in the years ahead ever-increasing pressures on our frequency allocations. As we write these lines, we still do not know the final outcome of the much-discussed proposals to take away a couple of Megahertz of our 220 band. There have been attempts on the 420 band. There will be more. Use of the vhf is increasing on the part of all services.

(Continued on page 76)

League Lines . . .

Now and then a radio club, wishing to spread the word about amateur radio, wants to provide a complete set of League publications for the local library. Good news! We've got a special deal for you! Your club can get a complete set of ARRL publications for this purpose at half price. Three conditions: (a) Yours must be an ARRL affiliated club (b) the library must supply a letter agreeing to accept the manuals and add them to their shelves, and (c) $17.50.

Note a change in Field Day scoring this year, as recommended by the Contest Advisory Committee under the chairmanship of K7NHV. Two points per cw QSO, to encourage greater use of that mode.

An address change for the District FCC Engineer in Charge, New York City. He's now at 245 West Houston Street (3rd floor) NY 10014. By subway, take the 7th Ave. IRT and hop off at Houston St.(local). By phone, 212-620-5747.

"Happenings" this month carries details on the special Bicentennial-year prefixes which the FCC is making available for 1976. Two important points: their use is entirely voluntary and requires no application or notification to the FCC, and they are available only for the calendar year 1976. Don't jump the gun!

Our major preoccupation at Headquarters these days is the membership survey on restructuring, undertaken to advise the Directors on the members' attitudes and opinions in advance of this month's Board meeting. The response from you, the members, has been nothing short of overwhelming! Page 94 gives a glimpse of the action.

During the month of May, French amateurs will be using the special prefix TK in place of the usual F to celebrate the fiftieth anniversary of the founding of the REF.

An additional examination opportunity will occur Saturday, May 31 at Rochester during the Western New York Hamfest. Exams with code tests at 10 a.m.; others at 1 p.m. Applications marked WNY Hamfest with filing fee of $4 should be filed with FCC, Room 1005 Customhouse, 2nd and Chestnut Sts., Philadelphia, PA 19106 by May 23, 1975. Other hamfest info in the "Hamfest Calendar," this issue.

The Foundation for Amateur Radio, Inc., a non-profit association supported by radio clubs in the Greater Washington, D.C., area, offers three scholarships each year. Details can be found on page 66 of the April issue. Deadline for filing applications is June 1.

Thanks to the volunteer recording work by ARRL Vice President W4KFC, The Radio Amateurs Operating Manual is now available on cassettes (15/16") from the Regional Libraries of the Library of Congress. Ask for RC-7821. The current ARRL License Manual should be available shortly.

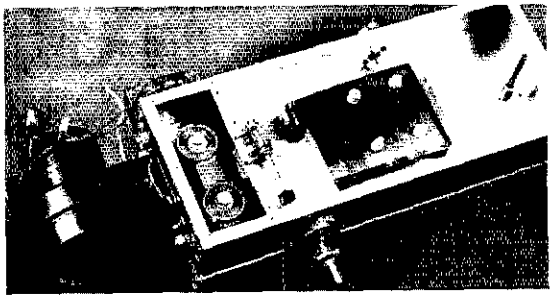
A caution. Those of you newly upgraded. Don't operate under your expanded privileges until you have the new license actually in hand!

One of our IARU societies recently asked to borrow a copy of "The Ham's Wide World, but the shipment ran into trouble with the overseas customs people. Seems that they didn't quite understand the shipping papers, and were looking inside the package for one film, one ham (bacon), and one radio. Held the film up in customs until the missing items could be accounted for!

An aspiring young amateur in Virginia, upon receiving announcement of an organized amateur radio licensing course, exclaimed, "The news was received like a cup of cold water on a dry and dusty day." Has YOUR club organized ITS licensing class yet?

Quote of the month. From the president of an enthusiastic new group, the Northwest Ohio Amateur Radio Club, "How can I lead them when they're all pushing?"

A Parallel-4CX250B Amplifier for 144 MHz



Two parts of the three-section top plate have been removed here to show the tube placement (left) and the plate-line bypass capacitor (right). The homemade Teflon bolts that hold the capacitor assembly together are obvious. The output-coupling probe is mounted under the portion of the top cover still in place, and the shaft for adjustment of coupling may be seen between the tubes and the coaxial connector. A vernier drive is used to turn the plate-tuning shaft. The vertical shaft on the extreme right is used to adjust the grid-tuning capacitor, C1.

BY STEVE GROSS,* W9OJI

AFTER YEARS of difficulties with push-pull amplifiers on 144 MHz the author decided to explore a different approach. The principle used by K2RIW in his 432-MHz amplifier appeared to offer solutions to instability and load-balance problems.[1] This parallel-tube design was altered to work on two meters, and the results have been most gratifying. "Push-pull," may you and your inherent problems rest in peace!

The reader should review the information presented by K2RIW, especially the part concerning air flow and cooling. This unorthodox (for amateurs) system has proved to be superior to established procedure. There are electrical advantages, as well as mechanical, in the parallel-tube arrangement, all of which are fully explained in the referenced literature.

Enclosure Assembly

A pair of aluminum chassis (3 × 7 × 17 inches) are bolted together, one inverted on top of the other, to form enclosures for the grid and plate circuitry. Bottom plates are used to complete the shielding, with the one on top being cut into three pieces. One piece covers the tubes and provides support for the Mylar air-exhaust chimneys. Another piece serves as a mount for the output probe and connector, and the third covers the remainder of the compartment. The bottom plate (over the grid compartment) has a 1 × 2-inch hole near the tubes to allow some air flow through the sockets. The upper, or plate, compartment is pressurized in the same manner used by K2RIW.

Input Circuitry

A half-wave line is used for the grid circuit, fabricated from .032-inch thick brass strip. This material is available from many hobby shops in 10-inch lengths and various widths. Since the grid line is 14 inches long (Fig. 2) it is necessary to solder two lengths together (overlapping) to obtain the proper size. Tuning is provided by a 50-pF variable capacitor located at the end of the line opposite the tubes. An insulated (nonmetallic) shaft from the grid-tuning capacitor extends up through the plate compartment for access.

A capacitive input probe is made from a piece of pc-board material. One end of the probe is soldered to the center connector of a BNC fitting and the other end is held in position by a small insulating screw that is threaded through both the probe and the grid line. The author used a nylon screw, but in light of the poor quality of this material in an rf field, perhaps Teflon would be a better choice. More on this later.

An rf choke is connected near the center of the grid line and the lead is brought out through the chassis wall by means of a feedthrough capacitor. This capacitor was made from a piece of pc board, insulated from the chassis by means of a sheet of .007-inch thick Mylar film. The sandwich is secured by using Dow-Corning silicone cement.

Since the spacing between grid connections is limited by the size of the sockets, this dimension is greater than the width of the grid line. A strip of

* ON127 Nepil Ave., Wheaton, IL 60187.

[1] Knadle, "A Strip-Line Kilowatt Amplifier for 432 MHz," *QST* for April and May, 1972.

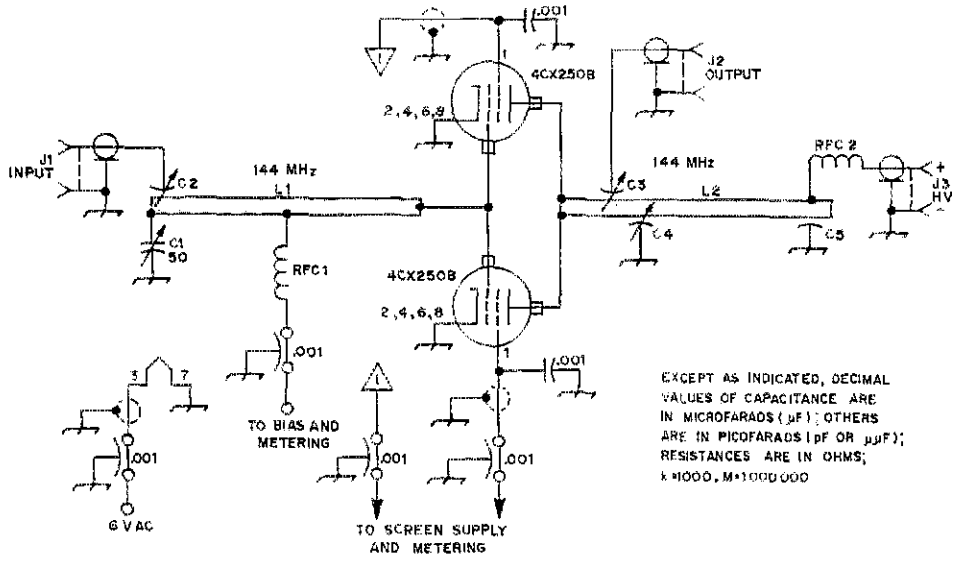


Fig. 1 — Schematic diagram of the parallel-tube amplifier for 144 MHz. Any of the plate, screen, and bias supplies and metering circuits commonly used with 4CX250 tubes may be employed with this amplifier. C2, C3, C4 and C5 are fabricated as described in the text and drawings. J1 is a BNC connector. J2 and J3 are uhf coaxial connectors.

brass, 1/2 × 4 inches, was soldered across the line at the grid end to make connection to the sockets.

Disk ceramic capacitors are used at the sockets to decouple the screen and filament supply leads. Shielded wire is used between the socket connections and the feedthrough capacitors. The screen leads are separate to permit independent metering of current for each tube.

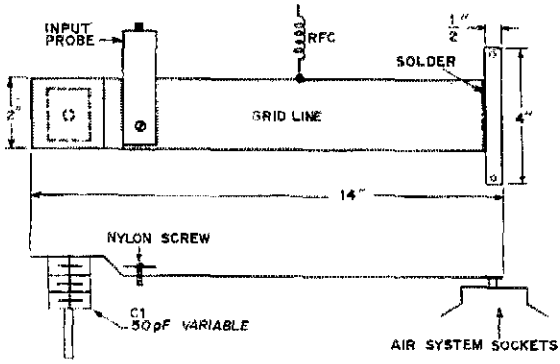


Fig. 2 — A half-wave grid line is made from strip brass. A variable capacitor is connected to the end opposite tubes for tuning purposes. The small strip of brass soldered to the tube end of the line is necessary to extend the width to connect to the socket grid terminal.

Plate Circuit

A quarter-wave plate circuit is used in the amplifier because of lack of space for a half-wave version. The plate line is fabricated from two pieces of .032 × 4 × 10-inch brass. A three-inch piece is cut from one end of one strip and saved for use as a plate-tuning vane. One end of a 4 × 10-inch strip is filed or cut to accept the finger stock, as shown in Fig. 3. The 7 × 4-inch piece is bent as shown in Fig. 3B to form the grounded portion of the plate line. A 3/4-inch lip permits bolting this part to the chassis by means of No. 6-32 screws.

A bypass capacitor for the plate line was formed by placing two .007-inch-thick sheets of Mylar between the upper and lower brass strips. This sandwich is held together by means of 1/4-20 Teflon bolts and nuts. These bolts were homemade from Teflon rod and the use of a suitable die. Nuts can be fabricated by drilling and tapping disks cut from a larger size of Teflon rod. A similar technique can be used to make the small-diameter screw used to adjust the grid-probe position, as mentioned earlier.

To increase the dc path between metal sheets, the holes in one piece should be drilled larger than in the other — 1/2-inch diameter for example. This will minimize the possibility of breakdown through the holes in the dielectric. Metal washers are not used here for the same reason.

High-voltage dc is connected to the hot side of the plate bypass capacitor through an rf choke

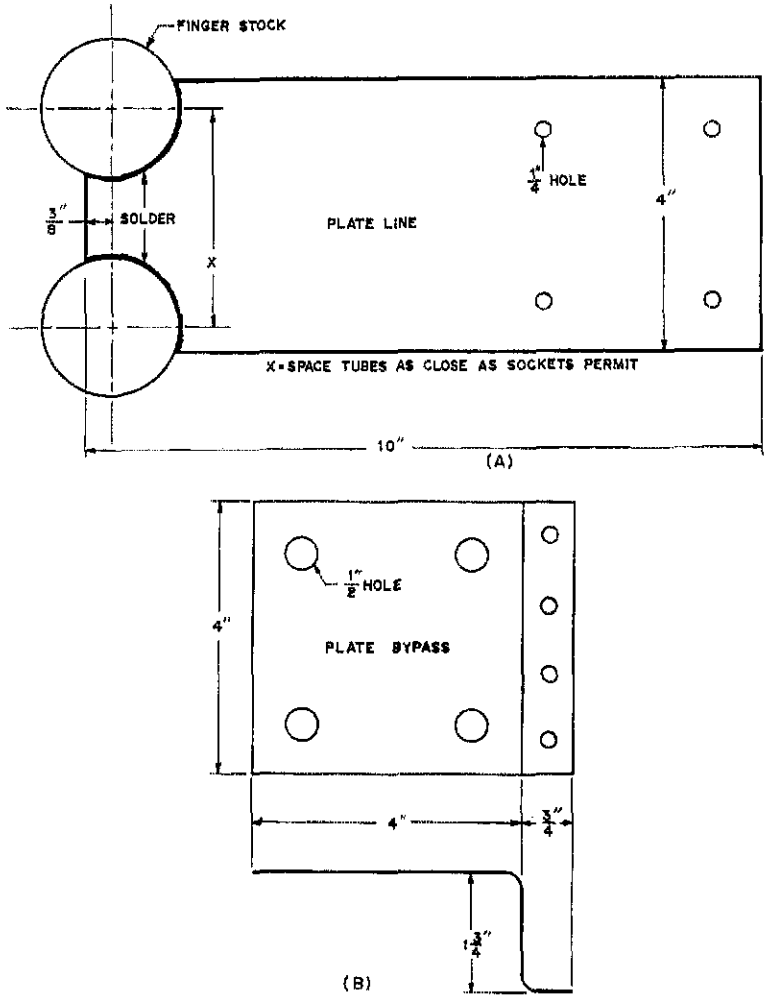


Fig. 3 — Dimensions and layout of the plate line at A, and the grounded part at B. Center-to-center spacing for the tube anode connections will depend upon the sockets used; with SK-610, the distance will be approximately 2-3/4 inches. If SK-620 or SK-630 sockets are used, the spacing will be nearly 2-1/2 inches. In any case, the dimension should be checked with the sockets in place.

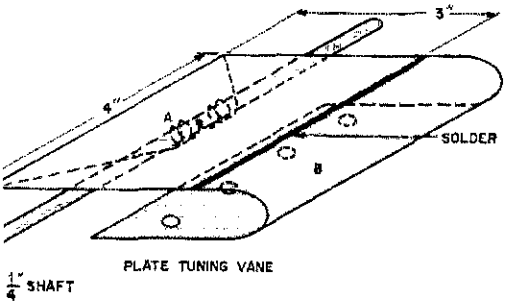


Fig. 4 — The plate-tuning vane is assembled by soldering a piece of thin flexible metal to a piece of brass stock. The thin material provides a good rf path to the chassis. Note that the fishing line is wound in or let out by both ends of the shaft simultaneously, thus pulling on both corners of the vane at the same time.

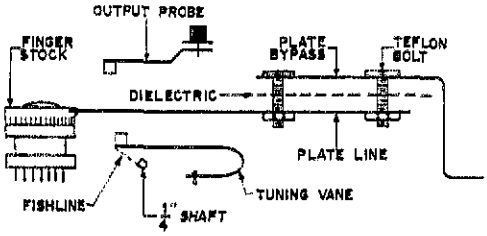


Fig. 5 — Assembly detail showing the relative positions of the various parts of the plate line and tuning arrangement.

consisting of 20 turns of No. 18 enameled wire, close wound on a 1/4-inch Teflon form. The power supply end of this choke is connected to a uhf coaxial connector mounted on the rear wall of the compartment. Coaxial cable is used to carry the plate voltage from the supply to the amplifier. No bypass capacitor was used on the high-voltage line, but one could be made from pc board and Mylar film if desired.

The plate-tuning vane is a variation of that used by K2RIW. Shown in Fig. 4, the 3 × 4-inch piece of brass left over from the plate line is soldered along one edge to a piece of thin metal which provides a flexible connection to the chassis. The thin metal serves as a spring as well as an rf path to ground (a strip cut from a coffee can worked well). The whole assembly is mounted under the plate line so that the end of the vane comes no closer to the tube anodes than 1/2 inch (Fig. 5). Tuning is accomplished by means of a 1/4-inch shaft (I used metal), passing through the entire chassis under the vane and very near to the chassis. This shaft takes up or lets out fishing line which is wrapped around the shaft and extends up to the free corners of the vane. I used a vernier dial on the shaft to provide mechanical drag. Some means should be used to prevent the vane from touching the plate line. I used a piece of 1/4-inch long Teflon rod cemented to the top of the vane.

In the interest of maintaining symmetry and tube balance, the capacitive-output probe was mounted on part of the cover for the plate compartment, so that the probe extends down toward the plate line as near the anodes as possible without danger of shorting. The probe consists of a piece of flashing copper bent as shown in Fig. 6 and soldered to the output connector. Coupling is adjusted by means of fishing line connected to the free end of the probe and brought through a hole to a shaft outside the plate compartment.

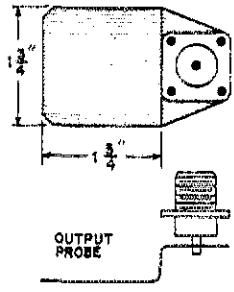
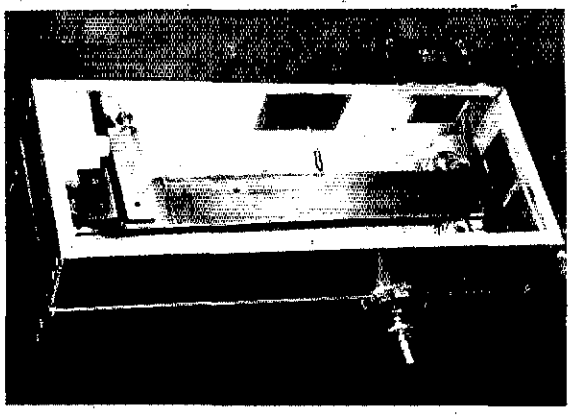


Fig. 6 — The output-coupling probe is a piece of copper sheet, bent as shown and soldered to the center pin of a uhf coaxial connector. The fishing-string-and-shaft method is used to adjust the probe position relative to the plate line.

Comments

It was feared that the capacitive probes would couple spurious energy from the multiplier string or mixer right into the antenna. No measurable output could be found anywhere except at 144 MHz with a grid dipper used as a wavemeter (this with amplifier running full power). A filter was used ahead of this amplifier as added insurance. A half-wave plate line would have been simpler and perhaps more efficient, but at 144 MHz it would take up too much space.

If you wish to experiment with plate and grid lines of different dimensions, try making the basic amplifier chassis first. Then experiment with plate and grid lines made of cardboard covered with aluminum foil. Dimensions and resonance can easily be changed and checked with a grid-dip oscillator. The final assembly can be fabricated from brass or other durable material. QST



Most of the bottom compartment is occupied by the grid line. At the left may be seen the input-coupling probe in place above the line. The dark "patches" on the rear wall are homemade bypass capacitors serving as feedthrough connectors for the grid-return circuit, filament, and screen leads. These capacitors are sandwiches, made of pc board and Mylar, as described in the text.

• *Beginner and Novice*

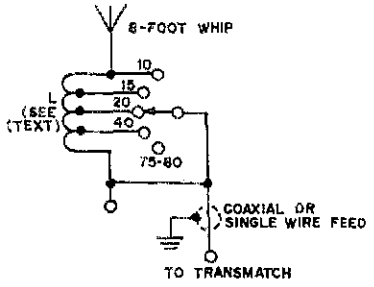


Fig. 1 — Electrical circuit of the antenna system.

THE CITY SLICKER

BY MILTON DRAKE,* W2JPN

WHAT ARE THE ODDS against working the South Pole on 40-meter phone, plus Japan, Australia, South Africa, Alaska, Hawaii, South America, England, Germany and 50 states — on five bands in three summer months? Imagine doing it while using only a barefoot transceiver and an eight-foot whip antenna mounted on a balcony outside the window of a fifth-floor New York apartment! I've had that happy experience. The details of the antenna system I used may be of interest to others.

Three of every four people in the U.S.A. live in urban areas, and the proportion is growing. For hams, city living can mean putting an antenna on the apartment-house roof. But the metropolitan life style is changing. With the proliferation of "master" TV-antenna service and cable TV, more and more landlords are declaring their high-rise roofs off limits for tenants' antennas.

The Problem

Recently reactivated in ham radio, I faced the problem of "getting out" from the fifth floor of a "high-rise." About one square foot of space, in a corner of the apartment balcony, was allotted to me for erecting an antenna. Having acquired a 5-band ssb transceiver, the problem was compounded by my determination to operate on all hf bands. A one-band setup, using a loaded antenna, would have been a simple solution. Many commercial whip antennas are excellent for window or balcony mounting. However, the prospect of going out onto the balcony to attach and detach loading coils every time I wanted to change bands was undesirable. Also, that type of system, with all resonators, hardware, and cable, would have cost more than $100.

* 4455 Douglas Ave., Riverdale, NY 10471.

The First Version

I recalled that many years ago I had operated mobile on several bands with a whip antenna and a bumper-mounted, band-switched base-loading coil. I dug out the whip and the coil, mounted them on the balcony railing, then fixed the coil-tap positions while using a grid dipper, and fired up the transceiver on 75-meters. When I hit the PTT switch — fireworks! The coil was near the peak-voltage end of the system at that frequency, and it lit up with a corona display.

I turned the band switch on the loading coil to the 15-meter tap and retuned the transceiver on 15. This time the coil was at the current peak and purple tongues of rf were licking their way across the switch, hissing from every metallic part, plus a new feature: the 14-gauge coil wire became an rf

Milt, W2JPN, seems overjoyed at the report he is getting and is just waiting to tell the guy on the other end what his antenna is! The antenna installation is visible in the background.

hotplate, and the polystyrene inductor supports melted, sinuously, out of shape.

I shall spare the reader the chilling details of my several succeeding failures. I'll describe the final solution to the problem, with caveats for anyone going the same route.

The Whip

First, the 8-foot-long whip must be mounted on superior rf insulating material, the mounting hole spaced *at least* one inch away from supporting metal. I used 0.5-inch-thick polystyrene, but ceramics, mycalex, or any good rf dielectric material of a thickness capable of supporting the whip in high winds, will do.

The Loading Coil

The coil may be any large inductor designed to resonate on 75 meters. Wire gauge and turn spacing will depend upon the power to be used. For outputs up to 100 watts try 30 turns of No. 14 tinned or silvered wire, 3-1/2 inches in diameter, spaced to form a coil 3-1/4 inches long. For transmitters of higher power, try to find a 500- or 1000-watt tank coil, air wound. I found a Johnson component, number 200-114, a 4-1/2 inch-diameter brute, the body of the inductor being 5-1/2 inches long. It consists of 28 turns of heavy-gauge, silver-plated 1/4-inch-wide metal ribbon. The leads from the band switch up to the coil taps are copper braid, salvaged from old RG-8/U cable.

The Band Switch

The switch is the heart of the system. I tried every commercial switch I could find but not even the BC-375 antenna-tuner monsters could stand the gaff. The barriers between closely spaced switch contacts cannot be made high enough to *prevent arcing without impeding the travel of the* pivot arm. The answer is *distance*. No contact may

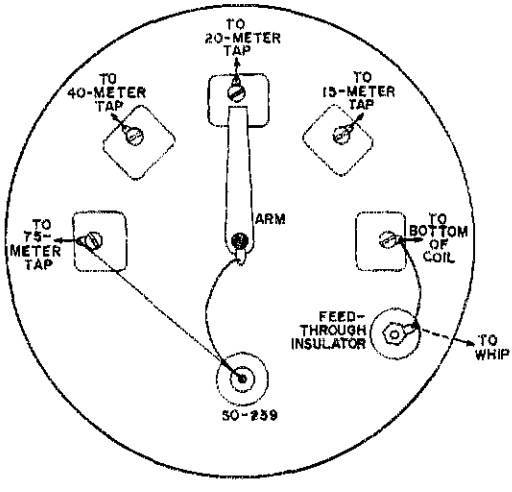


Fig. 2 — This drawing shows the band-switch contact details.

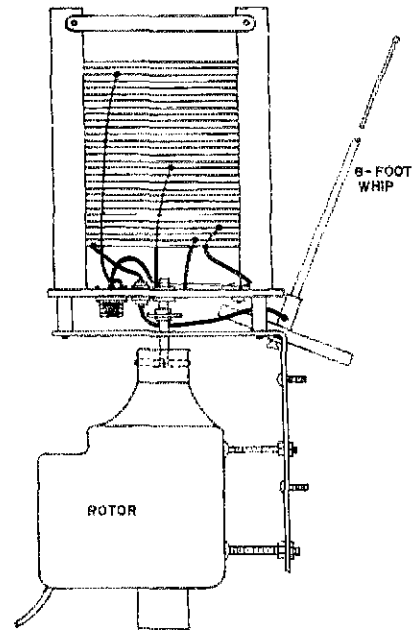


Fig. 3 — Here is a simplified side view of the switch, inductor, and TV rotor.

be less than 1/2 inch away from any other contact or any other metal part, so I made my own (see Figs. 2 and 3).

The five contacts were made from a small sheet of 18-gauge brass, obtainable from marine supply houses and larger hardware stores. Each contact is 7/8 inch long by 3/4 inch wide. All hardware must be of nonrusting metal if the antenna is to be used outdoors. Any steel parts should be stainless or plated. The sharp corners of the contacts should be rounded to reduce corona problems, and the edges beveled to a low angle to facilitate pivot-arm travel over them.

Drill a hole, 1/4 inch from one long side of each contact, to accommodate a No. 6-32 brass screw. This screw is used to hold a solder lug and to fasten *the contact to the switch base. After cutting,* shaping, and drilling, polish the contacts with grade 00 steel wool. Handle the contacts by their edges to avoid leaving tarnishing skin oils on their surfaces. If the switch is to be operated manually, the contacts can be much smaller. My switch was designed for remote control. The contacts had to be large enough to ensure against under-travel or over-travel of the pivot arm, which was driven by an imprecise TV antenna rotor.

The pivot arm was taken from an old Western Electric telephone-switchboard jack. These jacks are inexpensive in surplus junk shops. Polish the contact surface of the pivot arm to a shiny finish. The butt end of the arm should be drilled to provide a hole just large enough to sweat-solder onto the 1/4-inch shaft of a panel-type feedthrough bushing. A solder lug should likewise be sweated onto the shaft. The soldering should be done before the bushing is mounted through the

base, as the extreme heat could melt the polystyrene.

The other end of the bushing shaft will protrude from the underside of the base disk. If the switch is to be turned manually, fit a knob to the shaft. Otherwise, the shaft should be fitted with an insulated flexible shaft coupler for attachment to the rotating shaft of an electromechanical device such as a rotary solenoid, stepping motor, or antenna rotor. The least expensive reliable means I could find was an Alliance rotor costing about $20. Its control box with position indicator marked off in bands is located at my operating table.

The five switch contacts are mounted equidistantly on the 7-inch diameter base disk to form a 5-inch outside-diameter semicircle. The pivot arm can then make the complete trip from the 10- to 75-meter contacts by describing a 180-degree arc. Solder one end of a 3-1/2 inch length of copper braid to the butt-end lug of the pivot arm. Solder the other end of the braid to the inner terminal of the SO-239 connector. The excess braid should form a vertically oriented arch to allow free swing to the arm. The base-disk material, 1/4-inch polystyrene, is available from any plastic supply house. The rf dielectric properties of the base material are of key importance, and polystyrene is excellent.

Depending upon the structure of the coil used, a means must be devised to mount it vertically on the base. Provision must be made for an SO-239 receptacle and a feedthrough antenna connector. A nonmetallic cover should be provided over the unit.

Tuning the System

Clip the 15-meter lead to the 2nd turn from the bottom of the coil, the 20-meter lead to the 4th turn, the 40-meter lead about midway up the coil, and the 75-meter lead three turns from the top. On 10 meters the entire coil is shorted out by the switch.

Using a grid-dip meter, check the coil on each of the desired bands, adjusting the taps accordingly. The objective is to make the antenna resonant in each band. After you determine the correct tap points, solder the taps in place and dress the leads so they are at least 3/4 inch from each other.

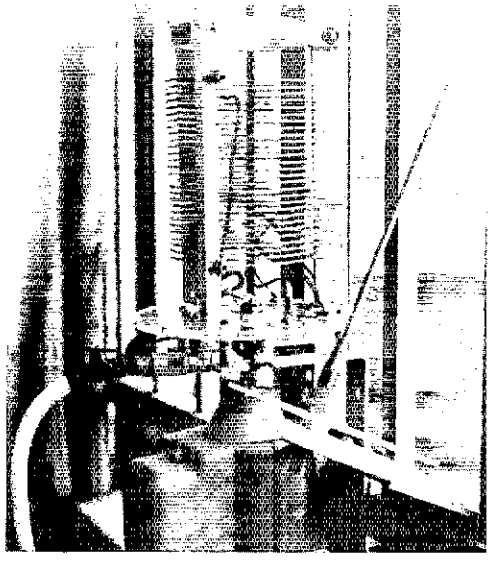
The SWR on 10 meters should be less than 2:1 if an 8-foot whip is used. But as one operates lower in frequency the SWR gets progressively higher until at 75 meters it can be as high as 10:1. Therefore, after the above tuning is done and you have soldered the braid taps in place, install a Transmatch or other matching device in the coax line, close to the transmitter. Caution: this system should not be used without a Transmatch or similar impedance-matching circuit.

Feeding the Antenna

The antenna can be fed with a single wire or with coax. The system will work just as well in either case. However, if you do plan to use coax from the Transmatch to the antenna, you must have a good earth-ground connection available at the antenna. In my case I used a drain-pipe ground. The outer shield of the coax should be connected to ground and the inner conductor to the antenna.

At each frequency, varying degrees of standing waves must be tolerated along the feed cable between the Transmatch and loading coil. This is because of the multiple compromise that has to be made with an antenna system which is both extremely short, and multiband. It is therefore important to use a transmission line with the lowest possible inherent losses.

Here at W2JPN I obtained a length of Times Wire and Cable AM-5012P solid-aluminum sheath 50-ohm coax. Though a bit more difficult to install



This shows the base loading-matching coil and the whip installed on the terrace railing. The coil is covered by a plastic housing for protection in regular use.

because of its semirigid jacket, this cable is highly efficient in the presence of standing waves. However, it is not necessary to use this cable. A satisfactory transfer of power can be had with any high-quality 50-ohm cable such as polyfoam RG-8/U. Do *not* use RG-58/U.

If single-wire feed is used from the Transmatch to the antenna, the wire should have good rf insulation. (Someone might come in contact with the wire and could get an rf burn.) Excellent wire for this purpose is the type used in ignition (automotive) wiring. (Beware of resistance-type ignition wire.)

Mounting the System

There is hardly a QTH where this system cannot be used. It can be fixed to a window frame, screwed to the railing of a balcony, clamped to the eaves of a shingled roof, or nailed to the floor of an attic crawl space. Mine is mounted on the balcony

(Continued on page 168)

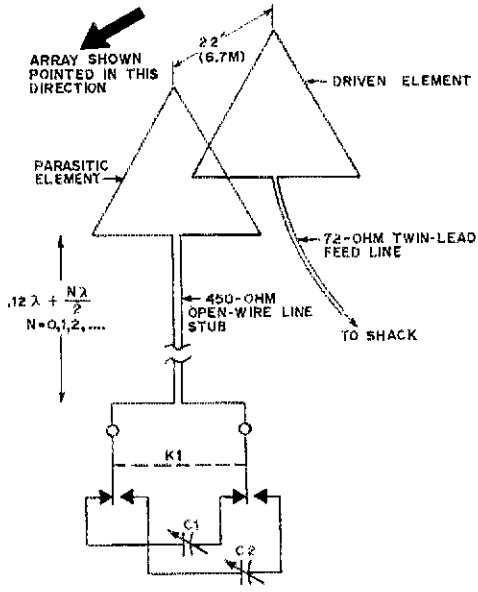


Fig. 1 — Configuration of two-element switchable 40-meter quad. Triangular loops are shown, although square or diamond loops can be used too. Both elements are cut to the same dimensions: 143 feet, 6 inches, for 7.0-MHz operation. The selection of either C1 or C2 by means of K1 determines which direction the array is pointed. Switching components K1, C1 and C2, can be installed inside the shack or on the ground. The stub line is cut long enough to reach them. Feeding the driven element with 72-ohm Twin Lead results in a low SWR.

C1 — 10- to 350-pF air-variable capacitor, adjusted for director operation as described in text.

C2 — Same as C1, except adjusted for reflector operation.

K1 — Dpdt relay (Potter and Brumfield KA11DG or equivalent).

A Convenient Stub-Tuning System for Quad Antennas

BY JOHN E. KAUFMANN,* WA1CQW

AND GARY E. KOPEC,** WA8WNU

THE CUBICAL QUAD has been a popular antenna with amateurs for a number of reasons — relatively light weight, small turning radius, low cost, and good DX performance at rather low heights when compared to other antennas. The authors' experience with quads has demonstrated, however, that best possible performance requires careful parasitic-element tuning. Cutting elements according to various "established" length formulas has often yielded less than satisfactory results. While adjustments for maximum forward gain are generally uncritical, a mediocre front-to-back ratio often results unless time and care are taken to tune the parasitic elements. Factors such as spacing between elements, proximity of the antenna to ground, or influence of other objects (including the other concentric loops in a multiband array) require that the electrical length of the parasitic elements be adjusted using empirical methods if optimum performance is to be realized from the system. It was felt that if one was going to the trouble of erecting a good antenna system, it was worth seeing to it that the antenna was delivering the performance of which it was capable.

These considerations led to the development of the parasitic-element tuning system described here. While the scheme is applicable to quads in general, whether rotary or fixed, the original intended application was in a fixed two-element, full-size 40-meter quad. The descriptions here apply to this 40-meter system, but the general information allows one to follow the same scheme with a quad for any band.

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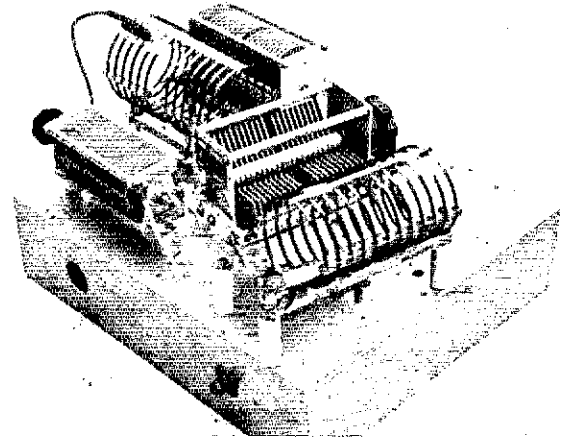
A 40-Meter System

This 40-meter antenna consisted of two nonrotatable full-wave wire loops suspended from a boom which was mounted near the top of a tower. Spacing between elements was 22 feet. The corners of the loops were tied down to convenient anchor points by means of ropes, thereby eliminating the need for spreaders. With the elements thus fixed in place, the antenna was oriented in one general direction and could not be steered elsewhere. A driven-element and reflector combination was used.

Early experiments with the antenna demonstrated the need for careful reflector tuning. Several trips were made up the tower to alternately prune and add wire to the reflector before the antenna exhibited good performance at the frequencies of interest. But when tuned properly, the quad really performed! In many instances signals which were inaudible while using an 80-foot-high reference dipole were perfectly readable with the quad (at a median height of about 100 feet). Reception was further enhanced by rejection of unwanted signals off the back of the quad.



The matching network built by the authors for the modified 40-meter system. Relays, used in the switching circuitry, are not visible. The builder is left to choose a suitable network of his own to meet his operating requirements. Basic design information can be found in the *Radio Amateur's Handbook* or *ARRL Antenna Book*.

Now if only the quad could be made rotatable – unfortunately a full-size rotating system (spreaders would be needed) was out of the question. The cost, difficulties of construction and installation, and the severe effects of New England winters discouraged such ideas. The authors, being avid contesters and DXers, were willing to settle for the next best alternative – keeping the fixed quad, but electrically switching its pattern.

The solution involved a tunable stub attached to one of the elements to lengthen or shorten it electrically. With the appropriate stub switched in, the single element could be made to look like either a reflector or director and thus cause the pattern to be reversed. In order that adjustments be made quickly, easily, and from a convenient location (such as the shack or the bottom of the tower), it involved more than the conventional short stub often used with quads. Rather, the situation called for a long stub – long enough to reach the desired remote location – terminated in a variable reactance. Tuning the element, then, involved nothing more than adjustment of the value of reactance which could be provided conveniently by means of a variable capacitor.

The electrical principle is simple. One adds inductive reactance to lengthen an element electrically, or capacitive reactance to shorten it. Typically, the former arrangement is used with quads in a driven-element and reflector combination in which both elements are cut to the same physical length. A stub, shorted at the end, is attached at the center of the bottom section of the reflector. By varying the position of a shorting bar along the stub, the amount of inductive reactance presented to the element can be varied and the electrical length altered correspondingly. Because the stub is short in length, this adjustment must be made at the antenna itself, preferably near or at its final height.

Now, if the stub is cut to some different length which happens to be longer than in the above case, the parasitic element can still be made to see the proper amount of inductive reactance (if it is a reflector) provided the stub is terminated properly with some other reactance (in general, something other than a short). Varying the reactive termination is then equivalent to moving the shorting bar along the conventional stub. This is a consequence of the impedance-transforming property of transmission lines. The long stub can be treated as a transmission line. If we know its characteristic impedance, its length, and the impedance that must be seen at the parasitic-element end of the line, the Smith Chart can tell us what kind of termination is required at the opposite end.

A reflector cut to the same physical dimensions as the driven element – self-resonant at the desired operating frequency – must "see" roughly 150 ohms of inductive reactance at the terminals where the stub is attached. Although little information is available about the use of directors with quads, it is assumed initially that a director, also cut to the same length as the driven element, must see a roughly equal but opposite amount of reactance, or about 150 ohms of capacitive reactance. If one desires to make the termination at the end of the stub a variable capacitor for convenience of tuning, which was the case in the 40-meter system under consideration, the problem can be rephrased slightly: what length of line of a given characteristic impedance is required so that a variable capacitor (a 10- to 350-pF unit was used) causes the parasitic element to see the above reactances? This is easily solved with a Smith Chart. Two somewhat different systems evolved from these ideas. The second, a modification of the first, will be described last.

The design procedure for the 40-meter version went as follows: The driven and parasitic elements were cut to the same length, given by the more or less standard formula, $L = 1005/f$, where L is the length in feet, and f the frequency in MHz. This resulted in a loop circumference of 143 feet, 6 inches at a frequency of 7.0 MHz. In the practical installation, the loops were triangular in shape rather than square or diamond. Shape is relatively uncritical – performance is approximately equivalent for the various geometric configurations, and ease of installation was considered more important. The triangle has the advantage of requiring only three tie-off points – one at the top where it hangs from the boom and two at the bottom – whereas the other two forms require support at four corners. Furthermore, the triangle requires less vertical height – approximately 41 feet on 40 meters, assuming equal-length sides – as opposed to the diamond which needs about 50 feet. The square requires the least vertical height but is the

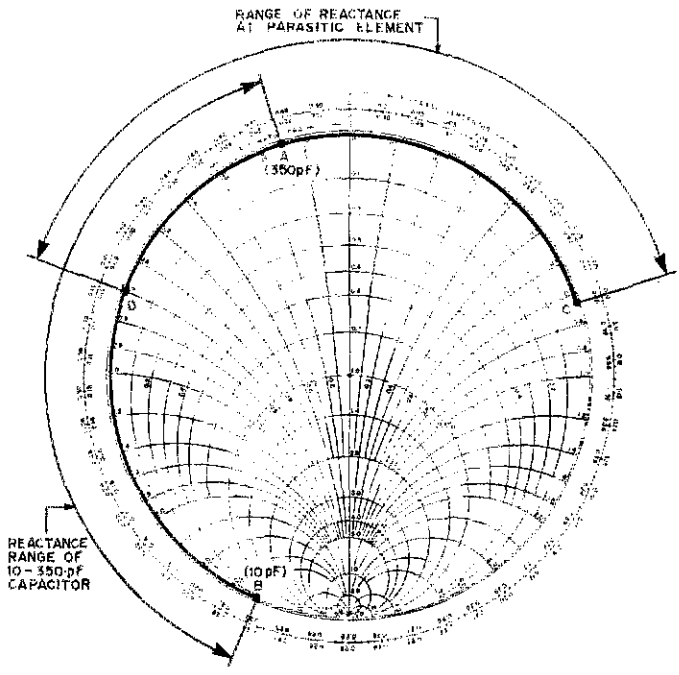


Fig. 2 – Example of Smith Chart calculations required to arrive at correct stub dimensions. A 10- to 250-pF capacitor is used as the variable-reactance element which terminates the 450-ohm transmission line used for a parasitic-element stub. The chart is normalized to 450 ohms. The arc between points A and B represents the range of reactance of the capacitor as it is tuned between the extremes of its range. If the capacitor is connected to a 0.12-wavelength long stub (plus any multiple of one half wavelength) with a 450-ohm characteristic impedance, the range of reactance represented by the arc between points C and D is presented to the parasitic element. This range is sufficient to cause a properly cut parasitic element to look like either a director or reflector. Further discussion of Smith Chart calculations may be found in the latest edition of *The ARRL Antenna Book*.

most difficult to support mechanically. The resultant configuration is shown in Fig. 1.

The stub line was made from 450-ohm open-wire transmission line because of its relatively low cost in commerically made form and its low-loss characteristics. The reactance range of the 10- to 350-pF capacitor by itself at 7 MHz was then plotted on the Smith chart as shown in Fig. 2. (Recall that $XL = 2\pi fL$ and $XC = 1/(2\pi fC)$ where XL and XC represent values of inductive and capacitive reactance respectively, given in ohms, L and C the corresponding values of inductance in henrys and capacitance in farads, and f, the frequency in hertz.) The low-capacitance end of the range is indicated as point B in Fig. 2 with the Smith Chart normalized to 450 ohms in this example, while the other extreme comes out at point A. If the capacitor was then connected at the end of a 0.12-wavelength section of the 450-ohm line (approximately 16 feet in open-wire line), the impedance seen at the other end of the line would vary between the range of slightly greater than $+j300$ to $-j300$, represented by points C and D. This would meet the $+j150$ and $-j150$ reactive loading requirements of the parasitic element for reflector and director operation, respectively. Actually a stub length of 0.12 wavelength, plus any multiple of a half wavelength, would work too, because any half-wavelength section of transmission line merely repeats at one end the impedance that appears at the other. Thus, the distance to the desired remote location dictates the minimum required line length. Another advantage of using 450-ohm line, as opposed to a line with a lower characteristic impedance, becomes apparent when working examples on the Smith Chart – for a given capacitor tuning range, the 450-ohm line produces a greater range of reactance change at the antenna end of the line. A 300-ohm line would serve almost as well, however, providing only slightly less tuning flexibility.

The stub was terminated at a dpdt relay which was controlled from the station operating position and which was used to select one of two variable capacitors – one adjusted to provide reactance for reflector operation and the other for director operation as shown in Fig. 1. In this manner, the pattern could be flipped around 180 degrees instantly from the shack. The driven element was fed directly with 72-ohm transmitting-type Twin-Lead. A low SWR was obtained with no special provisions made for matching.

The director and reflector tuning should be done empirically, as was stated before. Experience has shown that quads tune rather broadly for maximum forward gain. It was found that fairly large changes in the settings of the variable capacitors did not alter the gain significantly. It is best, therefore, to tune for maximum front-to-back ratio, on which the settings had considerably more effect. On-the-air signals arriving from the rear direction can be nulled by tuning the capacitors. The nulls should be fairly pronounced if the system is set up as described here. The exact amount of attenuation of signals off the back of the antenna varies from signal to signal. It was observed that the 40-meter antenna exhibited the greatest front-to-back ratio for signals arriving from distant locations (at low radiation angles). Alternatively, field-strength measurements can be made to determine the proper settings for minimum radiation or reception off the rear of the antenna. In this fashion, one capacitor is adjusted for director operation and the other for reflector operation.

When making large excursions in operating frequency on 40 meters, it is necessary to touch up the tuning. A director tuned for operation in the low end of the cw segment is self-resonant approximately in the middle of the phone portion and provides little usable gain at those higher frequencies. Retuning is done easily, however — something which is not possible using fixed-tuned elements.

A Modified 40-Meter System

The 40-meter system described in the foregoing provided very good results over a period of months, including stateside and DX contest work and casual DXing. After some thought, however, a modified system was constructed. The new configuration provided some advantages over the original scheme.

The same principle of operation was retained. The new system shown in Fig. 3, used only a reflector-type parasitic element, but the switching system now allowed either element to operate as the driven element or reflector. In this manner, the antenna pattern could still be reversed by choosing the appropriate element for the desired function.

Several factors prompted the change. It was found with the original system that a considerably higher front-to-back ratio could be had using a reflector rather than a director. The latter yielded no more than about 10 dB discrimination against signals received off the back of the antenna, even with careful tuning, whereas with the former the figure was approximately as high as 25 dB. Although most available literature made little mention of quad performance using a director, this observation agreed with what little published data could be found on the subject.[1] The reflector-only model also had the advantage that just one tuning adjustment was required, since one stub reflector served both elements in an identical fashion. Furthermore, because the system behaved the same no matter which direction the array was switched, the SWR did not change when switching, and the transmitter was thus always tuned properly. With the original scheme the antenna feed-point impedance changed when switched between director

[1] "Technical Topics," *Radio Communication*, Feb., 1973, p. 101.

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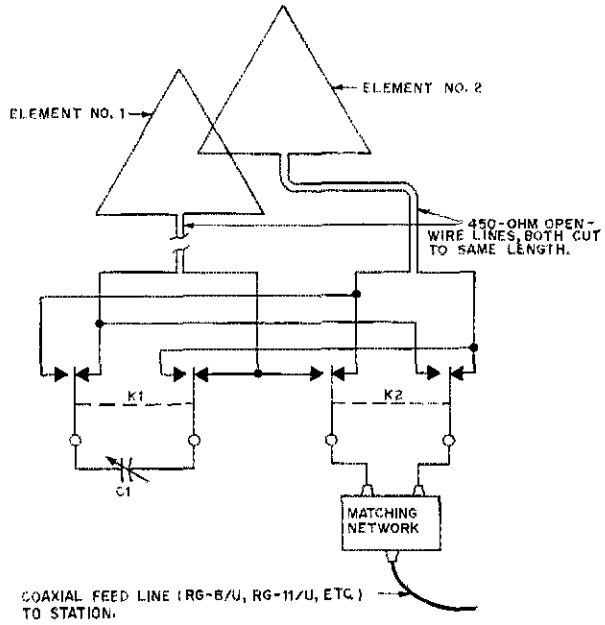
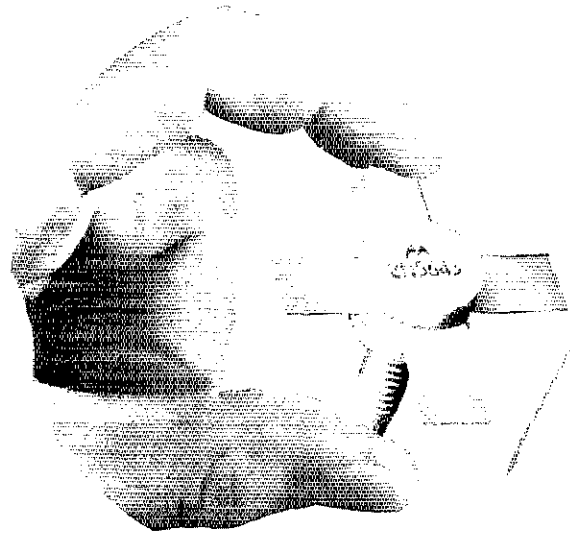


Fig. 3 — Configuration of modified two-element switchable 40-meter quad. The lines from each element are both cut to the same length, which can be the same as the parasitic element line in Fig. 1 or other suitable length. Both elements are cut to the same dimensions as in Fig. 1. The positions of K1 and K2 determine whether an element is fed as a driven element or terminated as a reflector. The array pattern can be switched by determining which element operates as a reflector or driven element. Only one tuning capacitor is required, but a matching network is needed to match a coaxial feed line.
C1 — 10- to 250-pF air-variable capacitor, adjusted for reflector operation.
K1, K2 — Dpdt relays operated simultaneously, or both may be replaced by a single 4pdt relay (Potter and Brumfield KA11DG or equivalent).

Learning to Work with Semiconductors



Photograph of an rf power transistor, stud-mount variety. Note the low-inductance connection leads (strip-line package) which help minimize unwanted inductive-reactance effects (see text).

BY DOUG DE MAW,* W1CER

AND JAY RUSGROVE,** WA1LNQ

Part II – Transmitter Design

IN PART I of this series we learned some basic design data concerning crystal oscillators. This installment deals with rf power-amplifier design. The workshop assignment on amplifiers will involve the building of a buffer and an amplifier, and will begin in Part III. Those stages, when coupled to the oscillator described earlier, will be suitable for transmitting in the 80-meter band at the QRP level. Later in the series, the two add-on stages will be modified to function as low-level amplifiers for driving a higher-power stage.

In an effort to avoid the use of high-level math, slide rules, and Smith charts, the writers have attempted to show how some simple rules of thumb could be derived and applied in transmitter design. Part II will be built on that philosophy, despite the broad generalization necessary to execute a viable design when using such an approach. *Rules of thumb are nearly impossible to* contrive when dealing with rf power amplifiers, for conditions vary in accordance with the frequency of operation, operating voltage, brand of transistor, power level, and physical structure of the device employed.

Some of the foregoing are of vital concern when working with vacuum tubes, but none of the tube characteristics are as critical as those for solid-state power amplifiers. Therefore, the amateur who works without meaningful transistor data sheets and network-design equations is purely an experimenter. As a consequence, he can meet with failure, mild disappointment, or pure ecstacy if he obtains good results. The outcome will usually depend on how tenacious and careful the experimenter is when testing and altering his design. Good results can come from the experimental approach, and it is a method encouraged by the writers. It can be said, "A blown junction is worth more than a pair of idle hands."

The Nature of the Animal

Unlike its vacuum-tube counterpart, the power transistor is a complex, sometimes-ornery beast that can bring unrest to engineers as well as *tinkerers. Its output impedance is dreadfully low,* and its input impedance is even lower. Its gain increases at the rate of 6 dB per octave as the operating frequency is lowered, thereby giving rise *to instability. If not given proper in-circuit treat*ment, it can become open or shorted with the blink of an eyelid. It spews out copious amounts of harmonic energy, thus requiring far more care in tank-circuit design and filtering than is normally required for vacuum-tube amplifiers. As a discrete component, it is more expensive than the vacuum tube in terms of watts per dollar – roughly $1 per watt for a good rf device.

*QST Technical Editor.
** ARRL Technical Assistant.

Now that the power transistor has been unmasked as the villain it is, let's place a few marks on the "accounts receivable" side of the ledger. It is physically small. Low operating voltage (28 volts dc or less) is required. Inexpensive coils, capacitors, and resistors can be used in solid-state amplifiers. Large variable capacitors aren't normally used. A single supply voltage is adequate. Neutralization is seldom required. Compact portable or mobile gear can be realized with transistors.

Selecting a Suitable Transistor

Studying the never-ending lists of transistor types found in catalogs and data books could cause the uninitiated to bid farewell to the cruel world of semiconductors and take up badminton as a pastime. However, things aren't really as bad as they may seem in that regard. When doing rf work, the amateur need concern himself with only the rf kinds of transistors, and there aren't too many to choose from when designing 12-volt equipment. The difficult part of the job is wading through the lists of types in quest of the rf power devices.

Most rf power transistors are specified as Class AB units for linear amplification, or as Class B or C types for a-m, fm, or cw work Many transistors earmarked for linear amplification will work well in Class B or C. Vhf and uhf power transistors can be made to work at hf or mf, but the reverse is not true. Therefore, it is not imperative to utilize an hf-band transistor for hf-band amplification. The principle is not unlike that of using an 829B tube on 160 meters. The builder should beware of the bargain-house rf power transistor, however, for some of the dealers sell factory "gradeouts," and those components are defective in one way or another . . . leaky, low in f_T, gain, or whatever.

The rules discussed in Part 1 are applicable when choosing a power transistor – voltage, wattage, and f_T considerations. There is the matter of case style to consider, and many shapes and sizes are available. Generally, one has the choice of TO-5, flange mount (TO-3 or TO-33), or stud mount. The latter is the more common variety in rf power work, and comes with connection pins protruding from the glass header, or with flat "strip-line"leads for low-inductance circuit connections. Some stud-mount transistors are built with the emitter common to the stud, while others have a stud that is isolated from the transistor elements. From a practical point of view it is best to avoid using the third type, which has the collector connected to the stud. That kind of transistor requires a floating heat sink, which can be awkward to deal with. The primary considerations are that the emitter lead be kept as short as possible in an assembled circuit, that the heat sink can be bolted to chassis ground, and that the transistor can be coupled efficiently to its heat sink. In circuits that call for a grounded emitter, the shortest possible lead length should be used to prevent loss of gain brought about by *degeneration*. The latter is a condition caused by inductive reactance in the emitter return. The longer the lead length, the more pronounced the effect. Stud-mount transistors with strip-line connecting leads are much easier to work with when trying to minimize unwanted inductance in the emitter, base, and collector leads.

Gain Considerations

Some experimenters are misled by the dc beta ratings of transistors respective to rf work. Dc beta (hFE) is not a significant characteristic in our application. When designing a low-level rf amplifier, it is important to consider the small-signal gain (hfe), which tells the builder what the ac or rf gain amount should be. Another term which is used to characterize the gain of rf power transistors is Gpe (small-signal power gain for a grounded-emitter stage). For large-signal devices it is expressed as GPE. In each instance the gain is given in dB at a specific operating frequency. The gain will be different at other frequencies within the useful amplification range of the transistor – increasing gain at lower frequencies, and decreasing gain as the operating frequency is made higher. GPE and Gpe can be translated into plain language by employing the formula: $dB = 10 \log P_2 \div P_1$. In other words, if a given transistor has a GPE of 9 dB at 30 MHz and a power-output rating of 24 watts, it will require 3 watts of drive to obtain the rated output at 30 MHz (Fig. 1A).

It was said earlier that the gain of a transistor increases 6 dB per octave. This means that at 15 MHz the transistor just discussed will have a gain of 15 dB, at 7.5 MHz the gain will increase to 21 dB, and so on. Therefore, when using a vhf or uhf transistor at hf or mf, preventive measures are necessary to assure stability in the presence of such very high gain. It becomes necessary to use effective bypassing, resistive swamping on occasion, *R/L/C* compensating networks, or deliberate mismatching. It is an unfortunate matter of fact that most manufacturers cater to the vhf/uhf land-mobile market. Therefore, one doesn't have much to choose from when selecting a power device for hf work. Most hf-band power transistors available today are made for military applications between 1.5 and 30 MHz, and are intended primarily for ssb use. They are very expensive, as are most items slanted toward the commercial/military market. In view of this fact, the ham is better off financially to use an available vhf or uhf power transistor for hf-band applications.

Class of Operation

For cw work it is best to use Class B or C power amplifiers. The various popular classes are illustrated in Fig. 1. The operating angles of the classes can be equated to those of vacuum tubes, and the subject is treated completely in the *Handbook*, Chapter 3. The transistor Class B mode can be compared to that of a zero-bias triode tube operating Class B – that is, no external bias is applied. Class AB operation, as shown in Fig. 1B, requires a slight *forward bias* to establish a given static (no-signal) collector current. An npn transistor requires a positive base-emitter voltage,

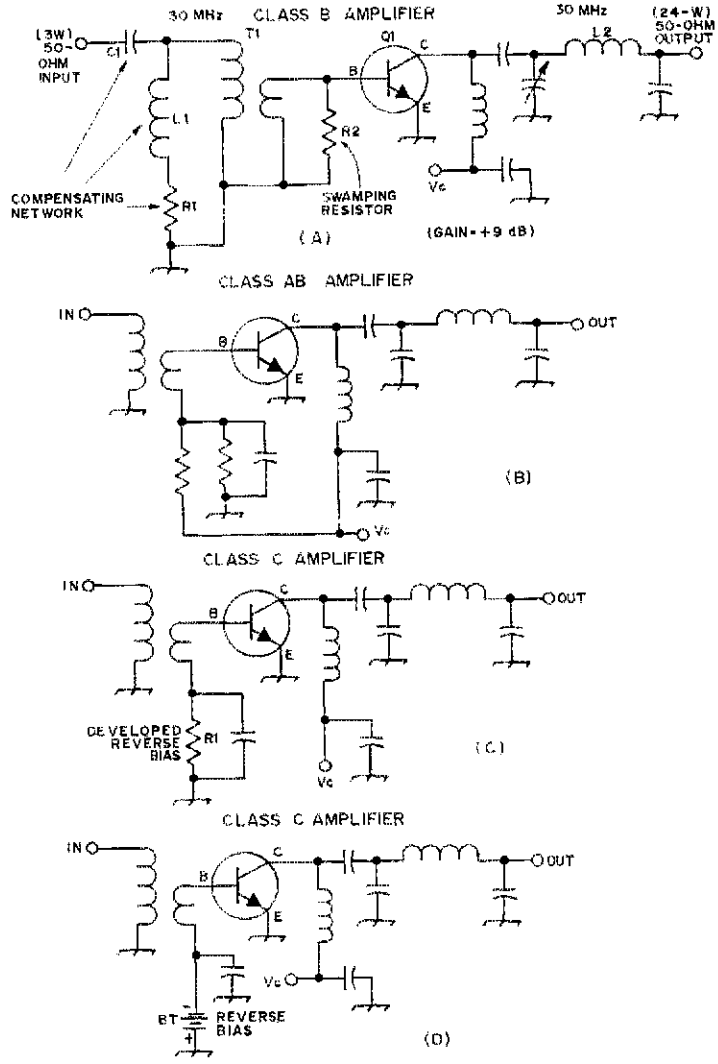


Fig. 1 — Examples of various amplifier classes, showing simplified input and output tuned networks. A compensating network is shown in the illustration at A (C1, L1 and R1). It is stated in the text that the transistor gain increases as the operating frequency is lowered. The compensating network is designed to equalize the stage gain across a wide operating range, such as 1.8 to 30 MHz. C1 and L1 tend to form a low-Q high-pass network at the upper end of the hf range. L1 is chosen for high reactance at the upper end of the operating range, but has low reactance at the lower end of the hf spectrum, and quite low reactance at 160 meters. The lower the operating frequency, the greater the amount of driving energy passing through L1 and into R1. R1 dissipates part of the drive power to equalize the gain of Q1. T1 in the example at A is a broadband transformer. R2 is sometimes used to lower the gain of Q1 and to aid stability. Its value is typically 3 ohms or less.

whereas a pnp device needs a negative base-emitter voltage. The Class AB mode is used for linear amplification and is the least efficient of the three modes. Furthermore, the transistor is somewhat prone to thermal runaway when forward-biased for Class AB use. A noteworthy feature of the Class AB amplifier is that it requires the least amount of excitation for a given power-output amount, as compared to amplifiers in the B and C modes.

Considerable misinformation has been published regarding the Class C mode. Some writers insist on calling a zero-bias transistor amplifier a

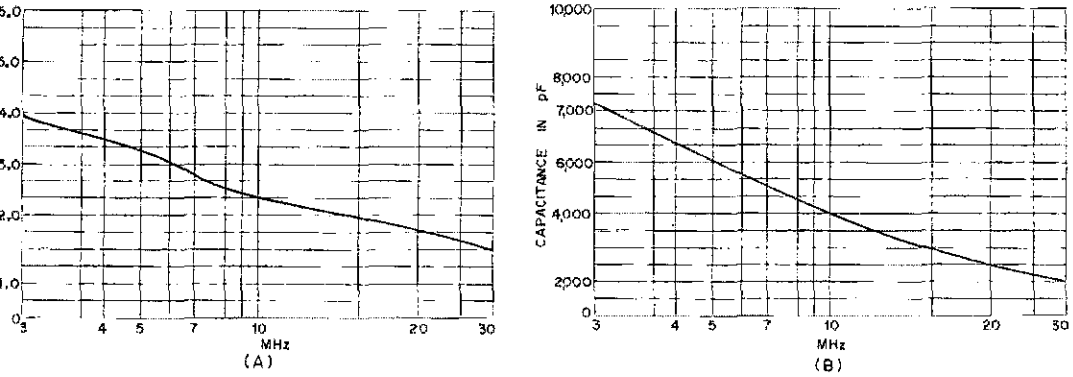


Fig. 2 — Curves showing the relative change in base resistance and capacitance of an hf-band power transistor as its operating frequency is changed. The curves help to illustrate the complexity of input impedance matching versus frequency. The output capacitance and resistance of a power transistor exhibit a similar set of characteristics, but the output capacitance is considerably lower than the input amount.

Class C stage, when in practice it is operating in Class B (not cut off, but with a *small* amount of conduction). To obtain true Class C operation with a bipolar transistor, one must develop cutoff bias across a base resistor (Fig. 1C), or by the application of negative bias (Fig. 1D). Class C operation is the most efficient of the three classes, but demands the greatest amount of driving power for a specified power-output level. The act of reverse-biasing the transistor junction is a critical one, for excessive reverse bias can cause destruction of the device (too much reverse bias will degrade the *collector-to-emitter breakdown-voltage* rating). During Class B operation (Fig. 1C) bias is developed within the transistor across what is known as the *base-spreading resistance*. The amount of bias developed is small and is not controllable because of the nonuniformity of transistors from the same or different production runs.

Some of the low-cost, medium-power transistors sold for hi-fi equipment will give good

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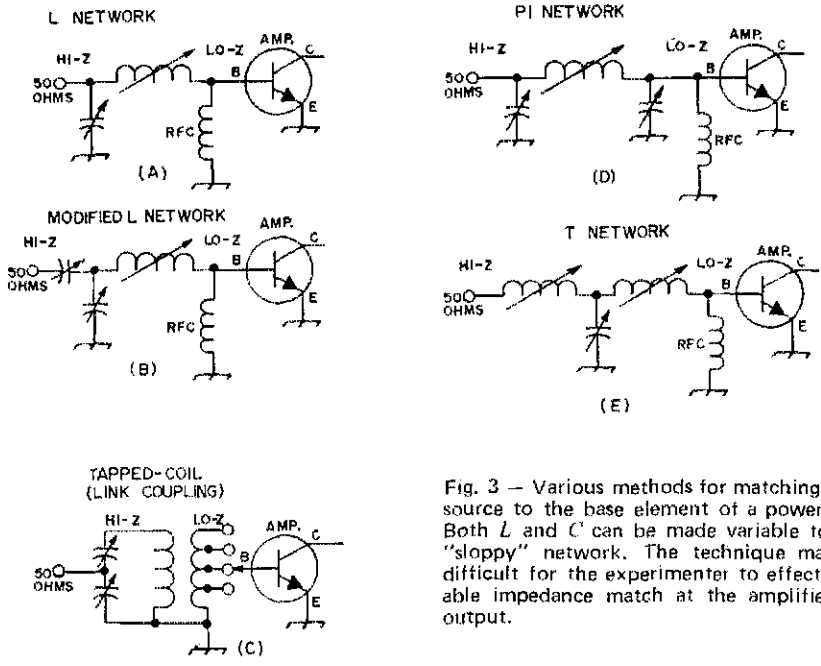

Fig. 3 — Various methods for matching the driving source to the base element of a power transistor. Both *L* and *C* can be made variable to provide a "sloppy" network. The technique makes it less difficult for the experimenter to effect an acceptable impedance match at the amplifier input or output.

An Analog-Computer-Type ACTIVE FILTER

BY ALLEN TAFLOVE,* WA9JLV

THE ADVENT of low-cost operational amplifiers in the past few years has excited interest in their use in *RC* active filter circuits. Typically, excellent *Q*s in the audio range have been achieved without any use of inductors. For band-pass and band-reject filters, resistors and capacitors are chosen to achieve a given center frequency and *Q*. However, there are several drawbacks to this approach. First, variable-frequency operation is difficult, requiring either ganged potentiometers or acceptance of severely reduced *Q*. Secondly, matching of capacitors or resistors may be required in some designs to realize high *Q* and good peak response or notch depth.

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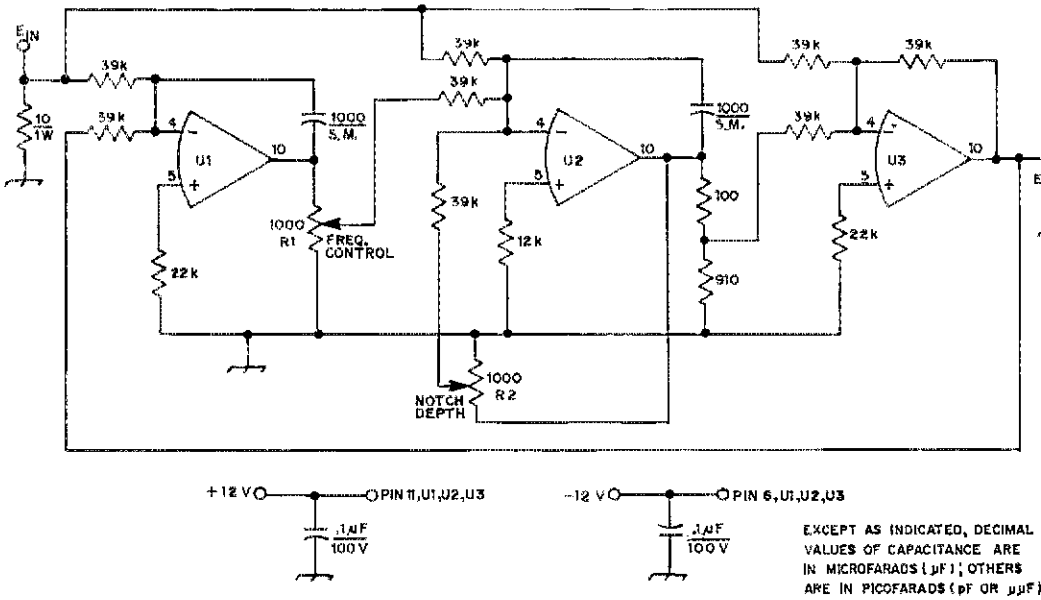
Fig. 1 — Schematic diagram of the active filter. The preferable tolerance of the 39-kΩ resistors is 2 percent. All others can be 10 percent. Tolerance of the silver-mica capacitors should be 5 percent.

R1 — (See text.)
R2 — Circuit-board type.

U1, U2, U3 — Op amp, type 741. Pin numbers are shown for 14-pin DIP package (Motorola MC1741L or MC1741P2). For the 8-pin types (MC1741G and MC1741P1), substitute pin 7 for pin 11 on the drawing; pin 4 for pin 6, pin 3 for pin 5, pin 2 for pin 4 and pin 6 for pin 10, respectively.



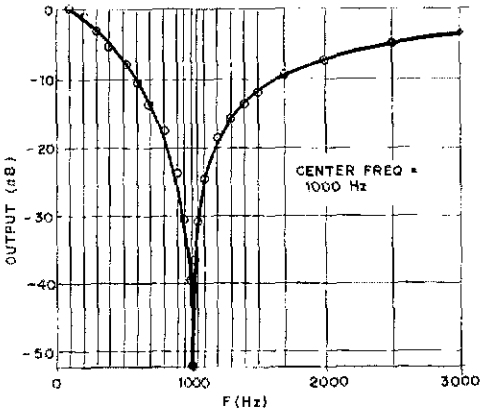


Fig. 2 — Response plot of the active filter. The output voltage at 0-dB reference was 0.48 and the input voltage was 0.5 V pk-pk.

There is, however, an alternative. Instead of using one operational amplifier and an *RC* input-feedback network configuration, it is possible to use three op-amp networks to achieve virtually any second-order transfer function. Let us recall that op amps received their name originally because analog computers used amplifiers of high gain and wide bandwidth to perform mathematical operations such as integration and summation. A wide variety of differential equations may be solved in this manner. One interesting application mentioned in the analog computer literature[1,2] is the synthesis of transfer functions using one or more op amps. The drawbacks mentioned above may be eliminated with a suitable circuit choice. A good example of what can be done is a notch filter using three 741 op amps. Center frequency can be varied (using one control) up to approximately 4 kHz, with circuit *Q* and notch depth remaining practically constant over the range. Component matching is not required. Only one setup adjustment is needed: a variable control adjusted for best notch depth.

[1] Roger R. Jenness, *Analog Computation and Simulation: Laboratory Approach*, Allyn and Bacon, Inc., Boston, Mass., 1965, pp. 111-123.

[2] A. Bridgeman and R. Brennan, "Simulation of Transfer Functions Using Only One Amplifier," *1957 WESCON Convention Record, Part 1*, August, 1957, pp. 273-278.

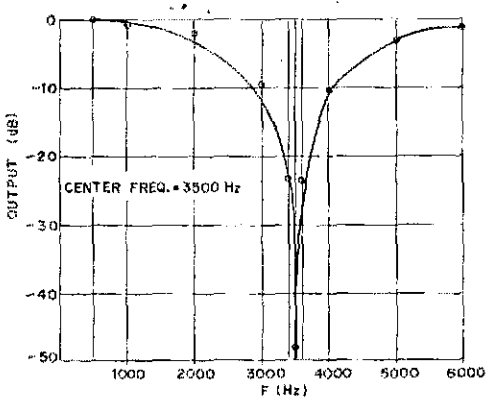


Fig. 3 — Response plot for a center frequency of 3500 Hz.

The Circuit

In the circuit shown in Fig. 1, U1 and U2 serve as integrators with a dc gain of about 25,000. U3 serves as a summing device. The 1000-ohm control, R2, is used as the *Q* control and is adjusted only once for deepest notch. R1 serves as the frequency control by controlling the "gain" of the differential equation, which the system is solving in effect. For easiest tuning, this should be a ten-turn precision-type potentiometer.

The results are impressive for a circuit of such simplicity. Notch depth is at least 50 dB. Measurement of absolute depth was difficult because the test oscillator used had a harmonic content suppressed by only 50 dB. Response plots are shown in Figs. 2 and 3.

Notch depth remains approximately constant over the tuning range, with *Q* seeming to increase somewhat with center frequency. In determining experimentally the two plots shown, the *Q* control was untouched.

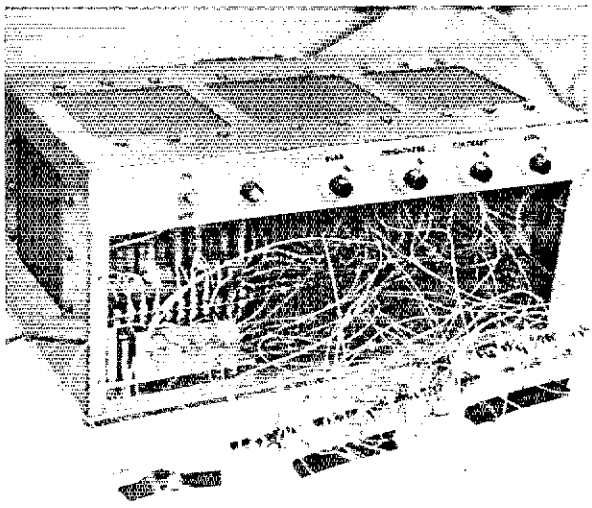
In operation, the input to the filter may be taken from the speaker or headphone jack of a receiver. Because a 741 op amp will deliver approximately 12 V pk-pk across 2000 ohms, a high-impedance headset may be connected directly across the output. If required, a suitable buffer stage could be added to drive a lower impedance speaker or headset. Best results in notching out an offending heterodyne can be achieved when the receiver age is turned off. Otherwise, the strongly interfering carrier would heavily activate the age and reduce the receiver gain, pulling the desired signal down with it. This filter would be a useful accessory for an ordinary ssb transceiver, which normally lacks provision for i-f notching. In my setup, I am able to take the required voltages for the filter from the VOX accessory socket of the Swan 350. A ten-turn tuning control makes adjustment swift. The total cost including such a control and the op amps should not exceed $15. QST

Strays

Want to Hear the New Oscar?

Oscar 7, the new amateur radio satellite will be within range of stations in the continental U.S. on Friday evening, May 16. Just tune your receiver around 29.45 MHz at 10 P.M EDT (plus or minus 10 minutes) and you'll hear the band come to life with DX signals! Almost any antenna will do; if you're using a beam, point it toward Denver for best results. Be sure to report your reception to Amsat, PO Box 27, Washington DC 20044. Send an s.a.s.e. and you'll receive an attractive Amsat-Oscar 7 QSL in return.

SLOW-SCAN to FAST SCAN TV Converter



Part II

BY DR. GEORGE R. STEBER,* WB9LVI

IN PART I of this article, *QST* for March, 1975, we reviewed current SSTV standards, the effects of sampling and quantization on picture quality, digital image processing, and digital scan conversion techniques. In the sequel, we shall provide details on a working model of a slow-scan to fast-scan converter. We emphasize again that this article is not a construction treatise but should serve as a tutorial guide for the advanced amateurs wanting to understand and build equipment of this type for their own use.

Specifications

The specifications and capabilities of the slow-scan to fast-scan converter are outlined below:

1) The converter is completely solid state, employing MOS dynamic shift registers for picture storage.

2) The digitized picture consists of 128 horizontal elements and 128 vertical lines. Each picture element is allowed to attain one of sixteen shades of brightness. By means of a simple option the picture can be digitally processed to display 256 vertical lines and additional brightness levels.

3) The converter is completely compatible with existing SSTV transmissions and may be used with ordinary monochrome television receivers built to U.S. standards. Displayed pictures are in a one-to-one aspect-ratio format consistent with SSTV standards. The unused portion of the FSTV screen is blanked out.

4) SSTV pictures may be viewed directly, line by line, as they are received off the air. Frames of interest may be frozen in memory and displayed indefinitely, if desired.

5) All components are used within their design limits. There have been no part failures in the first one and one-half years of use.

Block Diagram Functional Description

The scan converter consists of the functional blocks shown in Fig. 9. Each of the blocks is represented by one or more circuit boards in the finished unit and is discussed in more detail later on. To understand the overall operation, let us first see how the converter is put together.

The SSTV demodulator is the input stage and obtains its signal directly from the loudspeaker or audio connection of the ssb receiver. Contained on the board are an input signal limiter, an fm discriminator, a 6-pole Butterworth low-pass filter,

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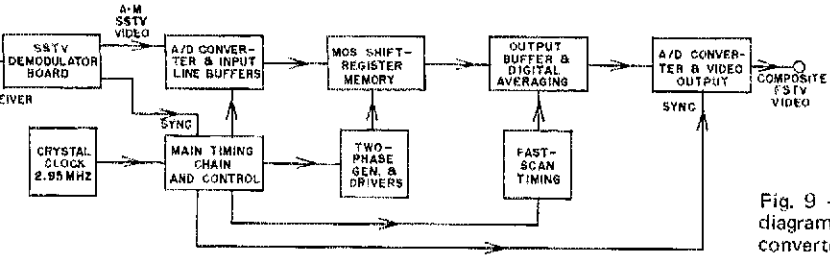


Fig. 9 — Functional block diagram of digital scan converter.

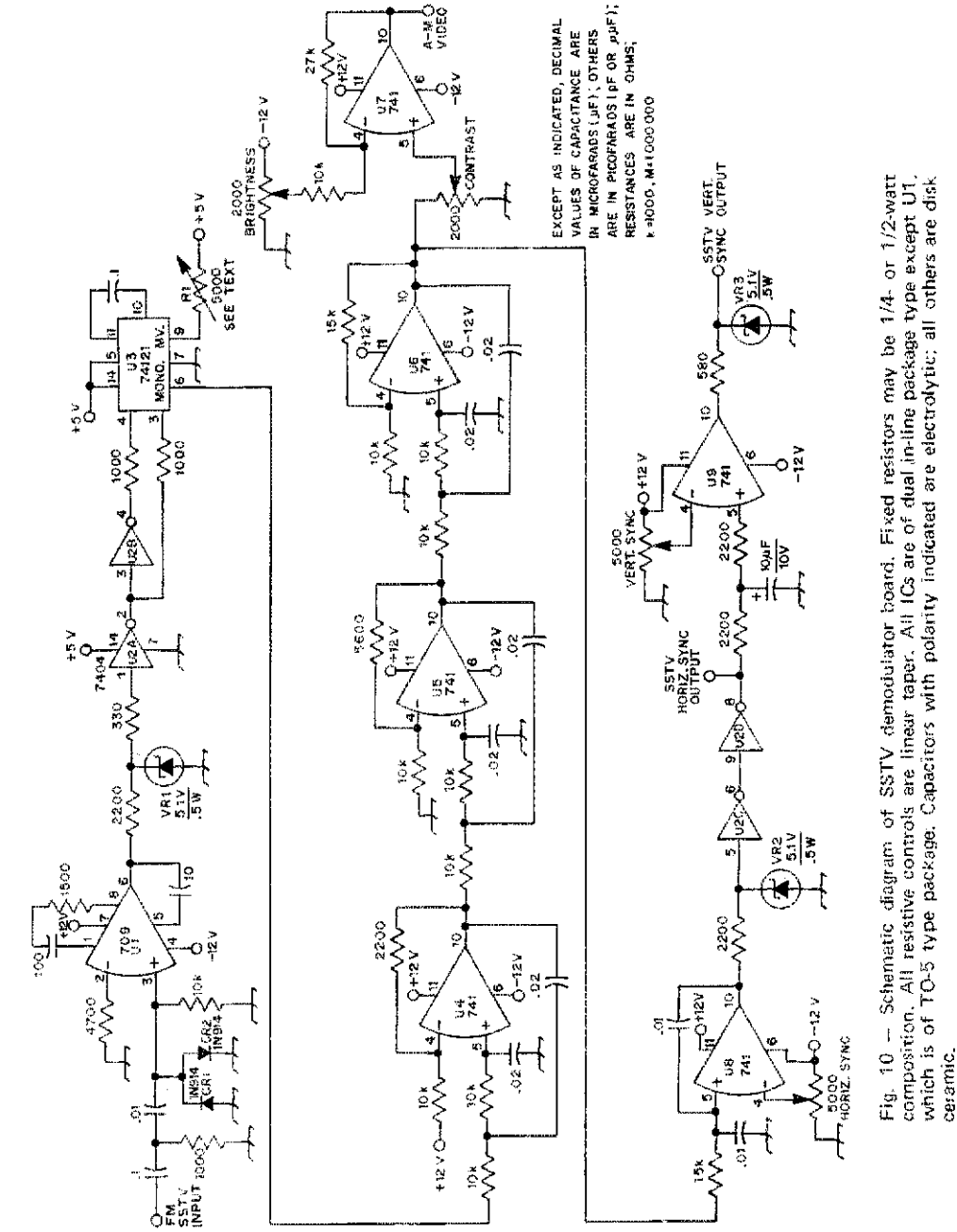


Fig. 10 — Schematic diagram of SSTV demodulator board. Fixed resistors may be 1/4- or 1/2-watt composition. All resistive controls are linear taper. All ICs are of dual-in-line package type except U1, which is of TO-5 type package. Capacitors with polarity indicated are electrolytic; all others are disk ceramic.

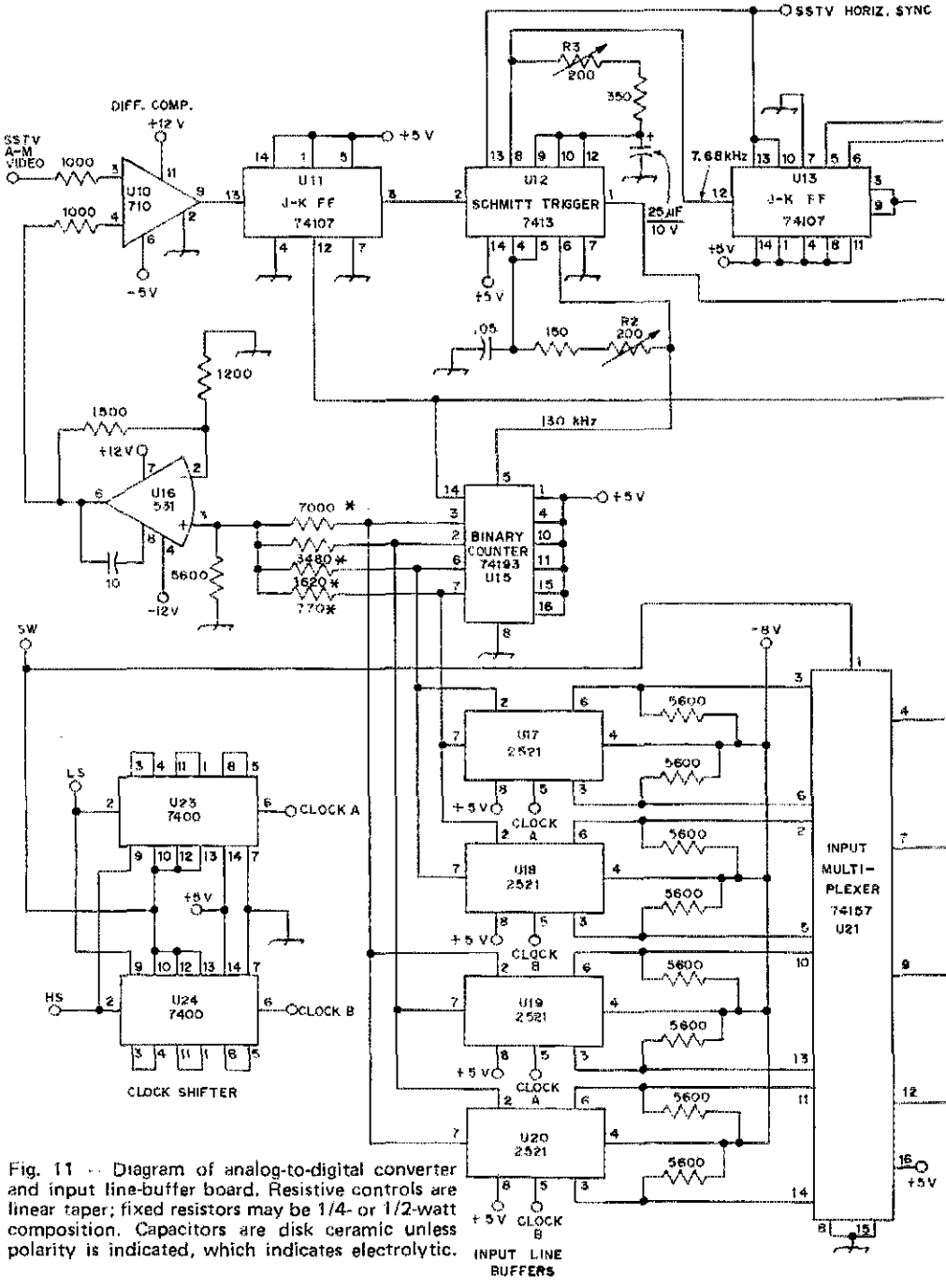
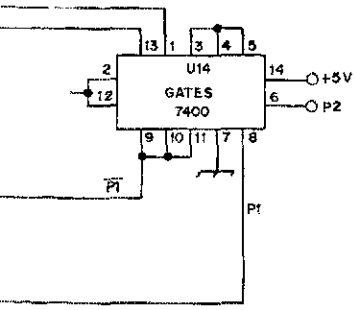


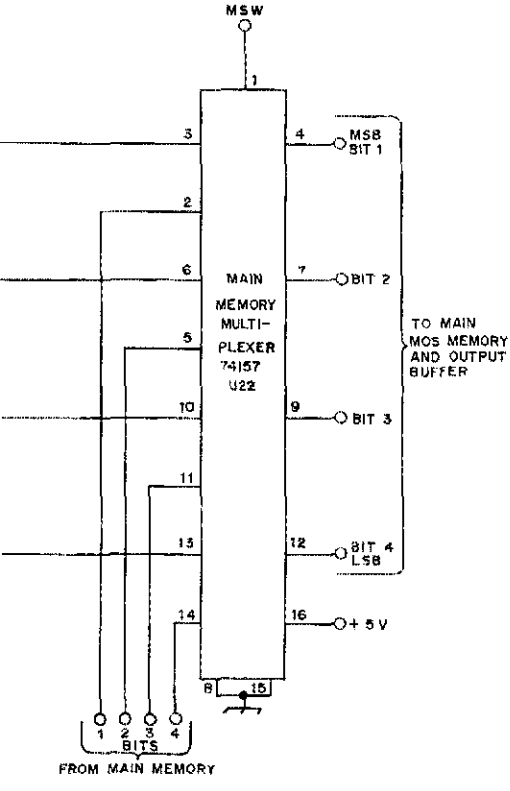
Fig. 11 — Diagram of analog-to-digital converter and input line-buffer board. Resistive controls are linear taper; fixed resistors may be 1/4- or 1/2-watt composition. Capacitors are disk ceramic unless polarity is indicated, which indicates electrolytic.

and sync detection circuitry. Also included are individual brightness, contrast, and sync controls to compensate for abnormal SSTV pictures that require improved contrast or sync tuning. The demodulated a-m slow-scan picture is transferred to an A/D converter and line buffer while the sync signals are sent to the main timing-chain control.

A crystal-stabilized clock is used to provide a pulse train to the timing chains to operate the line buffers, main-memory MOS shift-register memory, and the fast-scan timing board. Close synchronization of the fast-scan 60-Hz sync signal to the power-line frequency is needed to eliminate ripple in the displayed picture.



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



The main timing board contains circuitry necessary to sense the start and end of each frame. This board provides the necessary signals to transfer the picture elements residing in the line buffers to the main memory. After a single line is transferred, the main memory is reconnected and circulates as before. All of this switching occurs in about 1/15,000 second, the time required for a single fast-scan TV line.

The MOS shift-register memory has 64 individual 1024-bit shift registers connected to yield four shift registers each 16,384 bits long. Four half-boards are used for the memory with sixteen 1024-bit shift-register chips on each. The memory bits are continuously circulated at an intermediate 0.984-MHz rate to reduce switching transients and to minimize power dissipation. The parallel 4-bit word from the memory is then presented to the output buffer for final speedup and processing.

The output buffer board consists of two output line buffers and a digital averaging circuit. The output line buffers take each line of memory and increase the bit rate to 2.95 MHz which is compatible with fast-scan television. The optional digital-averaging circuit provides both horizontal line averaging and vertical line averaging to produce an equivalent 256-line picture. During the averaging process, additional brightness levels are generated and are also supplied to the D/A converter which follows. These additional brightness levels have the effect of reducing contouring effects and producing a higher quality picture.

The final video output is derived from the D/A converter and video amplifier board. Fast-scan sync signals are also supplied to this board and a composite FSTV signal is produced which may be fed to a television monitor.

Specific Circuit Description

As noted above, in some cases one board performs more than one function. In spite of this, each board will be given a name corresponding to the block diagram of Fig. 9 and all of the circuits of the particular board will be discussed together. Perhaps this will provide the reader with a greater understanding of the interaction of the circuits and their specific functions.

SSTV Demodulator Board

The circuitry of the demodulator board appears in Fig. 10. Starting on the left, the fm SSTV signal from the ssb receiver is fed to the input stage U1 through a 0.1-μF capacitor. This stage provides both amplification and limiting of the signal. A 5-volt Zener diode, VR1, is used to establish a TTL-compatible level for the two gates that follow. The function of gates U2A and U2B is to provide out-of-phase signals for triggering the 74121 monostable multivibrator, U3, at twice the input frequency. The output of the monostable is a voltage having an average value proportional to the a-m video signal. R1 is adjusted to provide an approximate square wave at pin 6. High-frequency components of the carrier are filtered by the next three stages (U4, U5, U6) which comprise of a 6-pole Butterworth filter with a cutoff frequency of 900 Hz. The SSTV video signal from U6 is fed to U7 for video output and to U8 for sync separation. The horizontal sync pulses are detected by U8 and the rise time is improved by using the

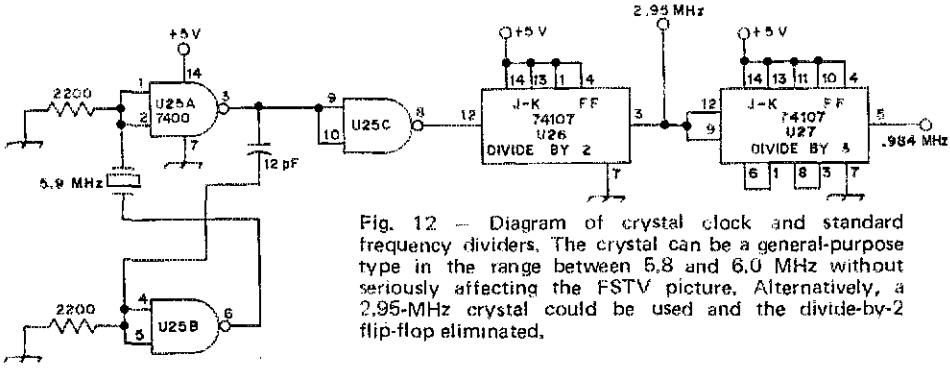


Fig. 12 — Diagram of crystal clock and standard frequency dividers. The crystal can be a general-purpose type in the range between 5.8 and 6.0 MHz without seriously affecting the FSTV picture. Alternatively, a 2.95-MHz crystal could be used and the divide-by-2 flip-flop eliminated.

TTL gates U2C and U2D. Similarly, U9 detects the vertical sync pulses.

It should be mentioned that there is nothing critical or special about the circuitry on this board, and there is quite a bit of room for variation and experimentation. This particular configuration was chosen because the parts are easy to get and were on hand at the time of construction.

Analog-to-Digital Converter and Input Line Buffer

In this stage (Fig. 11) the a-m SSTV video is sampled and converted to a 4-bit digital signal and stored in four type 2521 static shift registers. U10 is a voltage comparator used to compare the SSTV input and the output of U16 which is acting as a D/A converter. Two clocks are involved in the conversion — a 7.68-kHz clock synchronized to the incoming SSTV signal and a 130-kHz clock for the counting stage, U15. Both clocks can be constructed from a single 7413 dual Schmitt trigger, U12. The SSTV horizontal sync pulses are used to gate the 7.68-kHz clock, and a divide-by-four *J-K* flip-flop is used to derive a two-phase 1.92-kHz clock signal at U14. One phase, $\overline{P1}$, is used to gate the 130-kHz clock and the noninverted phase *P1* is used to enable binary counter U15 and flip-flop U11. Phase *P2* is also used by the main timing board for the low-speed address counters. The frequency of the 7.68-kHz clock must be readily adjustable in order to accommodate both 50- and 60-Hz slow-scan stations. R3 provides for this adjustment. The frequency should be adjusted to

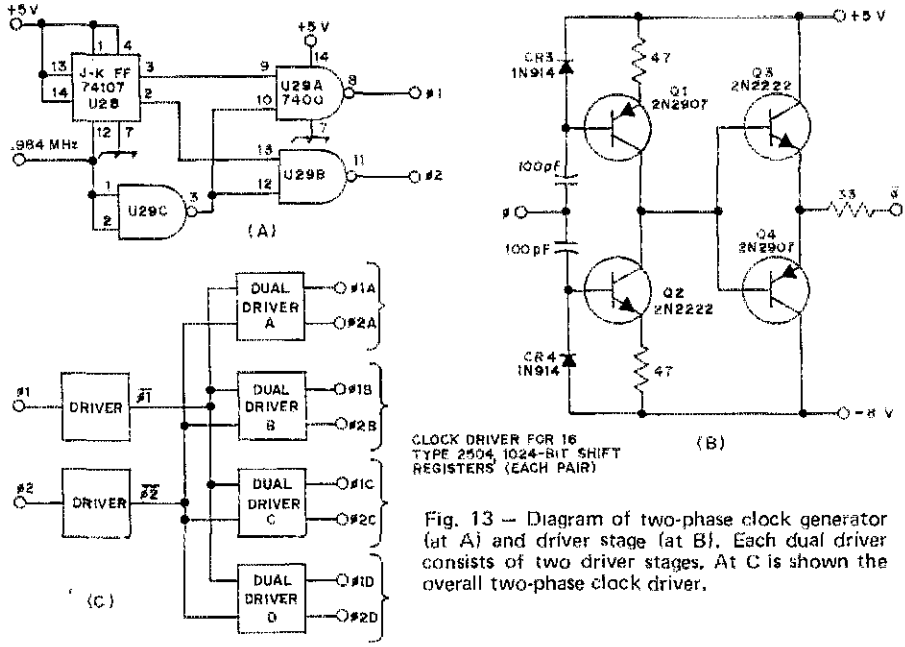


Fig. 13 — Diagram of two-phase clock generator (at A) and driver stage (at B). Each dual driver consists of two driver stages. At C is shown the overall two-phase clock driver.

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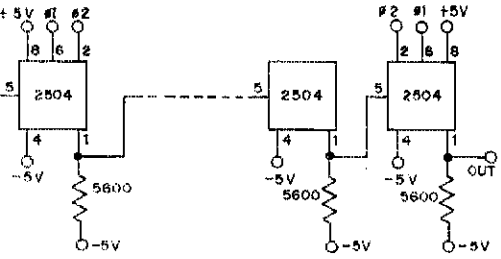


Fig. 14 — Schematic layout of one of the MOS shift-register boards. Each board has sixteen type 2504 DIP shift registers connected as shown, and there are four such boards in the converter. The two-phase clock signals $\phi 1$ and $\phi 2$ are taken from appropriate points as indicated on Fig. 13. Type 1404 shift registers may be substituted with no changes. The power supply leads should be bypassed to ground at several places on the board with 0.1-μF ceramic capacitors to reduce cross talk and ringing.

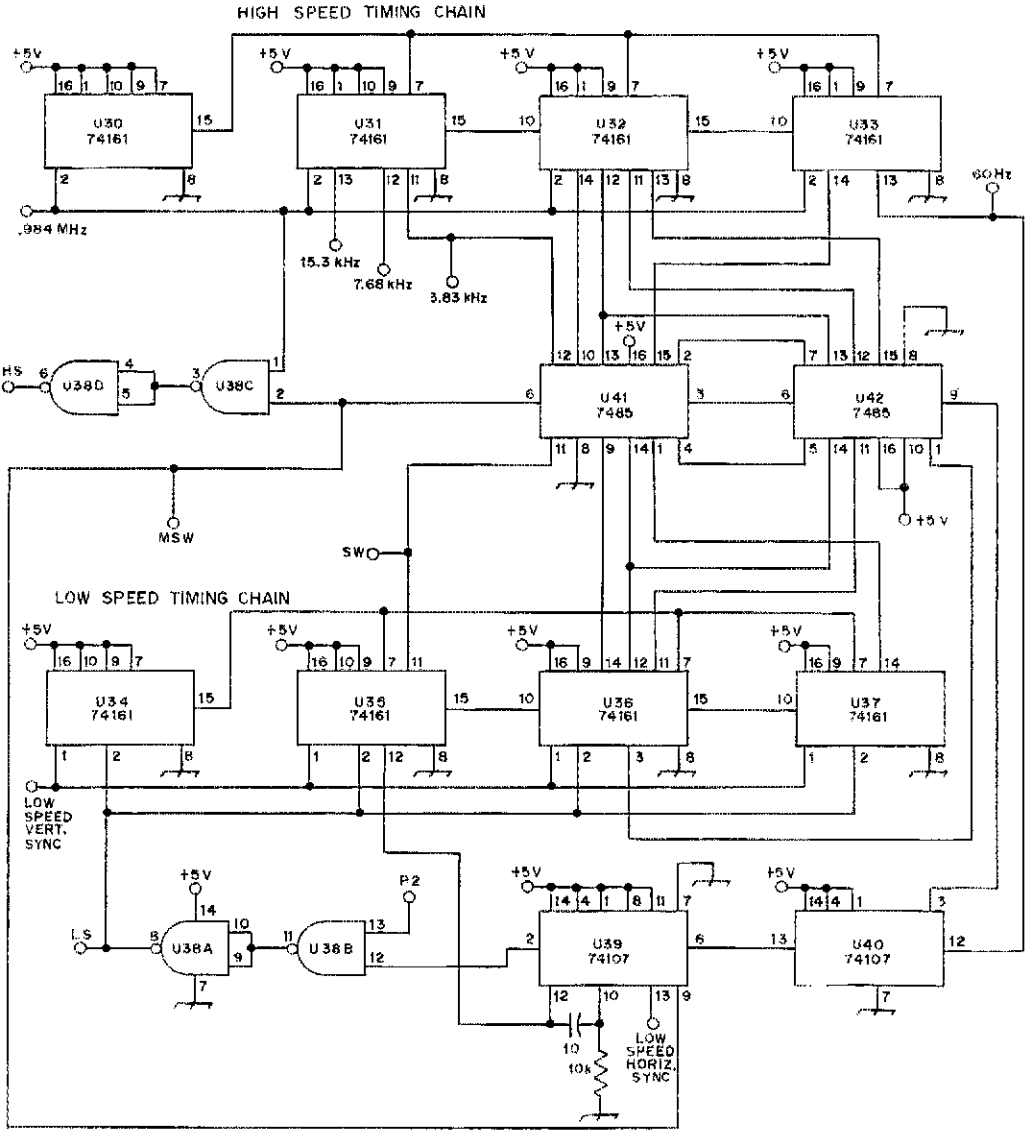


Fig. 15 — Schematic diagram of main timing board and control circuits. Type 74161 synchronous counters are used in both the high- and low-speed timing chains. Two 7485 comparators are used as an eight-bit magnitude comparator between the two counting chains.

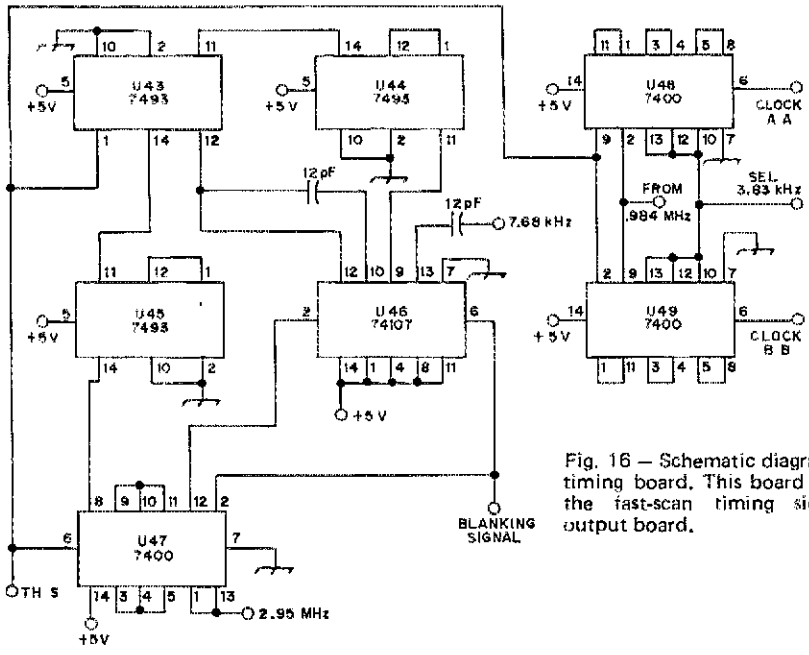


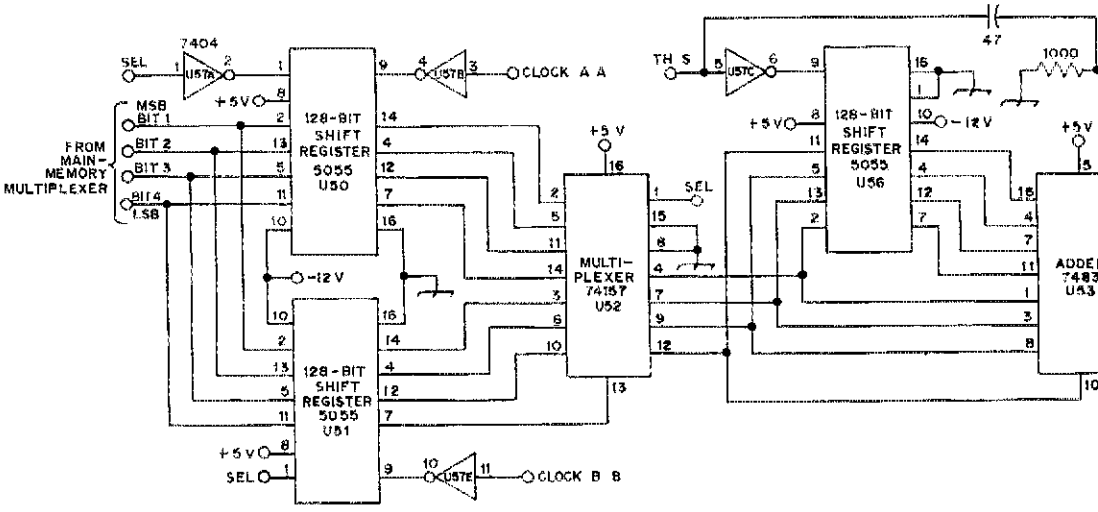
Fig. 16 — Schematic diagram of fast-scan timing board. This board provides all of the fast-scan timing signals for the output board.

allow only 128 samples of a given slow-scan line. For example, if one line takes 1/15 second, set the clock for 4 × 128 × 15 = 7.68 kHz.

The digital samples are taken from the output of counter U15 at pins 7, 6, 2, and 3. Each sample is clocked into a 2521 dual 128-bit static shift register and held for transfer to the main memory. The clock *A* and clock *B* outputs (U23 and U24) are derived from two 7400 gates connected as a 2-input multiplexer and can be switched between the SSTV clock *LS* and the main-memory clock *HS* by the signal *SW*. The logic signal *SW* also determines which buffer will be read by controlling the multiplexer U21. A control signal *MSW* allows the main-memory multiplexer U22 to switch between the main memory and the input buffers.

Crystal-Clock Board

A crystal clock is not an absolute necessity for this project, but it will improve the stability of the picture on the television set. A 5.9-MHz crystal oscillator is shown in Fig. 12. This frequency was chosen because surplus crystals of this frequency were on hand. The two frequencies actually required are 2.95 MHz and 0.984 MHz; so if a



2.95-MHz crystal is available, it may be used in place of the 5.9-MHz crystal and the divide-by-2 flip-flop eliminated. Of course, leads should be kept short in this circuit to minimize stray capacitance. Operationally, the circuit has been found to perform well with a wide variety of crystals.

Two-Phase Clock Driver Board

The circuits for the clock driver are shown in Fig. 13. The 0.984-MHz clock signal is used to generate a two-phase clock necessary for operation of the dynamic shift registers in the main MOS memory. Discrete transistors are used for the driver stage. An alternative approach would use an integrated-circuit dual driver such as the MH0026 for this function. However, this chip is fairly expensive and can be easily burned out by overloads.

One driver is used to buffer each of the phases $\phi 1$ and $\phi 2$ and to provide enough drive for the four dual drivers required by the sixty-four MOS shift registers in the memory. Short leads should be used between the drivers and the shift registers, and heavy bypassing of the +5-volt and −8-volt supplies to ground with 0.1-μF ceramic capacitors is recommended to reduce ringing of these lines.

MOS Shift-Register Board

Shown in Fig. 14 is a schematic of one board of the main MOS dynamic shift-register memory. Each Signetics type 2504 shift register has 1024 bits and there are sixteen on the board for a total of 16,384 bits. The two-phase clock lines are connected in parallel for $\phi 1$ and $\phi 2$ respectively and should be as short as possible. The power supply lines should likewise be short and heavily bypassed to ground with many 0.1-μF capacitors to prevent ringing.

Main Timing Board

The schematic diagram of this board is shown in Fig. 15. The 0.984-MHz clock signal is fed to a synchronous high-speed counter chain, U30 through U33, to derive the necessary frequencies — 15.3, 7.68, and 3.83 kHz and 60 Hz. This chain also serves as an address counter for the picture elements stored in the main memory. The low-speed counter chain, U34 through U37, keeps track of the input address for the current slow-scan line and generates the signal *SW*. The signal *P2* from the A/D board provides input to this counter via U38B and U38A.

Two 7485 comparators (U41 and U42) connected as an 8-bit comparator are used to compare counts in the two counting chains. When an exact match is obtained, the signal *MSW* is generated which provides for switching buffer clocks.

The SSTV horizontal sync pulse is used to disable the flip-flop U39 which assures that only one line gets entered into memory. Also, incoming vertical sync pulses are applied to the common clear terminals of the low-speed chain to reset the counter. This corresponds to the start of a new frame and results in the new picture information starting at the top line.

Fast-Scan Timing Board and Aspect-Ratio Conversion

This board (Fig. 16) provides the necessary synchronization of the 0.984-MHz memory and the 2.95-MHz output buffers. Two clock sources corresponding to these frequencies are fed to two input multiplexers (U48 and U49) made up from 7400 gates. The 3.83-kHz signal from the main timing board allows the switching of the multiplexers between the two clock frequencies. Aspect-ratio conversion is also accomplished with this circuitry by delaying the start of each line by 32 clock pulses, by using a 7493 counter and 74107 flip-flop. This delay effectively centers the picture on the screen and also provides a square format. There is a 128-bit counter (7493 ICs) also provided to keep track of the time the video is displayed and to provide a blanking signal for the unused portion of each line.

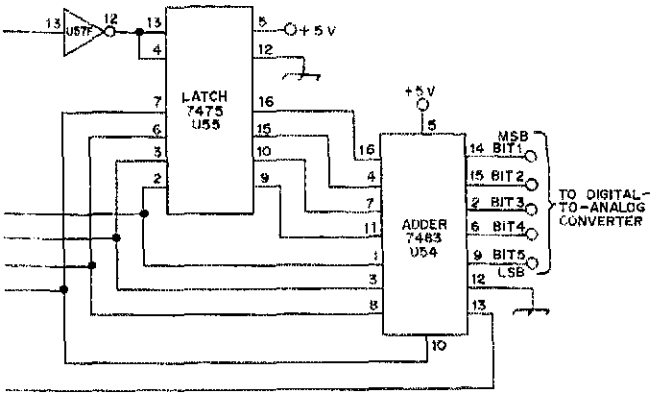


Fig. 17 — Schematic diagram of the output buffer and digital averaging circuitry. Type 5055 and 128-bit static shift registers are used for the line-doubling and line-delay functions.

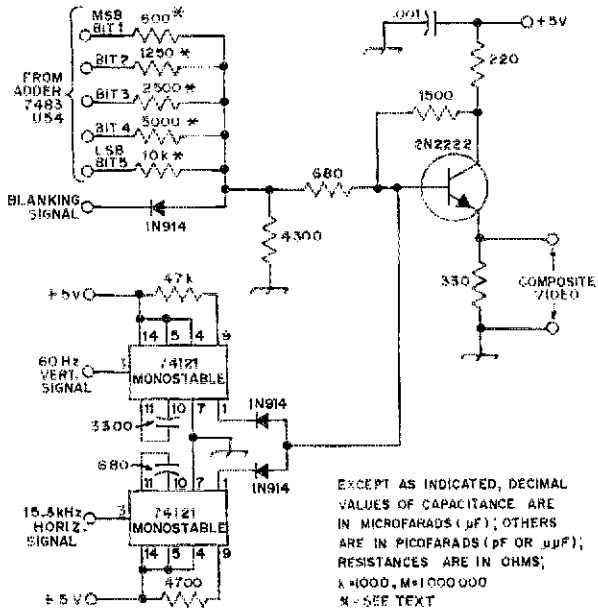


Fig. 18 — Schematic diagram of the digital-to-analog converter, sync generators and video amplifier. These items are combined on the same output board with that shown in Fig. 17.

Output Buffer

Most of the circuitry presented in Fig. 17 is optional, as it performs the functions of line doubling, line averaging and pixel averaging. If one wishes only a 128-line picture, the incoming 4 bits from the main-memory multiplexer can be fed to four 128-bit shift registers, clocked as shown, and the outputs can be connected directly to the D/A converter board. The author feels that much superior pictures can be obtained through digital image processing, however, and strongly recommends the inclusion of the circuitry shown here.

The function of the 128-bit shift register is to store alternate lines of slow scan and to perform the function of line doubling. The doubled lines are fed to multiplexer U52 where they are delayed one line and presented to the 7483 adder. The 7483 forms the average of the lines it receives and therefore generates a new line whenever successive lines are not the same. The carry bit (pin 15) from U53 is sent to the next adder U54 to provide additional continuity. The 7475 latch is designed to provide a one-half-pixel delay of the output of U53. Therefore, the original line plus the delayed line are presented to U54 for averaging. This process generates about 256 pixels per line although admittedly half of them are made up of averages. The resulting 5 bits from U54 are then sent to the D/A converter for output to the video amplifier.

Digital-to-Analog Converter and Video Output

The final stage of the slow- to fast-scan converter is shown in Fig. 18. The resistor values in the network for the digital-to-analog converter are critical for proper gray-scale rendition and reduced contouring. The 2N2222 transistor acts as a video amplifier and buffer for the television set. Vertical and horizontal signals from the timing chain are used to trigger 74121 one shots for the required duration. The required duration is about 1 ms for the vertical and about 6 μs for the horizontal pulse although the exact values are not critical. The sync is combined by two ordinary silicon diodes and then combined with the analog video to form a composite video signal.

The composite video signal may be fed directly to the video amplifier of a television monitor. A look at the diagrams of most modern solid-state television sets should enable one to find the proper point for introducing the video. The author has found it convenient to mount a jack on the side or back of the set so it can be returned to normal service whenever it is needed.

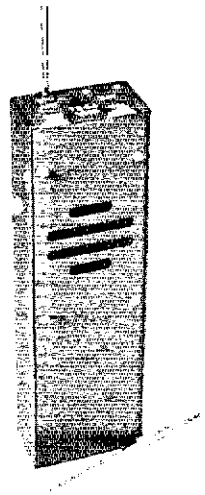
Power Supplies

Several power supplies are needed for this project. The schematic diagrams are not given since the designs are all standard. Required are +5 V at

(Continued on page 46)

Recent Equipment

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



VHF Engineering HT-144 Hand-Held Transceiver

ALMOST from the start of the growth curve of amateur repeater popularity, this writer began to receive questions from amateurs interested in "a miniature transceiver I can build, preferably hand-held." The general unavailability of subminiature parts, and the necessary parts density in so small a unit, made the outlook quite bleak. First-hand knowledge of the troubles associated with working on some of the commercially made "pocket" units of the day caused grave doubts as to the ability of many would-be builders to properly assemble a facsimile. If there is such a thing as an "average" ham workshop, the stock of tools and test equipment therein did not further inspire confidence.

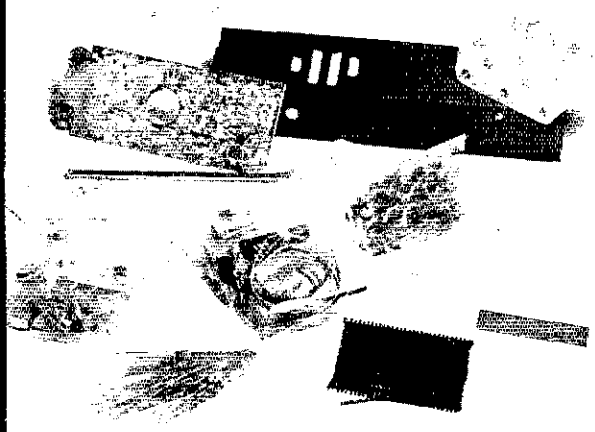
In the early part of 1974 VHF Engineering came forth with their HT-144; the effect was as brightening as a suddenly opened window. Here was a unit that could be assembled by an "average" ham, with an excellent chance that he could make it play.

This still does not answer the purist among the experimenters, who insists on doing it himself, all the way. However, a major consideration here is that the two most difficult phases of such a project are taken care of by the manufacturer – obtaining the parts and fabricating the pc board.

Construction

The assembly instructions supplied with the kit are not long or profusely illustrated, but nontheless were found to be adequate in clarity and coverage. Considerable study is recommended before heating the soldering iron, with particular attention to comparing the schematic diagram with the oversize parts-location drawing. This reviewer used one of the new cordless soldering irons for the job of connecting the many components to the board. (This tool was picked for two reasons: it had a very small tip and it was something new; therefore little excuse was needed to try it.) An iron with a small tip and some good lighting at the work area are both essential for ease of construction. Assembly time was very near six hours from step one to the turning on of the switch for the welcome sound of receiver hiss. At this point there came a pleasant surprise in the form of receiving the local repeater (10 miles away) full quieting; no receiver alignment had been tried and the antenna was not yet installed. Crystals for a more distant repeater were then installed and the receiver alignment was done while listening for best quieting by a weak signal. Of course the proper way to do the tune up is with meters and a signal generator, but it was interesting to see what could be done without such test equipment. No problems were encountered in the assembly of the unit, and no fault could be found with the parts or with the mechanical fit of the boards or housing.

Tuning the transmitter for maximum output was done with the help of a grid-dip meter in the absorption mode while using a No. 47 lamp as a dummy load. Later tests with a wattmeter verified



Parts used in the HT-144 are of top quality and are carefully packaged. It helps to use the normal kit-builder's procedure of sorting and identifying the components. Assembly can proceed quite rapidly after a careful reading of the instruction manual.

that all was well in the rf power-output department.

Circuit Highlights

The receiver circuitry starts off along somewhat conventional lines, but when you look at the schematic diagram and then at the pc board, you cannot help but admire the job of finding a place for everything. A dual-gate MOSFET starts the lineup, followed by a bipolar mixer, two filters at 10.7 MHz, and a second mixer to convert to 455 kHz. The low-frequency i-f amplifier section is made up of four bipolar transistors, capacitively coupled for ac, but all in series for dc. At the output of the last i-f stage is where things get interesting (see Fig. 1). What apppears to be an i-f filter at the output actually *is* a filter – the peak of its pass curve just offset from the 455-kHz center frequency. This offset feature places an incoming carrier partway down the selectivity curve or skirt, with the result that any deviation of the carrier presents more or less energy to the diodes in the detector. Who said that slope detection of fm was a no-no? This circuit is working proof that when designed and controlled properly, slope detection will produce results that are very effective.

Following the diodes in the detector is an audio-amplifier IC which completes the signal path. Bipolar transistors are used in a noise-amplifier and dc-switch circuit to provide squelch action.

Transmitter circuitry is along familiar lines, starting with fundamental-mode crystals in a harmonic-oscillator circuit, followed by a doubler and an amplifier stage. Interstage coupling consists of double-tuned circuits with low values of capacitance (top coupled) to provide a fair degree of rejection of unwanted harmonics.

A variable-capacitance diode connected to the crystal oscillator circuit serves as the frequency-modulating element. Audio amplification for the transmitter is provided by several bipolar stages in the HT-144, or by an IC in the HT-144B. More on this later.

Oh-Oh! Troubles

The smiles of success engendered by the receiver operation mentioned earlier turned into frowns of concern when words were spoken into the microphone in the first attempt to communicate through the HT-144. Reports of very weak audio were the immediate result. This led to an immediate and thorough check of the wiring and voltages at all significant points through the transmitter. All seemed to be in order, but still there was not enough deviation.

Subsequent consultation with the people at VHF Engineering brought out that "yes, there is a problem, which is being worked on." A suggestion to use a specific type of transmitting crystal (those made for the GE Pocket Mate) was tried and did cause some improvement in deviation. After a period of time a letter arrived with modification information and some parts to substitute. The suggestions were carried out, and again there was a slight improvement. However, the modulation still

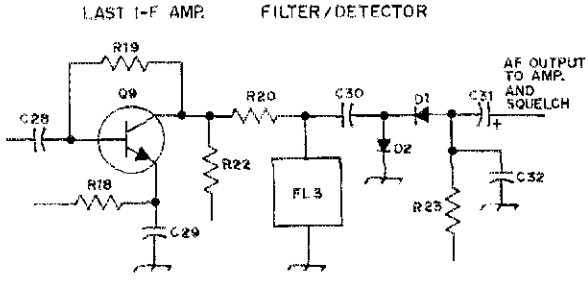
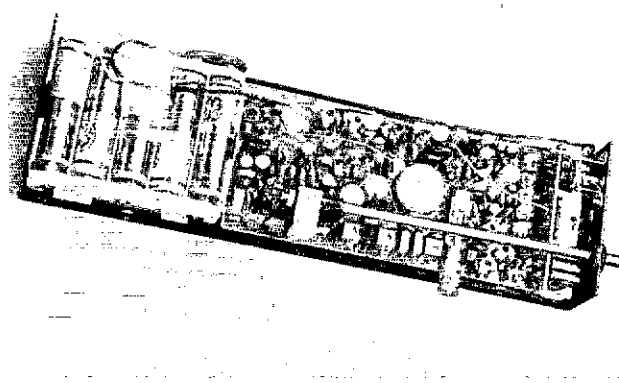


Fig. 1 — The detector in the HT-144 employs a form of slope detection. FL3 is a ceramic resonator with its peak response offset from the center frequency of the 455-kHz i-f amplifier. Incoming carrier deviation produces an output voltage not unlike the familiar discriminator S-curve response. A small amount of forward bias (through R23) is applied to the diodes to aid detection of weak signals.

did not have the quality and quantity that one would expect from modern devices and circuitry. Then followed another waiting period to allow the engineers a bit more "drafting-board" time. The next development was the HT-144B, incorporating changes to improve the audio and to cure some problems that had not appeared in the unit assembled by this writer. An assembled "B" model was obtained and used to complete the evaluation.

Examination of the HT-144B brought forth some interesting details. Three of the four transistors in the transmitter audio section have been replaced with an IC. The trimmer capacitors in the crystal-oscillator circuit have been augmented by some parallel fixed-value units, and crystal sockets have been added for ease in changing to crystals of another channel. In the receiver things remain much the same except for a series trap in the second i-f section, designed to eliminate leakage of second-oscillator energy into the detector circuit.

Tests with the new model did indeed indicate that things had been improved especially in the carrier deviation department. The normal voice of this reviewer produced a 5-1/2 kHz swing, and those with more stentorian delivery had no trouble moving the carrier out to 7 kHz. (Some voices just do not go over big when run through electronic equipment and that of the writer is one of them.)



Transmitter and receiver circuitry are both on one pc board, with the receiver mainly on the bottom in this view. The battery pack shown here is an early version -- the rechargeable AA cells are not supplied with the kit. Optional accessories available include a sealed NiCad pack, an ac-operated battery charger, and an adapter with flexible antenna ("rubber duckie") to replace the whip shown on this model.

VHF Engineering
HT-144B Hand-Held Transceiver

Dimensions (HWD) and Weight: 9-1/4 × 2-3/4 × 1-1/2 inches, 1-1/3 pounds.*
Power requirements: Internal battery pack, nominally 12 V. Current drain approx. 500 mA while transmitting; 15 mA receiving (quiet), 100 mA on voice peaks.
Transmitter power output: 3.2 watts.*
Transmitter deviation: Adjustable.
Receiver sensitivity: 0.3 μV for 20 dB of quieting, 0.26 μV to open squelch.*
Receiver bandwidth: 15 kHz.
Channel capability: 4.
Crystal requirements: For receiver; channel frequency minus 10.7 (MHz), divided by 3; approx. 45 MHz, parallel resonant, 20-pF load. Transmitter; output frequency divided by 8; approx. 10.7 (MHz), divided by 3; approx. 45 MHz, parallel resonant.
Spurious output signals: Second harmonic -- 34 dB, all others greater than 42 dB below maximum carrier output.*
Receiver spurious responses: Image rejection 56 dB, adjacent channel rejection 64 dB, other spurious vhf signal rejection greater than 90 dB.*
Frequency stability: Determined by crystal, typically .002% or better.
Price class: $130.
Manufacturer: VHF Engineering, Division of Brownian Electronics Corp., 320 Water St., Box 1921, Binghamton, NY 13902.

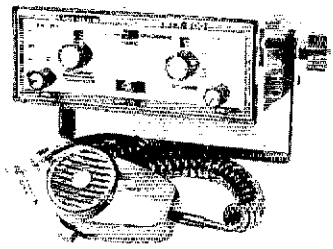
* Measured in ARRL Laboratory.

Receiving sensitivity with the new unit was virtually the same as in the first model. A comparison of the two, side-by-side, reveals very little visible difference other than the crystal sockets. A new battery package was supplied with the HT-144B -- a sealed unit by Alexander. It is slightly smaller than the original package and has no exposed terminals to make unwanted contact with the screws that hold the outside cover in place. This latter point was a matter of concern with the first model, and a warning in the instruction manual served to point out the care needed in battery placement.

Summary

Assembling the HT-144 is not particularly difficult; in fact it could be called a pleasure. The effort to track down the problems with the first unit was definitely educational to all concerned. These areas of difficulty were brought out in this evaluation because there are undoubtedly some HT-144 owners among the readers. The VHF Engineering people have been very helpful in sending out modification information and parts to those purchasers who requested help.

The model currently available, HT-144B, is indeed an improved version, worthy of consideration for communications use. However, it would be grossly unfair to compare this unit with any of the vastly more sophisticated items seen dangling from belts or stuffed in shirt pockets across the land. An acquaintance of the writer summed it up quite well with one word utilitarian -- which it certainly is. More than that, it is the first unit made to fill a void that had existed too long. -- *WISI.*



Genave GTX-600 6-Meter FM Transceiver

DURING THE RECENT growth period of 2-meter fm and repeater operation, use of the 6-meter band for this type of operation seems to have been forgotten awhile. But now that the repeater portion of the 2-meter band is filled nearly to the saturation limit in some densely populated areas of the U.S., amateurs are looking for new horizons. The Genave GTX-600 FM Transceiver should help many to find them. In a package no larger than the average 2-meter mobile box, it offers all the features desired for operation through an fm repeater, or for simplex operation.

Of course there's no reason why operation must be conducted through a repeater for covering distances. When the band is "open," there's a lot of "skip" just waiting to be worked. In addition, believe it or not, there is an active group of enthusiasts who have always felt that 6-meter fm is the place to be. They're willing and eager to have others join their ranks. Whether you may be an old timer or a prospective newcomer to the fm mode on 6 meters, the features of this transceiver will likely arouse your interest.

The GTX-600 is designed with mobile operation in mind, but it also makes a useful and attractive piece of equipment for operation in the home station. An optional ac power supply is available. The built-in speaker is located at the bottom of the transceiver, convenient for under-dash installations.

The transceiver may also be used for portable operation from a battery supply. Provisions are

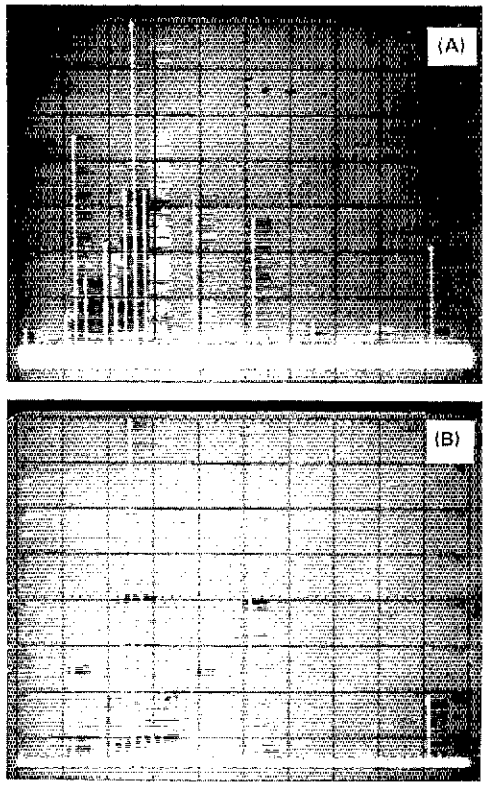


Fig. 1 — Spectrum analyses of GTX-600 transmitter output during 52,525-MHz operation; at A, low-power, and at B, high-power output. Frequency is displayed on the horizontal axis with 20 MHz per reticle division (total display from 0 at left to 200 MHz at right). Amplitude is represented on the vertical axis with 10 dB per division. The tall "pip" about 1/4 of the distance from the left edge of each photo represents the carrier; the display is adjusted so its amplitude meets the 0-dB reference line at the top. Responses close to the carrier frequency are on 52,525 +4,377 MHz, the plus/minus component being that of the crystal oscillator before frequency multiplication in the transmitter. Pips for frequencies removed from the carrier by multiples of 4,377 MHz may be seen at various other amplitudes. At A the most significant unwanted response is at 26,2625 MHz, half the transmitter frequency. At B the second harmonic of the transmitter frequency appears in the approximate center of the display at about −39.5 dB.

included for selection of ten transmit and ten receive frequencies (20 crystals required). The transmit and receive frequencies may be selected independently in the UNLOCKED position of the front-panel MODE switch, or selected in prearranged pairs in the LOCKED mode.

The GTX-600 is designed to cover the complete 6-meter amateur band, 50 to 54 MHz. The receiver section employs dual conversion, with a 13.1-MHz first i-f and a 455-kHz second i-f. Crystals for the receiver first local oscillator are of the third-overtone type, with the LO frequency being 13.1 MHz below that of the received signal. For transmitting, fundamental-cut crystals are required for 1/12 the operating frequency. All crystals are plugged into terminals mounted on the main circuit board of the GTX-600, spaced to accommodate HC-25/U holders.

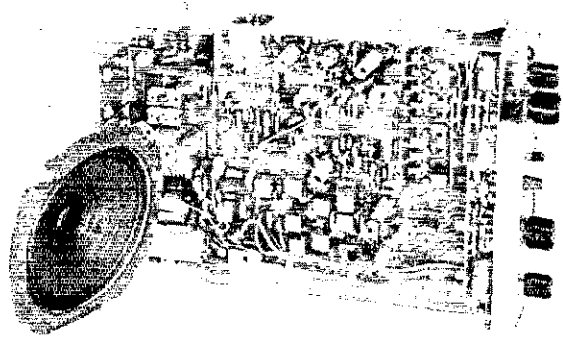
Phase modulation of the carrier is obtained by means of a voltage-variable-capacitance diode, and with deemphasis of the audio signal before application to the diode, the appearance of frequency modulation results. The deviation is adjustable to 10 kHz maximum. The transmitter output power is 35 watts nominal. A low-power mode of operation for contacts over short distances and for reduced drain from the power source provides 5 watts of output power, nominal. For most simplex contacts in the local area with fixed operation using a 6-meter ground-plane antenna at a height of 40 feet, this operator found the low-power mode to be quite satisfactory. High power was found to be more effective during a 6-meter band opening between Connecticut and the state of Florida, and between Connecticut and the Ontario province. In mobile operation, low power was usually satisfactory for fixed or mobile stations up to 8 or 10 miles away.

In several months of operating, the GTX-600 performed flawlessly. It was noted, however, that

Genave GTX-600 6-M FM Transceiver

Dimensions (HWD): 2-1/2 × 6-1/2 × 9 inches.*
Weight: 5 pounds.*
Color: Black with chrome trim.
Channel capability: 10 transmit, 10 receive, either independent (UNLOCKED mode) or in prearranged pairs (LOCKED mode), with front-panel selection of mode and channels.
Frequency coverage (all operation crystal controlled): 50 to 54 MHz.
Transmitter output power: High power, 42 watts with 13.6 V supplied; low power, 12 watts with 13.6 V supplied.*
Power requirements: High power transmit, 13.6 V nominal at 6 A; low power transmit, 13.6 V nominal at 3.8 A; receive, 13.6 V nominal at 0.5 A.*
Transmitter spurious responses (see Fig. 1): High power, all 38 dB or more below carrier; low power, all 25 dB or more below carrier.*
Receiver sensitivity: 0.25 μV for 20 dB of quieting, 0.1 μV to open squelch.*
Image rejection: 44.1 dB; rejection of TV Channel 3 audio-carrier frequency for 52.525-MHz reception, 66.8 dB.*
Price class: $220; including crystals for 52.525-MHz operation, ceramic microphone, built-in speaker, and mounting hardware.
Manufacturer: General Aviation Electronics, Inc. (Genave), 4141 Kingman Dr., Indianapolis, IN 46226.

*Measured in the ARRL lab.



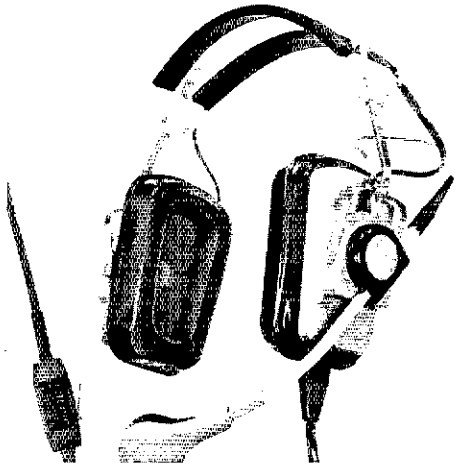
Here's the inside of the GTX-600 with the speaker removed from its mounting tabs to expose the parts beneath. The circuitry is constructed on one main circuit board, which is also a "mother" board for two crystal-switching boards, their edges visible at the right, behind the front panel. The row of trimming capacitors for netting the ten transmitter crystals may be seen in that same area (one trimmer is hidden from view). The transmitter section occupies the upper half of the remaining portion of the board, and the receiver section the lower. Just to the left of the netting trimmers in the transmitter section may be seen a clear area in which components for an optional sub-audible modulator may be added. The board is designed and holes are present to accommodate the few extra parts needed. Installation and alignment instructions are contained in the instruction manual.

the receiver, when set for reception of 52.525 MHz, was susceptible to pickup of the audio signal of TV Channel 3, from a transmitter located in the Newington/Hartford area. A bit of mathematical calculation revealed the cause. The second harmonic of the 35.425-MHz first local oscillator (78.850 MHz) was mixing with the audio carrier frequency of the TV signal (65.750), and the difference frequency was falling directly into the i-f range of the receiver, 13.1 MHz. This was not a bothersome problem, however, as any amateur signal of reasonable strength would far override the TV signal. In fact, the only way this occurrence was noted at all was that in mobile operation the squelch would be tripped open for brief periods of time in various parts of the city.

The instruction manual provided with the GTX-600 is quite comprehensive, including all information needed to place the unit into operation. Also included is a complete section on the theory of operation, a section on alignment procedures, a complete schematic diagram, a list of parts, and diagrams of the circuit-board pattern with component locations shown. Further, information for voltage and scope measurements is tabulated and/or included on the schematic diagram. In these days when it seems to be the intent of some manufacturers to offer so little technical information on their gear that it's necessary to return the instrument to the factory for even minor servicing, it is gratifying to see an instruction book of the scope of this one Genave has produced. Here's one manufacturer who apparently recognizes that some amateurs still like to service their own equipment when practicable. – *K1PLP*

• *New Apparatus*

TELEX CM-1210 BOOM MIC HEADSET

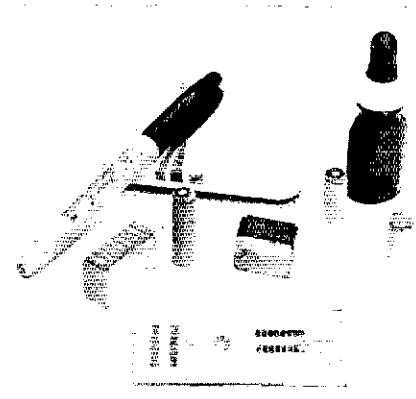


Lightweight and comfortable are the key words that describe one of the new products from Telex. The CM-1210 is a headset that has a boom microphone and low-impedance earphones (3.2 to 20 ohms). The microphone is a high-impedance ceramic type offering an excellent audio response. It should interface nicely with any communications system. The headset comes with a ten-foot-long cable which is unterminated, so the individual can put the appropriate connector on it for his particular rig. A PTT switch is included on the cable for manual control or if left switched on, VOX can be employed.

The headset is ideal for those long DX operating stints or traffic sessions. It is a pleasure to have one's hands free to handle the necessary paperwork of log keeping or note taking. With the long cable, convenience is enhanced by being able to move around the shack and still maintain communications.

The price class for the CM-1210 is $40. Their product line is worth a look. Further information can be obtained by writing Telex, 9600 Aldrich Avenue South, Minneapolis, MN 55420. *WA1ABV*

R&R ELECTRONICS STAMP-IT, ETCH-IT KIT



If you are one who likes to make your own etched circuit board, the "Stamp-It, Etch-It" kit shown in the photograph may be just the thing for you. This kit contains eight rubber stamps plus an ink pad and resist ink. The stamps are the most-used designs in etched-circuit-board work. One stamp, for example, is for a 16-pin (or 14-pin) dual in-line IC socket. We found that using the kit simplifies layout and detail work for the circuit boards. The kit is available from R&R Electronics, 4994 Olympia Dr., Indianapolis, IN 46208. The price class is $10. – *W1ICP*

SWITCH TO SAFETY!

RFI Task Group

Meets in Washington, D.C.

The ARRL RFI Task Group, which is headed by ARRL Vice President Clark, W4KFC, met for eight hours of planning and discussion in the offices of ARRL General Counsel Booth, W3PS, on March 4, 1975. Committee members present were Vic Clark, W4KFC; Ted Cohen, W4UMF (Secretary); Harry McConaghy, W3SW (Board Liaison); Doug DeMaw, W1CER (ARRL Technical Editor); Don Gerue, K6YX; Bill Grenfell, W4GF; Lew McCoy, W1ICP (ARRL staff); Ed Redington, W4ZM; Hal Richman, W4CIZ; and Paul Rinaldo, K4YKB.

The action plan of the RFI Task Group is:

1) Establish and maintain close liaison with the FCC, the EIA, consumer agencies, and others, as appropriate, to further the interests of amateur radio and the general public respective to radio-frequency interference (RFI) to entertainment electronics devices, medical devices employing electronics, and automotive electronics.

2) Develop and distribute information which will lead to wider understanding of the nature and correction of RFI problems.

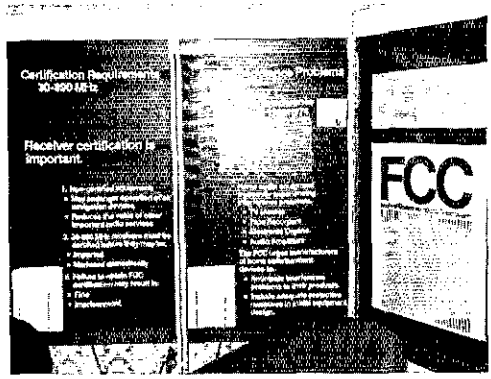
3) To update, as necessary, the ARRL packet on RFI causes, cures, and preventive measures.

4) To develop mailing lists of interested supporters, and to provide them with pertinent information and guidance on RFI matters.

A study is being undertaken by the committee to establish minimum RFI rejection standards for entertainment devices, specified in terms of acceptable rf voltage levels at the various ports of ingress and egress common to such equipment. The study will include specific techniques which can be applied by the manufacturer and consumer to lessen the chance of RFI. Some of the work attendant to the foregoing is being carried out in the ARRL Hq. lab.

Efforts are being made by the committee to place before the House of Representatives a bill which will cause amendment of the *Communications Act of 1934* to include specific details relative to regulations which shall pertain to RFI susceptibility and necessary preventive measures concerning electronics entertainment, medical, and automotive devices. Such rules will apply to all persons or organizations engaged in the manufacture, import, sale or shipment of the aforespecified equipment.

The RFI Task Group is shown, left to right: W1ICP, W1CER, W4CIZ, W3PS, W3SW, K4YKB, K6YX, W4ZM, W4UMF, and W4GF. Not present in the photo is Chairman Clark, W4KFC, who served as photographer.



FCC RFI exhibit which was used at a recent High Fidelity Music Show.

Through the efforts of K4YKB and W4UMF, directly, an RFI symposium will be held at the 1975 ARRL National Convention, September 13 and 14, 1975, Reston, Virginia. The Convention is being sponsored by The Northern Virginia Amateur Radio Council and The Foundation for Amateur Radio. For details write to Box 682, McLean, VA 22101.

On March 5, 1975, Lew McCoy and Doug DeMaw of ARRL Hq. met with various FCC officials in Washington to discuss the general RFI situation and to obtain the views of the government officials respective to RFI and legislation. Prose Walker, Chief of the Amateur and Citizens Division of FCC, was unable to attend the luncheon meeting held later in the day, but offered some good suggestions for dealing with RFI matters.

The FCC indicated the seriousness of the RFI problem by citing some 42,000 consumer complaints which were registered in 1974. At a recent Washington High Fidelity Music Show, the Commission furnished an exhibit for the purpose of educating consumers and equipment manufacturers respective to the worsening RFI problem.

The readers are encouraged to submit input to the RFI Task Group which illustrates cures for interference problems caused by amateur radio transmitters. – *W1CER*

Prose Walker, W4BW, Chief of Amateur and Citizens Division, takes a short break from the RFI discussion to answer a phone call.

Hints and Kinks For the Experimenter

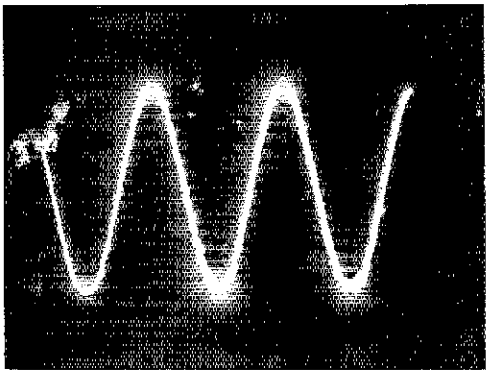


Fig. 1 — The nearly "perfect" voltage-time waveform of a PE-75 generator.

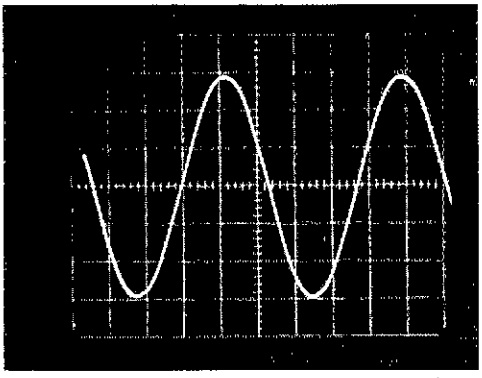


Fig. 2 — The 117-V ac commercial-main waveform. All photos are to the same vertical scale, but the horizontal time bases vary.

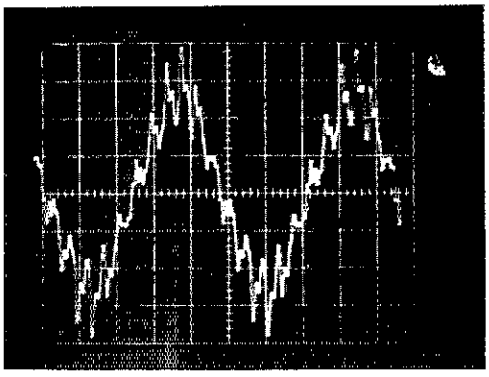


Fig. 3 — The voltage-output waveform of a 2-kW generator under a light load. DON'T USE IT.

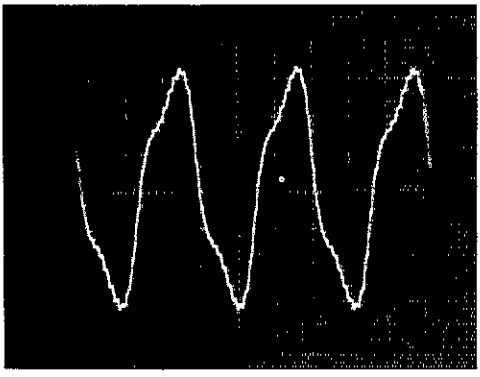


Fig. 4 — The voltage waveform of a 1974 commercial rotating permanent-magnet generator, acceptable for Field Day use.

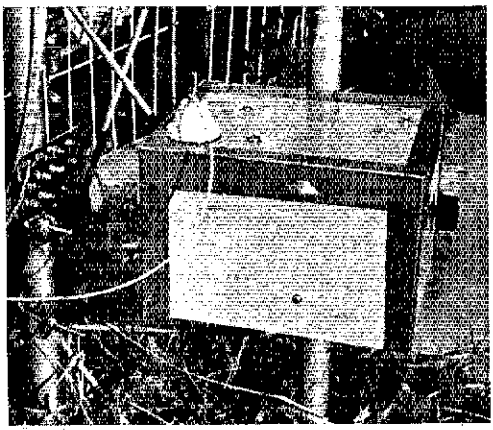
FIELD DAY GENERATORS

Operating Field Day presents the average ham with an entirely new bagful of "Murphyisms." Not least among these is the use of portable gasoline-driven generators for 117 V ac. After surveying the output-voltage waveforms of some representative units, the author concluded that it is essential to check the voltage waveform of the generator prior to plugging in an expensive rig. For example, the waveform in Fig. 1 (generated by a World War II vintage, PE-75, 2-kW generator) is nearly perfect compared to the commercial mains shown in Fig. 2. But the waveform in Fig. 3 is sure to cause many a capacitive-input-filter high-voltage power supply to burn up because of the excessive voltage spikes. The peak-to-peak voltage of this 2-kW generator (unfortunately owned by the author) is 30% greater than that of a sinusoidal 117-V ac source. The rms value is approximately the same, so an incandescent lamp burns with normal brightness, but your peak-responding high voltage is too high. A series of experiments showed that this waveform is not due to a defective generator component, but is probably a design error. The waveform becomes somewhat smoother when the system is fully loaded to 2-kW output, but the peaks are still 10% greater than those of a sinusoidal waveform.

For comparison, the voltage waveform of a rotating permanent magnet Sears, Roebuck and Company 117-V ac generator, under no load, is shown in Fig. 4. While the waveform is not perfect,

it is good enough to cause no difficulty to a ham rig.

The best way to check the generator voltage waveform is by means of an oscilloscope (a Heath SB-610 Monitorscope may be used, but the capacitive coupling tends to accentuate the high frequency spikes). For those without an oscilloscope, a comparison between a peak-reading VTVM (such as the Heath V-7A) and an rms meter or the brilliance of a light bulb should be made. If the peak-reading meter (calibrated in volts rms for a sinusoidal wave) reads above 130 V ac and the rms meter reads 117 V ac, or a lamp is of normal brilliance, BEWARE! You probably have a "spikey" generator waveform. Shut it off, or use it only for powering electric lights and hot plates. Check out your generator voltage waveform before Field Day; it could save you a lot of money and embarrassment. – *Roger Kaul, WIFLM*



CUSTOM-MADE WEATHERPROOF ENCLOSURES

Frequently a need exists for an easy-to-build outdoor box in which to put a matching network for an antenna. Some metal boxes, even if made weatherproof, tend to rust after long exposure to the elements. Aluminum boxes are subject to corrosion. Furthermore, it is not always possible to locate a ready-made container of the desired size for a given application.

The photograph shows a 10 × 10 × 10-inch housing made from single-sided glass-epoxy circuit board. The material was acquired at low cost from a vendor at a ham-radio flea market. One attractive feature in the use of circuit-board material is that a box of some specific size can be made readily. The copper surfaces are inside the container. A high-wattage soldering iron (100 W or greater) can be used to affix the walls in the desired position. The solder will seal the joints against the weather.

A tuning network for 160 meters is enclosed in the model shown here. A coating of spar varnish has been painted on the box to help preserve the glass epoxy. Weatherproof tape has been used to offer additional protection where the walls have been joined. A variable capacitor shaft protrudes from the front of the box (knob at right). A rubber grommet provides a tight fit around the variable-capacitor shaft to keep dirt and moisture out of the housing. The assembly is affixed to one tower leg by means of two U bolts and an aluminum plate. Caulking material is used to seal the bolt holes at the mounting point. – *WICER*

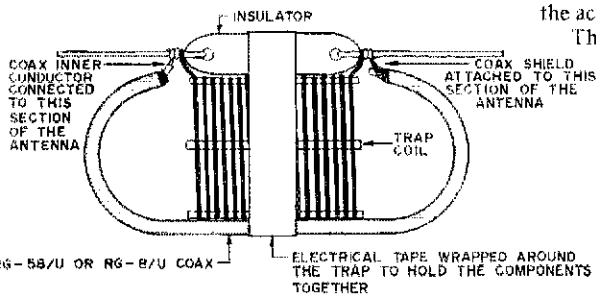
BEWARE OF PROTECTIVE DIODES

A word of caution regarding the use of protective diodes across the antenna input terminals of solid-state receivers is in order. If separate antennas are used for transmitting and receiving, severe TVI can be created by the diodes rectifying the transmitted signals and reradiating them on many frequencies in the rf spectrum. I discovered this while experimenting with my solid-state receiver. I was attempting to see if the diodes really protected the front-end rf transistor stage by leaving the receiver connected to its own antenna while transmitting with a 350-watt rig nearby. I was impolitely informed by the XYL that I was raising havoc with the television set. As soon as the receiver was disconnected from its antenna, the problem disappeared. If the same antenna is used for transmitting and receiving such a problem should not exist. – *Glen Benskin, K6UH*

INEXPENSIVE CAPACITORS FOR TRAP DIPOLES

Recently, I decided to put up a multiband trap dipole. Finding transmitting type capacitors for the traps became a problem. Roy Purchase, W8RP, suggested that I might be able to use a piece of coaxial cable as a capacitor rather than the hard to obtain transmitting capacitors.

The proper length of coaxial cable needed to make the trap resonant at the desired frequency was determined experimentally. The method used to hold the trap assembly together can be seen in the accompanying drawing.



The antenna has been up approximately two months and no problems with the traps have developed. The RG-58/U cable seems able to handle the rf voltages developed on the antenna. It should be noted that I run 100 watts on ssb and cw, and if higher power levels are to be run it might be necessary to use RG-8/U coaxial cable. Of course the transmitting type of capacitors could be used. – *Don R. Walters, WA8FCA*

May, 1925

. . . "Sending Pictures by Amateur Radio" is the cover illustration theme, and this issue describes for amateurs a Jenkins fax system which can use the phonograph turntable as the drive mechanism – if only you can get it synchronized with your similarly-equipped QSO.

. . . Frank C. Jones (still 6AJF) has an A to Z story on 5-meter pioneering work – receivers, circuits, and especially directional antenna design along with polar curves of gain. 9ZT adds some experimental info of his own on this "microwave" band.

. . . A few of the brethren still won't observe friendly warnings (100 have had licenses suspended), and so the League is urging formation of "vigilance committees" in cities where broadcast interference is a problem. Representatives of the press and the BCLs will join leading amateurs to help solve the problems.

. . . Even then refusing to follow thought, A.L. Budlong debunks some of the accepted principles of low-loss and decoupled coils, showing that most everyone is blindly following the leader.

. . . The Isofarad receiver is a broadcast set, but like some others in the past is reviewed for design and circuit information of interest to amateurs.

. . . Bart Molinari wins the Hoover cup award for the outstanding amateur station of 1924 (he's still 6AWT).

. . . 9BRK was set up at Sand Cave, Ky., to relay information to the press on the Floyd Collins cave-in tragedy.

. . . Washington Radio Club reports that the Governors'-President relay was only partly successful, with 22 out of 24 messages delivered.

May, 1950

. . . Postwar growth crowds ham bands more and more; W1DX takes a big step toward QRM alleviation with a 50-kc. outrigger i-f amplifier having 1000-cycle bandwidth at 20 dB down. If some gent calls you 2 kc. away, you'll never hear him.

. . . Some new Barker & Williams coil stock prompts W1DF to build an antenna coupler with no design compromises and yet with simple construction.

. . . A quarter-kilowatt amplifier with only a buck for the tubes? W1FTX says the 826s at 50 cents each in surplus are an overlooked bargain, and work beautifully, especially on higher frequencies.

. . . W9SCH illustrates the reliability of 160-meter ground wave, complete with formulae charts.

. . . FCC has refused the petition of a couple of national amateur societies to poll licensees on some of the Docket 9295 restructuring proposals (Extra Class in particular), but has granted ARRL's request for oral argument and scheduled it for May.

. . . A beautiful 2-meter mobile rig is the product of W2JUM design – yet it seems monstrous alongside today's simplified fm gear.

. . . Frankford Radio Club took it on the chin from Potomac Valley in the 1948 Sweepstakes, but bounced back last year to win another gavel.

. . . W1HDQ plots transequatorial 6-meter QSOs which have been taking place by the dozens the past few months, all in contradiction to official propagation predictions.

. . . VE1OU (G2IS) shows us how to put some zip into our gear by home anodizing panels. – *W1RW*

TV Converter

(Continued from page 36)

2.5 A; −5 V at 2 A; plus and minus 12 V at 100 mA; and −8 volts at 500 mA. The supplies should exhibit good regulation and low output impedance. Ground leads should be brought to a common point and 0.1-μF bypass capacitors should be used liberally. It is recommended that heavy bus-bar type wire be used for power supply lines to reduce cross talk and ringing.

Conclusion

All of the necessary information for constructing a slow-scan to fast-scan converter for SSTV has been presented. Perhaps the biggest problem for the prospective builder will be obtaining all of the necessary parts, particularly the shift registers. The author has invested about $125 in parts for this project not counting the television set. However, the author has a very large junk box and is also an expert scrounger. All of the circuits were initially connected and tested in a breadboard layout. The title photograph shows the scan converter in its final stages of completion as a finished unit.

It should be noted that all of the parts are available commercially, and if purchased at retail prices would probably total over $450. Nevertheless, many of the critical parts (the shift registers) have been turning up as surplus recently at very low prices, so stay alert to this possibility.

Should you decide to build the scan converter, it will provide you with untold hours of pleasure and perhaps some frustration, but the end result will be worth it. The author wishes you well in your endeavor.

The author wishes to thank the many amateurs and colleagues who have contributed so much to the project. Special thanks go to WA9VNJ for helpful discussions at the start of the project and to my XYL, Gloria, for her patience and enthusiasm throughout all of my projects. QST

Remember Field Day, June 28-29, 1975. See rules this issue.

Amateur Radio Boosts Education

High upon a rocky hilltop in Scotland, teacher and students track a uhf signal. Below them, sheep graze in a typical pastoral scene.

Innovative Program Uses Oscar Satellites in the Classroom

BY BARBARA J. DIRRIGL*

IN MITCHELL, South Dakota, senior class high school students of Jim Hermanek recently were introduced to the Oscar satellites and amateur radio in a way they will not soon forget. As Jim describes it, "The in-the-classroom demonstration consisted of a one-hour presentation explaining the principles of satellite communication including orbit structure, communication technique, and the Doppler shift. Slides provided by Amsat were also shown. Later the group met for a demonstration at the instructor's home where they made contact with a couple of stations on Morse code. Transmitters, receivers, and antennas were discussed; also, between orbital passes a hf demonstration was held. As a result, several of those in attendance are now working on their Novice amateur radio licenses."

From Boston, Massachusettes, teacher Michael Hopkins reports, "Most of my students had never seen a communications receiver and had no conception of radio communications outside of what they had seen on television. All found that communications *now* had more meaning. The idea of actually being able to hear a satellite transmit, to plot its course, to interpret the telemetry was sufficient to motivate the students to learn more."

Such new educational programs are drawing an enthusiastic response from science teachers across this country as well as in other countries. They are part of an Oscar Education Program launched a few years ago with the assistance of NASA's Educational Programs Division.

* Educational Program Assistant, ARRL

Why Use Oscar?

The ARRL-NASA Oscar Education Program capitalizes on a unique feature of Oscars 6 and 7 — student involvement in live satellite communications through ordinary station equipment set up right in the classroom by amateurs.

Because of their reliability and long-life expectation Oscars 6 and 7 are especially suited for school use. They were designed and built by an international group of amateurs under the direction of Amsat, the Radio Amateur Satellite Corporation. Considerable support was provided by ARRL. Although Oscar 6 had a design life of one year, it is still functioning more than two years after its launching. Oscar 7 was built with increased capabilities and a longer design life than Oscar 6. Both were conceived of with education in mind, since their orbits are predictable and on a regular basis for morning operation; therefore, coordinating class time with orbital time is not difficult. The satellite can be activated for additional orbits to accommodate special uses. Advance notice to the ARRL of such requirements is necessary.

NASA's interest in this program is that live *space* communications are possible in a regular classroom. This educational aspect aids amateurs by giving NASA the incentive to provide launches for the satellites as "tag-a-longs" on meteorological

missions. The satellites are now in a near-polar orbit about the earth.

Letting Teachers Know

Through NASA and ARRL more than 30,000 newsletters were distributed nationwide to educators. The ARRL newsletter entitled "Space Science Involvement . . . in the Classroom" introduces teachers to the Oscar satellite program. With its attached coupon teachers may order a free copy of *Space Science Involvement*," a curriculum supplement produced by educators at Connecticut's Talcott Mountain Science Center under contract to ARRL and Amsat. It covers in understandable detail many classroom applications of the Oscar satellites. Interdisciplinary in nature, the guide presents classroom activities for space science, physics, mathematics, astronomy, electronics and even social science at various grade levels. Guidelines and a list of times when the satellites are available for classroom demonstrations are included with the curriculum.

At Ravenna High School in Ohio, Eugene Roliff, WA8TPO, teaches with the help of Oscar 7. "The students are quite impressed with the idea of using man-made satellites to measure the mass of the earth. The height of the Oscar 7 satellite above the earth is about 910 miles, and the period is about 115 minutes. Changing these data and solving the appropriate formula yields a mass for the earth of 5196 X 1024 kg, which is the figure given in the curriculum guide. The use of Oscar has added interest that could not have been achieved by using only textbook data." Mathematics is just one area of study explored by the use of the curriculum guide.

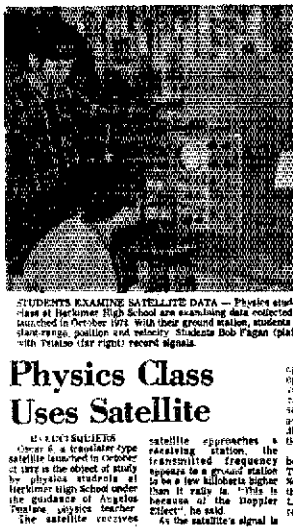
Worldwide Program

The ARRL has received letters from as far away as Scotland, where the space science curriculum is being used. Educator E.W.H. Jarvis recently wrote to us; "Just over a year ago, a neighbor Robin Andrew, GM3WFJ, brought his receiver to our classroom and gave a short talk on Oscar 6, followed by a demonstration on tape. We were unable to time his visit to coincide with a pass. A few days later some of my pupils had put up a crossed dipole for 29 MHz and were receiving Oscar 6 *for themselves*, getting considerable excitement from knowing when it would pass next and at what inclination. At that stage they said their geography had benefited from having to put a stiff wire circle around a globe to predict the satellite position. We are in a remote rural area where broadcast signals are difficult to receive, so Oscar 6 and 7 are quite a source of interest to my pupils. If any of your readers are visiting Scotland and would like to see our setup and the school, I would be glad to hear from them."

Students at Belton Honea Path High School, South Carolina, have literally broadened their horizons by becoming involved in satellite communications. Live contact with foreign countries gives the students a fresh perspective and adds dimension to their language and social studies. Teacher Frank Mitchell, who initiated the Oscar program at the school, has found that the use of the rig and the orbiting satellite has opened up rare opportunities to his students. Examples include communication with stations in France and Venezuela and contacting a Spanish speaking station, allowing a fellow student from Belton's Spanish class to practice his language skills. For several months local press coverage has followed the progress of Mr. Mitchell's classes.

How Hams and Teachers Meet

The ARRL works with teachers to arrange for a local radio amateur to provide classroom demonstrations and assistance. The initial contact is made through letters to the ham and to the teacher requesting them to follow through and contact each other by phone or mail. Once they set the time of the proposed demonstration, either the radio amateur or the teacher writes back to the ARRL with information about the date, specific time, and requirements of the demonstration. We help make advance arrangements for on-the-air contacts through Oscar 6 and 7 with amateur stations in different parts of the world.



STUDENTS EXAMINE SATELLITE DATA — Physics class at Herkimer High School are examining data collected launched in October 1972. With their ground station, students slant-range, position and velocity. Students Bob Fagan (plaid with Tsiatso (far right) record signals.

Physics Class Uses Satellite

Newspaper coverage of students in Angelos Tsiatsos' class at Herkimer High School examining data from Oscar 6. Students Bob Fagan (plaid shirt) and Dan Pollack, with Tsiatso (far right), record signals.

In the foreground is a turnstile antenna for 2 meters at the Edison Freshman School, Midland, Texas. The ten meter receiving antenna can be seen in the background.

The local radio amateur then sets up a simple "Oscar ground terminal" or radio station in the classroom. There are League members in or near virtually every community with the necessary

knowledge to do this. Though the most effective contacts are two-way Oscar QSOs, receive-only demonstrations can also be quite rewarding for students.[1] A basic setup requires a 10-meter receiver and dipole antenna to receive Oscar. It's really that easy! To transmit, a 2-meter ssb transmitter and antenna are also required. A small Yagi, turnstile or 1/4-wave vertical,will do.

For students and teachers with no prior knowledge of communications, Oscar signals recorded at your own station can be an exciting listening experience. If for some reason equipment is scarce, a pre-recorded tape of a two-way contact is available to amateurs free of charge. If a taped version isn't possible, a lecture-discussion of what Oscar is and how it functions would suffice. To help amateurs in this role, introductory material has been prepared by ARRL entitled "Guideline for Radio Amateur's Classroom Demonstration – Oscar Satellites." It contains information about special Amsat bulletin stations, how to decode telemetry from the satellites, what two-way contact through Oscar is like, and more. Attached to this is "Instructor Remarks, Space Science Demonstration – Planet Earth Laboratory and Amateur Radio Station," which is a talk prepared by the Hall of Science in New York. It takes the radio amateur by the hand, step by step, into discussions on inertia, the force of gravity, what keeps the Oscars in orbit, what Oscar stands for, satellite dimensions, solar energy, signals, and antennas.

Mr. Thomas J. Kirby, WIEUJ (with some students listening) discusses the Oscar 7 satellite.

"It is significant that educational means be provided wherein students can be helped in understanding just how a satellite works and to have some hands-on opportunities to participate. Amateurs and the ARRL should have a very high commendation in this regard." – Dr. William B. Rich, Associate Director of Educational Programs, NASA.

[1] On every school day either Oscar 7 telemetry or Oscar 6 ssb bulletins transmitted by special educational bulletin stations (W2GN, W6CG, W6DOW, W6ELT, W4MOP, W4DWN, K4TI) are available for receive-only demonstrations. With advance notice, the content of the bulletin may be addressed to the needs of your demonstration. Allowing the students to hear the name of their school or class coming from a satellite does much to create intense interest!

How it Works

An excellent example of using the Oscar timetable and a successful application of simple equipment is the Oscar 7 demonstration recently conducted in New Hampshire at the Nashua High School physics classes of Mr. James Lin. Tom Kirby, WIEUJ, assisted in cooperation with the Science Department Head, Mr. Marco Scheer. Kirby wrote to us reporting, "The demonstration was held February 14th, 1975, on orbits 1138 at 0807 EST and 1139 at 1002 EST. These were chosen to coincide with breaks between classes one and two and classes three and four. In this way a maximum number of students were on hand at the time of each orbital pass. I prearranged a QSO with W2GN to whom I was referred by Headquarters and set up the equipment on the Saturday prior to the demonstration. The antennas consisted of fixed dipoles oriented to favor the satellite passes, broadside and strung 1/4 wavelength high above the flat school roof to attain 5 dB of zenith gain from the 1/4 wavelength above ground. The receiver and transmitter consisted of a Heathkit SB-301/SB-401 on 10 meters, driving an SB-500 transceiver with 50-watts output on 144 MHz. The first pass was successful but impaired by the appearance of substantial rf noise on 28 MHz as the satellite passed over. On the second pass with the satellite now high in the sky, W2GN was heard clearly; contact was easily made on ssb. During the QSO with W2GN, much to our surprise, W4MOP broke in from Lexington, Kentucky – this was most effective in exciting student interest. Overall, I rate this as a tremendous demonstration! I thank you for presenting me with a most enjoyable opportunity in this task."

ARRL Teacher Aides

To assist classroom demonstrations, visual and audio aids are obtainable from the Educational Program Department, ARRL. The *Space Science Involvement supplement is available to educators*, along with Amsat newsletters, reprints, and glossy photos of Oscar 7. Produced by John B. Meagher, W2EHO of WABC News, New York, an audio tape contains an actual Oscar (voice and cw) QSO and a discussion of space communications. Originally aired on WABC News, it was subsequently released for duplication. The ARRL has for loan an adequate supply of copies in cassette-tape form. It is a good description of the Oscar program and can serve to aid a teacher's or amateur's classroom presentation. There is a limited supply of 35 mm-color slides depicting the construction of Oscar. These slides were originally produced by Amsat, in Washington, D. C.

In addition, a new half-hour color videotape featuring Jean Shepherd, K2ORS, and Dr. Owen *Garriott, W5LFL, NASA Astronaut, has been* produced at League request. It was shot on location at the Johnson Space Center in Houston and at the Talcott Mountain Science Center by Connecticut Public TV for use on the PBS Network and in schools through audiovisual facilities.

Post-production assistance was provided by the PBS ARC. This entertaining program depicts, in an actual classroom situation, a live two-way Oscar contact and presents discussion on subjects such as telemetry, equatorial and polar orbits, Faraday rotation, ionosphere, and the Doppler effect. The videotape will be available to local public TV stations around mid-May. If interested, contact your local stations and ask them to carry the program entitled, "Oscar and the Ham." We urge you to take advantage of these opportunities which are readily available.

What Can You Do?

To the radio amateur, experienced or inexperienced, using Oscar opens many options for program participation. One may go directly to a local school to offer services, thus taking the initiative to introduce the school to the Oscar Program, or one may be ready and willing to assist a school in one's area when called upon. An overall need for cooperation and determination are the core in a program as far-reaching as this. In a day of increasing depersonalization, direct involvement of the individual is diminishing. What the ARRL/NASA Oscar Education Program offers becomes even more valuable as it links the student directly with others in the outside world, giving a sense of individual accomplishment and broadening his otherwise limited scope. Mr. Fred Wise, a teacher at Keystone High School, Knox, Pennsylvania, comments on his success with the Oscar program. "From your satellite timetable we were able to make a recording and play it back for the class. In an age when the spectacular is commonplace, kids need a little explaining to know how great something like this is. The students seemed amazed to know that we in the classroom could reach out and pick a signal from the sky for our own use. Truly, scientific technology is for those who are willing to reach out and grasp it. Oscar is within reach." The enthusiastic reception and widespread growth of this program underscore that Oscar *is* within reach of many students and teachers who otherwise would only read about satellites and space but never enjoy the intense excitement that in-class live communications hold for them. The educational possibilities are unlimited and the impact upon the student is total and lasting. You, the radio amateur, can share this excitement as ham radio provides yet another public service. You are, in fact, the vital key. QST

Semiconductors

(Continued from page 25)

performance as Class B or C rf amplifiers. The f_T ratings of some of the complimentary-symmetry plastic types are well into the vhf region. Experimenters should not overlook the use of those semiconductors for hf-band amplifier construction. Similarly, transistors designed for high-speed switching applications may provide a low-cost answer to medium power in the hf spectrum (2N2102, 2N5320, 2N3878, and others).

Impedance Matching

In trying to treat the matter of impedance matching through the use of simple terms, we enter into a complex and almost impossible discussion. The alternative to precise design techniques is to approach the matter from a purely empirical stance. That is, without resorting to complex math and in-depth study of the electrical characteristics of the transistor being used, we can only experiment with the working circuit until the desired performance is obtained. Some generalities can be offered here, and they should help the reader to understand the need for equations and electrical data when doing a paperwork design.

Significant among the characteristics of a power transistor is the complex structure of the input terminal (base circuit of a grounded-emitter stage). Some professionals confess in hushed tones that even they can't predict precisely what the transistor input impedance will be at a given power level. They must first build the amplifier, *then* use complex laboratory test equipment to measure the base impedance at a given operating frequency. The problem results from reactances presented by lead lengths (internal and external) which exhibit inductive reactance. The input capacitance of the transistor, plus the case capacitance, differs from one transistor to another. The driving source (exciter) must look into capacitive reactance as a result. The reactance value changes with operating frequency, thereby requiring readjustment of the *LC* matching network as the operator changes bands. The unwanted reactance must be tuned out in order to assure a proper impedance match between the driving source and the amplifier input. The graphs of Fig. 2 illustrate clearly how the input capacitance and base resistance of a typical hf-band power transistor change with frequency.

A matching network can take a variety of forms, depending upon the impedances being dealt with – a simple *L* network, pi network, tapped inductor, link coupling, or *T* network (Fig. 3). Whichever type is used, it must be *resonant* at the operating frequency, tune out unwanted reactance, effect an impedance match, and offer selectivity of some degree.

In broad language we can consider the base terminal of a Class B or C transistor amplifier as having an input impedance between a fraction of an ohm and, say, 10 ohms. Therefore, the input matching network must have a transformation ratio between 100:1 and 5:1 when using a 50-ohm driving source. Our network must be capable of tuning out the reactance which exists if we are to have maximum power transfer from source to load.

In the interest of stability, when vhf or uhf transistors are used for hf amplification, deliberate mismatching is sometimes done to aid stability and reduce the effective gain of the amplifier. Generally, the matching-network terminal nearest the base is made *lower* than the base impedance when that is done. It is not uncommon to embrace such a design trade-off for the sake of smooth operation. Some designers strap a noninductive resistor of low ohmic value between base and ground (e.g., a 1-ohm resistor across a 5-ohm base impedance) to spoil the gain. The matching transformer is then designed to work between 50 ohms and 1 ohm to assure a low SWR between the preceeding stage and the amplifier base. QST

1975 ARRL National Convention

The 1975 ARRL National Convention scheduled for the weekend of September 12-14 will be held at the International Conference Center in the Sheraton Inn, Reston, Virginia. Sponsored by the Northern Virginia Amateur Radio Council (NOVARC), the convention promises an agenda with distinguished speakers, a technical symposium and other activities organized to serve the interests of all amateurs. The Foundation for Amateur Radio is cooperating in sponsorship of the convention.

In addition to the public service role of amateur radio, another theme of the convention is *RFI — Reaching For Improvement*, which will be the subject of a symposium on Friday afternoon, given over entirely to the presentation of technical papers on rf interference and electromagnetic compatability. During the weekend, there will be presentations embracing ATV, SSTV, RTTY, antennas and propagation, space communications, receivers, transmitters, transceivers, and other topics.

Scheduled as speakers are The Honorable Richard E. Wiley, Chairman of the FCC, and ARRL President Harry Dannals, W2TUK. Members of the League staff in attendance will include Dick Baldwin, W1RU, newly appointed General Manager of ARRL.

Ladies Program

A busy weekend is being put together for the ladies — a Friday evening cosmetic workshop immediately after dinner, a delightful fashion show, a luncheon featuring addresses by two prominent women, a workshop on diet illustrated with slides.

Forums

In addition to an open ARRL forum, FCC forums have also been arranged for the weekend — an opportunity to discuss matters with Commission representatives who will be on hand from the Amateur and Citizens Division and the Field Operating Bureau.

As part of the FCC's participation, a special facility will be set up to administer exams for the General, Advanced, and Extra Class licenses.

Homebrew Contest

The convention will feature a homebrew contest. Breadboard as well as finished equipment will be accepted, but all entries must relate to amateur radio. Awards will be made on the basis of originality in design and thoroughness in workmanship. Homebrew contest applications should be made in writing by August 1, describing the project in detail. Include return address, telephone number, and any requirements peculiar to the project (*e.g.*, 220 vac). Write NOVARC, P.O. Box 682, McLean, Va. 22101. Late entries will be accepted at the convention at the convenience of the committee.

IEEE Conference in Tandem

On the Thursday preceding the ARRL National Convention, the Vehicular Technology Group of the IEEE will conduct a technical symposium at the Sheraton. Its theme will also be RFI/EMC in relation to such matters as antiskid and fuel injection electronics and ignition noise.

Credits

Volunteers who are laboring hard to make this one of the most rewarding Nationals ever include Stu Meyer, W2GHK/4, Chairman; Bud Smith, W4YZC, Vice Chairman; Tex DeBardeleben, W4TE, Registration; Rita Des Roches, Ladies Program; Joe Des Roches, W4WKT, Accommodations; Bill Grenfell, W4GF, FCC Forum; Dick Jordan, W4UM, Advertising Chairman; Vern Mann, WA4EJH, Exhibits Chairman; Bill Miller, K4MM, Prizes; Paul Rinaldo, K4YKB, Technical Symposium; Hugh Turnbull, W3ABC, Banquet Arrangements; Bob Zaepfel, K4HJF, Legal Advisor; and Ed Kennedy, W3GPI, *QST* Publicity.

Accommodations

The 1975 ARRL National Convention is being held in a single building enclosing forum rooms, exhibit space, and banquet room as well as personal accommodations. Parking is free and the lot is patrolled.

Registration

For final details on the 1975 ARRL National Convention, write NOVARC, P.O. Box 682, McLean, Va. 22101. Please note that special rates are available for early registration for the convention as well as accommodations. In all cases, Master Charge and BankAmericard credit cards will be accepted.

Notes Worth Noting

As mentioned above, many details of the 1975 National Convention are still being worked out, but the following activities are firmly scheduled:

- The banquet on Saturday night will highlight a number of outstanding speakers expressing provocative ideas on "whither amateur radio."
- At midnight on Saturday (local time), the fearsome Wouff Hong ceremony will take place.
- A number of special interest meetings will convene during the convention including those of MARCO, the Radio Club of America, the Frankford/Potomac Valley Radio Clubs, FOC, and the QCWA.
- A special session will be devoted to a program covering the activities of the Amateur Radio Public Service Corps.
- Religious services will be conducted on Sunday morning for both the Catholic and Protestant faiths.
- Major manufacturers of amateur radio equipment and related gear will feature exhibits.
- The MARS organization is observing its Golden Anniversary this year and a special tri-service station will be in operation during the convention.
- FM talk-in will be on 34/94 and an hf position will also be active. Special calls have been applied for and commemorative QSL cards will be issued.

Sponsorship

The Northern Virginia Amateur Radio Council comprises a group of 16 clubs active in northern Virginia, Washington, D.C., and southern Maryland.

The Foundation for Amateur Radio is devoted exclusively to promoting the interest of amateur radio and is composed of 40 amateur radio clubs located in Washington, D.C. and its environs. QST

FIFI

vs.

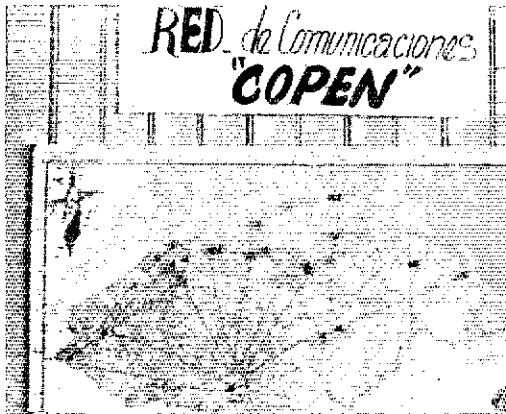
HONDURAS

Amateurs Side With Honduras

SAN PEDRO SULA, Honduras – In the early hours of September 19, Alex, HR1ALT, and his son were sleeping in a small hotel near San Pedro Sula. It was almost dawn and Alex woke up with a feeling of uneasiness. When he opened the door of the dark room, he felt water up to a foot deep. He ran to his car and managed to start the engine despite the water coming almost to the hood. He drove toward town but had to stop when he looked at the immense pond forming in front of him. The river was sweeping the land in a turmoil of stones, trees, houses and even human beings. Then, he went in the opposite direction with the same result. Returning to the hotel, he found several persons including an old man who could not survive by himself. Alex and his son helped people into a small boat, but there was no room left for them. They stood on a couple of chairs. Fortunately, after nine hours the water started to go down. The car was still operating, so they headed for the capitol. Once in Tegucigalpa, HR1ALT met with HR1OP and HR1RT to discuss the situation. The government had announced the appointment of the COPEN (Permanent Emergency Committee), so they decided to go there. At the Military School (COPEN Headquarters) they talked to Major Alcerro of the Armed Forces General Staff who was in charge of communications. The room was empty. No radios, no telephone, nothing. Before Fifi, Honduras was a country with very poor communications. To most of the affected areas communications were nonexistent. So, in the face of the happenings, what could Alcerro do? Radio amateurs were now on the scene . . . and they started to work.

SAN PEDRO SULA, Honduras – Tom, W9LII, and his wife left Pekin, Illinois, on a combined pleasure/business/mercy trip to San Pedro Sula. They were transporting an X-ray machine which had been donated to the Mission in Ocotepeque, Honduras. When they arrived in San Pedro Sula, they were met at the airport by Ruth, HR2RP, her husband and HR5JDC. It had started to rain so as soon as customs was cleared they were whisked away to the HR2RP residence. Ruth had begun plotting the course of Fifi on September 17; when Tom arrived he assisted in the activity. They plotted the course of the hurricane across the Honduras northern coast and it didn't look as if San Pedro Sula would get any of the wind. But about 2115 on September 18 the situation had changed. By 0600 the next morning, HR2RP was at her radio . . . beginning a daily vigil which would continue for more than a month. At 0845, electric power failed, forcing HR2RP temporarily off the air. The telephones in San Pedro Sula had already been out of order for several weeks before the hurricane hit Honduras. HR2ASM got an auxiliary power plant at a nearby tractor sales office and with the help of W9LII and HR5JDC got Ruth back on the air. For a time, HR2RP was the only contact between flood-ravaged Honduras and the rest of the world.

LA CEIBA, Honduras – Arturo, HR3AAW, is an airline pilot and flies from La Ceiba to Tampa, Florida, every week. Upon hearing of Hurricane Fifi, he rushed to make a return trip to La Ceiba; his plane was the last to land at the La Ceiba airport before Fifi made her full-fury presence known. From noon that day and for the next four



A Permanent Emergency Committee (COPEN) was established to coordinate communications. With headquarters in Tegucigalpa, special station HRØCOPEN maintained contact with 48 stations in 28 different places in Honduras. This map displays early COPEN Net activity.

Amateur radio was a prime means of communications for Honduran military relief units. Here checking the map with military personnel are (standing) HR1RP and HR1ALT. At the rig is HR1RT.

days, he got no sleep. He was on the air the whole time, handling traffic into and out of La Ceiba. HR3AAW lost power for two days and used a 12-volt battery until power was restored.

Communications Commence

When Hurricane Fifi struck the Central American republic of Honduras on September 19, it left one-third of the country devastated, thousands dead, many more thousands homeless and in dire need of rescue, food, clothing, shelter and medical attention. Communications within the country and with the outside world were, of course, totally disrupted.

Four days before the hurricane hit the coast of Honduras, the HR Emergency Net had been reporting about the storm and giving warnings. Two days before, the National Broadcasting Station had relayed the hams' net to every place in the country. Thus, when HR1ALT, HR1OP and HR1RT went to COPEN Hq., many amateurs were already operating. Two hf stations were installed and they went on the air with the call HRØCOPEN. One by one the HR and foreign stations started to check into the net. The authorities issued an official bulletin giving the *Radio Club Tegucigalpa*

A key station during the Honduran disaster caused by Hurricane Fifi, HR2RP spent long hours each day for over a month handling communications into and out of the stricken country.

full authority to regulate and operate the emergency communications in the country. HR1OP would be in charge of installations, HR1RT in charge of operation of the control station and HR1ALT in charge of coordination. The COPEN net would eventually reach a total of 48 stations linking 28 points in the disaster zone.

Foreign teams started arriving in Honduras. From Panama (*Liga Panamena de Radio Aficionados*) came HP1ND (member of IARU Region 2 Executive Committee) and YN1PMG who lives in Panama. With them they brought a complete station including power plant. LU2DZ/W4, HP1ND and HP1PM installed a 146.34/146.94 repeater to cover Tegucigalpa, since normal telephone service was out most of the time. Before the emergency there were only five 2-meter stations in the country, so gear supplied by *Sociedad Internacional de Radio Aficionados (SIRA)*, ARRL and others, proved most valuable. HR2GK helped coordinate equipment. With the vhf repeater and simplex facilities, amateurs were able to link city hall with the airport to control the incoming materials that were destined for relief use and were able to put the city engineer in touch with his biggest problem; the city water reservoir which had been destroyed.

Among the Nicaraguan hams (*Club de Radio Experimentadores de Nicaragua*) who went to Honduras were YN1FI (who was deeply involved with emergency communications during the Managua Earthquake), YN3FSM, YN1RAB, YN7SBS and YN1MAT. The official *CREN* station YN1YN was operated in Managua and in different parts of Nicaragua as YN2YN, YN3YN, etc. YN9MQ operated near the Nicaraguan-Honduran border for many hours in addition to repairing several pieces of equipment from the disaster area.

From Guatemala (*Club de Radioaficionados de Guatemala*) TG9GH and TG4TL set up in San Pedro Sula. The *CRAG* station, TGØAA, operated from Guatemala City during the emergency.

Cuba's CO2SRC and CO2GB and others were active with emergency communications.

When alerted by a hurricane warning system, the *Sociedad Internacional de Radio Aficionados* came to the aid of the Hondurans by setting up three emergency networks on 14,205, 7,155 and 3,805 MHz to handle health-and-welfare messages. When *SIRA* members received a call from HR1ALT for immediate aid in the way of antennas, radio equipment, food and medicine, they set up a radio marathon called "Operation People to People" on Miami radio station WQBA. Over $26,000 and over 15 tons of food, medicine, clothing and other emergency items were solicited. The cooperation of an airline was obtained to fly supplies to Honduras. A group of volunteers, consisting of YV5DWB/W4, VE3DPQ/W4, YN1LL/W4, LU2DZ/W4 and WA4ZZC, with radio equipment, was sent to the stricken country and operated HRØSIRA.

In Tegucigalpa, HR1JBS was in charge of the traffic with the U.S. He handled messages for the U.S. Ambassador, the State Department, the Agency for International Development, and for many officers of the Honduran government. The *SIRA* station in Miami was also relaying traffic to the States and several other countries. WA4SNC worked at the station for many hours.

During the emergency, HR1AVO, President of the *Radio Club of Tegucigalpa*, operated the HR net with HR1AHN, HR3EJI and HR1VRA among the participants. Another net was operated from Puerto Cortez by HR2BLP, President of *Radio*

Fortunately, Honduras received much-needed amateur radio equipment from foreign countries. Unpacking a shipment from ARRL are: HR1OP, HR1ALT and YN1PMG (bending over).

Club of Honduras, who was unable to return to San Pedro Sula because several bridges had collapsed. Joining him on the net were HR2s ASJ ER GK RP.

As has been the case with so many emergency situations before, stateside amateurs were available in force to assist when necessary. The International Mission Radio Association Traffic Net went into full-time operation for three weeks. W4ZRC, operating at MacDill AFB, Florida, picked up the outgoing traffic from Honduras, while the club station at the Kennedy Space Center, WB4ICJ, picked up all inbound health-and-welfare traffic and held it until a station was available to pick it up. Later, IMRA started monitoring the first 15 minutes of each hour (1400 through 2200 UTC) for any possible traffic. WB4ICJ, WA3RXQ, WA2IPM, and several other stations spent countless hours as net control stations. Numerous requests for drugs, vaccine, etc., were handled.

The Hurricane Watch Net, under direction of K4RHL, K3JH, WB4BHW and others, served to coordinate communications between the U.S. and Honduras, as well as assist in relief efforts to the disaster area. K4RHL received weather information directly from the Hurricane Center in Miami and she was active giving warnings even before the storm hit. The net helped: the Panama Canal Zone get helicopters into Honduras; the Red Cross from several places in the States get relief equipment in; Mexico to get some equipment to Honduras; and the National Guard to get planes in.

Within hours after the hurricane struck, medical needs were being relayed to other countries through an organization of several hundred medical doctors, the Medical Amateur Radio Council (MARCO). Requests for supplies and information, which for a time came in at two per minute from missionary doctors and other medical personnel in Honduras, were coordinated by MARCO. W4RFA spent hours tracing lost shipments of medical supplies and other cargo at the Miami Airport and was on continual call for medical advice and proper handling procedures.

State Aid

Many groups throughout the U.S. supplied aid to the Hondurans through relief operations. Often these operations were coordinated by amateur radio.

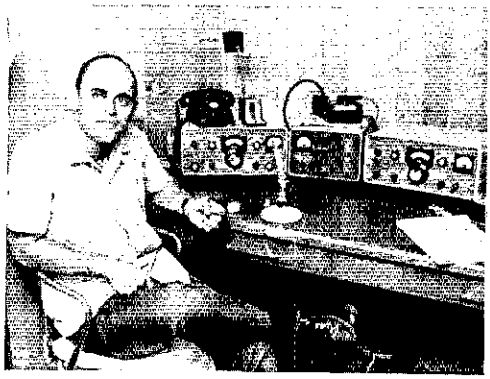
Prompted by a request for information (September 22) from a board member of La Buena Fe Foundation (an organization which supports a medical and vocational-education mission in Honduras), WØQWH, WAØEMX and other Kansas City area amateurs maintained communications with Honduras. The Foundation president had several direct contacts via phone patch with the Honduran Public Health Ministry. As soon as the need was established and permission granted, the Foundation had its medical team gearing up for emergency service. Typhoid vaccine, medical supplies, food and clothing were quickly assembled for the flight. A DC-3 was needed for the 2900-mile flight. With the aid of over a hundred amateurs on the Missouri and Iowa nets, a DC-3 was located on September 24. Later, another aircraft was made available locally, and the mercy plane left Kansas City on September 28 carrying 12 medical team members and several thousand pounds of medical supplies.

In Albany, New York, "Operation Goodwill's" Uncle Dave, W2APF, spearheaded a fund-and-supplies-raising drive. He was in daily contact with the stricken area, to keep advised of their needs. Over $1,100 was forwarded to a community near San Pedro Sula.

Profiles

□ WA2MJE, in Syracuse, New York, heard about a severe shortage of 100-octane aircraft fuel in Tegucigalpa, which prevented planes from taking off with food and medical supplies desperately

HP1ND is shown behind the rig while operating on the Island of Guanaja off the northern coast of Honduras. The local emergency committee president is standing behind him and, along with military personnel, they're receiving word from Major Alcerro in Tegucigalpa who is in charge of all communications in the disaster-stricken country.



HR3AAW returned to Honduras just before Fifi's arrival and just in time to spend four sleepless days keeping La Ceiba in touch with the rest of the world.

needed in outlying areas. He called the Office of Procurement and Disbursement of Supplies for Government Agencies in Washington, D.C., to ask if some of the "red tape" could be cut. Later, he received a call from the Air Force to let him know that the fuel was on the way.

When WA2MJE was made aware of the need for incubators for premature infants who were unable to survive air travel to larger cities, he procured two incubators and related equipment from a local hospital, and they were prepared for shipping. In Miami, IMRA members continued the items on the way to Honduras. HR2RP handled the placement of this equipment.

□ On September 30, W3KVG read that a Pittsburgh-based organization, "Brothers Brother Foundation" (a group who supplies teams of medical troubleshooters at the sites of disasters) was sending supplies to Honduras, he offered to provide communications. Approximately 42 phone patches concerning relief operations were handled by November 9, by way of HR2RP – W3KVG. Other patches were also handled.

□ W6WRJ received a message from HR2RP at 1740 UTC September 26, going to a company in Los Angeles regarding water-well equipment. The company was called and information on water-well pipe sizes and engineering data from the Acting Mayor in San Pedro Sula were passed.

□ WA2IPM used his connections to get enough typhoid vaccine to immunize a quarter-of-a-million people in Honduras. He was also able to wrangle a couple of helicopters for the disaster area.

□ Although WA6MPR had planned to attend the ARRL Southwestern Division Convention in San Diego, he remained at home to handle emergency traffic between the Liga International and the medical group at San Pedra Sula. He arranged for some equipment to be sent to the stricken area as well as passing along urgent requests for three teams of doctors and nurses, and medical supplies. Two portable hospitals were also provided.

□ W6DZN, a doctor, tuned to the hurricane net as soon as he learned of the expected arrival of Hurricane Fifi. He ran numerous phone patches, arranged aircraft flights with typhoid vaccine to Honduras and assisted in departure from California and arrival in Honduras of Salvation Army relief assistance.

□ K2CBD received a request for supplies from a Franciscan priest in Honduras. He contacted the local Catholic Relief Services director and as a result, $2000 emergency relief money was made available to the Hondurans.

□ Numerous examples of amateurs reporting health-and-welfare information to anxious relatives were reported. WB6KWE reported on the safety of the missionary daughter, son-in-law and grandson of a salesman in Ridgecrest, California. G2CWL/W8, and later W1RLV, advised a Ludlow, Massachusetts, couple that their daughter, a teacher outside San Pedro Sula, was okay. Through the assistance of HR2RP, W1OKH could tell the Burlington, Vermont families of three women teachers in San Pedro Sula that the women were all fine. A Danvers, Massachusetts resident, whose son, daughter-in-law and their two children were living in San Pedro Sula, was advised by WA1RGJ that her family was safely located at a Red Cross center. In Cleveland Heights, Ohio, WB8OGB was able to tell Ashtabula Red Cross that Peace Corps workers at Punta Gorda, Delice, an island off Honduras, had experienced high winds, but were safe.

Here, we've presented only an outline of amateur activities in connection with the Honduran disaster caused by a gal named Fifi. Examples were given of group and individual participation. Undoubtedly there are other nets involved with emergency operations and participation by dozens of other amateurs with equally noteworthy contributions. This account is based upon reports received; our thanks to all those who sent information on disaster activities. A special note of appreciation goes to HP1ND whose detailed report on activities in the disaster area formed the basis for this report.

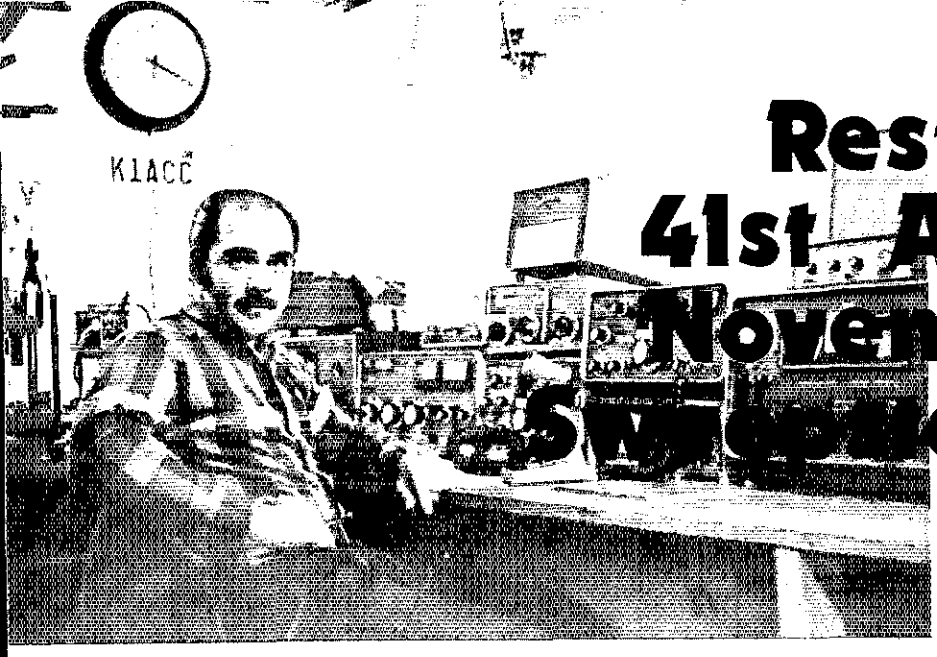
Unsung Heroes

Charles Green, writing for the Associated Press, related a story which was widely covered by the news media:

> TEGUCIGALPA, Honduras AP — A group of American and Honduran amateur radio operators are making the job of U.S. rescue pilots in Honduras a lot easier and safer.
>
> "Those ham radio operators are the unsung heroes of this rescue operation," a blond Army captain told a colleague after a day of flights into the area ravaged by Hurricane Fifi. "We would have been in real trouble without them."
>
> The captains, pilots based in the Panama Canal Zone, recalled their arrival in Honduras last Friday, a day after Fifi roared through. Sent to assess the hurricane's damage, they found they couldn't contact Tegucigalpa's Toncontin Airport for a weather report because of the storm damage.
>
> "We got our weather report via Fort Lauderdale, Fla.," the pilot said. "A ham operator in Fort Lauderdale asked if anyone in Tegucigalpa was listening. A man named Frank came up, said he lived next to the airport, and gave Fort Lauderdale the weather. That's how we got it, because we were too close to hear Frank's signal."
>
> The pilots said they were lucky to get the frequency in their aircraft that is used

(Continued on page 89)

Results, 41st ARRL November Sweepstakes



W2HHC

REPORTED BY RICK NISWANDER,* WA1PID/WA7WXY

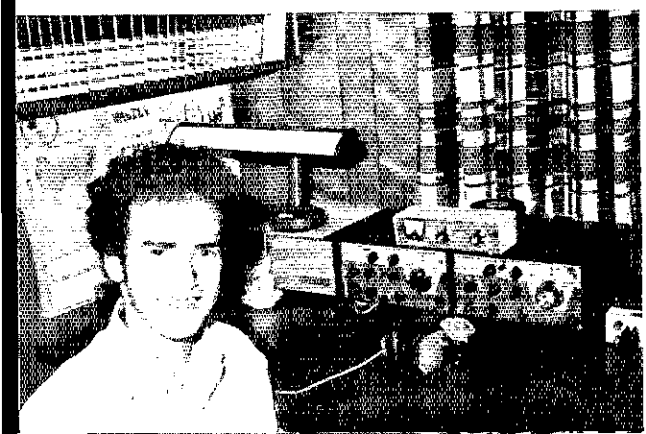
THE 41st ARRL November Sweepstakes (held November 2-4 on cw and 16-18 on phone) chalked up an all-time entry record, jumping almost 11% to 2425 entries. For the 4th year in a row, cw logs outnumbered phones 1224 to 1177 this time. Check logs numbered 24.

While 11% may not seem like much of an increase, it is a quantum jump for an established contest. Increases of that magnitude are caused by changes in contest format or vastly improved propagation conditions. The addition of low power section awards this year undoubtedly had a positive impact on the log upswing. From soapbox comments it is obvious that the addition of low power awards has been met with overwhelming acceptance. Log returns echo that approval. While high power log entries went up 5% (from 1097 to 1153), low power logs jumped a phenomenal 17% (from 1068 to 1248). This year marks the first time in many years that low power entries outnumbered high. The main reason for that switch is the 19% increase of low power cw logs this year, from 605 to 720. It seems as though more and more people are realizing that low power SS operation on cw can be fun and challenging. On phone, sheer brute force is often the key to success while on cw, a little finesse can go a long way. The high power class continues to dominate phone entries although not by the margins noted in the past.

Higher participation means higher scores and this year we had a passel of them. The all-time-division-leader box lists the current high and low power single operator leaders in each division along with the year they set that record. The starting date for the high power records is 1964, when the contest was shortened from 40 hours to 24. The low power records date from 1969, when the low power multiplier was eliminated.

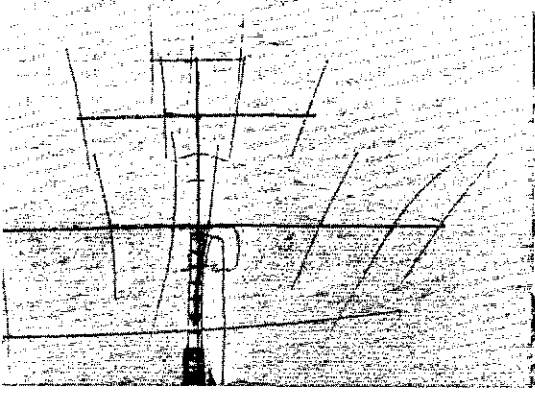
Phone Clean Sweeps dropped again this year for the second year in a row. In fact, the 62 sweeps on cw were 6 more than the phone total. Congrats to WB2OEU, K3EST, K4CG, WB4RUA, W6DGH (WB6ZVC, opr.), W6HX (WB6OLD, opr.), K7NHV, WA7NIN (W6OAT, opr.), K8MFO and WAØCWH for making the Clean Sweep on both modes this year. Hq. received logs from all 75 on phone but missed KZ5 on cw.

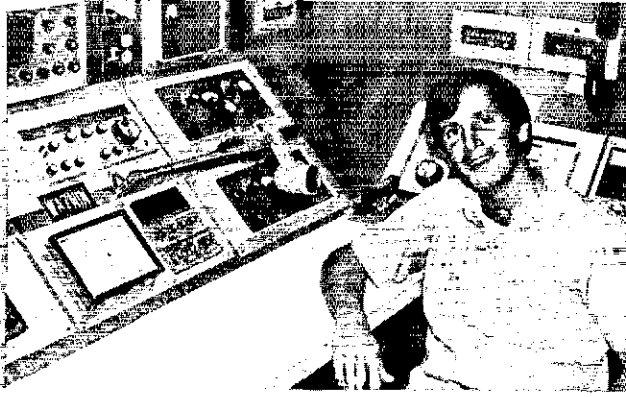
This year the Order of the Purple Ear "award" goes to WB8OER. Frank used a Drake line and dipoles to garner second place on cw and first on phone in the low power class from the tough Ohio section. Nothing really special about that other than Frank is blind. He uses a braille writer and



WA6TLV has much to smile about since he managed to take the tough L.A. section in the low power class. Bob also placed 8th in the low power top 10. FB job.

* Asst. Communications Manager, ARRL.





Number 5 in the country and tops in the Pacific Division on both modes is WA7NIN operated by W6OAT. On the left are the homebrew antennas that are (from top down) 3 elements on 10, 4 on 15, and 5 on 20 and 3 on 40 on the same boom. The tower is a 78 foot crankup. Right: Rusty, W6OAT, at the WA7NIN operating position. The Collins drives an Alpha that is partially hidden behind Rusty. For cw he had the use of a Curtis programmable keyer that is located to the right of the rotor indicator. A very eye-appealing layout to be sure.

gets help transcribing his logs after the contest. He also has to rely on his memory during the contest rather than an Op. Aid 6 (I don't know about you, but I have trouble remembering 10 contacts back much less 500). This is a fine example of overcoming an obstacle with a little determination and doing a good job in the process.

V.Y. Senny Tree, reading the above over my shoulder, scampered off to his little alcove to conjure up another wise and wonderful saying and returned with the following adage shortly before retiring to the Western reaches (W7-land to be precise). So, as a parting shot from the pen of the mighty master of profound prose, we offer:

"Those who complain that life is too tough, that they, because of their particular situation, should get a few breaks, are those that will never make it – their self-made albatross will drag them down to defeat. But, those that strive with the tools available to them, those that realize there are always others better and worse than they, *those* are the real victors. For you will be judged by what you did with what you had, not by what you could have done with something else."

Think about it.

Novice Corner

The Novice Top Ten this year is as follows: WN9LVM 26,680, WN7YOO 23,638, WN2SLA 23,600, WN9LHK 22,770, WN3WUI 20,608, WN4KKN 18,816, WN2RMO 18,304, WN6ATL 15,768, WN2QDP 15,190, WH6IFN 14,602.

Other Novice winners are: WN1RSY, WN1UAX, WN2TVU, WN3YWC, WN4CTA, WN4GNI, WN6FZL, WN8SBH, WN9MDS and WNØMNK.

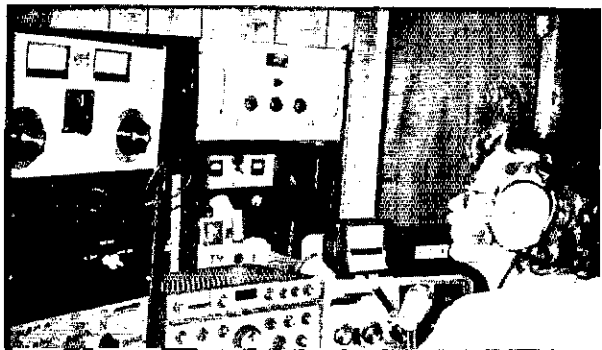
Two amplifiers, some FB antennas (that's putting it mildly) and a strong voice helped WB2OEU top ENY, the Hudson Division, and grab 4th spot nationwide on phone. Fred also got a little time in on cw as shown here.

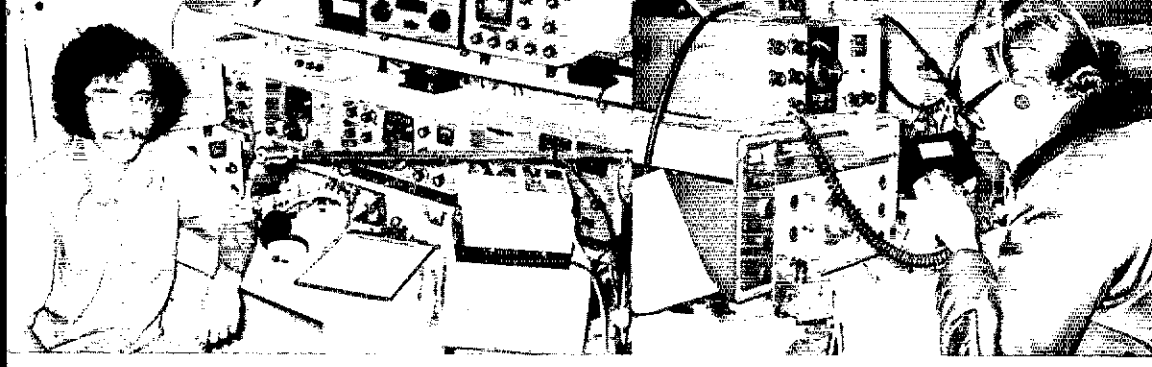
SOAPBOX

Klicks

I know I'll think of a great soapbox as soon as I seal this envelope. – (WB4DZL). 52 minutes before Sweepstakes the power supply blew up. Chased all over town for a new HV rectifier. First one I bought was a chump. Finally found one just as the store was closing. Was lucky to get into contest at all. – (WBØMDO). Why is it that the antennas break, the fuses blow, the alma mater holds its homecoming game, the buffalo herd stampedes, the dam breaks, etc. even though you changed the weekends around? The new date didn't fool Murphy at all. – (WA4BDW). [It's obvious that he reads *QST* too! – Ed.] T/R relay wouldn't switch over to transmit. Had the SB-400 out of the cabinet all weekend and used a pencil to hold relay in transmit. This slowed me down appreciably. – (W2BQF). The king of contests. Worth every minute of it. – (VE2BYR). Really a challenge with 2 watts and a dipole. – (WA6FKK). My last contest from North Dakota as I leave for Kansas and graduate school in January 1975. – (WAØMLE). [Sob, Sob. – Ed.] Had to choose between operating SS and studying for an economics midterm. So I compromised. I operated first and studied later. – (WB2FKF). I had some difficulty convincing many competitors that I was first licensed as KN9WRX in 1960. – (WN7YQO). My greatest accomplishment during the contest was making two contacts in one minute while eating an eggroll and listening to Oscar 6 on another receiver all at the same time. – (WB2AXV). Bill welcomed me to operate his station because then he had the opportunity to visit neighbors all weekend and prove it was not HIS station causing TVI. – (WA3GVP, opr. at W3KMV). A tribander and drooping dipole aren't conducive to a winning score in the L.A. section

(Continued on page 60)





SCV on phone was the scene for the musical-stations act of WB6DSV (left) and W6OKK (right). The stations belong to WB6DSV (right) and W6OKK (left). Got it? No? Well . . . that's DSV at OKK on the left and OKK at DSV on the right. Ok now? Good . . . I don't think I could have said that again if I tried.

DIVISION LEADERS

CW			*PHONE*	
Single Op.	*Multiop.*	*Division*	*Single Op.*	*Multiop.*
W3LPL	W3DBT	Atlantic	W3GRF	W3AU
W9YT	W9YH	Central	W9YT	WA9PBK/9
WAØENP	WAØRBW	Dakota	WAØCPX	WAØCJU
K4PUZ	. . . .	Delta	W5WMU	W5RTX
K4GSU	W8LT	Great Lakes	WA8YVR	WB8JBM/8
WA2UOO	WC2MC	Hudson	WB2OEU	K2BK
KØGXR	WØQQQ	Midwest	KØCVA	WØQQQ
W1FBY	W1PUO	New England	W1ZM	W1DGL/1
W7RM	W7FO/7	Northwestern	K7NHV	W7FO/7
WA7NIN	W6BIP	Pacific	WA7NIN	W6YX
K4VX	K4CG	Roanoke	K4VX	WB4MRI
WAØCVS	W7ZQ	Rocky Mtn.	WAØCVS	WB5AXC
WB4AEX	WB4MWC	Southeastern	WB4VUP	WA4ECY
W6RR	W6UE	Southwestern	W6HX	W6YRA
K5PFL	W5TMN	West Gulf	WB5DTX	W5LUJ
VE7WJ	VE3ART/3	Canadian	VE7WJ	WØOXN/VE4

ALL-TIME SINGLE OPERATOR DIVISION LEADERS

(High power station listed first in each division)

W3LPL	74	152,884	Atlantic	W3GRF	74	192,150
WA3DSZ	71	107,152		WA2UJM	74	105,648
W9YT	74	154,800	Central	W9YT	72	198,900
WB9GFC	74	128,772		WB9GFC	74	129,940
WAØENP	74	144,540	Dakota Delta	WAØCPX	74	158,250
WAØBWM	72	100,110		WBØDSP	72	122,850
K4PUZ	74	156,074	Delta	W5WMU	74	187,200
WA5RTG	74	103,452		WB5FMJ	74	144,150
K4GSU	74	153,446	Great Lakes	WA8YVR	74	204,092
W8CQN	74	137,492		WB4REN	73	98,974
WA2UOO	74	150,818	Hudson	WB2OEU	74	226,200
WB2RJJ	73	111,024		WB2RJJ	73	92,944
KØGXR	74	134,550	Midwest	KØCVA	74	178,200
WAØNVZ	74	90,520		KØLUW	72	87,000
K1ZND	73	149,036	New England	W1ZM	74	197,250
WA1QNF	74	101,762		K1EUF	71	152,144
W7RM	74	168,150	Northwestern	W7RM	71	249,600
W7YTN	74	89,836		W7CFL	71	114,300
WA7NIN	74	160,800	Pacific	WA7NIN	74	219,000
K6SSJ	73	106,042		K7JCA/6	73	153,825
W4KFC	65	156,859	Roanoke	K4VX	74	199,800
K4IAF	74	92,418		K4PQL	74	138,380
WAØCVS	74	138,846	Rocky Mt.	WAØCVS	74	249,300
WBØDLE	72	113,040		WB5LZC	74	89,602
KV4FZ	68	143,283	Southeastern	KV4FZ	68	187,500
W4OZF	73	106,416		K4WAR	69	119,550
W6RR	74	172,350	Southwestern	W6HX	74	253,200
K6LKD	74	115,344		WB6VZI	74	118,080
K5PFL	74	149,700	West Gulf	WB5DTX	74	217,650
K5RHZ	70	117,216		K5RHZ	70	148,000
VE7BDJ	71	141,600	Canadian	VE7WJ	72	178,125
VE2AXW	74	71,994		VE4EA	71	74,906

AFFILIATED CLUB SCORES

Club scores are listed by score within call areas. The number in parentheses after the club name indicates the overall position of the club nationwide.

Club	Score	Entries	Phone Winner	CW Winner
One-Land				
Murphy's Marauders(Ct.)(2)	8,488,980	102	WB2OEU	W1FBY
Norwood Amateur Radio Club(Mass.)(14)	780,446	7	WA1EOT	WA1MHJ
Eastern Connecticut Amateur Radio Assoc.(35)	253,042	7	WA1DWF	WA1LPT
Connecticut Wireless Association(43)	184,700	5	. . . .	W1TCJ
Bristol Radio Club(Ct.)(60)	113,412	3	. . . .	. . . .
Middlesex Amateur Radio Club(Ct.)(63)	108,962	4	. . . .	. . . .
Two-Land				
Wireless Institute of the Northeast(N.J.)(4)	3,244,758	46	WA2UOO	WA2UOO
South Jersey Radio Association(15)	770,948	27	K2JOC	K2JOC
Buffalo Area DX Club(N.Y.)(18)	609,412	12	WA2LCC	WA2LCC
Radio Society of Greater Brooklyn(24)	412,184	11	WA2IYH	WB2FKF
Overlook Mountain Amateur Radio Club(N.Y.)(28)	381,520	7	. . . .	WB2RKF
IBM Owego Radio Club(N.Y.)(32)	303,914	7	. . . .	W2BHP
Rochester Amateur Radio Association(N.Y.)(41)	206,880	8	WB2GGM	WB2JRX
Gloucester County Amateur Radio Club(N.J.)(47)	164,072	7	WB2OSQ	WB2OSQ
Wantagh Amateur Radio Club(N.Y.)(48)	163,678	12	K2PAY	WB2EHM
Hall of Science Radio Club(N.Y.)(51)	153,998	12	WB2SGT/2	WA2TEI
Radio Amateurs of Greater Syracuse(N.Y.)(66)	.64,314	3	. . . .	. . . .
Lake Success Amateur Radio Club(N.Y.)(70)	.14,060	6	W2NBI	. . . .
Three-Land				
Frankford Radio Club(Pa.)(7)	2,235,476	34	WA3GUL	WA3GUL
Nights of the Roundtable(Md.)(12)	1,074,588	14	WA3NYU	WA3NYU
Reading Radio Club(Pa.)(39)	215,836	10	K3BFA	K3BFA
South Hills Brass Pounders & Modulators(Pa.)(40)	212,496	12	WA3UEN	K3VXV
ARINC Amateur Radio Club(Md.)(46)	165,504	9	W3HH	W3TOS
Delaware Amateur Radio Club(52)	152,056	10	K3HBP	K3HBP
Free State Amateur Radio Club(Md.)(53)	144,638	5	K3TNM	. . . .
Pennsylvania Amateur Radio Club(59)	118,546	3	. . . .	. . . .
Penn Wireless Association(62)	111,478	6	. . . .	WA3PHQ
Four-Land				
Potomac Valley Radio Club(Va.)(1)	8,570,392	115	K4VX	W3LPL
Central Virginia Contest Club(13)	822,852	14	WA4QOC	W4QCW
Alamance Amateur Radio Club(N.C.)(21)	453,686	8	WA4FFW	WA4FFW
Hollywood Amateur Radio Club(Fla.)(29)	373,108	5	. . . .	. . . .
Mid-South DX Association(Tenn.)(58)	128,886	7	WA4FDR	WA4FDR
Five Flags Amateur Radio Association(Fla.)(61)	112,890	4	K4LAN	. . . .
Five-Land				
Richardson Wireless Klub(Tex.)(5)	3,175,494	35	WB5DTX	W5LUJ
Texas DX Society(10)	1,515,214	15	WA5LES	K5PFL
Ruston Area Amateur Radio Club(La.)(27)	381,942	5	W5HGT	. . . .
Dallas Amateur Radio Club(42)	186,762	10	WB5LHL	W5QGZ
Six-Land				
Northern California Contest Club(3)	4,331,050	57	WA7NIN	WA7NIN
West Valley Amateur Radio Club(8)	1,935,364	22	W6HX	W6HX
Foothills Amateur Radio Society(20)	487,370	11	WB6LPK	W6OCP
South Peninsula Amateur Radio Klub(54)	138,076	11	K6EIH	K6YGS
Electronics Museum Amateur Radio Club(55)	136,462	3	. . . .	. . . .
Seven-Land				
Western Washington DX Club(6)	2,648,152	40	W7RM	W7RM
Radio Club of Tacoma(Wash.)(38)	235,426	10	W7BUN	W7BUN
Boeing Employees' Amateur Radio Society(Wash.)(56)	135,370	11	K7RSB	K7KGP
Oregon State University Amateur Radio Club(67)	.32,472	3	. . . .	. . . .
University of Washington Amateur Radio Club(68)	.30,252	3	. . . .	. . . .
Spokane Radio Amateurs(Wash.)(71)	6252	3	. . . .	. . . .
Eight-Land				
Canton Amateur Radio Club(Ohio)(16)	672,720	28	W8KEL	WB8DGO
Ohio Valley Teenage Network(19)	543,464	6	WB4DQM	. . . .
Saginaw Valley Amateur Radio Association(Mich.)(22)	449,932	29	K8JLD	K8BKF
Central Ohio AREC(23)	423,940	7	. . . .	. . . .
West Park Radiops(Ohio)(31)	271,788	9	WA8YWX	W8IDM
Central Michigan Amateur Radio Club(36)	252,514	10	W8VPC	W8TJQ
Farout Amateur Radio Club(Ohio)(45)	169,772	7	WB8OFR	WB8OFR
Cuyahoga Falls Amateur Radio Club(Ohio)(49)	163,168	17	W8HST	WB8KIA
Parma Radio Club(Ohio)(69)	.24,092	3	K8NXV	. . . .
Nine-Land				
Indy Dxers(Ind.)(9)	1,562,672	17	K9UWA	WB9LHI
Northwest Amateur Radio Club(Ill.)(25)	395,488	7	WB9GFC	WB9GFC
Wisconsin Valley Radio Association(26)	393,968	18	W9MJ	K9EYA
Radio Amateur Megacycle Society(Ill.)(50)	158,564	10	WA9TKK	W9DY
Ozaukee Radio Club(Wisc.)(57)	131,422	3	. . . .	. . . .
West Allis Radio Amateurs Club(Wisc.)(64)	.84,658	6	WB9HGS/9	WB9NME
Chicago Radio Traffic Association(65)	.67,764	6	W9REC	. . . .
Zero-Land				
Minnesota Wireless Association(11)	1,229,576	15	WAØENP	WAØENP
Colorado Contest Conspiracy(17)	667,934	4	. . . .	. . . .
St. Charles Amateur Radio Club(Mo.)(30)	368,700	11	WAØCWH	WAØCWH
Denver Radio Club(33)	282,150	6	WBØGAZ	. . . .
Cedar Valley Amateur Radio Club(Iowa)(34)	264,260	6	. . . .	WAØVDX
Mid-Mo Amateur Radio Club(37)	245,280	4	KØRPH	. . . .
Douglas County Amateur Radio Club(Kan.)(44)	184,572	5	WAØSEV	. . . .

Top RI low power entry on phone is WA1KOO. Frank says he'll be back next year with a tribander to replace a few of his dipoles.

(Continued from page 57)

but I'm sure nobody had more fun than I did. – (K6MP). I enjoyed the contest despite low power and a lower antenna. Someday I'll have a QTH where I can put up at least a dipole. – (WB4ADT/4). Best cw contest I ever entered. – (K3YWJ/9). Moved to Nebraska in May. (WØAIH). Worked North Dakota and VE5 . . . the day after the SS. – (WA2YHK). The propagation Gods burned us up here in the Seattle area. The only coincidence that caught my funnybone was working WB2HIM and KL7HER back-to-back. – (VE7ZZ, opr. at W7SFA). Murphy's contributions are to phew! to mention. – (K2TTG). This contest assures me that we still have some damn good cw ops around. – (K9IIQN). I was blessed by good conditions (no aurora) and only minor equipment failure. – (WAØBWM, opr. at WAØFNP). My last QSO was with WB2FUN. Very appropriate for summing up SS 74. – (K4BAM). God bless VE8NN now that VE8BB is gone. – (K8HPX). Why is it that the guys who call the longest CQs also hop all over the band so you get to listen to them over and over before their ID tells you that they're the same fella? – (WA2TEI). I like the new dates and the weekend in between. – (W2FZK). Caught the SS fever during halftime of the Redskins-Packers game and missed both the third quarter Redskin touchdowns. – (W4EDB). Nevada section is tough to get even FROM Nevada. – (WAØKXJ/7). One of these years when I say "wait 'till next year" I'll get around to fulfilling that prophesy. – (K9JUU). TVI lives! – (WBØDJY). I found one ingredient for a perfect SS by sending the XYL and Junior operator to mother-in-law for the weekend. – (W9MDW). Dad and I didn t even decide to get in on cw SS until we heard it on the air. I dug up some log sheets and we had a blast. – (WBØKDE). It was a pleasure to hear many FB operators. – (W9RHH).

Splatter

Spent most of my time explaining that I was WB2LOF and not WA2LOF. – (WB2LOF). Scared the daylights out of both of us when I called W4USM. He was signing W4 United States Marines and I was signing W4 United States Navy. I'm not in the Navy and he's not in the Marine Corps. – (WB6DPV, opr. at W4USN). Next year I'll use a dupe sheet DURING the contest. – (WB2NDR). The 10-meter opening really helped out on sections. – (WA1RWU). Despite having to work on Sunday and fighting almost solid S9 power line noise I had a real ball. – (VE8RO). My biggest surprize of the contest was working WBØLVR. – (WA3LVR). The multiplier I really needed at any moment was on the back of the beam and, when I swung it around, he would dissapear and, sure enough, there was another multiplier on the back of the beam. By the time the SS was over my beam was 180 degrees out of calibration. No wonder I couldn't null out the sixes. – (WBØLJM). We were visited by a skunk in the last hours of the contest.

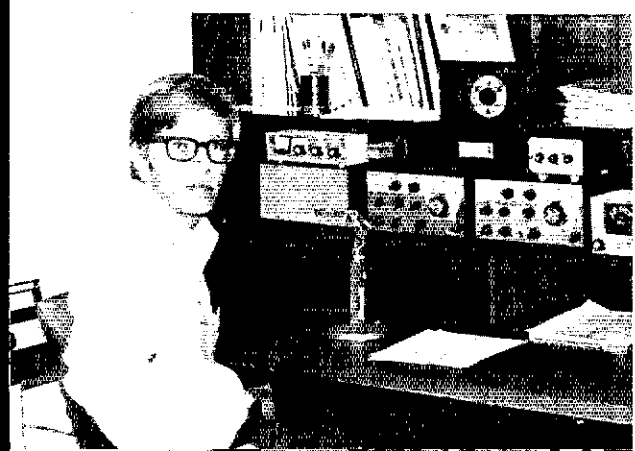
(WA3TJB/3). My first SS and a deafining experience. – (K3HWL). I was able to give out a

TOP TEN
(Single Operator)

CW		*PHONE*	
W6RR	172,350	W6HX	253,200
W7RM	168,150	WAØCVS	249,300
W6MAR	163,800	W6RR	237,244
K7NHV	161,550	WB2OEU	226,200
WA7NIN	160,800	WA7NIN	219,000
K4PUZ	156,074	K7NHV	218,700
W9YT	154,800	WB5DTX	217,650
W6HX	154,500	WA5JMK	215,700
W6NUT	153,750	W5MYA	210,000
K4GSU	153,446	KØZCM	209,124

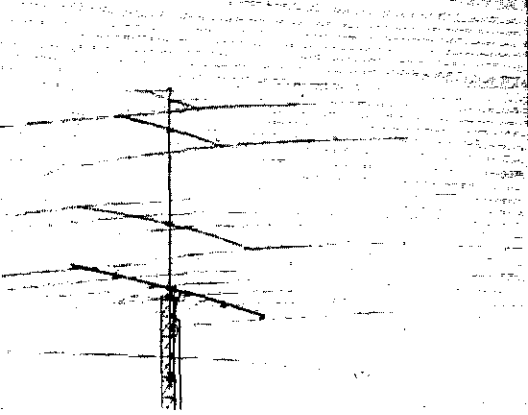
QRP CHAMPS
(200 Watts or Less at All Times)

CW		*PHONE*	
W8CQN	137,492	WB5FMJ	144,150
WB9GFC	128,772	K4PQL	138,080
K6LKD	115,344	WA6HAF	133,298
W3HAE	105,228	WB6VZI	118,080
WA5RTG	103,452	WA4UFW	107,136
W1FCC/3	102,200	WA2UJM	105,648
WA1QNF	101,762	W5QWF	101,104
WA6TLV	101,232	WA1SSH	93,684
W1DKU	99,456	WB2JSJ	91,732
WB6VZI	95,630	WB2MAN	90,312



Tops in Missouri is WAØPAO. Outside Mike utilized 3 elements on 10 and 15, 4 on 20, dipoles and a 750-foot-per-leg rhombic. Not bad.

QST for



The crazy man from San Francisco, W6NUT, and his aluminum farm. The antennas include (from the top down) 3 elements on 10, 2 on 40, 4 on 20 and 6 on 15. The boom below all the antennas is a support for a 2 element phased inverted vee array on 80. All this on a 68-foot crankup tower on a 600-foot hill overlooking San Francisco Bay. Right: W6NUT and station. Note the second op beside the key. Tom had a FB 9th place nationwide showing on cw. He kept alert during breaks by doing Hatha Yoga. That's what he said anyway.

few badly needed Maine contacts although I missed it myself. – (WA1LBP/1). The only thing that could top off my string of bad luck would be not getting one comment printed in *QST*. – (KP4DSO). In dire need of a North Dakota contact, we were fortunate to meet WAØDCQ from SD who got in his car and drove across the state line to oblige us. How refreshing, especially in the sometimes-short-and-curt atmosphere of a contest. – (WA4ECY). I would have done more operating but my father kept knocking down my indoor dipoles. – (WB2VTN). Took me two hours to get back in the swing. Ten years between SS is too long. – (KØJGH/5). It seems the foreign broadcast isn't the loudest thing on 40 meters, at least for a couple of days. – (WB4WDV). Before I get in another contest I will have to get an antenna up for 40 meters. You can't work 15 and 20 all night. – (WA6AYW). Everyone thanked me for Nebraska but no one would answer my CQ. I guess everyone was after North Dakota. – (WBØIHU). The first time our club operated in a contest in many years. Lots of fun but we could have used more operators. – (W9YW). Certainly can't wait 'till next year. – (WA7LNW). I used no beams at all this year but find I'm going to have to get one to filter out some of the unwanted stuff while receiving. – (W5ONL). I wanted to spend more time in the contest but when your brother is good in Karate and is trying to sleep, the switch is quickly set to the off position. – (WA7VTM).

FORTY-FIRST SWEEPSTAKES CONTEST

Scores are grouped by call area. Sections, within call areas, are broken down by power category. Example of listings: VX1KE 47,320-338-70-19 or final score of 47,320, number of QSOs 338, number of sections 70, total operating time of 19 hours. Multi-operator stations are grouped in order of score following single-operator station listings in each section tabulation. An asterisk denotes a Hq. staff member, ineligible for an award.

CLEAN SWEEP CW

K1EUF	WA4ZHB*	W7EXM
WB2OEU	WB4ADT/4	W7GKF
WB2PYM	WB4RUA	W7LR
WB2RJJ	K5PFL	W7TML
K3DPQ	W5OB	W7WW
K3DTD	W5TMN*	K8BPX
K3EST	WA5LES	K8MFO
W3CRE	K6EBB	W8KIC
W3EZT*	W6BIP*	W8OYI
WA3AFQ	W6HJP	W8RSW
WA3GUL	W6MAR	WB8DGO
WA3SWF	W6NUT	W9DY
K4BAI	WA6PGB	KØGXR
K4CG*	KH6IJ	WØIYP
K4VFY	KH6RS*	WAØCWH
W4UQ	K7NHV	WA3PWL/Ø
W4YZC		VE3EJK

K1CPF (WA1JYY, opr.) W7RM (K7VPF, opr.)
W2YD (WA2SRQ, opr.) WA7NIN (W6OAT, opr.)
K6CQF (W6PAA, opr.) W8EDU (WA3BGE, opr.)
W6DGH (WB6ZVC, opr.) K9IU (WB9GVT, opr.)
W6HX (WB6OLD, opr.) W9YT (K9ZSE, opr.)
W6RR (W6RTT, opr.) KØZCM (WØLBP, opr.)

CLEAN SWEEP PHONE

K1DQV/1	WB4RUA/4	KZ5WA
W1ZM	KP4EAJ	W6PRP
WA1PID	K5KSI	WB6EDM/6
WA2UOO	W5FC/5*	WB6KBK
WB2OEU	W5LUJ*	K7NHV
K3GJD	W5MYA	W5QQQ/7
W3AU*	W5RTQ	K8MFO
W3AZD	W5WMU	K3YWJ/9
W3QII	WA5FTP/5	WB9CGL
WA3UTA	WA5JMK	KØCVA
K4CG*	WA5RXT	KØUYN
K4FU	WA5VDH	WAØCPX
W4UPJ*	WB5FMJ	WAØCWH
W4WSF		

WA1KID (K1ZND, opr.) K6EBB (WB6AIN, opr.)
W2PV (WA1ABV, opr.) K6OVJ (W6DSQ, opr.)
W3EZT (WA3IAQ, opr.) W6DGH (WB6ZVC, opr.)
W3GRF (W3BQV, opr.) W6HX (WB6OLD, opr.)
W3LPL (WA3HRV, opr.) W6OKK (WB6DSV, opr.)
K4VX (K3EST, opr.) WA7NIN (W6OAT, opr.)
WA5LES (K5LZO, opr.) K9IU (WB9DZS, opr.)
WB5DTX (WA3GBU, opr.) WAØCVS (WBØDJY, opr.)

* Multioperator

CW SCORES

Maritime

VY1KE 42,320- 338-70-19

200 Watts or Less

VE1VI 49,542- 359-69-22
VE1MX 39,304- 289-68-16
VE1BAK 50- 5- 5- 3

Quebec

VE2AQP 40,186- 283-71-20
VE2WA 19,180- 137-70-10

200 Watts or Less

VE2AXW 71,994- 503-71-24
VE2BYR 69,561- 470-74-20
VE2YU 47,600- 340-70-
VE2HY 2538- 47-27- 5

Ontario

VE3HUM (VE3BVD, opr.)
111,544- 764-73-24
VE3DH 83,516- 266-63-14
VE3ARI/3 (VE3- AID FBI GAS)
60,144- 537-56-19

200 Watts or Less

VE3EJK 61,350- 409-75-23
VE3GEN 31,360- 245-64-11
VE3IR 20,608- 172-64-
VE3DDW 3698- 43-43- 3

Manitoba

VE4SW 16,224- 156-52- 6

200 Watts or Less

VE4VV 16,740- 155-54- 8
VE4MG 10,304- 112-46-10

Saskatchewan

VE5ZU 3500- 50-35-10

200 Watts or Less

VE5QR (VE5AL, opr.)
26,656- 238-56-16

Alberta

VE6MP 83,860- 599-70-22

200 Watts or Less

VE6ATT 44,928- 351-64-22

British Columbia

VE7WJ (VE7AON, opr.)
118,114- 809-73-
VE7IQ 49,000- 350-70-22

200 Watts or Less

VE7GX 10,810- 115-47-14
VE7ALF (+VE7CFO)
6160- 88-35-24

Yukon-N.W.T.

200 Watts or Less

VE8NN 13,144- 124-53- 8
VE8OO 5376- 168-32- 2

U.S.A.

1

Connecticut

W1EBY* 148,444-1003-74-24
WA1PID* 143,708- 971-74-24
W1ZM (WA2CUQ, opr.)
141,488- 956-74-24
WA1STN* 136,900- 925-74-24
K1DPB 119,880- 810-74-24
WA1IZC* 119,664- 831-72-23
WA1MAQ 113,760- 790-72-23
WA1NNC 110,408- 746-74-24
WA1LNQ* 109,500- 750-73-19
K1TZD (WA1QI, opr.)
107,856- 749-72-19
W1GQO 104,400- 725-72-24
K1GUD 95,776- 656-73-20
K1ASJ 92,648- 626-74-24
WA1QZH 92,448- 642-72-20
WA1KOC 81,576- 618-66-22
W1VV 75,044- 514-73-17
W1GNC/1* 69,440- 496-70-14
W1TCJ 66,480- 554-60-20
W1GPK 64,610- 455-71-21
W1BIH 62,456- 422-74-12
WA1NLD 59,800- 425-70-13
WA1KID 49,270- 379-65- 6
K1JHX 43,164- 327-66-
WA1HNI 40,960- 320-64-17
W1QV 5270- 85-31- 3
W1NJM* 1240- 31-20-
WA1KOJ 624- 24-13-12
WA1NRF (+WA1OCU WA1SFO)
12,280- 142-45-10

200 Watts or Less

WA1QNE 101,762- 697-73-22
WA1SSH 92,944- 628-74-24
K1THQ/1 77,040- 535-72-23
WA1FCM* 54,808- 403-68-18
W1DHI (WA1RYL, opr.)
42,240- 330-64-13
WA1SHO 38,610- 292-65-15
WA1CCR 27,956- 241-58-12
WA1RUR 23,424- 297-46-15
W1NRG/1 (WA1QME, opr.)
24,400- 200-61-15
W1HV 23,040- 288-40-15
W1IX 9504- 108-44- 5
WA1SCV 9380- 116-40- 9
WN1UAX 6480- 108-30-17
WN1RRS 4650- 93-25-20
K1MYQ 2560- 40-32- 3
WN1UAC 2184- 42-26-19
WN1UAD 2150- 43-25-21
WA1SZJ 572- 26-11- 4
WN1TWC 80- 8- 5- 4
K1MUJ/1 (+K1DNW WA1s DWF HYN)
49,980- 351-70-16
WA1SHX (+WN1TNS)
14,868- 177-42-19
WN1TWW (+WN1TWX)
4154- 67-31- 6

Eastern Massachusetts

W1MX (WA8WNU, opr.)
148,000-1000-74-24
WA1JUY (WA2LQZ, opr.)
133,496- 902-74-23
W1DAL 123,728- 836-74-24
K1CPE (WA1JYY, opr.)
117,300- 782-75-24
K1EOF 117,150- 781-75-24
W1PL 93,294- 639-73-22
WA1SJR 89,352- 612-73-20
K1OME 71,680- 561-64-16
WA1MHJ 50,874- 417-61-18
WA1SCX 41,184- 312-66-14
WA1RGW 33,908- 346-49-18
WA1LKX 24,852- 218-57- 4
DL2AA/W1 19,788- 194-51- 8
WA1MSK 12,358- 167-37- 7
WA1NRV 7632- 106-36- 2
W1PLJ 4224- 66-32- 8
WA1PDM 504- 21-12- 2
W1BCH (WA1s CBH RJX RVB SDR WN1s RTY SXF IMO M. Farrell J. Luchini B. O'Toole)
19,074- 187-57-24
W1KBN (WA1ss OLV OML PDM RCH)
17,808- 168-53-10

200 Watts or Less

WA1MJD 74,760- 534-70-20
WA1FOT 69,720- 498-70-22
W1GXV 57,260- 409-70-24
WA1PAZ 46,976- 367-64-18
WA1OSJ 41,860- 322-65-16
W1HBM 41,644- 359-58-21
WA1QJU 34,440- 287-60- 9
WA1RFF 31,248- 248-63-17
WA1KBG 8944- 104-43- 8
WN1TFF 8810- 115-37-23
WA1IEB 7360- 92-40- 8
WN1RIM 6160- 77-40-
K1HRV 4092- 62-33- 3
WA1LAI 2000- 40-25- 4
WA1UCU/1 520- 26-10- 4
W1HDO 162- 9- 9- 4
WA1RLI/1 4- 2- 1- 1

Maine

K1TEV 6308- 83-38- 3

200 Watts or Less

K1GAX 8200- 100-41- 4

New Hampshire

W1BPW 72,720- 505-72-10
W1HCS 62,172- 471-66-23
WA1MZV 36,850- 275-67-19
W1JSM 12,556- 146-43- 7
W1DXB 10,304- 112-46- 5
W0DAD/1 2970- 45-33- 4

200 Watts or Less

WA1RFI 58,080- 440-66-24
WA1ODG 54,272- 424-64-21
WA1RQT 20,900- 190-55-12
WA1RKH 13,640- 155-44-13
W1EWZ 476- 17-14- 7
WA1URC (WA1s JSD LNH)
12,250- 125-49- 7

Rhode Island

K1GMW 63,956- 542-59-22
K1JPA 58,926- 427-69-22
WA1CVF/1 53,988- 409-66-23

200 Watts or Less

K1SWK 54,470- 419-65-24
WA1ODD 47,600- 350-68-22
K1QED 41,472- 288-72-15
WA1UCC 37,744- 337-56-24
K1ZFN 3564- 81-22- 3
WA1SZF 840- 30-14- 8

Vermont

WA1ABV/1*
121,952- 824-74-24
WA1PSK 15,892- 137-58- 7
W3KE/1 13,816- 157-44- 8

200 Watts or Less

W1GLZ 61,472- 452-68-23
WA1TXI 15,092- 154-49-
K1HK 5776- 76-38- 5
WN1TZL 2090- 55-19-15

Western Massachusetts

WA1ABW 128,042- 877-73-24
K1RQE 78,064- 574-68-21
K1SSH 68,256- 474-72-16
WA1LPT 58,078- 409-71-19
W1FLX 5808- 88-33- 5
W1PUO (WA1s MYK NR1)
99,012- 669-74-24

200 Watts or Less

W1DKU 99,456- 672-74-24
W1DGL/1 85,680- 612-70-24
WA1MJE 62,720- 448-70-19
WA1PZM 44,220- 345-66-16
WN1RSY 10,350- 115-45-14
WN1TAI 5530- 79-35-22
WA1EKE 2- 1- 1- 1

2

Eastern New York

W2PV (K1ZND, opr.)*
140,748- 981-74-24
WB2OFO 125,400- 836-75-24
WA2EAH 121,656- 822-74-22
K2MME 119,136- 816-73-24
W2AZO 103,968- 722-72-24
W2HHC 80,592- 552-73-22
K2BK 63,750- 425-75-18
WB2BXL 62,604- 423-74- 2
WA2SPL/2 8340- 139-30- 3

200 Watts or Less

WB2RKF 69,000- 500-69-22
WA2HAI 65,550- 475-69-22
WA2SVH 63,788- 431-74-24
WB2AXV 57,960- 414-70-21
WB2WZA 50,680- 362-70-19
WA2MTZ 24,012- 207-58-13
K2TTG 20,482- 209-49-16
WN2ODP 15,190- 155-49-19
WB2ZUM 9900- 110-45-17
WB2GSW 8584- 148-29-10
WA2CIY 8400- 100-42- 6
WA2ROH 7200- 100-36-10
WA2SVH 2090- 55-19- 3
W2NG 572- 22-13- 4
WB2FUH 208- 13- 8- 1
W2FSL 192- 12- 8-

N.Y.C.-L.I.

K2AU 120,304- 824-73-24
WB2FLE 115,200- 800-72-24
W2AJR (WA2UWA, opr.)
114,464- 784-73-23
W2FVS 108,864- 756-72-23
WA2YHK 101,672- 716-71-24
WB2PYM 101,100- 674-75-20
WA2GMD 2448- 68-18-11
WB2HTM 456- 19-12- 2
W2OTS 2- 1- 1- 1

200 Watts or Less

WA2LVV 62,020- 443-70-19
WB2FHM 51,888- 376-69-22
WB2EKF 51,858- 387-67-17
WB2HZH 51,590- 385-67-22
WA2DLV 43,420- 334-65-15
WB2EZG 40,300- 310-65-18
WB2BXO 39,240- 327-60-17
WA2APO 33,012- 262-63-10
WA2TFI 30,240- 252-60-24
W2GKZ 27,738- 207-67-10
WB2JRY 26,394- 249-53-14
WB2GXW 25,088- 224-56-18
WN2RMO 18,304- 176-52-
WA2ROK 16,800- 175-48-10
WA2YJN 16,714- 137-61- 8
W2DUS 15,288- 147-52- 8
WN2TVU 11,644- 142-41-
WB2HES 10,676- 157-34-11
WA2VPA 10,584- 147-36-13
W2HAE 9476- 103-46- 8
W2CZZ 9460- 110-43- 6
WN2WBH 7598- 131-29-14
WN2WKH 2560- 105-36-14
W2KDI 6432- 67-48-13
WN2POE 6120- 85-36-11
WN2WXS 4872- 87-28-23
WN2SZR 4466- 77-29- 8
WB2EAV 3410- 55-31- 6
WN2SJG 3360- 60-28-
WB2EHN 1716- 39-22- 4
WB2DUB 1504- 47-16-10
WN2VKF 1184- 37-16-23
WB2UHY 1140- 30-19- 4
W2NBI 630- 21-15- 5
WB2EVT 600- 20-15- 7
WB2JSM (WB2TBC, opr.)
550- 25-11- 5
WN2TQE 450- 25- 9-11
K2PAY 64- 8- 4- 2

Northern New Jersey

WA2UOO 150,818-1033-73-24
W2YD (WA2SRQ, opr.)
142,500- 950-75-24
WB2RJJ 129,300- 862-75-24
WB2FIT 110,668- 758-73-24
W2SHM 107,424- 746-72-25
WA2DNY 99,936- 694-72-23
WB2SHH 85,400- 610-70-23
WA2SZQ 72,896- 544-67-18
WB2CST 66,360- 553-60-23
W2HTR 39,996- 303-66-16
W2MB 4884- 74-33- 5

200 Watts or Less

WA2LUG/2
78,736- 532-74-24
WA2DSA 55,074- 411-67-11
WB2GAV 48,360- 372-65-16
WB2APO 40,704- 318-64-15
WA2BSU 31,742- 269-59-13
WB2WNZ (WB6JJE, opr.)
31,152- 236-66- 9
WB2VFT 26,536- 214-62-14
WB2TBB 25,194- 221-57-15

WN2SLA 23,600- 200-59-21
WA2EJZ 21,480- 179-60-17
W2HCA 21,472- 244-44-17
WA2SLF 21,384- 198-54-10
W2HN 19,520- 160-61- 8
WB2RMK 18,800- 200-47-16
W2DMZ 18,172- 154-59-14
W2DEN 12,750- 125-51- 6
W2HR 11,232- 156-36-10
W2KWW 10,900- 109-50-14
WA2WBF 10,658- 73-73-12
WB2VPR 9800- 70-70- 4
WN2QHN 6000- 120-25-10
WA2UUB 5304- 68-39- 8
K2PTI 3944- 68-29- 7
W2NPT 3420- 90-19-
WN2SOU 1800- 50-18- 7
WN2WIH 1428- 34-21- 9
WN2WDT 308- 14-11-24
K2DT 32- 4- 4- 2
WC2MC (WA2s PCPK KOV SMW WB2MIC) 2- 1- 1-

Southern New Jersey

W2REH 128,100- 854-75-22
K2JOC 105,996- 726-73-24
W2BQP 105,648- 744-71-23
W2HSX 70,596- 477-74-22
WB2OSQ 52,140- 395-66-19
W2FPA 48,688- 358-68-21
W2HNO 43,026- 303-71-16
WA2VYA 23,664- 204-58- 6
WA2TRK 19,140- 165-58- 6
W2PAU 8584- 116-37- 4
WA2OMY 4212- 81-26-10
W2PGY 840- 28-15- 5

200 Watts or Less

W2LYL 56,420- 403-70-18
W2EA 48,438- 351-69-23
K2SBW 26,400- 200-66-14
W2FDJ 25,200- 210-60-23
WA2WLM 22,288- 199-56-13
W2RFB 10,560- 120-44-
WB2QNH 7644- 98-39- 7
WA2REK 5256- 73-36- 8
WA2AIH 3080- 55-28- 5
WB2UWB 1170- 39-15- 7
K2HPV 588- 21-14- 5
WN2WIL (+WA2NUL WB2s FOB MMX) 5760- 80-36-15

Western New York

WA2LCC 107,494- 757-71-23
WA2MBP 80,512- 544-74-16
W2HPF 65,036- 458-71-13
WA2QXA 53,856- 374-72-23
W2FXA 53,250- 375-71-11
WA2ZRD 37,448- 302-62-12
K2RUE/2 26,622- 261-51-16
W2GJY 18,762- 177-53- 8
W2FR 11,700- 78-75- 7
WB2AIO 756- 27-14- 1
K2GXT (WA2s FQE FTK NVI) 20,930- 161-65-19
W2OW/2 (WA2s GHH IKO MSQ RBA RBJ WB2LNX) 11,782- 137-43-24

200 Watts or Less

WB2FNS 95,040- 660-72-24
WA2UJM 85,118- 583-73-19
WB2ABD 81,322- 557-73-23
W2BHP 69,864- 492-71-24
WA2DRC 65,860- 445-74-19
W2PZK 60,568- 452-67-11
WB2FNQ 59,064- 428-69-21
WB2JRX 53,040- 408-65-19
WA2UUA 43,878- 309-71-15
WB2EXL 42,194- 289-73-21
K2MQV 30,012- 246-61-14
WB2GGM 27,648- 216-64-17
WA2BAO 24,738- 217-57-12
WB2KLA 23,184- 207-56-15
WA2LEZ 16,422- 161-51-16
W2FCW 8736- 112-39-16
WN2KNZ 8528- 104-41-13
K2UAN 5440- 80-34- 7
WB2FXY 3172- 61-26- 2
WN2OBA 3120- 60-26-13
K2DTQ 1406- 37-19- 8
WA2AOG 1064- 28-19-
WB2FJC 252- 14- 9- 2

3

Delaware

K3KAJ 40,920- 310-66-13
W3OWE 24,852- 218-57-15
WA3TVS 15,364- 167-46-12
WA3KZX 1120- 28-20- 8

200 Watts or Less

W3TGF 72,520- 518-70-20
K3HBP 30,600- 225-68-20
WA3KUD/3 29,760 240-62-14
W3GL 25,350- 195-65-11
WA3DUM 21,840- 210-52-13
W3DRD 17,408- 136-64-13
K3YHR 8232- 98-42- 8
WN3WPY 1224- 36-17-16

Eastern Pennsylvania

WA3GUL 124,200- 828-75-23
W3GM 114,912- 798-72-24
K3DPQ 100,800- 672-75-24
W3YP (W3DQG, opr.) 100,492- 679-74-20
K3ANA 90,596- 638-71-20
W3JSX 90,228- 618-73-24
W3ADF 57,600- 400-72-19
W3KT 45,756- 369-62-10
WA3WIM 43,800- 365-60-18
K3ZOL 34,472- 278-62-12
WA3RTY 26,314- 223-59-17
W3CLM 14,800- 148-50-12
K3HNP 7200- 100-36-
WA3NVZ 6188- 91-34-11
W3HMR 4752- 72-33- 5
W3BIP (+W3JYB) 92,304- 641-72-24
WA3PHQ (+WA3SXU) 52,390- 403-65-24

200 Watts or Less

W3HAE 105,228- 711-74-24
W3ARK 80,640- 560-72-20
K3DZB 70,000- 500-70-16
K3BFA 69,000- 500-69-20
WA3VDQ 34,540- 314-55-15
K3DTD 33,098- 247-75-21
K3OIO 30,100- 350-43- 9
WN3WUI 20,608- 161-64-19
WN3VQE 13,416- 172-39-17
WA3MVP 13,064- 142-46-11
WB2RBA/3 11,280- 141-40- 7
WA3RID 6848- 107-32-
WN3WOE 6696- 108-31-16
WA3SXU 5696- 89-32- 3
W3KFK 4914- 63-39-12
WA3UDV 4480- 70-32-
WB2TEN/3 1972- 17- 3-
WA3RHX 1080- 36-15- 5
W3OS 378- 21- 9- 5
WA3RCA (WA3s SZD WLH) 52,452- 423-62-24

Maryland-D.C.

W3LPL 152,884-1033-74-24
K3EST 147,750- 985-75-24
W3CRF 133,050- 887-75-24
W3IMZ (W9SZR, opr.) 120,742- 827-73-24
W3IN 116,946- 801-73-22
K3ZAW 111,000- 750-74-24
WA3NYU 108,432- 753-72-23
W3GRF 108,332- 742-73-22
W3KMV (WA3GVP, opr.) 104,190- 755-69-22
WA3AFO 99,450- 663-75-21
WA3UOP (WA3QIA, opr.) 91,834- 629-73-24
WA3LHG 87,046- 613-71-24
K3NPV 80,940- 570-71-15
W3YXM (WA3NQJ, opr.) 80,920- 595-68-
W3FA 77,234- 529-73-24
W3MFJ 62,906- 443-71-20
K3IMC 62,874- 499-63-24
K3CQ 56,876- 482-59-22
K3CKT 51,208- 346-74-15
K3LYW 50,126- 353-71-16
W3HXO 45,124- 389-58-24
W3AXW 38,776- 262-74-12
W3HVM 32,232- 237-68-15
W3HH 22,072- 178-61-13
WA3AMH/3 17,388- 161-54- 6
W3ZSR 16,968- 202-42- 4
WA3TOE/3 15,800- 158-50-11
W3CSZ 4736- 74-32- 2
WA3WAD 1584- 36-22- 4
W3DBT (+W3BQV) 120,768- 816-74-24
W3EZT (+WA3IAQ) 118,350- 789-75-19
K3GJD (+K3CUW) 112,924- 763-74-24
W3CU (+K3s LLL SDO OFJ W3s EWP FIA GMJ JBU WA3s RWS TKP W4RIO W5FEE WA8ETR) 97,016- 724-67-24

200 Watts or Less

W1FLM/3 75,118- 529-71-22
W3TOS 62,370- 495-63-21
W3ABC 37,788- 282-67-13
WA3TZT 36,414- 289-63-23
WA3SXH 35,784- 284-63-16
K3TNM 31,122- 247-63-22
WA3TDZ 22,848- 168-68-18
W3TN 21,692- 187-58-17
K3REB 21,432- 188-57-16
WA3WRN 20,700- 207-50-19
WA3UHJ 15,040- 160-47-12
W3FZV 10,730- 145-37- 5
W3KA 9652- 127-38- 6
WN3YWC 9000- 150-30-24
W3FSP 8928- 72-62- 6
WN3UHO 7790- 95-41-11
WA3SOR 7280- 104-35- 7
WA3VPL 6800- 85-40-13
WA3UYB 5832- 81-36-16
WA3VRJ 4092- 62-33-19
WA3VJG 532- 19-14- 4
WN3UUO 240- 12-10- 7
K3INF 128- 8- 8-
WN3YKK 112- 8- 7- 4
W3RIL 2- 1- 1-

Western Pennsylvania

WA3SWF 99,750- 665-75-14
W3GNR 11,280- 141-40- 9
WA3TPM 5032- 74-34- 2
WA3FAL (+WA3s SZX WIK) 82,080- 570-72-15
K3CR (WA3s JIH OFR OVZ) 80,496- 559-72-22

200 Watts or Less

W1FCC/3 102,200- 700-73-24
WA3KOS 70,840- 506-70-19
K3VXV 53,280- 360-74-13
K3VCH 52,220- 373-70-23
W3HDH 45,640- 326-70-11
WA3VBM 41,052- 311-66-17
WA3QNT 28,672- 224-64-13
K3DMG 19,264- 172-56- 7
WA3SWB 12,600- 150-42- 6
W3HPX 9492- 113-42-10
WN3WSC 9000- 100-45-20
W3GXF 2652- 51-26- 4
WA3LVA 1368- 36-19- 8
W3KQD 1200- 30-20-

4

Alabama

K4ZGB 57,132- 414-69-21
WA4BDW 44,020- 310-71-12
W8FAW/4 32,696- 244-67- 4

200 Watts or Less

WB4ADT/4 60,600- 404-75-17
K4JYO 44,162- 311-71-20
WB4PDQ/4 22,248- 206-54-10
WN4KKN 18,816- 168-56-23
W4OR 2646- 49-27-
W4USM 900- 25-18- 1
WN4ITB 128- 8- 8- 6

Georgia

K4BAI 121,350- 809-75-24
WB4TVU 99,864- 721-73-21
W4BTZ 84,960- 590-72-24
WB4RUA 76,200- 508-75-16
WA4APG 38,544- 292-66-15
WB4MWC (+WB4s CTL UIH) 83,070- 585-71-24

200 Watts or Less

K4BAM 58,646- 413-71-22
W4SAS 9000- 100-45-13
WB4UFW/4 3696- 56-33- 3
K4UJS 1890- 35-27- 2

Kentucky

K4GSU 153,446-1051-73-24
K4EU 89,836- 607-74-19
W4RIW 31,066- 317-49-16

200 Watts or Less

WA4CIC 55,300- 395-70-19
WB4FOT 22,560- 188-60-11
WB4YQY 17,214- 151-57-16

North Carolina

K4EQA 115,486- 791-73-24
W4NQA 108,000- 750-72-19
WA4FFW 97,828- 661-74-21
K4CAX 1700- 50-17- 1
WB4FBC(K4s BWS COF SLC WA4s DRC GGH VCC WB4s BXW BZS) 58,032- 403-72-18
K4EG (WB4VVP WN4KPI) 51,612- 391-66-17

200 Watts or Less

K4FOB 82,386- 597-69-24
WA4MWP 41,184- 312-66-21
W4RWL 12,008- 158-38-10
WA4DEQ 9400- 100-47- 9
WN4FYL 5148- 78-33-16

Northern Florida

K4VFY 120,450- 803-75-19
W4YUU 100,788- 681-74-20
K4LAN 25,252- 214-59- 7
WA4LCO 23,064- 186-62-17

200 Watts or Less

WA4UFW 80,784- 561-72-22
K4SAV 62,764- 442-71-18
WB4ULL 7000- 100-35-10
WB4AJL/4 6402- 97-33- 5

South Carolina

K4GDL 60,858- 441-69-19

200 Watts or Less

WA4LBO 42,000- 300-70-22

Southern Florida

WB4AEX 130,464- 906-72-24
K4DBZ 116,476- 787-74-20
WB4OGW 88,768- 608-73-20
W4OZF 67,320- 510-66-13
K4PY 43,164- 327-66-11
W4ZTB 42,640- 328-65-19
WB4DFV 38,400- 300-64-20
WA4KKE 29,000- 250-58- 9
K4JOP 5810- 83-35- 6
WA4ZHB (WA4FCI WB4HYN W0PBI) 79,800- 532-75-24

200 Watts or Less

W4GOG 58,872- 446-66-22

WN4GNI 11,440- 110-53-22
K4DAS 4332- 57-38- 5
K4MV 1628- 37-22- 8
WB4NTH 1188- 27-22- 7
WA4BTQ (+WA4B1R)
56,160- 432-65-24

Tennessee

K4PUZ 156,074-1069-73-24
WB4WFT 52,580- 447-70-18
WB4OBC 40,672- 328-62-14
K4MOJ 38,350- 325-59-10
WB4RJF 13,920- 120-58- 8

200 Watts or Less

WA4BTK 83,088- 577-72-23
WA4EDR 39,600- 306-66-11
WA4JBP 27,474- 241-57-22
WA5ZKO/4
22,272- 192-58-15
WN4CIA 12,880- 140-46-11
K4HPP 6800- 100-34- 4
W4OGG 3500- 50-35- 4
WA4ASZ 216- 12- 9- 1

Virginia

K4VX (K4POL, opr.)
138,700- 958-73-24
W4QCW (WA8ZDT, opr.)
124,392- 852-73-24
K4CFB 116,552- 808-72-24
WB4BGY 110,084- 754-73-20
WB4SGV 109,152- 758-72-21
W4DM 108,144- 751-72-24
WB4DFL 104,636- 707-74-21
W4MYA 101,088- 702-73-22
K4DTD 98,784- 682-72-24
WB4BUI 93,388- 631-74-23
WA4QOU 82,928- 568-73-22
W4UO 80,556- 537-75-18
K4OD 80,068- 541-74-23
W4COP (WB4UKA, opr.)
78,480- 545-72-22
W4YZC 75,900- 506-75-18
W4KXV 25,312- 823-72-17
K4IM 71,960- 514-70-13
W4CRW 64,480- 496-65-19
W4KFC 63,648- 442-72- 9
W4NH 60,882- 417-73-14
W4EZ 60,236- 407-74-14
WB4FBO (WA4BFY, opr.)
55,488- 408-68-20
K6FTM/4 54,272 424-64-18
W4ZM 43,416- 324-67-12
K4JWD 35,328- 256-69-12
K4EBY 24,640- 220-56-19
W4WBC 20,160- 168-60-11
K4ZA 19,096- 154-62- 8
WB4TFL 18,240- 152-60- 6
KØCMF/4 14,040- 130-54- 5
K4EJG 12,298- 143-43-13
K4RDU 12,210- 111-55- 5
W4YHD 10,472- 119-44- 3
W4JHK 3100- 62-25- 1
K4JYM 2350- 47-25- 2
W1GVW/4 1120- 40-14-
K4EZL 494- 19-13- 1
K4CG (+K3WUW)
109,800- 732-75-23
WB4DZL (WA2QMI WA4AJF
WB4s NNO QEB WN4CWM)
9030- 105-43- 7

200 Watts or Less

K4IAI 92,418- 633-73-23
WB4URW 78,480- 545-72-19
WA4TTB 74,016- 514-72-24
K4KA 52,026- 377-69-15
W4TKR 50,662- 347-73-16
WA4BKQ 49,558- 349-71-19
K4UK 48,580- 347-70-23
K4TM 48,300- 350-69-14
WA4GIT 47,250- 375-63-23
WA4AT 43,120- 308-70-15
WTIRE/4 37,352- 322-58-15
W4GF 36,432- 276-66- 9
K4GKD 28,350- 225-63-13
W4ZS 25,200- 200-63-11
WA8ZLQ/4 12,800- 128-50-17
WA7AFF/4
12,584- 121-52-11
WB4YKM 11,938- 127-47- 9
W4EDB 10,692- 99-54- 5
K4GFT 9200- 100-46- 6
WB4FDT 8136- 113-36- 3
W4WSF 6004- 79-38- 3
WB9KVO/4 3658- 59-31-13
W4ZSH 1840- 40-23- 2
K4GFH 1386- 33-21- 2

West Indies

KP4EAJ 128,160- 890-72-21
KP4DSO 25,800- 215-60-12

200 Watts or Less

KV4IO 31,560- 263-60-22

S

Arkansas

WA5VDH 120,450- 825-73-24
WB5KFP (WB5FMK, opr.)
15,618- 137-57- 8

200 Watts or Less

WA5RTG 103,452- 699-74-24
W5JOV 1386- 33-21- 7
WB5HNE 120- 10- 6- 1

Louisiana

W5WMU 138,972- 939-74-24
W5RUX 130,608- 903-72-24
W5HGT (WB2UFG, opr.)
110,050- 775-71-27
WB5KTY 29,196- 222-59-18
W5OB 27,600- 184-75-18

200 Watts or Less

W5WG 44,022- 319-69-18
WB5KTA 31,020- 255-66-14
WA5VOE 20,384- 182-56-12
WB5KQU 1610- 35-23- 4
WB4INT/5 704- 22-16-10

Mississippi

W5RUB 120,176- 812-74-22
K5LUW 67,480- 482-70-24

200 Watts or Less

WA5DXI/5
61,372- 458-67-19
WA5MUE 25,418- 179-71-13
WB5KUJ 7400- 100-37-11

New Mexico

W5QJH 123,876- 837-74-23

200 Watts or Less

WB5IOU 44,980- 346-65-22
K5MAT 5180- 74-35- 2

Northern Texas

W5LUJ 117,092- 802-73-24
WA5RXT 116,328- 786-74-22
W5ONL 114,600- 764-75-24
WA5JMK 100,788- 681-74-
W5MYA 87,330- 615-71-17
WA5FTP/5 79,662- 561-71-23
W5QGZ 68,136- 501-68-14
K5KSI 42,642- 309-69-14
W5PAQ 26,718- 219-61- 7
K5VTA 21,528- 207-52- 7
W5ZSX 21,492- 199-54- 9
WB5JBP 4- 2- 1- 1
WS1MN (+WSBJA WA5DCT)
87,150- 581-75-21
WA5FBQ/5 (+K5TCK WN5s
KKY MYA)
42,456- 366-58-19

200 Watts or Less

K5ITR 63,758- 449-71-20
WA5CVQ 58,752- 408-72-22
W5RYA 51,072- 399-64-24
WB5IIE 50,410- 355-71-23
WA5QXD 29,000- 250-58- 9
W5UBR 26,760- 224-60-17
W5UJI 16,744- 161-52-17
W5KHP 11,172- 114-49- 5
W4GXW/5 9984- 104-48-12
WA5SRK 2028- 39-26-10
W5SOD 1944- 36-27- 6
K5SRC 840- 28-15- 4
WB5LHL 520- 20-13- 2

Oklahoma

K5LUR 90,752- 709-64-24
W5UDA 64,220- 494-65-15
W5CPI 11,656- 124-47-12

200 Watts or Less

WB5KSX 29,736- 252-59-21
WB5JFR 18,120- 151-60-17
WN5JGS/5 7020- 90-39-11
WA7LKI/5 6- 3- 1- 1

Southern Texas

K5PFI 149,700- 998-75-24
WA5LES 136,500- 910-75-20
WA5ZNY 133,052- 899-74-23
W5OIB 72,380- 517-70-16
WA5QPA 54,536- 401-68-19
K5LZJ 21,424- 206-52-18
W5RTO 11,008- 128-43- 3

200 Watts or Less

K5HSZ 93,684- 633-74-23
WA5TPO 48,384- 378-64-18
WB5HOD 42,840- 340-63-15
W5RPJ 42,704- 314-68-17
W5LJF 40,572- 322-63-10
WA5WOF 17,572- 191-46-10
WB5GMB 3136- 56-28- 9
WN5MID 1806- 43-21-14
WN5LVL 510- 17-15- 2

T

East Bay

W6MAV (WB6AIN, opr.)
112,360- 815-72-24
WB6ION 101,360- 724-70-23
WA6AHP 89,352- 612-73-19
K6HIH 64,480- 520-62-
WB6BKB 63,948- 438-73-18
W6ROZ 35,760- 298-60-17
W6RGG 19,950- 175-57- 5
W6DOD (+W6DG)
56,374- 397-71-20

200 Watts or Less

WB6CFP/6
64,860- 470-69-24
WB6TZK 50,820- 363-70-24
K6ATV 40,334- 301-67-22
WB6RDD/6
10,980- 122-45-12

Los Angeles

W6RR (W6RTT, opr.)
172,350-1149-75-24
W6HX (WB6OLD, opr.)
154,500-1030-75-24
K6OVJ 140,160- 960-73-24
W6DGH (WB6ZVC, opr.)
132,600- 884-75-24
K6MP 107,424- 746-72-20
K6VNX 92,418- 633-73-22
WA6GSV 35,400- 300-59-12
W6OEO 30,114- 239-63-14
K5MHG/6 12,136- 148-41- 9
W6UE (WA2RFR WB4YCV
WA6OTD)
60,306- 437-69-17

200 Watts or Less

WA6TLV 101,232- 684-74-24
WB6VZL 95,630- 655-73-24
WB6KPN 90,028- 634-71-24
WA6LXF 57,084- 426-67-22
WA6PNN 48,816- 339-72-14
WB6UCC 42,496- 332-64-19
WA6VUD 37,210- 305-61-23
WA6KKP 25,704- 238-54-11
WA6KHK 20,088- 162-62-10
WB6RVQ 9000- 100-45-10
WN6FZL 4898- 79-31-20
WN6FNM 4026- 61-33-
WN6FCI 2714- 59-23-15
WN6DVF 2576- 46-28-10
WB6RVQ 2300- 50-23- 4

Orange

WA6RUS 23,896- 206-58-10

200 Watts or Less

WB6UQV 54,270- 405-67-18
WA6YMX 27,938- 229-61-15
K6HRT 20,496- 183-56-11

Santa Barbara

W6PRP 101,032- 692-73-24
W6GFB 98,716- 667-74-23
K6QPH 40,068- 318-63- 9
W6RFU (WA6MWH, opr.)
10,208- 116-44- 7

200 Watts or Less

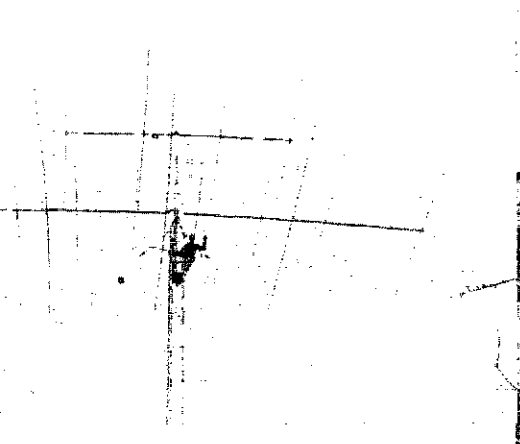
WA6VHB/6 160- 10- 8- 1

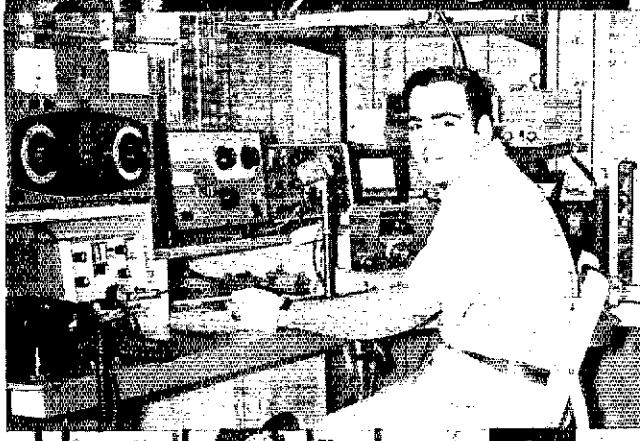
Santa Clara Valley

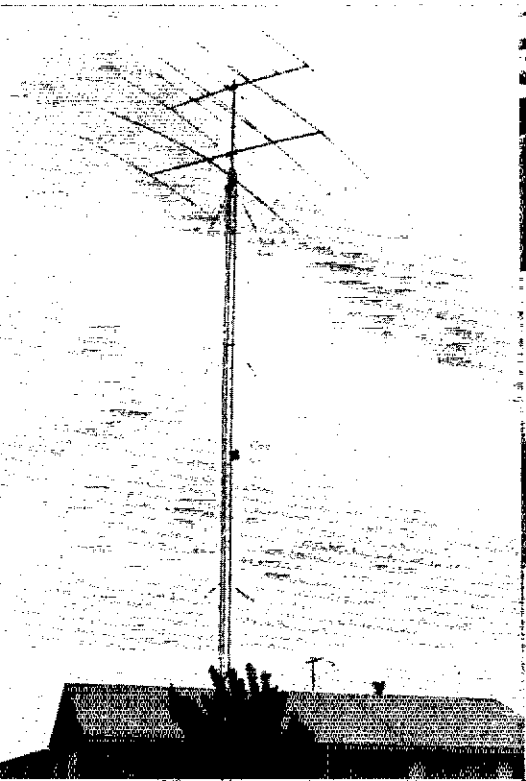
K6FBB 139,350- 929-75-24
WA6PGB 109,200- 728-75-24
W6OWO (WA6NLQ, opr.)
95,904- 648-74-24
VE7AUA/W6
79,094- 557-71-20
W6OUP 78,048- 542-72-23
W6ASH 69,224- 509-68-19
WB6KSZ 58,236- 422-69-23
WA6GFY (WB6LXW, opr.)
50,360- 353-68-14
W6KZJ 19,264- 172-56-10
W6GWQ 16,390- 149-55- 9
WB6DSV 13,288- 151-44- 4
K6YGS 12,342- 121-51- 6
K6ARL 10,700- 107-50- 5
W6OKB 8364- 102-41- 7
W6AIN 6510- 93-35-16
WB6GNM 6336- 96-33-10
K6ZX 5148- 78-33- 6
K6OG 972- 27-18- 6
W6OKK (+K6AYA WB6DSV)
102,960- 715-72-24
W6YX (WA6LZV WA7MQX
WA9BMG WA0ZUE)
70,858- 499-71-20
WA6NKK (K6s EIH SMH YGS
W6s LEN LYG WB6NET)
38,192- 308-62-24
WB6WSL (K6ODK WR6s AAJ
OOC WN6s DMO GSW GSZ
HEY D. Corbett)
37,120- 290-64-24
K6YA (W6JKJ WB6s LSN
OVW TZD)
29,640- 228-65-16

200 Watts or Less

W6HJP 78,600- 524-75-22
WA6CEJ 67,938- 507-67-24
K6HMO 61,200- 450-68-24
WA2BWS/6
54,504- 398-64-14
WA6CUX 31,624- 268-59-17
K6YT 26,660- 215-62-17
K6ZX 22,750- 175-65- 8
WN6ATL 15,768- 146-54-13
WA6WEO 11,970- 133-45-14
K6TGG6 10,998- 117-47-14
WN6WBF 9576- 114-42-10
W6GRY 5494- 67-41- 5
W6CLZ 5254- 71-37- 6
WA6OFM 4320- 60-36-11
WN6GBN 4032- 63-32-14
W6DWJ 3536- 52-34-12
G3PPF/W6 2760- 60-23- 4
K6HH 2652- 47-28- 5
WB6GRZ 1900- 38-25- 5
K6SMH 1360- 30-21- 3
K6FFR 1324- 34-18- 5
W1FXY/6 1080- 36-15- 2
WA6FKK 884- 26-17- 4
WA6HAD 784- 28-14- 7
WB6JEH 390- 15-13- 9
WN6YMY 208- 13- 8- 6
WN6GSZ 126- 9- 7- 1
W6DFF 96- 8- 6- 2
W6BFH 32- 4- 4- 3
WN6RYO 2- 1- 1- 1







Above, proceeding clockwise: The antennas responsible for the big signal out of WB9LHI. The top twirley is 4 elements on 15 at 80 feet with a 20-meter dipole element thrown in for good measure. The bottom monstrosity is 5 on 20 and 8 on 10 on a 50-foot boom. That's LHI himself waving to the crowd. Southern belle WA4ALC rang up a nice 66K phone score from this SC setup. One of 10 over-100K Virginia phone scores emanated from this neat setup belonging to WB4UOX who even happens to be pictured therein. Top low power phone entrant from oft-rare Nevada is K7VYT. Outside Gary used dipoles on 80 and 40 and loops on the other bands. WB9NDS, at the mike, and WB9IND, keeping the dupesheet up-to-date, operated W9PU to the tune of 87K phone points. NDS, Imran, is thought to be the first Pakistani ham to be licensed in a foreign country. 85 feet up in the clear Colorado air are the twirleys of WA2WMT/Ø who racked up 170K on phone. At the top is a homebrew 10 and 15 meter beam. Below it rests a Hy-Gain DB-24 for 40 and 20.

San Diego

W6MAR 163,800-1092-75-24
K6KDE 408- 17-12- 1

200 Watts or Less

K6LKD 115,344- 801-72-24
W6MJP 20,724- 157-66-17
W6ONV (WA9UCE, opr.)
3472- 56-31- 3

San Francisco

W6NUT 153,750-1025-75-24
W6ZT 44,496- 309-72-24
W6RNF 5808- 88-33- 6
W6BIP (+WA6DJD)
104,700- 698-75-24

200 Watts or Less

WA6OQO 45,012- 341-66-20
WB6BDL 29,388- 237-62-24
W6IZZ 25,800- 215-60-13
WB6YCB 10,452- 134-39-12
WN6YIU 7872- 96-41-20
VE7DBV/W6 126- 9- 7- 2
WN6FEB (+WN6VKT)
2808- 52-27-17

San Joaquin Valley

K6CQF (W6PAA, opr.)
152,850-1019-75-24
K2SSX/6 448- 16-14- 1

200 Watts or Less

K6ODP 24,168- 212-57-24
K6GPB 3240- 54-30-10

Sacramento Valley

WA6JVD 100,048- 676-74-23
W6NKR 37,960- 260-73-12
W6NJU 27,776- 224-62- 9

200 Watts or Less

W6FGX 42,600- 300-71-17
K6SG 31,496- 254-62-14
WN6BRV 2064- 43-24-11

Hawaii

KH6IJ 75,450- 503-75-22
KH6RS (K2SIL W6DQX)
151,950-1013-75-24

200 Watts or Less

KH6IGC 55,720- 398-70-17
WH6IFN 14,602- 149-49-12
KH6BYG 9476- 103-46-15

7

Arizona

W7IR 137,678- 943-73-24
W7ZMD 62,480- 440-71-18
K7JVR 55,080- 405-68-22

200 Watts or Less

W7YS 71,568- 497-72-21
WB7DAV/7
64,680- 462-70-24
WA7WMG 48,824- 359-68-19
K7WQO 45,694- 341-67-17
WA7VTM 25,016- 212-59-15
W7AWH 24,966- 219-57- 6
WN7YQQ 23,638- 223-53-21
K7PUC 22,002- 193-57-20
W7FCD 19,040- 170-56- 7
K7BR 10,836- 126-43-12
W7BMC 10,000- 100-50-18
WA7NWL 50- 5- 5- 1

Idaho

K7NHV 161,550-1077-75-24

200 Watts or Less

W7IUO 77,526- 531-73-24

Montana

W7GKF 124,800- 832-75-23
K7LTV 107,636- 758-71-18
W7LR 74,550- 497-75-22
W7FO/7 (K7RRS W7s DB ROE WA7s FLG PZO QZD SRB VXK WN7s VXL VXM YTR)
29,280- 244-60-24

200 Watts or Less

K7CPC 76,300- 545-70-24

Nevada

WA7NIN (W6OAT, opr.)
160,800-1072-75-24
WA9IXE/7
14,496- 151-48-10
WA7WYF 12,232- 139-44- 9
W7FCK 3016- 52-29- 8

200 Watts or Less

WAØKXJ/7
41,958- 333-63-20
W7YKN 21,960- 183-60-13

Oregon

W7TMT 138,600- 924-75-24
K7IWD 71,710- 505-71-20
W7WW 54,756- 365-75-15

200 Watts or Less

WA7TDZ 63,656- 436-73-22
K7BPR 48,384- 384-63-24
W7WHO 44,086- 329-67-18
K2LIP/7 21,228- 183-58-20
WA7ZGL 1444- 38-19- 8

Utah

K1PKO/7 19,822- 187-53- 6
W7HOI 17,748- 174-51- 5

200 Watts or Less

W7CYH 78,480- 545-72-18
WA7VCE 57,684- 437-66-24
WA7VVS/7 2120- 53-20- 9

Washington

W7RM (K7VPF, opr.)
168,150-1121-75-24
W7SFA (VE7ZZ, opr.)
127,576- 862-74-24
WA7OTT 114,700- 775-74-23
W5QQQ/7
113,220- 765-74-23
W7UBA 73,728- 512-72-16
WA7UQG 61,336- 451-68-16
W7EXM 56,550- 377-75-16
W7JEG 53,620- 383-70-17
W7BUN 50,440- 388-65-20
W7NP 42,024- 309-68-14
K7GGD 38,556- 306-63-10
W7GYP 33,264- 297-56- 9
WA7JCB 28,928- 226-64-10
W7KHN 18,900- 175-54- 4
K7RSC 10,560- 120-44- 9

200 Watts or Less

W7YTN 89,856- 607-74-24
K7KGP 75,118- 529-71-20
W7GYF 41,538- 301-69- 9
WA7RKJ 33,852- 273-62-20
WA7VZX 26,544- 237-56-10
WA7OBL 18,200- 175-52-10
WA7WMD 12,152- 124-49-14
WA7BSQ 10,584- 108-49- 9
W7DEO 5548- 73-38- 7
K7EEB 4636- 61-38- 9
K7MOK 4144- 74-28- 8
WA7UVJ 3080- 52-28- 8
K7BEL 1176- 28-21- 3
WA7IOF 966- 23-21- 9
WN7WRH 696- 29-12-10
W7WRT 680- 20-17- 5
WA7WMC 532- 19-14- 5
K7RSB 72- 6- 6- 1
WN7YGM 36- 6- 3- 4
W7YD (WA7s TOY TRI)
15,184- 146-52-23
K7IOO (+WN7s VVK WET)
17,100- 171-50-24

Wyoming

W7TSM 29,232- 252-58-
W7HRM 23,048- 344-67-15
W7ZQ (+WA7s DKZ IEJ FHA VEK WN7YVG)
119,282- 817-73-24

Alaska

KL7HRP 75,024- 521-72-
WA2HSP/KL7
66,378- 481-69-15
KL7HNN 28,016- 206-68-18

200 Watts or Less

KL7HER 20,748- 182-57-13
WA7ZZJ/KL7 5304- 78-34-15
KL7IDT 98- 7- 7- 7

8

Michigan

W3GN/8 61,486- 433-71-19
K8HWW 56,800- 400-71-19
K8HWW 56,800- 400-71-19
W8VPC 51,100- 365-70-14
K8BKE (WB8MKR, opr.)
36,036- 286-63- 8
WB8AAX 26,650- 205-65-14
WA8QEE 24,240- 202-60-17
WA8YVR 24,034- 197-61- 3
WB8IZA 14,522- 137-53-10
W8BNF 11,742- 103-57- 9
WB8IOT 9758- 119-41-20
WB8KEV 5840- 73-40- 5
W8QS 5320- 76-35- 7
W8KZM 1470- 35-21- 5
W8QM 572- 22-13- 2
WB8EUO (+K8PXG)
97,056- 674-72-24
WB8AYW (+W8QM)
45,504- 316-72-24
WA8GJD (+WA8FSN)
25,728- 201-64-21

200 Watts or Less

W8CQN 137,492- 929-74-23
WB1JQ 51,474- 373-69-20
W8NVP/8 51,534- 409-63-20
WA8MEC 46,670- 359-65-17
WB8LJY 38,352- 282-68-24
WB8TLB 37,440- 312-60-16
W8QM 35,490- 273-65-14
WA8MOA 27,336- 201-68-14
WA8VNZ 27,136- 256-53-13
W8IZS 26,216- 226-58-14
W8WVU 24,888- 204-61- 6
W8TZZ 20,448- 144-71-13
W8FGI 16,302- 143-57- 7
W8HAN 12,768- 133-48-13
WA8MOY 12,690- 135-47-19
K8CVV 11,700- 150-39-17
WB8JYX 10,736- 122-44- 6
WA8TDY 10,578- 129-41- 8
WB1UP 10,058- 107-47- 8
WA8WBZ 9374- 109-43- 8
WN8SQA 8514- 129-33-21
W8KTR 7826- 91-43-11
WB8ILV 7200- 100-36-14
WB8SHL 6560- 82-40-18
WB8RWU 5332- 86-31-12
WB8KFU 3192- 57-28-17
W8LBU 3162- 51-31- 5
WB8FBG 3008- 47-32- 4
WB8RVG 2958- 51-29- 6
W8TKW 2244- 51-22- 5
W8NBN 1944- 36-27- 7
WB8NTD 1560- 39-20- 7
W8IJS 1404- 39-18-15
WN8ROC 1332- 37-18-20
WB8SWL 1080- 30-18- 3
WA8QCW 960- 30-16- 8
K8LNR 672- 21-16- 7
K8DAC (K8RWC WN8s NTX PJF SNL)
10,620- 118-45-24

Ohio

W8KIC 141,450- 943-75-24
W8FDU (WA3BGE, opr.)
137,100- 914-75-24
W8RSW 78,900- 526-75-21
WB8DGO 64,950- 433-75-22
WB8AYC 64,640- 505-64-14
WR8UPH 62,220- 510-61-22
WB8MMF 61,770- 435-71-21
WB8NUA 59,478- 431-69-22
W8MXO 43,693- 331-66-16
W8VOI 42,120- 324-65-18
W8IML 39,476- 278-71-12
K8SWE 38,836- 286-73-
W8SWB 29,680- 212-70-17
WA8LXJ 12,584- 121-52-1
WA8LWH 11,232- 117-48-1
WB8JVT 2968- 56-28-
W8KFL 2400- 50-24-
WN8JBM/8 (WN8s DQP JU LSN WN8OOB Joy Jr.)
147,022-1007-73-24
W8LT (WA1ERO W8ERI WB8s HHP IBZ JNY JXS)
98,842- 677-73-24

200 Watts or Less

K8BPX 80,100- 534-75-1
WB8OER 78,472- 577-68-20
W8OYJ 74,550- 497-75-2
K8RMN 74,340- 531-70-2
K8MLO 61,134- 443-69-1
WB2FGA/8
55,648- 376-74-2
K8RXD 47,520- 330-72-2
K8CVJ 44,530- 305-73-1
K8NEB 32,370- 249-65-1
K8MFO 32,180- 214-75-1
WB8NLG 30,264- 291-52-2
K8BWZ/8 30,240- 240-63-1
W8PMJ 28,080- 216-65-1
WB8KJA 27,966- 237-59-1
W8IDM 27,720- 220-63-1
W8GOC 27,528- 222-67-1
WA8YWX (WN8RQU, opr.)
27,018- 237-57-2
WA4SKP/8
24,308- 206-59-1
W8MV1 22,400- 200-56-1
WB8HST 20,696- 199-52-1
WA8ZVC 16,912- 151-56-1
WB8MED 14,184- 197-36-
W8PRS 14,136- 114-62-
K8ISS 13,100- 131-50-1
WB8LCF/8 6930- 99-35-1
W8EXI 5840- 73-40-
K8LCA 5530- 79-35-
WB8EZS 5220- 87-30-1
WB8NTY 5010- 50-50-
WB8PHI 4760- 70-34-
WN8SBH 3960- 66-30-1
WB8QXN 3564- 54-33-2
WN8REF 3100- 50-31-
WN8SPS 1568- 28-28-
K8COT 1444- 38-19-
WA8MGI 1240- 31-20-
W8VZF 640- 20-16-
WN8SXS 330- 15-11-
WA8ZGL 280- 14-10-
WN8QPX 264- 12-11-
K8PBJ 252- 14- 9-
W8HSR 132- 11- 6-
K8PIO 126- 9- 7-
K8VPV 12- 3- 2
WB8EMX (+W8DPR WB8 MKZ PGW)
45,936- 19-72-2
WB8OJE (+WN8SZN)
11,266- 131-43-1

West Virginia

200 Watts or Less

WB8IJW 70,140- 501-70-2
K8OOL 43,056- 312-69-2
WS7WT/8 33,920- 265-64-1
W8NR 30,016- 224-67-1
WB8SQX 18,564- 221-43-
W8IWX 16,688- 149-56-
K8LQU 3472- 56-31-
WN8RKK 154- 11- 7-
K8QYZ 2- 1- 1-

9

Illinois

K9UKM 108,080- 772-70-1
WB9HAD 104,600- 740-70-
K9DWK 80,230- 565-71-1
WA9GAM 65,240- 466-70-2
W9UDK 65,088- 452-72-1
WB9UFD 60,052- 469-64-1
K9KHI 45,108- 358-63-1

W9WR 20,010- 145-69-15
W9QHH 12,600- 150-42- 5
W9YYG 2236- 43-26- 2
W9YH (WA2SMD WA9s LUD OUT WB9s PVH TYZ)
105,672- 714-74-24
WB9AJZ (+WB9GOD)
19,864- 191-52- 7
W9YW (WB5KLB WA9WYC)
286- 13-11- 3

200 Watts or Less

WB9GFC 128,772- 882-73-24
K9UIY 82,368- 572-72-22
WA9JCO 77,526- 531-73-21
W9ZAV 58,424- 432-67-20
WB9JFI 48,840- 370-66-24
K9PPW 43,400- 350-62-19
K9UUD 42,714- 339-63-14
WB9MVP 38,556- 357-54-18
K9QQN 36,478- 299-61-10
W9RGC 34,160- 244-70-20
W9IPT 33,456- 246-68-17
W9DY 33,000- 220-75-12
WB9MMT 28,604- 206-67-12
WB9IQC 27,604- 206-67-12
WN9LVM 26,681- 230-58-15
W2EMS/9 23,010- 177-65-11
W9QWM 17,136- 153-56- 6
W9VBV 16,800- 150-56- 3
WA9UKK 16,758- 147-57-10
WA9JJE 10,248- 123-42-17
WB9KTW 10,080- 112-45- 8
W9AXT 10,032- 133-38-12
W9ZEN 9890- 115-43- 9
WA9ZWY 9652- 127-38- 6
WN9PHM 9240- 110-42-14
WA9MZS 7548- 103-37- 8
WB9LVC 6660- 111-30- 8
W9NJP 5328- 74-36- 7
WN9NRT 4050- 81-25-14
WB9KZQ 3584- 56-32- 8
WB9GOI 1260- 35-18- 3
WA9IOQ 680- 20-17- 2
WN9NLO 480- 20-12- 4
WB9FYR/9 (+WB9s FEA FVD WN9MLY)
17,700- 177-50-24
K9MDQ (+WN9PIC)
884- 26-17-13

Indiana

WB9LHI 121,508- 821-74-23
K9IU (WB9GVT, opr.)
120,750- 805-75-23
WA9BWY 120,672- 838-72-24
W9LT 116,496- 809-72-24
K9HDP 114,756- 786-73-24
K9UWA 96,460- 689-70-23
W9BF (WA8TGX, opr.)
67,014- 459-73-20
K9CLO 56,146- 419-67-21
W9SER 39,000-3000-65-11
W9OLW 13,860- 126-55- 6
WN9PIR 4368- 84-26-23
W9YB (WB2RKK, opr.)
2288- 52-22- 1

200 Watts or Less

WB9IHH 61,824- 448-69-24
W9MDW 50,370- 345-73-21
W9FI 31,790- 289-55-17
WB9LHQ 27,984- 212-66-22
WB9IVB 25,010- 205-61-16
W9SFW 22,016- 172-64-16
WB9NMC 20,412- 189-54-23
K3YWJ/9 13,400- 134-50- 6
WN9MDS 13,340- 145-46-18
WB9MDB 11,374- 121-47- 6
K9KRN 10,824- 123-44- 9
K9HCK 6006- 91-33- 8
WB9QTF 5184- 72-36- 9
WN9LGZ 2900- 58-25-10
W9KL 2464- 44-28- 3
K5LZT/9 50 5- 5- 1

Wisconsin

W9VT (K9ZSF, opr.)
154,800-1032-75-24
K9LWV 109,938- 753-73-24
WB9ERG 83,070- 585-71-24
WA9BZY 73,780- 527-70-24
K9LAN 73,000- 500-73-16
W9MVS 61,472- 452-68-22
W9HF 55,510- 427-65-15
WB9MWM 10,668- 127-42-12
K9JPS 2700- 50-27- 6

200 Watts or Less

W9LO 88,060- 629-70-24
K9EYA 60,066- 423-71-20
WB9KMQ 51,030- 405-63-23
WB9HRP 35,454- 311-57-21
WB9NDO 29,402- 241-61-19
WB9FJE 28,202- 239-59-16
WB9NML 25,010- 205-61-19
WN9LHK 22,770- 207-55-18
WB9KPV 17,670- 155-57-18
WA9KRI 12,972- 141-46-11
K9MIX 11,004- 131-42-13
WB9OJG 10,824- 132-41- 6
WB9PWR 8316- 99-42- 6
WN9OWJ 7490- 107-35-18
WB9IDU 4602- 63-37- 8
WB9HGS/9 4264- 82-26-17
WN9PCQ 2352- 49-24-15
W9KRH 1722- 41-21- 6
K9HFR 1344- 32-21- 5
K9KSA 936- 39-12- 3
WN9PRG 930- 31-15-24
WB9LSS 864- 27-16-
WB9IZT 336- 24- 7-10
WN9OFC 84- 27-11- 5

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Colorado

WAØCVS 138,846- 951-73-24
KØZCM (WØLBP, opr.)
123,900- 826-75-24
WBØDJY 109,440- 760-72-18
WØETE (+WØHXB)
82,460- 589-70-23

200 Watts or Less

WBØHBS 63,378- 503-63-13
WBØIRJ 39,468- 299-66-14
WBØGFX 17,980- 155-58- 5
WØPCM 14,400- 150-48- 9
WBØIGT 9016- 98-46- 7
WBØIWL 408- 17-12- 1
WNØMCL 24- 4- 3-12

Iowa

KØGXR 134,550- 897-75-24
WAØVDX 88,416- 614-72-14
WAØIAQ 74,244- 538-69-16
WØLO (WBØCSG, opr.)
10,388- 98-53-10
WØFHF 2800- 50-28- 5

200 Watts or Less

WBØMSX 80,928- 562-72-23
WA3PWL/Ø
71,850- 479-75-20
WAØODK 65,888- 464-71-21
KØAZJ 33,120- 230-72- 7
WBØGUU 30,550- 235-65-15
WAØNMA 8560- 107-40- 9
WBØJTQ (WAØs ACX NLK)
55,376- 268-66-18

Kansas

WØINH 73,730- 505-73-10
KØCVA 70,000- 500-70-24
WAØGSG 19,604- 169-58- 8
WAØIAS 1702- 37-23- 1
WBØGZR 1080- 30-18- 3
WØQQQ (K9WIE WAØs SWC YVXI
108,000- 750-72-24

200 Watts or Less

WØDFP 55,120- 424-65-22
WBØKWJ 35,186- 241-73-13
WØODT 27,336- 204-67-14
WØJT 27,060- 205-66-12
WBØKWJ 23,850- 225-53-23
WBØCOT 15,476- 146-53-10
WBØISW 7990- 85-47- 9
KØCML 6560- 80-41- 7
WØICL 630- 21-15- 2
WBØKDF (+WNØKDF R. Barrientos)
16,660- 170-49-14

Minnesota

WAØFNP (WAØBWM, opr.)
144,540- 990-73-
KØIJL 122,202- 837-73-22
WØOXN 121,180- 830-73-24
WØHW 118,800- 825-72-24
WØIYP 100,050- 667-75-23
WAØKQU 97,440- 696-70-24
WØYCR 41,316- 313-66- 9
KØCNC 40,446- 321-63- 7
WAØRBW (+WAØVPN WBØHCH)
106,128- 737-72-24

200 Watts or Less

KØZXE 78,144- 528-74-21
KØMPH 45,568- 356-64-16
KØEZG 40,068- 318-63-22
WØH7 (WAØVKP, opr.)
39,942- 317-63- 9
WAØIAW 25,704- 204-63- 6
WAØURW 17,280- 160-54- 5
WAØVPK 16,626- 163-51-10
WBØCQL 15,476- 146-53- 8
WBØEMI 7600- 100-38- 6
WBØKTH 5256- 73-36- 5
WNØNEV 4264- 82-26-12
WNØLJH 3654- 63-29-15
WBØMDO 3224- 62-26-15
WØOWY 2916- 54-27-12
WAØKNP/Ø 2400- 48-25- 7

Missouri

KØRPH 101,520- 705-72-18
KØDEQ 81,548- 551-74-21
WAØCWH 76,650- 511-75-24
KØLJR (WØHBH, opr.)
63,000- 450-70-17
WAØLBQ 14,448- 168-43- 8
KØLNW 5600- 80-35-15
WAØCGV (W9NVW WBØ GQP HRP VCQ)
46,498- 347-67-19

200 Watts or Less

WAØNVZ 90,520- 620-73-24
WØOWS 74,124- 522-71-24
WAØCWV 59,130- 405-73-21
WØOTP 58,380- 417-70-16
WAØYEF 34,170- 255-67-19
WAØFMD 30,464- 238-64-15
WAØCXI 27,816- 228-61-15
WBØLJD 24,976- 223-56-12
WØBV 19,080- 180-53-12
WNØKAP 9280- 116-40-18
WNØNUO 1540- 35-22-
WØEEJ (WB4OFM WB9EAT WBØBBA L. Lannui)
64,170- 465-69-24

Nebraska

200 Watts or Less

WBØGTJ 57,620- 430-67-17
WØAIH 47,570- 355-67- 9
WBØINO 40,300- 310-65-18
WØOYW 14,080- 160-44-16
WNØMNK 10,440- 116-45-16
WØOB 10,248- 244-42- 3
WNØMTS 8132- 107-38-21
WØQNP 4080- 60-34-13
WNØLYU 3360- 56-30-16

North Dakota

WBØAHH/Ø 1872- 72-26- 6
WBØHHC (+8, Walch)
23,638- 223-53-13

200 Watts or Less

WAØMLL 62,342- 422-73-12
WNØMKR 6764- 89-38-19

South Dakota

WAØCPX (WAØONL, opr.)
103,896- 702-74-24

200 Watts or Less

WBØLVO 75,208- 553-68-20
WRØLJM 18,144- 163-56- 8

PHONE SCORES

VE

Maritime

VE1AR 13,348- 142-47-20

200 Watts or Less

VE1MX 2548- 49-26- 6

Quebec

W3URW/VE2
60,984- 462-66-23

200 Watts or Less

VE2AXW 42,504- 322-66-21
VE2BYR 34,210- 311-55-16
VE2YU 22,672- 218-52-

Ontario

VE3GAS 122,836- 901-68-22
VE3HUM (VE3BVD, opr.)
103,952- 712-73-23
VE3DAC 43,648- 341-64-18
VE3FLE 5390- 77-35- 4
VE3AKG/3 (+VE3s GQB HHG)
61,744- 454-68-20

200 Watts or Less

VE3EJK 30,756- 233-66-20

Manitoba

VE4RP 34,650- 275-63-21
VE4OP 31,978- 271-59-13
VE4DD 17,136- 153-56-17
WØOXN/VE4 (+WØOIR WAØs ATI DCQ B. Cross M. Guler)
87,630- 635-69-24

200 Watts or Less

VE4VV 19,690- 179-55-14

Saskatchewan

VE5IO 15,250- 125-61-14

200 Watts or Less

VE5YA 6984- 97-36- 9

Alberta

VE6AEI 27,966- 237-59-21

British Columbia

VE7WJ (VE7BBO, opr.)
126,720- 880-72-24
VE7GX 15,080- 145-52-13
VE7IO 9072- 126-36-12

200 Watts or Less

VE7RN 13,616- 148-46-11

Yukon-N.W.T.

VE8RO 6942- 89-39-11

U.S.A.

1

Connecticut

W1ZM 197,250-1315-75-24
WA1PID* 190,650-1271-75-24
WA1KID (K1ZND, opr.)*
172,950-1153-75-24
WA1MAO 149,796-1026-73-21
WA1SIN* 149,504-1024-73-20
WA1LNQ* 131,400- 900-73-20
K1JHX 127,680- 912-70-19
W1GOO 122,544- 828-74-18
WA1NES 122,406- 887-69-21
WA1KOC 106,272- 738-72-20
W1FBY* 69,144- 516-67- 7
WA1NLD 66,912- 492-68-13
K1DPB 63,928- 524-61-11
WA1NKK/1
58,208- 428-68-14
W1VV 57,204- 454-63-12
W1GPK 56,792- 458-62-18
K1RLU 53,926- 457-59-11
WA1QZH 47,672- 404-59- 9

K1GUD 42,036- 339-62- 9
WA1HNI 39,330- 345-57-18
WA1JZC 37,600- 400-47- 6
W1FCJ 32,436- 306-53-12
WA1KOJ 30,846- 291-53-22
K1NGL 26,962- 221-61-13
K1ASJ 24,960- 208-60-11
WA1OWF 22,512- 168-67- 7
K1ONZ 22,176- 231-48-
W1BIH 13,824- 96-72-
WA1QQU 13,068- 99-33- 6
W1DGL/1 (+W1GNC)
127,160- 935-68-24
WA1HQI (+K1TZD)
122,400- 850-72-18
WA1QNF (+WA1OCU WN1RGH)
60,060- 455-66-20

200 Watts or Less

WA1SSH 93,684- 633-74-24
K1THQ/1 77,112- 567-68-23
WA1NRF 49,408- 386-64-19
WA1RYL 43,848- 406-54-17
W1NRG/1 (WA1QME, opr.)
24,640- 220-56-15
W1AW (WA3JSU, opr.)
8056- 106-38- 2
WA1FON 4656- 97-24-
WA1RUR 3800- 100-19- 3
WA1DZR 2940- 70-21- 5
WA1RZA 1386-3- 21- 4
W1HDO 494- 19-13- 6
K1MYQ 320- 16-10- 1
WA1SHO 270- 15- 9- 1
K1MUJ/1 (K1DNW WA1HYN)
18,054- 177-51- 8
WA1SUE (+WN1s TLH JQ)
13,692- 163-42-15

Eastern Massachusetts

W1MX (WA1KKM, opr.)
163,728-1137-72-24
WA1NRV 156,074-1069-73-24
WA1EOT 139,430- 955-73-24
WA1JUY (WA1JYY, opr.)
116,476- 787-74-20
K1ECC 78,720- 615-64-23
K1EUF 69,414- 503-69-
WA1MCY 69,296- 568-61-21
W1HWM 61,610- 505-61-22
WA1QKD 60,512- 496-61-16
WA1IEB 50,924- 439-58-15
K1OME 31,518- 309-51- 7
WA1MHJ 30,400- 304-50- 9
WA1SCX 24,780- 210-59- 9
WA1RBR (WA2LQZ, opr.)
18,718- 191-49- 2
WA1RGW 17,220- 205-42-10
W1CMH 15,158- 143-53- 5
WA1OLV 10,304- 161-32- 4
W1PLJ 8208- 108-38-11
DL2AA/W1 3364- 58-29- 2
W1KBN (WA1PDM, opr.)
1476- 41-18- 1
WA2TGU/1 (WA1LKX, opr.)
70- 7- 5- 1
WA1CBH (+WA1s RJX RVB SDR WN1s RTY SXE TMO M. Farrell J. Occhini B. O'Toole)
54,558- 433-63-24
WA1RFF (+WN1TMV F. Levine)
37,440- 312-60-14

200 Watts or Less

WA1KBG 76,212- 522-73-22
WA1KBZ 34,176- 267-64-18
WA1PWF 22,000- 250-44-12
W1GXV 14,994- 153-49-10
WA1PDM 11,396- 154-37- 9
K1HRV 8510- 115-37- 7
WA1LAI 7480- 110-34- 7
W1HFM 7344- 136-27- 7
WA1MSK 6930- 99-35- 3
W1CRL 6630- 85-39- 8
WA1UCP 4048- 92-22-14
WA1SJR 3600- 72-25- 2
WA1LMJ 2850- 57-25-
WA1PAZ 1320- 44-15- 2
WA1QJU/1 (+WA1QOK)
26,226- 279-47-14

Maine

WA1PED 29,982- 263-52-22
K1TEV 24,856- 239-52-13
K1GAX 20,400- 200-51- 5
WA1PAY 14,616- 174-42-21
VE2CK/W1 3180- 53-30- 2

200 Watts or Less

W1SD 21,460- 370-29-12
WA1LBP/1 12,900- 129-50-12
WA1SDQ 12,642- 129-49-14
WA1SUR 6120- 85-36-12
WA9FCG/1 560- 20-14- 3
WA1NMW 8- 2- 2- 1

Rhode Island

K1TPA 72,988- 514-71-23
K1HMO 44,160- 345-64-16
W1OP (WA1s NCC QOG WN1RLN)
50,924- 439-58-15

200 Watts or Less

WA1KOO 39,900- 399-50-24
W1GFH 11,932- 157-38-11

Vermont

K1DQV/1
113,250- 755-75-17
K1IIK 60,636- 489-62-13
W3KE/1 40,890- 435-47-11

New Hampshire

WØDAD/1 49,776- 366-68-14
W1DXB 5200- 65-40-
WA1UBC (K1STH WA1s JSD LNH)
9632- 112-43- 8

200 Watts or Less

W1HAF 45,880- 370-62-21
W1HDI 28,426- 233-61-16

Western Massachusetts

WA1ARW 128,084- 902-71-24
W1YK (WA1NNC, opr.)
72,806- 617-59-11
K1RQF 64,800- 540-60-17
K1KNQ 22,736- 203-56- 5
WA1LPT 19,074- 187-51- 9

200 Watts or Less

WA1PCJ 32,450- 295-55-18
WA1RWU 27,542- 293-47-17
W1FLX 15,272- 166-46- 8
WA1PZM 10,922- 127-43-11
WA1FKF 2- 1- 1- 1
WB2APV/1 (+WA1RLP)
53,568- 432-62-24

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Eastern New York

WB2OEU 226,200-1508-75-24
W2PV (WA1ABV, opr.)*
198,150-1321-75-24
W2SZ (WA2SPL, opr.)
121,440- 880-69-24
W2AZO 104,512- 736-71-18
K2MME 11,938- 127-47- 4
W2HHC 105,672- 714-74-23
WA2EAH 38,478- 363-53- 7
K2BK (+WB2BXL)
91,688- 628-73-23

200 Watts or Less

WA2OPS 46,720- 365-64-21
WA2HAI 33,224- 304-53-19
K2TTG 36,848- 376-49-21
WB2RKF 28,600- 286-50-16
WB2EUH 13,552- 154-44- 9
WB2GSW 6120- 102-30- 6
WB2SZV 756- 27-14- 6
WB2AXV (+WA2ENG)
58,072- 427-68-24
WB2ABJ/2 (WA2s BRV UAC WN2s KVW QAI VVV J. Mennell)
27,280- 248-55-24
K2GSF (+WB2FHD)
24,640- 220-56-19

N.Y.C.-L.I.

WA2IYH 117,240- 841- 70-24
WB2MZU 101,728- 748- 68-23
W2FVS 89,760- 660- 68-19
WB2PYM 76,824- 582- 66-16
K2PAY 32,184- 298- 54-22
WA2YHK 30,508- 263- 58- 6
WB2FLF 22,344- 266- 42- 4
WB2HTM 16,400- 164- 50-13
WA2GMD 7800- 100- 39-11
W2GKZ 2760- 46- 30- 1
W2NBI 2288- 44- 26- 5
WA2JZX 2204- 58- 19- 2
K2AU 1764- 42- 21- 1

200 Watts or Less

WB2JSJ 91,732- 646-71-24
WB2MAN 90,312- 636-71-24
WA2DLV 73,304- 539-68-22
WB2GXW 61,110- 485-63-22
WB2FKF 55,120- 424-65-15
WB2NDR 42,224- 364-58-20
WA2ROK 36,120- 301-60-18
WB2SGT/2
32,686- 277-59-20
W2KDI 32,382- 257-63-15
WB2EHN 22,560- 235-48-12
K2OVS 22,458- 197-57-16
WB2HZH 19,980- 270-37-14
WA2SNQ 17,296- 188-46-10
WB2BXO 14,344- 163-44-11
WB2ZYE 12,728- 148-43-10
W2PDM 10,850- 175-31- 8
WB2CHY 10,742- 131-41- 8
WA2YIN 8820- 105-42- 4
WB2JRY 7910- 113-35- 6
WB2EHM 6360- 106-30-
WA2TIY 4640- 80-29- 9
WA2MZE 4590- 85-27- 6
WA2ROD 4536- 81-28-18
WA2PFZ 2950- 59-25- 7
WB2UHY 2500- 50-25- 5
WB2EVT 2400- 50-24- 6
W2CZZ 1540- 35-22- 2
WA2PFY 960- 32-15- 5
W2TUK 140- 10- 7- 1
WB2VTN 80- 10- 4- 1
WA2KUX (WA2QAL WB2s YAO YIG)
22,896- 212-54-21

Northern New Jersey

WA2UOO 188,700-1258-75-24
WB2RJJ 136,640- 976-70-24
W2SHM 93,150- 675-69-23
WB2CST 63,120- 526-60-21
WB2KQC 25,410- 231-55-16
WB2FIT 15,876- 189-42- 4

200 Watts or Less

WA2LBT/2
85,200- 600-71-24
WB2VFT 84,534- 579-73-24
WA2MYZ 34,188- 259-66-11
WB2WNZ (WB6JJE, opr.)
29,116- 251-58- 9
WB2ERH 21,600- 225-48-12
K4MDS/2 20,000- 200-50-15
WB2DWF 15,708- 154-51-10
WA2DSA 15,054- 193-39- 3
WA2NTI 12,864- 201-32-10
WA2BSU 11,020- 190-29- 6
K2DT 5576- 68-41-16
WA2LJZ 4380- 73-30- 6
W2OI 70- 7- 5- 1

Southern New Jersey

K2JOC 142,672- 964-74-24
W2HNO 104,192- 704-74-23
W2EPA 73,656- 558-66-19
W2RLH 70,092- 531-66-10
WB2OSQ 44,368- 376-59-16
W2FGY 43,956- 333-66-24
WA2OMY 42,944- 352-61-24
W2UG 7416- 103-36- 5
WA2BPL 6800- 100-34- 5
WB2VLD 2650- 53-25- 8
K2MZP 330- 15-11- 1
W2PIU (WA2FEC WA3MOJ VE3BUV)
101,982- 739-69-21
W2ZO (WA2s BIX GMH K3CPF)
87,438- 741-59-24

200 Watts or Less

K3DVS/2 48,240- 360-67- 9
W2FA 38,052- 302-63-21
K2HPV 16,740- 186-45-16
WB5DBO/2
11,844- 126-47-16
W2FDJ 8320- 104-40- 5
K2SBW 4500- 75-30- 5
W2TDN 3888- 72-27-10
W2OGZ 480- 20-12- 3
WA2NUL (+WN2WJL)
24,304- 248-49-23

Western New York

WA2LCC 151,256-1036-73-24
W2HPF 127,658- 899-71-19
K2DTQ 58,590- 465-63-23
W2FXA (WB2YQH, opr.)
43,470- 315-69-11
K2SOT 39,040- 305-64-19
WA2BCK (WA2MBP, opr.)
38,640- 280-69- 8
WA2EXZ 32,768- 256-64-14
K2RUE/2 29,580- 290-51-13
WB2FYZ 22,686- 199-57-11
WB2AIO 20,000- 200-50- 4
W2IPO 11,592- 161-36-10
W2JRJ 8000- 100-40-10
WB2GTB 3300- 50-33- 7
W2VDX (W2EWO WA2s QXA SCE WB2JLM)
58,930- 415-71-23
W2OW/2 (WA2s GHH IKG MSQ RBA RBJ RBP)
40,880- 365-56-21
K2GXT (WA1OWG WA2s FQE NVJ PTW)
14,872- 143-52-16
K2EQB/2 (+K2UXE WA2RIC)
4736- 74-32- 3

200 Watts or Less

WA2UJM 105,648- 744-71-22
WB2ELW (WB2FNQ, opr.)
81,072- 563-72-24
WB2GGM 34,920- 291-60-22
W2GHD 34,216- 329-52-21
WB2JRX 32,026- 239-67-12
WB2ABD 20,600- 206-50- 7
WA2STS 20,298- 199-51-17
WB2EXL 19,074- 187-51-14
WB2FNS 14,630- 209-35- 5
WB2LOF 8856- 108-41- 9
WA2UUA 8736- 112-39- 9
WB2FXY 6132- 73-42- 1
WA2VBY 5400- 100-27- 8
WA2LEZ 5320- 76-35- 9
WB2UKO 2744- 49-28- 5
W2DXF 1722 41-21- 2
WA2PHM (+WA2LEG WB2QDN
32,816- 293-56-

3

Delaware

K3HBP 44,880- 330-68-16
WA3TVS 40,664- 299-68-16
WA3KZX 2024- 44-23- 3

200 Watts or Less

W3GL 24,940- 215-58- 9
K3YFR/3 16,426- 191-43- 9
W3DRD 1664- 32-26- 3
WA3DUM 858- 33-13- 2

Eastern Pennsylvania

WA3GIH 151,694-1039-73-24
K3DPQ 136,160- 920-74-

K3JGI 130,816- 896-73-24
W3YP (W3DOG, opr.)
126,836- 857-74-20
W3JSX 123,760- 884-70-24
W3GM 116,946- 801-73-23
K3AWZ 115,446- 813-71-22
K3ANA 95,608- 703-68-19
K3HXS 71,760- 552-65-15
WA3LVR 60,268- 494-61-14
WA3TLR 56,994- 413-69-12
WA3HJR 52,452- 423-62-19
K3BFA 37,544- 361-52-14
K3KHL 30,150- 225-67-14
WA3WIM 28,208- 344-41-11
K3MGO 14,946- 141-53- 8
K3ZOL 12,512- 136-46- 7
W3ETB 8686- 101-43-13
WA3MVP/3 7696- 104-37- 6
W3ADE 1900- 50-19- 3
WA3QYY (+WA3s QYZ VOQ)
49,770- 385-63-12

200 Watts or Less

WA3JYB 63,920- 470-68-22
WA3MKB 35,380- 290-61-15
K3PCX 22,048- 212-52-12
WA3PHO 15,540- 222-35- 8
K3DZB 13,152- 137-48- 4
W3KFK 9920- 124-40-
K3OIO 7424- 116-32- 3
WA3RID 5544- 99-28-10
W3WJC 5450- 109-25- 5
WA3VUE 3900- 75-26- 7
K3DTD 3416- 61-28- 7
WA3UNI 3318- 79-21- 8
WA3RHX 3300- 50-33- 4
WA3SXU 270- 15- 9- 1
W3UQH 120- 10- 6- 2
WA3RCA (WA3s FOF OVH UXM WN3WUI)
45,486- 361-63-24
WA3HWZ (+WA3SXU)
32,760- 315-52-17

Maryland-D.C.

W3GRF (W3BQV, opr.)
192,150-1281-75-24
W3EZT (WA3IAQ, opr.)
181,800-1212-75-24
W3LPL (WA3HRV, opr.)
181,800-1212-75-24
W3CRR 169,608-1146-74-22
W3AZD 156,900-1046-75-24
WA3UFA 149,100- 994-75-24
WA3NYU 146,300-1045-70-24
WA3AMH/3
141,192- 954-74-22
K3ZAW 140,306- 961-73-24
W3TMZ (W9SZR, opr.)
135,504- 941-72-24
W3IN 127,132- 859-74-22
K3GJD 124,800- 832-75-17
W3YXM (WA3QIA, opr.)
122,220- 873-70-24
W3ZSR 114,100- 815-70-17
WA3LHG 105,846- 767-69-23
K3NPV 87,078- 631-69-19
W3EAX (WA3TOE, opr.)
85,058- 599-71-24
K3LYW (W3LPL, opr.)
77,420- 553-70-15
K3IMC 72,670- 559-65-22
WA3LJP 70,516- 578-61-13
W3DBT 64,186- 479-67- 6
W3FA 55,338- 401-69-20
W3JPT 54,234- 393-69-21
W3MFJ 38,068- 307-62-11
K3CKT 37,700- 325-58-10
W3HH 27,376- 233-59-14
WA3AFQ 27,200- 200-68- 6
W3HVM 26,550- 225-59-10
W3AXW 22,272- 192-58- 8
W3YHR 16,588- 143-58-10
W3PWO 16,170- 147-55-10
WA3WAD 13,328- 136-49-11
W3ENS 2016- 48-21- 5
WA3IQL 1332- 37-18- 2
W3RIL 2- 1- 1- 1
W3AU (W3ZKH + 2 meter net)
168,300-1122-75-22
WA3EPT (WB2s MZE UZU)
152,292-1029-74-24
W3ZH (W3TUX WN3UUO)
30,688- 274-56-16
WA3WDK (+WA3WCO)
17,248- 176-49-15

200 Watts or Less

K3TNM 49,660- 382-65-20
WA3TZT 46,068- 349-66-19
WA3UHJ 43,560- 396-55-20
WA3WRN 42,496- 332-64-19
WA3TAI 40,194- 319-63-19
WB9BXX/3
22,000- 200-55- 6
WA3TDZ 19,008- 176-54-12
K3KSS 13,824- 128-54- 6
WA3VPZ 10,878- 147-37-10
WA3SOR 7260- 121-30-
WA3JYV 3240- 54-30- 3
W3EVQ 3080- 70-22- 8
W3KA 1824- 38-24- 2
WA3SXH 1462- 43-17- 2
W3ABC 900- 25-18- 2

Western Pennsylvania

W1FCC/3
180,018-1233-73-24
WA3SWF 106,726- 731-73-14
WA3EVB 16,100- 175-46-18
WA3FPN 16,006- 151-53-16
K3HWL 2760- 60-23- 3
WA3TPM 256- 16- 8- 2
WA3FAL (+WA3s KLG SZX W1K WA8KCX)
130,752- 908-72-24
W3VC (WA3s OFC ROZ SDC WB9s HSS IHC J. Rose)
52,200- 435-60-24
WA3OJH (+R. Eckenrode)
19,796- 202-49-15

200 Watts or Less

W3GNR 46,900- 350-67-20
WA3UEN 42,160- 310-68-19
WA3SWB 39,962- 377-53-11
WA3KOS 31,860- 270-59-11
WA3WNT 21,070- 215-49-17
W3QII 20,200- 200-75-23
W3SMX 14,200- 142-50- 7
WA3LVA 3780- 63-30- 7
W3KQD 3770- 65-29-
K3FIW 2900- 50-29- 7
WA3PCX 40- 5- 4- 1
WA3TJB/3 (+WA3MYT)
42,960- 358-60-24

4

Alabama

K4TIG (W8FAW, opr.)
91,732- 646-71-10
K4ZGB 60,900- 435-70-15
W4USM 50,184- 369-68- 9

200 Watts or Less

K4JYO 65,660- 469-70-21
WA4VQD 48,048- 364-66-17
W4DS 42,504- 308-69-17

Georgia

K4BAI 126,144- 864-73-22
K4DJC 106,412- 719-74-18
K4HAV 103,952- 712-73-22
WB4RUA/4
77,400- 516-75-15
WA4APG 33,280- 256-65-10
K4KKJ 25,986- 213-61-14
WA4AKU 23,516- 266-63- 9
W4GKI 18,460- 142-65-12

200 Watts or Less

K4UJS 984- 26-17- 2

Kentucky

WB4RBN 169,798-1163-73-23
WB4DQM (WB4NFQ, opr.)
165,888-1152-72-22
WB4OSS 130,388- 881-74-24
K4FU 109,950- 733-75-18
WA4CTC 102,528- 712-72-19
WB4YQY 25,864- 212-61-18
WB4WCM 14,700- 150-49- 4

200 Watts or Less

WB4WDV 84,668- 632-67-23
WB4FOT 33,456- 246-68-12

North Carolina

WA4FBW 147,022-1007-73-24
K4FOA 134,904- 924-73-24
K4KZZ 126,728- 868-73-24
K4FOB 105,280- 752-70-24
W4NQA 52,704- 432-61-10
W4UW 17,444- 178-49- 9
WB4VHE 15,344- 137-56- 7
W4YK 13,440- 96-70-
W4NXM 6006- 77-39- 4
W4ACY 2700- 50-27-
W4BFB (K4s BWS LVV SLC WA4s DRC PCS VCC WB4s AMU BZS KOH YFC)
123,200- 880-70-19
K4FG (WB4VVP WN4KPI)
110,880- 770-72-19

200 Watts or Less

WA4DFQ 47,916- 363-66-13
WB4SGB 16,992- 177-48-12
WA4MWP 16,200- 162-50-12
WB4TAK 3328- 52-32- 5
WA4CAO/4 2000- 40-25- 5
WB4IOP (+WA4GKQ WB4TAK WN4KHC)
17,160- 264-65-19

Northern Florida

WB4VUP 174,640-1180-74-24
W4WKQ 86,380- 617-70-16
K4LAN 68,816- 506-68-14
WB4JCV 31,284- 237-66-15
WB4JGY 23,310- 185-63-13
WB4JHQ 18,432- 192-48-11
K4SCZ 1456- 28-26- 6
WA4FCY (WA3FHK WB4SBD)
129,356- 886-73- 9

200 Watts or Less

WA4UFW 107,136- 744-72-22
WA4VBN 70,700- 505-70-17
WB4SCA 27,084- 222-61-16
K4HKU 1472- 32-23- 5
WA4CAD/4 390- 15-13- 1

South Carolina

K4GDL 119,564- 842-71-15
WA4ZUK (WB4IUX, opr.)
71,568- 504-71-18
WA4ALC 66,516- 482-69-24
K9KIC/4 58,362- 411-71-15

200 Watts or Less

WA4LBO 840- 28-15- 2

Southern Florida

WB4AEX 79,430- 611-65- 8
WB4DRV 75,710- 565-67-18
W4OZF 67,328- 526-64-10
WB4OGW 43,560- 330-66-12
K4PY 42,612- 318-67- 9
WB4OFH 24,960- 195-64- 9
W4ZTB 23,718- 201-59-12
K4IAU 11,868- 129-46-20
WA4ZHB (K4GFG WA4FCT WB4s HYN VMH WB8ENH WØPBI)
103,234- 727-71-24

200 Watts or Less

WA4ZLW 40,020- 290-69-22
WB4ZSO 28,956- 254-57-16
WA4BTR (+WA4BTQ)
65,824- 484-68-24

Tennessee

WB4WFT 69,690- 505-69-13
K4PUZ 16,758- 171-49- 2
K4KTX 16,626- 163-51-11
WB4OBC 16,284- 177-46- 9
WA4AVB 11,780- 155-38- 6
K4RTA 11,008- 128-43- 3
W4OGG 6336- 99-32- 4
WB4RJF 3872- 44-44- 4
WA4ZZU/4 (+WA4s RKS TGC C. Adams)
106,116- 717-74-20
WA4UCE (+WA4HWI WB4s EYA PAR SCG ZEH)
83,328- 651-64-24

200 Watts or Less

WA4FDR 40,800- 300-68-11
K4YEH 30,960- 258-60-19
WB4JBP 15,800- 158-50-12
WA5ZKO/4 8316- 99-42- 8
WB4FNN 6200- 100-31- 5
K4HPP 2800- 50-28- 2
K4MOJ 320- 16-10- 1

Virginia

K4VX (K3EST, opr.)
199,800-1332-75-24
WA4OOC (WA8ZDT, opr.)
168,192-1152-73-22
WB4BGY (W1FUM, opr.)
166,944-1128-74-24
W4DM 150,818-1033-73-24
W4USN (WB6DPV, opr.)
141,400-1010-70-24
W4MYA 128,760- 870-74-20
W4WSJ 128,100- 854-75-21
W4KFC 122,404- 862-71-14
WB4UOX 109,624- 772-71-24
WB4BUL 100,010- 685-73-22
K4LSD 90,428- 611-74-24
W4CRW 86,904- 612-71-18
WA6CXK/4
79,476- 537-74-20
K4OD 68,832- 478-72-23
KT4VMI (WB4UKA, opr.)
68,572- 553-62-13
W4LZ 57,486- 429-67-11
K4JWD 45,260- 365-62-13
W4NH 42,240- 320-66-11
W8QGP/4 37,696- 304-62-16
W4YHD 35,880- 345-52- 7
W4ZM 33,060- 285-58- 8
K4ZA 30,096- 228-66-14
W4YZC 30,000- 250-60- 8
K6FTM/4 25,186- 257-49-14
WB8RFB/4
23,100- 210-55-24
K4EBY 18,616- 179-52- 5
W4DSW 18,354- 161-57-11
W4JVN 17,640- 180-49-12
W4QCW 16,422- 522-51- 3
W2TPV/4 10,200- 100-51- 5
K4CFB 10,184- 134-38- 5
W4GF 7280- 91-40- 2
WB4MRI (+WB4SGV)
174,196-1177-74-24
W4UPJ (+K4EKJ W4UGF WA4HPF + 2 meter net)
150,900-1006-75-24
K4CG (WA8RGI + 2 meter net)
100,200- 668-75-20
WB4TEL (+WB4WIW)
74,060- 529-70-18
WB4VMB (+WB4VBG K7MPP)
72,960- 570-64-19

200 Watts or Less

K4POL 138,380- 935-74-24
W4CHK 73,408- 496-74-19
WB4OXD 72,576- 504-72-16
WA7AFF/4
59,532- 451-66-22
W4UPV 56,952- 452-63-18
WA4BIX 34,000- 250-68-14
K4IAP 31,878- 231-69- 9
WB4URW 23,600- 236-50- 6
W4TMN 19,080- 180-53-18
WB4ZRU 15,484- 158-49-13
WA8ZTQ/4
10,508- 142-37-18
WB4WVC 9906- 127-39- 9
WB9KVO/4 8856- 108-41- 8
WA4FVI 6696- 108-31-15
K4KA 6592- 103-32- 5
K4FM 1440- 30-24- 1
W4DRP/4 520- 20-13- 4

WA4GPT/4 (+WA4BMO) D. Northrup)
43,188- 708-61-21
WA4JIY (+K4MOB)
24,288- 264-46-16

West Indies

KP4EAJ 172,350-1149-75-20
KP4AXM (K1QTI, opr.)
53,856- 408-66-10
K1HMU/KP4
24,416- 218-56- 8
KP4DSQ 1584- 33-24- 2

200 Watts or Less

KV4IO 19,504- 184-53-11

5

Arkansas

WA5VDH 171,750-1145-75-23

200 Watts or Less

WB5EMT 144,150- 961-75-24
KØIGH/5 62,238- 451-69-23
WB5KED 35,380- 290-61-12
W5PGM 12,000- 125-48-13
W5QE-W 7308- 87-42- 9
WB5EHF 484- 22-11- 3

Louisiana

W5WMU 187,200-1248-75-24
W5HGT (WB2UFG, opr.)
158,804-1073-74-20
WB5KTY 47,328- 348-68-15
W5JEB 3782- 61-31- 3
W5RTX (+K5YMV)
170,236-1166-73-24
WA5RMC (+WA5s UJX WCG)
101,388- 714-71-17
K5LXZ (+WB5QVE)
89,568- 622-72-19

200 Watts or Less

W5WG 54,510- 395-69-21
WB5KFA 47,232- 369-64-19
WB5KIA 32,512- 254-64-15
K5LVZ 22,816- 184-62-15
WB5GUB 12,192- 127-48-14
WB5KQS (+WB5GQO)
32,630- 251-65-22

Mississippi

W5RUB 83,300- 595-70- 8

200 Watts or Less

WA5MUF 20,008- 164-61- 9

New Mexico

K5EPO 158,064-1068-74-21
WB5HAL 41,968- 344-61-14
WB5AXC (W5EUU WA5s MHR VYL WB5s ICK IYU WA8ECB J. Maloney A. Noori)
140,154- 987-71-24

200 Watts or Less

WB5LZC 89,602- 631-71-21
WB5IYE 67,452- 511-66-14
W5QNQ 6984- 97-36- 6
K5MAT 3430- 49-35-

Northern Texas

WB5DTX (WA3GBU, opr.)
217,650-1451-75-24
WA5IMK 215,700-1438-75-24
W5MYA 210,000-1400-75-24
WA5RXT 201,750-1345-75-24
W5IMN 178,932-1209-74-23
WA5FTP/5
162,600-1084-75-24
K5KSI 117,150- 781-75-19
W5PAQ 116,032- 784-74-18
W5KHP 101,676- 687-74-18
K5YAA 95,992- 676-71-15
WB5HIH 81,144- 588-69-17
K5YTA 79,520- 560-71-17
WB5IH 75,924- 513-74-24
WB5MSI 44,980- 346-65-15

WS0EE 8658- 111-39-12
WB5ACO 3536- 52-34- 6
WB5IBP 1352- 52-13- 1
W5SOQ 48- 6- 4- 1
W5LUJ (+WB5AAR)
175,650-1171-75-24
W5FC/5 (W5QUZ WB5s IBP JJA EHD)
112,500- 750-75-16
W5ONL (+D, Sisson M. Sisson)
67,206- 487-69-15
WA5EBU/5 (+K5ICK WN5MYA)
44,100- 350-63-11

200 Watts or Less

W5QWF 101,104- 712-71-22
K5AOL 80,472- 566-71-19
WA5SRK 66,792- 506-66-22
W5UBR 52,932- 401-66-18
K5YRK 47,464- 349-68-16
WB5BNG 20,610- 229-45- 8
W5SOD 16,200- 150-54-11
W5RYA 14,344- 163-44- 7
W4GXW/5 11,662- 119-49- 9
W5PXW 9476- 103-46-
WB5LHL 2214- 41-27- 2
W5QGZ 1700- 50-17- 1
WB5IBP/5 162- 9- 9- 1
WB5JJA 126- 9- 7- 1

Oklahoma

K5LUR 129,608- 953-68-23
W5CPI 36,046- 269-67-19
K5DEC 18,352- 148-62-17

100 Watts or Less

WB4NXY/5
26,520- 195-68-14
WB5IER 22,420- 190-59-13
W5KS 20,736- 192-54-11
WA7LKU/5
12,600- 140-45- 7
KØYBX/5 3190- 55-29- 6

Southern Texas

WA5LES (K5IZO, opr.)
199,350-1329-75-24
K5PFL 166,148-1138-73-20
W5RTQ 139,500- 930-75-16
W5OIB 109,624- 772-71-13
WA5ZNY 78,256- 536-73-10
WA5QPA 16,874- 143-59- 7
K5IZJ 300- 15-10- 1

200 Watts or Less

WB5FKX 78,064- 574-68-22
K5BNZ 77,526- 531-73-17
WB5IQG 50,020- 410-61- 8
WB5FVT 36,600- 300-61-17
WA5WQD 7056- 98-36- 3

Canal Zone

KZ5WA 156,150-1041-75-21

6

East Bay

WB6ION 120,596- 826-73-24
K6ZM 85,536- 594-72-22
K6HIH 81,444- 617-66-
W6UZX 43,684- 326-67-
K6BF 29,000- 250-58- 7
W6RGG 21,200- 200-53- 7
WB6BKB 17,576- 169-52- 5
W6ROZ 9126- 117-39- 9
WA6IQK 5904- 82-36- 5
WA6AHP 3850- 75-39- 4
W6IOH (+W6KG)
110,376- 756-73-24

200 Watts or Less

K6RM 31,900- 275-58-13
WA6KEQ 24,600- 205-60-16
WB6BIB 13,464- 153-44-18
WB6RSS/6 2- 1- 1- 1
W6BB (WA6s NLQ ROC WB6CFP)
58,022- 433-67-24

Los Angeles

W6HX (WB6OLD, opr.)
253,200-1688-75-24
W6RR (W6RFT, opr.)
237,744-1603-74-24
K6OVJ (W6DSO, opr.)
190,050-1267-75-24
W6DGH (WB6ZYC, opr.)
167,250-1115-75-24
WA6PNN 32,576- 304-72-11
WA6KKP 53,448- 393-68-10
W6OFO 42,084- 334-63-13
K6MP 32,696- 268-61- 8
W6RNU 32,240- 260-62-14
K6ELX 24,420- 222-55- 7
W6YRA (K6TTOI K3ZLA WA6DPQ WB6IAN WA7DAC)
155,344-1064-73-24
W6OE (WB4YCV WB5s IOG JDW WA6OTU WB6OYN)
92,540- 661-70-24
W6VPZ (K6HRT W6s BOB CFM IJG HDK WA6s BIL DCJ WB6s HJO JCD WWU WN6FEF)
87,188- 614-71-24

200 Watts or Less

WB6VZI 118,080- 820-72-24
WB6PXP 73,414- 517-71-20
WB6KPN 73,220- 523-70-20
WA6VHD 61,880- 476-65-23
WA6TXF 39,996- 303-66-16
K6GOA 34,314- 301-57-19
WA6AYW 27,642- 271-51-16
WB6NFO 12,870- 117-55-14
WA6EXY 10,248- 122-42- 4
WA6TLV 9324- 126-37- 3
WB6OXH 2318- 61-19- 5
WA6DGQ 2050- 41-25- 4
WB6OCC (+WB6s AUF UFW)
61,360- 520-59-18
W6SD/6 (W6LPJ WB6s DBL OYE)
52,992- 384-69-24
WA6SFM (WA6s DHM PZL WB6s CIA JJE POV)
45,990- 365-63-21

Orange

W6IOS 35,630- 285-59-11
WA6OVA 28,470- 219-65-18

200 Watts or Less

WA6EUT 75,686- 533-71-20
W6LKO 53,868- 402-67-18
WB6KRE 24,034- 197-61-15
K2UVG/6 20,048- 179-56-13
WA6ITY 4970- 71-35- 8
WB6AIV 2064- 43-24- 4
WAØKXJ/6 900- 30-15- 3
W6LYG/6 40- 5- 4- 1

Santa Barbara

W6FEG (WB6YBL, opr.)
160,580-1085-74-22
W6PRP 111,750- 745-75-17
K6QPH 36,760- 430-66-13
W6GUR 26,676- 234-57-14
W6GEB 18,656- 176-53- 5
W6SUN (+WB6ULR)
122,692- 829-74-18

200 Watts or Less

W6DKO 54,020- 370-73-20
WB6FDM/6
11,250- 75-75- 8
WB6HTK 560- 20-14- 2

Santa Clara Valley

K6FBB (WB6AIN, opr.)
198,750-1325-75-24
W6OKK (WB6DSV, opr.)
174,300-1162-75-24
WB6KRK 156,150-1041-75-24
VE7ATA/W6
102,930- 705-73-21

WA6GFY (WB6EXW, opr.)
86,328- 654-66-1
WB6LPK 78,242- 551-71-1
W6OTP 74,976- 528-71-2
VE3DXV/W6
62,928- 456-69-1
WB6DSV (W6OKK, opr.)
55,704- 429-66-1
WB6GNM 41,860- 322-65-
K6LU 40,710- 345-59-
W6NLG 30,012- 246-61-1
WB6RIU 29,754- 261-57-1
K6BWD 29,700- 225-66-1
WA6MQS 27,108- 251-54-
W6OBY 27,022-229-59- 1
W6IDC 23,718- 177-67-1
WA6NDN 20,696- 199-52-1
K6AEL 19,936- 178-56-1
W6HQN/6 7696- 104-37-
WB6MWW 3380- 65-26-1
W6YX (WB4ILW WA6s AC HFP WB6s IUV RAL TV ZUO WA7MQX DJ6UO)
127,008- 882-72-2
WB6WSL (K6ODK WN6s DM GSZ Dale + Dana Corbett)
99,216- 689-72-1
K6YA (W6JKJ WA6NIL WB GYO LSN QVW W8RPA)
91,908- 666-69-2
WA6NKK (K6s FIB SMH YC W6s LEN LYG WA6FK WB6FNF L. Shoenburger)
57,754- 431-67-1

200 Watts or Less

WA6WEI (WA6GSN, opr.)
79,660- 569-70-
W6HJP 51,060- 370-69-
K6VGW 39,884- 338-59-
WA6LIJ 39,732- 301-66-
WA6UZA 26,786- 227-59-
W6NIR 22,538- 191-59-
K6FIH 14,798- 151-49-
WB6UOC 9000- 125-36-
K6RTU 7800- 100-39-
WA6EKK 4554- 69-33-
WB6SWH 3024- 54-28-
WA6NCX/6 2160- 45-24-
W6WZF 1088- 32-17-

San Diego

W6ONV (WA9UCE, opr.)
151,402-1037-73-
W6POF 9900- 75-66-
W6MAR 72- 6- 6-

200 Watts or Less

WB6RMG 37,076- 299-62-
WA6UFY 8600- 100-43-

San Francisco

W6NUI 90,300- 645-70-
W6RNF 65,000-1000-65-
W6IZZ 21,560- 196-55-
W6BIP (+WA6DJH)
122,248- 826-74-

200 Watts or Less

W6KHI 16,992- 177-48-

San Joaquin Valley

K6CQF (W6PAA, opr.)
158,360-1070-74-
W6PXG 59,616- 414-72-
K6AYA 41,344- 304-68-

200 Watts or Less

WA6CPP 52,026- 377-69-
K6OOP 31,200- 260-60-
K6IG 768- 24-16-

Sacramento Valley

WA6JVD 67,392- 468-72-
K6SU 17,700- 177-50-
W6KYA 5848- 86-34-

200 Watts or Less

WA6HAF 133,298- 913-73-

Hawaii

KH6IJ 109,056- 768-71-22
KH6RS (W6DGH, opr.)
47,302- 354-67- 4
W6NJU/KH6 2808- 52-27- 2

200 Watts or Less

KH6IGC 43,554- 357-61-18
KH6GMP 42,768- 324-66-19
KH6HRG 8832- 96-46- 9

7

Arizona

W7AWH 166,440-1140-73-20
K7JVR 102,930- 705-73-23
W7ZMD 47,192- 347-68-16
WA7ZQL 12,784- 136-47- 7

200 Watts or Less

WA7VTM 40,320- 320-63-18
W7ECD 11,200- 112-50- 4
WA7LNW 4620- 70-33- 3
WA7NWL 32- 4- 4- 1

Idaho

K7NHV 218,700-1458-75-23

200 Watts or Less

W7IUO 75,460- 539-70-24

Montana

W7GKF 111,580- 797-70-21
K7LTV 106,812- 774-69-17
W7FQ/7 (K7s KCR RRS W7ROF WA7s FBJ FBN FOB MJU PZO QZO VXK WN7s VXL VXM YTQ)
55,754- 457-61-20
W7YB (W7LR WA7HDD)
36,464- 344-53-12

200 Watts or Less

K7PGL 20,160- 210-48-14

Nevada

WA7NIN (W6OAT, opr.)
219,000-1460-75-24
WA7WYF 43,648- 341-64-11

200 Watts or Less

K7VYT 12,880- 161-40-13
K7WLX/7 286- 13-11- 4

Oregon

W7TML 154,496-1088-71-24
WA7LDZ 1500- 50-15- 2

200 Watts or Less

K7KVV (WA7HDZ, opr.)
71,208- 516-69-24
K2LIP/7 34,568- 298-58-23
W7TML 17,160- 165-52-23
K7UYX (WA7RGR, opr.)
3248- 56-29- 5
W7IWN 2500- 50-25- 8
WA7IHO (+WA7s WFP WNQ)
27,724- 239-58-14

Utah

K1PKQ/7
158,952-1074-74-21
W7GXC 55,744- 416-67-15
W7OGU 14,996- 163-46-10
W7HOI 660- 30-11- 1

200 Watts or Less

WA7YAZ 15,936- 166-48- 9
WA7VCE 442- 17-13- 1

Washington

W7RM (K7VPF, opr.)
197,136-1332-74-24
W7SFA (K7JCA, opr.)
158,952-1074-74-24
VE7ZZ/W7
129,312- 98-72-24
W5QQQ/7
128,850- 859-75-24
K7RSC 119,282- 817-73-17
WA7FFU/7
110,050- 775-71-24
WA7OTT 104,020- 743-70-22
W7UBA 96,600- 700-69-19
W7GYP 84,500- 650-65-17
W7BUN 66,240- 480-69-18
WA7UQG 55,704- 422-66-17
W7NP 52,680- 439-60-22
K7GGD 43,940- 338-65-14
W7JEG 40,680- 339-60-16
K7MOK 28,404- 263-54-19
K7RSB 28,080- 234-60-14
W7YTN 27,720- 231-60-11
WA7JCB 15,504- 152-51-10
WA7GYR 11,352- 132-43- 5
W7RJW 7416- 103-36-18
W7CLZ 3660- 61-30- 5
WA7BSQ 840- 30-14- 3
W7OJJ 360- 18-10-
K7UWT 200- 10-10- 1
W7OS 48- 8- 3- 1

200 Watts or Less

WA7OBL 50,096- 404-62-20
WA7IVO 46,800- 360-65-22
WA7WMB/7
24,396- 214-57-15
WA7PVE 20,200- 202-50-22
K7IOO 17,914- 169-53-12
WA7WMC 16,848- 162-52- 9
WA7WMD 14,200- 142-50-13
W7WIA 3770- 65-29- 6
W7KHN 3400- 50-34- 2
WB7ZNW 1920- 60-16- 5
WA7TLK 1344- 32-21- 3
WA7IOF 1320- 33-20- 9
W7DFO 1102- 29-19- 3
WA7NUY 1008- 28-18- 2
WA7GCY 990- 45-11- 3
K7TTS 546- 21-13- 3
K7EFB 440- 22-10- 3
WA7TLL 340- 17-10- 2
W7YD (WA7s TOY TRI)
15,372- 183-42-24

Wyoming

W7TSM 32,120- 292-55- 9

200 Watts or Less

WA7ZZY 27,260- 235-58-19
W7OBE (WA7s DKZ FHA IHJ VEK)
17,472- 168-52-13

Alaska

KL7FAE (KL7HNN, opr.)
1190- 35-17- 3

200 Watts or Less

WA2HSP/KL7
39,294- 333-59-11

8

Michigan

WA8YVR 204,092-1379-74-24
W8RC 156,672-1088-72-
WA8FRE 92,540- 661-70-20
W8CNL (WA8MOA, opr.)
78,952- 556-71-24
K8HWW 72,000- 500-72-16
K8PAO 67,758- 491-69-20
W8KZM 62,100- 450-69-16
K8GSR 61,740- 441-70-22
WB8JVX 45,500- 325-70-15
K8JLD 41,788- 337-62-21
WB8IOT 41,454- 329-63-23
W8VPC 34,102- 289-59-13
WB8LZA 33,720- 281-60-15
W8QQL 30,550- 235-65-11
WA8OEF 30,352- 271-56-13
WA8GJD 27,848- 236-59-18
WB8KEV 25,320- 211-60-12
K8ICF 24,500- 125-49-10
W8QM 24,192- 224-54-19
WB8RVG 15,980- 170-47-16
W8BNF 13,312- 128-52- 9
WB8SWL 10,486- 107-49- 4
K8BKF 6300- 75-42- 5
WB8DIT 2756- 53-26- 6
WB8EUO (+W8JLT)
112,140- 801-70-24
W8KRR (+W8LHP K8SLE WA8s MNF ZVO WB8MFI WN8SLE Cooperider)
91,840- 656-70-24
WB8RTL/8 (+WA8IBB WB8s OWU PIW)
85,536- 648-66-24
WB8AYW (+WB8IFX WN8TLD)
49,266- 391-63-23
WB8SHL (+WN8SWF)
22,660- 206-55-16

200 Watts or Less

W8HNI 51,816- 381-68-19
WB8LJY 48,580- 347-70-22
WB8QXR 44,850- 345-65-18
K8TAH 39,360- 328-60-16
32,886- 261-63-24
WA8ZHZ 24,120- 201-60-17
K8REN 20,900- 190-55-13
W8TJQ 20,760- 173-60-13
WA8QCW 19,928- 188-53-12
K8CVV 15,040- 160-47-13
WB8RNM 10,736- 122-44-11
W8HAN 6808- 92-37-10
WB8KPU 6800- 100-34-17
W8JUP 2450- 49-25- 6
W8LBU 384- 16-12- 2
W8NBN 374- 17-11- 2
WB8RWU 286- 13-11- 7
WB8ETP 264- 12-11- 2
WB8RNQ/8 68- 34- 1-10
K8HPS (+WB8JCD)
32,886- 261-63-24
K8DAC (multiop)
28,912- 278-53-24
WA8ILQ (+WB8s FBJ JZN)
27,280- 220-62-20
K8HLR (+WB8KPN)
15,600- 156-50- 4
WA8PVR (+WBØIUL)
14,000- 140-50-19

Ohio

WA8YWX 155,636-1066-73-23
WB8AYC 155,400-1050-74-24
W8KIC (WA3BGE, opr.)
119,000- 850-70-17
WB8MMF 102,346- 701-73-20
W8KEL 86,802- 629-69-21
WB4KTR/8
75,456- 524-72-22
WB8DGO 70,148- 494-71-23
WB8NUA 69,722- 491-71-22
W8KZP 42,340- 365-58-19
W8MXO 36,992- 289-64-12
W8VQI 35,772- 271-66-15
W8UPH 34,272- 306-56-17
WB8JVT 30,988- 254-61-16
W8KPI 17,368- 167-52-14
W8VZE 13,668- 134-51- 7
WA8LWH 13,668- 134-51-11
K8NXV 13,600- 200-34-10
W8OYI 13,200- 132-50- 8
WB8NBY 11,280- 141-40-13
WA8OYR 10,396- 113-46- 9
K8NQW 9200- 100-46- 4
WB8MSE 7680- 96-40-11
WB8HLI 6642- 81-41- 7
W8LMS 5130- 57-45- 9
WA8DBI 5070- 65-39- 7
WB8EVY 3740- 55-34- 5
W8IMF 3472- 56-31- 8
K8SWE 1472- 32-23-
WB8JBM/8 (WB8s DOP LSN WN8OOB Joy E. S. Warner)
168,484- 1154- 73- 24
W8LT (WA1LKU K8MLO WB8s FWQ HHP IBZ INY JXS)
144,576-1004-72-24
WB8EDU (WA3MEJ WA8TKW WB9s DXW LJX K. Geisten)
101,982- 739-69-21
WB8MIP (+WN8PIY)
62,640- 522-60-22
WA8HQO (+KBWNU WBØML)
57,948- 439-66-14
WB8OUF (+WN8SZN)
26,432- 224-59-

200 Watts or Less

WB8OVR 65,000- 500-65-16
WA8GUG 63,936- 444-72-13
K8CVJ 44,100- 350-63-19
W8SWB 35,052- 254-69-19
W8HSU 27,720- 231-60-14
W8SDV 26,600- 190-70-20
K8ISS 21,930- 215-51-23
W8IDM 20,904- 201-52-14
WB8NLG 20,352- 212-48-15
K8VPV 19,604- 169-58-14
WB8SFZ 18,020- 170-53- 7
K8JGA 16,660- 170-49-12
WB8QXN 15,732- 171-46-10
WB8LCF 15,392- 148-52-13
W8OJW 13,416- 129-52-15
WA8RCN 13,328- 136-49- 7
K8MFO 11,250- 75-75- 7
WB8IAY 10,082- 71-71-10
K8HO 8832- 96-46- 7
WB8LZR 8704- 136-32-10
WB2FGA/8 7800- 100-39-
WB8PHI 4320- 72-30- 5
K8MLO 3944- 68-29- 5
WB8NTY 1800- 30-30- 3
W8BSR 1656- 36-23- 8
K8OBG 494- 19-13- 3
WB8KWC 204- 51- 2- 6
WB8HHN/8 192- 12- 8- 3
K8KSN 168- 12- 7-
K8VPV/8 144- 9- 8- 1
W8EPP 96- 8- 6- 1
WA8SDF (+WA8s EJK FOA LBR ZJL ZPS)
48,776- 364-67-23
WB8JMV (+WB8JIY WN8OBS)
28,600- 275-52-18

West Virginia

W8AHZ (WA8OPM, opr.)
38,860- 335-58-11
K8QYG 3- 1- 1- 1

200 Watts or Less

W8NR 42,636- 323-66-12
WB8MOI 35,880- 299-60-13
WB8UW 24,786- 243-51-10

9

Illinois

WB9HAD 156,240-1085-72-21
WB9CGL 149,400- 996-75-24
W9VBV 111,544- 764-73-20
WA9GAM 100,448- 688-73-22
K9AIZ 84,000- 600-70-18
WA9LVJ 80,868- 586-69-22
K9BQL 64,894- 457-71-17
WB9KNX 45,140- 370-61-19
WB9CPT 39,936- 384-52-15
WB9DVQ 15,600- 150-52- 9
W9CRN 12,000- 120-50-10
WA9LEY 6732- 102-33- 5
WB9DED 6138- 93-33- 4
W9USS 6052- 89-34-
K9KBI 3840- 64-30- 1
K9KKX 3828- 58-33- 8
W9DY 2500- 50-25- 2
W9OHH 2100- 50-21- 1
WA9BLP 972- 27-18- 2
W9NNU 288- 12-12- 1
K9ORP 270- 15- 9- 1
W9YYG 144- 9- 8- 1
WA9PBK/9 (+WB9sIUR KMP)
142,848- 992-72-24
WB9IDS (+WB2KBH WA9WDP R. Kral)
139,860- 999-70-23
WB9AJZ (+WB9GOJ D. Mossi
37,184- 332-56-12
W9YW (WB5KLB WA9WXC)
25,088- 224-56- 8
W9UDK (+G. Zurbuchen)
6534- 99-33- 4

200 Watts or Less

WB9GFC 129,940- 899-73-24
WA9IXF 78,242- 551-71-21
WA9SVZ 46,992- 356-66-19
W9ZJS 44,200- 325-68-19

WR9MMT 38,610- 297-65-14
WA9YLB/9
37,820- 310-61-24
K9IIY 34,100- 275-62-15
WB9IEN 30,866- 253-61-20
W9CUD 29,610- 235-63-21
WB9KZQ 19,548- 181-54-11
W9IAY 17,238- 169-51-11
WA9JJF 16,052- 167-48-18
WA9LKK 15,600- 150-52-11
K9DKJ 13,668- 134-51- 8
WB9GSZ 12,780- 142-45-10
W9REC 6560- 80-41-13
WA9WVJ 850- 25-17-
W9HPG 10- 5- 1- 2
W9MVE 2- 1- 1- 1
K9TZZ/9 (WA9POY WB9s GFN IWN IWO ISR KLW KNY KXI OFI WN9PIF Al Doug)
55,440- 420-66-23
WA9ZIK (+K9s FYQ ZWY WA9EPS WB9EEF)
29,000- 250-58-16
WB9FYR/9 (+WN9MLV)
22,936- 244-47-24
WB9EXB (+D, Lloyd)
13,366- 163-41- 6
K9IKM (+WB9HGN)
4118- 71-29- 1

Indiana

K9IU (WB9DZS, opr.)
165,000-1100-75-24
K9UWA 146,292-1002-73-22
WB9CEP 123,840- 860-72-22
WB9LHI 120,596- 826-73-17
W9LT 105,540- 754-70-17
WA9NPM 103,660- 730-71-18
K3YWJ/9 94,800- 632-75-23
WA9IHA 79,424- 584-68-16
K9CLO 72,940- 521-70-22
W9OXO 66,732- 498-67-23
WA9RWY 60,634- 497-61- 6
K9IZH 52,932- 401-66-10
W9LKI 51,612- 391-66-18
WB9IHH 23,400- 195-60-13
WB9LXW 1218- 29-21- 3
W9YB (WB2RKK WA9YVY)
113,820- 815-70-22
W9PU (WB9s IND NDS)
87,906- 637-69-24

200 Watts or Less

W9MDW 51,000- 375-68-16
WB9GVW 39,732- 301-66-18
K9UBF 35,636- 302-59-14
WB9MDB 26,230- 215-61- 8
WØUAW/9 14,210- 145-49- 7
K9HCK 5076- 94-27- 5
W9UEM 4900- 70-35- 4
WB9NMC (+WN9OSJ)
43,470- 345-63-24
W9SAL (WB9s IUQ JSN)
19,760- 190-52- 9

Wisconsin

W9YT (K9LBQ, opr.)
179,288-1228-73-21
W9MJ 72,000- 500-72-16
WB9MOG (WA8OIB, opr.)
67,456- 496-68-21
WB9FUN 66,732- 498-67-16
K9HFR 43,956- 333-66-17
K9JPS 19,440- 180-54-13
WB9IGA 14,820- 130-39- 7
W9KI 7500- 75-50-13
WB9MWM 440- 20-11- 5
WB9ASN (+WB9s BWR KNP)
75,024- 521-72-24
W9ODD (WB6MTB WB9s JLJ MBD)
26,784- 248-54-13

200 Watts or Less

WB9HRP 51,188- 382-67-20
K9EVA 50,344- 406-62-19
WB9KMQ 41,412- 357-58-23
WB9KRR 40,474- 343-59-19
WB9PLM 33,600- 280-60-19

WB9HGS/9
24,012- 207-58-23
K9LWV 23,484- 206-57- 7
WA9TEQ 22,464- 216-52-16
WB9IER 22,440- 204-55- 9
W9LO 20,592- 198-52- 8
WB9MFC 17,920- 160-56-12
K9MIX 17,760- 185-48- 9
WB9FWR 8600- 100-43- 6
WB9KPX 7644- 91-42-13
WB9KMW 7062- 107-33- 8
WB9KZZ/9 6360- 106-30-10
WB9HJE 3150- 63-25- 7
WB9LSS 1140- 30-19-
WB9NME 480- 20-12- 5
WA9YAK (K9s VFY ZMU WB9s FWK KFB B. Reitzner)
46,920- 391-60-24

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Colorado

WAØCVS (WBØDJY, opr.)
249,300-1662-75-24
KØZCM (WØLBP, opr.)
209,124-1413-74-24
WA2WMT/Ø
170,348-1151-74-24
WBØAMJ 75,456- 524-72- 8
WØTPO 66,384- 461-72-19
WØOSK 58,344- 429-68-16
WBØBLJ 27,260- 235-58-11
WBØDOJ 21,004- 178-59-16

200 Watts or Less

WBØGAZ 84,180- 610-69-17
WØOUI (WAØEGZ, opr.)
81,600- 600-68-
WBØJGT 61,248- 464-66-16
WØPCM 38,976- 348-56-14
WØBWJ 34,170- 255-67-16
WBØLVR 26,838- 213-63- 9
WBØIPL 12,880- 140-46-15
WAØPYY 8372- 91-46-10
WBØIWL 6336- 88-36- 4
WBØIDU (+WBØHBS)
75,108- 569-66-24

Iowa

KØGXR 147,460-1010-73-24
WAØIAO 111,744- 776-72-19
WØEHF 78,384- 552-71-19
WBØCQO 59,664- 452-66-23
WAØHK 29,512- 238-62- 9
WAØVDX 8686- 101-43- 2
WØWSV/Ø (WB9MXH KØPSC WØHUP WAØZZG WBØs BPH GUU)
55,424- 433-64-23
WØIO (WAØZOD WBØHUL S. Hume)
50,432- 394-64-10

200 Watts or Less

WØMHK 62,652- 454-69-20
WBØMSX 56,816- 424-67-22
WBØIYK 29,000- 250-58-18
WØSML 19,700- 197-50-16
WA3PWL/Ø 2204- 58-19- 2
KØEVC 1722- 41-21- 6

Kansas

KØCVA 178,200-1188-75-24
KØUYN 126,000- 840-75-24
WBØGZR 115,200- 800-72-18
WØIUB 111,860- 799-70-
KØROD 94,998- 669-71-24
KØFQY 36,580- 310-59-14
WØJCY 18,126- 159-57-11
WØOQO (K9WIE WAØs SWC YVX WBØs HKE JDK WNØNJO)
133,006- 911-73-24

200 Watts or Less

WBØISW 72,846- 513-71-22
WAØSEV 68,474- 511-67-21
WAØPBQ 49,010- 377-65-18
WBØKDE 44,532- 336-66-17
WBØCGI 35,280- 294-60-23

WØJYJ 29,008- 296-49-10
WBØEYS 26,078- 221-59-17
WØSPI 17,238- 169-51-14

Minnesota

WAØFNP 116,724- 822-71-13
WAØKQU 104,784- 708-74-24
KØZXE 104,370- 735-71-22
KØIJL 97,720- 698-70-18
WØIYP 93,744- 651-72-19
WØHW 864- 27-16- 1
WAØCJU (WAØs JMI MJF OFZ WBØKFK)
66,150- 525-63-17
WAØURW (+B. Caldwell)
62,196- 438-71-14

200 Watts or Less

WAØRLD 40,198- 394-51-16
WØOWY 36,736- 287-64-17
KØFZG 31,784- 274-58-22
WBØCQL 27,206- 223-61- 9
KØUHG 24,400- 200-61-16
WBØIRL 23,040- 180-64-16
WØTIV 14,700- 150-49- 5
WBØNBJ 13,800- 150-46- 9
WBØIMI 8200- 100-41- 6
WAØQWY 4284- 63-34-10
KØMPH 1476- 41-18- 3
WBØJOJ (WBØHSN WNØKRY)
10,912- 124-44-11

Missouri

WAØPAO 166,032-1153-72-24
WAØCWH 123,150- 821-75-19
KØRPH 99,774- 723-69-17
KØDEQ 92,480- 680-68-16
WAØYLB 39,000- 325-60-21
KØFNW 10,120- 115-44-14
WBØATD 3360- 60-28- 4
WØFFF (WB9s RVV SAT WAØRAD WRØBBA)
122,820- 890-69-23

WBØJOR (WBØs IUN LPM)
85,680- 612-70-24
KØLIR (WØIIBH WAØIXV WRØIKR)
84,042- 609-69-

200 Watts or Less

WAØJNF 82,320- 588-70-23
WØQWS 70,618- 527-67-22
WBØLTD 40,626- 333-61-16
WAØCWV 37,400- 275-68-13
WØOLF 37,180- 286-65-14
WAØEMD 20,304- 188-54-12
WAØCXI 14,400- 150-48-11
WBØEBF 11,200- 112-50-13
WAØABI 9996- 119-42-14
WØBV 400- 20-10- 3
WBØKXP 224- 14- 8- 2

Nebraska

WBØIHU 12,444- 122-51- 8
WAØWHB (+WBØDJQ)
48,438- 351-69-23

200 Watts or Less

WBØINQ 37,800- 300-63-17
KØPVI/Ø (WBØIWL, opr.)
17,568- 183-48- 5
WØNWN 11,024- 106-52-11
WØOYW 5712- 84-34-10
WBØADH 1480- 37-20- 4

North Dakota

200 Watts or Less

KØERP/Ø 31,034- 263-59-14

South Dakota

WAØCPX 158,250-1055-75-24

200 Watts or Less

KØGZZ 45,158- 337-67-17
WBØLJM 8640- 108-40- 6

Check Logs

CW: VE1AR, VE2PJ, WB2THS, WB4WVC, WA7PHI, WB7UQV, WBRQWQ, WØOZX. PHONE: VE1VI, VE3DH, W3SPG, WA3TMP, K4AUJ, WA4QVK, K5LZJ, WA7IIQ, WA7PHI, WB7UOV, WBFQG, W9KL, WA9GER, WA9SFY, WØOZX, K4AVO/Ø.

Disqualifications

CW: K3MNT/7, WB4YLG, K5YAA (opr. of WB5DEX), W9ROM. Phone: WB2SHH, K3MNT/7, WB4HDF (opr. of WB4HOE), WB4TVU, WB5FFU (opr. of WB5IZN), WA5QXD, W9RQM.

Strays

What is Metrovision? It's the name of a unique amateur TV repeater system operating in the Washington, D.C. area with special permission from FCC. There are about 20 two-way users and 40 participants who are equipped for SWLing, ATV style. The repeater, WR4AAG has an input at 439.25 MHz, with video out at 427.25 and audio out at 431.75. *QST* hopes to carry further details in a future issue.

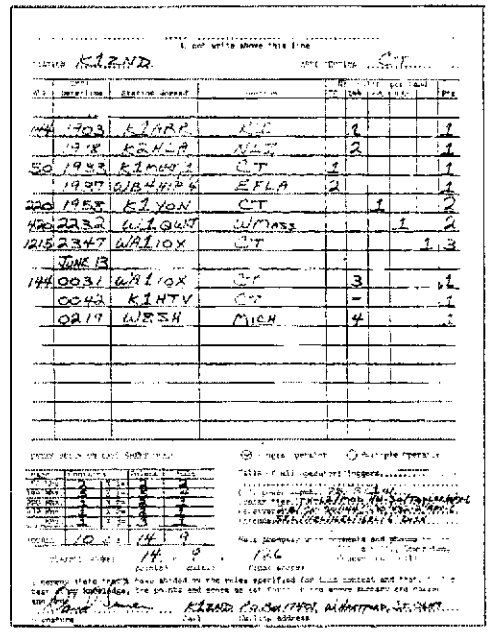
Want your *QST*/ARRL membership to continue without interruption at renewal time? Then don't wait until a few days before expiration to renew. If you renew within two or three weeks after receiving your first notice of expiration, *QST* service will be continuous. Overseas members can insure similar continuity by renewing promptly via airmail.

VHF QSO Party Announcement

IF YOU HAVEN'T already done so, it's time now to start planning for this year's June VHF QSO Party to be held June 14-16.

Contest logs (38 QSOs per sheet) are available. Unless first class postage is included with your request, the logs will go via third class (slow!) mail. One unit of first class postage is sufficient to send 5 sheets of paper. Using this as a guideline, you can determine the amount of postage to include.

Be sure your entry is postmarked no later than July 7, 1975. GL – *WA1PID*



Rules

1) The 1975 June VHF QSO Party begins at 1900 GMT, Saturday June 14 and ends at 0600 GMT, Monday June 16. Entrants may operate no more than 28 out of the 35 hours. The seven hours of off-time must be taken in increments of 30 minutes or more. Listening time counts as operating time. All contacts must be made on amateur bands above 50 MHz using authorized modes of emission.

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

3) Fixed, portable or mobile operation under one call, from one location only, is permitted. A transmitter used to contact one or more stations may not be used subsequently under any other call during the contest period (with the exception of family stations where more than one call is assigned to one location by FCC/DOC).

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).

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

4) Scoring: 1 point for completed two-way exchanges on 50 or 144 MHz.; 2 points for such exchanges on 220 or 420 MHz.; 3 points for such exchanges on the higher uhf bands. The sum of these points will be multiplied by the number of different ARRL sections worked per band; i.e., those with which at least one point has been earned. Reworking sections on additional bands for extra section credits is permitted. Cross-band work does not count. Aircraft mobile stations cannot be counted for section multipliers.

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

6) A contact per band may be counted for each station worked. Ex.: W2EIF (S.N.J.) works K1-YON (Conn.) on 50, 144 and 220 MHz. for complete exchanges. This gives W2EIF 4 points (1 – 1 – 2) and also 3 section-multiplier credits. (If W2EIF contacts other Conn. stations on these bands, they do not add to his section multiplier but they do pay off in additional contact points.)

7) Each section multiplier requires a complete exchange with at least one station. The same section can provide another multiplier point only when contacted on a new v.h.f. band.

8) Awards: Entries must be postmarked no later than July 7, 1975. A certificate will be awarded to the high-scoring single-operator station in each ARRL section. In addition, the high-scoring multi-operator station will receive a certificate in each section from which three or more valid multiple-operator entries are received.

9) Disqualifications: 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.

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

2) 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).

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

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

5) 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

Rules for the ARRL Field Day

Annual Test for Emergency-Powered Stations, June 28-29

BY THE TIME you read these lines you will have less than two months to prepare for what should be one of the biggest activities on your club calendar – FD. Read the rules thoroughly and send for the contest forms. These forms include a summary sheet and duplicate sheets (Op. Aid 6). FD logs are not available, nor have they been for a number of years. The submission of a contest *log* is not required this year as in the past. Although the FCC no longer requires that full logs be kept, it is highly advantageous to do so since 1) a log extract may be requested by Hq. for log checking purposes and 2) a full record of your club's past performance is helpful when planning for next year. Please read rule 13 carefully.

There is only one rule change this year. As explained in rule 10, each cw QSO will now count 2 points and each phone QSO will be worth 1 point. The Contest Advisory Committee recommended that this change be instituted for the 1975 Field Day on a trial basis, to be adopted permanently if the change appears to be serving its intended purpose of increasing cw activity during Field Day. This change will undoubtedly modify band/mode setups for many groups so thought should be given now to the course of action your club might take. The Oscar rules have been moved from the lead material to rule 11f.

The schedule of Oscar 6-7 FD passes is available on request. Ask for the info. with your FD forms request or separately via an s.a.s.e.

Entries must be postmarked no later than August 1, 1975. GL – *WA1PID*

Rules

1) *Eligibility*: The Field Day is open competitively to all amateurs in the ARRL Field Organization (plus Yukon and N.W.T.). Foreign stations may be contacted for credit but are not eligible to compete.

2) *Object*: For portable and mobile stations, to work as many stations as possible. For home stations, to work as many portable and mobile stations as possible.

3) *Conditions of Entry*: Each entrant agrees to be bound by the intent as well as the provisions of these rules, the regulations of his licensing authority and the decisions of the ARRL Awards Committee.

4) *Entry Classifications*: Entries will be classified according to the number of transmitted signals simultaneously on the air at any one time during the FD period, followed by the designation of the nature of the individual or group participation. Once a transmitter makes a contact on a band, it must remain on that band for at least 15 minutes. During this 15 minute period, the transmitter is considered to be transmitting a signal, whether it is or not, for purposes of determining transmitter class. Class A: Club group (or non-club group with three or more licensed amateurs) set up specifically for operation in the FD and using portable identification. Such stations must be located in places which are not regular station locations and must use no equipment or facilities installed for permanent station use, not any structures installed permanently for FD use. Stations must be operated under one call (except when a Novice position is used, as provided by miscellaneous rule (c) and under control of a single licensee or trustee for each entry. All equipment (including antennas) must lie within a circle whose diameter must not exceed 1000 feet. All contacts must be made with transmitter(s) and receiver(s) operating from a power source independent of commercial mains. Entrants who, for any reason, operate a transmitter or receiver from commercial mains for one or more contacts, will be listed at the end of their class. Class B: Non-club stations set up and operated by not more than two licensed amateurs. Other provisions same as for Class A. Class C: Stations located in vehicles capable of operation while in motion and normally operated in this manner, including antenna. Class C stations may operate stationary, but no stationary equipment or facilities may be used. A Class C station may not be used as a station in any other class. The operator of a Class C station may also operate from another station during the FD period, but scores for his mobile operations must be submitted separately. Class D: Stations operating from permanent or licensed station locations, not portable or mobile, using commercial power. Class E: As above, but using emergency power for transmitters and receivers.

5) *Field Day Period*: FD operation starts at 1800 GMT the fourth Saturday of June and lasts until 2100 GMT the following Sunday, a period of 27 hours. Class A and Class B entries who do not begin any setting-up operations until 1800 GMT on Saturday may operate the entire duration of the FD period. Others may operate no more than 24 consecutive hours, i.e., once FD operation has started it must cease 24 hours from that point.

6) *Bands*: Each phone and each cw segment is considered as a separate band. All voice contacts are equivalent and RTTY is counted as cw. A station may be worked once on each band. Cross-band contacts are not allowed. The use of more than one transmitter at the same time in a single band is prohibited, except that a Novice position may operate on any Novice band segment at any time. Contacts made by retransmitting either or both stations do not count for scoring purposes.

7) *Exchanges*: Stations in the U.S., possessions and Canada must exchange ARRL section (see page 6 in any *QST*) and signal report. Valid contacts with stations outside of a section consist

of sending a signal report and section and receiving a signal report and country from the foreign station.

8) *Valid Contacts*: A valid contact is defined as a two-way exchange (see above) between stations. Class A, B or C stations may contact any station. Class D or E stations may contact any Class A, B or C station.

9) *Miscellaneous Rules*:

a. Operators participating in the FD may not, from any other station, contact for point credit the FD portable station of a group with which they participated. This is intended to outlaw any kind of manufactured contacts.

b. A station used to contact one or more FD stations may not subsequently be used under any other call during the FD period. This rule is intended to outlaw multiple contacts on the same band with the same station, using different calls. It is not, however, intended to prohibit the use of jointly-owned stations which are normally used under different calls by members of the same family.

c. Any Class A group whose entry classification is three or more non-novice transmitters may also use one Novice operating position (to be set up and operated only by Novice class licensees) without changing their basic entry classification. The Novice position must use a Novice call sign and must keep their own logs and check sheets. The Novice position QSO total may be added to the group QSO total before multiplying.

10) *Scoring*: Scores are based on the number of valid contact points times the multiplier corresponding to the highest power used at any time during the FD period, plus bonus points. Phone contacts count one point each, and cw contacts count two points each. Power multipliers. If all contacts are made using a dc input power of 10 watts or less AND if a power source other than commercial mains or motor-driven generator is used (e.g., batteries, solar cells, water-driven generators, etc.), multiply by 5. If any or all contacts are made using a dc input power of 200 watts or less, multiply by 2. Multiply by 1 if any or all contacts are made using a dc input power over 200 watts and up to 1000 watts. Over 1000 watts multiply by ZERO! Dc power on SSB phone is considered to be half the peak envelope power. Batteries may be charged while in use for Class C entries only. For other classes, batteries charged during the FD period must be charged from a power source independent of the commercial mains.

11) *Bonuses*: The following bonus points may be added to the score (after the multiplier is applied) to determine the final score. Only Class A and B stations are eligible for bonuses. Do not add bonuses to your final score – all applicable bonuses will be added at headquarters.

a. 100 points for 100% emergency power, per transmitter classification. ALL equipment and facilities at the FD site must be operated from a source independent of the commercial mains.

b. If one or more contacts are made using equipment that is totally powered by a source of energy that is derived from "natural" power such as wind, solar or water power, the FD group will get a 100 point bonus. Oil, coal, natural gas, nuclear fuels or any other fossil fuels or their derivatives are not allowed. The energy source must be described. Commercial electric mains or batteries may not be used for this bonus.

c. 50 points for public relations. Publicity must be obtained or a bona fide attempt to obtain publicity must be made. Evidence must be submitted in the form of a clipping, a memo from a BC/TV station stating publicity was given or a copy of material sent to news media for publicity purposes.

d. 50 points for message origination. A message must be originated by the club president or other FD leader, addressed to the SCM or SEC, stating the club name (or non-club group), number of operators, field location and number of AREC members participating. The message must be transmitted during the FD period and a fully serviced copy of it must be included with the FD report. The message must be in standard ARRL message form as explained in *Operating an Amateur Radio Station*. The message must be correct in all respects or no credit will be given.

e. 5 points for each message received and relayed during the FD period, up to a maximum of 50 points. Copies of each message , properly serviced, must be included with the Field Day report.

f. 50 points can be earned by completing at least one cw QSO via the Oscar satellite during the FD period. The repeater provision of rule 6 is waived for Oscar QSOs as is the 15-minute provision of rule 4. An Oscar station does not count as an additional transmitter. On the summary sheet show Oscar as a separate "band."

12) *Club Aggregate Mobile Score*: Entries under Class C may be combined to form an aggregate score for their club, having no connection with the club's portable entry, if any. Individual reports must include the club name. The club secretary or other designated club official must submit the club aggregate mobile score claim. Only bona fide members of a club operating in the club territory (175 mile radius from the club headquarters address) may contribute to this aggregate mobile score.

13) *Reporting*: Entries must be postmarked no later than August 1. The proper summary sheet, plus a list of stations worked on each band and appropriate proof(s) for bonuses constitute an entry. *An entry that does not include a check sheet or any other list of QSOs made will be classified as a check log.* A copy of your FD log is not required unless specifically later requested by ARRL. This does not, of course, relieve you of the responsibility of keeping a log as required by FCC/DOC. Send a stamped addressed envelope to ARRL Hq. for FD forms which include a summary sheet and a sample of a suggested check sheet.

14) *Disqualifications*: 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.

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

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 1974 phone SS prohibits submission of an entry for the 1975 phone SS, but 1975 cw SS participation is okay).

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

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

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

Silent Keys

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

Ex-W1ELF, Norman E. Varney, East Rochester, NH
W1IZ, Robert E. Landick, Lynn, MA
K1LDI, Cornelius Hourihan, Westwood, MA
WA1MEH, Charles S. Sebastian, Westwood, MA
K1PIW, Harold H. Ross, S. Burlington, VT
W1SVS, Bernard Ostendort, Jr., Stamford, CT
WN1TBM, James B. Richardson, Lowell, MA
W1TQP, Mortimer E. Reardon, West Roxbury, MA
W1UJS, Frederick C. Rowland, Stamford, CT
W2BKX, George A. Wies, Central Valley, NY
WN2KFJ, Kenneth S. Perkins, Fair Haven, NY
K2PCU, George F. Day, Central Square, NY
W2RMM, Casimer Sroka, Guilderland, NY
W2TQV/WA2HPO, Ainslie M. Rutherford, Waddington, NY
WA2UAF, Daniel J. McMonagle, Tillson, NY
WB2YBR, Arthur R. Rosselle, Staatsburg, NY
W2YN, Fred G. Donnellan, Chatham, NJ
W3AUO, Alfred W. Demkee, Fullerton, PA
W3KH, Harold E. Dinger, Washington, DC
W4BYY, W. M. Oettmeier, Sr., Fargo, GA
W4EOF, Louis E. Marsh, Jacksonville, FL
WB4KQM, Dr. Nathan Caress, Lauderhill, FL
WB4LPQ, Herman S. Lorenz, Merritt Island, FL
W4NVX, Noel W. Harman, Falls Church, VA
W4POO, Cleatus T. Price, Salem, VA
WB4PYO, Lewis T. Carroll, Aiken, SC
W4TKU, David B. Pitkin, Fort Lauderdale, FL
W4TOK, Ethel M. Lockhart, Miami, FL
WB4VFU, William G. Gambill, Nashville, TN
K4ZSZ, Dr. G. H. McChesney, Rome, GA
W5FIR, William C. Brigance, Jr., Ft. Worth, TX
K5IQL, N. Frank Green, Yale, OK
WB5LPM, Russel Frazier, West Biloxi, MS
W5OCX, Edward R. White, Jackson, MS
K5RKM, Earl W. Horton, Snyder, TX
W5SDD, Anton H. Erickson, Fayetteville, AR
W5SZI, Walter E. Kean, Santa Fe, NM
W6AWX, Orville H. Basore, Quincy, CA
W6BJO, Joseph W. Bell, Berkeley, CA
Ex-6CHQ, Carl S. Schramm, Long Beach, CA
Ex-W6DGO, Claude J. Mahoney, Imperial Beach, CA
WA6EDQ, Donald R. Walter, Exeter, CA
K6EG, Donald I. Mather, San Diego, CA
K6IOY, Wilbert C. Aston, Oakland, CA
W6KUP, Harvey L. Williams, III, Vallejo, CA
W6LGU, Alfred S. Cline, Los Angeles, CA
W6NRK, Gray V. Jones, Long Beach, CA
K6OIK, Leonard R. Schlageter, Jr., Atascadero, CA
W6OQX, Hubert W. Brittain, Santa Barbara, CA
W6OSX, Floyd E. Cummings, Jr., Lancaster, CA
W6PDW, George T. McAnany, Hollywood, CA
W6RXX, Andrew G. Chenoweth, Yuba City, CA
W7CAM, Frank B. Ingalsbe, Greenback, WA
WA7EIG, Robert S. Chamberlin, Phoenix, AZ
W7IUO, Kenneth R. Hill, Blue River, OR
W7QZ, George G. Descamps, Sun City, AZ
K7RLT, Carl E. Lindsay, Benson, AZ
WA7VLH, Harvey W. Towsley, Tucson, AZ
K8CRF, Virgil H. Hemmelskamp, McClure, OH
W8PDD, Robert B. Stevenson, Davison, MI
W8RR, Herbert E. Hafele, University Heights, OH
W9APN, Dr. Irving L. Cook, Spring, WI
W9AVV, Albert E. Shumaker, DuQuoin, IL
WB9BOT, Oliver J. Wheaton, Kaukauna, WI
W9CE, Ray E. Norene, Villa Park, IL
WA9EUR, Carroll M. Berkshire, Trafalgar, IN
W9FWO, Harrison L. Haskins, Green Bay, WI
WA9KJN, Morrison W. Brown, Lockport, IL
W9MU, Samuel Blair Weicht, Marion, IN
WA9SDO, Mark C. Guinnup, Ft. Wayne, IN
WA9TWY, Frank S. Smith, Kenosha, WI
WA9WMX, Verlin Gander, South Beloit, IL
WØBHL, Henry J. Bothman, Thief River Falls, MN
KØITC, Harold L. Shaw, York, NE
WØJTN, Lloyd L. Peterson, Wichita, KS
WAØYMU, Ray E. Lindgen, Procter, MN
VO1DF, C.E. Carlson, Gander, NF, Canada.
VE2BAB, J.E. Stanislas Breault, Rock Forest PQ, Canada
VE7AAS, H.A. Taylor, Sidney, BC, Canada
VE7EF, J.F. Wilson, Vancouver, BC, Canada
VE7SR, Fred. J. Shaw, Vancouver, BC, Canada
VE4KN, Fran Haddon, Brandon, MB, Canada
KP4DNV, Robert C. Lum, San Juan, PR
9Y4JH, John Hoford, Newtown, Trinidad
Ex-FG7XA, Andre Latil, Pointe-A-Pitre, Guadeloupe
G3WDO, Fred W. Hill, London, England
VP9AH, Albert Holmes, Wallasey, Cheshire, England

"It Seems to Us. . ."

(Continued from page 9)

In 1979 there will be a General World Administrative Radio Conference of the International Telecommunication Union which will be looking at the possible reallocation of the entire radio spectrum. How will the amateur service fare? Not very well if too many ITU delegates listen to some of the shenanigans on the air. The actions of a few are disgraceful, and degrading to the amateur service as a whole. It is a situation which deeply concerns all of those who want to see amateur radio maintain the fine reputation that it has developed through the years. We cannot permit the actions of a minority to jeopardize the privileges of the majority.

Last year the League's Board of Directors appointed an ad hoc committee to study the problem of deliberate interference to public service nets. When this committee reported during the January meeting, the action taken by the Board (Minute 31 in March "Happenings") was to direct the General Manager to undertake an educational program on methods of dealing with this problem, and to continue working with FCC personnel on measures to eliminate such interference from the amateur bands. This is a direct attack on one facet of the larger problem of intolerance.

You know the problem; *we* know the problem; and we'll be getting together with you in the months ahead to discuss methods of solving it. — *WIRU*

Changes of Address

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

Results, 14th Annual "Winnipeg Centennial" RTTY DX Sweepstakes

THE 14th ANNUAL RTTY DX Sweepstakes honoring the "Winnipeg Centennial" was sponsored by the Canadian Amateur Radio Teletype Group and was once again a popular event in the RTTY world. It was held a week earlier in October than is usual on account of CW Contests occupying the weekends in that month but, as propagation was fairly good and deteriorated badly after the contest, it turned out to be a better date.

There were 113 logs received and 46 countries contacted. Many did not hear the African Continent, though there were 5 African stations reported, which made only 25 stations with WAC this time.

Canadian participation was 23 stations, and U.S.A. showed an increase in numbers, probably due to the counting of Canadian and U.S.A. Districts as country multipliers.

Anyone wanting complete contest summary and statistic report, send s.a.e. to 85 Fifeshire Rd., Willowdale, Ontario, Canada M2L 2G9. Will be looking for YOU in October 1975!

Contest Comments

This was the last contest with my LU call sign as I moved to Rio de Janeiro Brazil on the 9th of November. I hope to soon have a PY call. – (LU2ESB). Good contest but couldn't find Africa! – (W9KDX). Best contest I have worked for a long time. Making the W and VE Districts count as separate countries sure does help. – (WØMT). Built 80 and 40 meter antenna for contest use, and called CQ 200 to 300 times on Sunday evening but no answer on our bands. See you next contest on low bands. – (JH1ISF). Hope to join the contest full time next year. – (OZ8DR). My first RTTY contest ever! Almost missed it as finals went flat two days before contest due to a faulty coax connector. – (WA7ZRX/6). Saturday seemed to be the hot day along with Friday night. Worked all the VE stations heard. – (VE2IR). New experience for me, made my first RTTY contact 2 months ago. Propagation not too good, 10 meters completely dead and propagation on 20 closed both days around 2215 GMT. – (18AA). My first RTTY contest. Of all the contests that I have participated in, I enjoyed this one the most. – (K8NTK). I really didn't expect to spend this much time but got carried away with the good condx. Regards. – (VE7BDQ). Conditions seemed very good, but where were the down-under boys? – (K7MNZ). I was surprised at the number of stations on the air. Makes you wonder where they are the rest of the time. – (WA6DEI). It was a pleasure to work the contest! – (PAØWDR).

SCORES

An asterisk indicates a certificate winner.

LU2ESB*	3,505,384	K8NTK	86,012
KH6AG*	2,066,316	XE1AFU*	80,690
K4GMH*	1,769,468	W7CBY	76,295
W3EKT*	1,600,154	K4GJW	70,887
I5WT*	1,271,104	W7MI	69,432
I6NO	1,206,038	K2RYI	62,150
W4CQI	1,156,450	K8KAG	60,208
KZ5BH*	1,093,585	OA4BR*	57,052
K7MNZ*	1,078,492	K2OYG	56,600
DL1VR*	1,069,350	DJ8BT	52,840
HK3PB*	1,032,460	OZ8BA	49,960
IT9ZWS*	940,504	W8JIN	47,230
I5CLC	895,448	DJ1QT	43,042
W5N8I*	873,350	TF3KB*	40,700
W3KV	841,434	VE2GA	37,920
OZ4FF*	819,246	VE3BPM*	28,791
K4YZV*	811,125	PAØRZ	24,481
K6WZ*	752,780	JA1EUL	22,200
ON5WG*	720,012	W2VAQ	21,250
JA1ACB*	644,528	WA7ZRX/6	20,892
PY2CYK*	625,312	DK3NH	19,060
W9KDX*	526,835	OZ2X	19,060
K6EQV	504,250	G3RDG*	18,911
VE7YB*	496,300	OZ4EDR	17,712
DA1LS	484,718	LA5HE*	14,904
W5CEG	460,820	W9MBV	10,980
IIPXC	433,064	WA1PWF	7420
CE3EX*	419,775	VE3CXK	6800
VK3KF*	396,200	SM5FUG	4820
CE3MA	367,700	JA1EYH	4380
I8AA	360,825	VE2AXO	3160
JH1ISF	346,480	PAØWDW	1668
WAØPEP*	337,405	VE6AYM	1569
VE2JR*	328,020	OZ8DR	940
W7BCT	327,360	W8TCO	690
HB9AVK*	294,830	OZ4XR	352
W1DXQ*	273,332		
W6JOX	256,950		
WØMT	256,880		
W3CRG	250,420		
VE1XP	238,596		
KØQJP	214,838		
ON4CK	212,970		
K4WAR	210,095		
DK3MG	209,280		
WAØEAS	208,904		
VE7BDQ	196,045		
IØZAN	176,685		
WB4PTU	168,500		
WA6DEI	166,380		
W8CQ*	157,600		
ON4BX	137,284		
PAØWDR*	136,925		
SU5AR*	135,660		
DK1QC	134,292		
SMØOS*	125,450		
WA8QWR	122,500		
VE2ARA	118,704		
VE5WZ*	115,880		
KØIJP	103,320		
WA3WAD	88,700		

Multioperator

DLØTD*	1,089,240
HA5KDQ*	373,370
WAØKHF	241,000
DK1AQ	18,680

SWL Printers

K1LPS/18	811,100
P. Menadier	693,792
H. Ballenberger	323,590
A. Marchesini	240,320
M. LaMoreaux	125,775

Check Logs

G6JF
DLØTD
WA3HXR/YV5
PY1DCB
W2BK
UA9PP
VE3CWO
VE3RTT

26th Annual

ARMED FORCES DAY COMMUNICATIONS TESTS

MILITARY-TO-AMATEUR communications tests will again be a highlight of the nationwide 1975 observance of Armed Forces Day, scheduled for Saturday, May 17.

The 26th Anniversary of Armed Forces Day will find military radio stations and ham radio enthusiasts celebrating more than a quarter century of solid cooperation – and mutual high regard – between the U.S. amateur radio community and the U.S. Army, Navy and Air Force.

Key features of the annual tests include crossband operations in cw, ssb and RTTY modes. Cw and RTTY receiving tests are also on tap.

Amateurs who make a confirmed two-way contact with any of the military stations taking part will be awarded special QSL cards commemorating the 26th Anniversary tests. In further recognition of their operating abilities and technical expertise, amateurs may qualify for special certificates by receiving and accurately copying an Armed Forces Day message from the Secretary of Defense. This message is transmitted in both cw and RTTY during the receiving tests.

No QSL cards are sent to acknowledge interception by short-wave listeners. But anyone with the necessary equipment and skills can copy the Secretary's message and become eligible for a certificate.

Military-to-Amateur Crossband Tests

The military-to-amateur crossband operations will be conducted from 17/1300 UTC to 18/0245 UTC. The military stations WAR, NAM, NPG, and AIR will transmit on military frequencies and listen for amateur stations transmitting in designated portions of the amateur bands. The frequencies and emissions for the crossband tests are the same as last year (see May '74 *QST*, pages 66-67) except that NAM (Naval Communications Station, Norfolk, VA) assumes the former NSS operation and adds to military frequencies, 148.410 MHz and 150.090 MHz for fm contacts. Also, NØNNN is not scheduled for crossband operation this year.

CW Receiving Test

The cw receiving test will be conducted at 25 words per minute for any person capable of copying International Morse Code. A ten-minute CQ call for tuning purposes will begin at 18/0300 UTC. The Secretary of Defense's message will be transmitted precisely at 18/0310 UTC from the following stations on frequencies listed: WAR (Army) – 4030, 6997.5, 14405 kHz; NAM (Navy) – 4012.5, 7385, 14385 kHz; NPG (Navy) – 4005, 6989, 14375 kHz, 49.995, 143.995 MHz; AIR (Air Force) – 7315, 13997.5 kHz.

RTTY Receiving Test

The RTTY receiving test will be transmitted at 60 words per minute. A ten-minute CQ call for tuning purposes will begin at 18/0335 UTC. The special Armed Forces Day message from the Secretary of Defense will be transmitted at 18/0345 UTC. Transmission will be from the following stations on frequencies listed: WAR (Army) – 4030, 6997.5, 14405 kHz; NAM (Navy) – 4012.5, 7385, 14385 kHz; NPG (Navy) – 4010, 7347.5, 13922.5 kHz, 148.410 MHz; AIR (Air Force) – 7315, 13997.5 kHz.

Submission of Test Entries

Transcriptions should be submitted "as received." No attempt should be made to correct possible transmission errors.

Time, frequency and call sign of the station copied as well as the name, call sign (if any) and address, including zip code of the individual submitting the entry must be indicated on the page containing the test. Each year a large number of acceptable copies are received with insufficient information or the necessary information is attached to the transcription and was separated, thereby precluding the issuance of a certificate.

Entries should be postmarked no later than 25 May 1975 and submitted to: Armed Forces Day Tests, Chief, Navy-Marine Corps MARS, 4401 Massachusetts Avenue, N.W., Washington, D.C. 20390.

W4USN/NØNMC Operation

The Naval Electronic Systems Command Amateur/Navy MARS Station W4USN/NØNMC in Arlington, VA, will be in operation on May 17 to commemorate the Armed Forces Day Communications Test. Operations will be conducted from 1400 UTC to 2200 UTC on or near 7250, 14300 and 21375 kHz on ssb and 7050 and 14090 kHz on RTTY. Visitors in the area will be welcome at the station located in National Center No. 1 Building, 2511 Jefferson Davis Highway.

WI9ANG Certificates

Wisconsin Air National Guard station WI9ANG will join in Armed Forces Day activities with operation on May 17 from 1330 to 2130 UTC on or near 7280 and 14310 kHz. To obtain a special Armed Forces Day certificate for working WI9ANG, send your QSL to WI9ANG c/o WA9DZL, 128th Air Refueling Group (TAC), General Mitchell ANG Base, Milwaukee, WI 53207.

QST

AMATEUR RADIO PUBLIC SERVICE

NTS RACES AREC

In the Public Interest, Convenience, Necessity HRH

CONDUCTED BY BILL MANN,* WA1FCM

Alabama and Oklahoma Amateurs Put to the Tornadoes Test

TUSCALOOSA'S NUMBER came up Sunday afternoon." That was the first-liner in *The Tuscaloosa News*. The civil defense director was just getting ready to pull the warning sirens when electrical power went out – that was the report in *The Altus Times-Democrat*. Hail, snow and tornadic winds devastated much of Duncan and Altus, Oklahoma, on February 22, while driving rain and tornadoes ripped up parts of Tuscaloosa, Hale, Jefferson and Cullman Counties, on the 23rd.

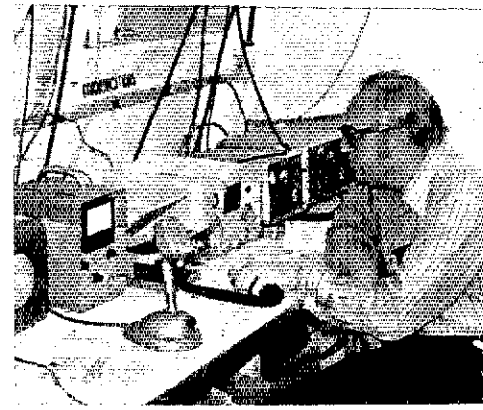
At the height of the storm, the Jackson County (Okla.) Emergency Net was activated and the Oklahoma Emergency Frequency was monitored. WB5MNB, WA5CBF, WB4KVZ/5 and WB5KRH manned the Emergency Operations Center amateur units, smoothly handling messages for c.d., Red Cross and the Storm Warning Net, and directing the actions of mobile units. In the sleet and snow WA5CBF, WA5TXG, WB5ITL, WB5KPM and WA5ZAR raised an emergency transmitting antenna at the WR5AGI site. Many others spent both the 22nd and 23rd on security patrols, in damage-assessment groups or warning nearby towns, using mobile units. Over 200 messages were handled by area amateurs and members of the Oklahoma Weather Net and Air Force MARS nets. The SEC, WA5FSN, reports that for hours two-meter fm was the only outlet for communications from Duncan and Altus. WA5CBF felt there were a lot of fine people who worked together for long hours.

Weather watches had been conducted informally by the Birmingham (Ala.) Amateur Radio Emergency Service/Jefferson County AREC and the Alabama Emergency Net M, for several days before alerts were issued by the National Weather Service. On the 23rd, amateurs stood by on the WR4ACK, WR4AGA, WR4ADD and WR4AEH frequencies. The Morgan County AREC, Tuscaloosa AREC and the West Alabama Emergency Net were called into session when tornadoes touched down or were spotted in Cullman County and southwest of Tuscaloosa. Over 50 mobiles were dispatched (writes W6LJU, EC Morgan Co.) to monitor the tornado's progress and report damage and injuries. On the air at the EOC of Tuscaloosa County was WA4TAJ. At the Jefferson County EOC was WA4GIY, and at the Morgan County EOC were W4MOI and WB4NLM. Set up at a demolished shopping center was W4ZEJ, who later reported a dangerous gas leak. W4WYP, W4WYO, W4WYN, WA4NFS and WB4SVH were operators at a National Guard Armory, being used for an evacuation center. Many amateurs manned road blocks and cleared debris, utilizing mobile units. Hundreds of messages were passed for c.d., Red Cross and Salvation Army by area amateurs and members of the Alabama Emergency Net M, reports W4LNN, net manager. Weather bulletins were relayed by the Birmingham ARC club station and the Dothan c.d. station. An example of the inquiries, reports WA4BDW, EC Jefferson County, was one concerning the sending of a c.d. generator to a woman on a kidney machine.

Tuscaloosa C.D. Director Sam Sloan said, "I don't know what we would have done without you amateurs; your service was of utmost importance in our operation." Amateur radio was the only means of communication in the Tuscaloosa area for almost 10 hours. WB4SVH, EC Tuscaloosa County, wrote that the Simulated Emergency Test

In the California area, A Regional Disaster Communications Council has been formed to help coordinate information among organizations interested in providing emergency communications. At the first RDCC meeting, the following were selected for Council and committee chairmanships (l. to r.): WB6UWQ, 6th Area Army MARS Dir.; WB6IIH, Alameda Co. RACES Officer; WB6RPK, SEC East Bay; WB6NAL, HEW; W6KOX, West-CARS Dir.; W6INI, Asst. SCM San Diego, ECAC Member; W6RFF, Northern California Net Mgr., WB6PUE, California Amateur Relay Council.

* Assistant Communications Manager, ARRL.



WB4RHB (left) and W4WYN inspect damage after a tornado ravaged Tuscaloosa, Ala. The Morgan County, Ala., Emergency Operations Center was manned during the weather alerts by W4PKA. For more details, see story, this column.

was a great help, as they operated just like clockwork according to their emergency plan, and had excellent cooperation with c.d. and Red Cross. – *WA1STO*

ECAC Doings. What's doing with the Emergency Communications Advisory Committee? Lots. The committee looks to amateurs for input to the committee on emergency communications topics. Here are some of the matters under discussion. Care to comment on any of them?

1) Getting a representative into a disaster area. Should ARRL Hq. have a person ready to move immediately into a major disaster area and help local hams coordinate communications?

2) Establishment of a Regional Emergency Coordinator appointment. Is there a need for a leadership appointment above the local EC level in states which have more than one section or in metropolitan areas whose populace extends over section boundaries?

3) Preparation of a pamphlet or workbook containing consolidated and indexed information necessary for operation by amateur radio stations during emergencies. ECAC members are providing guidance as to what should be included in such a publication.

4) Coordination of design factors of an automatic calling device for use in alerting selected hf net stations prior to or during emergencies.

5) Study of the emergency communications aspects of Field Day. Can/should Field Day be changed in this regard?

6) Improvement in the Annual Simulated Emergency Test. Can SET be made more meaningful and more realistic?

7) Establishment of national vhf emergency frequencies. Should certain repeater and simplex frequencies on 2 meters and the 220 band be recommended as emergency frequencies?

Your input on these subject areas would be very helpful for committee deliberations. Address comments to ARRL Hq. for distribution to all members or send to the ECAC member nearest you (see page 52, April 1975 *QST*). The committee is not limited to the above subjects; any pertinent topics concerning emergency communications can be suggested for committee consideration.

Before the Earth Quakes. It's September 14, 1974. A group of people are meeting at the Oakland (California) Red Cross Building. The amateurs on hand represent the ARRL Field Organization, Army, Navy and Air Force MARS, West Coast Amateur Radio Service, and CB's REACT and NET. Organizations involved in briefing amateurs are the Red Cross, (California) Office of Emergency Services, (California) Department of Health, U.S. Department of Health, Education and Welfare and the Federal Disaster Assistance Administration. The purpose of this meeting is to gather the various California volunteer radio services together for a briefing concerning disaster communications requirements of federal and state agencies and the American National Red Cross and to establish better lines of communications between the agencies and volunteer radio services. Government studies point to a real likelihood of a major earthquake in California; other studies cite a need to further develop disaster-communications readiness including more use of radio amateurs in disaster plans. The result is the formation of the Committee of Volunteer Emergency Communications Organizations (COVECO). WB6RPK is elected as Chairman.

During the months following, COVECO continued to assist in development of better understanding between agencies and amateurs. Most-noteworthy developments include Memorandums of Understanding being developed between the Western Area American Red Cross and the West Coast Amateur Radio Service, and between the Region 9 General Services Administration/Federal Disaster Assistance Administration and WestCARS.

February 22, 1975. COVECO meets again. The name is changed to Regional Disaster Communications Council. Agency speakers are on hand to

give more background on communications need and functions of the various agencies. With the formalization of RDCC, a General Chairman (K6ITL/WB6NAL) and two Vice Chairmen (WB6RPK and W6INI) are selected. Chairmen for the various committees comprising the Council are announced for the following committees: Amateur Radio Instant Service Nets, Amateur Radio Traffic Nets – NTS, RACES/AREC, Repeater Organization, MARS/Civil Air Patrol and Citizens Radio Service. These committees identify communications requirements that can be handled by their member groups. Contact is also made with appropriate agencies and agreements established outlining ways groups can supply communications and means by which appropriate amateurs can be contacted.

Can/should similar councils be established in other areas? It takes initiative on the part of amateurs to contact agency officials and arrange meetings to discuss methods of cooperation. Emergency Coordinators and amateur radio groups contact agencies at the local level. Section Emergency Coordinators deal with agencies at the section/state level. ARRL Hq. maintains contact with agencies at the national level. More interstate coordination could be desirable. What do you think? – *WA1FCM*

On Emergency Communications

Portable rigs, portable antennas and now portable repeaters. Public service accounts from around the country tell about portable repeater operation. This is something all AREC groups could use in time of emergency. Here is the very latest, though. The *Central Ohio AREC Bulletin* describes it as follows: "The AREC repeater has been living at WA8RUT's lately. He is adding a 28-V dc power input which would be needed should we ever put the repeater in an airplane. Don't think it can't happen!" How about that for innovative thinking? Of course, having emergency power for your repeater is handy too, since electrical power outages go hand in hand with many emergency situations. Better ideas for lifesaving . . .

■ Tornadoes Strike . . . Hams Help. We figure a good way to advertise to John Q. Public just what we can do is to give him the actual facts of past performances. Available for "showing off" purposes to local/state government officials, c.d. officials, etc., are two reprints. One of these is the article which was in October 1974 *QST*, of the aforementioned title. The other was seen in June 1974 *QST*, "Repeaters are Public Service Machines." This one can be used for repeater groups requiring factual data to present to local officials in order to put their repeater on existing towers, buildings, etc. For an s.a.s.e., you can get your copy now. – *WA1STO*

■ For February, 38 Section Emergency Coordinator reports were received, representing 14,001 AREC members. The same number of reports were sent at this time in 1974, covering 11,879 members; quite a growth in membership. Those sections accounted for were: Alaska, Alta, Ariz, Colo, Conn, Del, Hawaii, Ill, Ind, Kans, Ky, Mar, Mich, Miss, Mo, Mont, Nev, NLI, NC, NFla, NNJ, NTex, Ohio, Okla, Org, Oreg, Que, SDgo, SBar, SCV, SFla, SNJ, STex, Utah, Va, Wash, WMass, WPa.

Traffic Talk

A good way to get more amateurs involved in traffic handling is to start right at the beginner level – Novice nets. Several section-level Novice nets have been started in recent years. With a supply of higher-class licensees to provide liaison to other NTS nets, any traffic listed on the net may be handled.

Here are a few tips that may be helpful for slow-speed net operation:

1) Keep speed down even when passing traffic between stations who can send/receive at 20+ wpm. Higher-speed operation can be interpreted as show-offish by the newcomer and discourage him from becoming involved.

2) Tactful guidance from experienced traffic handlers is important.

3) If operating as a section net, concentrate on encouraging Novices within the section to participate. By soliciting participation of Novices from other sections, liaison stations to other NTS nets may become disenchanted forcing traffic to be routed haphazardly.

4) Closely allied to 3) is the need for non-Novice participation, especially as liaison stations. If NTSers don't participate in Novice nets, there's little chance of having this Novice traffic routed through NTS. An opportunity to assist Novices with a systematic routing of traffic is missed.

5) When moving off frequency to send or receive traffic, make sure the frequency selected is clear. Causing QRM is no way to get others involved in traffic handling! The same is true when opening the net.

6) If the Novice band is crowded and it is necessary to pass traffic between two higher-class operators off net frequency, consider sending them to frequencies just outside the Novice band.

If there is not enough interest for a slow speed net, an alternative is to have a slow-speed night on the section cw net. Publicity on other nets may bring a group of interested traffic handlers who were a bit leery of the usual net speed.

It should also be pointed out that there are several good "independent" Novice nets, covering

Special awards were presented to amateurs for their outstanding public service work during the Xenia, Ohio, tornadoes in April, 1974. L. to r.: W8JRN, Dayton ARA President; W8ILC, Emergency Coordinator; W8OK, Dayton ARA Director; WA8MCR, Assistant Emergency Coordinator. (Photo by K8YQH)

more than a single section, that also provide excellent training.

■ A net covering the eastern seaboard of the U.S. has been established to handle intercollegiate communications and information. The College Net meets on 7272 kHz Fridays and Sundays at 1830 UTC, 1730 UTC during DST.

■ During February, the Morning Session of the Forty Meter Eye Emergency Net facilitated the shipment of 53 eyes in the 24 sessions held.

■ *February Reports.* Second Region Net certificates were issued as follows: 1st annuals – W2BIW WA2LIK, 2nd annuals – WA2DRC WB2s FLF PYM, 3rd annual – WA2PJL, 4th annual – W2CU, 5th annuals – W2FZK WB2LZN, 6th annuals – WB2s RKK VPR, 7th annual – W2MTA, 8th annual – W2RUF. A morning session of DRN7 has been held and has had about equal representation as the late session. They still need reps from Idaho and Montana. Certificates went to K4KPI and WB4PZU for their work in the Fourth Region Net. Daytime Ninth Region Net wants PAMs of their region to send assigned stations. WØHXB is acting as TWN manager and WAØYNP has been taking over much of DTWN administration as assistant manager while manager W5PNY is getting ready to be married.

Net	*Sessions*	*Traffic*	*Avg.*	*Rate*	*%Rep.*
EAN	28	1635	58.4	1.308	97.6
DEAN	28	130	4.6	.376	72.6
CAN	28	996	35.6	.959	98.8
PAN	28	1111	39.7	1.022	98.2
1RN	55	495	9.0	.433	89.9
2RN	50	564	11.3	.779	87.1
3RN	57	655	11.5	.573	94.7
D3RN	28	261	9.3	.475	100.0
4RN	46	596	13.0	.515	77.6
RN5	56	768	13.7	.444	90.9
DRN5	26	65	2.5	.124	50.4
RN6	56	762	13.6	.589	100.0
DRN6	56	463	8.3	.240	62.3
RN7	53	328	6.2	.391	72.4
DRN7	56	30	.5	.034	39.6
8RN	42	339	8.1	.402	72.0
D8RN	28	90	3.2	.372	83.3
9RN	53	448	8.5	.352	89.7
D9RN	27	50	1.9	.153	67.9
DTRN	47	68	1.5	.084	50.2
ECN	56	295	5.3	.411	91.1
TWN	50	330	6.6	.275	62.9
DTWN	20	50	2.5	.127	59.3
CTN	28	286	10.2	.277	94.2
TCC Eastern	105[1]	622			
TCC Central	81[1]	491			
TCC Pacific	106[1]	807			
Sections[2]	4063	19659			
Summary	*5065*	*32394*	*6.4*		
Record	*4999*	*34238*	*24.3*		

[1]TCC functions not counted as net sessions.

[2]Section and local nets reporting (136): APSN (AB), MTN (MB), APN (Mar.), CMN GBN ODN OPN OQN NWON (ON), W-QV/UHF (PQ), AENB AEND AENJ AENM AENR (AL), ASN (AK), ATEN HARC (AZ), OZK (AR), NCN NEN SCN (CA), CN CPN CSN NVHFTN (CT), DEPN DTN (DE), EAST FMTN FPTN GN NFPN QFN QFTN VEN (FL), GSBN GSN (GA), IMN (ID, MT), ILN (IL), ITN QIN (IN), I75MN TLCN (IA), KPN KSBN KWN QKS QKS-SS (KS), KNTN KTN KYN MKPN (KY), LAN LRN LSN LTN (LA), MDCTN MDD MFPN (MD), EMRI EMRIPN EM2MN NENN WMN WMPN (MA), MACS MNN QMN WSBN (MI), MSN MSPN PAW (MN), MSBN MSN MTN (MS), ACE JC2AN MoAREC MON MoSSB MSN SCEN WEN (MO), MTN (MT), TCAREC WNN (NE), NHVTN (NH, VT), NJN NJPN NJSN (NJ), SWN (NM), NLI NLIPN NYS (NY), CN NCSSBN THEN (NC), BRN MASER OSN OSSBN O6MTRN (OH), OEON OPEN OTWN STN (OK), BSN OSN PAAREC (OR), EPA EPAEP&TN PFN PTTN WPA (PA), SDN (SD), TN TNN (TN), HAEN TEX TEX-SS TTN (TX), BUN UCN (UT), VSBN BSN (VA), NSN WSN (WA), WEN WVN (WV), BEN BWN WIN WNN WSBN WSSN (WI).

Transcontinental Corps

TCC Eastern Dir., W2FR writes that the only reason they did so well this month is because a lot of FB ops worked very hard to clear the hook under consistently rotten conditions. He awarded certificates to: WA2DSA WA2ICB WA8HGH.

Area	*Function*	*%Successful*	*Traffic*	*Out-of-net Traffic*
Eastern	112	93.8	1701	622
Central	84	96.4	1040	491
Pacific	112	94.6	1642	807
Summary	*308*	*94.9*	*4383*	*1920*

The TCC roster (February): Eastern Area (W2FR, Dir.) – W1s NJM QYY, WA1s MSK POJ, W2s FR GKZ KAT/3, WA2s DSA ICB PJL UWA, WB2s FLF PYM RKK, W3EML, K3s CB DZB MVO OIO, W4UQ, K4KNP, WB4SGV, W8PMJ, K8KMQ, WA8HGH, WB8ITT, VE3s AWE SB. Central Area (KØAEM, Dir.) – W4OGG, WB4DXN, W5s GHP MI OU UGE UJJ WA5IQU, W9s CXY DND NXG, WA9EED, WB9KPX, WØs HI INH LCX OMY ZHN, WAØTNM. Pacific Area (K5MAT, Dir.) – W5RE, K5MAT, W6s BGF BVB EOT MLF RSY UE VNQ VZT, K6HW, WA6DEI, WB6OYN, W7s BQ GHT KZ LCF, K7s IWD NHL NHV QFG, WØLQ, KØDRL, WBØHCK.

Independent Net Reports (February)

Net	*Sessions*	*Traffic*	*Check-ins*
Early Eighty Free	28	229	282
20 Meter ISSB	23	295	310
Washington Region	12	134	24
7290 Traffic	40	549	1920
20 Meter ISSB	20	1228	268
Hit & Bounce	28	1737	327
Hit & Bounce Slow	16	140	233
Mission Trail	28	247	1197
Ohio Valley Teenage	28	58	325
Northeast Traffic	19	66	117
75 Meter ISSB	28	464	1303
IMRA	25	474	1102
Central Gulf Coast Hurricane	28	128	1597

Public Service Diary

■ Middletown, OH – Oct. 24. WB8ODS used WR8ABS to request assistance for an injured person in an automobile accident. WB8CLG responded and advised authorities. – (WB8CLF, EC Butler Co.)

Emergency communications for Southern Texas are under the watchful eyes of SEC, WB5CUR, pictured here.

Public Service Honor Roll February 1975

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

WA1MHJ	65	WA1PAZ	49	WB9KRR	44
WA5IQU	65	WA2DIW	49	WB9NME	44
WA1QME	64	WB5JBW	49	WA9QVT	44
WB2PYM	64	K5MAT	49	VE3DVE	44
WBØHOX	64	W5MYZ	49	VE3FQZ	44
WB4ECB	63	W5RBB	49	VE3GJF	44
W4OGG	63	WB6OYN	49	VE3GT	44
WØMMP/Ø	62	W7GHT	49	WA1MJE	43
WA1MSK	61	WB8PAV	49	W2MTA	43
WA1SHO	61	K9LGU	49	WB4GHU	43
WA2DSA	61	K9ZTV	49	K4JJQ	43
WA3DUM	61	KØMRJ	49	WB5GZG	43
W5GHP	61	VE3FRG	49	WA6TVA	43
WA5ZZA	61	VE3GOL	49	WB8MKL	43
W7OCX	61	W2EC	47	KØBIX	43
WBØVZR	61	WB2UJD	47	WØNO	43
K3CR*	59	W5EIJ	47	W5SHN	42
W4RQS	58	W6INH	47	WA5VBM	42
WA1QKD	57	WB5EKU	46	W6AUC	42
WB2FIF	56	WØQTF	46	W7LG	42
WB5FMA	56	WB4DXN	45	WB8NCD	42
K6GME	56	W6JTA	45	WØOF	42
WB2RKF	55	W1BVR	44	WØOYH	42
W6RFF	55	W1FIH	44	KL7JDO	42
W9MEG	55	WA1POJ	44	WB2LZN	41
WAØEMD	55	WA2BSU	44	WA3VBM	41
WB5AMN	54	W2MLC	44	WB4EKJ	41
WB2JRX	53	WA2PCF	44	WA4HUB	41
WB5IUS	53	WB2SHL	44	WB5ASD	41
WA1RTGE	52	W3FCS	44	WB6AKR	41
WA6DMB	52	K3KAJ	44	WBØHCK	41
WB4SVH	51	K4IAF	44	W2FR	40
WB5JZQ	51	WB4SKI	44	WA3EOP	40
W5UGF	51	WB5EHA	44	WA4FDZ	40
WB2RKK	50	WA6DEI	44	WB4ZSZ	40
WA4EBI	50	WA7MFL	44	WB8NIF	40

*Denotes multioperator station.

■ Wellesley, MA — Nov. 11. WA1TUN heard HK1FMP calling from Barranguilla, Colombia, for a Boston station. Information was relayed about a niece of the Colombian who had just undergone an operation in a Boston hospital. — (WA1QJU)

■ San Antonio, TX — Nov. 21. An automobile accident was reported through WR5ADH. Aid was requested of the police by W5PKK. — (W5PKK)

■ New Orleans, LA — Dec. 18. To help locate two elderly women traveling from Texas to Florida, K8PHS sent traffic to the Louisiana and Mississippi Highway Patrols through WA5ZZA and K8YUW/5 on the Continental Traffic Net. On Daytime Fifth Region Net, K8YUW/5 relayed the message to the Texas Highway Patrol via W5KLV. K8YUW/5 advised K8PHS on MidCARS that police had been notified. — (K8YUW/5, Asst. Dir.)

■ Coleville, CA — Dec. 19. W6AJH was called by a lady whose daughter and husband had left San Francisco in a ketch bound for La Paz, Bolivia, and she had not heard from them for days. A call was put through WestCARS and a phone patch was run to the Coast Guard in San Diego, who in turn located the ketch. It was in high winds and heavy waves and was towed into La Paz.— (W6AJH, EC Mono Co.)

■ Newburgh, NY — Dec. 24. W1MX was service control on EastCARS when WA2IHP/mobile 2 reported an automobile accident. WA2THE called police. (*ECARS Monitor*)

■ Fayetteville, AR — Dec. 27. An accident involving an expectant lady was witnessed by WB5JLO. Assistance was quickly summoned via WR5AFB by WA5NRT. — (W5RXU, SEC AR)

■ Owensboro, KY — Jan. 24. The e.d. director called EC K4UDZ after a deluge wiped out all telephone communications with 10 county fire stations. Twenty amateurs were dispatched to the stations. — (W4OYI, Asst. Dir.)

■ Liverpool, NY — Feb. 4. A two-car accident was reported to K2HPT by K2CPU/mobile 2, via WR2AEC. The information was then telephoned to the Onondaga County Sheriff. — (K2HPT)

■ San Diego, CA — Feb. 4. WB6IPJ handled a request from WB6BRR, aboard a ship off the coast of Costa Rica. The ship's ammonia system had sprung a leak and the crew needed treatment for inhaling fumes. The U.S. Public Health Service in San Diego was then called. — (W6GBF, SCM SDgo)

■ Cold Spring Harbor, NY — Feb. 4. W2ZVJ/mobile 2 came upon the scene of an accident in which a person was injured. He contacted WA2JFA via WR2ACW and an ambulance was dispatched. — (WA2JFA)

■ Washington, PA — Feb. 6. On his way home from work, WA3FOJ/mobile 3 was in contact with WA3FOL. He came upon a disabled car and WA3FOI called police. — (WA3OKK, EC Washington Co.)

■ San Bernardino, CA — Feb. 10. WA6TRO/mobile 6 came upon a stalled car and contacted WA6JBL on the AREC repeater, WR6ACD. Police were called. — (WB6MKA, EC Glendora)

■ Cotabato City, Mindanao, Philippines — Feb. 11. DU1RBP/9 was heard calling for a much-needed medicine for a patient with a heart disease. DU9WX and DU6EG volunteered to get the medicine which was sent via plane in less than an hour. — (*DU6EG*)

■ Washington, PA — Feb. 10. WA3UAT/mobile 3 came upon a truck blocking traffic and called on WR3ADG for assistance. Answering was WA3APC

BRASS POUNDERS LEAGUE

Winners of BPL Certificates for February Traffic

Call	*Orig.*	*Recd.*	*Rel.*	*Del.*	*Total*
W4DUG	2550	73	–	–	2623
WØWYX	29	812	190	622	1653
KØONK	119	489	474	14	1096
W6RSY	42	512	460	2	1016
KØZSO	–	421	3	419	843
W2EC	3	423	402	14	842
K9CPM	39	400	99	250	788
W4LDM	29	339	299	40	707
WBØHOX	114	272	240	15	641
WA1QME	86	251	228	7	572
WB2PYM	42	244	212	9	507

More-Than-One-Operator Station

WA9UMH (Jan.)	127	270	50	60	507

BPL for 100 or more originations-plus-deliveries

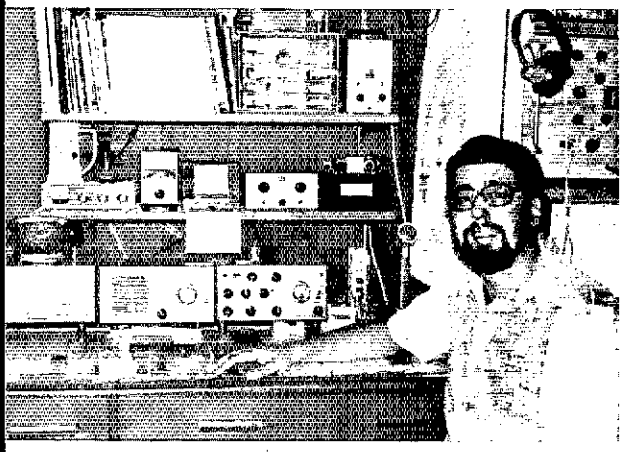
K4KDJ	182	WØFIR	131	WA5IQU	104
WØNO	174	WAØYVT	131	WN1UAX	102
W5UI	165	W4RHZ	114	WA6DMB	102
WAØAUX	160	WA4CLK	111	WB8ITT	102
W6RFF	152	WB2UJD	108	WB8MKL	102
K6RPN	141	K6UYK	106	WB2RKF	101
WB6VIK	134			VE3GOL	100

More-Than-One Operator Station

K3CR 369 . . . . . K4HY 146

BPL Medallions (see December 1973 *QST*, p. 59) have been awarded to the following amateurs since last month's listing: WA1SHO WA2DSA W2KAT/3 WA2PCF WN2UJD W3BNR WN3SZX WB6PVH WAØPNM.

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 points 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.



KH6IAC is active with the National Traffic System, passing traffic daily with California stations, acting as a "gateway" to and from Hawaii. He is also active in the Radio Amateur Civil Emergency Service.

who called police. – (WA3OKK, EC Washington Co.)

■ Washington, PA – Feb. 11. A car traveling north in a southbound lane was spotted by W3TZM/mobile 3. He called via WR3ADG and responding was K3PSP who called police. – (WA3OKK, EC Washington Co.)

■ Eagle Nest, NM – Feb. 9 - 11. A small aircraft crashed on the side of a mountain and its emergency-locater transmitter was signaling. RO of the Los Alamos c.d. K5QIN called W5NUI to establish a communications network of Albuquerque amateurs. A search-and-rescue mission was begun with amateurs, including W5ALR, SEC, going to the search area. WR5AFP was used as a link between the CAP at Santa Fe and the direction-finding activities. Many stations relayed information when propagation was poor and kept the frequency clear until the mission was concluded. Eight-five messages were handled by amateurs and New Mexico Road Runner Net members. – (W5NUI and WA5OHI, EC McKinley Co.)

■ Washington, PA – Feb. 12. WA3APC/mobile 3 on his way home in an ice storm came upon an accident. He called via two meters and was answered by WA3OKK who called police. – (WA3OKK, EC Washington Co.)

■ Bacolod City, Philippines – Feb. 13. DU6OMC was in contact with DU6VFC/MM when suddenly the former could no longer be heard. His son got on the air and said his father was lying on the floor having been shocked by his battery charger. DU7AHS was called to render first and DU6EG, a physician, broke-in and gave medical instructions, until the man was revived. – (DU6EG)

■ Azusa, CA – Feb. 17. WB6JBQ saw a vehicle on fire in a shopping center parking lot. He got in his car and called on WR6ACD for help. WA6VEV answered and called authorities. (WB6MKA, EC Glendora)

■ Owensboro, KY – Feb. 19. AREC members were called by c.d. to assist in a search for a lost child. Eight amateurs volunteered and W4EWM was enroute to the sheriff's office. The child was found. – (W4OYI Asst. Dir.)

■ Bloomington, IN – Feb. 22-23. Three people were spelunking when the cave began to fill rapidly with water. They could be seen but not rescued by other spelunkers. The National Speliological Society was called and W9MKV, an active caver was sent to the scene. WB9DPC called EC WA2VKU/9and K9BBZ, state police dispatcher, asked the AREC to be mobilized. A mobile unit was set up at the police post and WB9HXP, WB9DPC and WA2VKU/9 went to the cave with portable units and utilized WR9ADJ. Meanwhile another report of four overdue spelunkers was received at the police post. W9MKV went to the scene. By the next morning these four were rescued, but the three trapped in the first cave died. Over twenty auto patches were handled to police, Red Cross, and hospitals. – (WA2VKU/9, EC Monroe Co.)

■ Licking Co., OH – Feb. 23. Fourteen AREC/RACES members were requested by EC/RO W8EOG to set up water-level measuring stations in several spots along swollen rivers. Heavy rains for several days had endangered residential areas, and evacuations were assisted by amateurs. The men worked for an average of six hours. (W8EOG, EC/RO Licking Co.)

■ Chemung Co., NY – Feb. 24. The c.d. director contacted WA2TCZ requesting communications aid when flash flooding was predicted after heavy rains melted snow. WA2SMM was contacted and went to c.d. headquarters. Through WR2ABL, others were called. EC K2DNN assigned amateurs to shifts at c.d. and was then contacted about intended evacuation of families by Red Cross. Equipment was taken to the evacuation center and to Red Cross. Much traffic was passed through WR2ABL. – (K2DNN, EC Chemung Co.)

■ Clearwater, FL – Feb. 26. WB4FXO/mobile 4 called for emergency assistance on two meters, when he spotted an automobile accident. Information was relayed to police by W1BYS/mobile 4. –(W1BYS)

■ San Diego, CA – Feb. 27. WA6JCG/mobile 6 was driving in fog when he came upon a person injured in an accident. He called through WR6ACF to authorities. – (W6GBF, SCM SDgo)

(Continued on page 109)

Repeaters are used daily to assist the public, (reporting accidents, disabled vehicles, etc.) but does the public know who provided the assistance? Here's a card the Mount Tom ARA members give to people they help. The back can be used for general information about amateur radio or who to contact for more information.

You have been assisted by

NAME CALL

a licensed radio amateur
and a member of the
Mount Tom Amateur Repeater Association
P. O. Box 3494
Springfield, Massachusetts. 01101

PACIFIC DIVISION CONVENTION

Fresno, California — **May 2-4**

The 1975 ARRL Pacific Division Convention, combined with the Fresno Amateur Radio Club's 33rd Annual Fresno Hamfest, will be held at the Sheraton Inn in Fresno on May 2-4. Program features include swap tables, exhibits, tech talks and demonstrations, code proficiency tests, Old Timers Program, transmitter hunts, club and group meetings including MARS, WPS and WCARS, Novice Nellie, breakfast meetings, ARRL forum, banquet, Wouff Hong ceremony, and ladies luncheon and program. ARRL headquarters will be represented by General Manager Richard L. Baldwin, W1RU, and Doug DeMaw, W1CER.

Reservations and information: Hamfest, P.O. Box 783, Fresno, CA 93712.

TENNESSEE STATE CONVENTION

Knoxville — **May 24-25**

The Radio Amateur Club of Knoxville invites everyone to attend the 1975 ARRL Tennessee State Convention to be held in the Jacobs Building at Chilhowee Park in Knoxville on the weekend on May 24-25. There will be a flea market, exhibits and other activities of interest to all. A convention highlight will be the Saturday evening banquet with Lew McCoy, W1ICP, as featured speaker. The banquet will be held at the Holiday Inn N.E., and starts at 7 PM. An excellent zoo, amusement park, and overnight camper hookups are located right in the park.

Table rental for the flea market will be $2 for an 8' table. Advance reservations for the Saturday evening banquet are requested, and $5.25 includes tax and gratuities. Banquet and motel reservations go to Ms. Sally Sliger, WB4NDX, 5316 Riverbriar, Knoxville, TN 37919.

COMING ARRL CONVENTIONS

May 2-4 – Pacific Division, Fresno, California.
May 24-25 – Tennessee State, Knoxville.
July 4-6 – Georgia State, Atlanta.
July 5-6 – West Virginia State, Jackson's Mill.
August 1-3 – Canadian Division, Calgary, Alberta.
August 29-September 1 – Atlantic Provinces, Moncton, New Brunswick, Canada.
September 12-14 – NATIONAL, Reston, Virginia
October 10-11 – Great Lakes Division, Columbus, Ohio.
October 17-19 – Midwest Division, Lincoln, Nebraska.
October 24-26 – Southwestern Division, Ventura, California.
November 1-2 – New England Division, Hartford, Connecticut.

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

Hamfest Calendar

California – The 10th annual Burbank hamfest is May 17-18. Program will place emphasis on assisting youngsters to become interested in amateur radio. Excess cash to be contributed to Amsat. Contact Bill Welsh, W6DDB, 213 848-9340.

Illinois – Starved Rock Radio Club annual hamfest is June 1 at Bureau County Fairgrounds, Princeton. Free coffee and doughnuts 10-10:30 AM. Other refreshments, camping and trailer space, nearby motels plus historical spots of interest. Advance registration $1.50; after May 20, $2.00 at gate. For info send s.a.s.e. to W9MKS, RFD 1, Box 171, Oglesby IL 61348.

Indiana – Wabash County Amateur Radio Club annual hamfest is Sunday, May 18, 4H Fairgrounds. Technical sessions, bingo, camping, food. Advance registration, $1; $1.50 at gate. Contact Bob Mitting, 663 Spring St., Wabash IN 46992.

Indiana – Evansville Tri-State ARS annual hamfest is May 18, at 4H Fairgrounds, US 41, 3 miles north of town. Camping, auction, flea market, ladies bingo. Info from Jay, WB9ICL, RJ, Box 56M, Wadesville IN 47638.

Kansas – The Central Kansas Amateur Radio Club annual hamfest is Sunday, June 1 at the 4H Complex, Kenwood Park, Salina. Saturday evening dinner. Sunday registration opens at 9 AM. W4KFC speaker. Covered-dish lunch with beverages supplied by club. Write CKARC, PO Box 1072, Salina KS 67401.

Kentucky – Northern Kentucky Amateur Radio Club Ham-O-Rama is Sunday, June 1 at Boone County Fairgrounds, Burlington. Located 10 miles south of Cincinnati, Ohio near I-75. Exhibits, flea market, refreshments. Advance tickets, $1.50; $2 at door. Contact WA8OGS, 6381 Mullen Rd., Cincinnati OH 45239.

Louisiana – Baton Rouge hamfest is May 3-4 at Catholic High School. Contact BRARC, PO Box 15043, Baton Rouge LA 70815.

Massachusetts – Central Mass. ARA annual auction at Knights of Columbus Hall, Spencer, May 10, 12 noon to 5 PM. 10% charge on sales for club. Contact WA1LEA, 617 753-7480.

Michigan – The Catalpa Amateur Radio Society will celebrate Michigan Week, May 20 through 26 by contacting out-of-state or foreign hams, using their call WM8ICH. Certificates will be awarded to those sending a QSL card and large size SASE to: Operator ——, Station WM8ICH, American Red Cross, 100 E. Mack Avenue, Detroit, Mich. 48201.

Minnesota – The summer PICONET picnic is Sunday, June 1 at Edgewater Park, Albert Lea. Registration begins at 9 AM. Contact WØFIT.

New Jersey – The Irvington Radio Amateur Club flea market-hamfest is May 18, at 1 PM at the Irvington NJ PAL Building, Irvington.

New York – LIMARC flea market and auction is Sunday, June 1 (rain date June 22), 10 AM to 6 PM at New York Institute of Technology, Route 25A and Whitney Lane, Old Westbury. Auction starts at 4. Admission for buyers, $1; $2 for sellers. 25/85 talk in. Contact W2KPO.

New York – Western NY Hamfest and VHF Conference is Saturday, May 31 in Rochester, Marriott Inn. FCC exams with prior arrangement. For info write WNY Hamfest, Box 1388, Rochester NY 14603.

(Continued on page 110)

Happenings of the Month

CLASS E CB DELAYED

Our president, W2TUK, reported in the March issue about the letter from the Office of Telecommunications Policy to the FCC urging swift action to establish a Class E Citizens Radio Service in 222-224 MHz, otherwise as proposed in Docket 19759. Several of the members wrote letters to Congressmen, Commissioners and the OTP. President Dannals and General Manager Dick Baldwin, W1RU, visited officials in Washington to talk about the issue; a team from *Ham Radio Magazine* and *HR Report* made similar visitations.

Something worked: after a special session on March 5 and 6, the Commission issued a Public Notice announcing its intentions of considering Dockets 19759, on Class E CB, 20120 on Class D CB expansion, and 20282 on amateur restructuring in the same time frame. Quoting from the Notice:

> The Commission believes that these three rulemaking proceedings, Dockets 19759, 20120, and 20282, all involve related issues. Principal among these are the amount and location of spectrum space that should be allocated to meet the personal and business radiocommunication needs of the general public. In addition, we believe further discussions with Canada are needed relative to Class E frequencies along our border. Accordingly, we will defer action on Docket 19759 until later in 1975 to permit us to fully develop the requirements and alternative solutions we feel are needed. We are fully aware of the importance of the issues in Docket 19759 and it is our firm intention to conclude this proceeding as promptly as possible.

QST YL Editor Louise Moreau, W3WRE, is on the receiving end for this plaque from the YLRL recognizing her research into the history of women in communications. Eila Russell, WA8EBS, right, makes the presentation at the Penn-Jersey YL. *(Photo thanks to Jane Jones, K3ZDN)*

Walter J. Cooper, W6CDJ, (left) is "Amateur of the Year" in the NorCal Chapter, QCWA. The award was presented by Bernard A. Wambsganss, W6WOY, chapter president; at right is ARRL Pacific Director Doc Gmelin, W6ZRJ. *(Photo by K6BGM)*

CLASS D CB EXPANSION COMMENTS

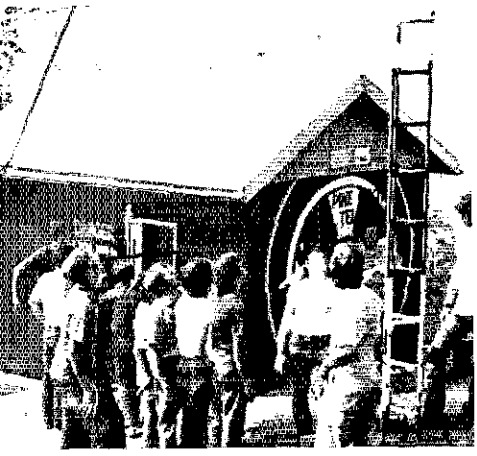
On a related topic, ARRL filed a 27-page comment with FCC on Docket 20120, expansion of Class D CB in the 27-MHz frequency range, as part of our defense effort for the 220-MHz band. The "Summary" below conveys the gist of the League filing:

> A vast reservoir of channels exists between 25.01 and 27.54 MegaHertz sufficient to meet all present and forseeable demands for a radio service for use by the general public. As many as *336* channels can be made available with but minimal hardship upon other services if the highly efficient single sideband suppressed carrier (SSB) mode of emission is employed. If the advantages of frequency modulation (FM) outweigh the less efficient utilization of the spectrum, at least *168* channels can be made available. The propagation characteristics of the frequencies between 25 and 28 MHz are ideally suited for the Citizens Radio Service. Expansion of the Class D service as proposed will make unnecessary further consideration of the Class E service proposed in Docket No. 19759. Adoption of the Commission's proposals with but minor modifications will accelerate interest in and growth of the Amateur Radio Service.

We have also filed "Reply Comments" backing up some arguments of some other groups in the Docket, and refuting the arguments of others especially as to the desirability of a Class E service being created.

SUMMER STUDENT PROGRAMS

Courses in amateur radio theory and International Morse Code will again be among those offered by the United States Army Reserve to boys



Ham radio students at last summer's Career Interest Program sponsored by the Army Reserve get a look at the antennas of a TV station.

and girls age 15 or older at several camps around the country. Students supply their own transportation and pay fees of $48.50 for the two-week sessions to cover room and board. Though the instructors are reservists, the program is not military: as the brochure says, "There are no formations, no uniforms, no haircuts. There is a lot of hard work, fun, and a sense of accomplishment."

Amateur radio is offered at:
Fort Pickett, Virginia and Dugway Proving Ground Utah, June 15-27; Indiantown Gap Military Reservation, Pennsylvania, and Fort Lewis, Washington, June 29-July 11; Fort Chaffee Arkansas and a Georgia location to be announced, July 13-25; and Fort McCoy, Wisconsin, August 10-22.

Students interested in the Summer Career Interest Program should get in touch with the Community Service Command, 118 South Royal Street, Alexandria, Virginia 22314; phone area 703, 750-6648.

Reservists, too, interested in serving as instructors for the program as their annual training duty, should get in touch with Col. R. T. S. Colby or 2nd Lt. Angela M. D'Angelo at the address above.

ARRL REQUESTS EXAMS IN SPANISH

Pursuant to an action of the Board at its January meeting, ARRL has filed a Petition for Rule Amendment with FCC, requesting that examinations for amateur license be administered in the Spanish language as well as in English. The text follows:

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

In the Matter of

Amendment of Section 97.29
of the Rules to Provide for
Amateur Examination in the
Spanish Language

To: The Commission

PETITION FOR RULE AMENDMENT

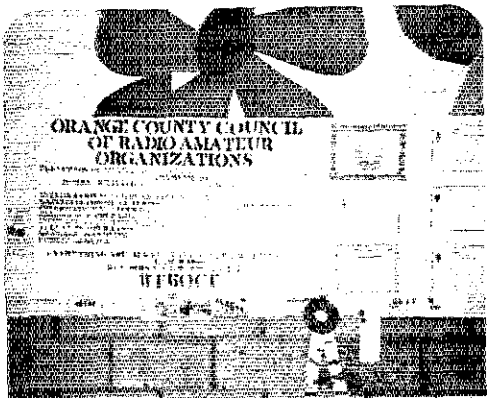
The American Radio Relay League, Incorporated, the national non-profit organization of amateur radio operators and enthusiasts, respectfully requests the Commission to amend Section 97.29 of its Rules to provide for amateur operator license examinations in the Spanish language.

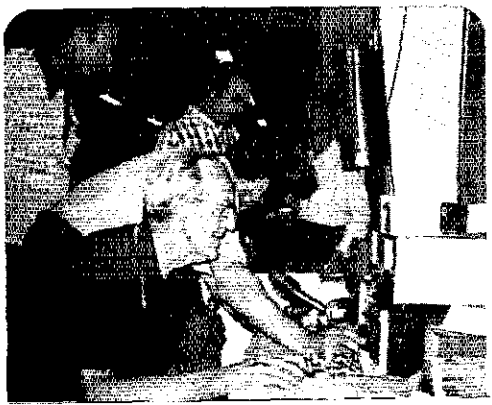
In support whereof, the following is respectfully submitted.

1. The Bureau of the Census reports 9,589,216 persons in the United States, excluding Puerto Rico, whose native language is Spanish. In addition, the native language of practically all of the 2,712,033 residents of Puerto Rico is Spanish. This is a total of 12,301,249 persons. Of the 9,589,216 in the United States, excluding Puerto Rico, 2,027,109 (21.11%) reside in the North East Region of the United States, 842,822 (8.79%) reside in the North Central Region, 2,788,090 (28.76%) reside in the South Region, and 3,931,195 (41.00%) in the West Region. (1970 Census of Population, Tables 136 and 144). A very high percentage of the 12,301,249 persons have only limited proficiency with the English language, particularly with the highly technical language of amateur operator examinations.

2. The barrier imposed by the present practice of giving amateur examinations in English is most substantial, as evidenced by the fact that the ratio of amateurs to the total population in Puerto Rico is less than in the United States as a whole. The

County fair time is almost upon us once again – time for clubs to start planning an exhibition of amateur radio for the public. Last year, the Orange County Council of Radio Amateur Organizations won a gold ribbon for their outlay at the Orange County Fair. In one photo SCM Bill Weise, W6CPB, operates WF6OCF; the other photo shows the background display.





Idaho celebrates Amateur Radio Week June 22 through June 29, 1975, following a proclamation by Governor Cecil D. Andrus, seated. With the governor, from left, are SCM Dale A. Brock, WA7EWV; Lowell Bye, WA7HOS, PAM; and SEC Lemuel Allen, W7JMH.

811 amateurs in Puerto Rico, excluding those with addresses on a military base, represent 0.0299% of the population. In the United States, excluding Puerto Rico, there are 271,868 licensed amateurs, 0.134% of the population of 203,235,298.[1] Some Carribean area countries which use the Spanish language in their radio examinations have a much higher per capita amateur population than Puerto Rico. For instance, Venezuela has 7,000 amateur stations and a population of less than 11,000,000 or 0.0636%. Without a doubt, the low per capita amateur population in Puerto Rico reflects the inhibiting effect of examinations only in the English language.

3. Spanish language examinations could significantly increase the number of Spanish speaking amateurs in the United States and Puerto Rico. This would become a factor in improving relations between our country and the countries of Latin America, where there are an estimated 40,000 Spanish speaking amateurs, thereby fulfilling one of the purposes for which amateur radio has been established and encouraged, i.e. "(e) continuation of the amateur's unique ability to enhance international good will."[2] Such a step would be particularly appropriate in anticipation of the Bicentennial Celebration.

4. Furthermore, the availability of amateur examinations in Spanish would be an important factor in breaking down barriers of language and culture that presently exist between the Spanish speaking citizens and aliens and other groups in the United States. The present practice of having examinations only in English appears diametrically opposite to the national policy of eliminating discrimination of minority groups and individuals.

5. The League has explored the alternative of permitting an applicant to use an interpreter, and has concluded that such an alternative must be rejected for three reasons. First, the expense of a qualified interpreter would be unjustified for an examination leading to a license which cannot be used for pecuniary gain. Moreover, the expected beneficiaries of this request are likely to be both young and from the lower economic level for which any added expense would be a difficult obstacle. Second, an interpreter selected would be required to have a background in electronics to function satisfactorily. However, use of a person with such a background might compromise the integrity of the examination. Third, the League has been advised that the use of an interpreter would be far less satisfactory to an applicant than reading the printed words in the native language.

6. Even though many potential applicants may be able to converse in English on everyday matters, such capability may be utterly inadequate in determining shades of technical meaning posed in a multiple choice examination. Thus, the simple fact that English is required in the schools does not render this request unnecessary.

7. Nothing in the Communications Act of 1934, as amended nor in the Commission's rules and regulations precludes translation of the examination questions into Spanish. In fact, as noted above, the absence of Spanish language examinations is contrary to the established national policy of eliminating discrimination against minorities. The Census establishes that Spanish speaking persons comprise by far the largest non-English speaking group. There is no possibility that the Commission would be deluged with requests to translate the examinations into other languages.

8. A formal rule making proceeding is not required as the requested amendment is procedural, not substantive, and falls within the exception of Section 553 (b) of the Administrative Procedures Act and Section 1.412 (b), (4) and (5) of the Commission's rules. A simple order will suffice.

Wherefore, the premises considered, the Commission is respectfully requested to issue an order amending Section 97.29 of its rules to provide for amateur examinations in Spanish.

Respectfully submitted,

THE AMERICAN RADIO RELAY LEAGUE, INCORPORATED

By Robert M. Booth, Jr.
Its General Counsel

March, 1975

[1] Number of amateurs obtained from *Radio Amateur Call Book*, 1975 Edition.

[2] Section 97.1 of the Commission's Rules.

The Sociedad Internacional de Radio Aficionados, Incorporated (SIRA) has filed a Petition for Rulemaking on the same subject, though with emphasis on different facets of present difficulties for the Spanish-speaking.

The *QST* article, "Making Two-Sided Circuit Boards by the Photoetching Process," in August, 1974, won the Cover Plaque Award for author Michael Rathbun, WAØPZI. Here making the award is Midwest Director Paul Grauer, WØFIR. *(Pix by WØCW)*

On a separate subject, a request for rulemaking, RM 2494, has been filed by Ted Cherrin, KH6GI, asking that portable and mobile stations in American territory outside the 48 contiguous states be required to sign the prefix as well as the numeral indicating their location; e.g., KH6GI/KL7 instead of simply KH6GI/7, which, though little-used, is the present legal form.

QST COVER PLAQUE AWARDS 1974

Each month the directors of the League, by mail, vote for the best article in the issue written by a volunteer author (hq. staffers are not eligible under the rules for the award). Here's a summary of winners for 1974 issues:

January: "The Thirty Dollar Counter," by Ralph V. Anderson, KØNL

February: "Energy Crisis," by Jim Sencenbaugh, K6TPS

March: "The Half-Square Antenna," by Ben Vester, K3BC

April: "A Simple and Efficient Mixer for 2304 MHz," by Leroy May, W5AJG/W5HN & Ben Lowe, K4VOW/WA5UVM

May: "VHF Propagation by Meteor-Trail Ionization," by Walter F. Bain, W4LTU

June: "Putting the G Line to Work," by George A. Hatherell, K6LK

July: "A Character Generator for ATV," by Thomas M. Ellison, Jr., WA4JNA

August: "Make Two-Sided Circuit Boards by the Photoetching Process," by Michael Rathbun, WAØPZI

September: "A Simple 146-MHz Antenna for Oscar Ground Stations," by Martin Davidoff, K2UBC

October: "Solid-State Repeater Control," by Dave L. Moon, WA2SHD

November: "A Two-Band Delta-Loop Array for Oscar," by Allan A. Simpson, VE4AS

December: "The Minooka Special," by Barry A. Boothe, W9UCW

ROBERT C. LUM, KP4DNV

We regret to report the death, on February 5, of Robert C. Lum, KP4DNV, who has been ARRL QSL Bureau Manager for KP4 since September 1974. Bob died while at work, of a heart attack. He was formerly from Charlotte, N.C., where he held the call W4LMO. A son, Robert Jr., was K4LMM.

Pending the appointment of a new QSL manager, the bureau is being handled by Juan S. Sepulveda, KP4QM, SCM of the ARRL West Indies Section, Cereipo 99, Alturas de Santa Maria, Guaynabo, PR 00731.

NEW CALL SIGN BLOCKS MADE AVAILABLE

The Federal Communications Commission has made new blocks of callsigns available for eventual assignment within the amateur radio service. Amateur-style calls in the AA to AL block and in the N block have previously been used by the Department of Defense for MARS stations; however, the MARS calls now take a different form and the Department of Defense does not object to FCC use of the blocks.

FCC also announced its intention of eventually assigning calls only a single letter after the numbral. The new blocks which will be available for use after April 25 (but may not necessarily be assigned to anyone immediately thereafter) will include:

K1A through KØZ	AA1AA through A1ØZZ
N1A through NØZ	AA1AAA through ALØZZZ
N1AA through NØZZ	KA1A through KZØZ
N1AAA through NØZZZ	NA1A through NZØZ
W1A through WØZ	NA1AA through NZØZZ
AA1A through ALØZ	WA1A through WZØZ

Probably the first use of these new blocks will be for special Bicentennial callsigns. Other uses may be for calls identifying special classes of license under restructuring (Docket 20282) and to increase desirable callsigns available for assignment to Extra Class licensees under Docket 20092.

Please Note: there are as yet no provisions for requesting special calls other than those of Section 97.51: previous holding of a specific call, club memorial calls; "two letter" calls for those who have held them or who are 25-year Extras, and specific calls for special events stations.

CENTENNIAL CALLSIGNS

Just at deadline, FCC built upon the order quoted above to announce prefixes which amateurs may use next year in helping to celebrate America's Bicentennial. Use of the prefixes is confined to the period from 0500 GMT January 1, 1976 to 0500 GMT January 1, 1977; it is completely voluntary and an amateur may (for any contact) elect to use either the assigned call or the special prefix with his assigned suffix. No existing suffixes will be changed. To illustrate, next January 2 W1UED could make a contact under that call and follow it with another using AC1UED. The following exchanges would be allowed: WA-AA; WB-AB; W-AC; K-AD; WD-AE; WR-AF; WN-AK; KB6-AG2; KC4 (Navassa)-AL4; KG6 (Guam) AG6; KH6-AH6; KJ6-AJ7; KL7-AL7; KM6-AH7; KP4-AJ4; KP6-AIØ; KS4-AH4; KS6-AH3; KV4-AJ3; KW6-AG7; Novices WB6(Baker, Canton,etc.)-AG3; WG6(Guam)-AG5; WH6-AH1; WJ6-AJ1; WL7-AL1; WM6-AH2; WP4-AJ8; WS6-AH5; WV4-AJ2; WW6-AG1. QST

Fifi

(Continued from page 55)

by radio amateurs, or hams, to deal with hurricane emergencies. "We don't know who they are. We just know first names and some call signs. Frank helped us. Ellie in Fort Lauderdale runs the net. They line up relays all over the place so there is around-the-clock contact."

The network, called Hurricane Watch Net, is located in south Florida and is coordinated by Ellie Horner [K4RHL] a Fort Lauderdale housewife, and Marcey Rice [WB4BHW], from neighboring Hollywood. The idea, said Mrs. Horner in Fort Lauderdale, is to "try to be there when the governments, military or relief agencies need us" in emergencies like the Honduran hurricane disaster.

When Fifi struck Honduras, hams *were* needed . . . *and were there as long as the need existed.* — *WA1FCM*

Correspondence From Members-

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

OFFENSIVE?

● I am an active YL ham as is W1YL, but we have opposite opinions of the value of the "YL News and Views" column (Correspondence, March *QST*).

I believe the column is of great use to YLs. We comprise less than 5% of the total ham population in the U.S.A. Being such a small group, we have many mutual interests, activities and friends. Many of us belong to YLRL and through *YL Harmonics* keep up on the YL news, but *Harmonics* is published only bi-monthly. W3WRE's column is monthly and gives different coverage. Through Louise's column we can keep up to date on the YLs here and throughout the world. How is this possible otherwise? Even an active YL cannot be everywhere on the bands!

I am not in the least offended if an OM reads the YL column. I enjoy reading about his activities – why shouldn't he have the same privilege? It is a most useful and enjoyable column. To "YL News and Views" and Louise – may she write it for many years to come. – *Ione O'Donnel, WA2DMK, Newcomb, NY*

● The only real justification for Lou's column would seem to be the fact that women are a minority in the amateur ranks and might be lost sight of. But there are two weaknesses in that line of reasoning: 1. The obvious fact that women in amateur radio will not let themselves be lost sight of. 2. Why single out this particular minority – how about blacks, teenagers (and below), senior citizens, handicapped, for instance? – *Chuck Clark, WB4OBZ, Moncks Corner, SC*

● I, as one male reader of *QST* cannot fathom the logic of W1YL's comments as to the value and utility of "YL News and Views." It particularly emphasizes the accomplishments of the YLs and sets a fast pace for some of us "Slow Roosters." – *Roy Barker, WA8PCG, Westlake, OH*

● Re' W1YL's letter in Correspondence. The only things I ever read in the YL column are the captions and the contest dates. These dates are already in OP Events, so no real need exists for duplication. I want to be one of the guys, not "different," so I see no real usefulness for the column. – *Rosalie Cain, WA1STO, East Hampton, CT*

● As a YL, I am proud to be not only a radio amateur, but a female hamette, and I like my "YL News and Views." Being a ham doesn't preclude me from being a woman also. – *Ella Russell, WA8EBS, Fairview Park, OH*

WITHOUT PECUNIARY INTEREST?

● Somehow I fail to understand the rationale behind allowing charges made for using a repeater. In the Greater Cincinnati area there are dozens of repeaters in use. I know that it takes a great deal of money to buy the equipment, install it, and to maintain it. Electricity costs enter into this too.

One amateur (?) has 8 repeaters in operation here. To me it does not matter whether the membership dues (?) are $50 per year or $500 per year for extra goodies like touch-tone, etc. The point is that these are direct charges for services rendered. The thin guise of telling me it is a club just won't hold water from any legal standpoint. Belonging to a club is one thing, but when it is set up so that only paid-up members can use a given radio facility is something else.

Hundreds of us who participate in the National Traffic System handle 3rd party messages. We too are repeaters! Albeit we are human and not machines. Is the FCC saying it is OK to charge fees to use a machine and you cannot charge for human repeaters? Suppose all the Official Bulletin Stations, Official Relay Stations, Net Control Stations, and all those along the line from the state nets to the regional and area nets charged for our services? We who use manual means to relay (repeat) should charge for our services the same as the owner of a repeater does. What a ridiculous situation this presents! Knowing human nature as I do and knowing how some groups manuever has given me a dim view of this practice.

It is strange that commercial two-way radio service companies own so many amateur radio repeaters! Could it be that they like to sell those rice boxes at several hundred dollars apiece? They don't give crystals away either! Service work is lucrative, too. – *Joe Rice, W4RHZ, Covington, KY*

RESTRUCTURING – II

● As the officer in charge of educational activities for the Dorchester ARC, this editor has come face to face with the result of the attacks on the International Morse Code. There is a great deal of propaganda in this country designed to oppose genuine learning in every field. This generally takes two forms. On the one hand people are encouraged to acquire superficial knowledge in the form of memorized phrases and ideas while at the same time various fields like radio are promoted as a source of self-aggrandizement and a shallow plaything. On the other hand, the making of mistakes or any show of lack of knowledge are ridiculed mercilessly. Thus the constant correction of errors, which should be the method for developing knowledge, becomes a source of fear, while we are encouraged to "take the easy way out" and give up serious amateur scientific work for purely self-serving activities. . . .

Amateurs who don't happen to have any background in certain types of skills often find learning a difficult and painful experience. Our club educational program is being designed to encourage amateurs to develop skills in many different

aspects of the Amateur Radio Service. We regard the recent FCC Docket No. 20282 as being in opposition to our program, and we are extremely hostile to it. We intend to teach the International Morse Code in its proper perspective as an essential mode of communication without regard to FCC rules or regulations. Large group code instruction on the air as well as in license classes is in the planning stages. In addition, practical experiments are being carried out in individual instruction in order to overcome the negative effects of the anti-code propaganda.

Many honest amateurs have been blinded by this propaganda and have found themselves in the camp of opposition to learning the International Morse Code. They have forgotten three important facts:

1) The International Morse Code is the simplest, most efficient mode of communication we have. It will sometimes get through under conditions that make other modes impossible.

2) The international "Q" codes make quick dissemination of essential information possible across language barriers.

3) The code is learned by training oneself to connect a definite sound with a definite letter (or word) and is thus inherently no more nor less difficult to learn than any other language. The extra difficulty people experience in learning it is the direct result of the anti-learning propaganda in our society.

It will take a lot of hard work to overcome these problems. . . . – *Sterling P. Newberry, WA1TCS, Dorchester, MA*

● I would like to express a vote in favor of the general sense of the new incentive licensing proposal. It seems to make it relatively easy to get started, but still provides rewards for climbing the ladder. While I'll probably be a cw man "forevermore," I'm convinced that the sideband people have won the game hands down. It's time to at least phase out the total code dependence if not drop it in one fell swoop. Keep up *your* good work – and keep after the CB racket. – *Homer Waite, K4KKN.* In my opinion it will be one of the best things that has happened to our hobby since I have been interested in it, and that dates back to high school days in 1916. – *Clyde L. Wilson, WB4ITP.* The concern over a declining amateur population, in my mind, is not real. The figures may be valid, but many of those dropping out of ham radio were never active; yet our hf frequencies are still very crowded. Bigness does not necessarily create goodness. – *Clayton Bitzer, K8GMR.* I am totally in favor of the proposed FCC rules changes on amateur licensing. – *R. T. Liddy, K8CVJ.* The self-regulated amateur is going to lose his carefully guarded and respected spectrum to a group of persons whose regard for rules and regulations are admittedly non-existent. The Commission's hopes that the amateur's long record of cooperation and self regulation will control the proposed new operations and lessen the workload of the Commission is a fantasy. There is no way the amateurs now operating within the present rules can or will have any hope of control. – *C. E. Harland, W7NO.*

Somehow, we Americans associate bigness with goodness. We don't need greater numbers for their own sake. New blood would be nice, but not at the expense of quality which is the elusive secret ingredient which magically makes amateur radio something different (two . . . or more . . . improperly installed antennas mounted on a car do not an amateur make. – *J. J. O'Neill, Jr., WB0EMI.* It is hoped ARRL will take a firm declared position and not be swayed from the human factors which are more important than any other aspects, in my opinion. – *A. W. Slapkowski, WB2MTU.* A few years back I enjoyed hunting and it became so restricted that I could no longer take part. Then I tried fishing, only to find that there were no fish fit to eat. And so it has been with other hobbies. Two months ago I received my General license, and now I face a major loss of privileges before I even get started . . . It's not fair! – *Harold L. Walton, WB0KAP.* Generally, I find no serious faults with the proposed plan as described in *QST*. However, in my book, the Communicator Class license *as defined*, is a definite no-no! . . . A lot of people will disagree with me, but as both a licensed ham and as a licensed private pilot, I compare a ham without a knowledge of code on the same level as a pilot who received his license without demonstrating his ability to land. Hopefully the ham, with his lack of code knowledge, will be the less dangerous of the two. – *Ray Vasek, WA2QNX.* The proposed Communicators Class of license may well serve ham radio by opening up the doors to many that may not otherwise even consider getting a ham ticket and thus increase our numbers. – *W. L. Lamb, W0PHD.*

DUES

● In 1930 *QST* was $2.50 and I had to work about five hours for a year's subscription. In 1975 most of us work one hour or less for one year of *QST*. And some guys complain. They should go back to 1930. – *Bob Valgren, W9IPH.* Dues get any higher I won't be able to afford them! Invest some of that wealth and make some money with it. – *Dale T. Rogers, WA9WBV.* Here is my renewal, and I'm glad to send it. Now, more than ever, we need to pull together. Thanks for good info and a good job of representing our fraternity. – *Mike Watson, K5MWH.* I think this is too much to pay for any magazine. – *Charles C. Applegate, W6BEP.* No complaints from me about the dues increase. I can't understand how you can get along on such a small membership/subscription fee. Your closest competitor charges 30% more. – *David Bellack, WN9NSR.*

SERVE THE PUBLIC!

● The primary purpose for ham radio is to *serve the public*! Being the emergency coordinator for my county, when I approach local amateurs and explain the workings of the AREC, the answer I invariably get is, "I don't have enough time." Well, *why not?* If everybody had that attitude the general public would not think much of ham radio.

Recently we were told by RACES authorities that they had no need for ham communications as they were getting all the help they needed from the CBers. The authorities have to *see* what we can do – we can't give them a lot of talk and expect them to call when an emergency situation comes up.

When the hams appear at the ITU conferences we will need a big list of services provided if we want to keep our frequencies. Public service is why we are here. *You* are needed. Look up the emergency group in your area and give the boys a hand. – *Steve Uhrig, WA3SWS, Ellicott City, MD*

The Post Office Department promises faster mail service with Zip codes. Use yours when you write ARRL. Use ours, too. It's 06111.

IARU News

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

WORLD TELECOMMUNICATION DAY

Each year on May 17, the anniversary of its founding, the International Telecommunication Union observes World Telecommunication Day to emphasize the importance of telecommunications in today's world. This year's celebration, the seventh to be held, has the theme "Meteorology and Telecommunications" to highlight the contributions made by communications satellites in the areas of understanding and predicting weather patterns.

Special activities involving radio amateurs often take place during the week containing World Telecommunication Day. This year, the weekends of May 10 and May 17 are devoted to a contest sponsored by the Minister of Communications of Brazil. Details appeared in last month's "Operating Events" column. A map showing the various ITU zones appeared on p. 107, *QST* for May 1974.

THE SIGNIFICANCE OF THE ITU TO THE AMATEUR RADIO SERVICE

Amateur radio is unique among avocations in that its very existence is dependent upon the nations of the world agreeing among themselves to permit it. Radio waves respect no political or geographical boundaries; since the development of artificial satellites, even the use of so-called "line of sight" microwave frequencies have had to be coordinated internationally. Dozens of different services, the amateur service among them, compete for allocations of frequencies from the finite spectrum. If the United States as a supporter of the amateur service decided unilaterally to allocate a new band to its amateurs while other countries allocated it to some other service such as international broadcasting, serious harmful interference to both services would result. International agreements are necessary to minimize such interference.

There are other reasons, less significant to amateurs but worth noting nonetheless, for international cooperation in the field of telecommunications. Equipment and operating methods must be standardized so that stations in different countries can communicate with and understand one another. Long-range planning for telecommunication networks must be conducted to ensure the most efficient use of available resources. It is apparent that some international framework for the coordination of telecommunication matters is necessary. This need is fulfilled by the International Telecommunication Union (ITU).

The history of international telecommunication regulation begins in 1865 with the founding by twenty European countries of the International Telegraph Union. The present-day ITU traces its origins to this body. In a recent editorial in *ITU Telecommunication Journal*, the Secretary-General of the ITU, M. Mili, observed:

> The wisdom of these twenty countries lay in the fact that they perfectly understood that humanity could not fully benefit from all the miraculous possibilities of the electrical telegraph . . . unless it could move beyond the narrow, rigid concept of national sovereignty as something absolute, sacrosanct and inviolate.

The preamble of the International Telecommunication Convention, the basic instrument of the ITU, stresses the need for cooperation among all members of the Union while ". . . fully recognizing the sovereign right of each country to regulate its telecommunication. . . ." This fine and delicate balance between international cooperation and national sovereignty is vital to the continued functioning of the ITU. If the international body tries to impose its will to the extreme detriment of one or more of its members it will lose its moral authority over those members – and moral authority is the only kind the ITU possesses. On the other hand, if each administration is allowed to go its own way, inefficient

The officers of the *Union Schweizerischer Kurzwellen-Amateure (USKA)* traveled to Zurich from several distant points within Switzerland to meet with IARU headquarters representatives last September. (l-r) international relations officer HB9DX, president HB9ALF, vice president HB9TL, and W1RU.

utilization of the spectrum will result. Each ITU member-administration must adopt the philosophy that the desirability of orderly spectrum usage speaks in favor of the necessity for compromise on many matters. If the decision of a Conference is so adverse to the national interests of a country that it cannot possibly agree to abide by the will of the majority, the delegates from that country may enter reservations, either final or provisional, so that there will be no obstacle to ratification of the overall results of the Conference.

The structure of the ITU is designed as much as possible to segregate the political and technical functions, so that problems in the one sphere will not intrude too greatly upon the other. The organization consists of three types of Conferences, an Administrative Council, and four permanent organs headquartered in Geneva, Switzerland. Briefly, the functions of these bodies are as follows:

Conferences

1. The Plenipotentiary Conference, which must be convened periodically and meets on average every six years. This Conference determines the general policies for fulfilling the purposes of the ITU and sets the guidelines for its activities.
2. The Administrative Conferences, which are regulation-enacting conferences convened only when required.
3. The Plenary Assemblies of the International Consultative Committees, which are technical conferences and normally meet every four years.

The Administrative Council

The Administrative Council is composed of twenty-nine members of the ITU, selected by the Plenipotentiary Conference. Its responsibility is to ensure the continuity of the ITU's activities between such Conferences.

Permanent Organs

1. The General Secretariat handles the administrative and financial aspects of the ITU's activities.
2. The International Frequency Registration Board records frequency assignments made by the various countries and furnishes advice on efficient spectrum utilization.
3. The two International Consultative Committees for radio (CCIR) and telegraphy/telephony (CCITT) comprise the technical expertise of the ITU. They carry out studies and prepare recommendations on technical and operating questions.

Future columns will discuss how each of these bodies relates to the amateur radio service.

[Much of the material contained herein is adapted from a series of editorials which appeared in *ITU Telecommunication Journal* during 1973 and 1974.]

NEW 80-METER FREQUENCIES FOR JAPAN

Effective January 1, 1975, radio amateurs in Japan have been authorized to use the frequencies 3.793 to 3.802 MHz with the same modes of operation permitted in the 3.500 to 3.575 MHz range. The new allocation permits Japanese amateurs to contact amateurs in other countries on 80-meter phone without the need for the stations at each end of the circuit to operate on different frequencies. Japanese amateurs also operate phone in the 3.525 to 3.575 MHz range.

Here are some of the leading officials of the *Central Radio Club of Czechoslovakia*. (l-r) vhf committee chairman OK1PG, assistant secretary OK1AWK, secretary OK1DDK, and short wave committee chairman OK1ADM.

OK1WI RESIGNS FROM ITU STAFF

Dr. Miroslav Joachim, OK1WI, has resigned from his post at the headquarters of the International Telecommunication Union and has returned to his home in Prague. Mirek is the immediate past-president of the International Amateur Radio Club, 4U1ITU, and was primarily responsible for the Contributed to Propagation Research (CPR) program in which amateurs were encouraged to submit information on their DX contacts for use in propagation analysis. A tireless and dedicated worker on behalf of amateur radio, he will be missed by his many friends who came to know him in Geneva.

KIRBY ASSUMES 4U1ITU PRESIDENCY

Richard C. Kirby, WØLCT, Director of the International Radio Consultative Committee (CCIR) at the ITU headquarters in Geneva, has been selected as the president of the International Amateur Radio Club, 4U1ITU. A long-time active amateur, Dick came to Geneva last September to assume his duties within the ITU. With his guidance, station 4U1ITU will continue to be a positive and effective demonstrator of amateur radio located at the worldwide nerve center for telecommunications.

NOTES

The Secretary of the *Vereniging van Radioamateurs in Suriname*, P.O. Box 566, Paramaribo, Surinam, has asked that the following notice be published.

The Surinam Award is available to any amateur who worked three PZ stations during the period of the Caribbean Scout Jamboree, August 20-30, 1974. Log information plus $1.00 (or 10 IRC's) is required. Some awards already mailed are believed to have been damaged in the mail; anyone receiving a damaged award may request another from the *VRAS*, mentioning the serial number on the award.

Strays

The Restructuring Survey

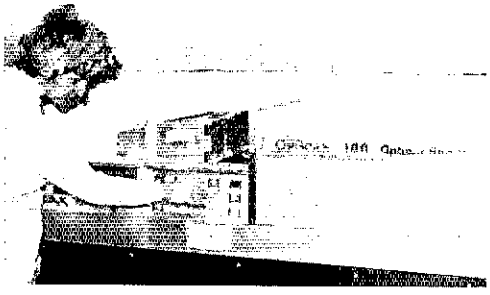
It all began with minute 23 of the 1975 Annual Meeting of the ARRL Board of Directors, as reported on page 72 of March *QST*. The Board unanimously voted to adopt the recommendations of an Ad Hoc Committee to conduct a survey of membership attitudes and opinions on the FCC restructuring proposals, Docket 20282. What it ultimately involved was the printing and distributing of three *tons* of paper to about 100,000 full and associate members in the United States. As we go to press, about 40,000 of the survey forms already have found their way back to Headquarters, and they're still coming in! The massive job of opening envelopes, removing forms, and running them through the optical scanner -- all superimposed on an already-busy headquarters operation – will continue right up to the day the computer takes over to convert the two million separate items of information to understandable numeric form.

The Directors will have the results of the survey in hand for their specially-timed meeting this month at which the League policies on restructuring will be considered. In the meantime, each of them has literally hundreds of personal comments sent in by members in each Division to mull over.

The survey form was not an easy or a trivial one, and a conscious effort was required to complete it. Skeptics said that it would be too difficult to fill out and that we would get a poor return as a result. We thank you, the members, for proving them wrong and for demonstrating your strong interest in the position your League takes on this historic proposal.

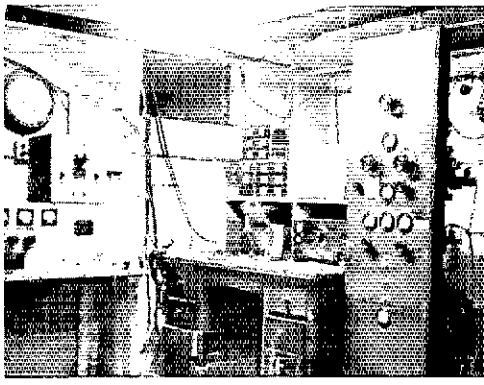
The incoming mail on March 24 included about 275 pounds Bf survey forms representing the responses of 11,000 members, on top of the usual Monday mail. Our Accounting Department separated the survey envelopes from the rest of the mail.

The next step was to open the envelopes, remove the contents, and separate the comment sheets for Directors from the special survey forms.



The completed survey forms were brought to the University of Hartford data processing center, where the responses were converted to magnetic tape for eventual processing by the computer there. Eleanor McMullen, W1RNT, wife of *QST* Assistant Technical Editor W1SL, took charge of this part of the operation.

No, this isn't a reprint from a 30's *QST*, but rather a recent shot of a station maintained and on the air by W2NX; although it probably won't reproduce, the calendar says 1973!



CONDUCTED BY BILL TYNAN,* W3KMV

DESPITE TROUBLES reported in last month's column, the WA6LET EME tests of late February were a great success. As a result of the efforts of Vic Frank, WB6KAP, Bruce Clark, K6JYO, and the rest of the gang at the SRI Radio Club, a number of new stations gained entrance to the "EME Club." On the heels of every EME operation involving big antennas, built for non-amateur applications, comes a chorus of complaints. "This is not ham radio!" "QSOs with such stations shouldn't count for WAS!" Indeed, there are those who think that no EME work should be credited for WAS.

I am sure that these people, like me, haven't yet taken the steps necessary to put their stations in the EME business, but this is not to infer that everyone who has not yet joined the EME ranks shares these feelings. This conductor, for one, is much intrigued by moonbounce, and feels strongly that this mode is our frontier for the '70s in vhf.

To those who say that working WA6LET isn't ham radio, I say let them try it. I know quite a few fellows who, after considerable preparation, were not able to make the grade. The fact that the SRI club operation took place provided the incentive for station improvement, not just in the U.S. and Canada, but all over the world. How many amateurs embarked on improvement projects just to *listen* for a signal coming back from the moon we will probably never know, but I am certain that the number was in the high hundreds. Many of these were bitten by the EME bug and may turn up on the two-way list next time.

From all evidence, once a vhfer has worked a WA6LET, a W2NFA, or a KP4BPZ, he does not stop there. Most EME fans boasting many different stations to their credit started by hearing one of the big special-event stations. Once they proved to themselves that they could do it, their appetites were whetted for more, and improvements to their stations followed. Improvements enabled them to work some of the very well-equipped home stations. The lure of more states, countries, and a greater number of EME contacts in general led to still further station improvement. Thus, a sort of chain reaction resulted. More stations upgrading their capabilities meant that a greater number of them can work one another. The seed was sowed by special-event stations, abetted by a few exceptional home stations, like W6PO and VE2DFO on 144 MHz, and K2UYH and VE7BBG on 432 MHz.

Though amateur signals were first bounced off the moon successfully over 20 years ago, EME is really just now getting started as a major part of the vhf scene. A whole new era of globe-girdling vhf and uhf communication lies ahead, if we can keep and build the interest. Thus tests like those conducted by WA6LET can contribute much to the EME picture for the future.

*Send reports and correspondence to Bill Tynan, W3KMV, Box 97, Burtonsville, MD 20730.

Final Report of the February 22-23 Tests

Last month's column carried some details of the SRI tests, phoned in to Headquarters by Bruce Clark, K6JYO. Vic Frank, WB6KAP, now provides the complete story. The following stations were worked on 144 MHz by WA6LET. The asterisk indicates two-way ssb; others were cw: K1HTV, K1WHS,* W1YTW, WA2BIT,* WB2CIK, K2RTH,* K3PGP, WA3QVN, W3TMZ, K4GL, W5ORH, WA5UNL, K5VWW, WA6UAM,* K6DYD, K6QEH, W6RDF, WA7BBM, W7FM, K7HTZ/7, WA7KYZ,* K8LLL,* K9UYK, K9UIF, KØWLU, VE2DFO,* VE3ONT, DK1KO, DL3YBA, F6CER, F8SQ, F9FT, F9QW, PAØJMV, SM7BAE, and ZE1DX. W2AZL, K3NYD, W7RUC, and DLØWW were heard but not worked.

Because of equipment troubles, WA6LET was on 432 MHz only about two hours, but W1SL, W1JAA, K9AQP/1, K2UYH, W3CCX, W4ZXI, K8UQA, W9WCD, PAØSSB, and ZE5JJ were worked. Heard were W2SZ/2, KØTLM, ON5FF, and SM5LE. K2UYH was worked on ssb. To those who didn't make it, better luck next time – for there will be a next time. Vic says they hope to try again sometime in the fall, when they will have a spare 432-MHz rig!

Conference News

The first Eastern Vhf/Uhf Conference was held at the New England Convention Center on the campus of The University of New Hampshire in Durham, March 22 and 23. The affair was much enjoyed, thanks to the fine work of Joe Reisert, W1JAA, program chairman; Chuck Benavides, WA1KIR, in charge of registration; Jim Fisk, W1DTY, publicity; and Tom McMullen, W1SL,

First EME QSO with Asia

What is almost certainly the first EME QSO with Asia was made March 22, when VE7BBG worked JA1VDV on 432 MHz, at 0930 UT. JA1VDV has a 20-foot stress-type dish, with dual dipole feed. The transmitter has a final stage patterned after the K2RIW design. A low-noise NEC transistor is used in the receiving system. K2UYH, who supplied this information just in time to beat our deadline, worked JA1VDV March 27. Signals were good enough so that both ends departed from the usual "T-M-O" format, once initial contact was made.

who scrounged the prizes. Technical sessions covered the whole range of subjects: Oscar, receiver and power amplifier design, antennas, and various forms of extended-range propagation.

The West Coast Conference, first of all such affairs to be set up as a yearly event, will have taken place probably before some of you get to read these pages. If you see this before May 2, and you have in mind to go to San Diego, we suggest that you check with WB6NMT right away. See April *QST*, page 69.

The 9th Annual Central States VHF Society Conference will be held Aug. 15 through 17, at Western Hills Lodge, Sequoia State Park, near Wagoner, Oklahoma, 48 miles east of Tulsa. The 1967 and 1970 affairs were held at this beautiful family-type location. Arrangements should be made early. For more information, watch for the CSVHFS Net, 3980 kHz, 2130 CDT Sundays, with K5HXG as NCS and W8KPY as eastern liaison, or write the secretary, W4FJ, enclosing s.a.s.e.

Operating News

An early *QST* will carry the first part of an article detailing use of WWV propagation information. Though its title indicates a slant toward the ht DXer, vhf enthusiasts should not pass it up. Early work on this project was discussed in several vhf columns, beginning as long ago as November, 1974, *QST*. Having become interested as a result of a W1HDQ talk at his radio club, March 7, WA1HHN, Springfield, MA, started monitoring WWV in the manner outlined. The venture was not long in paying off. Preparing to get WWV bulletins at 0014 UT March 11, Walt found the 10-MHz signal weak and hard to copy. Next, the 7-MHz cw band was checked, and the watery effect of hf aurora was immediately apparent. Going to 50 MHz, Walt worked WA3FVP in Maryland at 0052, followed by VE3FHU and VE1RC. K9HMB and WB8IJY were heard, along with many nearer stations.

It is worth noting here that the WWV propagation information went through a classic series of ups and downs (depending on one's point of view, hf or vhf!) at about 5-day intervals through early March. High K-index peaks at 1200 March 5 and 10, the latter reaching 6, the high in 6 months of data recording by W1HDQ who practically shouted "aurora!" from the housetops. See Part II of the article for the complete March A-index curve and for a discussion of the worth of both K-index and A-index information. The K-index, being essentially a "now" item, may be the aurora warning we've always needed — and the possibility of its usefulness during the E_s season should not be ruled out, especially for vhf stations outside the normal auroral-propagation areas.

WAØMRH, Omaha, caught the same aurora, beginning around 2300 UT, March 10. Signals were heard from Minnesota, Wisconsin, and Michigan, the best period being around 0100. Last signals were heard around 0208.

Skeds kept on 50-MHz cw are mentioned by several contributors. WA3NDQ, Bloomsburg, PA, keeps after-TVI-hours appointments with WA2HUP, Rock Hill, NY, 2330, local, Fridays, on 50.113. Breakers are welcome. Some of the 6-meter gang in the Washington area made good use of the cold winter nights this way. WA3UHY, WA3UHZ, K3QKP and others could be heard nightly on 50.115. As the months went by the speed went up and fists improved. Higher-grade licenses can't be far away for these fellows.

WA4MMP, Chesapeake, VA, and W1HDQ, Canton, CT, tried some weekend skeds on 50 and 144 MHz in the early morning hours. It is well-known that such a 385-mile path is negotiable with maximum amateur power and good antennas, but these skeds were kept with about 100 watts. Signals were heard each way on every try on 50 MHz, but m.s. methods would have been needed for complete information exchange. Nothing was heard on 144. More tries will be made in the tropo months, and probably with higher power. Bill, formerly WB2LAI/4, found 6 open to Louisiana, Feb. 8, and to 5 and 0 Feb. 11. Texas stations checked into the Tidewater net that night.

WA4GPM, in the same area, has been doing very well on 6 with only 2 watts. Buzz finds this a good way to avoid the "Indians." His secret weapon, pictured herewith, is a 7-element Yagi some 70 feet above ground elevation, on his apartment roof. He believes that QRP is much better than QRT, a lesson for other apartment dwellers. Once he moves into a house, probably early next fall, both the antenna size and power will be increased.

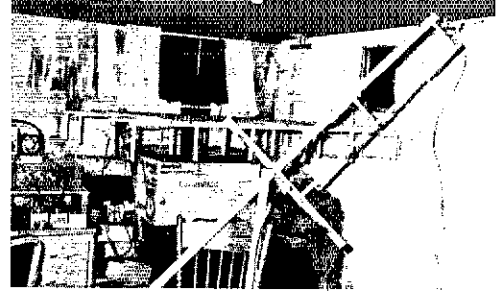
From K4MSG, Petersburg, VA, we learn that the Central Virginia Six-Meter Net, in operation since 1959, meets daily at 1900 local time, on 50.25 MHz. Control is rotated among various stations.

W4LNG, Atlanta, GA, copied WA6LET for three hours on 144 MHz Feb. 23, but did not make contact. Ruddy has a 96-element collinear. He says that there is nightly activity in the Atlanta area on 145.35 MHz, a-m.

K5ZMS, of SM1RK fame, reports the following February DX activity, by days. 2/2: WB4PXW, Naples, FL, reported hearing the T12NA beacon; 4 and 6 heard in San Antonio. 2/4: 4s again. 2/6: 4s, followed by WA7KYM, Laramie, WY, 6s, and Colorado. 2/7: 4s, weak. 2/8: 8, 9, 0, all weak, and K7BHP and K7OUM, in Utah. Second harmonic of WWV-25 heard — a good beacon on ideal E_s paths. (Those of us in the Washington, DC area miss the nice band-edge marker we had before WWV moved west!) 2/9: Continuation of previous evening. 2/10: 4s and K5MOU, (Mississippi) according to K5HVG, K5ZMS not being on. 2/11: Weak unidentified signal on 50.073, believed to be IG9KJ. 2/12: K4VAZ, Reidville, NC, worked, S9, but no other signals heard. 2/17: Opening to Georgia, North Carolina, and 8, 9, and 0. WA5LGN, Jonesboro, AR, also worked. 2/19: 6s, and Arizona and Utah 7s. 2/20: Florida 4s again. 2/22: Band open to somewhere, evidenced by backscatter from WA5UUD, near New Orleans. Last E_s heard in February.

K7ZCB, Boring, OR, tells us that except for a Feb. 13 opening to Southern California (WA6PKS, W6ABN, and K6QMA worked) February was a quiet month, an opinion shared by many reporters outside the deep South or Southwest. On the other hand, K5ZMS believes February was quite good, for the time of year - a continuation of favorable E_s conditions of late 1974. See WA5IYX report later for corroboration of this San Antonio viewpoint. Though the low latitudes are certainly better than the higher ones much of the time, it should be emphasized that activity is where you make it. Careful monitoring is good, but it is not enough. Frequent calls are needed, too.

Transequatorial propagation was still working in the Far East, from Japanese news received by K5ZMS. JA3LZS reports reception of the VK8VF beacon, 52.2 MHz, Darwin, Australia. During 1974, DU, HM/HL, JD1 (Marcus Island), Ioh Island, Bonin Islands, KS6, VS6, XW8, and VK2,



Working through Oscar 7 makes for a cluttered basement, says W9MLF. Not recommended for 432-MHz communication otherwise, the below-ground position of this helical array doesn't impair its effectiveness for Mode B service.

3,4,5,6, and 8 were logged in the Japanese home islands. No – this isn't the DX Column!

If you're a SMIRK member you already know that the First Annual SMIRK Contest will be held Sunday, June 1. The date was selected to provide a "warm-up" for the ARRL June VHF Party, the 14th and 15th. More information from Ray Clark, K5ZMS, 7158 Stone Fence Drive, San Antonio, Texas 78227. Send stamped self-addressed envelope, please.

WA5IYX, vhf observer extraordinary, summarizes February as "better than many a December I've seen" from an E_s point of view. Pat found the band open from San Antonio on 11 days, for a total of 18 separate times. The virtue of round-the-clock indicators is again emphasized in Pat's summary; he found 6 TV openings on 3 days, when no 50-MHz evidence was observed. Still, 25 states were heard on 6 in February. March "was living up to its reputation as the worst month of the year for E_s," Pat says, with only the 5th and 10th showing skip on 50 MHz or the lower TV channels, through March 17.

Two-meter contacts between the Bay area and Los Angeles and San Diego turn up at the most unexpected times, according to WA6UAM. K6MYC monitors 145.005, squelched (yes, some of the new ssb transceivers have squelch) and was surprised to have a San Diego station pop in at 2 P.M. one day recently. The worth of an established calling frequency and squelched monitoring becomes apparent for ssb work as well as with the carrier-type modes.

WA6UAM calls attention to the possibility of forming an ARRL vhf-uhf advisory committee, a proposition now in the hands of the Membership Affairs Committee of the ARRL Board. Interested parties are invited to express opinions to their ARRL Directors (see page 8) in advance of the May meeting of the ARRL Board, preferably with a copy to Director Gmelin, W6ZRJ, chairman of the Membership Affairs Committee.

Bomb of the month: K7BBO, Tacoma, WA, declares that, after 16 years and a considerable record of accomplishment, he is giving up ham radio. No dissatisfaction here – Dave says it was all great – but he's going in for astronomy now. Dave was a two-band moonbouncer (145 and 220 MHz) a holder of 50-MHz WAS (No. 99), a user of m.s. techniques on three bands, and an avid satellite communicator, with 26 states, 6 countries, and 572 QSOs, on Oscar 7, Mode B, alone. Think we've heard the last of him?

K7CVT, Tucson, may have the record for small-sized-antenna reception of WA6LET. He did it with a 7-element Yagi at ground level! Being able to aim at the right spot does help, even with a small antenna.

K7ICW, Las Vegas, operating mostly over weekends, maintains 2-meter ssb and cw contacts with California and Arizona stations despite low activity. Al is still working on his EME station for 144.

WA7BJU, Molalla, OR, is a good example of a station improved to make more EME QSOs. Dan, a Technician, operates on 145.004, with an array of 8 KLM Yagis, aimed at the universal window. He has 9 stations worked via the moon.

K1WHS, West Lebanon, ME, is another who has worked hard at developing maximum 144-MHz EME capability. Dave had his 160-element collinear on the ground during the worst winter weather, to "live to fight another day," but he has worked SM7BAE, WA7BJU, VK5MC, K6QEH, WA6LET, WA2BIT, and W2AZL, and heard many others.

WA9HCZ, La Crosse, WI, has converted a Heath HW-32 to 2-meter ssb and is using it in mobile service with a turnstile antenna. Jerry removed the 20-meter amplifier components and built in a 2-meter transverter. A thought in connection with such projects is to include crystal provision so that segments at 144, 145, and 145.8 can be covered, the last for Oscar service, of course. Jerry suggests 145.025 MHz as a national mobile ssb calling frequency. With some of the new transceivers tuning most conveniently to 10-kHz intervals, perhaps a better choice would be something like 145.05, also a spot covered by many crystal calibrators. Any opinions?

K9KQP, Libertyville, IL, sustained antenna damage. High winds sheared some bolts and the antenna windmilled, but he's back in business "in time for the spring aurora." Dick heard WA6LET on the Saturday morning 144-MHz tests, losing the signal at 0314 UT.

420 MHz and Up K9AQP/1, Groton, MA, considers 1974 to be the poorest so far for tropo. I guess it's a good thing we have EME and Oscar. Frank continues his regular 432 skeds with K2LGJ in Buffalo, and has started with VE2LL in Montreal. How about more information on these schedules? Activity like this builds more activity, but the gang must have details as to time and frequency, for most beneficial effect for others than the direct participants. Frank has been busy getting ready for bigger and better things in 1975, including a 16-foot dish for EME.

One place where tropo propagation conditions have been good is along and across the Gulf of Mexico. K5LLL writes that the troposphere cooperated again in mid-February, but the opening was not as long, nor as good in late December and January. Ron heard Florida 2-meter fm stations working XE2AS, but nothing doing on the low end of 2, or on 432.

KØTLM is putting a 2-meter feed in the 24-foot dish used for 432 EME. That size, Tom admits, is marginal on 2 but "nothing ventured, nothing gained." Later, Tom plans to put in a 1296-MHz feed. Thus a 24-foot dish becomes a 3-band antenna. It could be 4, as KØTLM and WØYZS have already indicated 220 EME interest. We need activity on 220, including EME.

One doesn't find too many commercial organizations offering equipment for 432. An exception is Amateur Radio Component Service, Box 546, East Greenbush, NY 12061. ARCOS, the brainchild of Fred Merry, W2GN, offers kit-form or

(Continued on page 167)

YL news and views

CONDUCTED BY LOUISE RAMSEY MOREAU,* W3WRE

Assistance to Handicapped

ONE of the most appealing sides of amateur radio is the opportunity of being able to meet people all over the world without the inconvenience of travel. Through amateur radio the handicapped have found a medium in which there are no physical limitations to their meeting people everywhere.

YLRL, the Canadian YLs (through CLARA), the Ontario Trilliums, and the world-wide YLISSB have done much in this field through their year-round assistance of the sightless YLs. Through the procurement of specialized equipment, the Handicapped Net has encouraged and helped the handicapped who are unable to operate even the seemingly simple controls. Through this net they are able to meet others who, like themselves, have overcome special problems. The Handi-Ham System of Minnesota has adopted the slogan "Open Your Window on the World" to encourage handicapped persons to become licensed amateurs.

Through the efforts of Sister Laurin, WAØRRJ, Sister M. Berard, WAØWVR, and Sister Alverna, WAØSGJ, the Handi-Ham System has increased each year since its beginning in 1967, and in the year 1974-75 almost 100 students have enrolled in their "Courage Center" to become amateur radio operators.

Thanks to Handicapped Net members, Mary Lou Stocksill, WB6SSZ, was given the very special assistance that was necessary for her to be able to pass the test. Mary Lou might well be called amateur radio's "Helen Keller," for she is both deaf and blind. The physically handicapped may be found on all bands, in nets, participating in contests, giving much time during emergency operation. Meg, W3TUR, is very active on the air, and as an officer of WAYLARC. Peggy, K1GSF, is a former editor of *YL Harmonics* and a busy member of WRONE.

Through the work of Marilyn, WB9MFC, amateur radio is being taken into hospitals for handicapped children to introduce it to them and to help them get started on their way to a license.

The common denominator of amateur radio puts us all on the same footing. The VE gals who have been such a help in bringing amateur radio into veterans' hospitals in their country, the many women who assist through making tapes for the blind in this country and Canada, have contributed much to the amateur picture through helping people enjoy the privileges of amateur radio.

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

There are only two YL members of Twin City DX Association, Minnesota. They are Patricia Sanner, WAØKVL, and Sister Laurin, WAØRRJ. Both are also members of the YLISSB and are very active in the Handi-Ham System.

Those Contest Logs

Unfortunately, the YLRL custodian for the YL-OM Contest logs was omitted in the announcement of the 1975 contest. All logs for the contests that are sponsored by YLRL should be sent to current YLRL vice-president who is always listed in November *QST*, YL News and Views report of the club's election results. For the 1975 contests the custodian is Myrtle Cunningham, WA6ISY, 1105 E. Acacia Avenue, El Segundo, Calif. 90245.

Novice Training Net

One excellent method of increasing the code speed that so often hits a barrier with Novices is to join a training net. The work in this type of activity improves code speed through a different form of procedure than does casual contact.

W2RUF, Clara Reger, sponsors a Novice Training Net Monday through Friday on 3.728 MHz. at 2200 GMT. Novices from the 1st, 2nd, 3rd, 4th, and 8th Call Areas are invited to participate.

One hour of training is devoted to assist Novices in familiarizing themselves with the proper use of abbreviations and Q symbols.

Code speeds followed are Monday, Wednesday, Friday, 5 to 8 wpm and Tuesday and Thursday, 10 to 20 wpm.

New YLRL Novice Correspondent Appointments

YLRL President, Chris Haycock, WB2YBA, has announced the appointment of Joyce Lauterback, WN9NUL, as the Novice Correspondent of *YL*

YLs who attended a Handi-Ham Fest December 1974. l-r seated: Alta Mitchell, WAØVTZ, Agnes Weeks, WBØDBD. Standing: Esther Kiphuth, WBØHWV; Sister Alverna, WAØSGJ; Nel Coil, WØMSW; Sister M. Berard, WAØWVR; Betty Schmidt, WBØJWV; Sister Laurin, WAØRRJ; Joyce Goshorn, WBØCYM. *(WAØRRJ photo)*

Harmonics, the club publication. The YLRL novice correspondent reports news of the club members who hold that class license.

Licensed in 1974, Joyce, and the OM, Jim, WA9BHH, are active in the County Hunters, and in their local radio club. She replaces Cindy Bishop, WN4FSH, in this position.

1975 DX YL to North American YL Contest Results The Winners

DX-YL Combined Score

HC2YL	579 points

High Score Phone DX-YL

HC2YL	578
DJØEK	273
F5RC	247.50*

DX Phone

HC2YL	578
DJØEK	273
F5RC	247.50*
DJ1ITE	200*
DL3LS	88
I3MQ	77
DJ5UAC	61.25*
G8LY	54
ZS5OB	42
JA1YL	37.50*
VK3KS	25
JA1AEQ	11.25*

North American Phone

W2GLB	200
WA8FSK	146.25*
WA8AHU	140*
WB4NDX	116
VE1AMB	96.25*
WA2RRI	82.50*
WB2NKO	40
WA8EBS	40
WA2DMK	7.50*

High Score cw DX-YL

YV5CKR	63
I3MQ	52.50*
DJØEK	36

North American YL Combined Score

WA8FSX	166.25* points

High Score Phone N.A. YL

W2GLB	200
WA8FSK	146.25*
WA8AHU	240*

High Score cw N.A.-YL

WA8FSK	20*
WA2NFY	16
VE1AMB	15

DX cw

YV5QKR	63
I3MQ	52.50*
DJØEK	36
G8LY	1.25*
JA1YL	1.25*
HC2YL	1

North American cw

WA8FSX	20*
WA2NFY	16
VE1AMB	15
WA2DMK	11.25*
W2HFR	6
WB4DNX	1.25*
VE8NN	1.25*

1975 WRONE Officers

WRONE, New England's YL Club, announced the results of the election of officers to guide the club for the year 1975:

President, Lorraine, WA1EDR; vice-president, Betty, WA1AJN; secretary-treasurer, Connie, WA1NXR; hospitality co-chairmen, Kate, W1BBS, and Barbara, K1YJS; net and membership chairman, Edna, K1VEB; certificate custodian, Dee, W1ZJS.

WRONE holds two luncheon meetings a year, the first Saturday in November and the first Saturday in May. Any and all YLs are welcome to attend. They also sponsor the Yankee Lassies Net, Wednesdays, on 3910 kHz, at 8:30 EST.

WB9LAD, Alicia Moore

Alicia always wanted to be the world's youngest ham, but she learned the code and waited until she was 15 before she got her license.

A member of ARRL and YLRL, she is active in AREC and is at present the Emergency Coordinator of Jefferson County, Indiana. When not busy with her duties as EC, she is active on 15, 20, or 40 meters, usually on cw, her favorite form of operating.

The many demands of schoolwork, and the many club activities at her high school where she is a senior, have limited her time on the air, but Alicia is planning to study for the Advanced License at the end of the school year. Much of her time on the air is spent hunting for contacts for the WAS and WAC certificates. She hopes to be able to complete upgrading her license before she enters Purdue University next year as a major in Electrical Engineering. QST

How's DX?

CONDUCTED BY ROD NEWKIRK,* W9BRD

H o w ? ? ?

Restructuring was a must after weirdo Eleven blew up Long Hall at last May's DXHPDS meeting. *What* a mess! Now the entire membership gathered once more in work clothes amid the ruins. Our plan was to restructure while carrying on DX Hoggery & Poetry Depreciation Society business as usual. Chairperson Lotta Flattoppin assigned various tasks to work squads as Ivan Itchyswitch sounded off first atop the rubble:

Blurk started yakking at dawn
At noon he droned on, on and on.
He certainly riled up
The bunch who had piled up –
Another rare opening gone.

It became apparent that our restructuring materials were somewhat less inspiring than the blueprint. Lugging sloppy mortar buckets, Y.B. Suchalid yelled from the fractured floor:

Wastebaskets Fuller rebels
At slightly delayed QSLs.
But everyone knows,
As far as that goes,
His own punctuality smells.

A half-rebuilt side wall crumbled with a sickening thud. Plenty of bricks for the job but an alarming number of rejects, too. Kenny Signsooner hollered his gem over a rickety wheelbarrow:

Powerfreak Fuseless O'Brrrack
Used gallons to crack through the pack.
His balun went sour,
Reflected some power,
And burned down his oversized shack.

Seems that the cement's quantity also exceeded its quality. The new balcony overexpanded, creaked sideways and teetered menacingly over the toilers. Ike N. Schriechlauder sang from the sinking foyer:

Speech-processor Mushy von Plower
Pushed up his average talk power.
With background so high
A cockroach crawled by
And popped off the top of his tower.

We switched to an alternative wooden design for Long Hall in a frantic crash program to get the thing off the ground. Lots of available lumber but we had a huge pile of square pegs to jam into round holes. Audy O. Mestup howled his offering just in time:

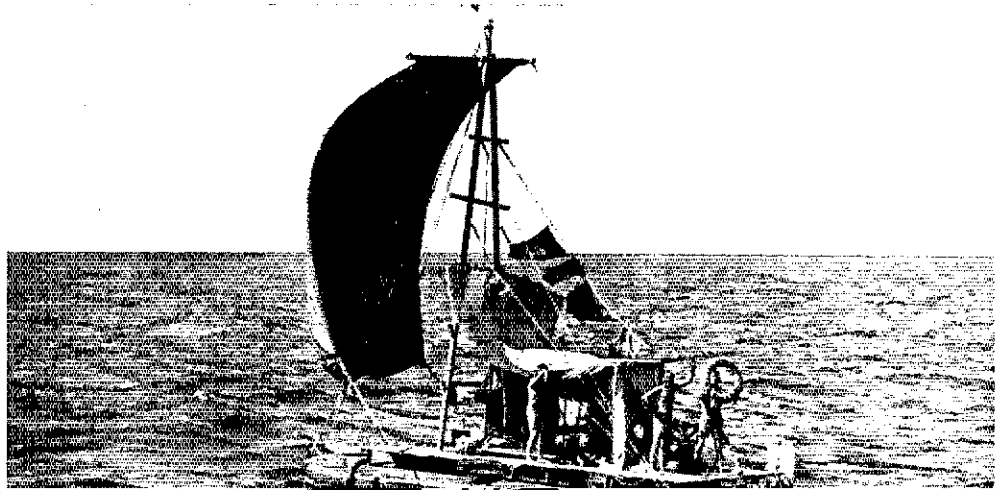
Behind his rig Peabrain McSneeze
Went groping around on his knees.
He fit nice and snug;
Had he pulled out the plug
He wouldn't have joined Silent Keys.

An odd couple strolled by pushing a wobbly baby carriage with double whips. Incredible racket from the beat-up buggy collapsed our restructural efforts in clouds of dust. Oh well, maybe next year. The squalling brat in that pram, toy mike in hand, looked suspiciously like our friend Eleven. His parents, who obviously couldn't stand him either, tried to leave the little pest with *us*.

† † †

* c/o ARRL, 225 Main St., Newington, CT 06111.

ON4AXA/mm, Belgian research raft *Lost Generation*, completed a three-month voyage from Morocco to Trinidad in mid-January. An FTdx150 and ground-plane (water-plane?) kept unfailing 14-MHz sideband schedules with CN8AP, ONs 4DE 4GK 4QP 5DO 5KL, 9Y4NP and other supporting amateurs. Some spot for Field Day! *(Photo via ON5DO)*



VU2s BK and DK, left and right, are a popular father-son DX team in Poona. Kab and Zal were among the many enthusiastic Indian DXers who extended traditional ham hospitality to a touring academic group headed by KØHUD.

What:

Nobody appears to deliriously happy over the outcome of this year's 41st International ARRL DX Competition but, like life itself, DXers must accept the yin with the yang. At least until we have a flock of orbiting Oscars on 28, 21 and 14 MHz to make to up for propagational shortcomings during sunspot minima. Some early contest commentary crossing the "How's" desk. . . .

It was the first cw weekend of the '75 ARRL DX Test. I put away my chess board and tuned up the rig. Twenty-five kHz from the bottom edge of 20 there was a weak signal with much QSB. I listened intently — F5AI — no, it couldn't be! But there it was again — QRZ TEST DE F5AI K. Just couldn't believe it. Europe on 14 MHz, and on a contest weekend! I knew this had to be a first for the U.S. Northwest. . . . I suppose that's a slight exaggeration of the facts but conditions have been generally lousy. They were slightly better for the first cw weekend than for the first phone weekend. I was glad to see them go from lousy to just poor. As is usual when conditions are marginal, stations piling up on South Americans in the afternoons produced a number of "garbage piles" on 20 and 15. (WA7UQG, Western Washington DX Club *Totem Tabloid*).

DX contests, while not war in the true sense, are a sort of fun war most of us can engage in without bloodletting. Half the yearly ARRL DX Test being over, the gladiators retired to lick their electronic wounds and plot against the other cats for the finale. I have reached the conclusion that Zeus, god of the sun, is biased toward phone men. At least he sent them a lot more usable sunspots than he did the cw lads. Skip was better and the bands stayed in longer for the first phone half. In the code part 80, 40 and 20 bore the brunt of the action with a lot of activity on 3.5 and 7 MHz when 14 died at sundown. Fifteen was not without its finer hours. With skip primarily north-south, 21 MHz sprung for some northern European vibrations around 1915 GMT which lasted less than half an hour. During that time LA OK SM and SP could be bagged. In the middle of some bitter in-fighting I heard my bell rung. Hark! ZL3GC via long path, the only southwest Pacific action of the battle from these quarters. Later the lads in Florida could be heard racking up VKs and ZLs evidently short path. Sorry to relate, they never got in over the midwest noise level. Twenty was somewhat of a different story, good conductivity to Europe. Many of the rarer U.S.S.R. stations, however, were not accounted for. Not that they weren't on; skip just petered out short of them. Some choice Afridan tidbits were on throughout the contest and I imagine a lot of fledgling DXers picked up new ones there. Forty and 80 proved to be the cat's pajamas, DX on those bands like crazy. Eighty was outstanding. Ten was a real sneaker, open both days but getting little play. One point I think should be made is that entirely too many people spend hours madly screaming CQ TEST. While they blindly flail away, they usually clobber nice multipliers. They should remember that 1000 contacts and 10 multipliers can give a score of 30,000 while only 250 contacts and 60 multipliers means 45,000 points. (W8ZCQ, Columbus Amateur Association *CARAscope*)

Lack of sunspots was clearly indicated by results of the first ARRL Test weekends, particular on 10 and 15 meters which in past years produced copious quantities of JA contacts. Most 10-meter QSOs from this region were with South America, Australia and New Zealand, north-south stuff. CT2 was the only European standout. Contacts in quantity were produced by 40 meters where many JAs showed in the cw portion. Some Sixes had much success in the mornings with Europe and Africa on 7-MHz long paths. (W6JPH, Southern California DX Club *Bulletin*)

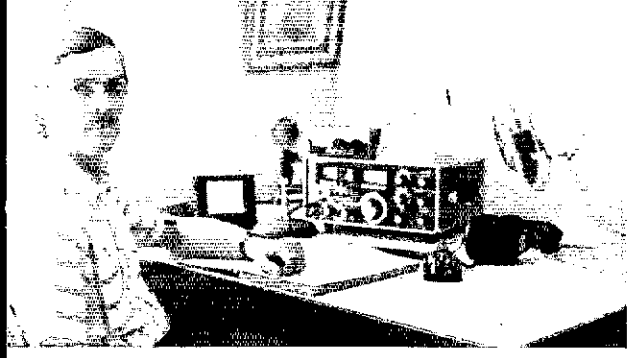
All in all, conditions were poor for the Test's opening weekends. Apparently DX stations pay little heed to modest signals from the Pacific northwest. Overseas ops seem to give just a quickie look for possible Sevens, then swing right back to Fives and the east coast. They don't seem to realize that our seventh call areas covers a mighty big piece of rare ground. Anyway, always good to see another ARRL DX Contest come along and I hung in there with my QRP doing battle with the big boys. (W7HPI)

First phone weekend was horrible. I operated from Knoxville instead of Nashville this year but it was a rerun of '74, atrocious QRM and deep pileups. Ten opened only briefly to South America and Africa. Fifteen never did open to Europe. No Asian openings here on *any* band. Twenty did well toward Africa, though, with Europe present in small numbers. Forty produced some Africans, Oceania, and South America, eighty the usual western hemisphere stuff. Didn't hear as many well-known Stateside DXers as I usually do. If things were so rough with my SB220 and TH6DXX how did the dipole people do? (WA4ZZU)

† † †

Where:

NORTH AMERICA — This month's "QSLers of the Month" are nominated in *QST* mail from Ws 1CDC 3IZJ, WAs 3SWF 4KDC, WBs 2EOO 2NOM 8MVX and 13FIN who applaud confirmational comebacks much speedier than the usual by A4XFE, CO2FA, EA9EP, EI8S, FP2SN, HA3PG, HM1EJ, KC4NI, KP4s, DJE EA1, KX6MV, KZ5FB, OD5IO, PZ5FB, TF3AC, TJ1EZ, VO1KE, VPs 2EEB 5RW 8HA 9CB, VQ9D, VSs 5MC 6BL 6DO, XW8FN, ZD8MF, ZLs 1AJL 2BT, ZM7AH, 4W1GM, 5V7WT, 6Y5NY, 7P8AT, 7X2BK, 9G1AR and 9J2FP, plus QSL aides Ws 3HNK 5ZF, Ks 2FT 4CIA, WA3HUP, VE6AKV, DJ5JA and F9GL. Anyone we overlooked? . . . My thanks to W7OK and WAØTAS who spotted my "How's" plea and 'alped me run down the pasteboard of XG1J, (WB2EOO) . . . 'ALP! These parenthesized brethren seek clews toward collecting QSLs from holdouts specified: (W1OPJ) CR6AL, CX2FD, FG7AP, FM7WU, HC2SB, JA1NJU, LZs 1KHB 2SN, PZs 1BH 9AB, ZD9GG, 8R1AE; (K3WHL) EA2HX, ZE3X; (K6UGS) CR7LE, ET3GK, GC2TR, VK9JW, VP2VAR, VS6DO, YS2RAR, 6Y5ET, 7Z3AB, 8R1W, 9Q5MG, 9Y4PA, all QSOd in 1971-'72; (WB2EOO) EA6CE, FR7AI/t, ISØLBU, IZ3SRL, JX6DS, OD5HF, SV1EH, VP2KM, 9H1AQ; (WB8MVX) CN8s BQ HD, CO8GL, CR7WL, DM25K-DM2AYK, HB9AYQ,



9L1JT concluded his 160-meter WAC recently by QSOing KH6CHC. When not QRL with missionary efforts, Jerry likes to fire up around 1826 kHz at 0645-0715 and 2130-2200 GMT. 9L1JT expects to QRT for a long K4ZIN/5 furlough next month. *(Photo via W3HNK)*

HR2RP, LZ1WD, PJ2RR, VQ9DC, ZD7SD; (W7FCD) KR6ON '72; and (W8KMG) FØAVG/FC. Any 'alp? . . . Currently or recently active stations QSLd through W2GHK's DXpedition of the Month facility are C6ANY, CN8HD, CR5SP, CX2CO, C21s DC DR, FM7WQ, HKØAI, HM1AJ, HP1IE, HS2AGP, 11s MOL RB RBJ, JW1EE, KV4FZ, LA1H, OY7ML, P29IK, PA9AFZ, PJs 7VL 8GQN 8HS 9GQN 9JR, PY2s PA PE, VE8s CV RCS, VKs 3BM 9JK 9XK 9XW 9XX, VPs 7NY 9GR, VS6DR, XE1IIJ, ZD8NC, ZS6IW, 4Cs SAA 9AA, 6Y5RS, 8P6CW, 9Y4VT and (North America only) 4U1ITU. Self-addressed stamped envelope to W2GHK requesting DotM bulletin No. 174 will bring further details. . . . It has entered my thoughts that the massive QSL job following each of my DXpeditionary jaunts to the Caribbean could be avoided by going into permanent hiding down there. So far I've been able to overcome the urge! Note that my QSLing for VP2E contacts goes only for cw activity in this year's ARRL DX Test. (K2FJ) . . . After numerous problems I finally finished QSLing for my YN4IM and 2nd-op YS1WPE QSOs of last summer. The liberties some guys take with GMT can drive you right up the wall. (W5QPX) . . . I have no knowledge of, and do not handle QSLing for, current VP2s A and AAA. Previous holder John Beck last operated down there in mid-1972 and I cannot respond to QSL requests for VP2A-AAA contacts made thereafter. (W4DQS) . . . All QSLs for my aeronautical-mobile work over international waters must reach me via the ARRL QSL Bureau (W4LR) because I maintain no other QTH practical for the purpose. I've been QSLing W/Ks direct when possible, others via bureaus. (WB4JUT/am) . . . An increasing number of hams who declare 100-percent QSL policies don't follow through, and it seems that QSL bureaus generally are nowhere near as punctual as they were when I began DXing in the '40s. (W1OPJ) . . . Operator Dale of HR6SWA asks for QSLs via W8CNL. XK and XO are newer Canadian labels, XK3EUP and XO3GBM respectively being VE3s EUP and GBM. Reminder: C6s are former VP7s, 6Cs ABC and ANX being ex-VP7s BC and NX. (DXNS)

AFRICA – I cannot help with QSLs from ZD5E and a 3D6AE pirate but I accept responsibility for the cards of 3D6s AA AE/p and ZS6BHW/3D6. Since I am away from Swaziland much of the time, it's hard for me to assist in any other general 3D6 confirmational problems. (3D6AA) . . . Remember that those C5s are ex-ZD3s, the old one-letter suffix now appearing as the second-suffix letter. E.g., C5AU equals old ZD3U. (DXNS) . . . As in the case of TA1HY, I now issue ZS6ME's cards only on receipt of requests. Too many multiple log entries to break down for blanket issuance. (W5QPX) . . . Cards received for 9X5KE accompanied by s.a.s.e., or s.a.e. with International Reply Coupons, get my prompt attention but others may not receive reply. Vast numbers of European QSLs arrive via bureau and are costly to answer. (WB2EOO) . . . Several years ago I did QSL chores for A2CAF, then operated by Rod Short who has since returned to the U.K. Apparently the call has now been reissued to a Jochim or Chim with whom I have no managerial arrangements. (W4NJF)

EUROPE – Ed Mehnert, W3JZJ, Dt. 9, 1141st USAF S.A. Sqdn., APO, New York, New York 09221, in Italy, tells me he can relay QSLs to M1s B C D and L. He's not their formal QSL manager but he does 2nd-op M1C on occasion. (VO1KE) . . . Many Statesiders aren't aware that mail rates to APO and FPO addresses, no matter in what part of the world, are the same as domestic rates. I see lots of envelopes from W/Ks overloaded with 18 to 26 cents in postage. (W3JZJ at 13FIN) . . . A map of Amsterdam for the year 1482 has been used as a plate from which eight variations of PA7 QSLs were prepared. By working a sufficient number of PA7s this year, you may obtain all eight which make up the map and certificate. All QSLs for PA7 stations can be sent to the corresponding PAØ *Callbook* QTHs or via our bureau. (PA7SMK–PAØSMK) . . . I, too, have been puzzled by the wide variation in QSLing by Russian amateurs. Some, such as UW9WR, seem to QSL every contact and their cards are received in three or four months, not bad at all for bureau-to-bureau exchange. As for QSLing by W/Ks, I'm surprised at the number who literally beg for my cards, then fail to reciprocate. Because of this, WAS is no cinch from the European end. (ON8VE-WA8UIC)

SOUTH AMERICA – As your readers may know, I manage QSLs for FYs 7AA ØBHI, FGØZZ/FS, TUs 2FC and 4AH. In the past few years, however, my work has caused me to change QTH several times. Thus I request all cards and inquiries be sent via my parents at 52 rue de Saussure, 75017, Paris. (F2QQ) . . . Postal indications to the contrary, I have no QSL managerial connections with CE6 or other DX stations. (KØSOX) . . . I've been working lots of WNs from Chile lately. I'm sure they want my QSLs but they have great difficulty copying my rather complicated South American address or comprehending that their cards can go to my home address. Please stress that my Oklahoma *Callbook* QTH is okay. (WB5LSU/CE3) . . . As QSL manager for HK3QQ, formerly HK1QQ, I've received no logs in the past year. I'm sure they'll eventually arrive but regret the inevitable delay in answering the many requests on hand. (W4DQS) . . . I'm leaving the Canal Zone on a new assignment in Saudi Arabia and report that all HC8GI QSL requests on hand have been answered. Anyone still needing my own KZ5 cards should consult WA6AHF who holds all logs. (KZ5PW-KZ5PWN) . . . CEØAE (K2BUI) found some years-old mail waiting him on his return to Easter Island this year. WA3HUP continues to handle all QSLs but she cannot confirm QSOs made by unauthorized user(s) of the call in 1967-'71. (WCDXB) . . . Operator Hector of LU1ZA specifies QSLs via LU2AFH while operator Jorge wants his via LU2CN. Incidentally, according to QSL, LU4ZS does not fit the usual pattern for Argentine Z-suffixed outposts, being on Seymour Island in the Ross group. (DXNS) . . . WN6HMS/KC4 indicates that his Antartic QSOs will be confirmed on return Stateside next year. (WCDXB)

OCEANIA – Those awaiting cards from 3D2ER and ex-A4XFJ please be patient. In some cases it takes me up to six months to match available logs with incoming QSLs but all valid requests are answered. By the way, mail sent to my old K4FCZ address still is forwarded to me, but with some delay. (W8KMG) . . . Surprising how many QSOs

with super-rare DX stations are not followed up by QSL requests. K6AQ reports a thousand Kingman cards still unclaimed. After a little more time Jim will clear the remainder via bureaus. WB6LTJ, handling his own FWØAA-DX and FKØDX QSLs, was grinding them out at 150 per evening in late February. Ron's Wallis cards get priority. We hear that stamp collector VK9JA wants all QSLs forwarded direct to his Norfolk Island address. (WCDXB) . . . VR3AJ has no airmail service on Christmas Isle and sees only three or four mail boats per year. (DXNS)

ASIA — Never give up! W6ONZ reports receiving his Manchurian MX3H confirmation some 35 years after QSO. Ex-MX3H still is very active as JA1ATF. After rapidly running through the JG prefix allocation, new Japanese amateurs will be issued JI calls. (WCDXB) . . . K3RLY may be able to assist with BV2B confirmations, single-sideband only. (DXNS) . . . Anyone still requiring QSLs for my OD5EJ and/or SM5BOK activity is invited to apply via my new Madrid address. (SM5BOK/Spain) . . . Here we go to individual recommendations, but be mindful that all suggestions are not necessarily either accurate, complete or official.

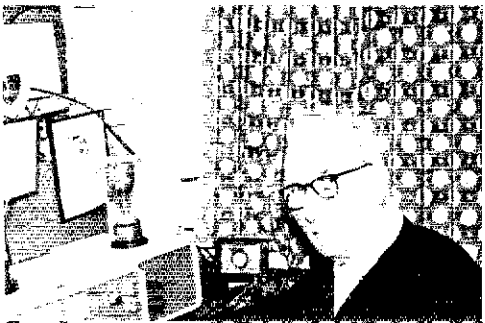
A4XFV, P.O. Box 981, Muscat, Sultanate of Oman
CR8AC, P.O. Box 59, Dili, Portugese Timor
FK8CF, Box 63, Noumea, New Caledonia, French Oceania
FL8DN, D. Niederlander, P.O. Box 215, Djibouti, T.F.A.I.
FL8OM/4W1 (via DJ1TC)
FO8EJ, P.O. Box 1215, Papeete, Tahiti
HR1GK, G. King, P.O. Box 149-C, Tegucigalpa, Honduras
HS2AKP, D. Pugh (K7VAY), Box 1434, APO, San Francisco, California 96330
IC8EGO, P.O. Box 18, Capri, Italy
ISØFCF, C.P. 3, Nuoro, Sardinia, Italy
KZ5s PW PWN (Via WA6AHF)
ex-OD5EJ (to SM5BOK/EA)
P29HC, H. Cook, Box 86, Ukarumpa, Papua-New Guinea
PI1-50ARU, P.O. Box 400, Rotterdam, Netherlands
PSØSAC, P.O. Box 22, Sao Paulo, Brazil
PVØAX, Box 783, Sao Paulo, Brazil
SM5BOK/EA, K. Emanuelsson, INTELSA, Torres Quevedo 2, Leganes (Madrid), Spain
TA3HB (via WA4ZSB or DA1CC)
VE3CUD/SU (via VE3CUD)
VP1IL, P.O. Box 790, Belize, Belize
VP2LBS, Box 494, Castries, St. Lucia, W.I.
VP5s GT SL, Private Mail Bag 1, Grand Turk, Turks & Caicos
ex-VP5MD, Marilyn Dennis, Route 1, Box 365-B, Valrico, Florida 33594
VR3AJ, Capt. J. Watt, Fisheries Officer, Christmas Island, Central Pacific
VR4DX, W. Elton, P.O. Box 33, Guadalcanal, Solomons
WA9EZV/KG6 (via KG6BX)
WB5LSU/CE3 (see text)
XW8HV, P.O. Box 3, Vientiane, Laos
YB5NA, Ji Sultan Abd Rhaman 87, Tanjung Pinang, Riau, Indonesia
YJ8AN, R. Beets, c/o Post Office, Santo, New Hebrides
YK1EL, Box 267, Damascus, Syria
ZD9GE, via V. Hugo, P.O. Box 12, Pennington, 4184, South Coast, Natal, S. Afr.
ZE7SD, P.O. Box 605, Gwelo, Rhodesia
ZS6BHW/3D6 (to 3D6AA)
3D6AA, K. Muller, Box 283, Mbabane, Swaziland
5R8s CO CU CS (via F8US)
5U7BD, P.O. Box 63, Arlit, Togo
9G1AR, H. Kaklikian, Accra, Dept. of State, Washington, DC 20520.
9G1JC, P.O. Box 6017, Accra, Ghana
9Q5ITU, P.O. Box 1459, Kinshasa, Zaire

ex-A4XFJ (via W8KMG)
A4XVB (via G4DLG)
A6XS (via G3SUW)
C5AU (via G3LQP)
CE9AT (via CE2AA)
CR6OR (via WØGX)
CT2BM (via WA5BDJ)
FB8WC (via F8US)
FB8WD (via F5QE)
FB8ZD (via F8US)
FM7WE (via K4CCB)
FOØRKP (to W9RKP)
FOØVAP (to W6VAP)
FPØMM (via WA1JKJ)
FYØBAB (via F9BW)
GC5BGM (via K9HOL)
HC8GI (see text)
HD1-ØQRC (via WA8TDY)
HI8XRG (via W3HNK)
HR6SWA (see text)
HS2AIG (via WA4BKC)
HS2AKS (via WB5GTV)
HS4AFP (via DJ8KS)
JY9RD (to K4MUD)
LU1ZA (see text)
LU2A (to LU2AFH)
P29LS (via G4CHP)
PA5GIG/a (to PI1ARS)
SM7JZ/4X (via SK7GH)
TJ1AF (via PAØJFN)

TR8BJ (via DJ5DA)
TU2EG (via F6CYU)
VK9XR/mm (via ON6GC)
VP2A-AAA (see text)
VP2E (see text)
VP2EEE (via K2BPP)
VP2GFA (to KL7FA)
VP2MDB (via KØVVO)
VP2MDG (via VE3HEA)
VP9GE (via WB2SJQ)
VQ9SS (to G4DII)
WB4JUT/am (via W4LR)
XK3EUP (see text)
XO3GBM (see text)
XQ9BIJ (via CE2AA)
YS1GDD (via W3HNK)
YU1AJF (via W1CDC)
ZL1BOY (to W9RKP)
3D2ER (via W8KMG)
3D6AE/p (to 3D6AA)
5Z4AL (via G4APL)
6F8J (to XE1J)
6W8AK (via F6AXP)
7X2BK (via WA3HUP)
7X5AH (via F6BFH)
9J2LL (via I4KJW)
9J2SJ (via W3HHV)
9Q5EP (to 9Q5ITU)
9V1SH (via W7PHO)

The preceding rundown comes your way thanks to Ws 1OPI 3HNK 3JZJ 4DQS 7HPI 9DY, Ks 2BK 3HWL 7VAY, WAs 1STN 3SWF, WBs 2EOO 2NOM 8MVX, VO1KE, HS2AKP, I3FIN, PAØHTR, Columbus Amateur Radio Association *CARAscope* (W8ZCQ), *DX News-Sheet* (G. Watts, 62 Belmore Rd., Norwich, NR7 OPU, England), International Short Wave League *Monitor* (E. Chilvers, 1 Grove Rd., Lydney, Glos., GL15 5JE, England), Japan DX Radio Club *Bulletin* (JA3KWJ), Long Island DX Association *DX Bulletin* (K2KGB), Newark News Radio Club *Bulletin* (M. Witkowski, Rt. 5, Box 167, Stevens Point, Wisconsin 54481), Northern California DX Club *DXer* (Box 608, Menlo Park, California 94025), Southern California DX Club *Bulletin* (WA6KZI), VERON's *DXpress* (PAØTO), West Coast *DX Bulletin* (WA6AUD) and Western Washington DX Club *Totem Tabloid* (WA7JCB). Got a few for the crew?

Gs 8VG (left) and 2PU are world-wide favorites amoung Britain's DX gang. Bill keeps busy in the cw bands as secretary of First-Class CW Operators Club. Sant's big signal from Cambridge often heralds European breakthroughs on voice frequencies.



Whence:

EUROPE — Last year's French Contest radiotelegraphic results list these Statesmen in scoring order: Ws 8VSK 3ARK 9OHH, ON8RA/W3, Ws 3CRE 4HOS, WB4OGW, W4JUK, K2VJS, Ws 7OK 4ILE and 6MAR, no VEs mentioned. On phone W4WSF, WA9FZQ and WB2HOK were 1-2-3 with VEs 3BS 2AFC 3GCO 2AG and VO2AS finishing in that sequence. Continental voice highs were CR6EO, LU5HFI, OD5BA, VE3BS and ZL1AMM. Pacing their continents by key were LU5HFI, UL7LAW, W8VSK and ZE1BL. (REF) . . . S.a.e. plus IRCs to VRZA Awards Mgr., P.O. Box 190, Groningen, Netherlands, will secure full details on the Amsterdam 700 Years certification based on sufficient contacts with appropriate PA7 stations during 1975. (PAØJR) . . . I'm out for great DX things in Kreuzberg as DA1ET. (K7UPJ) . . . Former Kure islander KH6HDB now runs a USCG Loran sender at Stilt on the North Sea and signs DA2GL. (WCDXB) . . . Our Channel Contest group, Gs 3MXJ, 3XBN 3ZQW 4BUE 4BVH and I, were behind GC4DAA action from Guernsey in March. (G3FXB) . . . GI4RY, going on 85, celebrates his fiftieth year in ham radio on 75 sideband. (DXNS) . . . My company has assigned me to Madrid where I anxiously await an EA4 call. Sweden and Spain signed a reciprocal amateur operating agreement last May so I should soon be greeting all the DX friends I made in eight years and 16,000 QSOs from Beirut as OD5EJ. (SM5BOK) . . . PI1ARS, operated by our local GIGA group since 1970, was active in March as PA5GIG/a on its fifty anniversary. On occasion we also sign PA6KM. (PAØHTR) . . . Keeping busy with two Heathkit projects and some 3.5-MHz antenna ideas. I'm also trying to get a net going for W/K fellows overseas. We'll start out with regular Saturday 2200-GMT sessions transmitting lower sideband on 7045 kHz, tuning for on-frequency cw and 7205-kHz ssb. On 20 we'll use 14,330 upper-sideband at 1230-1300 GMT. Hope it grows into a daily thing. Cheers for 4S7UD (3501 kHz at 1900-2400 GMT), A9XW, HKØBKX and other rare birds who consistently battle local QRM to issue 5BDXCC credits on lower cw bands. Gee, ten years have flown by since I left employment at ARRL. (W3JZJ at I3FIN)

† † †

NORTH AMERICA — If such certifications as ARRL's Five-Band DX Century Club are to continue to mean anything, I think DX men should be a little less helpful to each other on the air. Too much relaying of callsigns, reports, etc. occurs, especially on 75 ssb. On the other hand most operators on the band do an excellent job of cooperating with each other within ethical limits. (K2HYM) . . . My full-wave triangular loop does well on 7 MHz, 25 fast countries on 180 watts. May try another element on the thing while I'm replacing a tower and quad lost in a late-'74 breeze. About a hundred countries bagged now but quite a few QSLs to go. (WB6UFW) . . . Just returned to the DX fold after a seven-year layoff. Conditions surely are poor compared to the late 1960s but I managed a one-month DXCC's worth of countries, mostly using 15-meter ssb where the big guns are no longer so prevalent. I also reached 106 countries on 40 without beam or QRO. My pet peeve is all the local rag-chewing around 7025 kHz when the DX skip is in. (WBØMSX, ex-W9HFB) . . . Much fun catching FWØIC, KC4NI, ZD7HH and ZM7AH with my five-watt Argonaut. (WBØCGJ) . . . You can't keep a real codehound down. Despite a broken keying wrist I collected goodies on 20 cw. (WB8FLE) . . . YS1WPE, lately on 160 cw giving the gang a new one, plans a better 1.8 MHz radiator. Bill is no speed demon yet so hold back on that QRQ. (W5QPX) . . . Looking for Stateside buddies, especially the old police communications crowd, near 7090 kHz Sundays around 1400 GMT. (KV4HZ-W9WBE) . . . The 1974-'75 160-meter DX season wasn't top-notch at all times but there were plenty of excellent ups among its ups and downs. By this February 1st, I had worked 150 DX stations in 46 countries, comparing with 116/37 in the 1973-'74 season. I'm omitting my usual spring 160-meter DX news bulletin in favor of a South Pacific tour. (W1BB) . . . Novices in metropolitan areas still make good ground-wave use of 10 and 15 meters for QRM-free nighttime QSOs. (WA2TLM) . . . Finally reached my DXCC goal and must thank the many who helped. Takes teamwork by at least 101 amateurs to make such a feat possible. CU at 200! (WB4WFT) . . . Good DX livin' on Prince Edward Island with Drake twins on 160, an FL2000B added for other bands. Worked 72 stations in 22 countries on 1.8 MHz with an inverted-L over 25 radials. (W6BYB/VE1) . . . W5s NOP UDK WQL K5EVA, WA5AWF, KP4EAJ and I had three complete kWs going on Antigua as VP2A from 10 through 160 meters in late February and early March. (K5YMY) . . . I wonder if we DXers are sufficiently courteous to each other in our noncontest international contacts. As a ham since 1914 and resident in foreign countries for many years, I protest the brusqueness, even arrogance, that some Statesiders display on DX bands when we should all be doing our best to win friends. (W6AT) . . . An Extra Class ticket is just the thing for cw DX. After getting mine at 16, I QSOd CO EA8 FW HKØ KH6 KP6 KZ5 LZ UQ VK6 VP9 XE YU and ZS in my first week in the Extra reaches of 40 and 80 meters. Some incentive! (WB4ZVF) . . . Quiescent ten surprised me in mid-February with OA and VQ9 contacts. Can't wait for more sunspots! (WA1QMF) . . . DX takes a back seat while I chase Alaska, Utah and North Dakota to complete 5BWAS. (WB2FIG) . . . I agree wholly with your February comments on W6QD. Herb was one of the original seat-of-the-pants DXers. VS5MC was No. 310 here but I'm beginning to realize that DX is becoming more and more a game for the younger set. I've been retired from the Army since 1960 and can't stay in there and pitch as I once did. (W4NO, ex-F7FD-KA9AA-KR6AA-etc.) . . . Now back home finishing up the new ARRL CW DXCC after a refreshing winter visit to KV4AA, PJ7RO and 8P6DW. (W4NJF) . . . My eardrums took a 1400-QSO pounding in the first ARRL DX Test code weekend as VP2E, Anguilla. I signed VP2EEC for noncontest contacts. (K2FJ) . . . I recently worked some cw DX stations in the phone subbands who were using telegraphy to minimize the W/K/VE onslaught. (WA4KDC) . . . Got nipped by the DX bug late last year and now pursue the stuff with a homemade two-element quad. (K3HWL) . . . It gets more difficult to find new countries at the 150-mark, especially under present conditions. European openings grow steadily poorer, Asians practically nonexistent. I'm after somebody's old Ranger to join the 160-meter fun. (WB2EOO) . . . Back at DX from a fine new San Bruno QTH after a few years' absence. Day work plus night schooling slows progress on the antenna farm and new hamshack. (K6UGS) . . . Localisms courtesy aforementioned literature of clubs, groups and individuals: K2KGB, moving to New England on business, turns over his three-year editorship of LIDXA's *Bulletin* to WA2RJZ. . . . W1WQC and WA5QYR rolled up some 2500 contacts this winter from St. Lucia, Dominica (VP2DE) and other Indies stopovers. . . . FG7AK is back in Guadeloupe from PJ8AK. FG7AR/FS7 still does electrical work on St. Martin on lengthy assignment. . . . Fresh North Florida DX Association officers are W4ORT pres., WB4EYR veep, WA4UFW sec.-treas. and WB4EYX activities manager. . . . Southern California DX Club stalwarts now number 147 while archrival Northern California DX Club tips the scale at 190-plus. . . . ARRL's new CW DXCC certification brings out the Honor Roll contingent in full force with somewhat rusty and dusty but still workable keys. QRS, anyone?

Operating Events ..... de W1YL

MAY

1 *West Coast Qualifying Run* (W6OWP prime, W6ZRJ alternate), 10-35 wpm at 0400 UTC (Universal Coordinated Time, calculated same as GMT), on 3590/7090 kHz. This is 2100 PDST the night of APRIL 30! Please note that dates are *always shown at least 2 months in advance and times are always* the same local "clock time," i.e. 9 PM local Pacific time. Underline one minute of the highest speed copied, certify copy made without aid and send to ARRL for grading. (Note: ARRL Form CD-9 shows qualifying run schedules for both W1AW and W6OWP, as well as the complete W1AW code practice schedule.)

1-5 *KV0ISU Special Operation*, p. 78 April.

3-4 *Bermuda Contest* cw, p. 78 April.

3-5 *Connecticut QSO Party*, p. 78 April.

10 *Frequency Measuring Test, World Telecommunications Day Contest* phone, p. 78 April.

10-11 *Russian Contest* cw, p. 78 April.

10-12 *Georgia QSO Party*, p. 79 April.

11 *Worked All Britain*, low-frequency phone, p. 79 April.

14 *W1AW Qualifying Run* (10-35 wpm at 0130 UTC/GMT) transmitted simultaneously on 1,805 3,580 7,080 14,080 21,080 28,080 50,080 and 145,588 MHz. This is 2130 EDST (9:30 PM local Eastern time) the night of May 13. Underline one minute of top speed copied, certify copy made without aid, and send to ARRL for grading. Please include your full name, call (if any) and complete mailing address. A legal size addressed stamped envelope would be appreciated.

17 *Armed Forces Day*, this issue. *World Telecommunications Day* cw, p. 79, April.

17-18 *YL-ISSB QSO Party*, p. 79 April.

17-19 *Michigan QSO Party*, p. 79 April. *MDARC QSO Party* (McDonnell Douglas Astronautics RC), 0100 UTC May 17 through 0100 UTC May 19. Certificates will be issued to club members making the most QSOs and to non-members working five or more club members. A station may be worked once per band per mode. Logs must be received at W6VLD by Friday, June 16.

24-25 *New York State QSO Party*, p. 79 April.

25 *Memorial Day Zip Code Contest*, p. 79 April.

JUNE

1 *Worked All Britain*, low-frequency cw (160-80-40). Same general rules as shown under the April 16 listing on p. 78 April.

4 *West Coast Qualifying Run.*

12 *W1AW Qualifying Run* (including 40 wpm!).

14-15 *VHF QSO Party*, this issue.

21-23 *West Virginia QSO Party* sponsored by the West Virginia State Radio Council being held in conjunction with the 112th birthday of W. VA. from 0100Z June 21 to 0059Z June 23. Open to all. No time limits. The same station may be worked on different bands for additional points. Only one contact with each station per band may be counted for scoring. Exchange QSO no., RS(T) and county (if in WVA) or state/country. WVA stations may work each other. Out-of-state stations multiply no. of WVA QSOs by the no. of different WVA counties and then use appropriate power multiplier. WVA stations multiply QSOs by the sum of WVA counties, states and countries worked and then use appropriate power multiplier. For dc input of 200 watts or less use 1.5 power multiplier, for dc input of 201 watts to the legal limit use 1.0 multiplier. To be eligible for an award a station must have only one unassisted operator. Logs should be sent to the WVA QSO Party, Box 299, Dunbar, WVA 25064. To be eligible for an award, logs must be postmarked no later than July 25. Logs will not be returned. They must indicate date/time, QSO nos., calls, reports and county/state/country of stations worked, plus mode and band. Awards. Decisions of the contest committee will be final. Suggested operating frequencies are 35 kHz inside each cw band and 10 kHz inside the general portion of each phone band. *All Asian DX Contest* phone (cw Aug. 23-24), 30 hours from 1000Z June 21 to 1600Z June 22, using any band under 30 MHz. Classifications, single op. on 75-10 single band, single op. multiband, multiop. multiband. Exchange RS plus operators age. YLs may use 00 in lieu of age. No crossband. For single ops.: never transmit two or more signals at the same time. Multiops.: never transmit two or more signals on the same band (one signal per band OK). Multiplier is the no. of points (one point per Asian QSO) times the no. of different Asian *prefixes* (except for KA) worked under each band. JD1 stations in Ogasawara (Bonin and Volcanos) count as Asia, Minamitori Shima (Marcus) counts as Oceania. Scoring: sum of contact points on each band times the sum of multiplier on each band. Awards. Please furnish complete band break-down showing calculations. Phone log deadline Sept. 30. Disqualification basis, violation of contest rules, false statements, dupes in excess of 2%. Note: JA stations may now operate phone from 3793-3802 kHz. Please include the usual contest declaration.

25 *W1AW Morning Qualifying Run.*

28-29 *FIELD DAY*, rules this issue.

JULY

3 *West Coast Qualifying Run.*

4 *Straight-Key Night.*

5-6 *7X2 Contest, DL Activity Group cw QRP Contest, Radio Club of Tacoma "Area-Code" Contest.*

11 *W1AW Qualifying Run.*

12-13 *"Open" CD Party, cw. Ten-Ten Net Summer QSO Party.*

19-20 *"Open" CD Party, phone. VHF Space Net Contest. Independence of Colombia Contest.*

26-27 *Itchycoo Park World-Wide VHF Activity.*

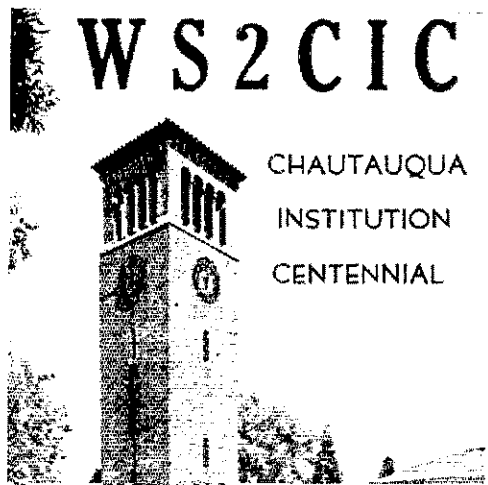
26-28 *CW County Hunters Contest.*

26-Aug. 7 *Calgary Centennial Calgary-to-Mobile Contest.*

Aug. 2-3, WAE DX Contest cw.
Aug. 23-24, All Asian Contest cw.
Sep. 6-7, VHF QSO Party.
Sep. 7, FMT.
Nov. 8-9, SS cw.
Nov. 22-23, SS phone.

Strays

When the Chautauqua Institution, known around the world as a cultural center, celebrated its centennial last year, it was recognized nationally by a U.S. postage stamp and an amateur radio call sign honoring the event. Some one thousand QSOs were made on 20 and 2 meters with the call sign WS2CIC.



Operating News

GEORGE HART, W1NJM
Communications Manager
ELLEN WHITE, W1YL
Deputy Communications Mgr.

ASST. COMMS. MGRS.: *DXCC*, R. L. WHITE, W1CW; *Hq. Station*, C. R. BENDER, W1WPR; *Contests*, F. D. NILSWANDER, WA1PID; *Public Service*, W. C. MANN, WA1FCM
Affiliated Clubs, JIM CAIN, WA1STN

Annual Report. The CD is the only headquarters department that makes an annual report to the Board of Directors. This is a carry-over of an old tradition that dates back to the days when the Communications Manager was an officer of the League. All headquarters departments are now under the general management, and report to the General Manager, who includes their data in his annual report. The only difference is that the Communications Manager's report is addressed directly to the Board. This is the way the Board wants it.

The report is very detailed and seems to get longer every year, despite our efforts to keep it as concise as possible. The department has more to do than ever, so naturally there are more details to report.

The timing of the annual reports is also a tradition – a necessary continuation in this case, because there is not enough time to collect year-end data for the January Board Meeting. Some of these data are not available until mid-February. Once the report is in the hands of directors it is available for free – the "Blue Book" also includes the Communications Manager's report, which is sold for $1.00 for as long as the very small supply of extra copies lasts.

By the time you read this in *QST*, the reports will have reached all directors, vice directors, assistant directors and officers, so at this time we would like to impart some tidbits of information as a matter of general interest. We will include such things as appointment status, SCM elections, awards status, contests, W1AW – just a short paragraph on each, omitting the detailed analyses included in the full report.

Appointments. We are happy to note a definite uptrend, contrasted to the slide which has taken place over the few previous years. The biggest gain is in ECs, which are now back over a thousand, but OOs and OBSs also figured in the increase. At the end of 1974, we had a total of 5326 appointments on the books. ORS is still the most numerous (1293), ECs second (1178), OPS third (1062).

Clubs. We affiliated 92 new clubs in 1974, half of them college, school or youth clubs. While this has to be a plus to the total recorded affiliates, the "active" affiliates are the only ones significant, because we're not sure whether the "inactives" are still in existence. Between those transferred to the inactive list (because nothing heard from them in over a year), those reported disbanded and those returned to the active list (because we finally heard from them again), we wind up slightly down from a year ago – but 84 of our active affiliates are now 100% ARRL members, and that's *good*. The average Category 1, affiliated club has 42 members, each of whom pays $9.54 a year in membership dues. The average meeting attendance is 18 members.

Code Proficiency. The W1AW-W6OWP code proficiency program continues to roll in high gear, with an insignificantly lower response in 1974. The December 40-wpm experiment was considered successful and will be tried again in 1975. Most participants are more interested in meeting license requirements than in gaining code proficiency for its own sake. Too bad.

Frequency Measuring Tests. Interest is up, but poor propagation conditions have been frustrating to many.

Miscellaneous Awards. This category includes WAS and 5BWAS, A-1 Operator, OTC and RCC. All are down from 1973 except 5BWAS, up slightly. The general downtrend is marked rather than slight. We don't push or glamorize these awards, as we do DXCC, and maybe this is the reason.

DXCC. But DXCC is down, too. This was predicted because of generally decreasing sunspot activity, and maybe we can blame a lot of decreases on this. With the new CW-DXCC in 1975, maybe the overall increase will be enough to make us break even this year, even if conditions don't figure to improve much.

Contests. Novice Roundup, November SS, 160-meter, 10-meter and CD Parties all were up; VHF-SS, DX, down; Field Day about the same. In general, 1974 was a good year for contests and interest remains high.

Traffic. Up slightly from a year ago, but below the million mark for the second year in a row. NTS up considerably, mostly because of improved participation rather than more traffic. BPL down slightly. In general, the traffic-handling part of amateur radio is still very much alive.

5-BAND AWARDS

(Updating the April 1975 listing.)

5BDXCC: (Starting with number 395), K8IFF G2BOZ WA6AHF 4X4NJ WB8EUN.

5BWAS: (Starting with number 207), YV1KZ K7ICW WA7RFH W4YZC W7EEJ.

W1AW SCHEDULE (effective February 23, 1975)

The ARRL Maxim Memorial Station welcomes visitors. Operating-visiting hours are Monday through Friday 1 P.M. - 1 A.M., Saturday 7 P.M. - 1 A.M. and Sunday 3 P.M. - 11 P.M., (all times local Eastern). The station address is 225 Main Street, Newington, Conn., about 7 miles south of Hartford. A map showing local street detail will be sent upon request. If you wish to operate, you must have your original operator's license with you. The station will be closed Mar. 28, May 26, July 4 and Sept. 1, 1975.

Times/Days *CDT*	*UTC*	*Monday*	*Tuesday*	*Wednesday*	*Thursday*	*Friday*	*Saturday*	*Sunday*
0740	1240	← Oscar[9] →					.....	.....
0800	1300	CODE PRACTICE[1] (5-25 wpm MWF, 35-15 wpm TTh) Details Below					.....	.....
1200-1300	1700-1800†	21/28 cw[7]*	7.290*	21/28 cw[7]*	7.290*	21/28 cw[7]*	.....	.....
1300	1800	← Oscar[9] →					.....	.....
1320-1400[4]	1820-1900[4]	14.290*	14.080*	14.290*	14.080*	14.290*	.....	.....
1400-1500	1900-2000	7.080*	21/28 ssb[8]*	7.080*	21/28 ssb[8]*	7.080*	.....	.....
1500	2000	← CODE PRACTICE[1] (10-13-15 wpm) Details Below →					.....	Oscar[10]
1530	2030	← CW Bulletin[1] →					.....	.....
1600-1630[4]	2100-2130[4]	7.1 Nov.[5]*	21.1 Nov.[5]*	28.1 Nov.[5]*	21.1 Nov.[5]*	7.1 Nov.[5]*	.....	Oscar[11]
1630	2130	← RTTY Bulletin[3] →					.....	.....
1700-1800[4]	2200-2300[4]	CPN[6]	14.095 RTTY*	3.625 RTTY*	7.095 RTTY*	CPN[6]	.....	.....
1800-1830	2300-2330	.....	CN[6]	.....	CN[6]	.....	.....	.....
1830	2330	← CODE PRACTICE[1] (10-13-15 wpm) Details Below →					.....	.....
1900	0000†	← CW Bulletin[1] →					.....	.....
1930-2000[4]	0030-0100[4]†	3.7 Nov.[5]*	14.080*	14.080*	7.1 Nov.[5]*	14.080*	.....	.....
2000	0100†	← Phone Bulletin[2] →					.....	.....
2010-2030[4]	0110-0130[4]†	3.990*	50.190*	145.588*	1.820*	3.990*	.....	.....
2030	0130†	← CODE PRACTICE[1] (5-25 wpm TThSatSun, 35-15 wpm MWF) Details Below →					.....	.....
2130-2200[4]	0230-0300[4]†	3.580*	.....	1.805*	.....	3.580*	.....	.....
2200	0300†	← RTTY Bulletin[3] →					.....	.....
2230	0330†	← Phone Bulletin[2] →					.....	.....
2240-2300[4]	0340-0400[4]†	7.290*	3.990*	7.290*	3.990*	7.290*	.....	.....
2300	0400†	← CW Bulletin[1] →					.....	.....
2330-0000[4]	0430-0500[4]†	3.7 Nov.[5]*	7.080*	3.580*	7.1 Nov.[5]*	3.580*	.....	.....

[1]CW Bulletins (18 wpm) and code practice on 1.805, 3.580, 7.080, 14.080, 21.080, 28.080, 50.080 and 145.588 MHz.**

[2]Phone Bulletins on 1.820, 3.990, 7.290, 14.290, 21.390, 28.590, 50.190 and 145.588 MHz.**

[3]RTTY Bulletins on 3.625, 7.095, 14.095, 21.095 and 28.095 MHz.** Bulletins at 170 Hz shift, repeated at 850 Hz shift when time permits.

[4]Starting time approximate, following conclusion of bulletin or code practice.

[5]W1AW will tune the indicated band for Novice calls, answering on the caller's frequency.

[6]Participation in traffic nets.

[7]Operation will be on one of the following frequencies: 21.02, 21.08, 21.11, 28.02, 28.08, 28.11 MHz.

[8]Operation will be on one of the following frequencies: 21.26, 21.39, 28.59 MHz.

[9]When an Oscar satellite is in orbit, daily updated orbital data is sent at 18 wpm on cw frequencies.

[10]Oscar orbital data for the coming week, on cw frequencies.

[11]Oscar orbital data for the coming week, on RTTY frequencies.

* General contact period.

** No 10- or 15-meter activity from 2030-0000 CST.

† Indicates following day when UTC is being used.

All frequencies are approximate.

W1AW CODE PRACTICE

W1AW transmits code practice according to the following schedule. Approximate frequencies are 1.805 3.58 7.08 14.08 21.08 28.08 50.08 and 145.588 MHz. For practice purposes the order of words in each line may be reversed during the 5-13 wpm transmissions. Each tape carries checking references.

Speeds	*Local Times/Days*	*UTC/Days*
10-13-15	7:30 PM EDST dy 4:30 PM PDST	2330 dy
10-13-15	4:00 PM EDST MTWThF 1:00 PM PDST	2000 MTWThF
5-7½-10-13-20-25	9:30 PM EDST SnTThS 6:30 PM PDST	0130 MWFSn
5-7½-10-13-20-25	9:00 AM EDST MWF 6:00 AM PDST	1300 MWF
35-30-25-20-15	9:30 PM EDST MWF 6:30 PM PDST	0130 TThS
35-30-25-20-15	9:00 AM EDST TTh 6:00 AM PDST	1300 TTh

May 5: It Seems to Us
May 8: Correspondence
May 16: League Lines
May 20: ARPS
May 28: World Above
June 2: YL News

Emergency Preparedness. AREC statistics are very much down, and the rest of the emergency preparedness picture is muddy as we try to determine which government agency to coordinate with and wait to see what FCC is going to do about RACES, if anything. Meanwhile, repeaters are coming more into use for emergency purposes, and some upgrading in ARRL literature seems indicated. There is plenty of interest, but methods are divergent.

Training Aids. This program is quite active, but a dearth of available material exists considering the demand, especially for motion picture films. Code practice tapes are just beginning to become available through headquarters, the chief difficulty here being establishing a price that will pay the cost.

DX CENTURY CLUB AWARDS

New Members

Radiotelephone listings follow the general-type "New Member" and "Endorsement" listings – February 1-28, 1975

W5OSJ	210	WB9HAD	131	I2CFX	115	9V1RF	107	W2HGN	103	F6KDT	100
WB4QNP	204	JA7IF	126	YU2CDX	114	WB6HAR	106	WA9UMP	103	K2ROR	100
WA8DXG	180	W2INF	124	ZL1OB	111	JH1FYM	105	DK8MA	102	K4GPX	100
WB9HLI	171	JA3QBM	120	WB6PYT	110	WA2WLM	104	GM5BAZ	102	W3AMF	100
W4CXG	138	K3OFN	118	JA3EY	107	DL6VW	103	WB5HVY	101	WA8AWH	100
DL9CJ	136	WB2EOO	116	WB2FYS	107	VE3BHD	103	YU2BTU	101	WB8IQO	100

IT9KZW	164	DU1REX	142	JA7IF	120	W4WFL/1	110	K3OFN	107	WB8AMY	103
WB4QNP	151	K4QJF	130	WB2ZQC	116	LA3JQ	109	K6JWY	107	LA6OL	101
W5OSJ	145	I1HAG	128	IT9LEF	112	KA7QZ	108	W7ISG	106	K2GAT	100
K6DT	144	EA8CN	124	DK7JH	110	CT1DS	107	WB4NLM	104	WA2ELA	100
		WB9LHI	124	JA3WBK	110	JA3EY	107	WB6HAR	103		

Endorsements

In the endorsement listings shown, totals from 120 through the 240 level are given in increments of 20, from 250 through 300 in increments of 10 and above 300 in increments of 5. The totals shown do not necessarily represent the exact credits given but only that the participant has reached the endorsement group indicated.

K2OO	330	K3TUP	290	DL1LD	260	DK3SF	220	DK3NU	180	WB8IGU	160
I5WT	320	K5FKD	290	OE1JRW	260	K6DG	220	IA1TNV	180	WØMHK	160
W7CSW	320	W2BAI	290	OH2FS	260	KA2PJ	220	JA6GDG	180	CX6CT	140
K4THA	315	W5QN	290	W5DJ	260	W2AXZ	220	SM6BZE	180	F5RS	140
PAØVO	315	K3SXQ	280	4X4NJ	260	W2IYX	220	W4YZC	180	LA7FJ	140
W6AEM	315	W9VJH	280	F2NB	250	WA6FIT	220	WB5EAY	180	W1OPJ	140
K8IFF	310	WB4SIJ	280	HKØRKX	250	K9HLW	200	W7CU	180	W2FPG	140
OK1MP	310	WB5BID	280	JA3BQE	250	KØMKD	200	CN8BO	160	WA2EUO	140
W2AWK	310	W9DDL	280	W2BXY	250	SM5BRS	200	IT9JLA	160	WA3TZT	140
W6BIL	310	K2DNL	270	W4KNW	250	W4DCW	200	OE3EVA	160	WA7OBL	140
W9HZ	310	K6IR	270	WA9TXL	250	W5TWI	200	WA1NCK	160	W8KI	140
F8RU	305	K7RLS	270	WØIU	250	WB8OFG	200	WA2FUE	160	WA9MOE	140
I2SM	305	WA1ABW	270	K6DT	240	WA9RRN	200	W2OXR	160	DJ3BF	120
K9TZH	300	W3HTW	270	K8HLR	240	YU2RKC	200	WA3SWI	160	K4QJF	120
WA5AUZ	300	W5KHP	270	W1CNU	240	5W1AU	200	WA4EWX	160	VE6CV	120
W8OA	300	DK3LP	260	YU4HA	240	CT1BB	180	W7AWH	160	W3MIX	120
WØLPA	300									W4BFZ	120

ZL1HV	350	CT1ZW	280	WA5AUZ	260	W4KNW	220	HI8XKP	180	IØMBX	140
EA2HK	325	K4HS	280	DK3PZ	250	W5DJ	220	W4EPZ	180	W2EWK	140
W3EVW	320	W9DOL	280	DL9VS	250	WB5BID	220	WA8PWZ	180	W2OXR	140
W9DNF	310	K3SXQ	270	K5FKD	250	WA7BPS	220	CT1BB	160	W7AE	140
I2SM	305	K3SXQ	270	WA5SMM	240	JA3BQE	200	K8GWM	160	W7ZH	140
K8IFF	305	WB4SIJ	270	CT1BT	220	KØIUC	200	W1AB	160	W8KI	140
F8RU	300	DK3LP	260	DK3SF	220	KA2PJ	200	W9DHS	160	JA3AEV	120
W9HZ	300	K6IR	260	EA3OJ	220	W5TWI	200	WØLPA	160	K1ATL	120
CR7IK	290	K7RLS	260	W2IYX	220	5W1AU	200	WBØCGJ	160	W3HCW	120
W4HOS	290	WB4TPU	260	K6DG	220	DK3NU	180	HK4DEG	140		

The Instructor Corps is still languishing; more volunteers needed.

W1AW. Operation of the headquarters station is not so routine as one might imagine, with all three of its staff being kept busy preparing tapes, performing maintenance, working on new construction projects and entertaining visitors over a period of some 100 hours per week. The "paid operator" hassle early in 1974 resulted in a marked decrease in individual contacts with amateurs, but otherwise the station statistics stood up well in comparison with previous years.

OO Program. There are two big problems here. The first is to get really qualified OOs (and this depends on the judgment of elected SCMs who appoint them). The second is dealing with adverse reactions to OO notices. The two are connected, of course, since observing and dealing with notice recipients often requires tact and diplomacy. Letters from aggrieved recipients of OO notices indicating skepticism as to the observer's qualifications are on the increase, and in a few cases the OO has decided he doesn't need this and has bowed out. By and large, however, the program remains highly active, with a known total of 6812

New A-1 Operators

DL8JS JA8QX JH3PJE SM5UH SMØBYD VK2ZA WB8IJW WBØJOZ WBØKTC WAØYJL

ARRL CERTIFIED AT 35 WPM - 1974

K1ARO	WA3JSU/1	W7RIR
K1BXZ	W3UT	W7YV
W1DM	WA3WEX	WA8DVU
W1WG	K4EZL	K8IUF
WA2AOG	WA4GYE	W8JUL
WA2DSA	K4LRO	W8VYU
WA2DVE	W4SUS	W9DND
WA2EDW	W4WOY	W9DY
WA2EXB	K4ZK	WB9IHH
WB2FLF	W5UGE	W9MI
WB2GAV	WA6JAE	WB9NOZ
WB2NOM	W6MSW	K9TPC
K2QMF	WA6KQY	WBØAYW
WA2SHT	WA6TLV	WØHBH
K3DI	W6VCY	G3DPX/W6
	WB6VUO	

notices being sent out during the year. Note that while many OOs are Intruder Watchers, and vice versa, the two programs are entirely different. OO is for domestic (and Canadian) amateur operation. IW is for foreign and domestic non-amateur *intruders* in our bands.

Contact. This is a function of all departments, of course, but during 1974 staff members of the CD made official contact with various offices and officials of FCC, DCPA (Civil Defense), National Communications System and MARS, both in Washington and elsewhere. Contact was also maintained closely with the American National Red Cross. Much additional in-person contact was provided by CD personnel in a total of 27 field *trips during the year.*

This completes our annual thumbnail report to the membership. For complete details of this and other reports, get a copy of the "blue book." – *WINM.*

Briefs

In the March 1975 DXCC Radiotelephone Honor Roll, the listing for I8KDB should read 315/337; the one for W3WGH, 319/337.

IN A COMMUNICATIONS EMERGENCY, *MONITOR W1AW FOR SPECIAL BULLETINS AS FOLLOWS* (times in GMT).

Phone: On the hour.

RTTY: At 15 minutes past the hour.

CW: On the half hour.

Public Service *(Continued from page 84)*

■ Vestavia, AL – Feb. 27. An inebriated driver was spotted by K4TQR/mobile 4. He called for help via the Birmingham Amateur Radio Emergency Services repeater and K4UMD answered. He called police who asked him to stay on the phone and relay information from K4TQR. Before the police could arrive, the driver hit a guard rail and went over an embankment and K4TQR stayed at the scene until police came. – *(K4AOZ)*

■ Hamilton, ON – Feb. 27. VE3DVV/mobile 3 had car trouble and called for help via repeater VE3DRW. VE3GFE answered and VE3GCP was sent to the scene to help. – (VE3FHQ, EC Hamilton)

■ Columbia, MD – Feb. 28. WB2NKT/mobile 3 was driving when the car headlights failed. He called for help on WR3ADZ and WA3VZW answered. The latter found a motel with a vacancy and WA3SWS drove to where the car was and took WB2NKT to the motel. – (WA3SWS, EC Howard Co.)

■ Mount Tom, MA – Dec. – Feb. Members of the Mount Tom ARA reported five accidents and two disabled vehicles in the area via WR1ABX and WR1ACP. – *(Intermod)*

■ Dallas, TX – Feb. Area amateurs reported 22 accidents, one street blockage, one parking violation, one fire and one suspicious person. – (WA5ZNZ)

■ St. Petersburg, FL – Mar. 2. A boat overturned with two men in the water clinging to it was spotted by K4FCW. He called through WR4ALM to WB4ARZ who phoned police. – (K4SCL, SCM SFla)

■ Arlington, VA – Mar. 2. WA3WQF/mobile 4 came upon an accident and used the auto patch on WR4ABR to notify police. – (WA3WQF)

■ Concord, VA – Mar. 2. The Lynchburg AREC group was advised by WA4WFR via two meters *that the Concord Rescue Squad had been notified* of a missing man. He had gone hunting in a mountainous area and the AREC groups were called in to supply a coordinated communications system to tie together the squads. After about nine hours the man was found. – (W4GCE, EC Area 7)

■ Pinellas Co., FL – Mar. 6. WA4KNI/mobile 4 came upon a disabled vehicle blocking traffic. Highway patrol assistance was requested through WR4ALM and WB4VWO. – (K4SCL, SCM SFla)

■ St. Petersburg, FL – Mar. 7. A stranded motorist was seen by WA4FYR/mobile 4. He *called through WR4ALM to K4QCG who phoned* for help. – (K4SCL, SCM SFla)

■ Bethesda, MD – Mar. 12. W3FOI was involved in an automobile accident and called for assistance on WR4ABR. WA3NGG responded and shifted to WR3ABC and used the auto patch to notify authorities. – (WA3WQF)

■ Pinellas Co., FL – Mar. 13. An accident blocking traffic was spotted by WA4FNY/mobile 4. He called through WR4ALM to K4KE who notified police. – (K4SCL, SCM SFla)

■ *Special Activities, August.* The Onondaga (NY) Cycling Club's Second 24-Hour Time Trial Bicycle Race was held Aug. 3-4. Area amateurs *assisted with communications at check points and* for injuries. – (W2YRL) *October.* Pettis Co., MO, AREC members assisted the c.d. and sheriffs with a Halloween Spook Patrol, in four areas of the county. They used two meters to report five fires. – (WØENW, EC) *January.* On Jan. 18-19, Central Ohio AREC members provided administrative and safety communications for the Ohio State University Winter Car Rally. The portable repeater, WR8AES was set up as the main communications link, and WR8ABX in Newark was used as a secondary link. – (W8ERD, EC) *February.* The St. Petersburg, (FL) ARC Repeater Team provided communications through WR4ALM for the Ladies Open Orange Blossom Golf Tournament. On Feb. 21-23, nine amateurs were stationed at scoreboards along the course and radioed scores and players' positions. – (K4SCL, SCM SFla) Area amateurs of Quebec provided communications support for the International Ski Marathon on Feb. 21-23. The *marathon covered areas from Montreal to Ottawa.* – (VE2DEA, SEC) *March.* Amateurs were assigned to polling places in Baldwin Park, CA, to report election totals to a central location, on Mar. 4, serving the public with quick results. – (WB6MKA, EC)

Hamfest

(Continued from page 85)

New York – Second annual Hall of Science Radio Club auction and flea market is Saturday, June 7 at World's Fair Grounds, Flushing. 10% fee on auctioned items. Admission $2. Zoo, boating, childrens farm, art and science museums. Write Box 1032, Flushing NY 11352.

North Carolina – Durham FM Association annual hamfest, flea market and fm convention is May 17-18, Downtown Ramada Inn, Durham. Sessions with well-known speakers and women's program. Flea market free, advance general registration $2; $3 at door. Children free. Saturday night banquet, registration $8. Write, Durham FM Association, PO Box 8651, Durham NC 27707.

Ohio – Logan Amateur Radio Club annual flea market and auction is May 18 at West Liberty Lions Park. Contact W8HFK.

Ohio – Vacation land hamfest is Sunday, May 18, Erie County Fairgrounds near Cedar Point. Tickets $1.00 in advance; $1.50 at gate. Info: Hamfest, PO Box 2037, Sandusky OH 44870.

Pennsylvania – 21st annual Breeze Shooters hamfest is Sunday, May 18, White Swan Park. Admission and parking free. Tables available. Amusement park adjacent to site. Contact K3DE, 2873 Beechwood Blvd., Pittsburgh PA 15217.

Pennsylvania – Annual Penn-Central hamfest is Sunday, June 1 at Union Township Volunteer Firegrounds, Route 15, Winfield. Contests, auction, flea market start at noon. Registration $3; XYL, children free. Free parking. Contact WA3OWT.

Pennsylvania – Warminster ARC hamfest is Sunday, May 18, 9 AM to 4 PM at William Tennent Intermediate School, Rt 132. Flea market, auction, free fm clinic, food available. Donation $1. XYL and children under 12 free. Sellers $2. Contact K3ZAC.

Tennessee – Annual Humbolt ARC hamfest is Sunday, May 18, Shady Acres City Park, Trenton. Flea market, ladies activities, playground. Contact Hugh Wardlaw, 2678 Cole Dr., Humbolt TN 38343.

Wisconsin – Yellow Thunder ARC annual hamfest is at Dellview Hotel, Lake Delton, Saturday, May 17. Public service, repeaters, DX, RTTY, MARS, ladies activities, transmitter hunt, swapfest, banquet and entertainment. Contact Al Gallagher, WB9BPL, 401 Market St., Lodi WI 53555.

ARRL QSL Bureau

The function of the ARRL QSL Bureau is to facilitate delivery to amateurs in the United States, its possessions and Canada, of those QSL cards which arrive from amateur stations in other parts of the world. All you have to do is send your QSL manager (see list below) a stamped, self-addressed envelope, about 5 by 8 inches in size, with your name and address in the usual place on the front of the envelope and your call printed in capital letters in the upper left-hand corner.

Cards for stations in the United States and Canada should be sent to the proper call area bureau listed below. Recent changes are in bold face.

W1, K1, WA1, WN1 – Hampden County Radio Association, Box 216, Forest Park Station, Springfield MA 01108.
W2, K2, WA2, WB2, WN2[1] – North Jersey DX Assn. PO Box 8160, Haledon, NJ 07508.
W3, K3, WA3, WN3[1] – Jesse Bieberman, W3KT, RD 1, Box 66, Valley Hill Rd., Malvern, PA 19355.
W4, K4 – National Capitol DX Assn., Box DX, Boyce, VA 22620
WA4, WB4, WN4 – J.R. Baker, W4LR, P.O. Box 1989, Melbourne, FL 32901.
W5, K5, WA5, WB5, WN5[1] – ARRL W5 QSL Bureau, Box 1690, Sherman, TX 75090.
W6, K6, WA6, WB6, WN6 – **ARRL W6 QSL Bureau**, 2814 Empire Avenue, Burbank, CA 91504.
W7, K7, WA7, WN7 – Willamette Valley DX Club, Inc., PO Box 555, Portland, OR 97207.
W8, K8, WA8, WB8, WN8 – Columbus Amateur Radio Assn., Radio Room, 280 E. Broad St., Columbus, OH 43215.
W9, K9, WA9, WB9, WN9 – Northern Illinois DX Assn., Box 519, Elmhurst, IL 60126.
WØ, KØ, WAØ, WBØ, WNØ – Dr. Phillip D. Rowley, KØZFL, 5209 Loma Linda Road, Alamosa, CO 81101.
KP4, WP4[1] – Juan S. Sepulveda, KP4QM, Cerecipo 99, Alturas De Santa Maria, Guaynabo, PR 00731.
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VE5 – A. Lloyd Jones, VE5JE, 2328 Grant Road, Regina, SK, S4S 5E3.
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VE8 – Frank Van Der Zande, VE8OO, P.O. Box 72, Fort Smith, NWT XØE ØPØ.
VO1 – William Coffen, VO1KM, P.O. Box 6, St. John's NF.
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[1] 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*.

Strays

FEEDBACK

In "Practical Ideas for the ATV Enthusiast," Part II, there is an error in Fig. 6, page 33, February *QST*. The polarity of the electrolytic capacitor connected from point B to ground is shown wrong. This is the –90-volt bias line so the "plus" side of the capacitor should be grounded.

Thanks to W8DMR, who pointed out the mistake.

In the article "Using Double Balanced Mixers," in March, 1975 *QST*, a line was inadvertently dropped from the text, causing some confusion. On page 17, in the last paragraph, line 7 should read . . . 50-ohm mixer output impedance to a 1500-ohm gate-input impedance . . .

The following corrections should be made in the information given in the description of the W7BBX "Ultramountaineer," April, 1975, *QST*.

In the schematic diagram of the transmitter and keyer portions of the transceiver, Fig. 2, the value of R14 should be 22k, not 22.

In the receiver and audio portions, Fig. 3, C41 should be .05 μF, not .01. The .01-μF capacitor across R20 is not labelled. It is C18 in the information that would accompany a readymade circuit board.

Reference to "Fig. 4" in connection with the photograph of the dense circuit-board pattern in template size was deemed impractical.

Station Activities

All operating amateurs are invited to report to the SCM on the first of each month, covering station activities for the preceding month. Radio Club news is also desired by SCMs for inclusion in these columns. The addresses of all SCMs will be found on page 6.

ATLANTIC DIVISION

DELAWARE – SCM, Roger E. Cole, W3DKX – SEC: K3KAJ. PAM: WA3DUM. RM: W3EEB. PSHR: WA3DUM 61, K3KAJ 44. The First State Club had an excellent talk by K3NEZ on his DX operations from Hong Kong and Macao. WA3PCC is back in harness editing an excellent Club Bulletin for First State and WA3RYH is in charge of general publicity. K3KAJ welcomed a new YL jr. op in Feb. The Del. Repeater Assn. held sign-ups for New Castle County RACES at its Mar. meeting. WN3WPY should have his new General Ticket in hand by press time. He scored 14,800 points in the Novice Roundup while fellow Del. ARC member WN3WLY made 5,025. WA3YQV now mobile on 75. DTN QNI 303, QTC 71; DEPN QNI 78, QTC 14, Traffic: K3KAJ 91, WA3DUM 87, W3DKX 54, W3EEB 54, WA3QLS 24, WA3QFP 19, K3YHR 10, WA3TVS 8, WA5RUD/3 7.

EASTERN PENNSYLVANIA – Acting SCM, Paul D. Mercado, W3BBF – SEC: W3BBF. PAM: WA3PZO. RMs: K3DZB, W3EML, K3MVO. PSHR: K3OIO 44, WA3NDQ 31. Regret recent withdrawal of W3ZRQ as SCM. The Acting SCM will endeavor to carry the duties of this office to the best of his abilities. Thanks for the encouraging notes received in mail. Southern Chester County Amateur Radio Club hosted K3OBU and WA3CMQ who discussed and presented slides on a Repeater Station design. PENNARC, AREC members did a great job during SET 1975. WA3QLG home from college enjoying a short vacation, WR3ADV is now used for AREC weekly drills. This Repeater covers Chester, Montgomery, Philadelphia and Delaware Counties. WA3VCS is Net Control every Sun. at 2030 local time. K3WAC is the new EC for Chester County. W3CUL hit the jackpot working traffic from two Fla. Fairs. W3EML recovering nicely from recent operation. Our ECs in EPA are doing a great job with their local nets. CMTN is buzzing along with messages. W3WRE says she is busy with traffic these days. WA3WKR at PA Institute of Technology is sponsoring Explorer Post No. 173. They are supplying radio communications during a three-day Olympic meet at Pennhurst. WA3NDQ reports flood alert activities in the Bloomsburg area with WA3QXI, WA3TMV, WA3UDV, WA3UCC and K3KFL participating. W3IOU back on cw and is teaching Morse Code in the Hatboro area. WA3UDV has a new keyer, invites 40 wpm QSOs with anyone. EPA CW Net had QNI 374, QTC 195; EPAEP&T QNI 369, QTC 175; PTTN QNI 119, QTC 49. Traffic: W3CUL 3696, W3VR 1114, W3WRE 405, WA3PHQ 281, WA3QYY 249, K3DZB 216, W3EML 164, WA3PZO 149, WA3SVJ 114, WA3VDQ 100, W3IPX 97, W3BNR 83, K3OIO 81, WA3UKZ 53, W3VA 34, K3DHU 31, K3MVO 30, WA3WOE 28, W3ADE 20, WA3UDV 19, WA3NDQ 14, W3LC 13, WA3CKA 12, K3HXS 10, W3CBH 5, W3OY 4, WA3YFX 2.

MARYLAND-DISTRICT OF COLUMBIA – SCM, Karl R. Medrow, W3FA – SEC: K3LFD. RM: W3FZV. PAM: WA3EOP. NCM: WA3LPL. Feb. PSHR: W3ECS and WA3EOP. W3JZY, W3KA, W3KW and W3SW have earned 50 year QCWA certificates. Congrats. W3QW reports the Cavalier Amateur Radio Society is a new one with W3TWX, WA3HNJ, WA3SSE, W3HXF and W3ZNW in rare Calvert County. WA3UUM is not anxiously awaiting the farming season. WN3YKK is working hard on MDNN with so-so results. WA3YWC, ex-W4TEM is a new MDC man. WA3UYF plans for automobile license plates. W3CDQ returns from a pleasant Fla. trip. WA3RVU makes a brave effort at the MDD bulletin despite apathy and inflation. WA3NUL and the ITCHYCOO PARK VHFers plan the 5th annual Worldwide VHF activity July 26 and 27. K3RUQ is WAS 160 meters and 50 countries confirmed. Congrats. W3TN was busy printing up the QCWA dinner tickets. K3DI has his garden plans all set. W3OKN is racing between his WPa and MDC QTHs. WA3SJY reports air-sea rescue operations intermittently over the Feb. 24-26 period had the regular net all tied up. W3EOV is enjoying the Senior Retired Volunteer program as an active driver. W3DFW temporarily at work in Tex. WA3EOP does the chores for both MDCTN and the WR PON. W3FZV found 21 happy Novices in the Roundup. WA3SJS busy on MARS has upped his power on 80 cw. K3ORW passes the Advanced Class exam and earns the CP20, congrats. WA3WRN, WA3UPH, WA3UYB and WA3PRW are all new OPSs. WA3LPL's rig failed, but was all ready with a spare. W3FCS makes the NCS job look easy. With the nets: MEPN toppers were W3ADQ, W3HWZ, W3JQN, WA3LPL, WA3PRW and WA3WRN. Close behind W3DKX, W3FA and W3LDD. The MDCTN top honor list: WA3LPL, W3ADQ, W3FA, W3LDD and WA3UYB. Net/sessions/Tfc/QNI avg. MEPN/22/159/27.1; WR PON/12/134/ 20.7; MDCTN/16/117/21.7. The Phone net meets at 6 PM local on 3920 kHz daily; WR PON at 5:15 local week days on 3905 kHz; the CW net daily at 7 and 9:45 PM on 3643 kHz. Traffic: WA3EOP 222, W3FA 216, W3FZV 106, WA3WRN 83, WA3LPL 78, WA3UPH 78, WA3RVU 76, WA3SJY 69, W3FCS 50, W3OKN 47, WA3UUM 46, WA3PRW 32, KØECG/3 26, W3EOV 25, WA3UYF 19, W3TN 18, WN3YKK 14, WA3SJS 13, K3ORW 9, K3RUQ 6.

SOUTHERN NEW JERSEY – SCM, Charles E. Travers, W2YPZ – SEC: W2JI. PAM: WA2DVE. RM: W2JI. Recent appointments include K2QIJ, pres. of the West Jersey Radio Amateurs Assn. OPSs: WB2EWS, WA2LZB. Endorsed WA2FGS as OPS. WB2GJH now a General, WA2TRS upgraded to Advanced Class license. Hearty congratulations, fellows. The GCARC will hold its annual banquet on May 10 at the Tall Pines Inn, Sewell, NJ. See WB2FTF for tickets and further details. Code classes for Novice and General class are planned for the DVRA. Ground breaking was recently held for a new repeater tower at the DVRA Club site. W2APD operating the 14 MHz band with a new linear. SEC W2JI took part in the recent SET from Winter Park, Fla. WA2DVE, Mgr. of the NJPN reports 31 sessions with 519 QNI and 286 QSP for Feb. W2ZI is a regular member of the Pepper Net which convenes each nite at 11 PM on 145.20 MHz. Other members include W2HX, WA2TNS, W2VU, W2YPZ, WA2WXP, WA2IVP and W2IDE. W2FDE joins the net each Sat. and Sun. nite. Traffic: WA2LZB 65, W2HIF 44, WB2FWS 21, W2YPZ 16, W2ORS 14.

WESTERN NEW YORK – SCM, G.W. Hippisley, K2KIR – Asst. SCM: R.M. Pitzeruse, K2KTK, SEC: W2CFP. For net information, see Nov. '74 QST, but correct listing for EDST. Our man in the Caribbean, K2FJ/VP2EEC, made 1400 QSOs in the CW DX Test as VP2E. He also operated /VP2D, went scuba-diving and generally enjoyed himself. By now he should be back in sunny Buffalo. WB2JRX active on 2RN but expects track team practice to cut down on his operating hours. The Rochester repeater (28/88) now has direct access to the Monroe County Radio Center for emergency dispatching, thanks to a 2M rig at the Center, manned by local hams. K1ZND of ARRL Hq spoke to RAGS on FCC's Restructuring proposals, in spite of ole man winter's efforts. W2RUF back at home after a recent hospitalization. K2DNN and WA2TCZ active in another Flood Alert. WA2EAJ hopes a speech processor will put muscles on his "puny" signal. The new Auburn ARA repeater is on 147.87/27 with good coverage. W2OE spent two months in South Carolina at the home of K4ZB, fishing, shucking oysters, and handling traffic. WB2KUN is Traffic Mgr. for SUNY/Buffalo's WA2NPQ. OVS sentiment unanimous for Feb., no unusual vhf propagation or contacts. WN2VXW going after his General Class license and building a VFO for his HW-16; Jim would like to correspond with any WNY hams. Extra Class tickets coming to WA2DRC and WB2JRX. New OO WA2UUA spent the month building a keyer. OOing and contest operating. Congratulations to WB2JRX, W2FR and W2MTA on making PSHR this month. Please try to get all station activities reports to me by the 7th of the month. Traffic: WA2KCW 297, W2FR 224, WB2VND 153, W2MTA 149, W2OE/4 128, WA2ICB 122, WB2QIX 98, WB2IRX 87, WB2AEK 86, WB2THS 75, W2FZK 63, WA2HSB 57, WA2PUU 51, WA2TPC 46, W2HYM 36, WN2VRJ 34, K2OFV 32, WA2DRC 31, WB2KUN 29, W2ROF 25, W2PZL 24, WA2TSR 15, WN2YGN 14, WB2CTB 13, WB2ODN 13, K2RTQ 12, W2EAF 11, K2KIR 10, WA2SMQ 9, K2KTK 7, K2DNN 6, WA2VKI 6, WB2WPA 6, WA2AIV 5, WA2FMM 5, K2IMI 5, WA2BAJ 3.

WESTERN PENNSYLVANIA – SCM, Donald J. Myslewski, K3CHD – SEC: W3ZUH. Asst. SEC: K3SMB. PAM: K3ZNP. RMs: W2KAT/3, W3LOS, W3KUN. WPA CW Traffic Net meets daily on 3585 kHz at 7:00 PM local time. Pa. Traffic Training Net meets daily on 3610 kHz at 6:30 PM local time. Pa. Phone Net meets Mon. thru Sat. on 3960 kHz at 5:30 PM local time. The Nittany ARC honored W2KAT/3 as the 1974 "Ham of the Year" at their Feb. meeting of which I had the pleasure of attending as a guest. The Juniata ARC displayed and operated an amateur radio station at the Greater Lewistown Shopping Plaza. WA3RVD acquired a new HW202. W3ATO is the proud possessor of a 40 wpm Code Proficiency Certificate. K3ZFP set up operations at new QTH in Sharon. W3API busy constructing a 5/8 wave 10-meter vertical. The Indiana County ARC has elected WA3UGW, pres.; Curt Lukehart, vice-pres.; W3FVU, secy.-treas. Congrats to WA3VZN on receiving the General Class ticket and WA3OKK who passed the Advanced Class exam. W3EGJ currently building an SB200. K3JSV, EC for Cambria Co. quite active recruiting new members. K3CR, Penn State ARC handled many messages during Valentine Day. The South Hills Brass Pounders and Modulators conducted their second transmitter hunt on 10 and 2 meters. Cold and wet weather did not hinder the large attendance to the Two Rivers ARC Swap & Shop.

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Kit SB-634, 14 lbs., mailable **179.9**

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Kit SB-614, 17 lbs., mailable **139.9**

SB-644 remote VFO

Designed exclusively for the SB-104. It provid split transmit and receive control and you are frequency-limited in any way — transmit at o end of the band, receive at the other. The "64 even has two crystal positions for fixed-frequen control. The "644" has a linear dial, but the exa frequency is displayed on the "104's" digital rea out. The display automatically changes wh switching from transmit to receive.

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HWA-202-9, 4 lbs., mailable **37.95***

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W3OFM, W3TZX and WA3TRB conducting code and theory WA3SZX active working through Oscar 7. I hope to meet a with the many WPA amateurs at the Breeze Shooters Han May 18. The Indiana County ARC meets the first Wed. c month at "Bills Place" in Indiana, Pa. at 8:00 PM. The Pa Ph had 24 sessions, 630 stations check in, and handled 555 m The WPA CW Traffic Net had 28 sessions, 348 stations ch handled 291 messages. K3CR made BPL. PSHR: K3CR WA3VBM 41, Traffic: K3CR 470, W2KAT/3 447, W3U WA3VBM 179, W3NEM 151, W3EGJ 82, W3RUL 65, WA3S K3HCT 48, K3VQV 41, W3KUN 39, K3ZNP 35, W3 WA3EJP 30, K3CHD 21, K3ASI 15, K3SMB 15, W3TTN 9, S, WA3OKK 3, K3SJN 3, W3IDO 2, WA3TGR 2.

CENTRAL DIVISION

ILLINOIS – SCM, Edmond A. Metzger, W9PRN – Ass Harry J. Studer, W9RYU. SEC: W9AES. PAM: WA9LD K9ZTV, Cook County EC: W9HPG.

Net	*Freq.*	*GMT/Days*
ILN	3690	2330 Dy
ILN	3690	0300 Dy
Ill Phone	3915	2245 Dy
NCPN	3915	1300 MS
NCPN	3915	1800 MS
IEN	3940	1400 Su

This column's sympathy to the families and friends of W and W9CE who recently joined the ranks of Silent Keys. W received his 20 wpm CP award. Harry Dannals W2TUK, ARRL was host speaker at a special meeting of the Sa Valley Radio Club on Feb. 21 in Springfield, Ill. He will a guest at the Starved Rock Radio Club Hamfest on Sun. Ju the Princeton Fairgrounds. WA9YOV, WB9MYN, WA9V W9LBQ were elected officers of the Libertyville and Mu Amateur Radio Society for 1975. The Waukegan UHF elected WA9SLD, WA9AKP, W9YPO and WA7SRX as their for the coming season. New Novice heard was WN9QB Chicago FM Club will hold their EXPO '75 on Sept. 6 and Lake County Fairgrounds. The Six Meter Club of Chicago' Hamfest will be at the Santa Fe Park on June 8. WN9OVZ WB9OVZ Advanced. Please forward your appointment ce for reendorsement if it has lapsed. We are trying to keep updated. Congratulations to WA9SVW and his XYL on bi harmonic, Karen. Now is the time to make the final arran for the annual Field Day sponsored by the League. Still request forms from Headquarters. New appointments WA9DLT as OO, WA9NXG as ORS, K9ZTV as OBS and W as OPS. Traffic: WA9VGW 397, K9MWA 316, WA9J WB9NOZ 155, W9OYL 114, W9HOT 111, K9ZTV 98, W9N W9JXV 79, W9LNQ 68, WB9LQC 68, WA9ULP 55, K9 W9KR 37, W9VHD 32, WB9DED 26, WB9KZP 25, W9P WB9PHM 21, W9HPG 18, WB9ELP 8, W9RYU 8, W9VRY 7.

INDIANA – SCM, Michael P. Hunter, WA9EED W9UMH. PAMs: WA9OAD, W9PMT.

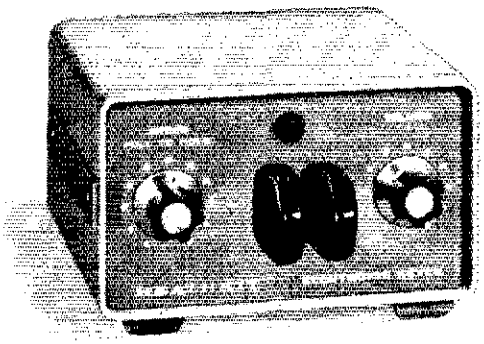
Nets	*Freq.*	*GMT/Days*	*QNI*	*QTC*	*Time*	
ITN	3910	1330,2300 Dy 2130 M-S	3309	511	2573	W
QIN	3656	0000,0300 Dy	208	180		W
IPON	3910	1300,2130 Su	134	12	152	W
Hoos. VHF	50,58		539	12	808	

The summer season is now nearly a reality. This is the time those winter dreams of monster antennas into reality. Con W9FMJ on his 40 wpm CP award. W9GX is experiencing difficulties. WA9UMH is no longer the SEC. It now is W9 that's strange, he doesn't even look old enough. W9JVF has returned from his trip to ZB2CS where he operated bef during the ARRL DX Test. K9PNP advises that military pho makes super low band antennas. K9UWA is sporting a new line. Congrats to K9LSB on his appointment to the VHF Advisory Council. WN9PWO reports that the daytime Indian active on 3720 at 2000Z daily and could sure use some from others. WB9OMX reports QIN activity is beginning somewhat better. Traffic: (Feb.) W9FWH 264, W9QL WB9OMX 210, WB9MDS 179, WA9OAD 178, WB9EOT 11 87, W9UMH 77, K9CBY 66, WA9BVS 44, WA9OKK 31, 30, W9MCJ 29, K9EQT 28, K9RWQ 18, W9UEM 16, WA9 W9PMT 15, W9BUQ 14, WB9HCH 14, W9HUF 13, WA9C K9JQY 12, K9PSL 12, WN9PFZ 11, W9KWB 10, W9 WA9TJS 8, K9YBM 8, W9ENU 5, W9BDP 4, W9JGE 4, WB9 K9PNP 1. (Jan.) WA9UMH 507.

WISCONSIN – SCM, Roy A. Pedersen, K9FHI – SEC: PAMs: W9AYK, WA9LRW, K9UTO. RMs: WB9ICH, W9MFG, K9LGU.

Nets	*Freq.*	*Time(Z)/Days*	*QNI*	*QTC*	
BWN	3985	1145 M-S	389	285	
BEN	3985	1700 Dy	699	182	W
WSBN	3985	2230 Dy	1318	293	
WNN	3725	2230 Dy	100	36	
WSSN	3662	2330 MWF	65	24	
WIN-E	3662	0000 Dy	280	191	
WIN-L	3662	0300 Dy	155	61	

New Heath Ham Accessories



New solid state Heathkit Electronic Keyer...49.95

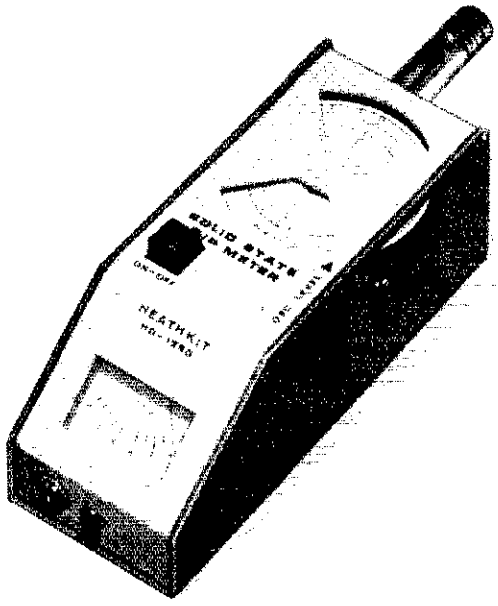
Sending code's easy with the HD-1410 whether you're operating base or portable. The dot and dash paddles' travel and tension are easily adjustable. When the two paddles are treated as one, the HD-1410 operates like a single-paddle keyer with dot and dash memories. Iambic operation forms most characters with reduced wrist movement. Dots and dashes are self-completing and always in proper proportion. During construction, you select the speed range you want up to 35 words per minute or up to 60 words per minute. Operates on 120 VAC or 12 VDC. Adjustable sidetone frequency, built-in speaker, headphone jack, weighted base. Styled to match our famous "SB" line.

Kit HD-1410, 5 lbs., mailable **49.95***

HD-1410 SPECIFICATIONS — Keying Speed: Variable from under 10 to over 35 or from under 10 to over 60 wpm. **Keying Output, Positive Line to Ground:** max. voltage open circuit or spikes — 300 volts. Max. current — 200 mA. **Keying Output, Negative Line to Ground:** max. voltage open circuit or spikes — 200 volts. Max. current — 10 mA. **Audio:** internal speaker or jack for optional hi-Z (at least 500 ohms) headphones. **Sidetone:** adjustable from 500 to 1000 Hz. **Internal Controls:** sidetone frequency, paddle tension, paddle travel. **Rear Panel Connections:** AC power cord, 12-volt power input, keyer out, headphones, receiver audio in, ext. key. **Temperature Range:** 0°C to +40°C (typ. −10°C to +40°C) or approx. 50°F to 105°F. **Power Requirement:** 120/240 VAC (±10%), 60/50 Hz, 3.5 watts or 10-14.5 VDC, negative ground, 150 mA. **Dimensions:** approx. 3" H x 5" W x 7½" D. **Net Weight:** 3 lbs.

HEATHKIT ELECTRONIC CENTERS — Units of Schlumberger Products Corporation Retail prices slightly higher.

ARIZ.: Phoenix; CALIF.: Anaheim, El Cerrito, Los Angeles, Pomona, Redwood City, San Diego (La Mesa), Woodland Hills; COLO.: Denver; CONN.: Hartford (Avon); FLA.: Miami (Hialeah), Tampa; GA.: Atlanta; ILL.: Chicago, Downers Grove; IND.: Indianapolis; KANSAS: Kansas City (Mission); KY.: Louisville; LA.: New Orleans (Kenner); MD.: Baltimore, Rockville; MASS.: Boston (Wellesley); MICH.: Detroit; MINN.: Minneapolis (Hopkins); MO.: St. Louis (Bridgeton) NEB.: Omaha; N.J.: Fair Lawn; N.Y.: Buffalo (Amherst), New York City, Jericho (L.I.), Rochester. White Plains; OHIO: Cincinnati (Woodlawn), Cleveland, Columbus, Toledo; PA.: Philadelphia, Pittsburgh; R.I.: Providence (Warwick); TEXAS: Dallas, Houston; VA.: Norfolk (Va. Beach); WASH.: Seattle; WIS.: Milwaukee.



New solid state Heathkit Dip Meter...59.95

A better dip meter at lower cost. The Colpitts oscillator covers 1.6 to 250 MHz in fundamentals with MOS-FET paraphase amplifier and hot-carrier diodes for more sensitivity and better dip. Q-multiplier for greater detector sensitivity and responsive 150 μA meter movement for positive resonance indications. Phone jack for modulation monitoring. Solid-state design and 9-volt battery operation. Custom molded gray carrying case protects the meter and the 7 color-coded, pre-adjusted, plug-in coils in transit, and makes a handy storage place. Build it in one evening. Nearly everything mounts on two circuit boards. And when you finish, you'll have the best dip meter around — for a lot less money.

Kit HD-1250, less battery, 4 lbs.. mailable. .**59.95***

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CN-144 2m conv (14-18) 29
PS-1 AC supply 9
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621 VFO 39

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CLEGG/SQUIRES-SANDERS
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418 DC supply/mod 25
Interceptor Receiver 219
Interceptor B 289
Venus 6m Xmtr 175
416 AC supply 75
Apollo Linear 175
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22'er FM (series 25) 199
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312B-4 station control 229
KWM-1 Transceiver 225
351D-1 mount 35
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KWM-2 Xcvr (early) 595
351D-2 mount 75
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516F-2 AC supply 125
516E-1 DC supply 75
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2B Receiver 189
2BQ spkr /Q mult. 25
2C Receiver 189
R-4 Receiver 269
R-4A Receiver 289
R-4B Receiver 339
MS-4 speaker 15
SC-6 6m converter 59
CPS-1 conv supply 12
CC-1 conv console 39
TR-3 Transceiver 299
TR-4 Transceiver 399
TR-4/NB Transceiver 459
RV-4C remote VFO 79
TR-6/NB 6m Transceiver 599
RV-6 remote VFO 89
T-4XB Transmitter 339
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DC-4 DC supply 89
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GT-550A Transceiver 329
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DC-35 DC supply 65
G-500 DC supply 75
XO-550 crystal adaptor 29
VX-35 VOX 12
CAL-35 Calibrator 9
SC-35 speaker 9
DAC-35 Deluxe console 69
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AC-210 AC supply 19

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G-50 Transceiver 149
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911A AC supply 39
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GSB-100 Transmitter 169

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S-106 Receiver 39
SX-117 Receiver 189
HT-32 Transmitter 179
HT-32A Transmitter 219
HT-37 Transmitter 159
HT-40 Transmitter 49
Loudenboomer Mk IIA 275
SR-150 Transceiver 249
SR-160 Transceiver 149
PS-150-120 AC supply 75
PS-150-12 DC supply 49
MR-150 rack 19
SR-400 Transceiver 495
FPM-300 Transceiver 349
FPM-300 Mk II 399
P-500 AC supply 85
HA-6 Transverter 89
P-26 AC supply 45
SR-150 Transceiver 249
SR-160 Transceiver 149
PS-150-120 AC supply 75
PS-150-12 DC supply 49
MR-150 rack 19
SR-400 Transceiver 495
FPM-300 Transceiver 349
FPM-300 Mk II 399
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HA-6 Transverter 89
P-26 AC supply 45
SR-42A 2m Transceiver 89
HA-26 2-6m VFO 39

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HQ-170 Receiver 149
HQ-170C Receiver 159
HQ-170AC/vhf Receiver 259
HQ-215 Receiver 219
SP-600 Receiver 125
SP-600JX-17 275
S-200 speaker 19
HX-50 Transmitter 175

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RX-1 Receiver 149
SB-300 Receiver 199
SB-303 Receiver 269
SB-600 speaker 15
HS-24 speaker 9
DX-20 Transmitter 29
DX-60B Transmitter 69
TX-1 Transmitter 99
HX-20 Transmitter 125
HW-16 Novice Xcvr 89
VHF-1 6-2m Transmitter 79
SB-400 Transmitter 275
HA-10 Linear 175
SB-200 Linear 219
HW-22A 40m Xcvr 85
HW-32A 20m Xcvr 85
SB-100 Transceiver 325
SB-101 Transceiver 349
SBA-100-1 mob mt 9
SB-610 signal monitor 69
SB-650 freq display 169
VF-1 VFO 19
HG-10 VFO 29
HG-10B VFO 34
HW-29 (Six-er) Xcvr 79
GP-11 DC supply 9
HW-17 2m Transceiver 75
HP-13 DC supply 49
HP-13A DC supply 54
HP-20 AC supply 24
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HP-23A AC supply 49
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HM-2103 load/wattmtr 49
HD-15 phone patch 19
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NCX-3 Transceiver 169
NCX-5 Transceiver 279
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NCXD DC supply 75
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AR-2 2m Amplifier 89
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SB-34 Transceiver 249
SB2-VOX 15
SB2-MB mount 9
SB2-DW Codaptor 25
SB2-MIC microphone 9
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SR-C851T 2m FM 269
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406B VFO 49
117B AC supply 59
MB-40 40m transceiver 199
160 external VFO 75
260 Cygnet Xcvr 269
14A DC converter 29
350 Transceiver 269
400 Xcvr/420 & 117B 299
500CX Transceiver 389
500CX/SS 16B 439
117C AC supply 65
512 DC supply 69
117XC AC supply 85
14C DC module 49
117X basic AC supply 65
14-117 DC supply 99
600T Transmitter 399

750 6m Transceiver
250C 6m Transceiver
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Xverter (50 MHz)
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FT-2FB 2m FM
FT-2 Auto 2m FM

3-4-75

All items are subject to prior sale. Amateur Electronic Supply reserves the right to sell such iter as power supplies with their matching equipment only, and not seperately - depending upon c stock situation. To insure quality, our used gear is serviced and made ready for shipment after r receive your order - so please allow for a possible delay (approximately 5 to 10 working days

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Phone: (414) 442-4200

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IMPORTANT! - Please Be Sure to send all Mail Orders and Inquiries to our Milwaukee store, whose address is shown above. The following Branch stores are set up to handle Walk-in Business only:

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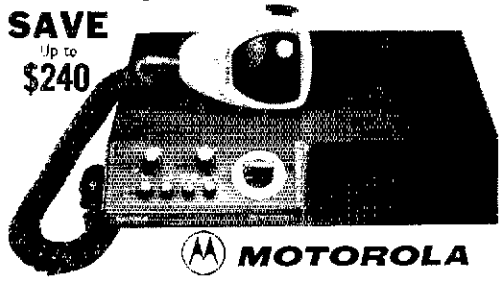
While our supply lasts! - Factory Warranty

Factory Authorized Sale !

SAVE Up to **$240**



MOTOROLA

If you purchase a Metrum II on Sale as shown below — We will also sell you a PK-736 Tone Encoder kit for just $1 (reg. $45) and, or a T-1670A AC Power Supply for just $99

	reg.	Now
10 watt Metrum II	$399	$279
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Crystals (one per channel)	9.00	PK-735 Multiple Repeater	
Repeater Offset Crystal	13.50	Offset Modification Kit	39.0
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Purchase a ICOM IC-230 for $489, with No-Trade, and you may take a $50 Credit towards the purchase of other merchandise.

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is the Best Place to purchase your new

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RY-4 Teletype adaptor	13.00
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MARS – 5 crystals	22.00
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Tropical Broadcast – 3 Crystals	13.50
RP-500 Receiver Protector	90.00

TR-72

TR-22C

Order Today
Direct from this Ad

R-4C

L-4B

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SAVE up to $100.

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TR-72 2m FM	$40 Bonus	TR-4C Xcvr	$60 Bonus
R-4C Receiver	$50 Bonus	C-4 Console	$40 Bonus
T-4XC Xmtr	$50 Bonus	L-4B Linear	$100 Bonus

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HOURS: Mon & Fri 9-9; Tues. Wed & Thurs 9-5:30; Sat 9-3

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4828 W. Fond du Lac Ave. Milwaukee, Wis. 53216

I am interested in the following new equipment:

I have the following to trade: (what's your deal?)

Ship me:

I Enclose $_____; I will pay balance (if any):
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☐ Master Charge* ☐ BankAmericard

Account Number:

Expiration DATE _____ *Master Charge Interbank number _____ (4 digits)

Name:

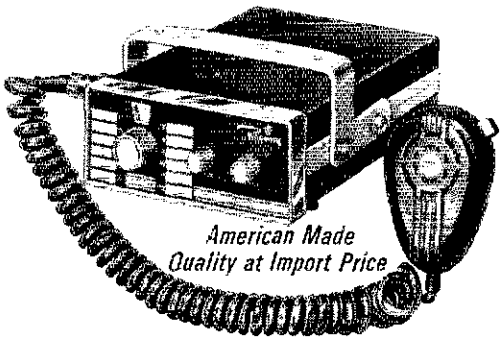
Address:

City & State:

☐ Send used gear list

NEW! HR-440

12 Channel
440 MHz FM Transceiver



Delivers 10 Watts of Power and 12 Channel Capability

You'll like the crystal clear transmit and receive performance of this compact 440 MHz unit . . . and so will those listening. Solid state design brings you the best in American Made circuitry. Features include Automatic Frequency Control and UHF power module. Frequency range is 420-450 MHz, with 0.5 μv tune-up sensitivity and 3 watts audio output. No need to worry about current drain, either. And all of this for the low, low price of only

$349.00

Amateur Net

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12 Channel-25 Watts
6 Meter FM Transceiver

HRT-2
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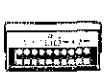
2 Meter FM Transceiver



ACT 10H/L/U
3 Band-10 Channel
FM Scanner Receiver

WRN	3660				KØG
WIPON	3928	1701 M-F	579	47	WA9N

W9SZL FC endorsed. WNN certs to WN9NRK, WN9PTX, WB9MI WN9OPI, WB9ICH. YTARC gets memorial call K9ODK. Do forget May 17 YTARC Hamfest Lake Delton. Mark July 13 WNA picnic, Oshkosh. SET 1975 success for Wisc. DT9RN 210 3940 kHz needs your support. Wisc. QSO party a success; WB9F made over 16,000 points. K9KGA was in Senegal operat K9KGA/6W8. YTARC has three new Novices. New officers Oshkosh RC WB9OAH, pres.; W9KKK, vice-pres.; K9LWV, se -treas.; W9IJY, board. K9PKQ appointed PR Asst. by W9HI FLARC Novice class of 35 members doing fine. Regret to rep Silent Keys: WA9TWY, WB9BOT, WA9WMX. ORS renew WB9KPX. Calgary Centennial ARC convention Aug. 1-2-3. 19 Door County ARC elected WA9ARB, pres.; W9OVO, vice-pr WB9MFO, secy.-treas. WNN doing fine. Both sessions of WIN I two good months, CW nets need more QNI. W9KB recei membership in QCWA and one year membership in ARRL court of W9DKH. Nicholet ARC officers Emil Eidt, treas.; WB9NK vice-pres.; WB9KRR, pres. XYL of W9CTI passed away, c condolences. WSBN cert to W9WAW. WIN-L cert to W9PV W9SQJ in Fla. W9ROM now W9NA. WIN-L cert. to WA9KE WB9KRR. WIN-E cert. to WB9KPX. WSBN endorsed W9IIF. R to K9CPM. Traffic: (Feb.) K9CPM 788, W9CXY 243, W9DND 1 WB9KRR 175, K9FHI 159, WA9QVT 152, WB9KPX 122, K9L 85, W9AYK 80, W9MFG 71, WB9NME 69, W9PD 69, W9IHW W9VBQ 66, K9KSA 56, WA9LRW 52, WA9KRF 50, WB9ABF K9UTQ 42, W9MMP/Ø 40, K9VSO 33, WA9PKM 32, WB9LSS WN9PTX 25, W9YFW 19, K9HDF 18, WB9HLS 18, W9BKD WB9BRF 15, WN9NRK 15, WB9KMQ 13, WB9LKG 11, WB9I 10, W9MDU 9, W9NA 8, WB9NKC 5, WN9PYG 5, W9YFW WB9HRP 1.. (Jan.) K9VSO 48, W9YFW 18.

DAKOTA DIVISION

MINNESOTA – SCM, Tod Olson, WØLYP – SEC: WAØOI PAMs: WAØYVT, KØFLT, WBØFLT. RMs: KØZXE, WAØYA Chief OBS: WBØLOR. Chief OO: WAØPRS. The Minn. Call Frequency is 3925 kHz.

Net	*kHz*	*Time/Day*	*Sess.*	*QNI*	*QTC*	*Mg*
MSN-1	3685	6:30 P Dy	28	254	98	KØZ
MSN-2	3685	10:15 P Dy	27	108	27	WAØYA
MSPN-N	3945	12:05 P Dy	28	928	191	KØF
MSPN-E	3925	5:45 P Dy	28	797	116	WBØF
PAW	3925	9A5 P XSU		3747	259	WAØYV
MWX	3925	6:15 P Dy	27	332	316	KØG

WBØMOT now an Advanced Class licensee. WØUMX vacationing Tex. WØRIL and WBØEKC vacationing in KH6-Land. The rec sale by Burlington-Northern of all the RR 2-meter equipm should put a lot of new sigs on the band. The new Mesabi Ra Club elected WAØKMR, pres.; KØGNI, vice-pres.; KØRMX, tre WØNO, exec. secy. WAØRLD passed his Extra. KØZXE (cheif R starting a new Novice traffic net. Help him out by sending him name and address of any novice you know. This month we want recognize the PAW NCS group: WAØCCA, WBØCPC, WBØCY WBØDBD, WBØEMI, WBØFNK, WBØFWP, WØGLU, WBØHW WAØIIB, WAØRRA, WAØTFC, WAØVUP, WB9IXT, WAØYA WAØYVT. (Also WAØVTZ the AM captain). These are the pco who were there when the blizzard hit. Congrats. Don't forget 3912 WINDS frequency during a WX watch or warning. BP WBØHOX, WØNO, WAØYVT. Traffic: WBØHOX 641, WØNO 2 WAØYVT 223, WØOMY 186, KØZXF 107, WBØFTL 104, WAØO 100, KØCSE 88, KØRMX 84, KØCVD 81, KØGNI 69, KØPIZ WAØVUP 61, WØIYP 54, WAØTFC 54, KØZBI 45, KØFLT WBØCPC 34, WBØCYM 32, WAØYAH 31, WAØURW 30, WBØK 29, KØGLI 28, WBØLOR 27, WBØLDW 26, WØWAS 23, WAØR 22, WAØCCA 20, WBØMHL 19, KØWXH 16, WAØDUA 15, WAØ 15, WBØDBD 14, WAØYWA 14, WBØEKC 11, WØRIQ WBØGMK 9, KØJTW 8, WAØWHT 8, WBØGMJ 7, WAØMMV KØSXQ 6, WAØWOV 5, WØALW 4, WAØIAW 4, WBØMOI WAØJPR 2. WBØJYT 2, WØOPX 2.

NORTH DAKOTA – SCM, Harold L. Sheets, WØDM – SE KØRSA. OBS: KØPVG. RM: WBØHHC. OO: WØBF, WØOEL revived the Annual Goose River Picnic to be held in Highland Prk Mayville, ND June 7 and 8. The Annual International Hamfest the Peace Gardens is July 12, 13. WAØUNA busy with new h shack in the basement. WAØRWM has consented to act as Explorer Post advisor. WBØHHC and WAØSUF busy with National nets. WØDM has checked in on the DTRN on 40. WAØM now has an antenna up. The Grand Forks Repeater WRØA working quite well from the top of the State Mill. KØPVG do some work on WRØAFV at Petersberg. WRØAED at Grafton ser that area well too. The Dakota Feedbacks ARC held their ann meeting at the Belvidor Steak House in Mar.

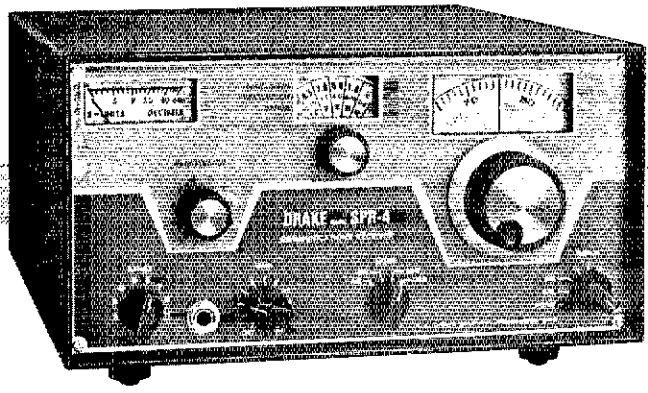
Nets	*kHz*	*CDST/Days*	*Sess.*	*QNI*	*QTC*	*Mg*
Goose River	1990.0	0900	4	54	0	WØC
YL WX	3996.5	0730 M-F	22	329	339	WAØR
RACES	3996.5	1830 M-F	44	606	75	WBØA
		0830 Su				WAØS

Traffic: WAØRWM 368, WAØSUF 76, WBØHHC 74, WØCDO WØDM 45, WBØIUO 29, WØWWL 27, WØMXF 9, WBØBMG WAØJPT 5.

Get Turned on...Tune in a

DRAKE SPR-4

COMMUNICATIONS RECEIVER

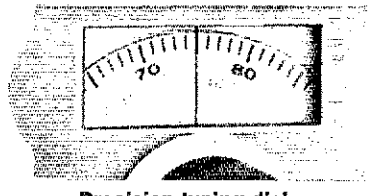


• Programmable Coverage • Direct Frequency Dialing • Solid State FET Circuitry • Great Value

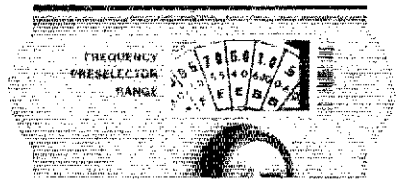
The SPR-4 is a general purpose receiver which may be programmed to suit any interest: SWL, Amateur, Laboratory, Broadcast, Marine Radio, etc. Frequency Coverage: 150-500 KHz plus any (23) 500 KHz ranges between .500 and 30 MHz.

FEATURES: • **Linear dial** with 1 KHz readout • **4-pole crystal** filter in first IF • **4-pole LC filter** in second IF • **Three bandwidths:** 0.4 KHz, 2.4 KHz, and 4.8 KHz for: CW, SSB, AM • **AVC time constants** optimized for each mode • **Superior** cross-modulation and overload performance • **Power:** 120 VAC, 220 VAC, and 12 VDC • **Crystals supplied** for LW, standard broadcast and seven shortwave broadcast bands • **Built-in speaker • Notch Filter.**

ACCESSORIES: 100 Khz calibrator, noise blanker, transceive adapter (T-4XC), DC power cord, loop antenna, crystals for other ranges.



Precision tuning dial . . . tune station frequency directly . . . no searching.



Programmable frequency coverage . . . change crystal and label on dial.

For complete details on the SPR-4 and other Drake equipment, contact:

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540 Richard Street, Miamisburg, Ohio 45342 • Phone (513) 866-2421 • Telex 288-017

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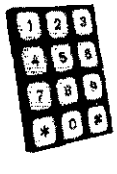
AUTOMATIC TOUCH TONE DIALER

Now, by the push of a single button you can automatically dial up to six separate 7-digit telephone numbers. All solid state with automatic PTT operation. Can send telephone number only, or repeater access code plus telephone number automatically.

AD-6 Sh. Wt. 2 lbs. without keyboard **99.50**
AMD-6 Sh. Wt. 2 lbs. with keyboard **119.50**
Factory programming of #s **7.50**

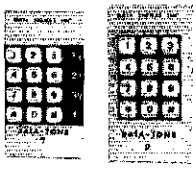
TOUCH TONE KEYBOARD/ENCODER



The smallest, thinnest keyboard with built-in touch tone encoder. Only ¼" thick. Completely self-contained, designed for mounting directly to hand-held portables. Operating temperatures —20°F to +150°F. R. F. proof.

DT-4M Miniature Encoder 2¼" x 3" x ¼" Sh. Wt. 1 lb. **89.95**

TOUCH TONE PADS



Standard size 12 and 16 digit Touch Tone Pads. Automatic PTT operation with 1½ second transmitter hold. Self powered via internal 9V battery. Audio and PTT outputs, TTP-1 and TTP-2 also has low volume audio monitor for acoustically coupling of tones to microphone. Zero quiescent current. Operating temperature —20°F to +150°F. R. F. proof.

TTP-1 16 digit 3" x 5½" x 1½". Sh. Wt. 2 lbs. **79.50**

TTP-2 12 digit 3" x 5½" x 1½". Sh. Wt. 2 lbs. **59.50**

TTP-3 12 digit 2¼" x 4¼" x 1½". Sh. Wt. 2 lbs. **59.50**

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SOUTH DAKOTA – SCM, Edward C. Gray, WAØCPX – SI WAØRIQ. PAM: WAØYAK. RM: WAØTNM. The South Dak. H Picnic will be held June 14 and 15 at the 4-H Grounds west Mitchell. Contact WBØEPY, Box 72, Mount Vernon, SD 57363 registration information. KØWLU reports making an "EME" (mo bounce) contact with WA6LET. WAØQLP reports working seve stations in Europe via Oscar 7 on 432 to 2 meters. WAØARZ h new TS-520 Kenwood transceiver. The SD Evening Phone nets h been combined. The Evening Net is meeting at 6:30 PM dur Daylight Saving Time and 6:00 PM during Standard Time. The will consist of a summer session and winter session with a differ net mgr. for each session, WØNEO has been chosen the Wir Session net mgr. Traffic: WØZWL 360, WØHOJ 111, WAØKKR WAØVRE 89, WAØUEN 82, WBØEVQ 31, KØDUR 23, WØDVB WBØLJM 7.

DELTA DIVISION

ARKANSAS – SCM, S.M. Pokorny, W5UAU – SEC: W5RJ PAM: W5POH. RM: W5MYZ.

Net	*kHz*	*Time/Days*	*QNI*	*QTC*	*M*
OZK	3765	0000 Dy	227	81	W5M
APN	3937	1100 M-S	737	17	W5P
M-Bird	3925	2130 M-F			WA5Z
ATN	3995	2230 Dy	341	35	WB5I
ANN	3715	2300 Dy	86	32	WB5I
ARN	3995	2330 Dy	369	33	

NWAARC picnic Sun. May 4 at AGRI Park Fayetteville from AM to 4 PM. WB5KHT now at Russellville. WB5CER elected constable and WA5YHN elected Ola alderman. The Akrk. Ri Valley AR Foundation has 2-meter net on 22/82 Nebo repeater 7:30 PM 1st, 2nd & 4th Tue. W5MRD, W5PZB & WA5Y installing 2-meter repeater at Danville Mountain. K5HTF, WA5L & WB5BLF busy with R/C airplane project. OPS cert to WB5BI ORS cert to W5MYZ. New hams around Ark.: WN5NOH, WN5N WN5NOJ, WN5NOK, WN5NQK, WB5NSJ, WB5NSL, WN5N PSHR: W5MYZ 49, W5EIJ 47, WB5IDF 22, W5IXA 24. Traf WB5IGF 70, W5EIJ 62, W5MYZ 53, W5UAU 31, WB5IDF WA5TLS 14, WB5GWU 10, W5PBZ 8, W5KL 7, W5TXA 2.

LOUISIANA – SCM, Robert P. Schmidt, W5GHP – Asst. SC John Souvestre, WA5NYY. SEC: W5TRI. RM: WA5ZZA. PA WB5EKU. VHF PAM: WA5KND. New officers MTA Club WA5WQN, pres.; WB5DJC, vice-pres.; WB5IOE, secy.; WB5GF treas. Officers BRARC are WB5CIQ, pres.; WA5OBO, vice-pr WA5SGO, treas.; K5SVD, secy. Remember the Baton Rou Hamfest May 3-4. There will be a meeting of all La. Leag appointees on Sat. afternoon. SE La ARC of Hammond will sta new license class shortly. The Delta DX Assn. expidition to Antig with K5FVA, W5NOP, W5UDK, K5YMY and WA5AWF was a gr success. QSLs will be handled by W5NOP. W5NVU now has DXC Officers of the Ruston ARC are WB5IKE, pres.; WA5YK vice-pres.; WA5YRM, secy.-treas. The Ruston Club repeater has n call WR5ADB. This is an open repeater with auto patch. W5F worked 8P6 Barbardos for new country. WB5JZQ active during S from Army MARS station at Ft. Polk. Twin City Club of Mon received memorial call W5EA. WB5DVS reports new S equipment working fine with help of 15-meter beam. WA5ANV a K5TTC active on LSN, have received their net certificates. W5WM operated during DX-CW contest at WA5LES with the Tex. DX

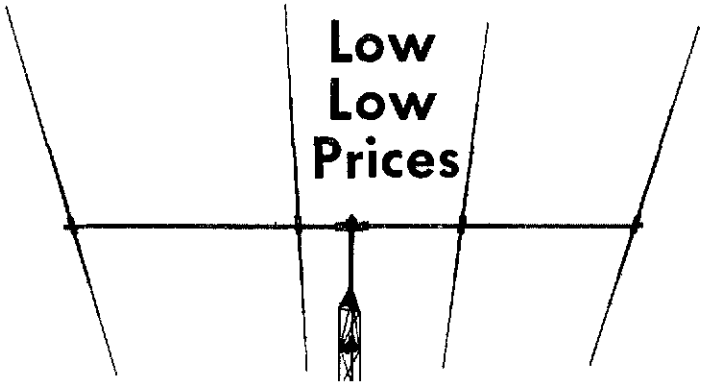
Net	*kHz*	*Time(PM,CDST)/Days*	*QTC*	*QNI*	*M*
LAN	3615	7:00/10:00 Dy	214	345	WA5Z
LTN	3910	6:45 Dy	70	190	WB5E
LSN	3703	8:30 M-F	29	114	WA5I
LRN	3587.5	7:00 W	4	10	W5G

Traffic: WA5IQU 340, W5GHP 191, WA5ZZA 160, WB5KFA W5MI 73, WB5FZI 65, WA5PRI 55, WB5ASD 52, WB5LBR WB5EKU 27, K5TTC 20, WB5JZQ 16, K5BLV 14, WB5DVS WA5QVN 8, WN5NSR 5, WN5NEM 2.

MISSISSIPPI – SCM, W.L. Appleby, WB5DCY – Asst. SC C.E. Gibbs, W5LL. SEC: WB5FXA. Former SCM W5NCB selec for the Annual Citizenship Award by members of the Miss. SB N Heard on MTN WB5IUS, K8YUW/5, WB5JBW, WA5DXI, W5LO W5SUK, WB5KUJ. W5SEJ has two letter call. Respond to ARRL Restructuring questionnaire. W5UCY active with QCW WB5KUJ OBS for MTN. MSN: W5BW OBS for MSBN. WB5F finished his SB102. WA5WGK & WA5FMF upgraded to Advanc K5RSI to Extra. Grieved to report W5VN a Silent Key. Welco new Miss. amateurs WN5NQA, WB5NPM, WN5NQE, WN5NC WN5NQJ, WN5NOS, WN5NQG, WN5NOY, WN5NQS, WB5LI Join us on the Miss. Sto Net, 3733, 0000Z, MWF local. WB5M mgr., WN5MDR asst. mgr. WB5FHA asst. mgr. Miss. Tfc. Net. Ple send recommendations for VHF-UHF PAM. Heard on VHF- W5RUK, K8AKA/5, K7QDH/5. New ARRL LMs W5BW, K5DZ WB5OAZ, WB5FXA. Heard on HF W5DE and WA5RRE. W5UA & W5RUB in all the pileups. WB5FHA needs data on RT91/ARC Anyone help? WA5GYM, WB5IRO, K5TFV, WA5YOU, WA5CA WA5MPQ, WB4SYB/5, WA5JTB, WA5OHQ, W9UMS, WA4C K8YUW/5 were busy on the MSBN Weather Watch. Appointmen WB5MTQ RM; WB5MDR ORS II. Vicksburg ARC office WB5LQU, pres.; K5IMT, vice-pres.; K5VXV, secy. W5GWD n 60-ft. tower. WB5LXW in RTTY. Meridian ARC officers: WB5C pres.; W5DNS, vice-pres. Meridian Repeater freq. 16-76, call

Wilson Electronics

WILSON 204 MONOBANDER



The Wilson 204 is the best and most economical antenna of its type on the market. Four elements on a 26' boom with Gamma Match (No balun required) make for high performance on CW & phone across the entire 20 meter band.

The 204 Monobander is built rugged at the high stress points yet using taper swaged slotted tubing permits larger diameter tubing where it counts, for maximum strength with minimum wind loading. Wind load 99.8 lbs. at 80 MPH. Surface area 3.9 sq. ft., Weight 50 lbs., Boom 2" OD.

All Wilson Monoband and Duoband beams have the following common features:

- Taper Swaged Tubing
- Full Compression Clamps
- No Holes Drilled in Elements
- 2" or 3" Aluminum Booms
- Adjustable Gamma Match 52 Ω
- Quality Aluminum
- Handle 4kw
- Heavy Extruded Element to Boom Mounts

- **M204** 4 ele. 20, 26' 2" OD **$119.95**
- **M203** 3 ele. 20, 20', 2" OD **$ 89.95**
- **M155** 5 ele. 15, 26', 2" OD **$119.95**
- **M154** 4 ele. 15, 20', 2" OD **$ 79.00**
- **M105** 5 ele. 10, 20', 2" OD **$ 69.00**
- **M106** 6 ele. 10, 26', 2" OD **$ 89.00**
- **M104** 4 ele. 10, 17', 2" OD **$ 49.00**
- **M340** 3 ele. 40, 40', 3" OD **$349.00**
- **M240** 2 ele. 40, 16', 3" OD **$199.00**
- **M520** 5 ele. 20, 40', 3" OD **$189.00**
- **M715** 7 ele. 15, 40', 3" OD **$159.00**
- **DB45** 4 ele. 15, 5 ele. 10, 26', 2" OD **$129.95**
- **DB43** 4 ele. 15, 3 ele. 10, 20', 2" OD **$ 99.00**
- **DB54** 5 ele. 20, 4 ele. 15, 40', 3" OD **$209.00**

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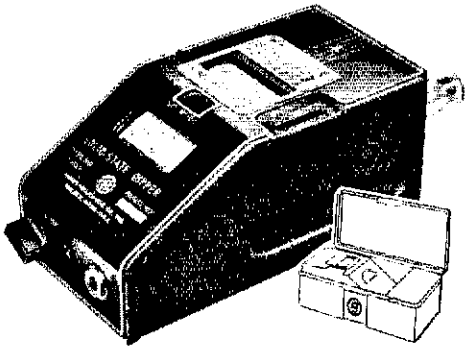

- Smooth meter reading over tuning range of 1.8 to 300 MHz with 7 coils.
- Q Multiplier for very sensitive absorption type wavemeter.
- Sensitive metering system using zero suppressing circuit.
- Performance equal to or superior to best type tube dippers.
- No power cord - runs on internal batteries.
- Unbreakable carrying case included.

All Solid State, Model 90652

$138

TUBE TYPE 90651-A - with transistorized DC Amplifier Runs on 110 AC or optional battery. Limited supply, at $114.

"NO STRING" DIAL - Slide rule type, with 2 5/8" x 7 5/8" bezel. 11:1 ratio. No. 10037 $15.60.

OSCILLOSCOPES - Modulation indicators. For 3" tube. Rack panel mount Model 90903. Less tubes. (Were $108.10) Special - $45.

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No. 92901 300 W Peak $138.

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VALLEY STREAM - 10 Sunrise Highway

WR5AHY. PSHR: WB5FHA, WB5JBW, WB5IUS. Nightly Nutti Net (NNN) at 3860 kHz 5:30 AM local. WA5MPQ has Drake line. Traffic: (Feb.) K5OAF 102, W5EDT 80, WB5JBW WB5DCY 52, WB5FHA 52, WB5IUS 47, WB5FHA 43, WB5B 42, WA5YZW 32, W5NCB 29, WB5MTQ 26, WB5HVY WB5BKM 10, W5LL 7, WB5MTQ 4, W5UCY 3, WB5AHZ WB5EJX 2, W5SBM 2, WB5FML 1. (Jan.) K8YUW/5 22.

TENNESSEE – SCM, O.D. Keaton, WA4GLS – SEC: WB4DY PAMs: WB4PRF, K4LSP. RM: WB4DJU.

Net	Freq.	Time(Z)/Days	Sess.	QNI	QTC	Mg
TPN	3980	1040 M-F	81	3415	180	W4PI
		1145 M-F				WA4EW
		2330 M-S				WB4PR
		1300 SSuH				
TCN	3980	2330 S				WA4Z
TECN	3980	1200 S	8	183	2	WB4D
		2100 S				
TN	3635	0000 Dy	29	248	135	K4YE
TNN	3707.5	0000 Dy				WA4GA
ETVHFN	50.4	0000 TThS	5	156	5	WA4YK
ETVHFN	145.2	0000 WF	9	42	2	WB4D
ETTMN	28.7	0000 WF	9	101	2	WB4N
MTTMN	38.8	0100 TF	9	54	0	W4EA
ACARECN	146.28	0000 T	6	182	141	WB4Z
	146.88					
KCARECN	146.52	2130 F				WA4Z
WTVHFN	146.37	2000 S	10	114	38	WA4V
	146.97	0130 F				

Traffic: K4CNY 415, W4OGG 145, WN4FZU 144, WB4DJU WB4ZSZ 51, WB4ANX 31, W4RUW 27, WB4YPO 26, WA4FDZ WA4GLS 25, WB4CRT 23, WB4DDV 19, WB4MPJ 19, WN4JPT W4SGI 14, K4AMC 8, WB4CMQ 6, WB4GTW 4, WA4KFS 4.

GREAT LAKES DIVISION

KENTUCKY – SCM, Ted Huddle, W4CID – SEC: WA4GH BPL: W4RHZ, K4HY.

Net	QNI	QTC	Net	QNI	Q
KRN	353	23	KNTN	42	
KYN	381	244	WKETN	42	
KTN	1347	120	Dist B AREC	86	
MKPN	806	43	n Dist. 2M	73	

The Owensboro ARC Novice classes will soon generate appro imately 15 new hams. New 2-meter activity for AREC in Danvi include W4CDA, W4RYL and K4NYO. The next repeater coor nation committee meeting will be held May 17 in Louisville. you're planning a repeater or having problems, this is a good gro to join. Traffic: K4HY 238, W4BAZ 140, W4RHZ 129, WB4ZM 90, W4CID 75, WB4ECB 58, WA4GHQ 53, WB4REN 52, K4UN 51, WB4EXQ 47, WB4AUN 43, WB4EUR 41, W4CDA 36, WA4I 31, WB4WCM 27, WB4WND 27, WB4ZMK 25, WA4FAF WA4RCD 14, K4TXJ 14, WA4AGH 13, K4HFD 13, WN4JAV W4OYI 6, K4AVX 5, W4YOK 2.

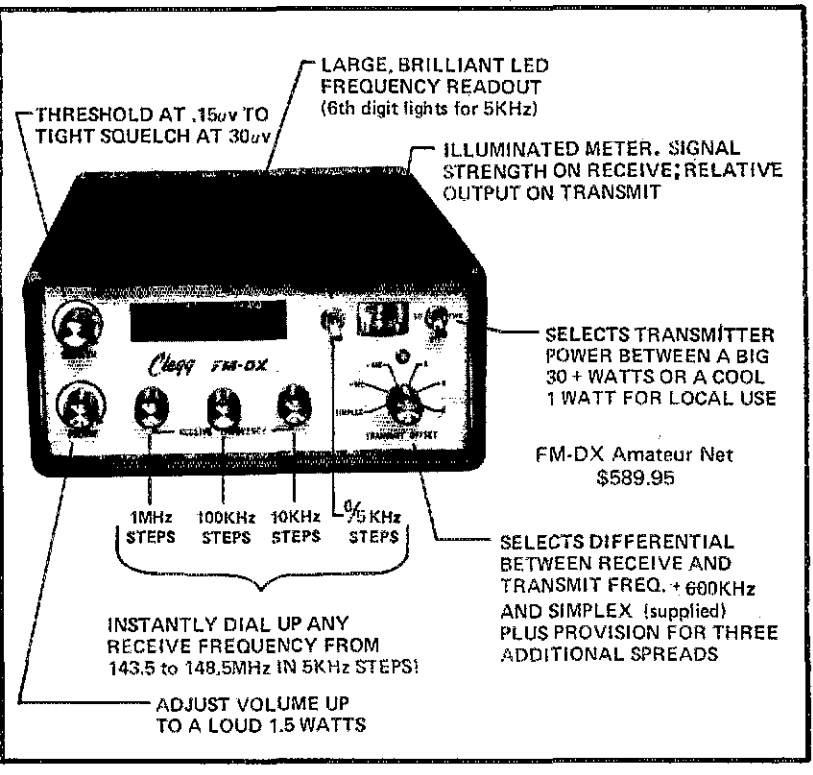
MICHIGAN – SCM, A.L. Baker, W8TZZ – SEC: W8MPD. RM W8JYA, W8WVL, W8RTN. W8GLC, K8KMQ, WB8IMI, WB8N PAMs: K8GBC, K8LNE, WB8BYB. VHF/PAMs: K8AE WA8WVV.

Net	Freq.	Time/Days	QNI	Tfc.	Sess.	Mg
QMN	3663	2300 Dy	979	358	80	W8J
MNN	3720	2230 Dy	290	105	28	WB8J
MACS	3953	1600 Dy	901	437	31	K8L
WSBN	3935	0000 Dy	604	59	27	K8G
UPEN	3922	2230 Dy	678	40	31	WB8I
Mi.6M	50.7	0000 MS	257	12	23	WA8V
BR/MEN	3930	2230 Dy	848	123	28	WB8B
GLETN	3932	0230 Dy	307	61	25	WB8O

W8CVQ reports the SW Mi. 2M net had QNI 55, QTC 1 in sessions. Catfish Net had QNI 66 in 4 sessions as reported WA8WVV. W8SWN now active on 160 meters using a modifi bowtie to radiate an FB signal on top band. Newly retired W8S says he expects to be an active OO. K8HLR is Michigan's n member on the Contest Advisory Committee. WB8MJI advises passed the Extra Class exam late in Feb. K8SWW reports a weatl RTTY at 75 wpm has been installed at the Milford Police station the Milford ARC. WB8RKF went from Novice to Advanc K8HNB on the air at W7KNT in Stevensville, Mont. I am pleased report Novice licensees: WN8s THO, TPT, ITK, TUM, TYW, T UAX, UAY, UBY, UBZ, UHS. Any word to TZZ? Also new Kalamazoo Central High School Electronics and Amateur Ra Club station WB8TPB. Traffic: (Feb.) K8DYI 410, WB8ITT 3 K8KMQ 192, K8LNE 137, WA8WZF 123, WB8JAD 115, W8G 113, WA8TBL 107, W8OW 104, W8JYA 97, WB8FBG 90, W8T 90, WB8RXS 86, W8MO 77, WB8NII 61, WB8NCD 57, W8NOH W8VIZ 48, K8YZI 46, K8LJS 44, WB8IMI 42, WB8DJS WB8SWL 37, K8WRJ 36, WB8DKQ 35, WB8IIX 33, WB8OBR WB8HYR 32, WB8BYB 31, W8FOI 30, K8GBC 29, W8TBP W8LOU 27, K8ZJU 27, K8HGA 25, WB8FKA 24, W8EU W8FZL 22, K8CIP 20, W8IUC 18, WA8ENW 17, WB8SIA W8SDB 16, W8DCN 15, K8JED 14, W8UOQ 14, WA8UQN K8GXV 13, K8PYN 12, W8WVL 12, W8YIQ 12, W8QBE K8AMU 10, WB8APN 10, W8SCW 9, W8UFS 9, WB8GKB W8JUP 8, WA8MDK 8, W8QOM 8, WN8RTB 8, W8ACW

THE ALL NEW Clegg FM-DX

2 METER FM TRANSCEIVER



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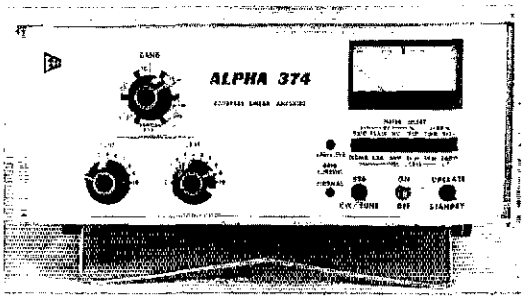

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WA8AXF 7, WB8MKU 7, WA8WVV 7, WA8FXR 6, WB8BJY WB8MJI 5, W8JAX 4, WB8RKF 4, W8HKL 2, K8WLE 2, WA8M 1, (Jan.) W8JYA 53, WB8BYB 35, WN8RTB 19, WB8RKF 1 WB8EUN 2.

OHIO – SCM, Hank Greeb, W8CHT – Asst. SCM: William Shaeffer, WA8MCR, SEC: WA8COA. PAMs: W8MOK, WA8VWI RMs: WB8KKI, WA8WAK.

Net	Freq.	Time	Sess.	QTC	QNI	Mgr
OSSBN	3.9725	1430/2100 ;2245	74	1125	2331	W8MO
O6MtrN	50.16	0100	27	53	326	WA8VWI
OSN	3.577	2310	25	72	210	WB8KK
BNR	3.610	2300	30	467	126	K8NC

The Burning River Traffic Net is currently operational on 146.4 MHz FM, daily at 6:00 PM. All amateurs in the Cleveland ar Northeast Ohio area are invited to participate. WB8OZA, WB8JS WB8OYV, WB8KQJ, W8IBX are co-managers. Mansfield Amate Service and Emergency Repeater (MASER) Net reports 4 session QNI 95, QTC 23, on 146.34/146.94 MHz. Other local nets know to be operating include Central Ohio AREC, 146.46 MHz and 29 MHz, W8FRD mgr.; Apricot Net (Cleveland) 51.0 MHz, K8ON mgr.;Ott. CntyAREC, 146.52 MHz, WA8HGH mgr.; Miami Valle (Dayton) FM Net, 146.04/146.64 MHz; Queen City Emergency N (Cincinnati), 53.05 MHz, WA8DED mgr.; Champaign-Logan AR Net, 145.68 MHz, 8:00 PM, 146.52 MHz, 8:30 PM Tue, SW Oh AREC, 146.46 MHz, 9:00 PM, Thur. If you'd like occasional listi in this column for your favorite net, please send in a regul monthly report including net name, frequency, geographical cove age, time, number of sessions, number of check-ins, traffic handle and net mgr. I'll devote a column to such reports at least twice year, but only those nets which are reported regularly will appea Traffic, training, and emergency nets are very much in the publ interest; support your local net! The Ohio Council of ARCs passed resolution supporting 146.46 and 223.46 MHz simple 146.46/147.06/147.66 and 222.46/224.06 MHz for exclusive publ service and portable repeater use. The need for common statewi and national VHF FM frequencies was the primary consideratio plus the severe pressure being felt on exisitng repeater channe within the 146-148 MHz band. In many areas there are super-abundance of repeaters – more than really necessary f communications. Before your group puts up a new repeater plea consider whether it really is needed for communications within yo locality or whether the need is more to satisfy the egos of t members and/or officers. Portable repeaters, easily transportabl and available to local AREC/RACES groups and placed on t common 146.46/147.06/147.66 repeater trio are the one exceptio to the above – the more the merrier! Traffic: W8PTT 42 WA8HGH 419, WA8MCR 394, W8PMJ 390, W8MGA 28 WA8WMI 198, W8CUT 160, WB8KKI 147, W8IBX 124, WB8OZ 119, K8VYR 103, W8MOK 102, WA8SED 89, WB8KWD 8 W8OZK 79, W8ENI 78, W8OUU 73, W8DIL 66, WB8QXN 6 W8GVX 54, K8OYR 52, WA8TYF 50, W8GOE 48, W8JD 4 W8SUS 45, WB8BZX 44, WA8YIB 42, WB8JGW 41, W8QCU 4 W8ILC 38, W8OE 38, K8LGA 36, WA8SGF 36, WA8MIH 3 W8WEG 32, WB8JKY 30, W8TH 30, WB8CJU 28, W8FGD 2 WN8PIY 25, WA8SSI 25, W8CHT 24, W8IBT 24, WA8MAZ 2 WB8MZZ 23, K8MVI 22, K8MLO 21, WA8VWH 21, W8DCX 2 WB8GGR 20, WB8RKA 18, WA8DWL 16, K8LXA 15, W8UOY 1 WB8CLF 14, WA8FSX 13, WA8MHO 13, W8DPW 12, WB8HUP 1 WA9MWF 12, WB8AJC 10, K8CKY 9, W8DYF 8, K8JPF WB8TEM 8, W8QXQ 7, WA8TSX 6, WB8EMW 5, K8GRO WB8MGW 2.

HUDSON DIVISION

EASTERN NEW YORK – SCM, Graham G. Berry, K2SJN SEC: W2KGC. Asst. SEC: K2AYQ. RMs: WA2PJL, WA2FE WB2IXW and K2DN for RTTY. See below for new PAM effecti 3/1 – sorry to lose WB2VJB after all this time! Nets: detailed next month – see back columns. Appointments: As PAM, WB2Q to succeed WB2VJB, resigned for business reason. Not previous listed: EC's WB2SON and WB2ZCM in Orange and Albany Countie Still need Green – contact W2KGC. OO to WB2DXL; OVS WA2PCK; OBSs WA2PAU and WB2FRV. Albany ARA hea WA2CKW, state Radio Officer with official films from Hurrica Agnes; has classes going on Fri. Overlook Mt. ARC had FM "tweak it up" session in Feb., dedicated Ulster County CC station WA2MJM in honor of ex-member and Silent Key Jean. Schenectac ARA has Field Day chmn, already active – WB2ROT and W2EW aided by WA2ATQ and WB2VPE. Running classes again Niskayuna HS. Harmonic Hills heard K2BQO on 2-meter a 20-meter activity on trip to Austria and Switzerland. Schenectac speaker was Jim Copperider, senior design engr. at Heath on SB-10 elected WA2ATQ to fill Board vacancy. Communications Club New Rochelle well under way on plans for club project – solid sta frequency counters. Most members plan to build, details fro K2JQB if interested, (SASE please). WA2RFP to Advanced Clas W2ECV off air while shack is maternity ward for new puppi Sorry to hear of W2VP's loss of XYL. WB2ABY now treas. Pea River HS Club. WA2UAC now active on mobile status. WB2SHE 2 FM. W2DW worked wtth W2EIV at Columbia County Emergen setup during SET. WA2UFB back from W6 vacation and acti NYSPT&EN (3,925 at 2200Z) continues very active – QNI 131 QTC 201 in Jan. WB2RKF another BPL. W2OOJ reminds all th

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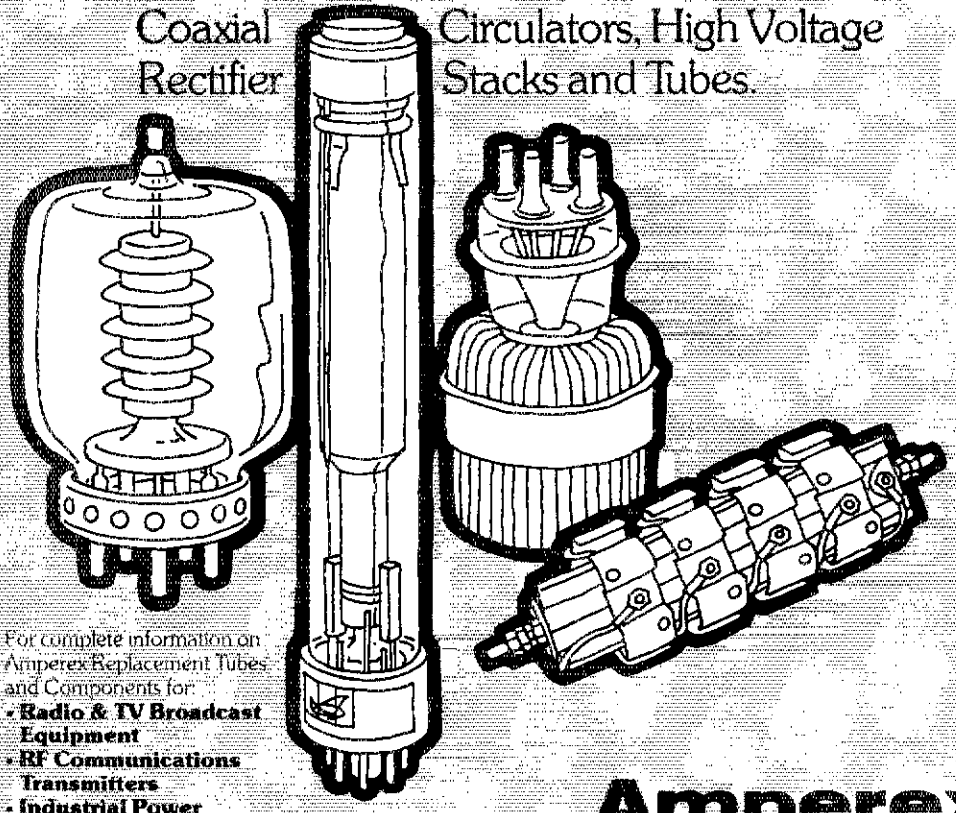

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Hudson Div. P/R net is now on at 2100Z 2nd and 4th Sun. Come in for P/R help. WB2VVS to W6 on trip at month-end. K2DN n on cw and ssb from 1.8 to 14 MHz plus RTTY activity. Traff (Feb.) WB2RKF 369, W2BIW 191, WA2LNA 154, WB2TGL 1 K2DN 76, K2SJN 36, WB2VVS 33. WA2IQO 29, WA2BRV WB2NKN 23, WB2RUZ 17, WA2CJY 14, K2OUA 14, WB2ELA WA2PAU 4, K2HNW 2, WN2WJO 1. (Jan.) WA2LNA 148.

NEW YORK CITY-LONG ISLAND – SCM, John H. Sma WB2CHY – Asst. SCM: Art Malatzky, WB2WFJ. SEC: K2HT RM: WB2LZN. PAM: WB2EDW. VHF PAM: WB2RQF. following are major AREC/RACES nets: join one.

Bronx	28.64 MHz	50.35 MHz	146.88
Kings	28.64 MHz	50.35 MHz	146.88
Richmond			146.88
New York	29.5 MHz	50.48 MHz	146.88
Queens	29.5 MHz	50.52 MHz	146.20
Nassau	28.72 MHz		145.68
W. Suffolk	28.73 MHz (Hunt.)		145.59
	28.65 MHz (Smith.)		147.21
	28.610 MHz (Babylon)		
E. Suffolk			146.82

Note: Net times between 2000 and 2100 local, Mon., also the T Meter Internet for Nassau meets on 29.640 at 1930 local, and Two Meter Internet for NYC (5 boros) is on 146.88 at 1900 lo with WA2UCP NCS. If you haven't received your new appointme certificate by May 15, please contact WB2WFJ, remember that appointments require monthly reporting to your SCM. W1-Land claimed another NLI member, after 3 years of editor of the LIDX bulletin, K2KGB has been relocated to I-Land, Larry will be miss here by all, but good luck in the new QTH. WA2JZX reports he w be starting a 2-meter FM Net for Babylon town on 146.94 fm, a he also enjoyed a visit to Hq. WA2USJ has a new TS 520 with Murch transmatch. Welcome to new Novice WN2ZGR, son K2FV. Also new Novice is WN2ZGY from Hunt. area he will be around 21,120 or 21,160 looking for WAS, DXCC and WAC. W2 finally made BPL. W2PF visited KP4-Land the last week in Feb., visited KP4CB, KP4CH and KP4DJ, then visited KV4CQ a KV4BW at their QTHs. WA2VPA has a new TR4C transceiv W2YNM now has KW linear and getting into DX activity. WN2P mounted a new vertical and now has 48 states QSLd and n looking for Hawaii and Utah. W2ML/W2BNX and W2BDD, bo members of the Lake Success Radio Club have retired from the s mines. K2JFE reports that his cousin from Germany will be visiti in July, his call is DF2GT. K2OVS qualified for Oscar achievement award during Jan. WA2HWJ reports the new repeat WR2AGG for 450 MHz now in operation. WB2VTN now on 2 with homebrew 50 W of W2BFN design and a BC 624C receiv The Wireless Institute of The Northeast should be a must for contest operators. Congratulations also to WB2PYM on maki BPL. Traffic: (Feb.) W2EC 842, WB2PYM 507, WB2FLF 20 WB2LZN 190, W2MLC 125, WA2WKH 95, WA2VPA 81, W2LY 78, WB2QCF 72, WB2SHL 58, WA2ZHA 44, W2GKZ 42, WA2K 30, WB2TPO 30, WB2NEB 24, WN2POE 23, WB2CHY WB2WFJ 17, W2HXT 13, K2JFE 11, W2PF 10, WA2JZX WA2TQT 4, WB2WBH 4, WA2USJ 2. (Jan.) W2HXT 22.

NORTHERN NEW JERSEY – SCM, William S. Keller, WB2RKK –

Net	*Freq.*	*Time(PM)/Days*	*Sess.*	*QNI*	*QTC*	*M*
NJN	3695	7:00 Dy	28	421	140	WA2D
NJN	3695	10:00 Dy	28	180	79	WA2D
NJPN	3950	6:00 Dy	28	519	286	WA2D
NJPN	3950	9:00 AM Su	3			WA2D
NJSN	3730	8:15 Dy	28	191	85	WA2D
NJPON /VHF	146.52	10:00 SuTh	8	78	24	WA2E
PVTEN	145.71	8:00 Dy	28	160	21	WA2O

SEC: WB2PBO. PAM: WA2DVE. RMs: WA2DIW, WA2DSA. App K2JFE as OO. WA2RZP EC Somerville. WB2YGT Morristown. Please contact your local EC, WB2PBO, or WB2R for information on how to become a part of the AREC. NJSN h a very successful meeting at NCE during Feb. Contact WB2PBO information on meeting. Congrats to WN2UQN on receiving WAC award. WB2VFT has 220 countries confirmed for DXC WA2GEZ has 89 countries confirmed. W2CVW recently worked countires via Oscar, reports several new countries worked on 80 a 40 meters. K2BPP and K2JAO operated from VP2EEE during second phone week end of the ARRL DX contest. WB2H working DX on 80 meters. WN2OHN and WN2TRS active in Novice Roundup. WN2TRS managed to pick up a couple of n countries in the NR. WB2YGK has a new IO-102 scope; WB2H an HW-7; WB2RKK a T4XC and R4C. WB2GAV moved to Te WB2ZSH has become WB0NXK, an Extra Class licensee in M WA2VVX and WB2JOG very active on 10 meters. Congrats WA2SOU who recently passed the Advanced Class exam, is a n OPS. OO reports received from K2EK, W2YD, WB2YGK, WB2TF WA2DNY, WB2CST, W2TPJ. WA2GEZ reports poor condtions vhf; K2OBW was able to work 3 stations by a satellite-to-satell relay thru Oscar 6 and 7. K2QBW also appeared on WABC

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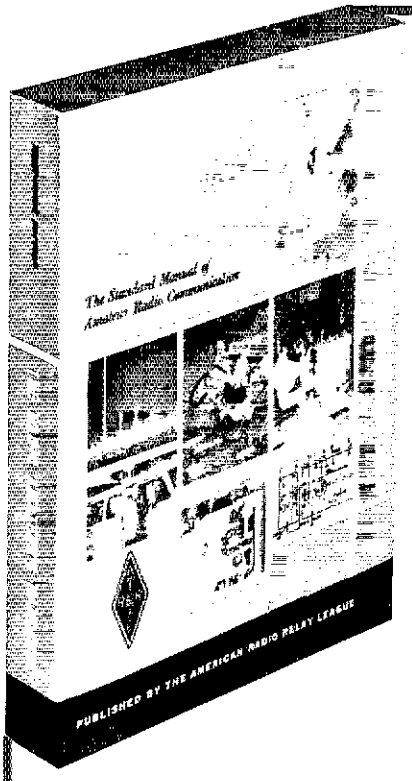

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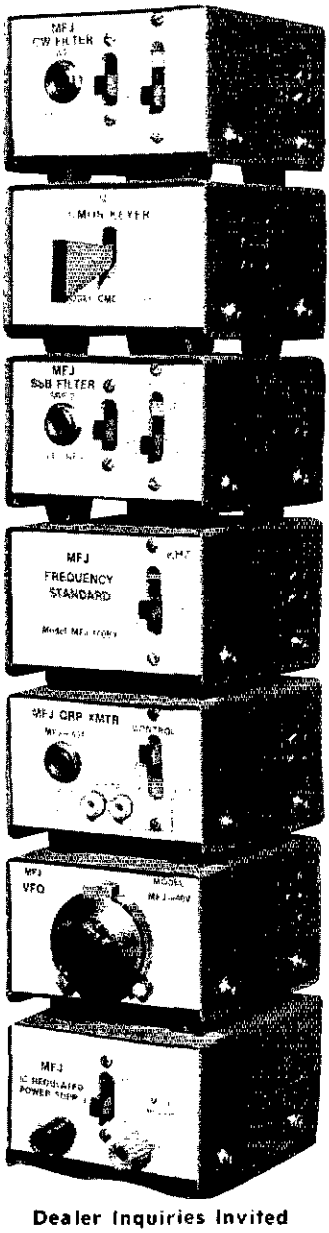

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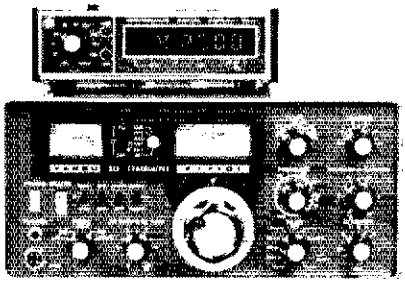

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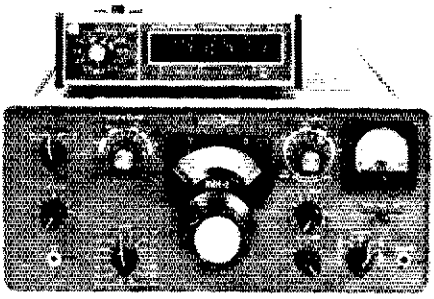

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WR2AFH. NJDXA officers are W2BHM, pres.; W2ZZ, vice-pres
W2GK, secy.; W2JLH, treas. The Cranford ARS will hold a fle
market (proceeds to go to Mt. Carmel Guild), at 10:30 AM, May
on Alden Ave. in Cranford. Talk-in will be 146.52. WA2NPP activ
on the traffic nets with WB2AFH and WB2YKG manning th
key/mike. WA2NPP active on the College net on 7270 at 1830Z o
Fri. The Dismal Harmony Propagation Society, operating K2CV
looking for new members. Contact WB2APO or K2BPP for detail
They have three-element on 40 at 106-ft., an inverted vee for 160
104 feet, and other big antennas. NNJ welcomes new Novic
WN2YWA, a member of GSARA with an HW16. W2OKO gave
presentation on a digital end-of-line indicator for RTTY at the Fe
meeting of the New Providence ARC. The NJ QSO party will b
Aug. 16-17. Traffic: (Feb.) WA2DSA 409, WB2RKK 384, K2BH
278, WB2UJD 202, WA2BSU 129, WA2EPI 89, WA2SLF 7
WB2ELF 64, WA2DVE 54, WB2HSG 53, WA2CCF 50, WA2PC
50, K2OQJ 49, W2BLM 47, W2SHM 47, W2SWE 47, WA2DIW 4
WA2NPP 46, W2ZEP 46, W2CU 41, WB2RMK 37, WB2FTT 3
WB2AEH 33, WB2KNS 32, WB2GAV 23, WA2KFF 23, WB2RJ
20, WB2VTT 18, WA2OPY 17, K2ZFI 17, W2CVW 16, WA2CA
15, WB2PBO 12, WA2CWS 11, WB2HSD 10, WB2VFT 9, K2KF
WA2ELW 6, WA2OJU 6, W2WOJ 6, WA2SOU 5, WA2SRQ
WN2UQN 5, K2DQT 4, WA2UOO 4, K2MFF 3, W2YD
WA2RGV 1. (Jan.) WN2UON 8, K2EOP 4.

MIDWEST DIVISION

IOWA – SCM, Max R. Otto, WØLFF – The Wallace Wood Jr. E
ARC of Davenport now a duly affiliated society. WØDSP advis
Mitchell County ARC with pres. WBØEFG and secy. WBØJVZ al
an ARRL affiliate. WRØAID near Springville is on the air. The 39
Club now has 334 members. About 150 check in on Sun. mornin
and Docket 20282 is discussed at 1930Z. WAØKHF did some f
with "This is Ham Radio" film; KØAZJ, WØMOQ, WAØTA
WØLKM, KØFLY, WØLCX, WBØDBG and WAØKZL representi
Iowa on TEN net. WAØKHF lacked 2 points of making PSH
WRØAHH at Waterloo on 22/82. W4DOC invites all of Iowa
Atlanta Hamfest July 5,6. KØYVU not hamming too much due
rotor trouble; antenna down and new job on City Council, WØSW
has some new ORM, a new granddaughter. WBØMSX converti
Motorola fm rig for 2 meters, and will have an FM Net for I
spotting in the Burlington area. KØFLY says his SET exerci
worked well, and WA5IOU says Iowa did well in SFT. Yours tru
talked to Iowa City and Cedar Valley ARCs. KØRHN is n
secy.-treas. of North Iowa ARC. Congrats to WAØHFW and
WBØIZS on becoming Advanced. WØBX again on the FC rol
KØIIR is AEC. KØLKH working hard as PAM-VHF. The picture
my shack in Feb. QST brought a note from W9MZN, who says I w
his first QSO in 1933. That was a lot of COs ago. Sioux City has
new Novice WNØOHI.

Net	Freq.	Time/Days	QNI	QTC	Sess.	Mg
Iowa 75 M.	3970	1730 M-S	1250	103	24	WAØV
Iowa 75 M.	3970	2300 M-S	1052	48	24	WAØAC
Tall Corn	3560	2330 Dy 0300 Dy	353	80	56	KØA

Traffic: (Feb.) WAØAUX 352, KØAZJ 182, WAØVZH 39, WAØTA
23, WØMOQ 20, WØLFF 12, WØBQJ 11, WBØAVW 10, WAØKHF
WBØIZS 2. (Jan.) WØLCX 64, WAØTAQ 21.

KANSAS – SCM, Robert M. Summers, KØBXF – SEC: KØJM
RM: KØMRI. PAMs: WAØSEV, WBØBCL. VHF PAM: WAØLD.
WAØOMB, now mgr. of the Central States Traffic Net (ole Ks P
Net) reports 18 participants with traffic for a total QTC of 32, QI
542. AGAIN we ask for NCS support in reporting as fast as you c
so reports to the SCM can be made on time, this goes for all NCS
all nets. QKS had a QNI of 450, QTC 185. QKS-SS QNI 121, QT
141. KWN QNI 490, QTC 119. KSBN in 24 sessions QNI 770, QT
103 and the KPN in 4 Sun. sessions QNI 107, QTC 40. KØJM
reports 17 of the 19 EC reporting activity in the AREC drills for
total QNI of 1011, 78 QTC in 93 sessions. AREC membership no
at 681. WØKL, EC for Zone 6B has completed his zone emergenc
plan. We are in the process of updating the State Emergency Pla
Copies should be in the hands of each EC, RM, PAM, etc., by t
time you read this. Understand that WØOGH has earned his 20 wp
CP cert. QKS (CW) Net 0100 and 0400Z (1 hour earlier during CD
on 3610 kHz. Traffic: WØHI 184, WØEIR 162, WØINH 124, WØC
124, KØMRI 113, WØOYH 70, WØCHJ 53, WBØCZR 52, WAØLB
52, KØBXF 51, KØJMF 43, WBØKWI 20, WBØGVR 15, WBØLK
15, KØFPC 7, WØKL 6, WAØMLE 6, WAØSRQ 6, WØGCJ 5, WØFD
4, WAØWJX 2, WBØCUY 1, WAØOWH 1.

MISSOURI – SCM, B.H. Moschenross, WAØFMD – Ass
SCM/SEC: Cliff Chamney, KØBIX. PAMs: KØBIX, WBØFNI
WASKBH/Ø WAØKUH, WØNUT and WAØRVT. RMs: KØAH
WØBV, KØONK and KØRPH. New appointments: KØBQI as OB
and WAØZVN as EC. Don't forget most nets now meet one hou
earlier GMT with the advent of Daylight Saving Time. Let's ha
more net reports by the 5th of the month please.

Net	QNI	QTC	Net	QNI	QT
MOSSB	1338	129	SCEN	48	
MON	217	216	MSN	45	
MON 2	105	38	ACE	8	
MOAREC	98	2			

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ARX-2K	Ranger Kit			**$10.95**

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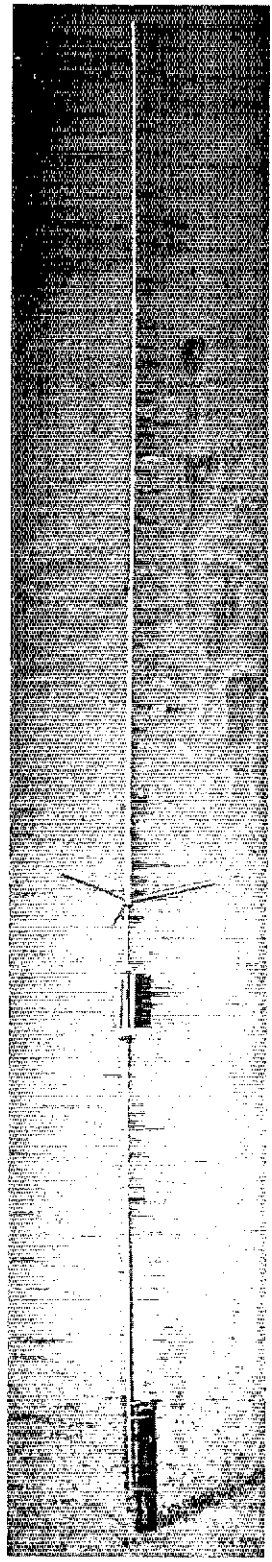

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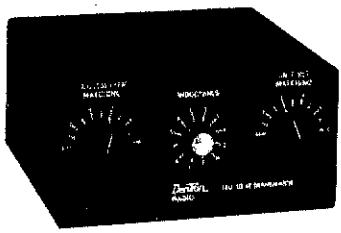

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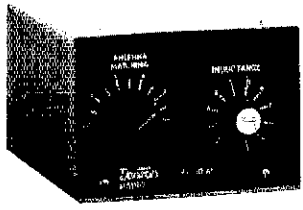

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W0KNF has assumed NCS duties on the Indian Foothills AREC Saline Co. ASCRA recently celebrated its First Anniversary. PI ARA presented two sets of ARRL publications to the Mid-Co library. The MO-Kan Council of ARCs have a net on 146.52 Mon. 8:30 PM local. HARC officers for the next year are: WAØZN pres.; WØPEM, exec. vice-pres.; WØJU, vice-pres.; WØAIB, sec WAØZIF, treas. The St. Charles ARC is now Inc. Don't forget Northwest Mo. Hamfest in KC on May 4 and the MOSSB Net pic at Memorial Park in Jeff. City on June 8. PHD novice class has attendees with 25 already having passed the 5 wpm code t Congrats to new Novice, WNØOOO; WBØHSP for passing Extra a PHD Amateur of The Month W5UAA, ex-WØAMO. WØGCL clos in on 70 and going strong. WAØEMX moving to an acre planning super rhombic for 80/40. Good luck. Traffic: (Fe KØONK 1096, WBØHSP 129, WBØJWM 119, WØBV 110, WØO 82, WAØFMD 81, WØOUD 57, KØBIX 55, WØEPI 53, KØPCK WAØEMX 42, WØNUB 40, WBØLMW 32, WØFEE 28, WØJKF WØSIV 21, KØENH 20, WAØQOA 15, WØBVL 14, WØGBJ KØRWL 13, WBØLRX 11, WAØFKD 1, WBØLTD 1. (Jan.) WBØJV 104, WBØLTD 19, WBØLTE 7.

NEBRASKA – SCM, Dick Dyas, WØJCP – KØITC of York Silent Key. The SEC and I visited the Blue Valley ARC in mid F Gave us an opportunity to meet many of the members. Hope to v other clubs in the near future.

Net	Freq.	GMT/Days	QNI	QTC	M
Neb 1&II	3700	0000/0245 Dy	45	4	WAØG
NSN	3982	0030 Dy	758	24	WAØL
NMN	3982	1230 Dy	1086	8	WBØGV
WNN	3950	1300 M-S	515	19	WØN
AREC	3982	1330 Su	177	2	WØI
CHN	3980	1730 Dy	1232	45	WAØG
SHN Wx	3950	1830 M-S	216	12	WØ
NAN	3980	2000 M-F	507	13	WAØA
160 M Wx	1995	0030 Dy	351	207	WAØC
QCWA	3980	1400 S	69		WØF
Lincoln AREC	16-/76	0200 M-F	325	15	KØG
NSN	3982	2330 Dy	1171	47	WAØL

Traffic: WAØCBJ 58, WØFQB 37, WØVEA 33, KØPTK 32, WØS 29, WBØEVS 28, WØHOP 28, WØYFR 28, WØNIK 22, WØHTA WBØJWQ 18, WAØGHZ 17, WØJCP 17, WØGKK 16, WØPGF WØCSW 15, WAØOEX 15, WAØQCI 14, WØIDJ 13, WØGEQ WBØGMQ 11, WØPL 10, WØDMY 7, WAØDXY 7, WØEGP 6, KØF 6, WAØOQX 6, KØODF 5, WBØFYB 4, WAØKCV 4, WAØPCC WØUOV 4, WØVYX 4, WBØGAK 3, WAØLOY 3, WAØEEI WAØHAL 1, WØWZR 1.

NEW ENGLAND DIVISION

CONNECTICUT – SCM, John McNassor, W1GVT – SE W1DGL. RM: K1EIR. PAM: K1YGS. VHF PAM: WA1OYE.

Net	Freq.	Time/Days	Sess.	QNI	Q
CN	3640	1900 Dy 2200	36	383	3
CPN	3965	1800 M-S 1000 Su	28	463	2
VHF 2	28/88	2130 Dy	28	280	
CSN	3725	1730 Dy	28	230	1

High QNI: CN – WA1FCM, WA1QME and WA1RUR. CPN WINQO, K1PAD, WA1QME, WA1RUR and WA1RXA. S W1DGL busy with AREC groups – Conn. EC Net going FB & v constructive. Active and able ECs needed for all areas. EC repo from WA1QME, WA1HYN and WA1RXA. Director W1HHR C letter requests input and communications from all for b representation at Board Meetings. Net reports on SET v impressive. CN continues late session as of Mar. 1. K1QGC St Civil Defense Comm. Officer guest speaker at Tri-City ARC meeti VHF PAM WA1OYE used walkie-talkie while confined to hospi Our sympathy to W1ZJJ/VE1 on the death of his XYL. New traf catagories effective in July – see pg. 65 Feb. QST for details watch for reminder in June QST. Congratulations to: WA1QME (hard way) & WN1UAX for Feb. BPL; WA1QME & WA1RUR h QNI CN & CPN Feb.; W1BGD & K1ZND for 40 wpm cert.; W1 elected Honorary V.P. ARRL! Hope you returned your survey FCC Docket 20282 to ARRL in time to be processed for the M Board meeting. Director W1HHR welcomes your additional co ments also. All this material will enable the Directors to formul ARRL position on the proposals. I hope you voiced your opinio Traffic: (Feb.) WA1QME 572, WA1FCM 264, WA1GFH 1 WA1RYL 192, WA1RUR 152, WN1UAX 145, WA1SHO 1 W1FFW 134, WA1TGE 105, W1NJM 104, WA1ICN 47, W1CTI K1YGS 45, W1DGL 39, W1GVT 36, W1YU 33, WA1HLP WA1PHJ 29, W1AW 27, W1KV 21, WA1TXM 12, W1QV W1CUH 8, WA1OPB 6, WA1UNE 6, WA1JGA 3, W1BDI WA1MBK 1. (Jan.) WA1OPB 5.

EASTERN MASSACHUSETTS – SCM, Frank Baker, W1ALI SEC: W1AOG. WA1QKD new EC for Attleboro. WA1QJU new O and PAM for 75 and mgr. EMRIPN. K9AQP/1 endorsed as O W1ALP received his 50-year ARRL member pin and plaque. WI W1TQP, WA1MEH are Silent Keys. W9NIQ, ex-K1FYT, W1ALC Quincy with old call, his brother W2YN, ex-W1EY is a Silent K

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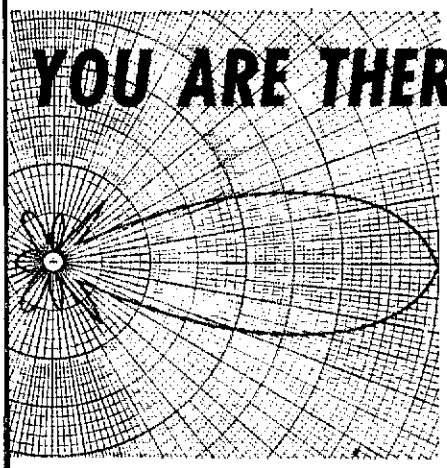

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WA1QZX in Westwood, W1QA had heart attack, W1BCN in Cal 19 Club met at W1MNK's. W1UF worked over 100 on 75 ssb. Ca & Island ARA had annual dinner at D. Webster Inn. WA1MKP go to Germany & Switzerland visit HB9AOH. South Shore Club ha "Ham Radio Hobby Night." WA1s KZT, KYU, LGW stood by P-town CD Hq. during 5 hour blackout due to accident in Tru WA1LBG in new QTH in New Bedford. WR1ADR has new s WA1FOV on 2 fm with FM27B, also WA1SIL, K1AHA homebrew beam for 2. WA1JDB has PAX on 2. WA1PEA OD joined Westport CD. WA1SCM on 6. W1EHH has six in Novice cla WA1RGA starting General class. W1EQH appointed K1DVX as EC for 6, WA1OKA is alt, NC for AREC Net. K1OIQ visiting WI for interview re SK W1UN. WA1UPF is YL of WA1OEZ who has Advanced. New officers of Norwood ARC: WA1GSB, pre WA1OCX, vice-pres.; WA1TEX, secy.; WA1DLU, treas. W1FC endorsed as EC, and on 2,6 & 75. Officers of Dorchester AR K1YTC, pres.; WN1UBO, vice-pres.; WA1TCS, editor; WN1TC secy.-treas. K9AOP/1 worked quite a list of countries on Oscar 7 mode B. WN1UNC on 40 cw, K1SAU on 2 with an ML2 ba station and SBE-144 mobile. W1BH on 2 with new GLB synth sizer. WA1QAB new 15 watt amp. on 2. Chelmsford AR demonstrated 2-meter availability to area police & fire officia K1PAD new OPS. W1EQH endorsed as EC. WA1OJU work Antartica with 25 watts. Brockton HSRC: WA1POV members WN1s SZG, SZH, TSM, OIQ, OIR, UIS, WA1OEZ, K1PUA advis will have rig on 2. WA1MKP is now Class I OO.

			Net	*Freq.*	*Time/Da*
EM2MN	145.8	2000 M-F	82	64	WA1E
HHTN	04-64	0330Z Dy	559	91	WA1M
NEEPN	3945	0830 Su	81	8	W1KE
EMR1PN	3898	1730 Dy	210	149	WA1O
EMR1	3900	1900/2200 Dy	368	253	WA1M
Clrg Hse	3925	1100 M-S	433	478	W1U
MaTfe/Ragchew	50.63	0830 M-F	86	8	W1G

The S.E. Mass. Emerg Net now the Dartmouth Repeater 147.6/147.0,50.7 will be guarded but not many mobiles W1MVO had heart surgery. W1VU vacation in Fla. W1OXS spoke the Quannapowitt RA on "Freq. Counter Construction." WA1OE very ill and the MMRA did a nice job in rounding up some blo donors for him. W1MV working DX on 20. W1CUY trip to Cana Island. W1IAU furnished slides & film on the Coast Guard Aux. the Whitman RC also classes are being held. WR1ADI duplex installed. MIT RC W1MX provides radiogram service for campu W1GJK is PAM for 6. Traffic: WA1QJU 296, WA1MHI 2 WA1QKD 228, W1UX 123, W1DMS 122, W1FIB 112, K1PAD WA1POY 69, W1MX 62, WA1QQK 57, WA1OWO 45, W1CE WA1PAZ 39, W1ABC 22, WA1RGA 21, W1PEX 19, WA1FFF W1DMH 11, W1EQH 10, K1LCQ 5, W1PJ 5, W1PL 3, W1MNK W1NF 1.

MAINE – SCM, Peter E. Sterling, K1TEV – SEC: K1CL PAM: K1GUP. RM: K1MZB. K1DPG, Scarboro moving to K Land for good. K1VBL has straightened out K1GAX's mast a beam. Don't forget the outing this year Sun. Aug. 10 at WA1GR QTH in Abbott Village. WA1TRE is finally on ssb also six mete The Northeast Area Barnyard Net reports 845 check-ins and traffic for Feb. The Main Seagull Net meets Mon. thru Sat. at 5 local to 6 PM local. The net meets on 3940 MHz. The Barnyard N meets on 3960 Mon. thru Sat. at 8 AM local time. The Pinetree N meets Mon. thru Sun. on 3596 at 7 PM local time. New hams Maine are WA1UKH, WN1UIV, WN1UIQ, WN1UIL, WN1UM WA1UOG, WN1UPJ, WN1UPK, WN1UPT, WN1UPZ. Congra fellows. K4BSS/1 still in the Brunswick Memorial Hospital, hopes be out soon. To the new Novices the Eastern Area Training N meets on 3728 Mon. thru Fri. at 1700 local time. Traffic: (Fe K1GUP 89, W1OTO 2, K1TEV 2. (Jan.) W1OTO 1.

NEW HAMPSHIRE – SCM, Robert C. Mitchell, W1SWX – SE K1RSC. RM: WA1GCE. PAM: K1YSD. Endorsement W1BYS/K1TXC OPSs; W1ALE OVS; WA1ISD & W1SWX O Appointed K1SHR as OVS & OPS. WA1GCE/NHVT Net repo shows 208 check-ins, 152 traffic. Top check-ins were K1LM K1POV, W1UBG. Welcome to WN1UPI. W1JB reminds us Medicare Net meets on 3825 at 0900 Mon. thru Sat. K1P skeding KL7HRK (WA1JTM) for WAS. The Derry ARC operated ARRL DX Test and added several new ones to their total. WA1J lost his inverted vee to the winter storms. W1SWX & XYL enjoye visit to W1LOO & K1JFO's home. Don't forget the Atlanta Hamf July 5 & 6, details from W4DOC. PAM K1YSD has a new mast his antennas. K1RSC reports an excellent SFT. W1DXB worked FR7AI on Tromelin Island for a new country. My thanks WA1CTI & The Central New England Net for all the cards after last accident. Traffic: K1POV 55, K1LMS 43, WA1GCE 20, W1 15, K1YSD 8, W1BYS 3.

RHODE ISLAND – SCM, John E. Johnson, K1AAV – SE W1YNE. RM: WA1POJ. PAM: WA1RFT. New Novice for R.I. WN1YPL. The Univ. of R.I. Radio Club W1KMV was operatio for a small part in the 160-Meter contest in Dec. WA1KOO bu working DX on 20 cw and has recently passed his Advanced Cl exam. WA1SPT has been working on 2-meter RTTY. WA1RFT been working 40-meter DX and W1LUJ and WA1JPC ha developed an excellent Novice course and are presenting it fo

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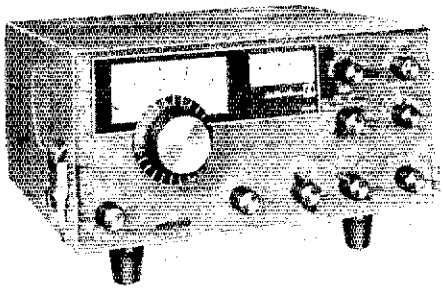

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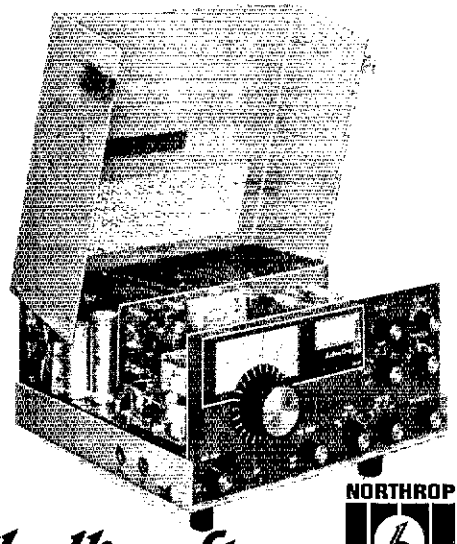
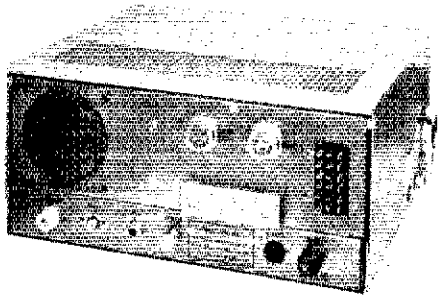
- Optional Accessories: MR-300 Mobile Installation Kit; HA-60 Blower Fan Kit, works on AC or 12VDC





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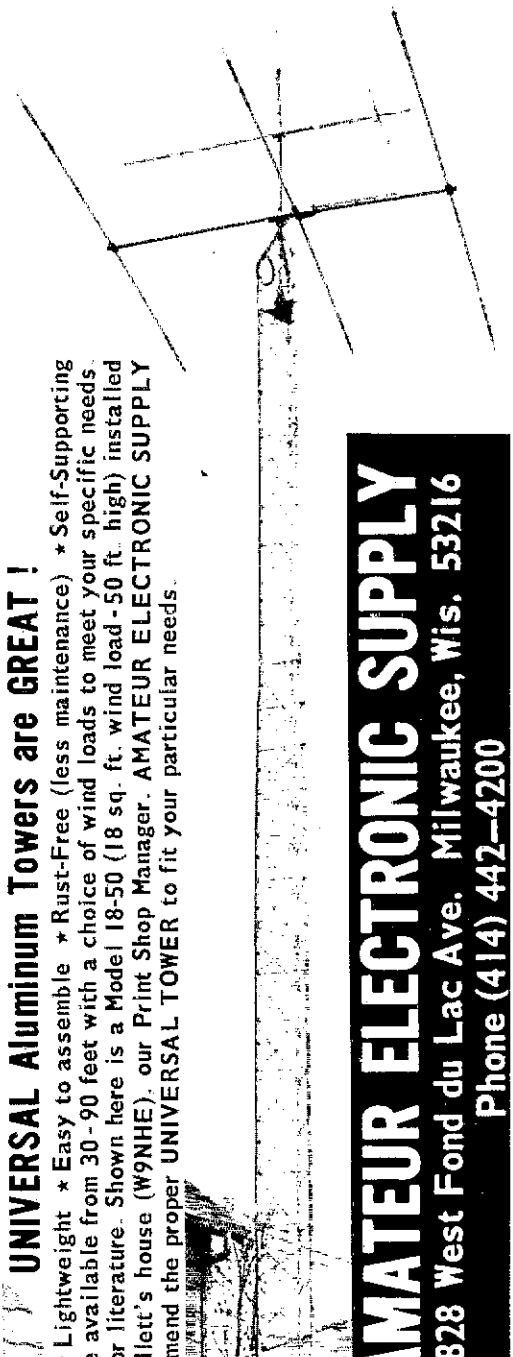

Club Program. The Station (W1KMV) has operating a DX 40 and HRO 60. The TX-1 is off the air for repairs. Marilyn Torrey ha recently passed her Novice Class exam. Traffic: WA1POJ 205 WA1RFT 21, W1KMV 1.

VERMONT – SCM, James H. Viele, W1BRG – SEC: W1VSA.

Net	*Freq.*	*Time(Z)/Days*	*QNI*	*QTC*	*Mgr*
VTSB	3909	2200 M-S 1130 Su	686	107	WA1PSE
Carrier	3935	1300 M-S	456	14	W2DSE
Green Mt.	3932	2130 M-S	454	32	W1JLZ
Vt. Phone	3909	2130 M-S	113	4	W1KKM
VTRFD	3909	2200 Su	86	16	K1BQE

Welcome new amateurs WN1UJH, WN1UPH, and WN1UGA WN1USG, WN1USH, WN1USI are harmonics of WA1QGR. K1LJE has been busy on Oscar 6 and 7, has worked seven states and looking for skeds. K1BQB reports good activity on VTRFD Ne which has replaced VTPO Net and meets at time and frequency shown above; will be reported here regularly. VTQSO Party hi success again this year under auspices of W1AYK. Traffic: (Feb. K1BQB 87, W1LMO 18, WA1TXI 5, (Jan.) WA1TXI 37.

WESTERN MASSACHUSETTS – SCM, Percy C. Noble, W1BVE – SEC: WA1DNB reports WMEN held 4 Sun. sessions with QNI 74 (including 21 reported by liaison to the 2-meter repeaters) WA1DNB, W1DVW, K1RGO & W1ZPB were on one session with emergency power. RM W1DVW reports WMN held 28 sessions with QNI 152, traffic 111. 75-Meter PAM WA1MJE reports WMPN held 20 sessions with QNI 248, traffic 40. We believe both WMN and WMPN had 100% representation on the Region nets. VHF PAM WA1PLS reports WMARA repeater held 19 sessions with total of 2 stations for QNI of 158. New ORS WA1BXP; OPS WA1RWU WA1MJE now has new Drake line including the 2000! WA1RWU has complete Heath line, WA1QWS a General Class licensee W1BVR, who has used only a bug for years, now trying to regain decent fist on his straight key! (Oh, me poor aching arm!). CMARA says speaker of the month was K1YZE, District Coord. for MARS WA1OLK top man in West. Mass. in Sept. VHF QSO party. HCRA reports speaker of the month was W1CER from ARRL; NE Di W1BHR also present. WA1QWI the new public relations officer fo the club. MARC reports K1PNB starting a code & theory course WM Repeater Assn. says speakers were WA1DNB & W1DVW on th subject of Public Service. Mt. Tom ARA new officers are K1PQB pres.; WA1CZG, vice-pres.; WA1SXV, secy.; W1PHU, treas. New members: K1PCW, W1QV, W1HAX, W1QFB, W1OJA, W1LEA W1EBW, W1HIF, WA1BNB, WA1OYF, WA1SBH, WA1UDX WA1UFF, WA1UGB, WA1UGL, WB2WPK/1. Traffic: (Feb. W1DVW 119, W1TM 83, W1BVR 72, W1KK 63, WA1RWU 55 WA1MJE 47, W1ZPB 37, WA1OUZ 28, WA1DNB 16, WA1PLS 6 WA1BXP 4, WA1OLK 2, (Jan.) WA1BXP 14.

NORTHWESTERN DIVISION

ALASKA – SCM, Roy Davie, KL7CUK – An old friend o Alaska WB5GUV reports KL7FQQ visited him in San Antonia; als present was W1ICP of ARRL. KL7JDO says 6 DC's reported activit in the SET. Tony also reports the ARRL slide presentation wa shwon both on Kodiak and Juneau. Juneau reports 6 new ARE members. He is also having a ball with Oscar 6 and 7. KL7HRK ha accomplished a permanent RN7 liaison. Also assisting on the RN liaison is KL7HER and KL7GIH. KL7HOV reports the Alask Snipers Net had 28 sessions, 7 OBS, 37 QTC, 46 patches and 52 check-ins. The net now has 56 members. KL7HNQ reports a ne station KL7IGU in his area. He also has VHF contact wit Fairbanks. KL7GCH lost his antenna in high winds. KL7IBG mee 3 nets every day. KL7HDX meeting the new Pacific CW Traffic Ne also busy on other nets. Traffic: (Feb.) KL7HRK 64, KL7GCH 1 KL7JDO 16, KL7HDX 22, KL7IBG 2. (Jan.) KL7HRK 176.

IDAHO – SCM, Dale A. Brock, WA7EWV – SEC: W7JME PAM: WA7HOS, VHF PAM: WA7FSI.

Net	*Freq.*	*Time/Day*	*Sess.*	*QNI*	*QTC*	*Manage*
FARM	3.935	0200 Dy	28			WA7HO
IMN	3.582	0230 M-F	19	183	62	W7GH
RACES	3.99	1415 M-F	19			K7UB
Id. Silver	3.93	0115 MWF				W7I

WA7CTS is mobiling through Calif. WA7HOS, W7JMH, WA7EW met with Governor Cecil D. Andrus; the Governor signed proclamation declaring Amateur Radio Week in Idaho for June through 29. This should be an extra incentive for all to operate Field Day week end. Boise's 34-94 repeater has a new antenn which has increased coverage considerably. W7FYR, Caldwell, ar WA7ERA, Boise, are working for Channel 13 at LaGrande, Or Traffic: W7GHT 183, K7NHV 127, W7FIS 11, WA7HOS 7, W7KD 5, W7IY 1.

MONTANA – SCM, Harry A. Roylance, W7RZY – SE WA7IZR, PAM: WA7PZO. For those who have not asked m personally Station Activities for last month did not come to yo through the courtesy of the U.S. Post Office. Montana Traffic n had 1009 check-ins, 20 sessions and 226 pieces of traffic. 1MN ha 19 sessions, 62 QTC and 183 QNI. W7CJB is on ssb with a Swa 350. New hams in Butte are WN7ACT and WN7AQV. W7LR ar W7RZY joined the DXCC Club. Was asked why Mont. didn't have

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75A-4 449
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75S-3 Receiver 495
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32S-1 Transmitter 349
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312B-4 stn control 169
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KWM-2A Xcvr 695
351D-1 mount 35
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351D-2 mount 75
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516F-1 DC supply 75
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CC-2 carrying case 49
278/GH 495

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2C Receiver 189
2AC calibrator 9
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R-4A Receiver 269
R-4B Receiver 339
R-4C Receiver 399
4NB noise blanker 49
FL-500 filter 39
FL-6000 filter 39
CPS-1 conv. supply 12
CC-1 conv. console 29
TR-3 Xcvr 299
TR-4 Xcvr 389
TR-4/NB Xcvr 459
RV-4 remote VFO 69
TR-4C Xcvr 149
RV-6 remote VFO 89
2NT Transmitter 99
AC-4 AC supply 85
DC-3 DC supply 75
DC-4 DC supply 95
MN-4 matcher 69
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TR-22C FM Xcvr 179

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HT-41 225
HT-44 Transmitter 159
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SR-160 Xcvr 149
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PS-150-12 DC sup 49
MR-150 rack 19
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HQ-215 Receiver 219
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SB-301 Receiver 219
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SBA-300-4 2m conv 19
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DX-60B Transmitter 69
DX-100B Xmtr 99
TX-1 Transmitter 99
HX-10 Transmitter 189
HX-20 Transmitter 125
VHF-1 6-2m Xmtr 79
SB-400 Transmitter 225
SB-401 Transmitter 249
HW-7 QRP Xcvr 69
HWA-7-1 AC supply 9
HW-12 75m Xcvr 75
HW-12A 75m Xcvr 85
HW-22A 40m Xcvr 85
HW-100 Xcvr 249
SB-100 Xcvr 325
SB-101 Xcvr 349
SB-102 Xcvr 469
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SB-650 Digital frequency display 169
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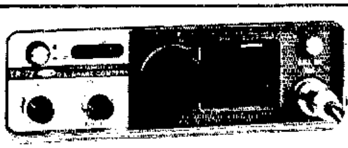

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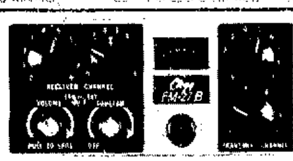

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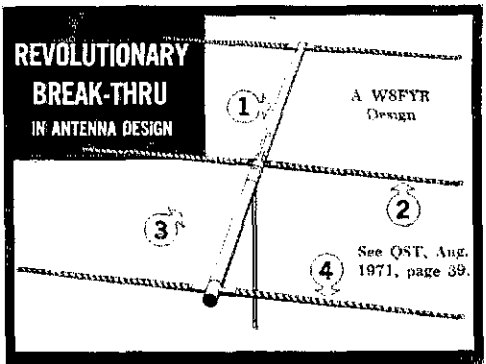

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County Certificate. We have, it has been in existence since 1962 known as the Treasure State Award. K7BMF was appointed EC in Hamilton, WA7OBH has been active with his OO appointment. New repeater call in Kalispell with WR7ARF 16-76 machine. Traffic: (Jan.) WA7KMP 59, WA7PZO 32, K4ROT/4 28, W7DEO 25, W7NEG 19, W7LR 12, K7BMF 4, WA7VTD 4, WA7OBH 2.

OREGON – SCM, Leonard R. Perkins, WA7KIU – Asst. SCM: Daniel O'Connell, WA7TDZ. SEC: W7HLF. RM: K7OUF. PAM: K7RQZ.

Net	kHz	Time	QNI	QTC	Manager
BSN	3908	0030	781	65	WA7QDC
OSN	3585	0145	160	116	K7OUF
AREC	3993	0200	319	3	WA7RWM
Nuclear	50,250	9:30 AM Su	22		W7FFF
PdxAREC		0230	275	15	K7WWR

Congrats to all users of the Mary's Peak Repeater, (22/82). Even though the Air Search for the lost plane was not a complete success it was very well demonstrated 2-meter repeaters are very efficient in providing communications in rough mountainous terrain. Also, congrats and thanks to the many users who patiently stood by and relinquished their normal use of the repeater. K7VIO did an outstanding job as Control Station. There should be many new novices on shortly. Practically every club seems to be graduating a class this Spring. Field Day. Now is the time to make plans for your FD efforts. Firm up your power supply, rigs, antennas, location, operators, log sheets, etc. Last year Portland ARC worked FD from the parking lot at OMSI. Traffic: (Feb.) W7ZB 171, K7OUF 138, K7IWD 132, K7OFG 125, WA7ODC 68, WA7YFU 60, WA7TXV 46, W7DAN 42, WA7UJO 41, WA7KIU 26, W7IWN 19, W7LT 6, K7WWR 5. (Jan.) K7OFG 103.

WASHINGTON – SCM, Mary L. Lewis, W7QGP – SEC: W7IEU. PAM: K7YRQ. VHF PAMS: K7GWE, K7LRD. RM: K7OZA.

Nets	Freq.	Time	QNI	QTC	Sess.	Manager
NTN*	3970	17:30	1048	81	28	W7PWP
NWSSB	3945	18:30	506	38	28	W7EIM
NSN	3700	0200Z	393	97	28	WA7NIB
WSN	3590	(8:45	273	61	28	W7LG
WARTS	3970	18:00	2160	128	25	W7QGP

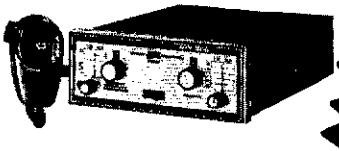
New Westside VHF PAM K7GWE. WA7TWB. Oregas Is. EC. '75 SET was our first and we really got our feet wet – Bill had to stop SET and help rescue a stalled boater in the Sound. Conditions should be better on AREC/EC Net Sun. 3930 with new time 1500. EC, do you have any ideas on format or procedures change? Suggestions are welcome it's your net. W7PI still inactive. W7KHN back home from Manila to find 75-meter antenna down from winter storms. When you report traffic count please, use break-down not just a total. The FCC proposed rule making No. 20282 has increased the demand for ARRL license Manuals & Handbooks to the back-order status, at this printing orders should be current, so try again. I hope my visits to your ARC meetings helped you answer No. 20282. I made 28 club visits in Jan. & Feb. from Aberdeen, Longview, Vancouver, Yakima, Tacoma & Seattle areas. When does your ARC meet? Thanks for asking me. Final accounting Expo '74 showed approximately $5000 of 8000 in donations but as a public service the Red Cross & Amateur Radio were not held to full account on lease contract. Thanks again fellows and gals. With regret I report Silent Keys WA7HCL and W7CAM. Traffic: WA7BDD 113, W7APS 75, W7QLP 74, WA7OCV 70, WA7TWB 61, K7OXL 53, K7OXA 51, K7VAS 47, W7BQ 45, W7BUN 29, W7LG 28, W7SYS 28, W7PWP 22, WB7ZNW 22, W7AIB 18, W7IEU 17, WA7RCR 15, W7HUU 12, WA7VHW 6, WA7GVB 4.

PACIFIC DIVISION

EAST BAY – SCM, Charles R. Breeding, K6UWR – Asst. SCM: Ronald Martin, W6ZF. SEC: WB6RPK. RM: K6HW. VHF PAM: WA6JUD. PAM: WA6YCE. WB6WWG is a new OPS and OBS. As OBS he will keep Lake Co. well informed; schedule will be Mon., Wed. and Sat. at 1945 PST on 146.52 and 146.64. It was my pleasure to speak before the membership of the Lake County AR Society. My hearty thanks to them for their most warm reception. It was good to learn of the activity in Lake County and the progress in setting up a RACES program. Director W6ZRJ has been busy in the Section speaking before the Livermore ARC, Mt. Diablo ARC and a meeting of the East Bay Section appointees and club reps. W6ZF transmitting West Coast Bulletins at 9 PM PDST/0400Z on the 1st and 3rd Mon. on 3540 kHz at 22 wpm. W6CBF back from trip to Mexico. At the Washington Birthday meeting of the Mt. Diablo ARC, VE2AQV/W6 was awarded his Public Relations Asst. certificate by Division Director W6ZRJ. W6JXK was down with the virus, but is now back at work on NCN. From CCRC the following were listed as new calls in the Section: WN6IWO, WN6IXF, WN6IWR, WN6IKP. Congrats to all. The Northern Calif. Contest Club doing a fine job of growing. If you enjoy contesting the NCCC may be the place for you. Drop a card to NCCC, P.O. Box 2025, Castro Valley, CA 94546 for full information. Traffic: K6HW 486, WA6IPI 195, W6TYM 121, W6IXK 36, K6PMG 34, WB6VEW 20.

HAWAII – SCM, Pat Corrigan, KH6GOW – SEC: KH6IKB. The WestPacTfcNet meets daily on 14110 cw at 0700Z. KH6IGJ grabbed IT1/A2/6Y5 on 75 meters. KH6HPS is new pres. Maui ARC. Other officers are KH6s HFJ, BYG, IDV. ARRL Gen. Mgr.

GIANT SAVINGS!



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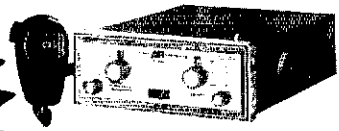

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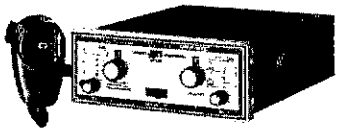

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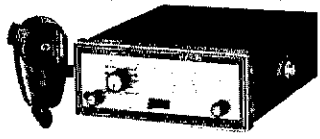

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Dick Baldwin, W1RU visited KH6 with his wife and spoke to a group at the SCM's house. PH Subbase ARC is growing and may soon be 100% ARRL. I urgently ask all members to respond to the ARRL survey questionnaire on Docket 20282. This is your chance to influence a decision with great impact. Also you should write individually to FCC. KH6HIF and BRA's son both cited in Aloha Spirit Awards. KH6IAC finds time to DX (102C). He now is Hon VP DXC and GDR is secy. KH6GQW, pres, Hilo Br. of EARC ha KH6IAA as chmn. Al also VP, EARC, Inc. with KH6GQW, pres. KH6ILD, secy.; KH6HGG, treas. KH6BZF reports W1BB ex-KH6HIF visited KH6, Lee says he worked WA6LET on 432 EME. He is now on Mode A on ssb/cw for Oscar. KH6CHC made news when he QSOed Africa on 160 meters. Jack only needs Fur for WAC. Pau,. Traffic: (Feb.) KH6IAC 279, KG6IAO 156, KX6LJ 84 KG6JED 39, KG6IEU 21, WA1LWS/KG6 14, KH6GQW 13. (Jan. KH6GQW 32, KH6BZF 10.

NEVADA – SCM, Harold P. Leary, K7ZOK – W7NKF has been working through Oscar 6 & 7 with good luck. W7IUC has new radio store in Vegas. W7VII's tower is ready for his quad. W7HOP and WA7QED have new towers and beams. WA7KNK will soon have hi tower and beam in the air after he finishes his new ham shack WA7RPZ putting up fancy 2-meter beam to hit Victorville repeater K7YUJ has new position with well known beam supplier. WA7JLK will be chmn. for Sierra Hamfest. WA7VIH constructing a digita readout transceiver, WA7GVF now Advanced Class. SNARS i reorganizing – having monthly meetings-code and theory classes XYL of W7AAA now W7MDM. W7VYT teaching Broadcast course at Reno high. W7GXD on 2 meters & MARS. W7AAA has a first for Nev. – a 220 MHz repeater 222.50 in 224.10 out with cal WR7AFI. Remember to send reports to W7AAF from now on Traffic: (Jan.) K6MQX/7 28. (Dec.) K6MQX/7 6.

SACRAMENTO VALLEY – SCM, Norman Wilson, WA6JVD – SEC: W6SMU. On Feb. 18, W6ZRJ, ARRL Division Director and W6VZT, Vice Dir., attended a meeting of the North Hills RC, gave a presentation and led a discussion on the proposed amateur restructuring docket. Over 260 were in attendance thanks to the fine publicity efforts of WB6AUH and WB6FDR. The 3rd Annual Sacramento Hamswap will be held in Carmichael Park on Sat. May 17. K6RPN with the help of a new 40-meter double extended zepp antenna has again run up an impressive traffic total and has made BPL. WB6FZY is the new trustee of the RAMS repeater WR6AJU and WB6KZN has taken over as the Public Service chmn. Con gratulations to WB6OJO on his new Advanced ticket and to WB6UWB on his Technician. WA6ITF was temporarily QRT while in Iceland. W6RTK has a Regency 2B, WA6HAF was able to repair his beams in time to score over 900K in the ARRL DX Phone test As no one else filed a nominating petition for SCM, WA6JVD will be kicked around for another 2-year term. Traffic: K6RPN 437.

SAN FRANCISCO – SCM, Charles K. Epps, W6OAT – RM WA6BTF. Since this month begins my term as SCM, I would like to start with a word of thanks on behalf of our entire section to W6NUT for the job Tom has done as SCM for the past two years W6RNE and W6KHI have received OO appts. WA6BTF now asst mgr. of NCN. We still need more SI section stations on the net particularly from the Marin County and Santa Rosa areas. We also need to get our section emergency preparedness plans updated. We have openings available now for SEC and EC appts. Anyone interested please contact W6OAT. W6KHI became a father right in the middle of the DX Contest! W6RQ had an average of 0.2 ppm for 4 readings (2 on 40 and 2 on 80) in the Feb. PMT. W6RNE received his Extra – congrats, Greg. W6BIP and WA6DJI teamed up for a multi-single effort at BIP's QTH in the DX test. The test also saw W6NUT operated by WB6AIN on phone, and by W6NUT, W6KHI and an NCCC contingent on cw. WA6PMK operated the test from W6OAT. Also heard active was K6ILM, WA6BTF now on RTTY Al's first QSO being W6GGR. W6KHI was elected secy.-treas. an WB6AIN elected dir. of NCCC. All stations holding CO appts. please remember the SCM needs your monthly rpts by the 6th in order to get info into QST. Traffic: W6RNE 210, W6IPL 118, WA6BTF 17 W6GGR 2, W6OAT 2.

SAN JOAQUIN VALLEY – SCM, Ralph Saroyan, W6JPU – The new EC for Tulare Co, is WB6MGG succeeding W6ASV who has an FB job. Looking for someone to handle the SEC job for the SJV WB6EHH has a 60-ft. tower and a Moseley TA33 beam. W6BAI mobiling on 2 meters. WB6AIF on 2 meters fm. The new repeater in Bakersfield is WR6AJZ. WN6JRS editor of the Bakersfield, Kern Co. "Splatter," WB6JIA has a Pace handitalkie. The Kern Valley ARC will hold cw practice for 30 minutes before their regular club meeting, starting at 7:00 PM. New call of the Tulare Co. Radio Club repeater is WR6AIM. K6ZMW worked K6UOH in Saratoga on 1296 MHz. WA6NRV also on 1296 MHz. W6MEV holding code classes for novices. The Turlock Amateur Radio Club held their Annual "Sweetheart" dinner on Feb. 21, with approx. 70 in attendance with K6SNA as MC, K6YDW and WB6QWF on RTTY, WB6RWM and WB6RWL putting together a Heath HW-202, WB6DKR has a Standard 826, W6DCP on SSTV. WA6JDB teaching code and theory. WA6CPP experimenting with 40-meter antennas. Traffic WA6RXI 52, WN6FPV 8, WA6JDB 1.

SANTA CLARA VALLEY – SCM, Jim Maxwell, K6AO/W6CU – SEC: WA6RXB. RMs: W6RFT, W6BVB, W6RSY, W6REF mad

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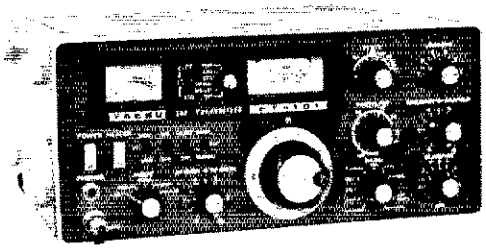

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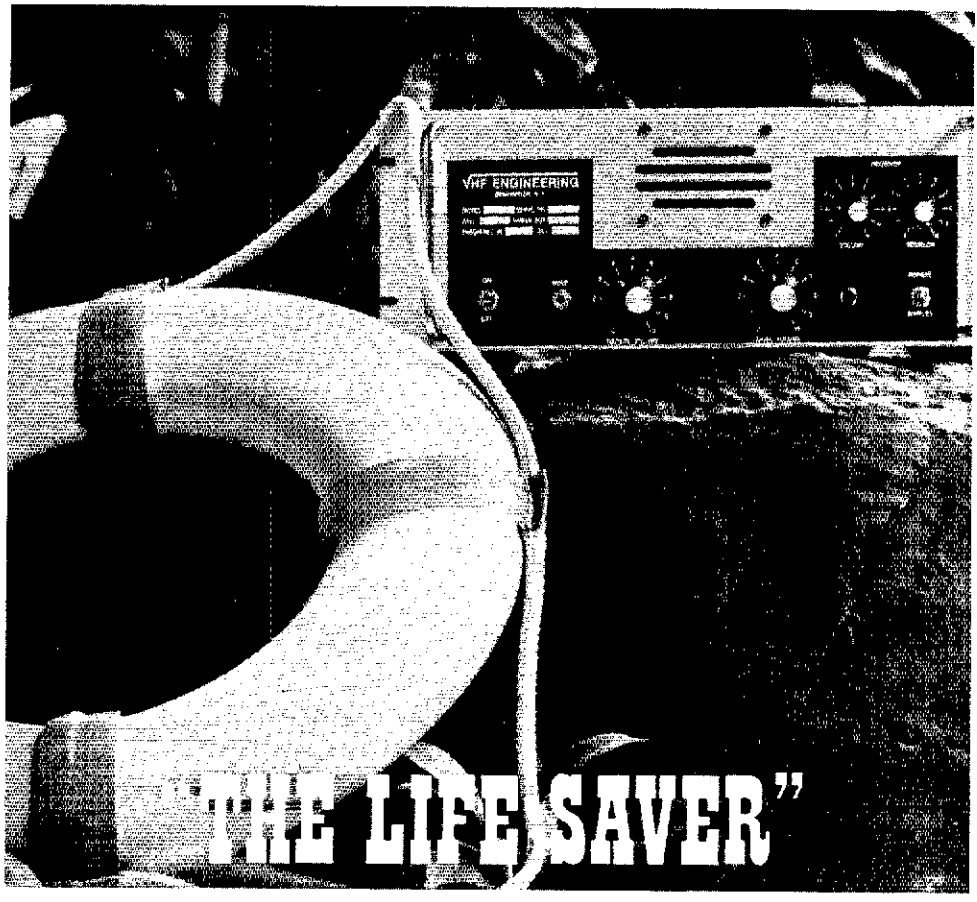
BPL. W6RFF, W6AUC made PSHR. New appointments include WA6JOC, FC for SCCARA, and W6ASH, OBS. W6DFF now QRV with his new SB102. WA6UAM completed his 4-MF array – four KLM twelve-element LPYs, with 2 wave spacing. He reports hearing good echoes from SM7BAE, VE2DFO. W6PO and WA2BIT, W6PC recently called CQ during the universal window, heard five replies. W6IC reports the San Mateo County CD Net meets at 8 PM Mon. on K6QFO. Input for K6QFO is 146.25, output 146.85. Welcome to W6ASA, a recent addition to SCV from LA via DL, where he was QRV as DL5DD. Top score for the Pacific Division in last Fall's VHF QSO Party was SCVer W6OCP. W6QIF still offers code practice on 3590 kHz daily (except Mon.) at 8:00 PM local time. K6UGS QSYed to San Bruno from SF. K6CU directing a new SCCARA novice class. Santa Cruz and FMARC have flea markets scheduled for May, SCCARA's in June. Contact your local club for details on time and place. WN6FLD joined AREC. New Contest Club prexy WB6IFP promises to spill all the secrets of winning contests via lectures at upcoming meetings. Contact CFP for meeting details. W1RU, the new ARRL General Mgr., will put in an appearance at the Pacific Division Convention scheduled for Fresno on May 3 and 4. WA6SCY has discovered the pleasures of 2M, acts as control operator for WR6ABD. Congrats to W6KVA on new Advanced Class ticket. Additional congrats in order for W6GVN who passed his Extra Class exam. OO W6HQN now K6KM, W6RSY reports a new Western Pacific CW Net has been established, which has greatly improved the flow of traffic to and from KG6, KX6, etc. Traffic: (Feb.) W6RSY 1016, W6YRV 365, W6REF 285, W6RVB 81, W6DEF 63, W6AUC 54, W6ZRJ 12, K6AQ 11, W6KZJ 11, W6QNB 11, WA6NDN 5. (Jan.) K6WT 13.

ROANOKE DIVISION

NORTH CAROLINA – SCM, Chuck Brydges, W4WXZ – SEC: K4PBG. PAM: WB4JMG. HVE PAM: K4GHR. RM: WB4ETF. EC of the month is WA4FFW who in addition to covering Alamance Co. is an Asst. Dir. in our Division. The Raleigh ARS and Cary ARC have novice class going with 18 trying. The Alamance ARC has class with 19, the Mecklenburg ARS has classes going. Congrats to WA4FFZ on completing his PHD at UNC. K4BLC puts out OBs on cw 3573. K4ZCP 5BDXCC now No 39 has 200 plus confirmed on five bands, congrats. WB4UTZ passed Advanced and First Commercial. K4BF continues OO activity as does WB4UJH, W4BUZ and WB4INB. W4ACY reports receiving quite a few letters regarding Docket 20282, please write him, your Division Dir., and also FCC. NC Six Meter Assn. first contest winner was K4GMJ, Greenville, SC with very close second from WB4YJW, with both stns working in excess of 80 stations. K4FI continues working DX thru Oscar 6/7. The Cape Fear ARS, Fayetteville had meeting with ARRL Film and discussion on Docket 20282. If you operate 2 meter repeater support your local repater and join the Carolinas-Va. Repeater Assn (CVRA) to support their valuable programs and objectives. For CVRA info contact W4IZI or WA4PEN. Traffic: (Feb.) K4MC 107, W4OFO 95, K4EZH 78, K4FTB 69, W4WXZ 64, WA4KSO 55, W4FMN 50, WB4BGL 41, WB4KHZ 40, WB4OXT 40, WA4ELZ 26, W4TYF 20, W4ACY 19, K4BF 6, W4REZ 6, W4FHF 5, WB4TNB 4, WB4CFS 3, K4TTN 2, WA4KWC 2, K4AIH 1. (Jan.) K4FBG 60, WB4OXT 36, WB4BGL 13.

SOUTH CAROLINA – SCM, Richard H. Miller, WA4ECJ – Asst. SCM: Charles N. Wright, W4PFD. RM: K4LND. PAM: K4GQG. New appointments: WB4OBZ, ORS. W4NTO and K4NJE, OPSs. Fritz also is ORS and OO. He's not collecting certificates; just doing a good job in those activities. W4EZF reports recent newcomers to Seneca are KL7GFT and XYL KL7GEU from Fairbanks, Alaska. Roll out the welcome mat, gang. We hope they stay long enough to become unreconstructed rebels like the rest of us local yokels. W4EGH isn't handling formal traffic but is keeping the SC Phone Net well informed as OBS. Well done, Claude. K4NJE upgraded to Advanced, WB4OKA to Extra. Quote of the month from WB4OBZ: "I'd like very much to attend the EC meeting to meet the people who are giving to ham radio – not just getting". Amen. The SSBN had 833 check-ins in Feb., handled 98 messages. All aspirants for PSHR please check current issue of QST for qualifying requirements. See "Public Service" in table of Contents. The current requirements are not those specified on the official reporting card. Traffic: W4NTO 159, WB4OBZ 73, W4AKC 40, K4GQG 21, K4GLT 17, WA4LOU 9, W4IVE 5.

VIRGINIA – SCM, Robert J. Slagle, K4GR – Asst. SCM: A. F. Martin, Jr., W4THV. SEC: WA4YIU. Asst. SEC: WA4PBG. PAM: WA4NEW/4. RMs: W4SHJ, K4IAF, WB2VYK/4, WA4AVN, WA4DHY. WA4DHY says, "Try Ten – you'll like it!" WA4CLI found his monthly report in his pocket and mailed it from Calif. New officers at Vienna Wireless Society: K4EJY, pres., WA4GPT, vice-pres.; WB4WPW, treas.; W4MIB, secy.; W4UM, act, W4UMH, W4ZM and K4LMB did fine job on WRC talk show. W4UO still enjoys the net and schedule affiliations he has had for years. WB4EDT loves new keyboard, W5VZO/4 glad to be back. W4YZC finally got his KL7 QSL and made 58WAS! WB4DRC enjoying two. W4TMN new 125' Random wire ant. WA4MMP tried sked with W1HDQ on 6 & 2, both head, but no QSO on 6, all n two. Hampton Roads Radio ASSN Swapfest July 12. WA4GPM/4 having TVI probs. ARRL First VP W4KFC enjoyed everything this month. W4TZC and his chores! New harmonic (No. 1) to WA4EPH's. W4LGM new call for W6MOF/4. New officers at WB4DZL



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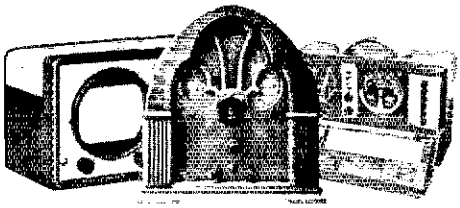

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WEST VIRGINIA – SCM, Kay C. Anderson, W8DUV – Ka River ARC (Bluefield) has been reorganized and will meet on 1 and 3rd Fri. of each month. K8ZDY is secy. WV QSO Party set fo June 20 & 21, sponsored by State Radio Council. Rules this issu Operating Events. Southern WV Repeater Assn. elected K8UD pres.; WB8CQV, vice-pres.; W8FTF, secy.; K8LOU, treas. Officer for Opequon ARC WB8NOB, pres.; WN8QPU, vice-pres.; K8QY secy.-treas.; WB8SYZ, act. Tri-State ARA held their annual banque Mar. 14 in Huntington. Among the guests were Roanoke Div. Vic Director W8JM and wife, WB8LAL. WB8MKL made BPL. W8ET new OBS in Charleston. WB8NEZ appointed OPS/ORS.

Net	kHz	Time(Z)	QNI	QTC	Mgr
WVN	3567	2300	257	132	W8HZ
WVNN	3730	2100	190	106	WB8PA
WVPN	3990	2200	1041	283	WB8DQ
WVMN	3990	1600	362	121	WB8DQ

Traffic: WB8PAV 239, WB8MKL 125, WB8IJW 119, WB8DQX 101 W8HZA 89, W8SQO 84, W8LGT 66, W8DUV 41, W8JWX 40 W8EDE 26, W8CZT 17, WA8NDY 11, K8CFT 10, K8QEW 1 WA8LFW 8, W8QEC 8, WA8YCD 8, K8IXO 7, WB8AKR W8GWR 6, WB8SCD 6, K8BCF 5, WB8CPU 5, WB8OZA 5, W8UQ 5, W8IZP 4, W8JM 4, WB8MAV 4, K8ZDY 4, K8BYR 3, WB8CJ 3, W8CKX 3, WB8CNN 3, W8ETF 3, WA8EIF 3, K8NYG WB8PKF 3, WA8WCK 3, W8DYB 2, W8GQE 2, WA8OKG WB8SCG 2.

ROCKY MOUNTAIN DIVISION

COLORADO – SCM, Clyde O. Penney, WAØHLO – SEC KØFLQ. RM: WBØHCK. PAMs: KØCNV, WAØYGQ. Con gratulations to WØWYX who recently received a Public Servic Award from ARRL. W5HRS/Ø reports he will be off the ai indefinitely, rig is at the factory undergoing repairs. He will b sorely missed. WØSIN is enjoying his new SB104, while KØTIV say he also is enjoying his new 30S1. Newly elected officers for th Pueblo Ham Club are WBØNRF, pres.; WAØUZO, vice-pres WBØBTA, secy.; W9KWS/Ø treas. Newly elected officers for th Western Slope Amateur Radio Club are KØPIM, pres.; KØILC vice-pres.; KØRES, secy.-treas. Net Tfc. for Feb.: Hi Noon Net ON 797, QTC 81. informals 133, 26 sessions, 881 minutes. Late Ne Tfc. for Jan.: SSN ONI 239, QTC 88, informals 25, 703 minutes Traffic: (Feb.) WØWYX 1653, KØZSQ 843, WBØHCK 143, WØI 89, WØLQ 73, KØDCW 60, W5HRS/Ø 48, WØSIN 37, WØENA 29 KØTIV 23, WAØTMA 22, WØMYR 20, WAØYNO 8, WØGW WBØLVR 7, WAØYED 5, (Jan.) KØFLQ 167, WØLQ 117, W5HRS/ 40, WØMYB 16, WØGW 6, (Dec.) WBØIWL 9.

NEW MEXICO – SCM, Edward Hart, Jr., W5RE – Asst. SCM Joe T. Knight, W5PDY, SEC: W5ALR. PAMs: W5DMG, W5PNY RMs: K5KPS, W5UH. Your SCM enjoyed a visit from WB5KSS W5HRS/Ø will be off while his Drake goes in for repairs, WB5FT ran a hidden transmitter Hunt on 52/52. WA5MIY will be i Europe for six weeks. K5MAT worked all states YL! SW (Southwest Net) meets at 7:15 PM MDST on 3585 kHz and report 221 check-ins and 182 messages handled. The net is now using much slower speed in net sessions to allow beginners to check in an tend the NCS. NMRRN meets 6 PM MDST on 3940. Check-ins 77 tfc 41. A mountain search for a downed plane was successful whe two of the four persons on board were rescued alive. Many loc hams were involved, including W5NUI, W5ALR, W5PDY, WBØAN and others too numerous to mention. WB5IFV, WB5CFU WA5YBA, WA5LTP, W5MEF and K5DAB are planning a repeat for Caprock, N.M. Traffic: W5UH 422, W5ENI 174, K5KPS 16 WB5KSS 164, K5MAT 150, W5RE 83, W5HRS 48, W5YQ 1 W5QNQ 5, WA5MIY 1.

UTAH – SCM, Ervin N. Greene, W7EU – SEC: W7GPN. RM W7OCX. Many stations upgrading licenses including WA7TSB an and WA7MEL going for their Extra. UARC School winding up wit many ready to appear for exams in Mar. Big news is upcoming Uta Hamfest sponsored by Utah Council of Clubs to be held July 26 Taylorsville Park. Many activities both amateur oriented and for th family are planned. This is an all day affair so bring the family Ogden Club building a new solid state repeater and plannin relocation to Mount Ogden Site to provide wider coverage. Lak

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Mountain Repeater on the air on 16-76. Many VHFers are workin the Mt. Harrison repeater up by Burley Idaho. Congrats guys for great repeater, nice coverage. W7KHY, WA7UOW and W7E working ATV on 450 MHz. Need more stations, W7KHY ar K7ZVT are building new eleven-element beams. Net activity: BUN 28 sessions, 857 check-ins, 24 messages. UCN: 62 messages, K7HL planning summer activity with Atlas mobile and a trip to Englan Traffic: K7HLR 334, WA7TSB 58, WA7MEL 52, K7ZVT 3 WA7OAU 27, W7EU 23, W7OCX 22, W7DKB 20, WA7IRC 2 W7RO 16, W7HOI 12, WA7TEH 9, W7ODY 4, W7UFM 4.

WYOMING – SCM, Joe Ernst, W7VB – Wyo. Weather Ne 3920 kHz 6:45 AM MDST, M-S. Jackalope Net, 7260 kHz 12: PM MDST and 3920 kHz at 12:30 PM MDST M-S. The Wy Cowboy Net, 3950 kHz 6:45 PM MDST M-F. The Wyo., Idah Mont. and Utah, (W1MU) Hamfest scheduled for Aug. 1,2,3 at Mac Inn, near West Yellowstone. The Calgary Centennial Amateur Radi Convention will be held on the same dates, with the first meeting the Canadian Division of the ARRL to be held in Western Canad at Calgary, pres. Dannals W2IUK will be present as well as gue speaker Dr. Owen Garriott, W5LFL of Nasa's Skylab Two Missio The convention will be held at the Calgary Inn. WA7RKC brought load of furniture to Lander for their new radio club house at th airport. Wedding bells rang out on schedule in early spring f several Wyo. hams. W7UZK brings a good signal from Sundance WR7ZZY from Cokeville to cover their portions of the stat WB7AEM and WA7RBW on two meter mobile. Wyo. Cowboy Ne W7SDA net mgr, 20 sessions, 471 QNIs, 28 QTCs. Traffic: W7TZ 59, K7SLM 34, K7VWA 31, W7UCP 24, K7ITH 11, WB7HNI 1 W7IOI 8, K7WRS 8, WA7NHP 5, W7SDA 4, W7LLL 2, W7MZW W7SQT 2, WA7TCQ 2.

SOUTHEASTERN DIVISION

ALABAMA – SCM, James Brashear, WB4FKJ – SEC: W4DGI RM: W4HFU, PAM: W4LNN. With regret I report Silent Key: W4HYI, W4KUP, K4MRH and W4RTQ. WA4MCS reports th Conecuh Co. ARC recently organized with K4TNS, pres.; K4KMC vice-pres.; K4VMT, secy.-treas. Charter members W4HJC, WB4MF WA4MQU and WA4MCS. Try Repeater WR4ALR 16/76. Th Mobile ARC first to file comments on Docket 20282. K4UMD an WA4BDW recently in the hospital. The Tuscaloosa ARC providir communications during severe weather conditions. W4RQS h home brew 7034/4X150 and putting out 400 watts on 2-meter fi with twenty-two-element beam. WA4EEC and K4CUU conduc emergency preparedness training after the AENJ net sessions. K4V back on QRP with his Harvey Wells 190. WA4BDW put up 40-f tower and tri-band beam. W6LJU/4 reports AREC membersh increased to 48. WB4YHV keeping AENM members posted b performing OBS functions just before net session. She and W4WS participated in 1975 SET. Officers of North Ala. DX Club a WB4GQK, pres.; K4GJD, vice-pres. Congrats to WB4UKU for his f wpm CP. WB4FIT gave an interesting talk to the Huntsville ARC o digital logic, symbols and decoding methods. K4JK keeps in touc with his Fla. buddies. Appointed WB4ZQF as ORS; WB4YKH FCi endorsed W4WSX and WB4YHV as OPSs. Welcome to th following WN4s KJI, KKN, KRI, KUM, KUV, KWL, KXS, KY LAI, LIC, LKS, LKU, LNP, LQU, LSZ, LTT, LUJ, LUK, LU LVT, LXP, LXW, MDG, MDH, MDJ, MDK, MDL, MDU, MDV MDX, MDY, MEU, MFF, MGA, MGG, MGK, MGL, MGM, MG MGO, MGS and MGQ; WA4s KKD, KSI, LAF, LKM, LLS, LM LML, LOL, LPW, LTL, LYZ, LZA, MCS, MEM and MEQ; WB4 KJB, KVD, KWP, KWR, LMA, LPS, LYS, MEO, MER. Traffi (Feb.) W4LNN 147, WB4EKJ 127, K4LYV 101, K4AOZ 9 WB4FZQ 77, WB4KSI 61, WB4SVH 56, W4RQS 51, WB4RCF 2 WB4IYW 25, K4CUU 20, WN4JDH 19, K4VF 15, WA4AJA 1 WB4TVY 14, WA4BDW 9, WB4NEU 2. (Jan.) W4WSX 3 WB4YHV 16.

CANAL ZONE – SCM, Roderick J. Isler, KZ5PI. Fun was ha by one and all at the Annual Crossroads of the World Hamfest, Ja 25 at the Gamboa Civic Center. Congrats to KZ5SD and the Chagr River ARC for providing the Canal Zone with Central Americ largest amateur event. Officers for the Canal Zone ARA are KZ5Q pres.; KZ5AS, vice-pres.; KZ5WA, secy. treas. KZ5CQ, former SC has departed the CZ for a new assignment with the Air Force Mich. HP1XIS former Canal Zone ARA vice-pres. departed for h home in England in late Mar. and can be worked as G3KW farewell and best wishes to you both. On Feb. 25 '75 Army MAR station KZ5USA operated by KZ5MR, rendered assistance for Air/Sea rescue operation conducted by the U.S. Air Force for severely sick person aboard a 36 foot sail boat near Ecuado Congratulations to new Novices KZ5AYN, KZ5BNN, KZ5BV KZ5CCN, KZ5CSN, KZ5DAN, KZ5DSN, KZ5ETN, KZ5GG KZ5JQN, KZ5KCN, KZ5KKN, KZ5KWN, KZ5LRN, KZ5MC KZ5TIN, KZ5URN, KZ5WKN, KZ5WLN and KZ5WWN.

GEORGIA – Acting SCM, John Englund, K4JJQ – PAM K4JNL. RM: K4JJQ.

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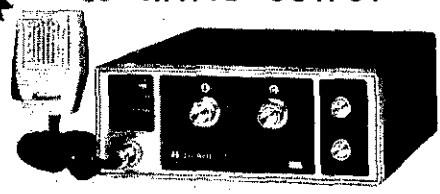

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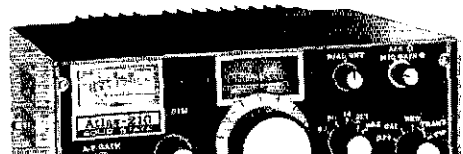

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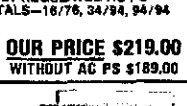

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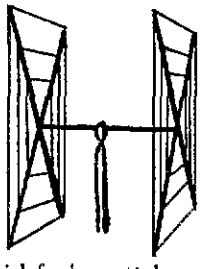

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CVEN 1	3,950	1730 Su	51	9	K4Y
CVEN 2	146.94	0130	491	92	K4Y

The new N.E. Ga. Emerg. Net meets on Sun. at 1830Z on 3.9 MHz (WA4AJY, mgr.) and daily at 0130Z using Sawnee Repeater on 147.75/.15 (WB4GQX mgr.). They need check-ins fr all N.E. Ga. counties. GSN & GTN have been way down QNI/QTC – let's support these cw nets, especially from downsta GSBN has been showing fabulous results of late, keep up the g work going. The Coosa Valley nets have been growing very nic Atlanta RC was treated to a tour of Delta Airlines comm. cen Make plans for Field Day! PSHR: K4JJO. Traffic: K4JJO WA4FSL 103, WB4WQL 84, K4BAI 42, WA4LLI 23, W4HON W4AAY 20, K4WC 14, W4JM 4, K4JFY 3, W4NET 1.

NORTHERN FLORIDA – SCM, Frank M. Butler, Jr., W4R SEC: W4IKB. RM: WB4DXN/WA4WIW. PAMs: WA4IZM/ W4SDR/40; WB4BSZ/VHF.

Net	*kHz*	*Time(Z)/Days*	*Mana*
NFPN	3950	2230 Dy	WA4I
QFN	3651	2300/0200 Dy	WA4G

Net Certificates for NFPN earned by WB4EWQ, WA4F WB4TZR & W4WLX. W4LDM & W7EM/4 handled Tampa traffic; W4LDM made BPL. WB4GHU received BPL medalli W4YSO represents N. Fla. on Daytime FAN and 4RN. DBARA its 19th annual banquet. WN4LOV new YL in Daytona. W4MB book which equips him to work DX in ten languages! Jacksonvi Ed White HS Radio Club, WA4LDV on the air. K4DDY conduct radio classes there. WB4DAD reactivated Wacky Wingdingers Mon. at 8:00 PM on 28,690 kHz. K1EES/4 & XYL K4KRU putt rare Dixie Co. on the map. WB4ZOC passed Extra Class ex Tallahassee repeater WR4AAB, has .16 & .34 inputs worki Panama City new club is St. Andrews Bay ARS hope to get W memorial call. K4KJP passed Advanced Class exam; WN4DYF WB4DYF, WB4WMR & XYL. WB4WMS new at Eglin. K4JLM l of a PARC committee to study Docket 20282. Plans for the Fla. "Swapfest" Apr. 13 are well underway. W4GSK, formerly f FWB, now retired and lives in Vernon. WB4JHO hospitalized – the W4UC News out just in time! WB4JCV working on a mem for WR4ACZ autopatch. WB4GWE/WB5CTV preparing propagat forecasts for the W. Fla. area. K4PIQ has new SB-104. Traf (Feb.) W4LDM 707, W7EM/4 384, WA4FBI 354, WB4GHU 2 WB4SKI 181, K4CVO 163, K4VFY 139, WB4DXN 113, W4K 73, WB4JHQ 61, W4RKH 53, WA4IZM 34, WA4EYU 31, W4Y 27, WB4NJI 24, WB4NHH 19, W4AFT 14, WB4ADL 10, W4L 10, K4OER 8, WA4CRI 7, WB4FJY 7, WB4VAP 5, W4UC WB4VMP 3, WB4VYU 3, W4IA 1. (Jan.) WB4VYU 8.

SOUTHERN FLORIDA – SCM, Woodrow Huddleston, K4S – SEC: W4IYT. Asst. SEC: W4SMK. RMs: K4EBE, W4 WA4GBC. PAMs: WA4NBE, W4OGX. New appointments: WB4Z ORS, OPS; W4GOG ORS. OOs reporting: K4DAS, K4JPF, WA4M K4NF, K4OG, WA4UVG. WB4JVZ reports for Tampa ARC t Fla. State Fair message center operated Feb. 4-15 originating 2 messages and getting 73 services back. This is 2.9%. Not b W4HOS spent all night looking for a missing person who was fo dead a few days later. WA4CTM doing FB job as new OBS gett bulletins from W1AW by RTTY. He also reports a fine group RTTY enthusiasts on 6-meter AFSK 51.0 and 50.325 MHz. K4 assisted Vice Dir. WB4CBP with presentation to Clearwater Amat Radio Society on FCC Docket 20282. SPARC Repeater Tea WR4ALM, assisted with Ladies' Open Orange Blossom Golf Tour ment in South Pasadena on Feb. 21-23, all proceeds going charity. A very active Hollywood ARC is celebrating its anniversary moving into larger quarters. They will have a booth "the mall" May 14th. Expect a flood of ARL SEVENTY SEVE K4NE teaching "Advanced Class" in theory & regs for St. P ARC. W4NMU doing the "General" class, covering broad range code, theory and regs. SPARC graduated 4 Novices now await their licenses. K4QG taking trip to San Francisco during Mar. Apr. K4DJN has moved to CF with XYL WA4ZHT and harmo WA4CZO. He works on space program at Vandenberg AFB. Traff (Feb.) W4DUG 3623, WA4SCK 469, K4SJH 351, K4SCL 2 W4DQS 230, WB4ALH 227, WB4ZSO 195, W4FH 176, WB4K 169, WA4GNI 109, W4WYR 92, W4IRA 87, WA4EIC 83, WB4A 75, K4TH 63, K3PIF/4 59, K4BLM 46, K4NE 34, W4GOG WA4HDH 26, WB4HJW 26, WA4KKF 25, K4QG 19, WB4TRI K4CFV 15, WB4VWO 14, W4OGX 13, WA4CTM 10, W4SMK W4TJM 9, W4MML 8, W4LK 6, K4FBE 3. (Jan.) W4GOG WA4HDH 27, W4NTF 23, W4MML 13.

WEST INDIES – SCM, Juan S. Sepulveda, KP4QM – KP4A planning to move WR4AEC to Cerro Punta. A new repeater be installed by KP4DL & KP4ADI at Cerro Maravilla to cover Pon and metro area. Another repeater being installed at Maricao KP4QC covering all the western part of the island. The PR DX C very active, will take care of QSL Bureau. The former QSL M KP4DNV, passed away. New novice classes at the Colegio Adv tista del Este. The Radio Club repeater for La Santa ready operation. The El Gato repeater has good island coverage. KP4DI moving stateside for medicine studies. KP4DRT has Advanc ticket. The 7250 kHz net on Sun. has good participation, KP4GN KP4BLX heard daily on 3830 kHz. KP4DOG's two meter rig sto a year ago was recovered. The new RCPR Board of Dir. compo of KP4s AOC, RK, QM, BBK, COM, DKZ, DDP, BDL, BBI, Traf KP4DBK 8, KP4BDL 5, KP4AOC 5, KP4QM 4.

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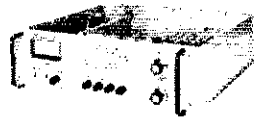

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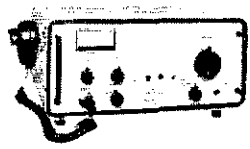

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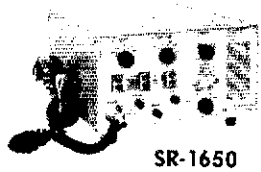

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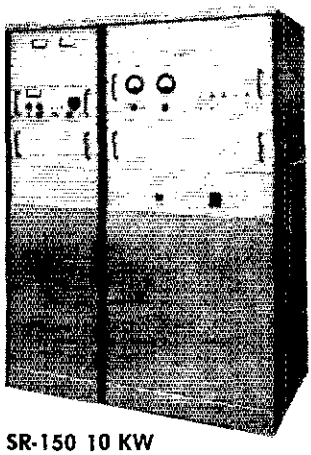

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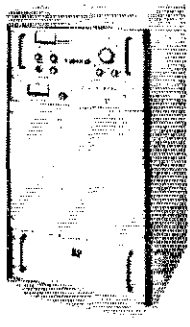
ISB TRANSMITTER



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SOUTHWESTERN DIVISION

ARIZONA – SCM, Marshall Lincoln, W7DOS – RM: K7NF PAM: WA7JCK. Members of the Tucson Repeater Assn. who help provide communications on 2 meters for the Tucson rodeo a parade include W7HFQ, W7TCO, K7SOG, WA7PEO, WB2WPY W7RVS, WA8EEC, WA7DAO, W8BID, W7CFN, WA7HFH, W7IE and WA7IHM. Old Pueblo RC members providing communicatio during a 26-mile high school marathon included WA7VTM, W7JY K9TBA/7, K7KNP, WA7PUT, W8BID/7, WA7DAO, WA7YQT a K7OMR. K7NTG invites Ariz. amateurs licensed for 25 years contact him to join the QCWA. The Ariz. chapter of QCWA, which he is secy., meets on 3933 kHz at 0900 Sun. and 16 Mon.-Fri. New officers of the Hualapai ARC are K7ZMA, pr W7JCO, vice-pres.; K7ABW, secy.-treas. Former WN7WEB, now General Class licensee. WA7OPQ is the new Mohave Co. Emergen Services communications officer and K9IKW is the county's n RACES RO. The club is working on a club station and clubhouse a county-owned bldg. at the Kingman airport. New officers of t Amateur Radio Council of Ariz. are W7IWL, chmn.; W7I vice-chmn.; WA7JCK, secy.; WA7NIY, treas. New members of state FM frequency coordinating committee are WA7NIY, W7I WA7FDN, WB5FMI/7 and W1KIB/7. Previous members continu on the committee are K7STA, K7PRS, K7CRO and K7KEQ. W regret, WA7EIG is reported as a Silent Key. W7YS reports receiv a 30 wpm CP cert. and advises WN7ZMQ is now WA7ZMQ. Cac Net QNI 1,018, QTC 347, ATEN QNI 625, QTC 31, net ce awarded to WA7KQE, WA7NHQ, K7NMQ, K7NTG and W7R Traffic: K7NHL 159, K7NTG 65, K7CC 63, W7UQO 35, K7U 35, W7DQS 15, WB2WPY/7 14, K7MTZ 8, WA7KQE 4, K7NMQ WA7YKM 3, WA7UWG 2, WA7NBQ 1.

LOS ANGELES – SCM, Eugene H. Violino, W6INH – SE WA6DUC. RMs: WB6OYN, K6UYK. One of the most disgust things happened to one of the most popular FM repeaters recent Some one planted a very small battery operated transmitter near WR6ABB powered by a heavy duty auto battery. Needless to this saturated the receiver and rendered the repeater inoperative all but the most powerfull signals. It's suprising what some unbap people will do, thanks to the help of the repeater users this unit finally found. This is not funny, besides it's against the law, I hope the culprit has been found. I wonder what has happened consideration for the other fellow? I wonder if the new doc making it easier to obtain amateur licenses, will bring more of t sort of thin, something to think about. The United RC of San Pe held its annual officers installation banquet at the "Swedish Corn in Torrance. The club also meets on 28.9 MHz every Fri. night 1930 local. The Tel-Co RC had W6SZH demonstrate making boards and show several club projects. The PARC RC has received their new repeater (MICOR) for WR6ABB, it was display *at recent club meeting. The control circuits were made ready* WA6AKI, many thanks to Ed. WA6PMJ presented a thorou comparison of several two meter beams both American and Euro made at the So. Cal VHF RC. K6YB worked JA8 on 40 cw mob with 3.6 watts input to a Ten Tec. on way to work in the morni W6CK again hosted large MTC annual banquet after returning fr 22,000 mile trip thru the Far East visited JH3PJE, HS1WR Bangkok, 9M2s CJ and CX in Kuala Lumpur and many VKs Sydney. K6ASK applied for license modification in 1973, sent let of inquiry Jan. 1974 and in Mar. He tried again in Dec. 1974, wo you believe it there has been no action taken to date. WB6EAL pres. of the USC RC which is now an affiliated club. The first 2 MHz T hunt called to my attention was conducted recently by WR6AER group, who plan to conduct such a hunt every month was won by WA6WWJ who had to drive only 6.8 miles to find transmitter. Another club program available, about your local pov companies, see W6KMC. Club *program chmn. note that we h* many programs available for you if you keep track of this colun WA6EWY recently gave a talk to Toastmasters Club regard amateur message handling, this is the kind of publicity that he amateur radio. Traffic: W6INH 297, W6UE 199, WB6OYN 1 WA6OTU 167, K6UYK 128, WA6TLV 80, WA6IDN 75, W6Q 62, WB6FTB 45, WB6TKR 34, W6USY 28, W6HUI 27, WA6F 17, K6EA 13, WB6YID 12, WA6ZKI 12, K6CL 6, W6NKE WA6TCH 4.

ORANGE – SCM, William L. Weise, W6CPR – Asst. SCM: D Birbeck, K6CID, SEC: WA6TVA. PAM: K6YCL. RM: WB6AK Citrus Belt RC will soon have a 220 MHz repeater in addition their 2-meter capability. W6CPB, WA6TVA, K6CID and K6G visited the Yucca Valley RC Mar. meeting to assist in the plann for emergency communications in the area. WB6VTK has return from his overseas tour and is very active on SCN from Santa A Chet says that the DRN6 Net is one of the better things that happened in this section. Great way to handle traffic. WB6AKR a new Clegg 27B and is active on 2 meters while commuting fr home to work and back. WA6FIT made a very respectable score the Dec. 10-meter test. Ron had 88,968 points. Congrats. W6B *inactive due to many visitors. Graham did manage to keep a h* contacts with his pals in W7-Land. Orange County Council Amateur Radio Organizations met in Mar. to elect a chmn. consider rule changes in the organization, Field Day participati and the prospective visit in the area of our Director at some fut date. K6GMI reports traffic at a very low level. Hal is looking better conditions in the months to come. The big activity

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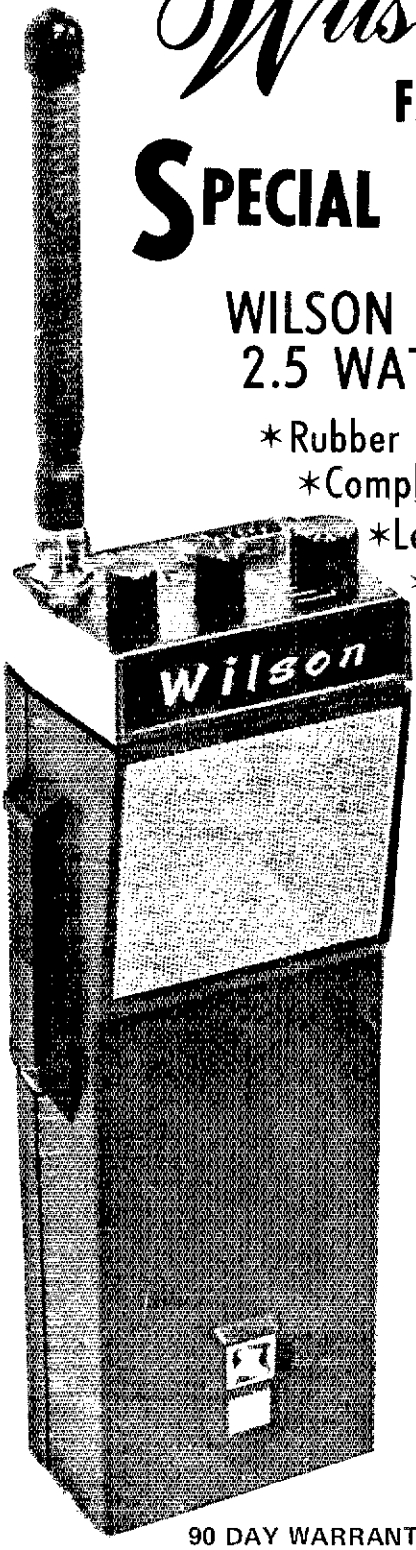

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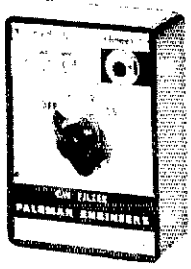

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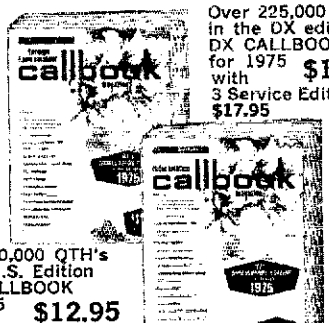

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WB6YPX, Autonetics RC, is the erection of a new antenna system Yep our Santa Ana winds do some damage and must be repaired PSHR: K6GMI 18, WA6TVA 43, WB6AKR 41. Traffic: (Feb K6GMI 343, WB6VTK 190, WA6TVA 26, W6WRJ 18, W6QBD 1 K6GGS 14, W6CPB 13, WA6HIT 5. (Jan.) WA6YWS 63.

SAN DIEGO – SCM/SEC, Cy F. Huvar, Jr., W6GBF – Ass SCM: Art Smith, W6INI. The Poway ARS elected W6PKA, pres K6DKR, vice-pres.; WB6VIE, secy.; WB6DCN, treas. The SANDR Mt. Laguna repeater WR6AJL is on the air 146.16/76. Antenn patterns are toward Imperial Valley and San Diego. Stations hav been worked 50 miles east of Yuma. New officers for Assn. a K6QL, pres.; W6IDS, vice-pres.; WB6URS, secy.; WA6SIG, trea The first annual Borrego Desert "I" hunt was held, sponsored b the Escondido ARS. K6UMI reports 16 cars and 26 hunters preser with 5 transmitters, one going to each winner, taking 4½ hours complete. I want to commend our section amateurs W6BIG, K6CM W6TBQ and others for providing contact with the Tuna Fleet. Yo dedicated service helped them to keep in touch with loved ones home. WB6IPT is aboard the "City of Lisbon." Get your touch to pads ready, the autopatch committee is at work getting the repeat tested and awaiting new freq. assignment. Instrumentation designa to detect and monitor UFOs has been developed by Precisio Monitoring Systems, a SDGO group of 18 scientists and enginee many who are amateurs. The network extends from Poway Imperial Beach and Alpine to the Coast. K6BWT is new comm officer for County Humane Society. WB6ZZD retired from Na and going east. WA6ZND moved to Las Vegas, W6NAT in Army Ft. Dix. PSHR: WA6DMB, WB6PVH. Traffic: (Feb.) WA6DMB 38 W6BGF 144, W6VNQ 66, W6PZU 53, W6GBF 9. (Jan.) W6DEY 3 WA6MHZ 4.

SANTA BARBARA – SCM, D. Paul Gagnon, WA6DEI WA6GSS reports a Paso Robles club member W6MSW has a ne FT-101B which talks with a slight Japanese accent and that W6BT has completed building a 200 MHz counter. WN6HGP planned t Thousand Oaks SET drill for his Eagle Scout project. We regret note the passing of WA6OKF in an auto accident. Explorer Po 2955 had an exposition of Amateur Radio at the Esplanade Oxnard. WA6BIV, WA6WKQ and WB6NNP were involved. WA6B and WB6TNM heard on SCN (3598). WA6DEI spoke on t Restructuring Docket at the Poinsettia ARC. K6QPH has his ne big four-element Quad up and getting fine reports. WA6YPK mov to Nev. leaving an EC vacancy in Santa Barbara. W6HHG has a ne Triton II for his cw work. WN6JGK a new Novice in Ventu WB6RWY is editing a newspaper for the Sulpur Mt Repeater Ass WB6CHI conducting Code and Theory class in EO. He also spoke Op Amps at the Canejo Valley club meeting. WA6YIZ, WN6B and WA6SHX prize winners at the Ventura Club annual auctio W6OUR, WN6ZMS, WA6MBZ, K6FHA new ARRL Life Membe W6POU Net Controls on Santa Barbara AREC Net on 146.9 SBARC working on a local SB repeater for 144 and 220 MH W6PRP noted lots of stns did not ID properly in the DX conte K6QPH visited KH6GQW, KH6IGJ and KH6RS while on business Honolulu. W6JTA a new Heath two meter rig. WA6OWR has mov to Morro Bay from LA to take firemans job. W6FSJ a new 2M r WB6QEF resides in Morro Bay. WA6DHS building a boat for his s WB6VJD, WA6WYD handled 118 msgs on MARS RTTY. Traff W6ITA 91, WA6DEI 84, WA6MBZ 84, W6POU 24, K6YX W6PNM 5, W6CDN 2.

WEST GULF DIVISION

NORTHERN TEXAS – SCM, L.L. Harrison, W5LR – As SCM: Frank L. Sewell, W5IZU. SEC: W5SHN. RM: W5C Richardson WK pres., WA5FTP reports WB5FOM and W5ZSX quads in Jan. 12 winds. Have you tried 160 meters lately? Mi dust off the old Ranger after FTP's report on WA5RXT work FY7AN, or go the FT-101B route. The old "Sore Head Net" be revived on 50.7 AM for those who still have an 8,450 rock arou SHN and MFQ drove to Euless to hear about Docket 20282. A clubs and repeater groups were on the panel and the ARRL rep Lew McCoy. Hope all such meetings will cause us to do some seri study and comment to FCC before the July 16 deadline. P Dannals, W2TUK at the PARC meeting wants everyone to m comments. PARC and TARC starting code and theory classes upgrading and beginners. WB5MFQ now teaching a new class. Tex VHF group planning classes in the Longview area. Juve hams have formed the Cherokee Repeater Assn., frequency 31/91. Net mgr. of CCEN now WB5MTN. CCEN will go to meters. N.Tex and NE Tex Emerg. Nets report K5RKM and W5C among Silent Keys. Canada has authorized the use of special prefix CY6 for all Calgary hams during 1975, their Centennial ye Convention dates are Aug. 1,2,3. Looking forward to the TTN/7 combined picnic at Lake Whitney State Park Apr. 26,27. W5GS TTN mgr. says picnic will start Fri. night the 25th with a wiener marshmallow toast. Send reservations to WA5JEZ. Dallas Chap QCWA meeting with wives included discussion on the ante height controversy and W5KM's National Radio Service Propo Midland Swapfest was held Sun., Mar. 23. Longview hams are hav a covered dish lunch Apr. 5. We welcome W4GXW/5 of Fla recent ORS in Ga., licensed in Ky. WA5UOC, WA5PPF WA5CMC among the first to respond to new SEC, WA2JRX/5 SMU ought to be tapped for teaching a radio class, handling traffic, and an ARRL appointment. OVS K5WIQ working on a

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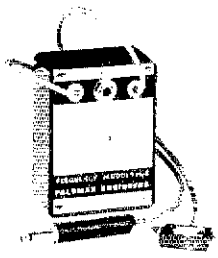

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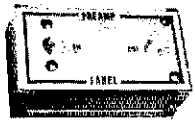

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camera, OVS WB5CHW reports an opening Jan. 30 on 6 meters Calif. WB5CKM has valuable experience and equipment in ti quency measurements. OOs W5TI and WA5EBQ bring good repor K5MWC starting an AREC net on 78/88. Traffic: (Feb.) W5TI 44 W5SHN 147, WB5MFQ 44, W5GSN 36, WB5MTN 11, WA5UIH (Jan.) WB5BFW 319, WB5DXB 241, W5SHN 212, WB5MFQ 9 K5MWC 23, WA5UIH 6, WN5MFP 1.

OKLAHOMA – SCM, Cecil C. Cash, W5PML – Asst. SCM/SE Leonard R. Hollar, WA5FSN. RM: W5RB. PAMs: STN, WB5AZ OTWN, WA5OUV; OFON, WA5ZOO. Thanks to reappointed R W5RB. The CW net was about to fall apart for lack of an RM a interest, but thanks so much for the faithful few that are interest and willing to give of their efforts to keep the net alive. I certain was thrilled to listen to the smooth way the traffic moved on Fe 22 and 23 following the early morning tornados which hit Altus a Duncan. The Altus repeater WR5AGE was pressed into operation can't begin to give all the calls and I don't want to slight any o but there were a good group. FB! I received a very complete repo of the Altus operation from WA5CBF. Loren wants everyone know that southwest Okla's newest repeater is operational 146.19/79. There also will soon be a machine on in Miami in the northeast corner with the call WR5AHX, not sure of the channel. good report received from EC of Muskogee Co. Congrats to two n Advanced Class WB5AXH and WB5LHG. Traffic: W5RB 15 WB5ELG 42, W5FW 38, WA5JGU 35, WB5AZS 31, W5FKL 2 WB5HLR 22, WB5ZOO 21, W5PML 20, WA5FSN 19, W5SUG 1 WA5OUV 11, K5LOI 8.

SOUTHERN TEXAS – SCM, Arthur Ross, W5KR – SE WB5CUR. PAM: W5HWY. RM: W5UGE. OOs reporting we WA5ZBN, W5RBB, WA5LTQ; OVSs K5LZJ, WB5HRI, WB5GY K5ZMS. EC WB5FMA now working at Ft. Hood. OVS K5ZM reports SMIRK continues to grow. WB5KCM, WB5EYG, WA5ZV new on 2. OPS WB5HJV staying with QRP. OPS W5TOP repo 25,000th contact was with WA5EZT on TTN Jan. 21! W8UX busy with traffic and has new Ringo on 2. OO/ORS W5RBB repo Houston area Emergency Net active every Wed. 8 PM local time 3898 kHz. OPS WB5HJV is pres. of Dobie High School ARC; el has two new Novices, WN5MZI, WN5MQI. ORS WA5KFO worki on Master's thesis. Alpine has new repeater on .34/.94 and has n ARC with EC W5YCK, pres.; K5IAG, vice-pres.; WA5ROE, sec treas. Name of Club is Big Bend ARC.WN5MTN passed Gene Class exam. TEX Net mgr. WB5BFW reports contributions for TE Bulletin postage always manages to come to him in time for t next mailing! Austin ARC bulletin AARCOVER reports a new ty of amateur radio net: NEW DIRECTIONS ROUNDTABLE creat by W0ORX. It is a discussion type net which meets on seve different frequencies, depending on section of country. Natio Roundtable meets 2 PM Central Sun. on 14253 kHz. Midwest a East Roundtable meets on 7163 kHz at 4:30 PM Sun. (Cent time). Traffic: (Feb.) W5TOP 459, W5UGE 273, W5UJJ 26 WA5VBM 171, WB0UX/5 137, W5KLV 102, WA5ZBN 88, K5HZ 75, WB5GZG 60, W5HWY 48, WB5AMN 47, WB5IZN 38, WB5H 37, K5EJL 36, WA5FOE 34, W5TIW 34, WB5FMA 32, W5BGE 2 K5ROZ 20, W5KR 19, W5RBB 15, WB5HJV 14, WB5IIR 1 WA5KFO 7. (Jan.) K5EJL 15, WB5HJV 10.

CANADIAN DIVISION

BRITISH COLUMBIA – SCM, H.E. Savage, VE7FB – Fe wasn't the month for antennas on the coast, high winds total many. King Cavalsky, ex-VE7AL celebrated their golden weddi RM VE7OQ is back in hospital, his pacer is OK, he is j overworking it. VE7UV is now home after surgery. Thanks to all t VE7s for allowing me to be your SCM for another term, and n being retired will get this office really rolling, "I hope." Traff VE7ZK 124, VE7AKI 121, VE7CDF 121, VE7BLO 31, VE7DA 13, VE7TT 6.

MANITOBA – SCM, Steve Fink, VE4FQ – RM: VE4PG, PA VE4JP. We welcome VF4AS our new OVS, who is active with Os 7, VE4CX is on 40 cw with an HW-7; recently was /W6 visiti brother WA6CGZ, VE4EP back after winter in Tex. The Winnip Repeater, VE4XK, has switched output to 146.46/147.06 and n operates split-site, linked on 440 MHz. There is growing interest 432 MHz activity with VE4AS, VE4JX, VE4MA, VE4VB acti VE4VV looking for mobile rig to add to his new car. VE4PG a VE4RO have been liaison stations from TEN to CAN, while VE4 is our mainstay on DTRN. The ARRL Board Meeting is May 15, if you have any comments to air write Dir. VE2MS. MTN: sessions, 176 ONI, 89 QTC, MEPN: 28 sessions, 1096 ONI. 8 QT Traffic: VE4RO 105, VE4PG 72, VE4TR 23, VE4XP 22, VE4T 21, VE4FQ 19, VE4VV 11, VE4UN 10, VE4JA 9, VE4JP VE4LU 7, VE4NC 4, VE4FK 3, VE4NM 3, VE4AX 2, VE4BX VE4CR 2, VE4HA 2, VE4LA 2, VE4LB 2, VE4LN 2, VE4NE VE4FL 1, VE4YO 1.

MARITIME – SCM, W.D. Jones, VE1AMR – ECs: VE1AS VE1AIC, VE1AUT, VE1GY, VE1IG, VE1AGZ, VE1ASJ, VE1AC VE1AIZ and VE1BBK. With regret I report VO1AS and VO1DF Silent Keys. The Truro N.S. ARC sponsoring "The Marigold Awar during Truro's Centennial Year; VE1s OSO 5, others OSO 3 Tru stations after Jan. 1, '75, submit GCR list signed by two ot

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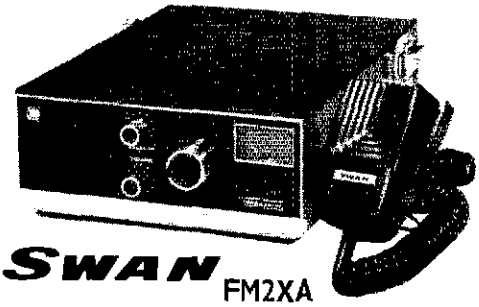

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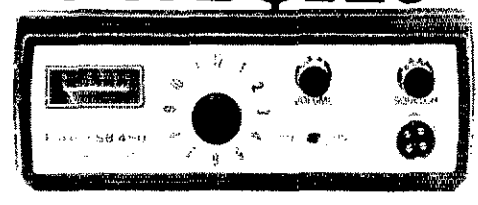

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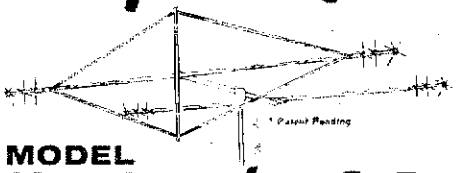

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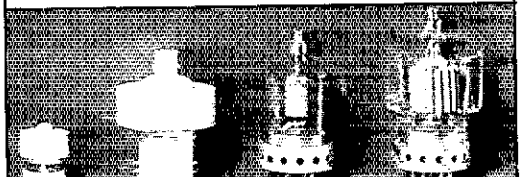

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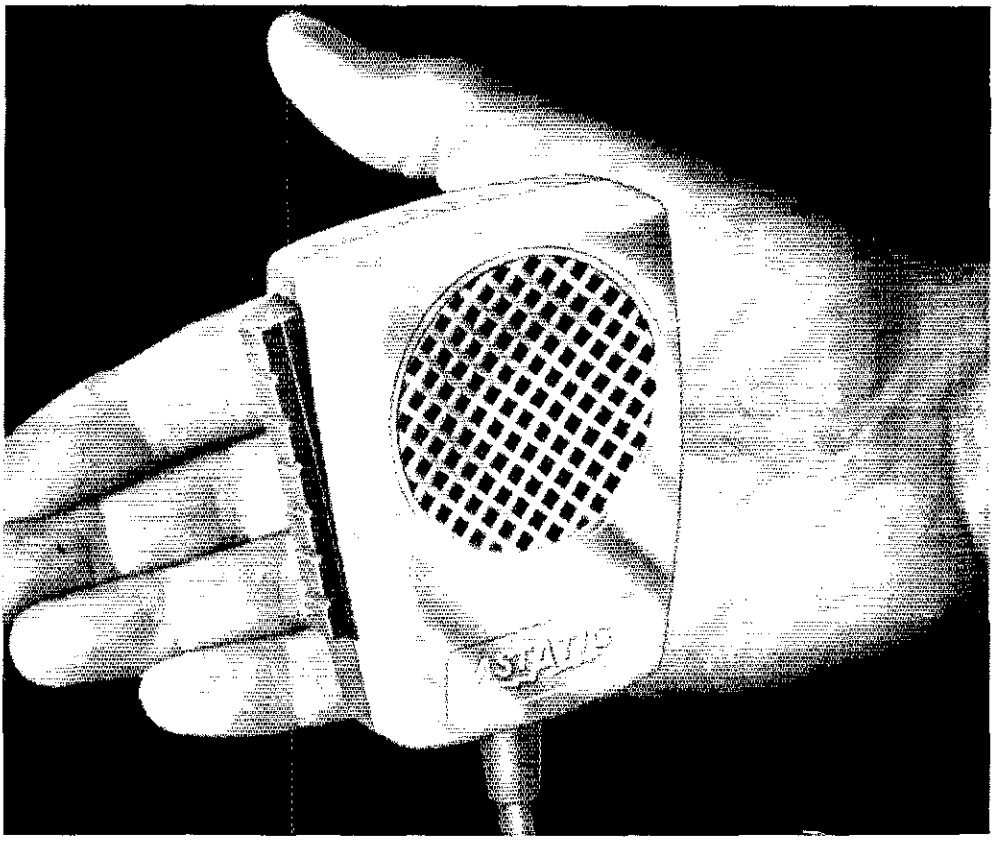
amateurs or your club secy. to George E. Richards VE1XP (CH1XP), 12 Belgrave Terrace, Truro N.S. RTTY buffs have a listen around 3.620 Sun. mornings at 1400Z for the gathering of the VE1 clan. The annual Moncton Club party was well attended and enjoyed by all. Demonstrations included Autopatch by VE1ACA, Slow Scan by VE1TV and Radio Controlled Model Aircraft by VE1BB. Congrats to the winners of the VE1 Contest, VE1AWP the cw and VE1ADV the phone section. The new Glasgow Repeater, VE1HR, has been treated to a new Duplexer antenna. Make your plans now for The Atlantic Canada Amateur Radio Convention. The location has been changed to the Hotel Beausejour in Moncton. APN reports sessions 28, QNI 174, QTC 120. Traffic: VE1AMR 116, VE1ARB 60, VE1ZH 59, VE1AKB 41, VE1ABU 27, VE1AAO 22, VO1GW 11, VE1AWP 9, VE1KR 9, VE1AFM 7, VE1AYJ 6, VE1ST 5, VE1AMB 4, VE1AHM 1.

ONTARIO – SCM, Holland B. Shepherd, VE3DV – This column prepared by VE3EHF while SCM VE3DV takes a well earned break-in the sun. Ottawa Hull amateurs provided communications for 100 mile ski marathon Feb. 22 and 23 using simplex and repeaters VE2RM and VE2CRA. Only 94 skiers out of 2550 starters completed the grueling course. Ont. QCWA members active in QCWA Feb. QSO party. VE3DVF conducting ten week Advanced amateur class for Niagara Peninsula ARC. Congratulations to VE3HDO and RNO who passed Advanced. VE3GX interviewed on CBC radio about VE3JW memorial station Ottawa. Ont. Trilliums LARC celebrate tenth anniversary May 19 with a special banquet. Scarborough ARC busy preparing for ARRL 1977 convention. It's nice to see VE3ATR back on GBN. VE3GOL looking after OQN while VE3GFN moves QTH. GOL earned her fourth BPL since becoming an ORS Sept. 1, '74. Mike should be back on air with bigger signal from new QTH when this column appears. Now is the time to get generator equipment ready for Field Day June 28, 29. Traffic: VE3GOL 263, VE3EHF 176, VE3FOZ 142, VE3AWE 134, VE3NB 134, VE3GJG 123, VE3ERG 106, VE3CYR 105, VE3DVE 95, VE3DPO 91, VE3HJA 55, VE3ASZ 43, VE3FGV 37, VE3EWD 34, VE3GT 27, VE3ATR 25, VE3GRE 19, VE3GCE 5.

QUEBEC – SCM, Larry Dobby, VE2YU – During month of Feb. there was a lot of VE2 activity in the phone and cw DX Contest. It was a good opportunity for people to increase their DXCC standing. The MARC, WIRC and VE2RM continue to hold regular meetings which attract good turnouts. Congrats to VE2ARR on his election to pres. of MARC for '75/'76. There has been some talk that the rules for the W/VE Contest will be altered to equalize the Canadian/American scores but nothing official has been published yet. The cw traffic nets continue to be well represented by VE2s but interested parties are always invited to listen in and participate. RTQ is a new cw traffic net formed by VE2BPT and VE2AJD on 3.7 MHz daily at 2330Z. Traffic: VE2DR 13, VE2ALH 109, VE2APT 92, VE2QJ 78, VE2DRC 54, VE2DEA 52

SASKATCHEWAN – SCM, P.A. Crosthwaite, VE5RP – The Central Yellowhead Repeater Group will be setting up a repeater on a temporary site at Jansen this spring on 146.16 - 76. Prince Albert will also be working this summer on 146.46 - 147.06. I receive news from the different clubs through their papers and find some of the news very interesting, an article in the Regina Guy-Wire written by VE5GG called "A Small Dose of ENO", humor is there along with the truth. Another good article to read is printed in QSO by VE5UU "Phone Patching Abuses", some very good points made. Traffic: VE5HP 26, VE5DN 25, VE5XC 25, VE5TT 15, VE5IZ 12, VE5VV 12, VE5RB 9, VE5KS 8, VE5DE 7, VE5RP 5, VE5TS 4, VE5SM 3, VE5EX 2, VE5LN 2, VE5QA 2.



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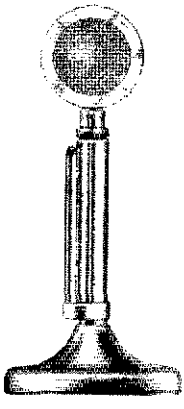

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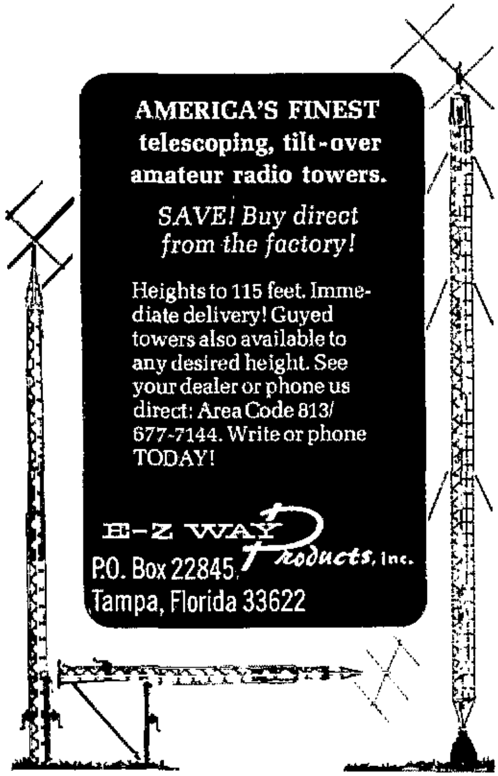

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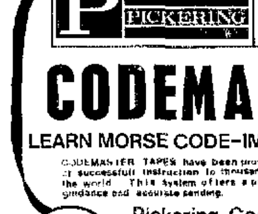

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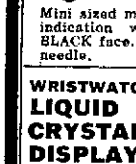

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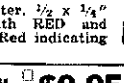

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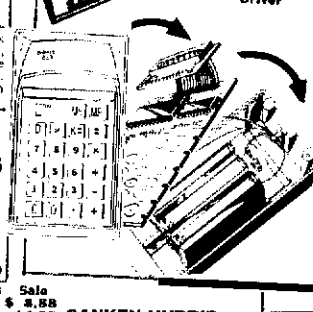

"FLASTAWAY" ON 1N4000 RECTIFIER PRICES

Type	PIV	Sale
☐ 1N4001	50	10 for 45c
☐ 1N4002	100	10 for 55c
☐ 1N4003	200	10 for 65c
☐ 1N4004	400	10 for 75c
☐ 1N4005	600	10 for 85c
☐ 1N4006	800	10 for 99c
☐ 1N4007	1000	10 for 1.29

Sanken	Watts	Sale
SI-1010G	10	$ 8.88
SI-1020G	20	14.95
SI-1030G	30	18.88
SI-1060G	60	29.95

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Kit includes 4 x 2½" G-10 glass etched pc board with 10 OAK "smooth touch" white keys with black numerals, plus diagram on "touch tone encoder". Makes many "keyboard systems" readily available. *0-to-9*

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OR
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Sale good till July 15, 1975

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- TO-220 Case • 1 Amp
- POSITIVE VOLTAGE

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☐ LM-340-06T	6 v
☐ LM-340-08T	8 v
☐ LM-340-12T	12 v
☐ LM-340-15T	15 v
☐ LM-340-18T	18 v
☐ LM-340-24T	24 v

Imagine a chip (MK50260) "Beepin" and audible alarm! All others are external. It also features internal brightness control. The CT7001 requires external triggering of alarm, date of the month and direct drive to LED readouts. Both require minimum current drain and voltages, for either 4 to 6 LED readouts, 12 or 24 hours, AM and PM.

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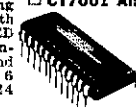
☐ **MK50250 BEEPER ONLY. $ 8.50**
☐ **CT7001 Alarm and Date. $ 6.95**



'ALL LED' MONSANTO READOUTS

.36 LED matrix

MONSANTO TYPE	CHAR. HT.	SALE EACH	Quantity Discounts
☐ MAN-1	.27	$2.95	3 for $ 7.
☐ MAN-2	.32*	4.95	3 for $14.
☐ MAN-3	.12	1.00	3 for $2.50

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☐ Red
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☐ SN7403	.22
☐ SN7404	.27
☐ SN7405	.24
☐ SN7406	.79
☐ SN7408	.27
☐ SN7409	.27
☐ SN7410	.19
☐ SN7411	.31
☐ SN7413	.89
☐ SN7414	2.25
☐ SN7418	.45
☐ SN7416	.45
☐ SN7417	.50
☐ SN7420	.22
☐ SN7422	.29
☐ SN7423	.32
☐ SN7425	.35
☐ SN7426	.31
☐ SN7427	.35
☐ SN7430	.24
☐ SN7432	.28
☐ SN7437	.45
☐ SN7438	.49
☐ SN7440	.19
☐ SN7441	1.00
☐ SN7442	1.00
☐ SN7443	1.00
☐ SN7444	1.00
☐ SN7445	1.00
☐ SN7446	1.10
☐ SN7447	1.10
☐ SN7448	1.45
☐ SN7450	.27
☐ SN7451	.28
☐ SN7453	.28
☐ SN7455	.28
☐ SN7462	.39
☐ SN7464	.39
☐ SN7465	.39
☐ SN7471	.85
☐ SN7472	.42
☐ SN7473	.52
☐ SN7474	.39
☐ SN7475	.91
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☐ SN74114	.95
☐ SN74121	.49
☐ SN74122	.55
☐ SN74123	1.09
☐ SN74125	.65
☐ SN74126	.89
☐ SN74140	2.50
☐ SN74141	1.19
☐ SN74145	1.19
☐ SN74148	2.95
☐ SN74150	1.19
☐ SN74151	.99
☐ SN74153	1.39
☐ SN74154	1.69
☐ SN74155	1.29
☐ SN74156	1.45
☐ SN74157	1.45
☐ SN74158	1.45
☐ SN74161	1.59
☐ SN74163	1.75
☐ SN74164	2.85
☐ SN74165	2.85
☐ SN74166	1.85
☐ SN74173	1.85
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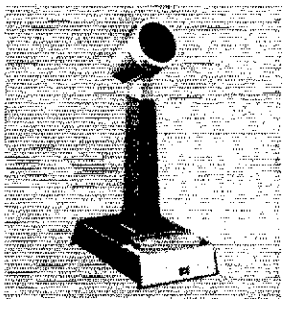

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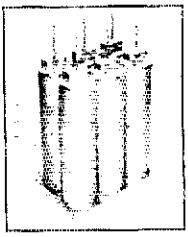

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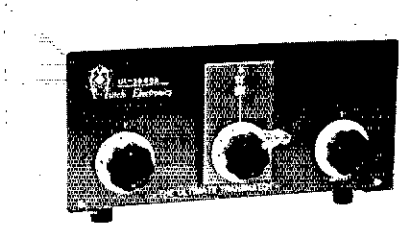

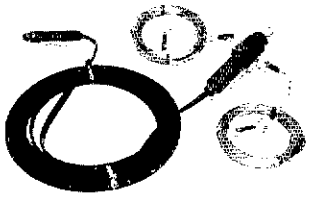

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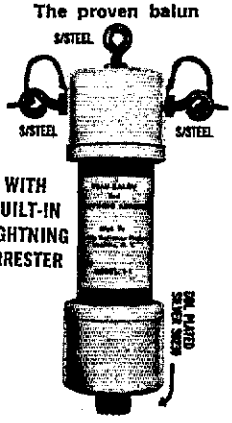

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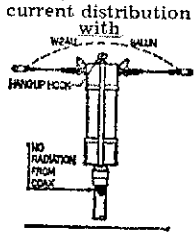

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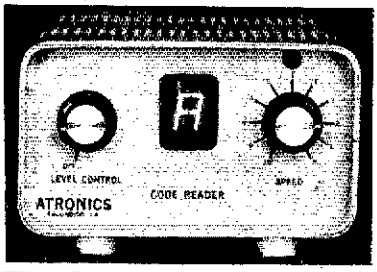

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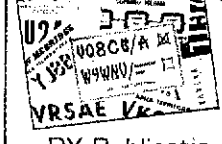

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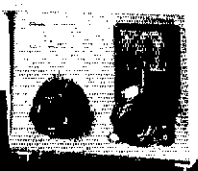

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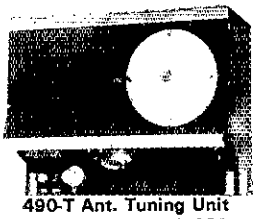

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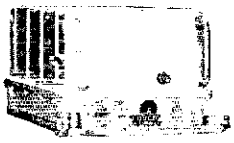
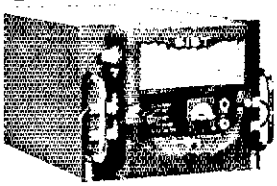


ARC-51 Transceiver
ARC-51 Control box also wanted



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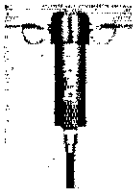

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World Above

(Continued from page 97)

completely assembled 432-MHz amplifiers based on the K2RIW design in April and May, 1972, *QST* and the ARRL *VHF Manual*, Edition 3. Finding components for vhf/uhf construction projects is a tough job these days, so Fred is performing a real service in making these fine amplifiers available to more people. We would like to hear about other firms supplying vhf/uhf components, kits, or complete equipment.

Oscar Doings

The big excitement on the satellite front was the first common visibility between two functioning amateur spacecraft. Due to the relative velocities of Oscars 6 and 7, this will occur about every 5 months. Therefore, come July the satellites will be close to one another again. At alternate times, such as in Mid-April, they will be on opposite sides of the earth. Onset of the first common visibility at the end of January, brought many satellite-to-satellite linked QSO's, when Oscar 7 was in Mode B, and numerous reports of "double signals, caused by the 2-meter uplink signals being translated down to 10 meters by both satellites, when it was in Mode A. The downlink frequencies were different because of Doppler shift, and because translation in the two spacecraft is different by a few kHz.

When Oscar 7 was in Mode B and Oscar 6 was in operation, satellite-to-satellite linked QSO's were possible. Such bizarre happenings as JA's being heard in England and other cases of extended-range transmission were noted. It was rather frustrating that two-ways over these long distances were not possible, because of the unidirectional nature of the link (432 to 146 to 29). It just doesn't work in reverse. Once the two satellites became sufficiently close, many contacts through both spacecraft were made. It's difficult to determine who made the first such QSO but the W5HN-K5AXH report (March *QST*, page 178) is still the first observation of the potential we've had.

WB2VKZ sent an impressive list of QSOs made between Oscar 6 orbits 10,498 to 10,525 and corresponding Oscar 7 orbits 969 to 994. Chip had 18 contacts made while transmitting into Oscar 7 on 432 MHz, and listening to Oscar 6 on 29.5 MHz. Five were made with stations transmitting on 432. They could have been listening on either 2 or 10. The rest were all transmitting on 2 and listening on 10. Best DX was WA6RIV, who was on Oscar 6, VE5XU, also on Oscar 6, was another nice contact. K2QBW also reports working several stations via the 2-satellite mode. Ray calculates that the Oscars got within about 30 miles of each other. He observed that contacts could be made through the two satellites when they are about 1,000 miles apart or less.

This satellite-to-satellite relay may seem to some like a lark, and to others it may be merely a nuisance, but these first amateur demonstrations may herald an exciting future. The day may come when we have synchronous amateur satellites spaced 120° apart, around the world. The three satellites would be within line of sight of each other, so a relay could be established between them to permit reaching virtually any spot on the face of the Earth. If this sounds like a pipe dream, remember how our present Oscars seemed only a few years ago. QST

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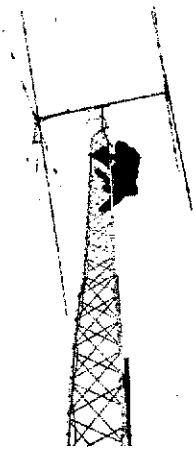

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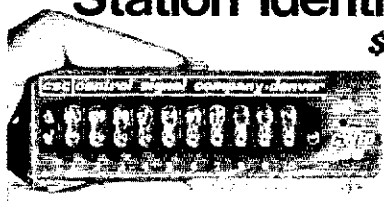

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City Slicker

(Continued from page 17)

railing with the whip tilted out at a 45-degree angle from the building. Rural and suburban hams will find it a fine emergency "skyhook" for those times when a storm has blown down the entire antenna farm. Traveling or vacationing amateurs can be on the air fifteen minutes after arrival at motel or cabin, with the "City Slicker."

It is vital to ground the system (coax outer conductor and transmitter) in the best available way. Also, ground any metal near the coil and whip such as a metal-sash window, a balcony railing, or a rain gutter.

I can get around from band to band in just a few seconds when propagation conditions change. Most of the hams have expressed surprise at the strength of my signals coming from an 8-foot antenna. They convinced me to describe the unit in print for others to try. I hope that, if you do, the system will afford you as much pleasure as it has given me.

One last word about performance – what can you expect from this antenna system? I started out in November to try to work 5-band WAS. From last November to March of this year I have contacted 190 "band-states" out of the possible 250 required and this was done with a "barefoot" transceiver. The moral is that one should not let a relatively poor location keep him from enjoying ham radio. QST

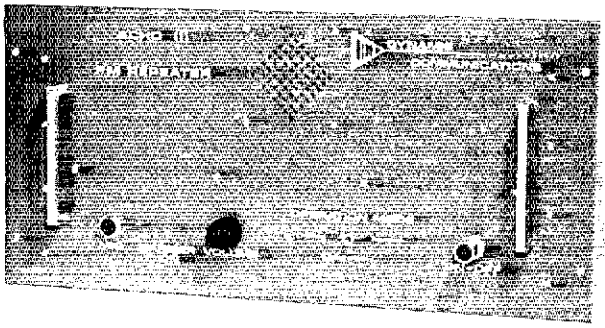
Stub Tuning

(Continued from page 21)

and reflector operation. Although the resultant SWR was not objectionable in either case (it did change, though), it was necessary to retune the transmitter after switching, or tolerate a moderate amount of mistuning.

The design procedure for the new arrangement is basically the same as before. Both elements are cut to the same length. Only the stub requirements for a reflector need be considered now in doing the Smith Chart calculations. Once the stub line length is determined, two such identical-length lines, both made from the same type of transmission line, are cut, one for each element. A 4pdt relay, or two dpdt relays operated simultaneously, are required in the hookup shown in Fig. 3, to switch the two lines between the parasitic-element termination and the main feed-line matching network.

The new system has one disadvantage, however. A matching network is required between the transmitter and driven element because of the mismatch between the main feed line, which is presumably coax, and the driven-element open-wire feed line. The original system required no special matching. This presented no problem in the 40-meter system considered here since a suitable network was easily constructed. The builder is left to choose a suitable matching network of his own as there are numerous possibilities to take care of the varied matching requirements which may arise under different situations. Depending upon one's preferences and requirements, the modified scheme may or may not prove more attractive.



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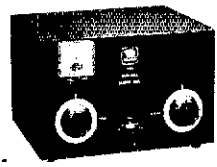

In our April QST ad for NYE VIKING MATCHBOXES, we misquoted the suggested list price. Correct price is $320 for Model 250-0030-004, illustrated. 7 other models, priced from $202 to $355. (All prices subject to change.)

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Additional Remarks

A few general comments can be made at this point. Although a variable capacitor has been designated thus far as the termination for the stub, there is no reason for not using a coil or some other combination of inductance and capacitance if it will work with a stub length which happens to be convenient. The builder can choose for himself. The 10- to 350-pF capacitor described earlier had approximately .05-inch spacing between plates. While it is difficult to predict the voltages present in the parasitic element (and across the capacitor), no arcing between plates was observed during transmitting periods, even while running one kilowatt transmitter dc input. This suggested the plate spacing was adequate.

The lines from each element should be brought away perpendicular to the elements as much as possible, and open-wire line should be kept reasonably clear of nearby objects, especially metal ones. Also, the velocity factor of the line being used (0.95 for "ladder" line) must be remembered when computing physical lengths.

The authors erected a single diamond-shaped 80-meter quad loop with its bottom close to the ground. The antenna was tried as both a vertically and horizontally polarized radiator. For DX work, the vertically polarized version yielded unquestionably superior results in terms of greater signal strengths at long distances and the beneficial feature of rejection of unwanted high-angle radiation from stateside stations when receiving. A parasitic element to accompany the single loop was not tried. These observations suggest interesting possibilities for vertically polarized ground-mounted quads for low frequencies.

The ideas presented here are applicable to any quad antenna, but should be especially useful in designing large arrays which cannot be turned physically. The design procedure is simple in any case. The feature of continuously variable tuning eliminates the guesswork in cutting fixed-length, fixed-tuned elements. The system will serve well in any situation where, say, climbing the tower to work on the antenna is not convenient.

A fixed, switchable array is an asset to the contestant or DXer who finds it necessary to change antenna headings in a hurry. From the northeastern U.S., a single such array provides good coverage of Europe and Africa in one direction and of the Western U.S. and the Pacific in the other. If two suitable supports spaced a reasonable distance apart are available, two arrays of this type, perpendicular to each other, can provide a wide range of coverage. QST

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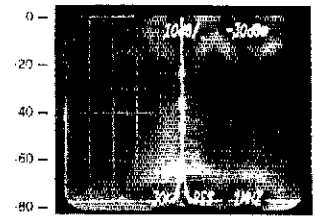

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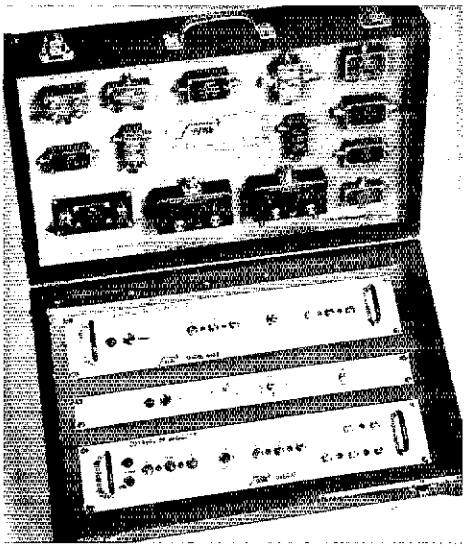

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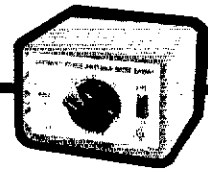

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MILITARY SURPLUS ARC-51BX, ARC-94, ARC-102, ARC-131, ARC-134, 618T, 807A, TRANSCEIVERS, ARN-82, ARN-83, 51R-8A, 51Y-4A RECEIVERS, 490T, CU1658, CU1669 ANTENNA COUPLERS. ALSO CONTROL HEADS FOR ABOVE. TOP DOLLAR PAID OR TRADE FOR NEW HAM GEAR. WRITE OR PHONE BILL SLEP (704)524-7519

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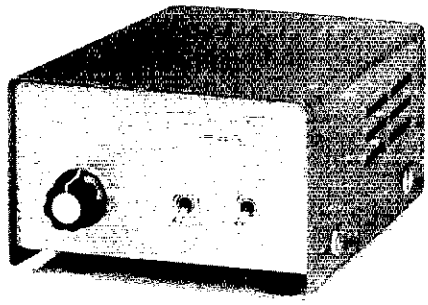

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16th Year — July 26 thru August 8, 1975

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Q-5

C. L. PETERS, K4DNJ, Director
P. O. Box 458, Glade Valley, N. C. 28627

Please send me the Booklet and Application Blank for the 1975 Glade Valley School Radio Session

Name_____ Call_____

Address_____

City/State/Zip_____

HAM-ADS

(1) Advertising shall pertain to products and services which are related to amateur radio.

(2) No display of any character will be accepted, nor can any special typographical arrangement, such as all or part capital letters, be used which would tend to make one advertisement stand out from the others. No Box Reply Service can be maintained in these columns nor may commercial type copy be signed solely with amateur call letters. Ham-ads signed only with a post office box or telephone number without identifying signature cannot be accepted.

(3) The Ham-Ad rate is 60 cents per word, except as noted in paragraph (6) below.

(4) Remittance in full must accompany copy, since Ham-Ads are not carried on our books. No cash or contract discount or agency commission will be allowed.

(5) Closing date for Ham-Ads is the 20th of the second month preceding publication date.

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(7) Because error is more easily avoided, it is requested copy, signature and address be printed plainly on one side of paper only. Typewritten copy preferred but handwritten signature must accompany all authorized insertions. No checking copies can be supplied.

(8) No advertiser may use more than 100 words in any one advertisement, nor more than one ad in one issue.

(9) Due to the tightness of production schedules, cancellation of a Ham-Ad already accepted cannot be guaranteed beyond the deadline noted in paragraph (5) above.

Having made no investigation of the advertisers in the classified columns except those obviously commercial in character, the publishers of QST are unable to vouch for their integrity or for the grade or character of the products or services advertised.

QCWA Quarter Century Wireless Association is an international non-profit organization founded 1947. Any Amateur Radio Operator licensed 25 or more years is eligible for membership. Members receive a membership call book and quarterly news. Write for information. Q.C.W.A. Inc., 2012 Rockingham St., McLean VA 22101.

PROFESSIONAL CW operators, retired or active, commercial, military, gov't, police, etc. invited to join Society of Wireless Pioneers — W7GAQ/6 Box 530, Santa Rosa CA.95402.

FREE sample copy Long Island DX Assn. bulletin. Latest DX news. Business size s.a.s.e. to the L.I. DX Assn., P.O. Box 73, Westbury NY 11590.

EDITING a club paper? Need public relations help? You should belong to the Amateur Radio News Service. For information write: Rosemary Willis, 9276 Borden Ave., Sun Valley CA 91352.

THE New York Radio Club invites Hams to club meetings, 2nd Monday of each month, 8:00 PM at the Williams Club, 24 E. 39th St., NYC. For information: Box 614, NYC 10028.

HAMFEST! Indiana's friendliest and largest Spring hamfest. Wabash County Amateur Radio Club's 7th annual hamfest will be held Sunday, May 18, 1975, rain or shine, at the 4-H fairgrounds in Wabash, Indiana. Large flea market (no table or set-up charge), technical sessions, bingo for XYLs, free overnight camping, plenty of parking. Lots of good food at reasonable prices. Admission is still only $1 for advance tickets, $1.50 at the gate. For more information or advanced tickets, write Bob Matting, 563 Spring St., Wabash, IN 46992.

NEW York City: Second Annual Hall of Science Radio Club Auction Flea Market, Saturday, June 7 at Worlds Fair Grounds, Flushing L.I. No sellers commission, but 10% fee on auctioned items. Admission — $2 Zoo, boating, children's farm, art and science museums adjacent. Field day goodies galore. Box 1032, Flushing, NY 11352.

MONTREAL Hamfest 75, Aug. 3, MacDonald College Farm, Ste. Anne de Bellevue. Prizes, Giant fleamarket, technical sessions, family fun, $2.50/adult. Information, contact VE2RM, Box 201, Pointe Claire-Dorval, Quebec, H9R 4N9.

THE 3rd annual Des Moines Hawkeye Hamfest will be held on Sunday, June 8, 1975 at the Iowa State Fairgrounds. Plenty of free parking. Flea Market, covered display booths available, small charge; open arena, no charge. Dealer displays, XYL activities. Camping available, small charge. Registration $1.50 advance — $2.00 at gate. Write Des Moines Radio Amateur Association, Box 88, Des Moines IA 50301.

WE BUY electron tubes, diodes, transistors, integrated circuits, semiconductors. Astral Electronics, 150 Miller St., Elizabeth NJ 07207. (201) 354-2420.

QSLs??? "America's Finest!!!" Samples 50c. DeLuxe 7
Religious 50c. (Deductable). Sakkers, W8DED, Box 2
Holland MI 49423.

PICTURE QSL cards of your shack, etc. from your photogra
or art work. 500 — $14.00, 1000 — $19.25. Also unusu
non-picture designs. Generous sample pack 35c. Half pound
samples 65c. Raum's, 4154 Fifth Street, Philadelphia PA 1914

3-D QSLs — Hallmark of discriminating operators. Samples 2
(refundable). 3-D QSL Co., Monson 2, Mass. 01057.

TRAVEL-PAK QSL Kit — Send call and 25c; receive your c
sample kit in return. Samco, Box 203, Wynantskill NY 12198.

FREE Samples—Stamp appreciated. Samcards, 48 Monte Ca
Dr., Pittsburgh PA 15239.

QSLs, samples 20c. Fred Leyden, W1NZJ, 464 Proctor A
Revere MA 02151.

QSLs 300 for $4.65, samples 20c, W9SKR, Ingleside IL 6004

QSLs "Brownie" W3CJI, 3035A Lehigh, Allentown PA 1810
Samples with catalog 35c.

DELUXE QSLs. Samples 20c. Petty, W2HAZ, P.O. Box 523
Trenton NJ 08638.

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service, economical prices. Little Print Shop, Box 9848, Aust
TX 78766.

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holders. 2 for $1, 7 for $3, prepaid and guaranteed. Tepabe
Box 198T, Gallatin TN 37066.

QSLs. Second to none. Same day service. Samples airmailed 50
Include your call for free decal. Ray, K7HLR, Box 33
Clearfield UT 84015.

QSLs — Variety, value, quality, custom. Samples and catal
20c. Alkanprint, Box 3494, Scottsdale AZ 85257.

RUBBER stamps $2.50 includes postage. NJ residents add ta
Clints Radio, W2UDO, 32 Cumberland Ave., Verona NJ 0704

QSLs catalog. Samples 35c. Ritz Print Shop, 5810 Detroit Av
Cleveland OH 44102.

COMPLETE 36 page QSL catalog! 300 cuts, stock and i
samples. Ten sample QSLs, 25c. Cornelison's, 321 Warren St.,
Babylon, NY 11704.

QSLs from "Bullett," creative designs, fast service, economic
Send 20c for samples to Bullet Printing Co., Box 3033, Waco T
76707.

CANADIAN Surplus Catalog and flyers $1. Etcox Electroni
Box 741, Montreal Canada H3C 2V2.

EVANSVILLE Tr State ARS will hold their annual hamfest
May 18, 1975 at the 4-H fairgrounds, US 41, 3 miles north
town. Overnight camping, auction, flea market, and ladies bing
For information contact Jay, WB9ICL, R1, Box 56M, Wadesvi
IN 47638.

ROCHESTER NY — Western New York Hamfest date
Saturday, May 31st, at the Monroe County Fairgrounds. Ho
headquarters is the Rochester Marriott. FCC exams at
Hamfest. Information? Write: WNY Hamfest, Box 13
Rochester NY 14603.

JUNE 1, SRRC Hamfest, same place as last year. Long SASE
must for information and advance registration. See display
this issue QST. Starved Rock Radio Club, W9MKS, RFD 1, B
171, Oglesby IL 61348, Phone (815) 667-4614.

SAROC Hawaiian Convention Holiday new dates, July 17-2
1975. Deluxe rooms all seven nights Sheraton-Waikiki, Honolu
Exhibits, Technical sessions, cocktail party and banquet. Limit
number reservations on Western Airlines from Los Angeles a
Oakland. Reservations available from mid-west and east co
principal cities. Travel arrangements by Del Webb World Tra
Company. SAROC Las Vegas Hotel Sahara, January 8-10, 197
Direct all inquiries to SAROC, POB 945, Boulder City N
89005.

GO solid state — Canadians and others, Triton II and 262 pow
sup with Vox — still under original warrantee — $810. Ke
Doyle, VE7CDK, R.R. 1, Green Bay Road, Westbank, B.
V0H2A0.

DO-it-urself DX-peditions, stay at ZF1SB, Cayman Is. Vertic
antenna and Caribbean at your doorstep. Diving, fishing if ha
folds. Write Spanish Bay Reef Resort, Box 800T, Gra
Cayman, B.W.I.

WANTED to Buy, pre-1930 Wireless gear and Morse keys. A
type? Condition. Write VK4SS, 35 Whynot St, West En
Brisbane, Q. 4101, Australia.

QST wanted: Jan, Feb., Apr., July 1917; 1919 except Nov., De
Pse write airmail, postage refunded. ZL2GX, 152 Lytton Roa
Gisborne, N.Z.

CASH paid for your unused tubes and good ham and commerc
equipment. Send list to Barry, W2LNI, Barry Electronics, 5
Broadway, NY NY 10012.

SPIDERS for boomless quads. Heliarc welded aluminum. A
Antennas, 1339 So. Washington St., Kennewick WA 99336.

VERY in-ter-est-ing! Next 5 big issues $1. "The Ham Trader
Sycamore IL 60178.

TRANSFORMERS rewound, Jess Price, W4CLJ, 507 Rach
Orlando FL 32806.

NOVICES: Need help for General ticket? Complete record
audio-visual theory instruction. Easy, no electronic backgrou
necessary. Write for free information. Amateur License, PO B
6015, Norfolk VA 23508.

MOBILE Ignition Shielding gives more range, no noise. Kits and custom systems. Literature, Estes Engineering, 930 Marine Dr., Port Angeles WA 98362.

TELETYPEWRITER parts, manuals, supplies, equipment. Toroids. S.a.s.e. for list. Typetronics, Box 8873, Ft. Lauderdale FL 33310, W4NYF. Buy parts, late machines.

MANUALS for ham gear before 1967. Large s.a.s.e. for quote on specific manuals. WØJJK, Hobby Industry, Box Q864, Council Bluffs IA 51501.

WANTED: An opportunity to quote your ham needs. 36 years a ham gear dealer. Collins, Drake, Ten-Tec, Swan, Kenwood, Tempo, Clegg, Regency, Icom, Hy-Gain, and all others. Also $25,000 inventory used gear. Request list. Chuck, W8UCG, Electronic Distributors, Inc., 1960 Peck St., Muskegon MI 49441, (616) 726-3198. Telex 22-8411.

SWAP-N-Sell ads free in Tradio. Box 4391, Wichita Falls TX 76308.

AMSAT/OSCAR 6-7 slides, set of 5 — $1.25 Lift-Off and Equipment. Proceeds AMSAT, K6PGX, P.O. Box 463, Pasadena CA 91102.

WANTED, Make, Model and Serial Numbers of stolen ham gear, for big list, W7UD, 3637 West Grandview, Tacoma WA 98466.

FM receiver, preamp, scanner, UHF converter kits. Hamtronics, 182 Belmont, Rochester NY 14612.

COMING to Florida? Use our club station or your own rig and our all-band antennas to work DX or your home town. All hams welcome. Details — H.E. Saxton, W4QED, c/o Spanish River Inn, Delray Beach FL 33444.

TRISTAO self-supporting crank up heavy duty tower, Model TWS-754 with hinged base and TRM-100 tower raising fixture. Handles 24 square feet of antennas in 80 mile winds. Factory reconditioned like new with new winches, cable, etc. List price $2750, sacrifice for $1,250. FOB Hanford CA. Doug Hahle, K6OE, Box 218, Carmel Valley, CA 93924.

TELETYPE equipment for sale, for beginners and experienced operators. RTTY machines, parts, and supplies. Special Lorenz model 15 KSR checked out — $95 and Lorenz 15 ASR — $145 plus shipping. Atlantic Surplus Sales Co., 3730 Nautilus Ave., Brooklyn NY 11224.

FOR SALE: Heavy duty BTI linear- console model spare. New 3-1000Z — $550. W1CPI.

PROP Pitch motors wanted — medium sized, in good condition, need repair and maintainence manuals if available with motors or separate. Need several for friends overseas. J.P. Ashcraft, 5641 Dyer St., Dallas, Texas, 72506, WB5BPZ.

YAESU FT-101 owners, VOX hang-up problems? Get special April 1975 issue of monthly FT Newsletter. Send dollar bill, creditable towards dues if you join the International Fox-Tango Club. Or business-size SASE for complete information. Milt Lowens, WA2AOQ, 3977-F Sedgwick Ave., Bronx NY 10463.

SELL: Need money for summer school, Clegg interceptor VHF receiver — $195; Motorola T53GKT — $100; Model 28KSR — $250. E. Wagner, 1018 Birch Haven Cir., Monona WI 53716.

SELLING: Heath SB-303 receiver and SB-400 transmitter, beautiful condition, recently factory aligned. All crystals and cw filter, pair only — $550; SB-650 digital display, mint — $125. Take all three for — $630. All cables and manuals included. You pay UPS charges. Martin Yoskowitz, 67-67 Burns Street, Forest Hills NY 11375.

WANTED to buy, police radio equipment made prior to 1945. Also, any literature, ads, or books on radio equipment of this period. Ronald Phillips, 1925 Baltimore, Kansas City MO 64108, (816) 842-9009.

MECHANICAL television: Want correspondence with old-timers once involved in this. Want experiences, literature, Jenkins Baird equipment. Also seek 1920's record changers. Wallace Wood, Box 8153, La Crescenta CA 91214.

WANTED: National SW-5, SW-4, SW-3, SW-58 SW-3 Bandspread coils, pilot Super Wasp, Grebe CR-18. C. Byrnes, P.O. Box 25, Pismo Beach CA 93449.

WANT: New A D — 1530; Sell: G R — 78, ideal for tourists. Radio WA0GYX, 1107 N. Scott No. 3, Belton MO 64012.

SIGNAL/one owners: special one year service-contract. Write for details. CX7A, mint, — $1295. Tuneable audio filter, 50 db notch, also has peak and low-pass included — $69.50. PACE Electronics, 5717 Genematas, Tucson AZ 85704. (602) 888-5234.

KWM-1 with 516 F1 AC p/s, — $325. Heath HW-32A — $110. Both excellent condition and with manuals. WA9CQS, Rte. 1, Box 223, Camby IN 46113.

SELL: Complete Heathkit station. Send or call for list. WA4BMK/2, Tom Jenkins, Rt. 144, Glenmont NY 12077. (518) 463-8250.

R4B, mint condition, full 10 meter coverage — $325. WA2OLO, Steven A. Jacobson, 124 Fort George Ave., N.Y.C., NY 10040.

WANTED: Self-supporting tower, 50 to 70 feet. John Record, K1NUG, 76 Fairview Ave., RFD 3, Rehoboth MA 02769. (617) 226-2074.

FOR SALE: Heath SB-401 XMTR with full crystals & mike. In working condition. — $210 & shipping gets it. WN4EJK, Box 421, McRae GA 31055.

BAY Area Ham Repairs. K6BE. 415-548-1889.

WANTED: Hamm Rotor and TH6-DXX Thunderbird beam. Wally Leonard (816) 436-7848, 7216 Rosewood Dr., Gladstone MO 64118.

HARD to get items. Parts. Our modern machine shop can produce almost any mechanical component you might need. Write or call, Edward A. Stoltzfus — Engineering machinist. Beacon Light Rd., Parkesburg PA 19365. Phone area code (215) 857-9602.

HEATH HW-100, HP-23A supply, speaker, mike, key; good cond — $235. Rober Burkhart, 522 Austin Smith, Monroe OH 45050. (513) 539-8075.

4-BTV w/90 m. resonator, $30; Vibroplex "Blue Racer" $12; 24 hr. digital clock — $9; Heathkit SWR bridge — $8; Turner 454x mic., — $6; WA6PPZ, No. 218, 11645 Montana Ave., LA CA 90049.

SB101 — $295; HP-23, — $45, both excellent. SB620 Scanalizer allowed for FT101 — $95; Motorola Base 60 watts xtaled 34/94 with telephone remote — $110; Ten-TecKR-5 keyer — $19. Mackey, 59 Mine St., Flemington NJ 08822, (201) 782-0187 nites.

TR4C with blanker, FT 101 B, Atlas 210. W8OY, Frank White, 19601 N. Park Blvd., Cleveland OH 44122.

SELL: General Radio Type 1565A sound level meter. Conforms to ANSI standards. Pocket-sized, SASE for Spec. sheet — $195. K7OLH, 636 S. Bluefield Pl., Tucson AZ 85710.

WANTED: Collins 75S-3C, 32S-3A, 516F-2, 312B3, 312B4. Round emblem earlier models ok. WIZP, Donald Kaplan, 27 Woodedge Ave., Waterbury CT 06706, (203) 753-6498.

SELL: Triton I, Deluxe p.s. — $500; Ten Tec PM-3B QRP XCVR — $60; Glenn Strickland, 2819 Broadwell Dr., Raleigh NC 27606.

HEATH HW-100 transceiver, in excellent shape. Trade or swap for R-4, R-388, or SBE SB-34 in same condition. Prefer local deal. Peter Steve Stutman, Swathmore College, Swathmore PA 19081.

HALLICRAFTERS HT-18, CW-FM, Xmtr, 3.5 thru 28 MHz — $50; RCA/Navy 15 thru 600 kHz receiver — $60 FOB Phila. Fitch, W3AW, 9406 Evans, Phila PA 19115.

WANTED: Collins S-line, 312B-4, Curtis keyer and memory, Heath Monitorscope. WA9UCF/6, 1096 Paseo Robles, Anaheim CA 92807.

COLLINS: 75S-3B — $695; 75S-3C — $735; 32S-3, 516F-2 — $795; KWM-2, 516F-2 — $895. All round emblems, mint. Signal/one CX7A, mint — $1295. Payne Radio, (615) 384-2224 anytime.

SELL: AN/USM-26 (FR-38D/U), TS-323, AN/FRR-59A, USM-50 scope. Best offer. Ed French, 991 Tollview Ave., Apt.-4, Aurora IL 60505.

COLLINS 75S1 with Waters Q-multiplier/Notch-filter — $275. Millen GDO type 90651, with coils and operating manual — $40. W. R. Turley, 534 Carroll Way, Tehachapi CA 93561, (805) 822-4144.

FOR SALE: SB101, CW filter, SB-630, HP-23, SB-600, HM-2103, HM-102. Complete — $500. Bob Glaser, WØVGA, 1238 Sunset, Mulvane KS 67110.

DRAKE SPR4 amateur CB marine calibrator-crystals-manual. Excellent — $475. W6LA/7 (503) 476-6098, 3550 Riverbanks, Grants Pass OR 97526.

FOR SALE: Hammarlund HQ 180 mod. to push pull AF — $150 cash. Drake R4 mod. with better S meter and ckt — $150 cash. Hallicrafters HA-1 keyer with Brown paddle and straight key package at — $50 cash. W6GMC, 328 Harson Ln., Santa Maria CA 93454.

SELL: Heath SB-200, SB-300, SB-400, all good condition — $150 each, $400 lot. Ralph Frick, WA2MIU, 1 Holly Drive, RD3, Randolph NJ 07801.

FOR SALE: Swan 250C, 6-meter transceiver with p/s speaker, No. 210 VFO and TV2 2 meter transverter, plus noise blanker. Mint condition. — $600 takes all. K3IPM, (215) 355-2867.

FOR SALE: Rohot Model 70A-80A SSTV station. Excellent condition — $500 plus postage. Wanted: Galaxy RF-550 wattmeter. Bill Johnson, WB4ALH, 1119 Lady Elaine Dr., Valrico FL 33594.

REGENCY: HR-212 with 12 channels — $225; AR-2 — $75; Monitoradio Scanner with 70, 76, 88 and 94 — $60; Spectronics Spec-2 — 144.00 to 147.99 in 10 kHz steps — $325; HM-2102 — $20; HWA-202-1 — $20; HA-10 KW amp — $150; HG-10B — $30; EICO 720 — $30; HT-18 — $15; Allied ZX-190 receiver — $140. R. H. Simonton, 100 Suffolk Dr., North Kingstown RI 02852.

ANTIQUE Radiola No. 20 — $125; Bremer-Tully "Counterphase" — $25; Atwater Kent No. 40 — $35; Federal B-30 "Ortho-Sonic" — $100; box Utah & Magnavox speaker parts — $5; RCA No. AP937 battery eliminator — $15; ten old dials — $5; 24 old tubes — $15; 6 pr. old headphones — $15; Globe "Supersensitive" phones in original box — $15; wooden folded horn table speaker — $10; Radiola No. 100 Speaker — $20; Radiola No. 100 A speaker — $20. Add $8.00 for solid packing and UPS shipping. WA1IWV.

WANTED: Good Novice transmitter, under $50. Write Dave Vitkus, 7949 Forest, Munster IN 46321, or call (219) 836-1023.

WANTED: Collins 200 Hz crystal filter, X455KQ - 200, for 75S3B. K3DPQ, 45 Briar Rd., Wayne PA 19087.

HEATHKIT HR-10B, DX-60, HG-10, HRA-10-1, PM-2, Homebrew T-R switch. First certified check for $250 takes all. Chris WN1TNR, Phone (203) 673-5803.

FOR SALE: Novice station, Hallicrafters HT40 with manual and 12 crystals, — $55. Heath HR 10B receiver with manual and 100 kC. CAL — $55. McNew, Milwaukee WI (414) 764-5998.

COMPLETE mobile station: Atlas 180 (factory warranty) DMK, MT-1, Hustler antenna, etcetera — $575. Peyton Lingle, W4AWO, 3237 Oakcliff Industrial Street, Doraville GA 30340. (404) 455-3027.

QST (1926-1974 complete plus 8 extra volumes), Ham Radio (1968-1974 complete), 73 (1961-1973) incomplete. SASE for inventory. Offers? M.M. Kovar, W2ZN, 3 Puddingstone Ct., Morristown NJ 07960. (201) 267-0657 evenings.

WANT: Johnson or EICO VFO. Howard Robb, WØBHA, Birdisland MN 55310.

VALIANT SB-10, combination, excellent condition, instant on VFO, PTT, audio filter. Variable VOX hold. Only $150 takes all. You pick up. W8HTM, 513-867-8593, 533 Glenway, Hamilton OH 45013.

HEATHKIT SB-101 with cw filter, HP-23, SB-600 — $338 including UPS shipping. WA5ZRO, Robert Rollins, 7816 Harmon Dr., Little Rock AR, 72207 (501) 225-6683.

FOR SALE: Heathkit SB-220 linear amplifier — $300; Robot SSTV monitor — $250; Johnson Viking Valiant One transmitter — $75; all in excellent condition. Price firm. Arden Harmon, 1239 Hoffman St., Hammond IN 46327. (219) 931-8808.

FSK terminal unit CV-278/GR matches R-392 receiver — $45. D. Lifland, WB2CCD — 516-569-1687. Donmoor Road, Lawrence NY 11559.

PROGRAMMABLE calculator, Compucorp Beta 326 Scientist. Complete with cassette tape deck, tapes, extensive applications program library for engineering, applied math, statistics, etc. Includes attache carrying case, ac/dc charger and operators manual. Mint condition, hardly used. Half price at first $650 post paid. Bob, W4TRP, (703) 385-9277 evenings or weekends. P.O. Box 4051, Falls Church VA 22046.

DRAKE R4B, T4XB, MSAC4, Johnson Matchbox, fine condition. All for — $800. Prefer personal pickup. H. Trede, Box 236, Setauket NY 11785.

FM27-B, mint condition — $300. Jay Sewell, W5DWN, 2102 Pecos, San Angelo TX 76901.

WANTED: SB-200 or SB-220. Sell XFMR 3600-0-3600 at 1A, 110/220 Pri — $40 FOB. WØAIH, 304 W. 17th, Grand Island NB 68801.

FOR SALE: Collins 351D-2 mount, MP-1 p/s w/cables, both — $125; Heath SB-200 — $200; SBE-34 w/SB-2CW Codapter, mobile mount, A/C D/C cables — $225. All w/manuals. Jack Muff, WA5DGR, 5475 Jackwood, Houston TX 77035. (713) 668-5223.

HP 2000 hot carrier diodes — $2 ea., Erie 4000V/.001 FT capacitors — $11 ea., Butterfly capacitors in stock: 3 pf., — $3.50 ea. 5 pf. — $4 ea. 8 pf — $4.50 ea. Amateur Radio Components Service, PO Box 546, East Greenbush NY 12061.

BRAND new Maco fiberglass quad, complete — $110. W2AU Quad, less spreaders and wire — $30; factory wired Ranger, excellent — $95. W6GXC, 514 Fountain Circle, Murray UT 84107.

SELL: HQ-145C / DB-23 preselector — $140; TR-22 xtra xtals — $150; Collins 516F pwr supply — $50. Ron, K2ZSY, call eves (212) 249-5142.

SALE: AN/GRR 5 .05 to 18 mc schematic, power supply — $40. E. Bean, 53 Ridgeland Rd, Wallingford CT 06492. 269-2968.

SWAN: latest models. Call or write WØØNGS, Bob Smith Electronics, 1226 9th Ave., North, Fort Dodge IA 50501. (515) 576-3886.

WANTED: Collins mechanical filters for Hammarlund HQ-215 receiver 526-9494-00 .5 kHz, 526-9498-00 6 kHz, also crystals needed. Pat Munro, 250 West Oakley, P.O. Box 84, Lowell IN 46356.

HEATH SB301 — $175; SB200 — $175. Excellent condition. You pay shipping. James Lollar, 418 W. 18th, Ada OK 74820. (405) 332-4734.

FPM-300, unopened carton, will prepay — $395 certified, please. FTDX-100, less drift than KWM2, 1KC readout, 110/12V built-in, swap for Atlas or Swan MB40A. WØBNF, Box 105, Kearney NB 68847.

QST 1957 to 1974 incl. in binders Ameco Model CSB converter selector box for quick sale. K2KDS. (914) 698-1154.

COMPLETE National station, NCX-5 Mk. 11 transceiver, NCX-A power supply-speaker, VX-501 VFO console, NCL-2000 amplifier, crystal calibrator. All same as new. ALso, mint SBE-34. WA2IQP, P.O. Box 493, Miller Place NY 11764.

WANTED: HW32A, A.C. and D.C. supplies. Jeff Phol, 103E Sharp Hall, R.P.I., Troy NY 12181, (518) 270-7339.

COLLINS KWM-2, Waters rejection tuning, 516F-2 supply — $785. W2SK, George Conn, 412 Old Boonton Rd., Boonton NJ 07005.

SELL: Collins 75S-3B Ser. No. 16478 — $525; Collins SM-2 mike — $35; Autronic keyer with paddle — $45. WA2JLM, 175 East 17th St., Huntington Station NY 11746.

LAFAYETTE receiver model HE80 — $40; National receiver model HFS — $30; EICO Capacitance bridge Model 324 — $15; Two ART 13 transmitters with one power supply — $60; EICO signal generator Model 324 — $15; Jackson signal generator — $15; Heathkit tube checker model IT-17 — $50; Heathkit oscilloscope model IO-12 — $50; L.M. 14 frequency meter with power supply — $25; Skyrider SP.44 — $10; Heathkit transceiver HW-7 — $45; parts for SRR 13 — $30. Ron Kendall, 284 Bradford Dr., Canfield OH 44406. Phone (216) 533-7195.

MUST Sell: Mint Collins. 75S-1, 32S-1, 516-F2 — $775. Not used in heavy service. Paul Young, P.O. Box 303, Hartford WI 53027.

FOR SALE: All Heathkit. All operational with manuals. IG audio generator — $30; IG102 RF generator — $20; IG42 generator — $50; IG52 TV Align. generator — $20; IM25 VOM $30; IM104 VOM — $50; IM28 VTVM — $30; IB28 Impedar bridge — $50; IM38 ACVTMM — $30; IM36 transistor tester $30; IM18 VTVM — $20; IT28 capacitor tester — $30; EK2A Basic radio — $25; HR10B amateur receiver — $50; GR Receiver — $70; Send M.O. or Cashiers' check — Add $1.50 shipping. Wanted — BC 221 AJ, AK, AL or AN. Richa Matassa, 941 Army Trail, Addison IL 60101. (312) 543-2186.

MOBILE Ops. Tired of ignition noise? Please send SASE for in on shielded ignition systems. Summit Enterprises, 20 Ei Street, Yarmouthport MA 02675.

325 old issues of QST, dating from 1934, boxed. Most 30's, 4 complete. Plus about 100 CQ's, etc. — $50 takes all. W1N (617) 369-6708.

WANTED: Tri-Ex tower and 3 band beam, also used Coll 30S1. F.P. Heinemann, Brockway Landing, Lyme CT 06371.

CASH for Collins 75S-3B/C, 32S-3, 516F-2, and Henry or 30S amplifier. Must be mint and unmodified. Give condition a price. Prefer pick-up within 300 miles. John Kushner, 59 Arlington Ave., Riverside CA 92504. Phone (714) 688-0989.

SWAN TV-2C, excellent condition. Best offer. WA2TT Richardson, 2102 Washington St., Olean NY 14760.

BARGAIN: T599A/R599A w/spkr., 4BTV "Hustler" verti Turner "Super Sidekick" mike — all used less than 3 hours. $575 plus shipping. Phil Nordmark, WA7LLJ, Rt. 3, Box 14 Hoquiam WA 98550.

WANTED: HF Linear, 2 watts input. WA6SQG.

FOR SALE: HQ-170 — $135, HT-37 — $160, Both — $2 Both very clean. HW-12 — $50. Want Argonaut or FPM-3 W4WAI, 321 Sunset Dr., Lawrenceburg KY (502) 839-7555.

DRAKE TR-4, just factory aligned, AC-4, DC-4, RV-4, MS-4 $625. SB-200 — $190. WA3JGS, Dom Ronco, 4067 Ford Ro Phila PA 19131. (225) 473-1867.

2-B Drake — $150. Joe Hoener, KØFYL, 1421 North Ma Hutchinson KS 67501.

TR-4 excellent condx — $350; L-4 with 20 hours on finals, m condx — $450. WA8VFK, 314 South Western Ave., Springfi OH 45506.

OLD Radio Magazines available, QST, Radio Broadcast a others. Limited supply. Write WA2LWX, 6 Brookline Dri Massappqua NY 11758.

KWS-1, tune and load knobs wanted. R. Kelley, Box K., F Dodge IA 50501.

NCX-3 with AC and DC supplies, crystal calibrator, mob mounting, manuals. — $290 firm. F.O.B. W9KBC, I Heatherlea, Palantine IL 60067.

FREE: 8 extra crystals of your choice with the purchase o new Icom IC-22A at — $249. With the 10 crystals which co factory-installed in the IC-22A, this gives you a total of crystals! For equally good deals on Collins, Drake, Ten-T Kenwood, Swan, Atlas, Midland, Standard, Regency, Temp Alpha, Genave, Hy-Gain, CushCraft, Antenna Specialists, Ven Hustler, Mosley, and others, write or call Hoosier Electroni your ham headquarters in the heart of the Midwest, and beco one of our many happy and satisfied customers. Hoos Electronics, P.O. Box 2001, Terre Haute IN 47802. (8 894-2397.

WANTED: Heathkit SB110A 6 meter transceiver. Pre excellent condition, however, any condition considered. St price on first contact. Mr. L. H. Bjerken, WB4USY, P.O. Dra 5858, Shaw AFB SC 29152. Phone (803) 481-2436.

OLD TV sets wanted — especially 7" Hallicrafters, 7" Nation smaller screen sets, or projection set. Also need cabinet from of these Hallicrafters models: SX-42, SX-62, S-47, HT-19, T- or will buy "as-is". Send description and price. Sam Thomps W6HDU/6, 1133 Polk St., San Francisco CA 94109. (4 441-3247.

COLLINS KWM-2, PM-2 supply, MM-1 mike, CC-1 ca everything excellent in appearance and operation. Compl overhaul by factory authorized service MAR 75 at cost of — $ Personally delivered by owner within 125 mile radius of S.F. your approval and $845 cash. K6SGD. (415) 364-1256.

BEST offer: Swan 600 line with VOX and CW filter. Telre meter beam, 2 meter arrays. K2YFE, Box 25, Lanoka Harbor 08734.

QUAD kits, $14.50 to $25.00. Boomless spider mount — $ Send SASE formation. WAC, 404 Sanders Rd., SW, Huntsv AL 35802.

HW-12A, calib., like new — $90. KØYBX/5, 1027 West Apac Norman OK 73069.

SELL: Hallicrafters HA-6 six-meter transverter with P-26 supp (mint — $110. I ship. David A. Holle, Star Route, Box 5, N Salem, ND 58543.

SELL: Mint Swan 500CX, VX1, 117XC. Recent alignment. N finals. Best offer. WB2IWH (201) 523-1437.

MOTOROLA HT220, HT200. Pageboy and Voice Comman service and modifications performed at reasonable rates. O makes, inquire. Hatfield, WA4FRV (804) 272-8403.

FOR Rent: Furnished ground-floor 2 bedroom apartment chalet "Rivers End" overlooking Bass River, Cape Cod. Seclu wooded location with beach rights on river. Five band anten available. W1HGH, 20 Eider Street, Yarmouthport MA 026

WANTED: National NC-300 or NC-303 in good condition. S price. Contact R. Klimas, 172 Shrub Rd., Bristol CT 06010 o (203) 683-2384.

WANTED: Someone thoroughly familiar with the Yaesu FTdx 560 who can align and adjust same. Does not load 75m nor indicate proper current during pre-tuning on most bands. Prefer someone within comfortable driving distance. Pay reasonable sum. W2HWS, Bruce McCoun, 2 Wren Court, Middletown NJ 07748. (201) 671-0046.

VIKING Ranger — $85. RME 4350-A receiver with 4301 sideband adapter, $150; Globe Champ 350-A (needs finals) — $65. K4TPO, 631 N. E. 14th Street, Homestead FL 33030.

COLLINS 75A-4 with 136C-1 noise blanker wanted. Sell 32V-2, Johnson Courier 500W, (pair 811's), best reasonable offers. Consider teletype or ? K6WZ, 13638 Sproule, Sylmar CA 91342.

TELETYPE equip For Sale. Model 28 printer, keyboard, cabinet, loop supply, all complete. Also, military R-390 receiver and URA-17A converter. All equipment like new. Make best offer. Floyd Martin, WA4VVA, Rt. 3, Box 56-D, Pensacola FL 32503, (904) 477-9684.

SWAN 500 w/ac, 80 mtr MARS and spares. 30 ft. crank up w/AR-22 and 3 el. 15-mtr. beam and coax. Waters keyer. Package — $500. WA6IVD (213) 282-1461.

KNIGHT TR-106, 6 meter transceiver with V-107 VFO — $70. Hallicrafters HT-40 AM and CW transmitter — $40. National NC-155 80-6M receiver with speaker — $100. Ron Rech, WB9EPZ, 325 Hickory Dr., Burlington WI 53105.

SELL: TV camera. All solid state, AC or battery. Zoom lense. Send for details. W2RLG, 42 Union St., Matawan NJ 07747. (201) 566-9238.

KNIGHT R100A receiver/spkr — $55; new 1/2 kW 432 MHz linear — $225; New modular QRP-TX 10-80M CW/SSB — $135; crystal filters (8) 5 MHz/9 kHz BW — $2.50; New Heath digital multimeter — $70. Henry Ingwersen, Charlotte VT 05445.

BURGLARS stole my SB401 and SB220, so I may as well sell my SB301. Three filters, perfect condition — $200. Dave Hachadorian, K1JYN/6, 12922 Aspenwood Lane, Garden Grove CA 92640, (714) 638-8745.

NEW FPM-300 — $425 ppst pd. Never used. Must sell to meet college expenses. WN0LUX Rt. 1 Box 35, Medicine Lodge KS 67104.

WANTED: Drake C-4 station console, Swan TV-2B or TV-2C transverter, and Heath SB-610 monitor scope. Must be located in New York City area. Contact G. Hawrysko, WB2GWU, P.O. Box 568 Boro Hall Station, Jamaica NY 11424.

B&W 51SB needed. Gunther, 1214 Arlington, Moses Lake WA 98837.

HT-37, CM-1, Relay and cables — $270 FOB. WA0JTB, 80751.

WANTED: Heathkit GP11 vibrator power supply. WB9BBI, 430 So. Christine, Appleton WI 54911.

SELL: Teletype models 34ASR and 34KSR, demodulators, AFSK, solid-state teletype test set, two-meter FM base, 450 FM base, 30-900 MHz receiving system with spectrum displays, seismic station, Emcor racks, etc. Write WA5OVG, 9660 Leaside Drive, Dallas TX 75238.

SELL: real sharp Signal One CX7A, with extra power supply board. Manual and also the big service manual. One of the last ones made in Calif. Works perfectly — $1400, or might take Collins S-Line or Drake C-Line in trade. Richard Schark, K0ZBQ, 417 North Ferry, Ottumwa IA 52501, Ph. (515) 682-5741.

32S1/516F2 No. 10165 — $425; HP-608D signal generator — $425; Motorola 5W portable P33BAM w/ntcads, 94/94 — $35; Motorola 80D complete, 94/94 — $25; Gonset GPP-1 patch — $10; Johnson but — $5; D-104 mike/stand — $15; Viewfax Model 6 thermal copier, like new — $75. Want 51S1/55G1. K3VPH (814) 238-1940.

MOTRAC U63HHT-1100C, 80 watts, mod for 2-freq, crystals for 66/06, 34/94, 52 and 94 simplex. New control head, microphone, cables and speaker. Extra cable & head for bench test. Complete manual. Excellent condition — $325. Test set — $40. K2GTY, (914) 237-3523.

SELL or trade: Tektronics 547 scope, 1A4 plug-in, 53/54L plug-in unit, type 127 power supply (Tektronics) — $1800. H.P. freq. counter 523B — $175. H.P. pulse generator — $150. H.P. wideband amp — $60. H.P. 412A-AC voltmeter — $175. All mint cond. Trade all for Collins 32S3 (very late model), 75S3C, 312B5, 30L1 (all mint cond.) Jim, W7MTC, P.O. Box 17011, Tucson AZ 85731. (602) 790-9255.

COMPLETE QST collection for sale, December 1915 to 1975. One copy missing (April 1916). Make offer. W6SN, Lippman, 525 South Westgate, Los Angeles CA. 90049.

BUY—sell—trade. Write for monthly mailer. Give name, address and call letters. Complete stock of major brands new and reconditioned equipment. Call us for the best deal. We buy Collins, Drake, Swan, etc. SSB & FM Associated Radio, 8012 Conser Overland Park KS 66204, (913) 381-5901.

SELLING United States collection of radio verification stamps. M. Anderson, 10561 S.W. 125th St., Miami FL 33176.

SELL: SBE-33 with case, less mike, exceptional condx, will ship - $125. W3HGV, 6207 Swords Way, Bethesda MD 20034.

TWO-METER FM Antennas, 1/4; 5/8 W "cartop"; and fixed station. Unique designs. Send for literature. Marsh Devices, P.O. Box 154, Old Greenwich CT 06870.

KWS1 — $450; Collins R388 receiver — $180; Galaxy V MK II transceiver with AC supply and remote VFO — $325. You ship. K7MNZ, Box 867, Big Timber MT 59011. (406) 932-3300.

HEATH HW 100-SB 200- heavy duty power supply with spkr and extra Heath spkr (new), all in mint cond — $495. Ken, W2KLH, 229 Sampson, Jamestown NY 14701.

CHERRY: Heath DX60B transmitter and HG10B VFO — $60. Pierce, 1201 W. Mission Rd. No. 57, Alhambra CA 91803.

GALAXY GT550A transceiver; complete 550 watt station with ac supply, speaker, VOX, crystal calibrator, remote VFO, wattmeter, all used less than 15 hours — $470. Hy-Gain TH6DXX, Hy-Gain 400 rotator, 60 foot aluminum tower, free-standing, only 10 months old — $485. Shipping can be arranged. George Shute, W0PBQ, 1844 S. 45th St., Lincoln NB 68506. (402) 489-0679.

DISCOUNT prices plus full warranty on new guaranteed items: CDE Ham-2 117.00; Belden 8448 rotor cable 12c/ft; Hygain TH6DXX 179.00; Mosley classic 33 179.00; 15% discount Triex W, MW towers; Supermast-FOB Calif; Belden 8214 RG8FOAM Coax 22c/ft; 8237 RG8 18c/ft; RG62B/U 8c/ft; Amphenol PL259 59c; Sprague 500PF/20KV doorknob cap 1.95; CDE .001/10KV doorknob 1.95; Rotron NTH2 Nugget blower 7.95; Raytheon 811A 15.00/PR; Sorensen ACR2000VA AC regulator—write specs; Quote TS520, KLM Echo 2MSSB; old tubes (4V, 7V); Write needs; Prices FOB Houston; Madison Electronics, 1508 McKinney, Houston TX 77002. (713) 224-2668; Nite (713) 497-5683.

HQ-170-C, factory selected — $140. Gonset GSB-100 xmtr (ssb-cw-am-fm) — $145. Heath HO-13 Ham Scan — $60; First $325 takes lot. All excellent condition — with manuals. Pick-up, or U.P.S., your expense. Robert Lewin, 90 Pond Road, Stamford CT 06902. (203) 325-2427.

BARGAIN KW factory checked & Like New condition, SB-301 with SB-650 frequency counter & SB 600 speaker ($15.00), SB-401 with EV 638 mic. (275.00) SB-200 linear (150.00) R.B. Cooper, W8AQA, 132 Guild Street, N.E., Grand Rapids MI 49505.

ESTATE Sale: Drake DC-4 mobile DC p.s. — new — $90; Sony cassette recorder w/mic, ac cord, Nicad battery and case, model TC-110 — $75; K&E 20" log-log-duplex slide rule — $10; Sony AM/FM/SW portable radio — $50; Elmo movie projector R & S8MM model FP-C, — $40; Swan 14C DC adapter — $25; DC p.s. for Swan transceivers — new — $90; Broadcast station RF P.A. tubes Machlett ML 7715 (2) with chimney, blower and RF tight air ducting assembly. Sell or swap. Jack Colson, W3TMZ, Rt. 3, Mt. Airy, MD 21771. (301) 253-4376.

WANTED: For HRO60 — xtal calibrator, NBFM adapter, AD coil-set, junker; also xtal calibrator for NC303; also 956 Acorn tubes and 913 CRT, Nagle, 12330 Lawyers, Herndon VA 22070.

BUILD your own radio desk/console cabinet. Design drawings, photographs — $4.75. Bill Morris, WA5RSC, P.O. Box 20302, Oklahoma City OK 73120.

REPAIRABLE, 2M FM transmitter with P.S. needed. Richard Peterson, 104 Ave., Delmar, San Clemente CA 92672.

COMMUNICATIONS receiver wanted: NC400, SP600-JX-17, HQ180AC, R392, or similar. Will be at Rochester, N.Y. Hamfest May 31st. WA2MRZ (716) 652-7304.

STANDARD sr-c146MA 2 watt Handy Talkie, 5 channel capacity, supplied with two channels — $240; sr-c826MA 10 watt mobile, 12 channel capacity, supplied with four channels — $335. Accessories available. Write for catalog and prices. Bercom Electronics, P.O. Box 237, Bergenfield, N.J. 07621. Also, TTL devices, 18 popular types available with spec. sheets.

CHRISTIAN Ham fellowship is now organized for Christian fellowship and witness among licensed amateurs. Free gospel tract sample and details on the organization on request. Christian Ham Callbooks, listing members, $2 on donation. Christian Ham Fellowship, 5857 Lakeshore Dr., Holland MI 49423.

WANTED: Heath SB-10 sideband adapter. R. Allen, WA3GQL, 606 Patterson Ave., Willow Grove PA 19090.

FOR SALE: 2 acre property with antennas, 60 foot crank-up steel tower (self-supporting) with TH6DXX tribander, Ham-M rotator and direction indicator, two 60 foot aluminum towers (guyed) with 350 foot span (center fed zepp, 600 ohm open wire feeder). Seven room house, large screened-in porch, 2 car garage with outside radio shack attached. W2BVN, 31 Wilson Ave., Matawan NJ 07747. (201) 566-2389.

SELL: National NC-155 revr. Used very little, in excellent condx. — $95. You pay postage. W2BIE/5, c/o K2EGI, 5 Stratford Pl., North Babylon NY 11703. (516) 669-8281.

MINI Products, Hybrid Quad, HQ-1 with W2AU balun — $70; Ten Tec 405 linear — $100. Both excellent condx. Will ship, your expense. D. Sowers, K4SVE, 522 McGeorge, Vinton VA 24179.

WANTED: FB7, SW3 with coils. K6ILO, Box 811, Hawthorne CA 90250.

DX'ers DC-100 preamplifier; Mosfet, 20 dB gain, 5 dB n.f., 10-30 MHz — $49.95. DC-200 logarithmic speech processor; 8 dB increase in average power, with level meter — $59.95. In cabinets. Dynacomm, 1183 Wall Road, Webster NY 14580.

HAMMARLUND SP600-JX wanted to buy/trade for all or part; Hewlett-Packard HR 400-D voltmeter, Vibroplex "Presentation" gold bug, Collins 478G-1 audio analyzer (includes two 7" VU meters). Prefer West Coast deal — will pick up. Call (415) 435-9084. H.L. Collins, Jr., Box 198, Tiburon CA 94920.

WANTED: Reliable 2 meter FM receiver only. Good condition. George J. Gropp, 1688 Mt. Everest Lane, Toms River NJ 08753.

WANTED: Heath HX-30. State price and condition. K0RSZ, 129 W. Dawes, Lincoln NE 68521.

COLLINS 51J4 receiver with three filters — $600; 32V3 xmtr — $120; Hallicrafters SR42A and HA26 two meter station — $110; RME sideband adapter — $25. All mint condition, with handbooks. Cash or certified check. Crating extra. Harold Gross, P.O. Box 714, Encino CA 91316. (213) 990-4879.

FOR SALE: Best offer. SB 102, cost — $385; HR 23B AC supply, cost $51.95; SB speaker, cost $20.75; IMB 18 ohmmeter, cost $55.95. Martin Ryerson, 313 S. Miami Ave., Bradford OH 45308.

FOR SALE: Heath HW32A — $70. K1ZZJ, 33 Colburn St., N. Attleboro MA 02760. (617) 695-0286.

NEW test equipment, Heath (1T-121) FET transistor tester $75; Heath (SG-18A), Sine, square, audio wave generator $110; Heath (IG-42) Signal Generator $115; Heath (1T-28) capacitor checker $115; Heath Schnlenberger (EU70A) dual trace scope $450; Heath (337C) scope demodulator probe $4; Heath (PKI) low cap. probe $4; Heath ((D-1041) HV probe $9; Heath (PKW-3) RF probe $5; Heath 336W-30KV-DC probe $6; two Heath (PKW-101) HF probes $40/pr. Write Eugene Zepkin, 128 Woodland Drive, Newport News VA 23606 or phone (804) 595-9701.

WANTED: Johnson Navigator, w/ manual. State condition and price, shipment prepaid. W4AX, RFD 4, Box 71, Glen Allen VA 23060.

SELL: Drake TR4, AC4, MS-4 and DC4. Bill, K4SLQ.

SEND your QST want list to Beardsley, 119 Wythburn Road, South Portland Maine 04166.

SWAN 350 w/117X — $295; Swan 250 w/117XC — $265; Hallicrafters SR500 Tornado w/ac — $275; Drake TR4 w/MS4 AC4 NB, mint — $550. Wanted, filter for Swan 500c, 5.5 MHz, 5 UPI or 5 DEPI tube. W2FNT, 18 Hillcrest Ter., Linden NJ 07036, (201) 486-6917.

7581, 11 K serial, very nice — $220. Add $25 for 500 Hz filter. 75S3 w/200 Hz filter — $385. K6FV (408) 245-5974.

PACKAGE deal, must sell, Galaxy GT550, RF550, RU550, SC550, F-3 filter, Three element TA33 Mosley beam, 80 meter Trik Stik, vibroplex bug, HD15 Heathkit phone patch, 254C Turner desk mike and accessories. Gary Strauch, 7930 Lake June Rd., Dallas TX 75217. (214) 391-5555, 288-1934.

"HOSS Trader Ed" says, We refuse to be undersold! Remember, if you didn't buy it from the Hoss, you paid too much! New Atlas 180 solid-state transceiver, $449; Demo TR-4C, $489; New Display Swan 700CX, $519; Demo T-4XC, $469; New Clegg 2-meter FM27B transceivers, $345; New Genave GTX-200, $194.95; Demo Atlas 210, $479. New Rohn 50-ft. foldover tower, Prepaid, $339.95; New Hy-Gain TH3-MK3 antenna and Demo Ham-II rotor, $259. Hoss Trader Specials: Used equipment, Drake TR-4, $379; R-4C, $429; T-4XC, $459; 700CX, $429; Swan 500C, $295; Factory reconditioned Galaxy GT-550, $279. Some Left — New Collins at old prices. Our Loss is Your Gain! Moory Electronics Company, P.O. Box 506, DeWitt Arkansas 72042. Tel.: 501-946-2820.

FOR SALE: TCS 12 transmitter, and TCS 12 receiver. (Collins designed) With microphone, and heavy-duty power supply, and complete manual. Entire assembly for — $54. Irving Partridge, WØCI, 602 4th Ave. E., Milbank SD 57252.

HALLICRAFTER station, beautiful condx. HT33B 2 kW, Linear, SX146 rcvr., HT46 xmtr, P&H distortion indicator, Waters phone patch, — $500 takes all. WA9IZK, 869 Daffodil Lane, Beloit WI 53511.

WANTED: Heath SB-10 sideband adaptor, in good condition, with manual. D. McBride, WA3YYG, 2 Whittier Place, Swathmore PA 19081.

ANTIQUE and old books on electronics, radio, etc. Send s.a.s.e. for list to WB9IXZ, 5540 Fenmore Road, Indianapolis IN 46208.

SIDESWIPER fans: Beautiful Scandinavian-styled, hand-made sideswiper on teak base, only $13.00 airmailed. KUNGSIMPORT, Box 257, Kungsbacka Sweden.

QSTs, buy, sell or trade. SASE for list of extras and needed. W4NUL/5, Bob Willsey, 1100 Cherry, Altus OK 73521.

WANTED: cabinet from 100V, 200V or 800L, or inexpensive/junk unit for parts. K8NGV, 26496 W. McNichols, Detroit MI 48420.

SB-303, new, perfect, ew filter — $350. WBØGSL, Qtrs. 4308 B, USAF Academy CO 80840.

DRAKE R4A for sale, Clean — $275. R. Myers, W1FBY, 221 Long Swamp Road, Wolcott CT 06716.

HW 16 — $75; Globe Scout 680A — $35. David Witzel, 305 Country Rd., Burkburnett TX 76354.

SELL: Jennings vacuum capacitors, 250 uuf at 10 kV — $15; 200 uuf at 10 kV — $15; Heath HP-13B 12 vdc power supply — $60; voltage regulator in 95-130, out 115 at 9.5 amps, — $20; frequency meter AN/URM-82, 1-20mc — $50; William Jacobs, Route 1, Independence WV 26374.

KWM-2, 516F-2, Heath SWR meter, 14AVQ antenna, Turner mike — $800. W7HAI, 32506 111th Pl. S.E., Auburn WA 98002.

SELL: DX-60B — $65; HG-10B — $35, both mint condition. Also, prop pitch rotor unit — $25. PRC-40, 2M FM — $40. WB8CHV, Rob Anthony, 1415 John R Rd, Rochester MI 48063.

CALL letter license plates wanted for collection. Will pay postage. Art Phillips, WA7NXL, 3401 N. Columbus, Apt. 5-0, Tucson AZ 85712.

UPGRADE your Ham licenses now! Let Posi-Check help you. Original, expertly devised, multiple choice questions and diagrams covering all areas tested over in FCC exams, IBM sheets for self testing. Keyed answers with explanations. Novice Class — $3.35; General Class (including latest rules and regulations) — $5.10; Advanced Class — $4.65; Extra Class — $4.90. First class postage prepaid U.S.A. Air mail 25c extra per copy. Send check or money order to POSI-CHECK, P.O. Box 3564, Urbandale Station, Des Moines IA 50311.

NC-105 receiver, excellent — $35; DB-23 preselector, 80/10 meters — $30; Take both, $60. Leo Zucker, 220-55 46th Avenue, Bayside NY 11361, (212) 631-8762.

SELL: SB-34 transceiver, mike, xtal cal., manual, SB-2 Codapter, new mobile mount — $200. W.H. Schiebold, W8EYM, 3953 Charing Cross, Bloomfield Hills MI 48013. (313) 646-1303.

COLLINS 30L1 linear, round emblem, high serial, mint cond. $390. (209) 733-3215, Dick Shideler, 3731 Evergreen, Visa CA 93277.

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HEATHKIT: DX60B transmitter, HG-10B VFO, mint conditio WA2TZH, (601) 392-6203.

FOR SALE: Hallicrafters HT-37 transmitter, Hammarlu HQ-180 receiver — $400. William Elder, W2FGU, 193 W Midland Avenue, Paramus NJ 07652.

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WANTED: Instruction book for radio receiver R-48 B/TRC Edwin Hill, 607 S. Jefferson, Kaufman TX 75142.

HEATH Mohawk rcvr, RX-1 with Ameco 6M. Conv. A condition, price — $135. K3YKM, 402 So. Manoa R Havertown PA 19083.

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HEATH SB-303 all filters — $275; SB-401 mike, crystal pack $275; both clean. Keyer-audio filter built into SB-600 speaker $55. Entire station — $575. Gladding 25 supply, P.L. ex crystals — $190. Possible trade for FM-27b or IC-230. WA8J 38251 Elmite, Mt. Clemens MI 48043. (313) 463-6792.

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HIGH Power Builders: Jennings Variable Vacuum Capacit 1-UCL, 1500. 1-UCL 1000. — $20 each. E.P. McClanah W7AHP, 133 W. Park St., Grants Pass OR 97526. (5 476-4369.

FOR SALE: Noise Blanker for R-599A. New, $35. A. Tadd 220 E. Live Oak, S. Gabriel CA 91776.

HEATH Apache — $60. SB10 adapter — $70. Both in go condx. WA6WVH, 2213 Culver Ct., Walnut Creek CA 94598.

WANTED: Any linear amplifier, 100 watts and up, with built or separate power supply that will work with the Argonaut, a an all band antenna tuner or transmatch with SWR met WN2WCQ, Allan Chin, 65 Pike St., Apt. 19E, New York 10002.

HALLICRAFTERS SX-111 dual conversion rcvr, Hy-G 14AVQ 10-40 m vertical. Both good condx, with manual ship. G. Hitchcock, 343 Main Street, Wakefield RI 02879.

SELL or trade Collins 75A-4 SN over 4400; Collins 32 xmitter; Hallicrafters SX-130; Gosset Communicator VHF V 50, 144 & 220 MHz; two code practice oscillators. No shippi Herb Benton, WB2KVJ (212) 662-1421.

HEATH HR-10B, DX-60B, HG-10B, SB-600 spkr, B&W relay. All mint condx. Six months old — $225. WN1UCY, Bonnie Drive, Farmington CT 06032.

PC's, SASE for list. K9PZS, 1826 South H, Richmond 47374.

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WANTED: QST 1930's, CQ 40's, 73 January 1961, all Callbooks, ARRL Handbooks and publications, by collector. Swap for others or hardback books & pocketbooks; list available. Don Erickson, 6059 Essex, Riverside CA 92504. 714-687-5910.

DESK model 32RO — $150; small USLS-465 vacuum variables — $35. W6ME, 4178 Chasin Street, Oceanside CA 92054.

CLEAN up, sez XYL. Must sell excess gear, mint, with manuals. Heathkit SB303 with ssb/cw filters and SB401, $550. SB313 SWL receiver, $260. Reluctantly, my pride and joy, rare Barker & Williamson No. 6100, the finest 80-10 meters ssb/cw exciter ever made, 180 watts PEP, spectacular performance, unique features, cost $895, only 300 built — $350. Drake 2B with Q-mult, extra crystals, retubed, realigned, $175. Heath 5-piece security system GDA-1158-1/2/3/4/6, brand new, $265. W2NZ, evenings, weekends — (516) 541-9355.

COLLINS 75S3 mint condition. All new tubes — $425. Dr. M.B. Kassell, 7561 Overbrook Ave., Philadelphia PA 19151.

WANTED: US and foreign amateur call sign books 1920-1923. Will pay $5 up each in usable condition. Write Woodbury, ex-1BNP, Meadowbrook Road, Dover MA 02030.

NC300 receiver with xtl calibrator — $135. Still a great receiver! Gerald Block, 30 Swan Lake Dr., Sumter SC 29150. Tel. (803) 775-7048.

SELL: Telonic SN-3 UHF Sweep Generator — $75; Tektronix 570 tube curve tracer — $90; Heath IB101 — $150; Heath IB102 Scaler — $40. Glenn Schmidt, W9AQK, 5123 N. Chester Ave., Chicago IL 60656.

SELL: Heath HR-10-B receiver with calibrator, excl., 14AVQ/WB verticle, homebrew swr bridge and tr relay, 30' RG-8, 35' RG-58 coax cable — all for $99.99. WN1UDZ, 291 Bradford St., Provincetown MA 02657.

SELL, together or separately: complete Heathkit station — SB-303, SB-650, SB-401, SB-620, SB-600, SB-310 SW receiver, HM-102, HDP-21A, HN-31, Magnum 6 processor, Ameco PCLP HF preamplifier. All items excellent condition, professionally wired with manuals — $1500. Heath twoer — $50, Mosley TA-36 beam with 40M conversion kit — $150, HAL ST-6 — $150. You ship. W. Orth, KH6HMA, P.O. Box 135, Lawai HI 96765.

WANTED: Heath 2'er/6'er -Rodger Adams, 352 Third Street N.E., Hickory NC 28601.

HEATHKIT Model DX-60 transmitter, Model HG-10 VFO total — $60. Minor, WB0JNM, 434 North Green, Ottumwa IA 52501.

WANTED: DC supply for HA-14. W8QBG, George Portell, 12940 Durham, Warren MI 48093.

HAND-Held Regency HRT-2, excellent condition, with charger, nicad, remote mike, rubber antenna, case, and five sets of crystals — $200. WB0NYX, Qtrs 4213-B, USAF Academy CO 80840.

FOR SALE: SB-200 Heathkit linear amplifier. 1200 watts PEP, no scratches, no operating problems, in perfect condition. Asking $220 or best offer. WA2SHR, C/O Len Robertson, 25 Villa Place, Eatontown NJ 07724.

FOR SALE: Measurements Corp. dip meter, $100; TS-173/UR freq. meter (90 through 450 MHz, ac supp. and cal. book), $45; Eico 752 solid-state mobile pwr. supp., never used (11-14 V dc in, 750 V, 280 V 100 V neg. out, $39. Antique buffs, Skyrider Marine S-22, 140 kHz to 18.5 MHz. Manual incl., $40. All items clean. W1CER, ARRL.

COLLEGE Forces Sale entire station DX-60B HG-10B HA-600A with matching speakers w/manuals, key, microphone, Hy-Gain SW-9 ant. w/cable $215. Midland VHF man. conv. w/12V P.S. $20, Surplus Xtal Cal. $5. M. Messenger, 140 Ocean Parkway Brooklyn NY 11218.

LITERATURE, cards, etc., back to 1919 — 22 items, good stuff, best offer, SASE for list. Hansen No. 35, 5772 Garden Grove Blvd., Westminster CA 92683.

HW-202, 2m FM plus AC supply. All crystals plus tone encoder. Will trade for good Heathkit 6 meter SSB rig. Call or write, WB8LYF, 915 N. Cory, Findlay OH 45840. (419) 422-4738.

SELL: Transceivers, linears, receivers, CE-MM2, assorted ham gear, S.A.S.E. for list, photos. K2QHI, 504 Grace Ave., Garfield NJ 07026.

WANTED tube tester in mint condition. Hans Frandsen (309) 523-3520, RR 15, Port Byron IL 61275.

DRAKE R4B, clean radio, will ship — $300. M. S. Pride, 225 Main Street, Newington CT 96111.

HEATH HW30 2M transceiver (lunchbox) — $22; 5X8 Kelsey Excelsior press — $75; Seneca VHF 1, 6 & 2M, transmitter — $49; Turner 33X xtal mike, WS — $9; Sprague TO-6, tel-ohmike, capacity analyzer — $18; Heath IO-10 transistor checker — $6; EICO 460, wideband scope, — $49; All very good condition. Hewlett Packard model 4000, as is — $9. FOB, B. Harms, W1JWW/4, 905 Fernald, Edgewater FL 32032.

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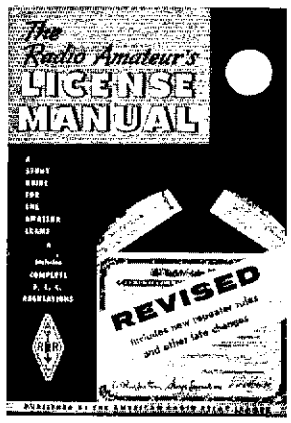

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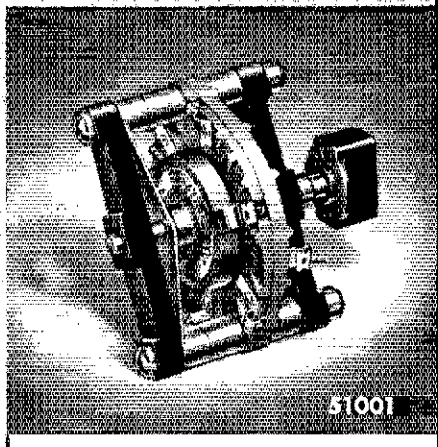

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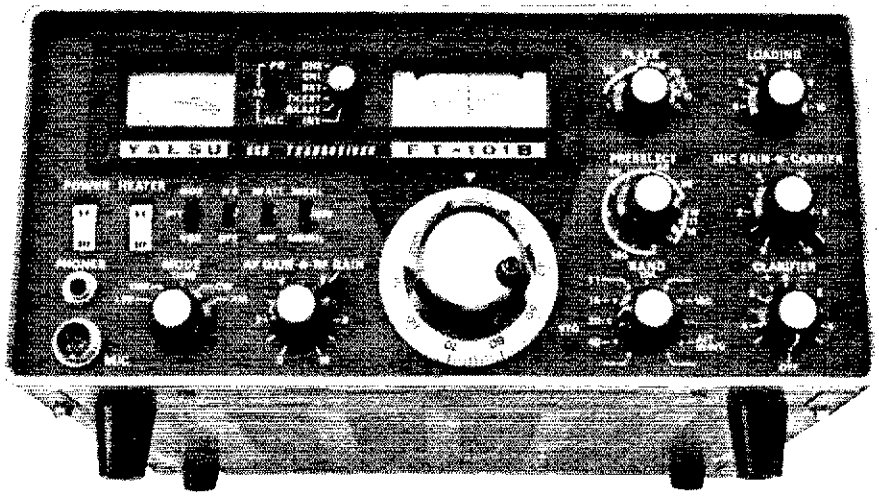

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