Worldradio

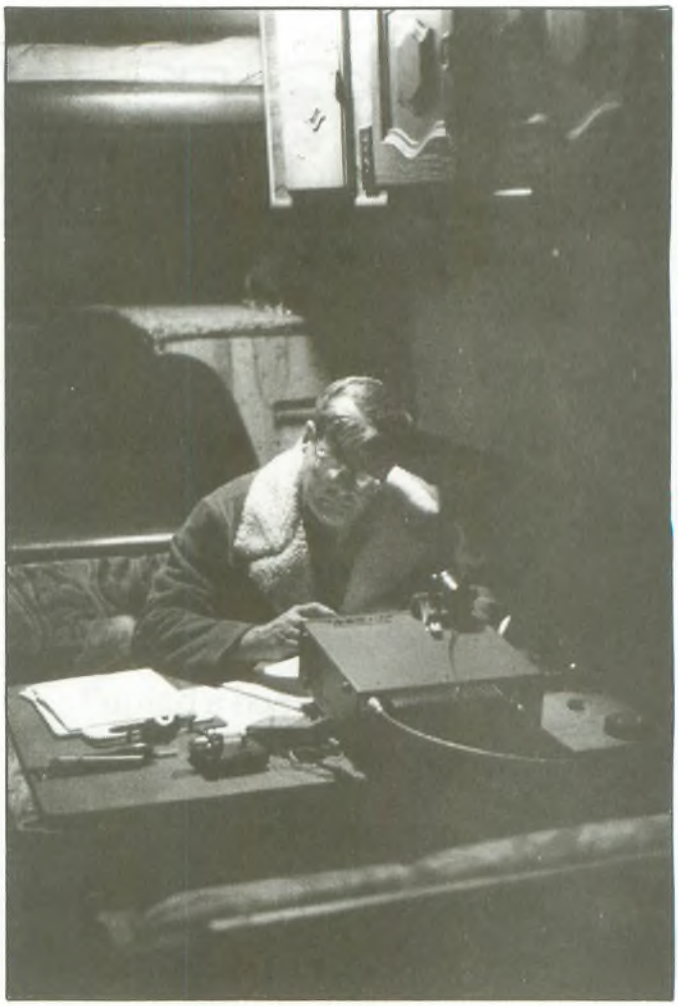
Year 21, Issue 3 September 1991 • $1.25

FEATURES

We just ordered our rig and applied for our reciprocals for a DXpedition to Albania!

COLUMNS

Field Day 1991



Pictures by Armond Noble, N6WR

Top left: Norm Brooks, K6FO, begins his CW siege. Top right: Dave Reynolds, KE7QF, drew one of the night shifts. Bottom right: Lou Ann Keogh, KB6HP, relaxes in the sun.

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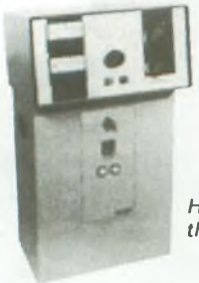

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Is Amateur Radio really in decline?

DAVID "SPIKE" BOYD, K9MX

It has become an article of faith among Amateur Radio operators today that the hobby they so love is no longer attracting enough new blood and is, in fact, in the early stages of a precipitous and dangerous decline. Accordingly, argue many, it is necessary that the hobby be changed in fundamental ways to staunch the losses and regain our political clout: eliminate CW as a requirement for licensing; ease technical examinations and requirements; change band plans; pursue all those computer literate young people whom we know—also as an article of faith—are held back only by the Morse code; and whatever else comes to mind. But is this picture accurate? Are we really in decline, or even at a point where our rate of growth is no longer robust?

If these assertions are true, we will continue to lose the political clout we need to protect the hobby; if not, our claims of decline dissipate our political strength by falsely reinforcing the perception that we're a dying breed. Yet the evidence, viewed objectively, is that we not only are *not* in decline, but we are experiencing a rate of growth that would be the envy of any group! So let's examine the facts.

From 1934 to the present, the Amateur Radio population grew dramatically, increasing from 46,390 to more than 470,000—more than a ten-fold increase—while the total population of the United States barely doubled.[1] That growth was not without fits and starts as recessions, wars and social turbulence affected it, sometimes positively and sometimes not. But it is the overall pattern which is one of *growth*, and not the minor blips, that ought to concern us.

From 1934 to 1947, amateur growth was essentially flat (no FCC amateur population reports were issued from 1938 through 1947), but growth surged as soon as the ham bands were reopened after WWII, increasing by

(please turn to page 15)

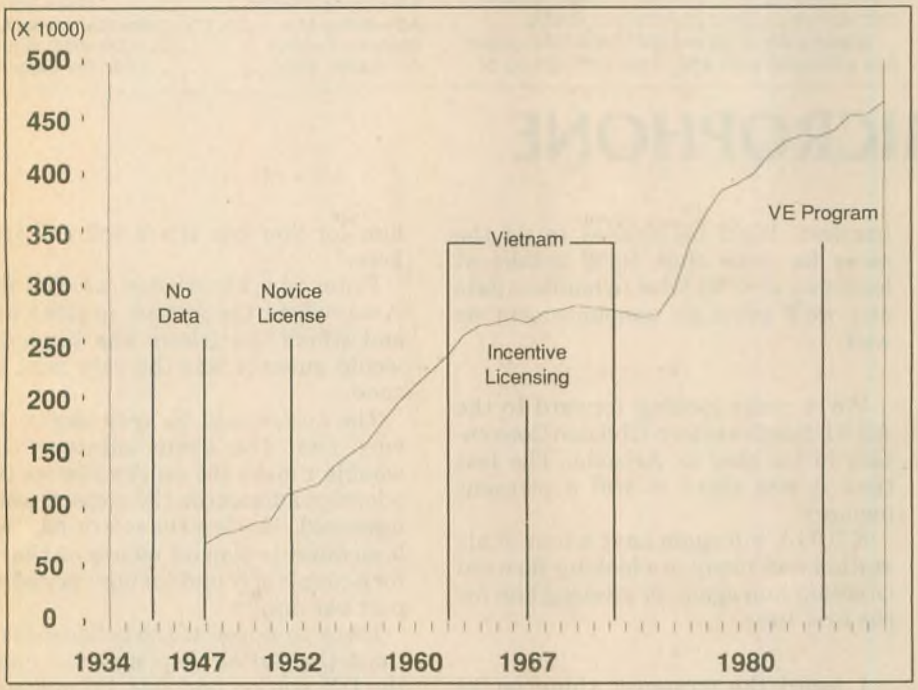

Figure 1. Total amateur population. Note that the curve has been consistently upward, except for minor blips in 1967, 1970 to 1973, and 1985, and that each dip is followed by a lengthy period of very healthy growth.

[1] Amateur population figures came from annual FCC reports, while US population and SAT figures were drawn from the Statistical Abstract of the United States, published by the US Census Bureau.

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Worldradio

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September 1991
Vol. 21, No. 3

is published monthly by
Worldradio, Inc.
2120 28th Street
Sacramento, CA 95818
(916) 457-3655

Subscription Dept.
Worldradio
201 Lathrop Wy., Ste. D
Sacramento, CA 95815
1-800-365-SUBS

Second class postage paid at Sacramento, CA & additional offices. **POSTMASTER:** Send address changes to **Worldradio Inc.**, P.O. Box 189490, Sacramento, CA 95818.

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You readers are participants — an alliance of active radio amateurs concerned with reality, using radio as a communications tool to develop the skill, quality and full potential of Amateur Radio.

We emphasize the positive aspects of this great activity, and desire your contributions dealing with dramatic, personal and humanitarian uses of Amateur Radio.

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PUBLISHER'S MICROPHONE

We first recognize those of supreme intellect who are the most recent to join the *Worldradio* Super-Boosters (lifetime subscribers):

Raymond Martin, KC1XW, Acushnet, MA;
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David Crane, WB4ERU, Fort Lauderdale, FL;
D. Alan Mills, WS8U, Southfield, MI;
Tom Barnum, AA6TP, Laguna Niguel, CA;
National Institute of Amateur Radio, Hyderabad, India.

•

Scott Cundiff, N5ASD, of Vivian, Louisiana, congratulated *Worldradio* on its 20th anniversary and said, "I enjoy the human interest and positively oriented format."

Mark Helmer, AL7NA, of Eagle, Arkansas, wrote: "I like it. I get the impression that I'm paying for a potpourri of good information and not glossy paper and color photographs."

Yes, that's the goal here. A reasonably priced magazine as good as we can make it for the cost.

•

Dave Goggio, W4OGG, of Memphis, Tennessee, wrote in regarding the *Worldradio* 100 Nations Award and also said, "Read your ITN—it's the greatest travel magazine of any."

So, I'll again mention, should you travel overseas often, I'll be pleased to send you a free sample copy of *International Travel News*.

Might as well also mention that, for those with an interest in WWII, Korea, Viet-Nam, and what's going on today, we have *Military*; same offer, same address.

•

Joe Gutwein, WA9RLJ, Downers Grove, Illinois, of the Six Meter Club of Chicago, was good enough to thank us for subscription donations to their hamfest. We'd be pleased to do the same for your club. Send details at least two months prior to hamfest date and we'll print an announcement as well.

•

We're really looking forward to the ARRL Southwestern Division Convention in October in Arizona. The last time it was there is still a pleasant memory.

K7UGA will again have a tour of his station and many are looking forward to seeing him again, or meeting him for the first time.

•

I heard the strangest thing on 14 MHz a few weeks ago. The band was open nicely and a country about 8,000 miles away, that we don't hear very often, was on. The distant operator and an amateur in the San Francisco Bay Area were having a very nice chat. The DX station commented that he had a very good friend in the Bay Area and wished he could come up on the air.

The California station said, "I'd call him for you but it's a toll call from here."

From my knowledge of the Bay Area, where the station in QSO was, and where the friend was located, I would guess it was the very next toll zone.

The cost would be very slight. I'm sure that the same amateur that wouldn't make the call, had he spotted a foreign amateur in the airport, would have said, "Let's go have a drink," and been quick to slap his money on the bar for a couple of rounds of high-priced airport bar drinks.

I was so upset at the callousness of the 6 that, after they signed, I called the DX station and said I'd make the call.

It's about 80 miles from here. Yes, times are a little tougher out there than they have been. But, I don't think a 25 or 30 cent phone call is going to send anyone into bankruptcy court.

I'm sure the Bay Area station, if in a social situation with a visiting DXer, would be saying, "Oh, no, dinner's on me! As they do. So, why not show a little largesse if the visit is via 14 MHz.

•

For those looking for tax deductions, former NBC reporter Roy Neal, K6DUE, is making another film about Amateur Radio entitled *Hams in Space*. The film's purpose is to draw young people into this avocation. Every single penny you donate to this fine effort is fully tax-deductible. (Sure beats the State Department giving to one of those countries that maybe allow three hams on the air, all high mucky-mucks).

So, send your check to "ARRL SAREX Fund," and address the envelope to Dave Sumner, K1ZZ, ARRL, 225 Main St., Newington, CT 06111. —*Armond, N6WR*

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- **32 Memories:** 16 tunable memory channels for each band.
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Of good will and good friends

LOU ANN KEOGH, KB6HP

This is a story about a remarkable young man, Gintas Sakenas. As LY2WW, Gintas manned the microphone during the Soviet attempted takeover of Lithuania in January of this year. This is also the story of good people and good friends.

An avid contestor, Gintas first became friends with Budd Drummond, WJ6Q, during a California QSO Party nearly five years ago. With time, Wayne Peterson, K6ZSJ, Rich High, W0HEP, and Chuck Carpenter, N6CFQ, were all to become fast friends with the 27-year-old electronics repair technician from Vilnius. Together, these four hams and their families contributed the airfare for a visit to the US and then hosted him in their homes.

After a year and a half of planning (and more than a few grey hairs earned worrying about his welfare in January of this year) Gintas arrived in New York. Flav Jankauskas, K3JA, met the flight and saw him on his way to California. In San Francisco, Gintas and the Drummond family began a busy tour.

Starting from their home in Redding, California, the Drummonds made sure Gintas saw the sights—from the giant redwoods with Budd to the giant supermarkets with Budd's wife, Patty. Ham club meetings, a high school economics class, the local Rotary club, and many local amateur stations of all descriptions were on the agenda. The Redding ARRL VEs held an exam, and in slightly less than four hours, the young visitor passed all the tests from Novice to Extra Class. The code posed no problem; he was a high-speed champion in Lithuania three years in a row and came in second in all the Soviet Union. Just imagine all those written exams in another language, one which doesn't even use the same alphabet as your native language! His US call sign, AB6DK, arrived just in time for Field Day.

During the trip, other generous amateurs showed their kindness in various ways. Dr. Les Katz, KX6Q, checked his vision and saw to it that the new glasses he needed were obtained. Dr. Len Traubman, W6HJK, performed much needed dental work. (Having a local anesthetic for dental procedures was a new experience for Gintas!)

For two weeks Budd took Gintas through northern California and southern Oregon. George McCarthy, W6SUN, hosted a dinner party for Sacramento area amateurs and their families at his Pilot Hill home. Gintas had expressed his wish to meet George and see for himself the origin of the big signal from the West Coast which had kept him company during January's turmoil. It was an emotional meeting when the two met face to face. Fear for Gintas' safety had run high during those dangerous weeks.

Wayne Peterson, K6ZSJ, and his wife, Irmgard, of Woodside (south of San Francisco) were the second family to have this pleasant young man as their house guest. Two years earlier they had visited Gintas in Vilnius.

The Petersons showed their guest the customary sights any newcomer should see in San Francisco. In addition, they took Gintas to Lake Tahoe and Yosemite. In the main, Wayne and Irmgard concentrated on daily life in their household and included Gintas in their routines. Wayne's work takes him to many businesses in the Silicon Valley, for example, and Gintas went along with him.

Press coverage in all the areas of Gintas' visit was gratifying for his host families along the way. Newspapers in each of the towns and cities where he stayed carried stories about the friendships developed through Amateur Radio.

Chuck Carpenter, N6CFQ, and his wife, June, and their son and daughter were Gintas' next family on this grand tour. As they live near Riverside, California, the first move by the younger set in the Carpenter household was to take him to Disneyland, of course! The *Queen Mary* with W6RO and the Spruce Goose were also on the list.

Chuck is a keen contestor, and it was his search for oblasts which led to his friendship with Gintas. June Carpenter (who claims that she isn't overly fond of radio) is the one responsible for a new English phrase for Gintas. She asked this DXer what he did for entertainment and, naturally, he responded "radio." She playfully shot back, "Get a life!" which he thought hysterically funny. In a recent QSO with Chuck, Gintas asked him to please tell June that he was getting a life.

After a rousing farewell party attended by numerous hams, the final leg of the trip began. Rich High, W0HEP, arrived in his motorhome to begin a tour of some 3,200 miles. Murphy got in to the act as the two men were leaving Death Valley; the transmission on the rig died just outside a small town in Nevada. Rich and Gintas had what turned out to be a long wait to get acquainted in person, after at least two years of QSOs. Ultimately the motorhome was patched together sufficiently to hobble into Las Vegas. The repair shop was not able to finish repairs that day. When Rich explained to the owner that the two travelers were living in the vehicle, the man brought the lift down to a few inches off the ground, handed the keys to the business to Rich, and asked him to lock up when they went out. It was a gesture which impressed Gintas.

Gintas and Rich set off on foot to explore the Las Vegas "strip." It was still daylight. After seeing some circus acts and having dinner, they came out to

George McCarthy, W6SUN; Eric Peterson, W6PZJ; Lou Ann Keogh, KB6HP; Jack Morgan, W1FEA; Gintas Sakenas, LY2WW; Budd Drummond, WJ6Q; Chad Morgan, KC6EWK; Carl Cook, AI6V; Armond Noble, N6WR; and Jim Heath, KB6SX.

the dazzling lights. As Rich later said, "You just have to hear Gintas say 'WOW' to get the full effect."

The next day they crossed Hoover Dam and reached the Grand Canyon late that afternoon. Gintas wondered how in the world he could possibly describe it to his friends.

Heading for the Denver area home of W0HEP and his wife, Elaine, W0HEM, the two men camped in National Parks and took in some of Colorado's spectacular scenery. Their arrival was timed just right—Field Day weekend. Gintas' US call had just come in the mail; but he waited to use it for the first time. His first contact as AB6DK was made with WJ6Q, Budd Drummond.

The week following Field Day the High's son Randy took Gintas to Pike's Peak, Royal Gorge and other attractions around Colorado Springs. This was followed by three days of camping in the southern Wyoming wilderness area where snow was still under the trees.

Meetings with the Denver Radio Club and other amateur groups took place upon their return. Gintas was thrilled to meet well-known contestor Steve London, N2IC, who invited him to is home.

Elaine and Rich then took Gintas to Torrington, Wyoming, where he met with local amateurs; the local newspaper and broadcast radio stations interviewed him as well. Mount Rushmore on the Fourth of July capped off the trek. What an experience!

Gintas was often asked what stood out, what overall impression of his visit to his Amateur Radio friends seemed most memorable. This quiet, thoughtful young ham consistently answered that it was the open, friendly nature of the people—not just the wonderful reception given him by his ham radio colleagues, but the pleasant faces in the grocery store or walking down the street.

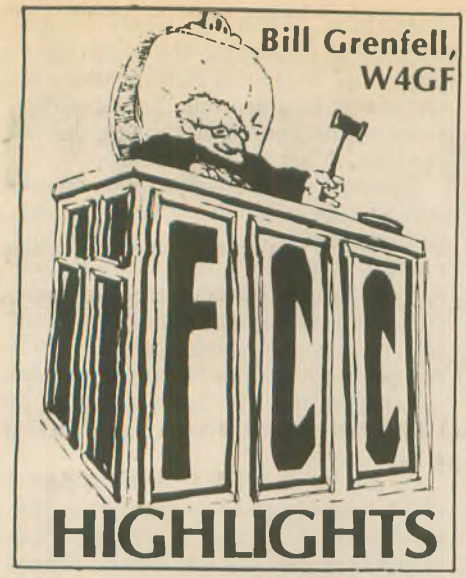
Gintas loves Lithuania. He is proud of his country and has great hopes for its future. A special bond exists between him and his American friends, though. Budd Drummond expressed it as feeling protective of Gintas and Lithuania. June Carpenter summed up the feelings of many people who met and grew to know AB6DK/LY2WW. "If Lithuania ever needs an ambassador in the future, they couldn't go wrong with this young man." One of our primary goals in Amateur Radio is the promotion of international good will. A better example would be hard to find. □

HT HI FI— make your squeek a squawk!

Have you ever used your HT in the car and just couldn't stand the audio from its squeeky earphone-sized speaker? Try this hint.

Drive over to your neighborhood discount catalog outlet store and pick up a Sony disc-to-tape adapter. This handy little gadget will convert the audio coming out of your HT's earphone/speaker jack into signals your car cassette thinks are coming from the cassette it is playing. The result is the quality of audio that your car stereo pumps out instead of all the squeeks of your HT speaker.

You'll also need to get an ⅛ in. stereo-to-mono adapter from your local electronic parts emporium. Pick the right diameter mono end plug to fit the earphone/speaker jack on your HT. The audio quality will amaze you, and I think you will agree it's worth the investment in both time and money. 73 de Bob, KW3W.—*The Delaware Lehigh ARC* □



HIGHLIGHTS

The ARRL has filed a massive document with the FCC requesting a secondary allocation for the Amateur Radio Service at 216-222 MHz. The ARRL contends, "This allocation would provide reaccommodation for those present and future wideband data intercity links and other point-to-point fixed amateur stations which stand, by August of this year, to be displaced from the 220-222 MHz band as a result of the reallocation of that segment in Docket 87-14." The League believes that amateurs can peacefully co-exist with present and future planned users of the band. The Commission may also have this belief since it was they who initially suggested this approach. The 216 to 220 MHz band is currently allocated to various mobile and fixed services. The ARRL petition asks that the 216-220 MHz segment only be used by amateurs for point-to-point fixed operation on a non-interference basis.

Tom Blackwell, N5GAR, and Boyce Jarrett, K5FOG, have filed reply comments with the FCC on their petition which seeks to add subparagraph "g" to amateur rule paragraph 97.205. This would hold the originator of a prohibited communication primarily responsible for automatic retransmission, with the licensee of a repeater (or packet digipeater) having secondary responsibility. The new paragraph "g" does not eliminate a trustee's (or intermediary packet station's) responsibility for insuring proper station operation. It is intended as protection from blame for those instantaneous retransmitted operations over which the repeater owner has no effective control. They agreed with the Motor City Radio Club that strict enforcement of the present rules can lead to the closing down of repeaters because licensees do not want to be held responsible for things over which they do not have complete control.

In response to an inquiry by a US Senator, FCC Private Radio Bureau Deputy Chief Beverly Baker and Chief Ralph Haller, N4RH, have affirmed that new power limits on hams or frequency reallocations are not planned. One amateur wrote: "I resent the fact that commercial interests are trying to usurp the radio frequencies that have been allocated to ham radio enthusiasts. These interests have apparently convinced the FCC that they are entitled to them. The individual ham cannot compete with the big money and lobbying of greedy interests. Another complaint is the reduction of power (watts of transmission) the FCC is surreptitiously planning for amateurs. By cutting the power they can effectively stop us dead in our tracks, especially in the low ebb of the sunspot cycle." (*W5YI Report*, 7/1/91)

At an open meeting on June 13, the FCC adopted its recommendations for US proposals to the 1992 World Administrative Radio Conference. The recommendations, contained in a report in General Docket 89-554, include the realignment of the amateur and broadcasting bands at 7 MHz to eliminate the overlap between the two services, while retaining 300 kHz of bandwidth for amateurs by shifting the amateur allocation down 100 kHz and broadcasters up 100 kHz. The 40M recommendation is similar to what the US proposed at the 1979 WARC, where there was insufficient support for the proposal in other countries. In fact, at WARC-79 the Amateur Service held onto its Region 2 allocation of 7.100 to 7.300 kHz by only a slender thread. The new recommendation still faces an uphill battle abroad; the HF spectrum below 10 MHz houses many competing interests, and reductions in existing allocations to the fixed services (which is likely to bear the brunt of any broadcasting expansion) will be resisted by many countries' delegations. Even if adopted, a number of years would pass before implementation; the US is proposing an effective date in the year 2007! (*The ARRL Letter*, 6/27/91) □

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Amateur Radio Call Signs

Amateur Radio operators often ask the FCC what call signs have been assigned lately. This list shows the last call sign in each group to be assigned for each district, as of July 1, 1991.

For more information about the call sign assignment in the Amateur Radio Service, see Section 97.17(f) of the FCC Rules, or write to the FCC, Consumer Assistance Branch, Gettysburg, PA 17325-7245.

Radio District	Group A Am. Extra	Group B Advanced	Group C Tech./Gen.	Group D Novice
0	AA0FB	KF0SI	N0OKN	KB0JIM
1	WT1G	KD1BZ	N1JKP	KA1ZAY
2	AA2FH	KF2CJ	N2MYJ	KB2NET
3	WO3H	KD3XR	N3JVU	KA3ZFE
4	AC4GT	KO4DW		KD4CDN
5	AA5ZD	KI5RF	N5ULO	KB5QAD
6	AB6DO	KM6CX		KC6WRW
7	AA7JC	KG7QT	N7SNE	KB7NVV
8	AA8EB	KF8NY	N8PCJ	KB8MUJ
9	AA9BE	KF9EB	N9LUR	KB9HAP
North Mariana Is.	AH0K	AH0AH	KH0AN	WH0AAQ
Guam	KH2R	AH2CK	KH2FF	WH2AMU
Johnston Is.	AH3D	AH3AD	KH3AG	WH3AAG
Midway Is.		AH4AA	KH4AG	WH4AAH
Hawaii		AH6LH	WH6AN	WH6CNA
Kure Is.			KH7AA	
American Samoa	AH8D	AH8AE	KH8AI	WH8ABA
Wake Wilkes Peale	AH9A	AH9AD	KH9AE	WH9AAH
Alaska		AL7NH	NL7XW	WL7CCL
Virgin Is.	NP2P	KP2BZ	NP2EF	WP2AHJ
Puerto Rico		KP4SC		WP4KDH

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Worldradio is a two-way communication. Send in Amateur Radio information and news. Share your knowledge with your fellow amateur and Worldradio reader. We are most interested in your comments and suggestions. We would appreciate being placed on the mailing lists of amateur club bulletins.

Does your antenna need a balun?

JACK ALTHOUSE, K6NY

If you have a balanced antenna such as a dipole, inverted V or a Yagi, and you feed it with coaxial cable, you probably need a balun. To see why this is so let's look at a typical antenna installation that does not use a balun.

Figure 1 shows a dipole antenna fed directly with coaxial cable. The dipole is a balanced antenna, that is, either way you look from the center insulator you see the same thing—a quarterwave length of wire. If you fed this antenna with twinlead you would be feeding it with a balanced transmission line. If you looked down from the antenna on either side of the center insulator you'd see the same thing—a small wire going down to the transmitter.

But if you used coax and you looked down from the center insulator, you'd see an unbalanced feedline. On one side of the antenna you see a wire (the center conductor) and on the other side you see a circular shield. It's the shield that causes the problem. To you and me, the coaxial cable looks like a two-conductor transmission line—center conductor and shield. But to RF signals it looks like a three-wire line—center conductor, the inside of the shield, and the outside of the shield.

To see why this is so, let's look again at Figure 1. Note that the shield is shown as being pretty thick. That's the way it looks to RF. The signal from the transmitter causes current to flow in the transmission line. There is current I_1 on the center conductor and an equal current I_2 on the shield. I_2 flows entirely on the *inside* of the shield because of "skin effect." Skin effect applies to AC current; the higher the frequency, the more the current concentrates on the surface—the "skin"—of a conductor. At HF there is almost no current more than 1/1000 inch from the surface.

But now let's take a look at what happens when the RF reaches the end of the transmission line and enters the antenna. Current I_1 from the center conductor flows to one side of the dipole. Current I_2 from the inside of the shield is supposed to flow into the other side of the dipole. And some of it will. But some of it may flow down the *outside* of the shield. The purpose of a balun is to prevent this from happening.

How much current flows down the outside of the shield? That depends on the length of the transmission line and its path to ground at the transmitter end. There are some lengths at which the outside of the shield will look like a high impedance to I_2 and no current will flow down it. At other lengths it may look like a low impedance and as much as half of I_2 may flow down it.

What happens to the current that flows down the outside of the shield? Some of it may enter your shack. This can lead to "hot" microphones and the like. But most of it will be radiated. If the radiating cable passes close to TV feedlines, house telephone or power wiring, you may get TVI and RFI. If current goes down the outside of the coax, then there is less current in the antenna itself, so the antenna gain will be reduced and its pattern shifted.

The situation is even worse when you are in receive mode. The principle of reciprocity tells us that an antenna behaves the same for receiving as it does for transmitting. A radiating coaxial line will pick up signals on receive and these will be added to the

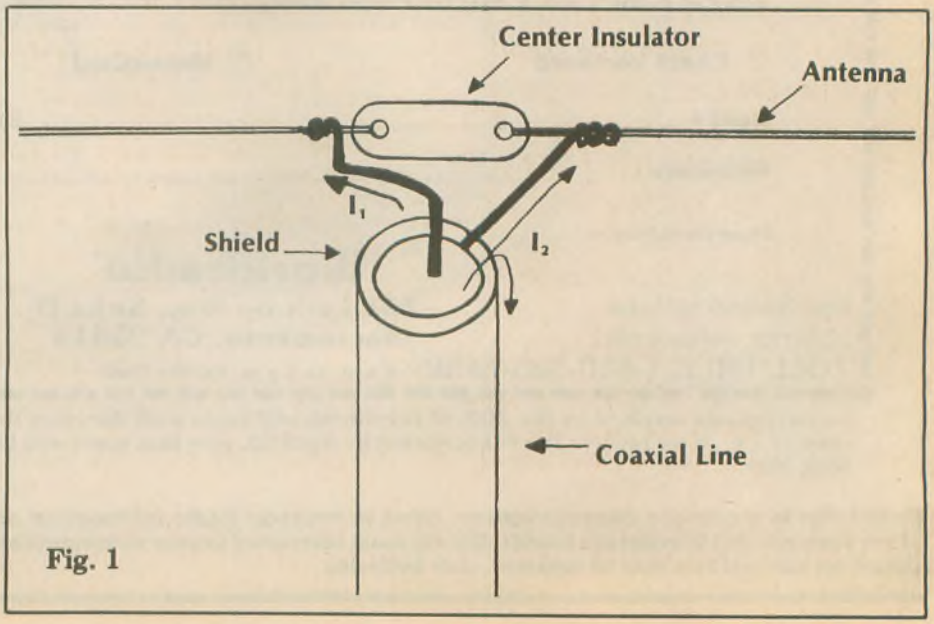

Fig. 1

signal pickup of the antenna itself. If the coaxial line passes near house power wiring or TV feedline it may pick up noise or horizontal oscillator harmonics that your antenna itself might not. Also, it is worth remembering that most man-made noise is vertically polarized. Balanced horizontal antennas discriminate against this noise. But a vertical cable readily picks up the noise. So your signal-to-noise may suffer. And your beam—what about its front-to-back ratio? Even a small amount of omnidirectional signal pickup on the coax can destroy that null off the back of the beam.

The current on the outside of the coax also changes the SWR. SWR is the ratio of the load impedance to the line impedance. Under normal circumstances this is the ratio of the antenna impedance to the line impedance. It has nothing to do with the *length* of the line. Changing the length of the line does not change the SWR. But when current flows on the outside of the coax we have another radiator in parallel with one side of the antenna so the load impedance seen by the coaxial line is different than before. And, as we have seen, the impedance of the radiator formed by the outside of the coax shield changes with line length. So, now we have a situation where the SWR changes with line length!

Balun to the rescue

The purpose of a balun is to prevent the flow of current down the outside of the coax shield. It does this by making a graceful transition from a *bal*anced antenna to an *un*balanced line; thus its name *balun* (which rhymes with "gallon").

Your basic balun is 1:1 ratio—50 ohms in to 50 ohms out. This is used with dipoles, inverted Vs and most beams. Other ratios are available such as 12:1—50 ohms in to 600 ohms out—for rhombic antennas and 4:1—50 ohms in to 200 ohms out—for folded dipoles and KLM beams. The higher impedance baluns serve as matching transformers in addition to their basic function of keeping RF off the outside of the shield.

A balun should be used at its design impedance A 1:1 balun should be used between a 50 ohm cable and a 50 ohm balanced antenna. It will work all right when used between a 50 ohm cable and a 75 ohm antenna. Of course the SWR on the line will be 1.5:1 but this is no cause for worry.

But if you put the balun between a 50 ohm cable and a 1000 ohm antenna it will not work properly, current may flow on the outside of the line; that is, the balun may not act like a balun, and it will probably become lossy. As a matter of fact it may absorb so much RF that it will destroy itself.

There are two common situations where this can happen. The first is a balun placed in a dipole used on several amateur bands. On its fundamental frequency the dipole will look like 50 or 75 ohms but on its second harmonic it will look like 1000 or 2000 ohms or so. This is bad for the balun. The second situation is a balun at the output of a single ended antenna tuner. The impedance seen by the balun can vary from very low to very high. This is bad for the balun and is why baluns in antenna tuners get hot.

Does your antenna need a balun? If it is a balanced antenna fed with coaxial cable and its impedance can be matched by the balun, the answer is: yes, use a balun. This applies to dipoles, beams, multiband trap dipoles and rhombics.

But if your balanced antenna is used on even harmonics or on frequencies where it is not resonant (you'll probably be using a tuner to make it work) you are better off without a balun. This applies to random length end-fed wires, simple dipoles used as multiband antennas, and most voltage-fed antennas. □

Great circles to DX success

C.H. STEWART, KD5DL

Let's say you've decided to get into DX in a big way. You've just mounted the latest Super Sky-Scoop Special antenna on a really high tower, and you're anxious to make the DX Honor Roll in record time.

You fire up your rig, and you hear another station hogging HZ1AB. Let's see, HZ is . . . Saudia Arabia! You look at the DX map on the wall and see that Saudi Arabia is almost due east—so that's where you point your beam.

You can barely hear the hog now, but he is giving the HZ station a 59+ signal report. So, if he can work 'im, so can you. After what seems like hours, the hog finally signs 73, and you're ready to tail-end the QSO.

Nothing. Oh, there's a signal or two on frequency, but nothing like the 59+ you expected, and especially not the HZ station. What happened? You strongly suspect that HZ went QRT, but now you hear another stateside station apparently in contact with the HZ and giving another 59+ signal report. Is your big buck SSSS an overpriced lemon?

Probably not. Most likely you have your antenna pointed broadside to the DX signal. Your wall map deceived you into thinking that Saudi Arabia was somewhere east of you when, in reality, it's more to the north!

No, they didn't rearrange the world when you weren't looking—it's still pretty much the same old place. It's just that the shortest route for radio signals between your QTH and the HZ station happens to be over the top of the world. This path is called a great circle path, and it is defined as the path with the shortest distance between points on a sphere. (Around our town the shortest distance between any two points is invariably under construction).

DXers know about and effectively use the great circle path; it's one of the many secrets of their trade. Many have special maps, the so-called azimuthal equidistant maps, or make use of heading charts centered on their home QTHs. We, too, can use our pocket computer to help us build our own special great circle map and next time, hopefully, we'll nail that DX operator.

Recently (see "QRP Computers," April '91), we've discussed some of the available pocket computers, both past and present. One of the most outstanding features of these machines is that they provide the option to calculate trigonometry in degrees, radians and gradients and can do so with great precision. *Most personal computers compute in radians only, so if you want to try this month's program on another computer you might have to rewrite it with the derived trigonometric formulae.*

For this project we'll need a pocket computer, the coordinates of our home QTH, and a world map having lines of latitude and longitude—a DX callsign wall map is an excellent choice.

The program, written in simple Casio BASIC, does several things. First, it asks for our QTH and heading. It then computes the coordinates of an arbitrary point in the desired direction and then uses that point in a mid-longitude routine. The computer then displays coordinates which, when plotted on the map, give us the great circle path for that heading. As a bonus, we also get an idea of the "backwards" heading from any distant point back to our shack.

Pocket computers are not known for their colossal memory, so one programming trick is to cram as many statements and calculations as possible onto one line.

In this program we have taken 28 separate instructions and fit them into 12 lines, and one line has six individual instructions! Another trick to conserve memory is to omit all ROM statements. Our great circle program, written for any Casio pocket computer, requires only 300 bytes of computer memory (the program was written on a Casio FX-700P).

```
 0 REM: GREAT CIRCLES, BY KD5DL
10 MODE 4: D=90: INPUT "LAT " L: GOSUB
   20: A=B: GOTO 30
20 E=SGN L*INT (ABS L): F=(L-E)/.6: B
   =E+F: RETURN
30 INPUT "LONG",L: GOSUB 20
40 INPUT "HDG",H: IF ABS COS H=1; PRI
   NT "DUE N/S": GOTO 40
50 IF H>180; H=H-180
60 E=ASN (SIN D*COS A*COS H+SIN A*COS
   D)
70 F=ACS ((COS D-SIN A*SIN E)/(COS A*
   COS E)): F=B-F
80 FOR I=180 TO -165 STEP -15
90 J=(TAN E*COS B-TAN A*COS F)*SIN I
100 K=(TAN E*SIN B-TAN A*SIN F)*COS I
110 M=ATN ((J-K)/(SIN (F-B))): N=SGN M
   *INT (ABS M*10)/10
120 PRINT N;" ";I: NEXT I: GOTO 40
```

Line by line

Line 10 has six statements. Mode 4 tells the computer to work all trigonometry in the "degrees" method. The variable D (distance) is assigned the value of 90 degrees (which is equivalent to the distance to the edge of your hemisphere. You're asked for your latitude, it's converted to decimal degrees, and the value is assigned to variable A. The program then jumps to line 30, the longitude routine.

When asked for your latitude and longitude use degrees and minutes, separating the two with a decimal point. For example: Sacramento, California, is 38 degrees, 36 minutes north, so enter it as 38.36 and press the EXE key. Locations in the northern and western hemispheres are entered as positive numbers, while southern and eastern hemisphere locations are input as negative numbers. Line 20 keeps everything straight while converting degrees and minutes to decimal degrees.

Lines 40 and 50 ask for a heading, determine if it is valid, or otherwise

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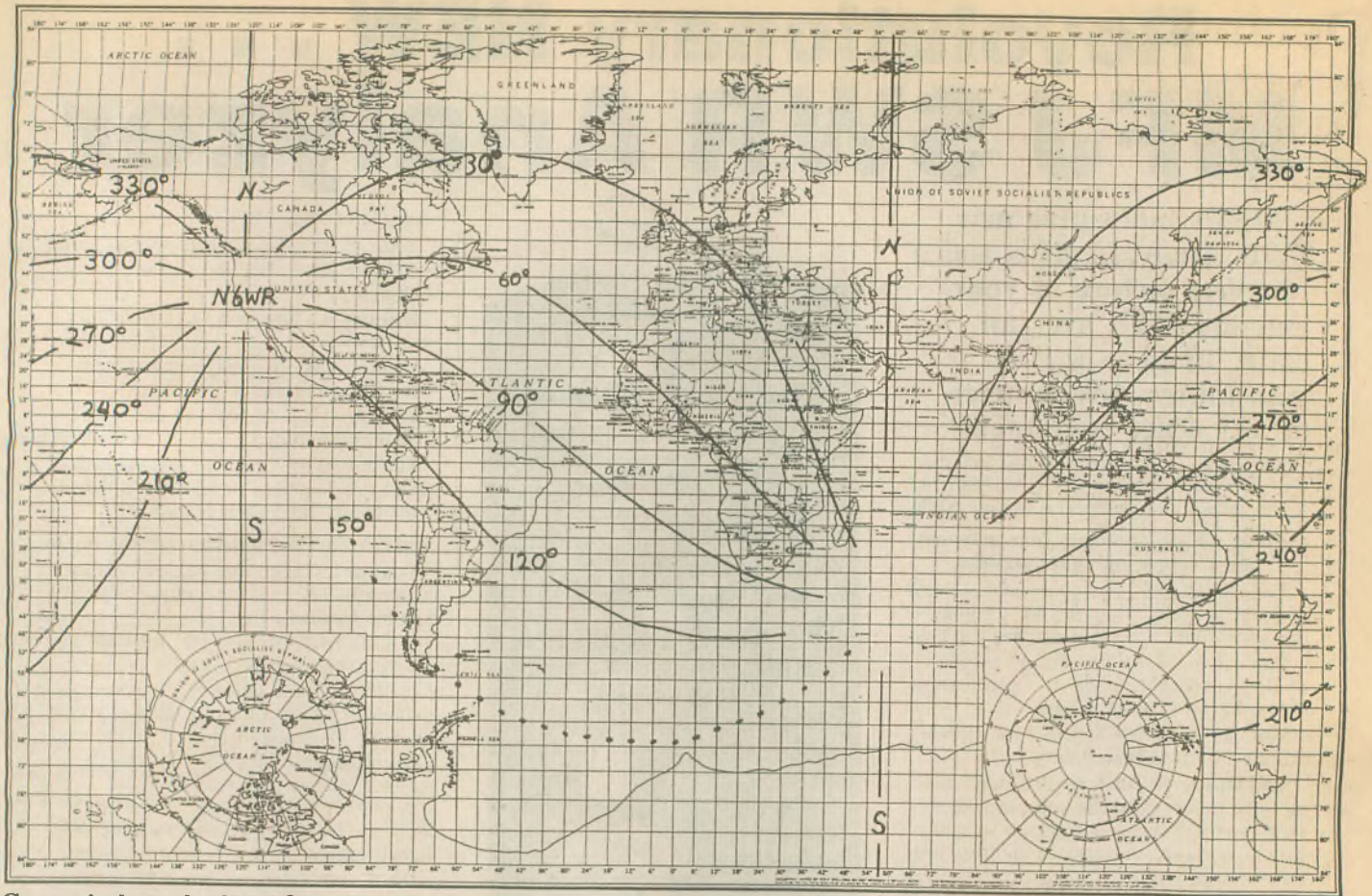

Great circle paths from Sacramento: on a regular map Spain appears almost due east of this QTH, but here we see that it is about midway between 30 and 60 degrees. Had we pointed our beam due east, we would have nabbed South Africa instead.

make it a valid heading. Lines 60 and 70 compute the coordinates of a point one-quarter the world away from your QTH in the direction of the heading you provided in line 40.

The rest of the program computes the mid-longitude positions for every major longitude from 180 degrees west around the world to 16 degrees east. The map we used has longitudes every 15 degrees, so we selected a step value of -15 in line 80. You can change this value to fit whatever map you choose to use.

The great circle plots are presented as decimal degrees with an accuracy of a tenth of a degree (six miles). Negative numbers signify locations in the southern and eastern hemispheres. Write these down, or plot them on your map; the first number is the latitude and the second is the longitude of the plot.

When the program finishes all plots for one heading it jumps back to line 40 and asks for a new heading. Our experience is that headings every 20 or 30 degrees are more than sufficient for this type of great circle map; you can easily interpolate other headings from these. To end the program, simply turn the computer off.

As you can see from our example map, the easterly heading of our SSSS antenna actually had it pointing to South Africa! The heading to HZ land is more like 10 or 15 degrees. No wonder we didn't hear him . . .

If you have a favorite pocket computer program or application you're willing to share, drop us a line at *Worldradio*. □

Decline

(continued from page 3)

nearly a third in a single year (see Figure 1). Things then leveled out to a pattern of moderate growth until the advent of Novice licensing in 1952 when, after a minor two-year decline in the growth rate, we had a one year spurt, which was followed immediately by a continuing decline in the rate of growth. (Notice, only the rate of growth declined. The total number of hams continued to increase.)

Some critics, focusing on isolated annual declines, have for years argued that it was incentive licensing which was the principal cause of the growth problems they claim plague the hobby to this day. Yet, as Figure 2 demonstrates, the decline in our rate of growth actually began in 1947, fully twenty years before it was even seriously discussed in any of the hobby journals. (Interestingly, the only increase in our growth rate during the period of the Vietnam War, 1962 to 1972, occurred the year following the enactment of incentive licensing!)[2] At least one gullible pundit, noting that it was also in 1967 that Scholastic Aptitude Test (SAT) scores began to decline (from 958 in 1967 to a low of 891 in 1980), has even tried to blame that decline on incentive licensing, yet has accorded credit to Amateur Radio for the improvement since 1980! It is far more likely, however, that the decline in amateur growth and in the SAT scores were all part of the general decline in interest in technical things during that turbulent era.

The truth is that Amateur Radio has, by every objective measure, shown amazing growth over the past half century. The best measure of the success of the hobby is what proportion of the total population has shown an interest

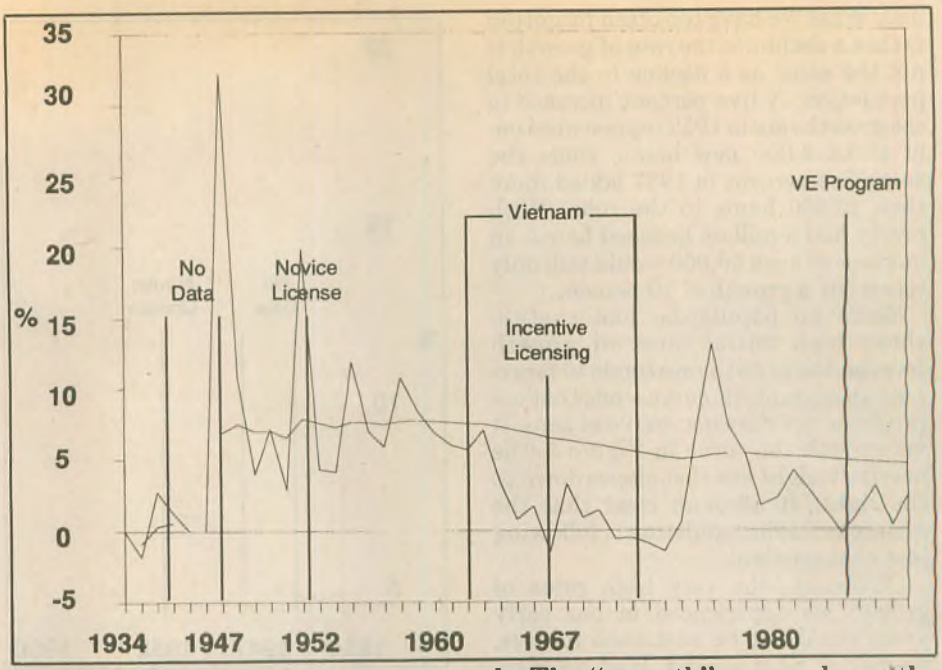

Figure 2. The rate of amateur growth. The "smooth" curve shows the moving average rate of growth over the entire period.

in it. If the hobby grows at a greater rate than does the general population, then its growth is clearly positive. We can argue that we would like to see greater growth (although how we would determine an ideal rate is anybody's guess), but we cannot argue honestly that it is in decline. By 1989, the last year in which the ten-year license does not obscure the real impact of new accessions into the hobby, amateur growth was still nearly twice that of the general population (see Figure 3).

What we are actually seeing in "the declining growth rate" are the inevitable effects of maturation on the amateur population. All successful populations (and the amateur fraternity is no exception) demonstrate a predictable statistical pattern. In the beginning, growth rates tend to be very high because the base population is low. But every incremental increase represents a smaller proportional part of the whole. Thus, when there was only one ham, the addition of a second represented a 100 percent increase, but as the base population got larger, even large numeric increases resulted in lower growth rates. The addition of a third member, for example, provided only a 50 percent increase over the sec-

[2] Interestingly, every change made in the licensing structure—usually to enhance growth—has had the same result. In the year immediately before the change, there is a minor decline in the rate of growth, but for a year following there is a significant increase. If "no code" follows the usual pattern, we will see a one year increase in the growth rate, followed by a return to the usual pattern. Unfortunately, the ten-year license will obscure those effects until at least 1995, because "no code" came into being during a five-year period when no licenses will expire.

ond. What we have too often forgotten is that a decline in the rate of growth is not the same as a decline in the total population. A five percent increase in the growth rate in 1952 represented only about 4,000 new hams, while the same five percent in 1987 added more than 20,000 hams to the rolls! With nearly half a million licensed hams, an increase of even 50,000 would still only represent a growth of 10 percent.

Since no population can sustain those high initial rates of growth forever, the growth rate tends to represent an asymptotic curve—one that approaches but does not arrive at zero. If we smooth the curve in Figure 3 (the nearly straight line that slopes down to the right), it becomes clear that the Amateur Radio population is following just that pattern.

Obviously, the very high rates of growth we experienced in our early years could not be sustained forever, no matter what we did. Had we managed every year to increase our numbers at the nearly 50 percent rate we saw in 1947, we would today have nearly two trillion hams, or more than twice the total population of the earth! As it is, we have more licensed hams than we do private pilots, certified public accountants, surgeons, or even lawyers (and we all know we have far too many of them). Even US population growth has followed exactly the same pattern, declining from growth rates that ran over 100 percent in a year to less than two percent now.

A closely allied and equally false perception is that, because the fraternity isn't taking in enough fresh blood, we're "graying." Yet aging of a growing population is also, in large measure,

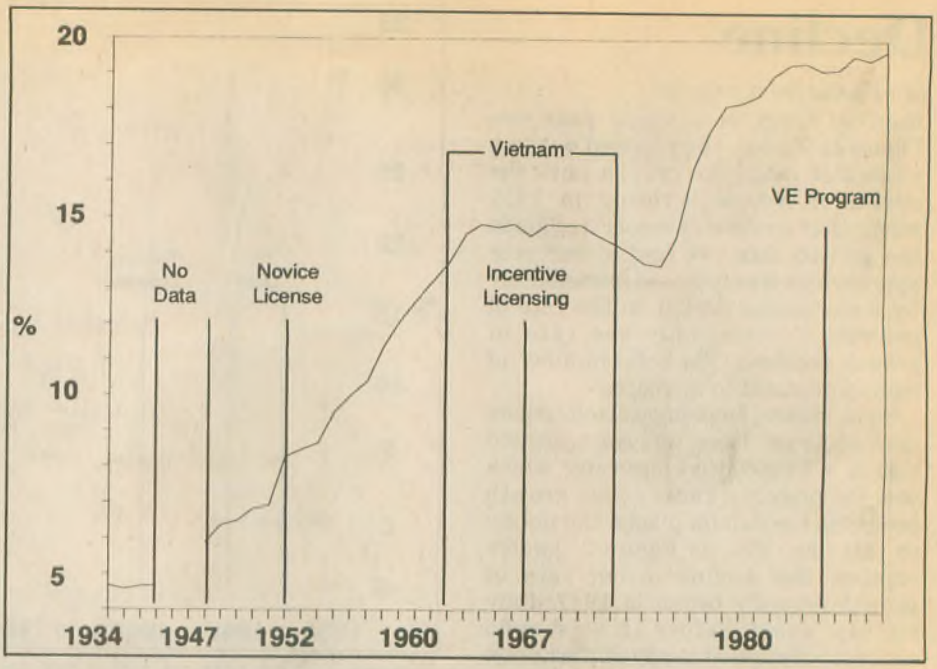

Figure 3. Amateur population as a percentage of the total US population. The scaling factor in this graph is very large, but the important observation to make is that the curve slopes steadily upward. Percentages have been multiplied by 10,000 for ease of reading. The amateur population currently represents 0.0019 percent of the total US population, about 25 percent more than the proportion of the US population who are lawyers. A simpler way to visualize what happened is to note that there was only one ham for every 2,724 Americans in 1934, while by 1989 the ratio had improved to one ham in only 535 Americans!

a statistical artifact. Despite our cloudy memories of yesteryear, the truth is that Amateur Radio was always made up mostly of adults. The very young simply hadn't the wherewithal to get into the hobby. And once in the hobby, even the young grow older. One of the great strengths of Amateur Radio is that you can enjoy the hobby whatever your age, so hams tend to stay with it all their lives. And those lives, as we all know, are being made longer by medical advances.

But even if those things weren't factors, the average age of members of the hobby would still, inevitably, creep upward. The hams who in 1960 were about 30 years old would be about 50 years old in 1980. In 1960, there were about 250,000 hams; in 1980, 400,000. If all 250,000 of the hams in 1960 were only 30 (which would make them 50 in 1980), and all 150,000 of those *new* hams were only 30 years old in 1980, the average age would still have crept up to 42.5 years. Unless we kill every ham when he reaches the age of 50, age creep is inevitable!

Now, none of this is to suggest that we shouldn't continue to try to find ways to help the hobby grow. It does, however, suggest that we should stop playing into the hands of those who lay claim to our spectrum by suggesting—falsely—that we are anything but a robust, growing hobby. Very small groups can gain huge political clout by claiming to be much larger than they really are; huge groups—like Amateur Radio—can *destroy* their critical political support by convincing policymakers that their numbers are declining, and may also drive away prospective enthusiasts who believe any investment in the hobby will be wasted when it dies.

Let's keep working to spread the word about our great hobby, but let's also blow our own horns, both about what we do for the public and about how much we're growing. Otherwise, the founts of doom may soon become the sources of self-fulfilling prophecies.

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Field Day 1991

ARMOND NOBLE, N6WR

This was the 55th running of the summer classic known as Field Day. Sponsored by the ARRL, it is a weekend drill designed to simulate emergency conditions. It is also a lot of fun. A group of radio buffs drawn together for a common task enjoy themselves.

This was the 19th Field Day for the *Worldradio* Staff ARC. Over the many years we've used every possible antenna configuration from mobile whips on the bumpers of cars to 4-element Yagis.

This year we decided to test out a unit which draws some controversy to it: the Maxcom automatic antenna matcher. This one was model number 200D, serial number 31008622.

The manufacturer says to put 50 feet of wire on each side of the unit. Promised is a low SWR on all bands. Critics say most of the power fed to the unit is absorbed in a resistive network. Maxcom admits that there is some power loss but says the amount is small and the convenience offered by the unit offsets the loss.

We put the unit atop a 50-ft. TV popup mast and fed it with 100 feet of coax. Our results follow. Now, in a true test, we would have had another antenna of known quality and would have switched back and forth. We didn't because we also wanted to do Field Day in the normal manner without being slowed down, which would have occurred with constant switchings, comparisons and note taking.

Most single transmitter Field Day stations start off on 10 or 15M. So as not to be met with derisive "Anything works on 10" type comments, we opened up on 40!

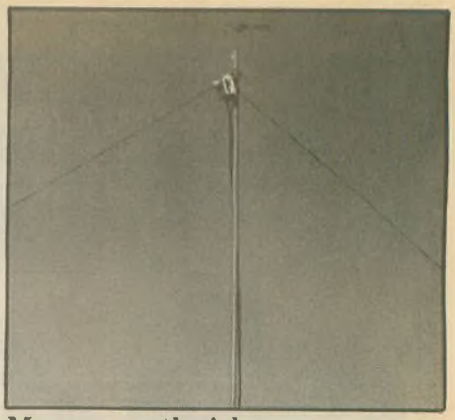
Contacts at 1801Z, 04, 05, 07, 09; running less than 100W, it was quickly obvious that this was not the "dummy load" that critics call it.

Getting settled in, this was a run on SSB 40M: 23, 25, 26, 27, 29, 30, 32, 34, 35, 36, 37, 38, 38, 40, 40, 41, 42. Yes, on two occasions there were two contacts in the same minute. This was accomplished by moving up and down the band answering the CQers.

Let's take a look at a run on 40 CW: 2019Z, 21, 23, 25, 27, 29, 31, 33, 35, 37, 40, 42, 44, 46.

Maxcom says the results are better if the antenna wires are 100 feet on either side of center, but we felt that would be impractical in most applications, so we did not use those lengths.

On 20M SSB there were 24 contacts in one hour (our operator's age is over the speed limit) with KM9J (0537) saying, "Beautiful signal;" NG5M (0539) exclaiming "Booming signal;" and KØLIR (0542) commenting, "Nice signal." Such were their voluntary remarks. We did *not* ask, "How's my signal?"



Maxcom on the job.

40 SSB: 0637Z, 38, 40, 41, 43; Later, on 75 SSB: 0734, 35, 37, 39.

On 40 SSB we worked K1AR, in NH; W1NY, in WMA; and W9AIU, in IL, who said, "Good signal" at 0928Z. NH and WMA are just about as far from Sacramento as you can get in the US.

On 80 CW, runs of 14, 16, 19, 22, 23. And 40, 42, 43, 45. And 09, 11, 13, 15, 16, 18. (Operator part of the original cast, WWII).

Robin Wortley, KC6RUD, logs for Bill Ferrell, WB6CRM, at *Worldradio's* Field Day site.

When you go through the logs afterward and you keep seeing three QSOs in three minute runs, you know that something is working.

On 15 SSB: 0125Z NFL, 26 NNJ, 27 EPA. A CW run of: 09, 11, 13, 15, 16, 18 is a pleasure.

The contact totals were: phone 21 and CW 102. When we were awake and

paying attention we did pretty well.

How was your Field Day? Send in your pictures and story to *Worldradio.*

Conclusion: there were some stations that never answered us. But that, as you know, can happen with any antenna you are using.

On phone there were eight occasions where there were three contacts in three minutes, or better. On CW there were 10 occasions where there were three contacts in six minutes, or better. And, as we've mentioned, we had compliments offered regarding our signal.

The SWRs on each band were minimal or slight. Maxcom's address is 1309 SW 5th Court, Fort Lauderdale, FL 33312. Our test unit has been returned. □

WIGWAG

Amateur Radio is a public service as well as a hobby. Cherokee Mental Health Institute employees who hold ham licenses are Frank Brodale, AG0M; Phil Carlson, WA0EVO; Tom Folkes, W0PDT; Bill Larson, KA0MMW; and Dan Swain, WB0THG.

Most of them are okay. Like Shakespeare's Hamlet, they know a hawk from a handsaw when the wind is southerly. True, they tend to buy expensive radios and talk worldwide to people similarly afflicted.

The lunatic fringe, however, celebrate an annual event called Field Day. With emergency power and makeshift antennas, they set up in unlikely locations and contact as many other stations as possible within a 24-hour period.

In June, a group calling itself WIGWAG (Western Iowa Group Wrecking Amateur Gear) travelled from Cherokee to Clarinda, where it rained four inches in four hours.

They went through three generators, wore themselves to a frazzle, and emerged with a camaraderie heretofore known only to survivors of Auschwitz.

Did they have fun? Yes. Said one, "Thank goodness we don't have to do this again for a whole year." Next year, they may celebrate Field Day at Cherokee MHI if they can convince the superintedent that doing so would not set a bad example for the patients.—*Tom Folkes, W0PDT, from* FYI, *a newsletter for the Mental Health Institute of Cherokee, Iowa* □

The movement of trees creates wind. It is obvious that when leaves and branches are still, no wind is generated. —*Arrowhead RAC, Duluth, MN*

Plan ahead for trouble

DAVID L. WILLIAMS, N3FNW

My experiences with lightning over the years, six hits in the past two years alone, three of them within a minute and a half of each other, prompt me to make the following suggestions: when storms approach, disconnect all hi-tech stuff (ham gear, TV sets, stereo equipment, computers, etc.). This includes all antennas and cables. I installed quick disconnect adapters for the cable TV lines. Disconnect telephone modems attached to your computers; I fried a mother board and a modem a couple years ago. Turn dimmer switches and digital timer switches to the OFF position; these things are appetizers for lightning. I even do this when the house will be unattended for more than a couple hours during the vulnerable season. All of this should take less than five minutes, but if you consider the effort required to replace or repair damaged equipment it is five minutes well spent. Have a lightning arrester installed at the circuit breaker panel or fuse box.

If you have small children, a spouse or pet, they will watch your reaction to the pending situation. If you display panic it will be contagious, so keep cool. Have a prearranged plan including several routes for evacuation, should it become necessary. Avoid using windows or doors that can put you in contact with any wires or cables, including ground and guy wires. Prearrange a safe assembly area away from utility poles and trees, such as a neighbor's front porch. You can also use this plan in case of fire.

When help arrives (fire or police), tell them immediately the status of the occupants, including pets, and their "safe havens." Inform them of any hazardous materials (ammunition, solvents, etc.) stored on the premises and their location. Then let them know where you are staying and get out of the way. — *Delaware Lehigh ARC* □

Icom America, Inc.

Our 20th anniversary Hamvention Special Issue featured profiles of many of our long-time supporters. Icom, though not appearing in that issue, has also been with us through the years.

Icom America, Inc., located in Bellevue, Washington, provides a complete line of communications equipment for the amateur, avionics, commercial and marine industries as well as marine navigational products. World renowned for innovative design and outstanding craftsmanship, Icom strives to build the highest quality products in the world.

A tradition of leadership in the amateur industry has helped Icom achieve developments such as the first micro-size hand-held, the first fiber optic mobile and the use of spectrum analyzers in products such as the commercial grade IC-R9000 receiver and the IC-781 HF transceiver.

Founded in 1954 by Tokuzo Inoue, Icom quickly gained the reputation as a quality Amateur Radio company. An international network of distributors was quickly formed and in 1979 Icom America, Inc. was established in Bellevue, Washington. Icom America, Inc. markets and distributes Icom equipment to all of North America. Icom's long-term commitment to excellence is your advantage, and four US service centers are your key to amateur success! For more information, call us at 206/454-8155. □

SPECIAL EVENTS

Circle City commemoration

The Corona Norco Amateur Radio Club (CNARC) will operate the Barney Oldfield special event station for a 30-hour period from 1600Z September 14 to 2400Z September 15, using the club president's call, W6TKV. This operation commemorates the 78th anniversary of the first automobile race held back on September 9, 1913. Some of the more notable participants were Barney Oldfield and Eddie Rickenbacher.

Today one of Corona's main thoroughfares, Grand Avenue, covers the same ground as the original circular racetrack, which gave birth to the city's nickname "Circle City." In 1913 they went 100 mph; today it's posted at 30 mph.

This special event station will operate on 28.450, 21.350, 14.250, 7.270 MHz and local 2M repeaters. For an outstanding commemorative QSL, send SASE with QSL to CNARC, P.O. Box 1783, Corona, CA 91718. □

Gold Country Jubilee

The Amador County Amateur Radio Club will sponsor special event station W6PI on September 14 and 15 as part of the Amador County Gold Country Jubilee.

SSB and CW frequencies will be in the lower 25 kHz of the General subbands and the Novice/Technician 10M subband. Operating hours will be from 1700Z until 0500Z each day with SSB on the first half hour and CW the second half hour.

For a commemorative QSL send your QSL and an SASE to ACARC, P.O. Box 1094, Pine Grove, CA 95665. □

WVARA Anniversary

The West Valley Amateur Radio Association will be operating a special event station to commemorate the club's 35th anniversary.

W6PIY will be portable from a local park and can be worked on CW: 14055, 21120, 28120; or SSB: 14250, 21350, 28450 from 1600 to 2200 UTC on September 15.

For commemorative certificate, send an SASE to WVARA, P.O. Box 6544, San Jose, CA 95150-6544. □

Labor Day safety

The Tri-City ARC will operate special event station KA1BB from the Waterford, Connecticut I-95 weigh station to promote safe Labor Day holiday auto travel. This event is in conjunction with the seventh annual Stay-awake Coffee Stop offered by BSA Troop 24 of Niantic, Connecticut.

Operation will be from 1700Z August 31 through 2300Z September 2 in the middle of the 80, 40, 20 and 15M General Class phone and CW bands. Talk-in to Coffee Stop on FM 146.52.

QSL with letter size SASE via Tri-City ARC, P.O. Box 686, Groton, CT 06340. For further information, please contact Bob Dargel, KA1BB, 8 Willow Lane, East Lyme, CT 06333; 203/739-8016 or 203/823-2150. □

Choo-Choo Festival

The Chattanooga Choo-Choo Chapter of 10-10 International will operate September 6 through 15 on 28.3 through 28.5 MHz as part of the annual Choo-Choo Festival. This is in conjunction with the Golden Anniversary special train running from New York's Pennsylvania Station to Chattanooga and the 50th anniversary of Glenn Miller's introduction of "Chattanooga Choo-Choo."

Operation with the call NR4R will take place September 14 and 15 from 1300Z to 2400Z from the Pullman Car at the Choo-Choo Terminal. Operation will be in the General and Novice portions of 40, 20, 15 and 10M.

For certificate, send QSL and large SASE to Alice Jenkins, NR4R, One Mitchell Lane, Rossville, GA 30741. □

Septemberfest

The Schaumburg Amateur Radio Club will operate special event station WB9TXO September 1 from 1500 to 2100 UTC at Schaumburg's annual Septemberfest.

Suggested frequencies are 7.291, 14.291, 21.291 and 28.391 MHz.

For special certificate, send QSL to SARC, P.O. Box 68251, Schaumburg, IL 60168-0251. For additional information, contact John Seal, N9EXS, at 708/887-1800, extension 126 (daytime) or 708/830-8727 (evenings). □

Zimmerfest

On September 14 from 1200 until 2200 UTC The American Red Cross Amateur Radio Club of Warsaw, Indiana will sponsor special event station KB9AVT in conjunction with the 1991 Zimmerfest.

Frequencies are 10 kHz up from the bottom of the General sections of 20 and 40M, and 28.450 (±.005), depending on QRM.

Listen for KB9AVT.

For a nice certificate, send your QSL (please include contact number and SASE) to ARC II, c/o John Sparks, KA9OWV, 1516 Maye St., Warsaw, IN 46580. □

James Madison Days

The Hopkins County Amateur Radio Association will operate from 1400Z to 2100Z for the James Madison Days on September 28.

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PC-1A	Phone Patch	Call	TH-26	2m Small HT	Call	TS-140S	HF Mobile Call
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A4S	4 Element Triband Beam		R5	5 Band No Radial Vertical	
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TX-455	21'0"	55 FT	18 SQ. FT	1385
TX-472	23'8"	72 FT	18 SQ. FT	2279
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USS Silversides

The Muskegon Area Amateur Radio Council will operate special event station W8ZHO from 1400Z September 14 until 1700Z September 15, 1991, from aboard the World War II submarine *USS Silversides*, docked in Muskegon, Michigan.

Suggested frequencies are 3.855, 7.255, 14.255, 21.320 and 28.460 MHz, and the W8ZHO repeater (146.34/94) for local contacts.

For certificate, send QSL and 9 × 12 SASE to William Bowman, KB8ARY, 1870 Francis, Muskegon, MI 49442. □

Canadian/American friendship

On September 6, 7 and 8, members of the Oliver Hazard Perry Expeditionary Force will operate from Perry's Victory and International Peace Memorial at Put-In-Bay, Ohio, to commemorate the 178th anniversary of the Battle of Lake Erie.

The celebration of Perry's victory and continuing Canadian/American friendship will be marked by the return of the restored United States brig *Niagara*, Commodore Perry's relief flagship.

KB8BN will commence operations on September 6 at 2100Z. Suggested frequencies are 28.365, 21.365, 14.265 and 3.965 MHz.

For a commemorative certificate, please send a QSL and large 9 × 12 SASE to Don Wills, 30372 Bates Road, Perrysburg, OH 43551-3832. □

Youth club first anniversary

The Gateway to Ham Radio Club will operate NØDN from 1400 to 2400Z on Sunday, September 8 in celebration of their first anniversary. The club is a school club near St. Louis, Missouri, with most of its members in junior high.

Operation will be in the lower 25 kHz of the General 40, 20 and 15M phone bands and the upper 25 kHz of the 10M Novice subband.

For a special QSL card send your QSL and an SASE to: Gateway to Ham Radio Club, NØDN, 10 Ann Av., Valley Park, MO 63088. □

Winesburg Fall Fair

The Clyde Amateur Radio Society will operate station NF8E from 1600 to 0000Z September 14 and from 1600 to 2200Z September 15 from the Winesburg Fall Fair.

Frequencies will be CW—3.720 and 7.125 MHz; and phone—3.890, 7.250 and 28.40 MHz.

For certificate, send large SASE to NF8E, 302 Hamer St., Clyde, Ohio 43410. □

St. Clair River Tunnel

The Lambton County ARC (Sarnia, Ontario) and the Eastern Michigan ARC (Port Huron, Michigan) will operate special event station XO3IG to commemorate the 100th anniversary of the first underwater railroad tunnel between the two countries, the St. Clair River Tunnel.

Operation will be from 1400Z to 2330Z September 19 through September 22, 1991, on the 80, 40, 20, 15, 10 and 2M bands.

QSL to Lambton County ARC, VE3IG, c/o W. Parsons, Box 1001, Petrolia, Ontario N0N1R0. □

Raylrode Daze Festivul

Branchville, South Carolina, the world's oldest railroad junction, will host special event station AD4U as the Edisto Amateur Radio Society celebrates its second annual coverage of the Raylrode Daze Festivul.

AD4U will operate 14.285, 21.375 and 28.400 MHz (±) and area 2M repeaters on Saturday, September 28 from 10 a.m. to 10 p.m. EDST and 1 p.m. to 6 p.m. EDST Sunday, September 29.

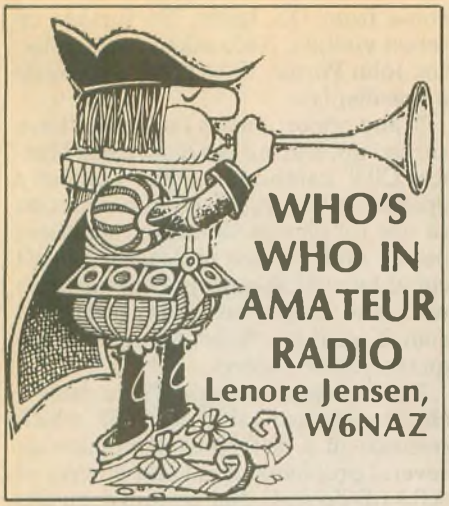
For a distinctive 8½ × 11 certificate, send QSL and SASE to: AD4U, P.O. Box 2045, Orangeburg, SC 29115-2045. □

Buckwheat Festival

Preston County Amateur Radio operators will operate special event station WM8E from 1400Z September 27 to 0200Z September 29 in celebration of the 50th Annual Preston County Buckwheat Festival.

Operation modes will be phone or CW on 40, 20, 15 and 10M. Contact may be made approximately 25 kHz up from the bottom of General phone bands or Novice CW bands.

For certificate, send QSL and SASE to John Wills, KE8NO, 104 Swartz Road, Kingwood, WV 26537. □



WHO'S WHO IN AMATEUR RADIO

Lenore Jensen, W6NAZ

Nate Brightman, K6OSC, continues to energize the operation of W6RO aboard the *Queen Mary*.

The original idea that inspired the popular W6RO aboard the *Queen Mary* in Southern California's Long Beach harbor was that of Nate Brightman, K6OSC. Uncounted millions of ship tour visitors have encountered their first impressions of Amateur Radio at the ship's Wireless Room. This prompted officials of the latest Dayton Hamvention to honor Nate with the Special Achievement Award. Well deserved!

When accepting the plaque, he was quick to point out that W6RO's success was possible only because of the enthusiastic cooperation by the Associated Radio Amateurs of Long Beach and other devoted volunteer operators.

But it always takes an active, energetic leader to get such a project started—as well as continuing to administer it. His persistence has been remarkable. (His XYL and helper of 51 years, Evie, WA6ZTW, says, "Persistence is his middle name!")

In 1967, when Nate first read that the City of Long Beach planned to buy and bring the luxury liner to its beautiful harbor as a tourist attraction, he thought, "How could we of ARALB make Amateur Radio part of the long voyage from England?" (The *Queen* would have to sail around Cape Horn, being too wide for the Panama Canal.)

Nate initiated phone calls, paper work and official permission pleas galore to both countries. Finally, in early 1971, it happened: The ARALB club members supported a project to send Al Lee, W6KQI, as the first American amateur to operate a maritime mobile station licensed by the British General Post Office, using the call GB5QM.

"The enthusiastic response from around the world led me to believe all sorts of people would be fascinated to personally see Amateur Radio in action on the ship," recalls Nate. "Why shouldn't the Wireless Room be visible with real live operators?"

It was easier to imagine than to accomplish! Patience was as essential as persistence. It took several years before the vessel was ready. Finally, he was able to formally present plans to those in charge. Nate visualized rebuilding the Wireless Room to retain the nostalgic spirit of the original, but arranged so that passing tourists would see and hear the intriguing sounds of Amateur Radio activity. "We particularly wanted the operators to be able to answer questions from the public, hoping to attract newcomers into our service, the 'best of all hobbies'."

Finally, in early 1971, the ship was to be moved from her repair berth to the permanent Pier J; Nate and son Howard, K6OSD, were aboard, with dad privileged to give the first CQ with ARALB's call sign, W6RO.

But he was still a long way from suc-

cess. "We hoped that manufacturers would be generous in lending us their most modern equipment," Nate says, "and they were! Over the years we have been privileged to use updated gear from Cushcraft, ICOM, Kenwood, Yaesu, AEA, MFJ and many others."

At long last, in 1979, hard-working members of ARALB installed operating positions with Bill Holder, W6TNB, in charge of equipment. In place were a 4-element beam and a 2M vertical poking up from a "smokestack" (funnel). This required agreeing that the beam could be lowered for the convenience of film crews who shoot movies aboard the liner. Currently, the beam is above the Wireless Room, which is on the (top) sports deck. Also used are 40 and 80M dipoles plus a satellite beam antenna.

In 1979, W6RO had its grand opening; at last, Nate and the others could stand back to see interested visitors stare through the large windows at the operators sending code or carrying on QSOs around the world by microphone, (and eventually) packet or whatever's new. What a neat way to promote our amateur service!

Bill Holder schedules and indoctrinates the station's more than 100 operators, sometimes as many as 160. From the logs, Harry Goldstick, WA6JTM, maintains attendance records; his XYL, Fae, makes certain that operators are always on hand.

It didn't take long for W6RO's frequencies to attract pileups! In response to the need for a QSL committee, Bob Hennesy, WD6AVW, assembled a dozen helpers. Guest operators are sent handsome certificates. On the average, 2,000 licensed visitors sign the guest book each year. Many have come from DX lands. To further interest visitors, Nate asked radio collector John Porter, WA6TNK, to provide a fine display.

Many opportunities for service have turned up. During the disastrous Mexico City earthquake, the company operating the *Queen* gave permission to use its phones to deliver countless health and welfare messages. W6RO could be available during emergencies with the ship's auxiliary power, of course. And one feels safe from earthquakes while aboard.

Time changes things. There came a change of ownership in 1989 which resulted in a difference of opinion on several problems. Nate and officers of ARALB decided that certain demands would put W6RO's license in jeopardy so, with great regret, operation ceased.

Persistent Nate continued negotiations until the happy day in October, 1990, when W6RO was once again put into operation, to the delight of tour visitors. Once more, volunteer hams each are dedicated to operating W6RO four or more hours a month, some coming from 50 miles away but willing to fight Los Angeles traffic to be on time.

The future? Possibly exciting. The Disney Company, which operates the *Queen Mary*/Spruce Goose complex, is considering the development of an "Epcot style" park to be called Disney Sea. The *Queen* would be part of it so even more tourists will be able to see Amateur Radio up close.

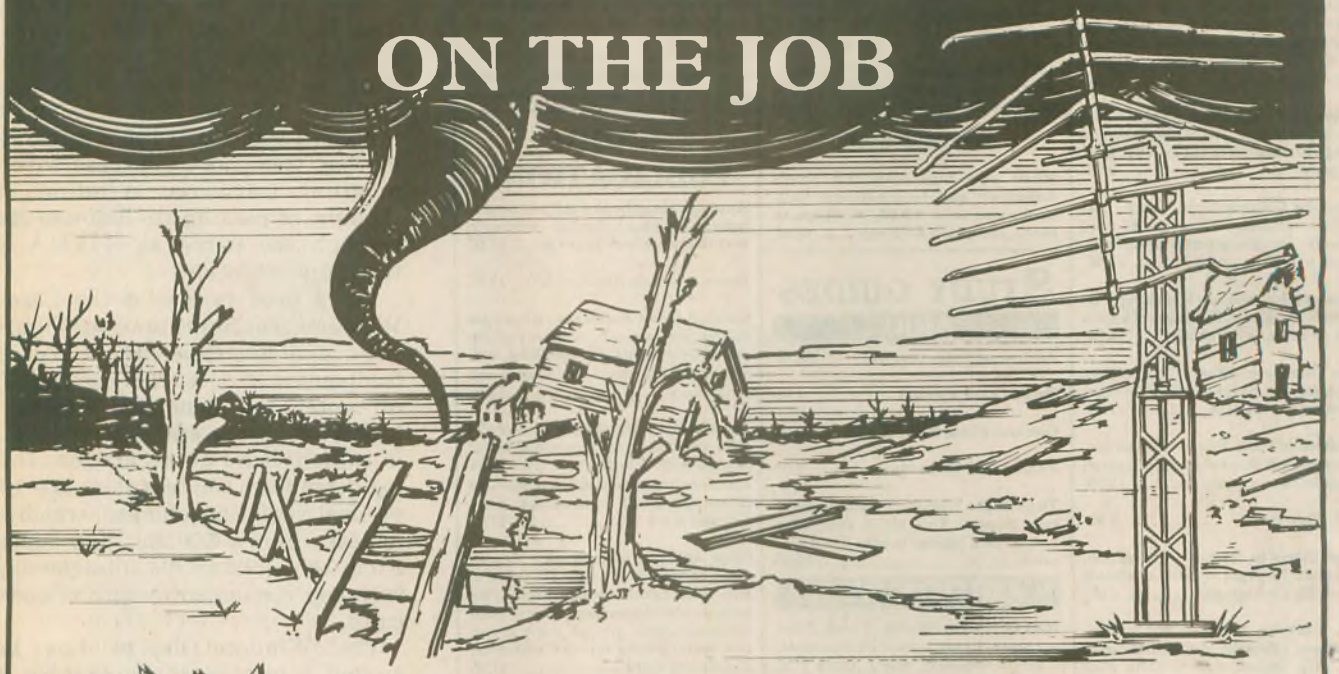
And what brought Nate Brightman to his devotion to Amateur Radio? "Oh, thirty five years ago Howard said he wanted to learn about ham radio; we earned our tickets together. And a couple of years later, Evelyn became WA6ZTW."

Nate's community work hasn't been solely with W6RO. He's diplomatically tried to keep Long Beach officials aware of amateurs' needs and interests, public service work and emergency abilities. He persuaded the city to raise a proposed 30 ft. antenna limit to 60 feet. Since Nate offered Amateur Radio to the 1982 Long Beach Annual Marathon, "it couldn't get along without ham communication." For three years Nate inspired Operation Library with demo ham stations in all the city's libraries, hoping to attract students.

And he involved amateurs with the local Red Cross chapter house, where there's a station. He and other ARALB members, for whom John McAdams, KI6AV, is president, have served on the Disaster Services Committee for 14 years. Nate has also been involved with projects providing for the less fortunate.

Nate Brightman, K6OSC, obviously earned his recent award! □

YOU DON'T WANT YOUR ANTENNA LYING DOWN ON THE JOB



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H10-3	10 m	6.46	1.03	1.79	$190
H6-6	6 m	9.41	1.02	1.91	$200
H144-15H	2 m	13.73	1.04	1.68	$145
H144-15V	2 m	13.73	1.02	1.93	$145
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HAM-PRO ANTENNAS

Product Review

Carolina Windom/2

RICHARD ARLAND, K7YHA

When Jim Thompson, W4THU, of The Radio Works (P.O. Box 6159, Portsmouth, VA 23703) contacted me about doing a review of their new Carolina Windom/2 wire antenna system, I jumped at the chance. Having had tremendous success with the original Carolina Windom, the thought of putting its half-size sister through the paces at K7YHA captured my attention.

For a brief review of the Carolina Windom/2 configuration, see Figure 1; the overall length is only 66 feet. The feedpoint is 25 feet from one end. This off-center fed condition makes for higher efficiency and better radiation in a multi-band configuration. Hanging down from the feedpoint is a 10 ft. vertical radiating element which terminates into a 50 ohm line isolator. From the isolator it's into the shack with any convenient length of coaxial cable.

The Windom design has been around a long time. In essence, the feedpoint is off center and causes a huge imbalance of antenna currents in the antenna radiating elements. Under these conditions, the coaxial feedline will also radiate. The coaxial transformer at the feedpoint of the Carolina Windom/2 enhances this unbalanced antenna current situation, further promoting feedline radiation. The coax used to feed the Windom is now radiating, providing a vertical component to the RF energy emitted from the antenna.

The Line Isolator™ was developed by The Radio Works and serves a dual purpose. First, it determines exactly how much of the feedline will be radiating. And second, it acts like an RF choke to keep the RF radiation to a minimum on the coaxial cable entering the shack, reducing stray RF and shock hazard.

Horizontal radiation is conventional from the legs of the Windom. As frequency increases more lobes are developed along the horizontal wire and the radiation angle decreases. The combination of the vertical radiation (inherently low in take-off angle) coupled with the multi-lobed horizontal radiation, produces an antenna pattern that is very well suited for DXing.

It is the unique combination of vertical and horizontal radiation from the antenna that accounts for the Carolina Windom/2's phenomenal performance on 40 through 10M. The idea of combining vertical and horizontal radia-

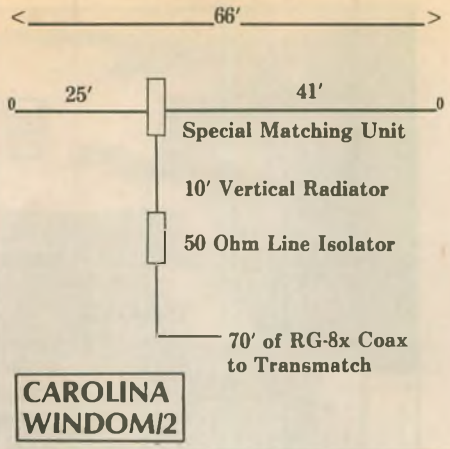
tors into one antenna is not a new one. The Radio Works accomplished this several years ago in their original version of the 135 ft. Carolina Windom. This antenna was tested extensively at K7YHA during 1988 and '89, using QRP output levels, with unbelievable results!

Once the "little brown truck" dropped off the package from The Radio Works, inventory was immediately taken and the antenna assembled. Since the support system at the prior QTH was not available, one end of the Windom was secured to the end of the house (approximately 30 feet above ground level) and the other end was tied to the chain link fence, leaving the low end about nine feet off of the ground. Not an ideal setup, but, in the immortal words of Bill Rankin, G5CSR, "You gotta take a few hits in a big operation!" A transmatch is highly recommended to ensure optimum performance and bandwidth.

After initial tests using the tuner preset with the Palomar RX Noise bridge, the HW-9 was hooked up and we went hunting on the low end of 20M. Twenty was chosen as the first experimental band since it is *the* major DX band and my 2-element beam was available for immediate comparison. Initial tests were somewhat surprising. Mid-afternoon DX was coming in from Europe and Africa. Listening on both antennas yielded some unpredictable results. In about 80 percent of the cases, the DX stations were stronger on the Carolina Windom/2 than on the beam! Moving the beam around did not significantly improve the signals. The lackluster performance by the beam should not be construed to mean that the beam does not work well on 20M. Since the beam is a short, close-spaced design, 20M operation is a compromise at best.

Further testing of the Carolina Windom/2 netted some very good DX contacts on 20, 15 and 10M. Receive signal levels compared to the 2-element beam yielded mixed performance. On 15 and 10M, the beam tended to outperform the Windom most of the time, owing to the increased efficiency of the beam on these bands. However, the ability to have an omnidirectional wire antenna with good gain and low angle of radiation was advantageous on numerous occasions when the bands were open and signal levels were high. In short, the Carolina Windom/2 is a good DX-getter on the high bands.

Forty-meter performance was very good. Compared to the end-fed sloper that I had been using, the Windom consistently netted higher S-meter readings. Two-way QRP contacts were routinely accomplished on 40M using the Windom. During the QRP ARCI Fall QSO Party, 40M was my prime band of operation and the Carolina Windom/2 performed extremely well, allowing me to amass 230,000 points during the contest.



Specifications

Freq coverage:	40 through 10M
Gain:	as much as 10 dBd*
Radiator length:	horizontal—66' vertical—10'
Polarization:	both vertical and horizontal components
Feed line:	50 ohm coaxial cable
Matching method:	dedicated matching unit + transmatch
Transmatch needed:	yes on all bands
SWR:	Low, adj. with/transmatch
Power rating:	1500W
Recommended HT:	>30'—usable at 25'
Radials?	not required

Figure 1

Eighty-meter performance was dismal. This antenna was not designed to work efficiently on 80M. However with a tuner, all portions of 75 and 80M were accessible. Efficiency was poor, at best. During the QRP contest I compared the 80M performance of the Windom to the sloper and, as predicted, the sloper worked circles around the Windom. No surprises here.

Jim Hand makes these antennas in the Portsmouth, Virginia, facility. Parts, quality and workmanship are up to his usual excellent standards. There is nothing magic about this or any of Jim's antennas. Just good, sound antenna theory coupled with high quality parts and excellent quality control. The end result is an outstanding product that will provide trouble-free operation. And, it's made in America!

Bottom line on the Radio Works Carolina Windom/2 antenna system: outstanding DX performer; excellent value for money; easy to erect and keep working; and high quality construction. If you need a DX antenna and can't erect a beam (for whatever reason) this is the antenna for you. The Carolina Windom/2 provides multi-band operation on 40 through 10M (it will tune 30 and 17M also with good results) in a small package that can be put up in all but the most restrictive QTH.

For more information on this antenna and the full range of The Radio Works product line, drop a line to Jim Thompson, W4THU, and get his latest catalog. Tell Jim you read about it in *Worldradio.* □

Morton Schwartz, N4ETT

STATION APPEARANCE

Send **Worldradio** *a picture of your shack and the staff will choose a winner to receive a free one-year subscription! Stations will be judged by neatness (wires tucked away, etc.) and accessibility of equipment. Monetary value of equipment is not a consideration.*

Winners will also receive a top quality, Laserjet-printed copy of the DXCC and WAS BeamHeadings list (a $15.95 value) compliments of Jack Hurray, W8JBU.

The entire station fits neatly inside this desktop cabinet.

This month's winner, N4ETT, shows off his cabinet-enclosed station, which is situated in his dining room.

To create a clean, enclosed aesthetic station, Morton added the hutch which is fastened to the desk; it sits three inches beyond the back of the desk, giving him extra desktop space in front. The bifold doors close in the equipment when he is not operating.

On the top left shelf is a Kenwood SP 230 external speaker, and to the right of that he now has a Pakratt 232 interface. On the middle shelf, he has a TM 2550 Kenwood transceiver and an MFJ station clock.

On the lower left shelf is a Kenwood TS 940S HF transceiver and a Shure 444D mike.

Top shelf to the right is a Samsung CD-1543M1 color monitor.

The lower left shelf holds a BTI IBM Clone computer.

Not seen, but sitting low to the right, is a Panasonic KX-P1180 printer.

The center kneehole area has two shelves, on one of which sits a 20 amp Valor power supply.

Right under the desktop in the kneehole area is a pullout desk shelf.

Also shown is the 7-band Spider mobile antenna which is clamped to the railing on his 21st floor balcony. □

Morton finds highrise operating easy with the 7-band Spider.

Amateur "Hi"

Ever had a funny or strange experience with Amateur Radio, either on or off the air? If so, type it up (or print neatly) and send it to us for consideration in our monthly AMATEUR "HI" contest. You could win a free year's subscription to **Worldradio***!*

This month's winner is Dr. M.J. Billings, W2BIV, of Hollywood, FL.

A few months ago I had a contact with OH4NL in Helsinki, Finland. We exchanged the customary information and names. His name was Alpo. I mentioned that this was the name of a dog food in the US I received the following letter:

"Dear OT, Doc,

Thanks for the nice QSO of the 7th of July. It is true that human beings with open eyes and ears can every day learn something. The new thing from that date was your information that my name, Alpo, means dog food in USA. In enclosed photo you see me with our dog which we had 13½ years and which never showed any intention for eating me. But she lived in Finland, fortunately for me . . .—73, Alpo, OH4NL (OH2NL)." □

ESTABLISH A HAM TESTING CENTER IN YOUR AREA

As of 1984, all ham radio license testing is handled by the amateur radio community itself. Teams of three Extra Class volunteer examiners (VE's) can now conduct all ham license upgrade examinations.

W5YI-VEC, the initial national VE Coordinator approved by the FCC, oversees the largest alternative (to the ARRL) testing program in the U.S. *You can be a part of it* by following the simple testing instructions provided.

Administering Technician through Extra Class examinations is no harder than administering Novice examinations – which VE's have done for decades. We offer . . . fastest VE accreditation, complete instructions, immediate testing . . . with testing fees (expense reimbursement) shared with the VE team.

Send an SASE today for a VE application if you are an Extra Class amateur and serious about conducting periodic amateur radio examination sessions in your area so that others may upgrade.

HAM IT UP!

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Let's get Amateur Radio growing again!

RFI in the early days

LOUIS R. HUBER, W7UU

Interference problems have beset Amateur Radio from the very beginning, but they were much different in the early days. The only practical way to solve them was to stay off the air, and that solution usually was followed when amateurs interfered with government services. Radio inspectors (RIs), who in those early days worked for the US Department of Commerce, had authority to impose silent periods for hams who interfered, for example, with Navy ship communications. Problems of this sort occurred rather often on the Eastern seaboard. Inland, except for the Great Lakes area, such problems did not exist; hams interfered with each other, of course, but that was their problem and they were expected to solve it among themselves. The solution usually was for the ham with the loudest signal to go ahead; those with weak signals stood by.

The above scenario existed from the beginning of ham radio (about 1910) until the early 1920s. Some explanation is due here. During that period there was only one kind of signal in ham radio: spark. Have you ever heard a spark signal? Probably not, so let me try to describe it.

All spark signals were broad—far broader than any signals heard today. Indeed, if a 1920s-type ham spark signal were to come on the air today you would think it must be someone keying a power leak. But it didn't sound that way in the early 1920s. Hams then had non-oscillating receivers —usually a loose coupler (one smaller Quaker Oats container sliding into and out of a larger Quaker Oats container, unless you could afford to buy a factory-made loose coupler from Montgomery, Ward & Co.) with a crystal detector.

Later came vacuum tubes and Maj. Edwin Armstrong's famous regenerative circuit, which also was non-oscillating up to a point. The trick was to make the receiver *almost* oscillate, in which state it amplified the incoming signal. It was done with a variometer, or coil in two parts, one rotating inside the other. Connected in the vacuum-tube plate lead, the variometer smoothly led the receiver into and out of oscillation as the inner half was rotated.

There was one small redeeming feature in sparks: they sounded good! Especially those with rotary gaps: indeed, I think the melodious sound was the main reason for having a rotary gap. You could vary the gap's rotating speed with a rheostat, and when it was just above or just below synchronism with the 60-cycle AC power supply a pleasing tremolo resulted, somewhat mindful of a pipe organ. I remember seeing in a magazine a poem entitled "My Rotary" which was patterned after the hymn "My Rosary" and could be sung to that tune.

Another element contributing to ham interference problems was a lack of knowledge of just what was going on. No ham that I knew had a frequency meter (which would have been called a "wavemeter" then, because nobody spoke of frequencies until about the 1930s). You put up your antenna (called an "aerial" then) in whatever space was available without any concern for length or resonance. Hams were supposed to stay at or below 200M anyhow. And, since there was nothing between 200 and 600M (the latter being the nearest important assigned wavelength in those days) no ham was much concerned about the danger of getting *above* 200M.

In the 1920s the coming of the 3-element vacuum tube enabled hams to use continous wave (CW) transmission. The big advantage of CW was that it concentrated the radiated energy on just one wavelength instead of spreading it broadly as spark did. There were some hardshell lovers of spark who refused to acknowledge this; but, in the main, hams took to CW in a big way, and sparks began to disappear, along with spark-caused QRM. (Phone had not yet come to ham radio; it brought more interference problems, but none to compare with those of spark.)

But before it did, another problem appeared: BCLs (broadcast listeners). As spark was phasing out, broadcast radio was coming in. I was a part of that problem, with the half-kilowatt rotary-gap spark transmitter I had bought (used, for $25). With that kind of a rock crusher, broadcast listening was impossible in the small Iowa town where I lived. I was quite unpopular with the small but growing broadcast listening public.

I was especially unpopular with the proprietor of the local electrical store. He had added radios to his wares and, when his customers tried to tune in Amos-n-Andy and got nothing but me, they complained to the dealer. He was at his wits' end, until he had a bright idea one evening.

Our telephone rang, and the call was for me. A gruff voice said: "This is the mayor. If you don't shut down that infernal noise maker that is bothering so many people, I'll have your electricity shut off."

The electric utility in our town was municipally owned and, of course, the mayor was the head of it. He probably could, indeed, have had my electricity shut off.

But I hesitated. *Was* that the mayor? I knew the mayor slightly—his daughter was in my grade in high school—and my telephone caller didn't sound quite right. Another thing: I had obtained my ham license only a few weeks before that, and of course I was full of knowledge about radio regulations, including the fact that mayors had no control over any kind of radio operation.

So I telephoned the real mayor. "Mr. Dallas," I said, "this is Louis Huber and I just received a telephone call from somebody who said he was the mayor, and that he would have our electricity shut off if I don't stop using my Amateur Radio transmitter. Did you call me?"

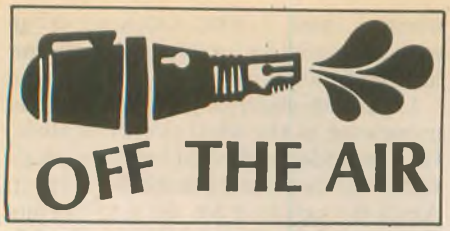
"Why, no," said the real mayor, "I did not call you."

I thanked him, hung up the phone, went upstairs to my ham shack, turned on my half-kilowatt sod buster and called CQ, thus notifying the impostor that his ruse had failed. (Fortunately the mayor had not yet bought a broadcast radio.)

How far this skirmish between me and the electrical-store proprietor might have gone I don't know. Shortly thereafter I managed to build a CW transmitter, and I retired the half-kilowatt spark. No more busting up Amos-n-Andy when I went on the air.

CW worked better, too: now I could reach the East Coast rather than just the next state. But better yet, the electrical store proprietor had no more cause for complaint. I was walking past his store a few days later; he saw me through the window and waved. I waved back. Peace and harmony again prevailed. Thanks, CW. □

It ain't braggin' if you really done it. — *Dizzy Dean*



Field Day license limits

A concerned fellow ham has brought Mr. Earl Mead's WB6LFD, letter (July issue) to my attention. Mr. Mead cites many FCC references in expressing his concerns about hams operating beyond their license limits at events like Field Day. However, he misses the one FCC rule that can cover the situation—Part 97.79 on control operator requirements.

In the *FCC Rule Book*, published by the ARRL, the very question of operating privileges and Field Day operation is addressed (section 7-5). In summary, it says: "Any person, amateur or non-amateur, may participate in Amateur Radio communications as a third party." For example, "A General Class licensee may participate as a third party in the Advanced portion of the band provided an Advanced or Extra Class control operator is present to supervise the operation . . . The participant, although an amateur, is a third party, not a control operator. The fact that he or she is a General Class licensee is irrelevant in this case."

The question remains as to the role of the person acting as control operator in a situation like this. Must he flip the switches? The same book addresses this in section 5-4, asking the question, "How closely must the control operator control?"

It answers with the following: "Although there is no specific rule about how close the control operator must be to the transmitter's controls, he or she must be 'present at a control point.' While it would be okay for the third party to press the PTT switch on the mike, the control op should make all the operating adjustments to the transmitter."

As a result, the situations about which Mr. Mead expresses concerns may or may not have been violations of the FCC rules. It all depends on whether or not a higher class licensee was present *and* was acting as a control operator, "supervising" the operator who was beyond his own license limits. (Certainly, the simple fact that a Field Day operation is using an Extra Class call sign does not permit operation anywhere on the ham bands, and this should be explained to the operators!)

Perhaps from now on, instead of leaving Field Day early, Mr. Mead, with his Extra Class privileges, could act as a control op, supervising a Novie or Tech and showing him or her the benefits of incentive licensing.

John R. MEYER, NZ9Z
Kellnersville, WI □

From an Extra without a microphone

Little Johnny, age five, was being questioned by his mother: "Johnny, why don't you ride your tricycle any more?"

The reply came quickly: "Oh mommy, I ride my big scooter now . . . I only rode my tricycle when I was a little kid!"

The point: most people enjoy challenge as they grow in their abilities on their way through life. In Amateur Radio, CW is that challenge.

More than any technical feat, more than any coveted voice "contact," CW challenges the operator to meet and talk on many levels of intelligence through the medium of a language devoid of vocal sounds. Impersonal? I don't think so. Any consistent CW operator can exhibit with warm enthusiasm his or her latest four-page letter, beautifully hand-written in painfully correct English—the result of a friendly contact in Japan, or Belgium, or just about anywhere in the world. The photo enclosed with the letter gives a clue as to the amateur's enthusiasm for CW—just look at the certificates on his wall! All of this in addition to coveted QSLs and exciting foreign stamps. CW impersonal? No way!

Yes, CW *is* a different language, and as such takes effort to learn. What a wonderful feeling it is to not only exhibit some technical and legal knowledge in order to start one's interest in Amateur Radio . . . but also to learn a brand-new language as well—CW!

JEAN B. GALLINGER, W7JAW
Kingman, AZ □

Cheap station

To those who think a ham station must cost a bunch of bucks and have space for elaborate antennas:

If you don't like $500 or $1,000 stations, how about building one that costs $9, or $13 with improvements? You can do it like I did, and with only a Technician license, you'd be far ahead of where I started.

In 1982 I saw a Hallicrafters S-38 receiver with a $5 price tag in a Salvation Army store window. It looked abused and the knobs didn't match but on a whim I bought it. For an antenna I ran a scrap of wire from the S-38 to the aluminum frame of the bedroom window. Surprisingly, it worked.

I listened to foreign broadcasts and hams, read some *QST*s in the library and decided to get a Novice license. I studied, copied CW from W1AW and hams on the S-38 and was licensed in May '83. Total cost so far was $5.40 including sales tax. I think the license was free.

For a transmitter I bought a '40s Packard Bell five-tube broadcast receiver at a garage sale for 50¢. It worked but the plastic case was broken. I discarded the case and stripped the chassis of everything but the tubes and sockets, tuning cap and volume control (for the off-on switch). I built an 80M crystal oscillator around the 50L6 audio amplifier, using wire from the loop antenna to wind an RF coil on a T.P. roll tube. At an electronics second hand store I got a box of crystals for $1, several of which worked on 80 and 40M. It took two weeks to get it working.

The transmitter wouldn't load into one window frame so I connected the window with two more window frames in series. This required scrap wire and a 98¢ package of alligator clips from Radio Shack. By now I was up to about $8.

My telegraph key was made from basement junk: scrap plywood, screws and nuts, and half of a hacksaw blade. The tuning indicator was a neon bulb (from a broken hair curler) and a loop of wire taped to the antenna lead-in. Odd hardware cost another buck.

Later, in a moment of fiscal recklessness, I bought 100 feet of wire for $3, made some insulators from a plastic 7-UP jug and strung an antenna between two trees. Some other tweaking and improvements brought the total cost to about $13.

With this rig I worked about 26 states and eight countries. I haven't the foggiest idea what the SWR was, or any of the other numbers that hams concern themselves about. Power output? Hell, I don't know, maybe about 2-3W. No one argued when I said I was QRP!

Now, before you run out and buy an S-38 you should know it's a very old five-tube set and its selectivity, sensitivity, S/N ratio and any other measure you can think of are all bad. My station was an absolute minimum and it looked UGLY. I could have afforded better, but it seemed in keeping with the S-38 to scrounge and improvise. Each contact provided great satisfaction.

Since then I've upgraded the station several times and now have a modern solid state station with Yagis on a tower and lots of other neat stuff. I thoroughly enjoy my present station but I don't regret starting as I did. So, a station doesn't have to be expensive, or work perfectly, or look good; it just has to work. Try it. 73 and good luck.

PETE PETERSEN, WY7Z
Bellevue, WA □

Cables needed

I have a bit of a problem. In 1985 I purchased a Metsat 1500 computer-based weather satellite video scan converter with CoCo. I purchased the unit from Metsat Products, Inc. Box 142 Mason, MI 48858.

This company does not exist anymore! I tried several times to contact Dr. Ralph Taggart, WB8DQT, in Mason, Michigan with no luck; he invented the system I own (see *73*, December 1984). Also I tried to contact Clayton W. Abrams, K6AEP, in San Jose, California, co-author of the article above, but there has still been no reply.

My problem is quite simple. I need two cables. The first cable has a multiconductor DIN plug (grey) for the serial socket on the CoCo. The other end has a video phono plug for the 1500. The second cable is a black DIN plug which plugs into R Joy socket. This too has a video phono plug for the 1500.

When I received my system, I lost the cables! I do not have the much needed schematics on the 1500, and without the old cables I have no way of knowing which pin connections go where. I don't want to damage the system in any way, and being thousands of miles from a Radio Shack store makes it a bigger problem.

So, maybe someone has the same system and can help.

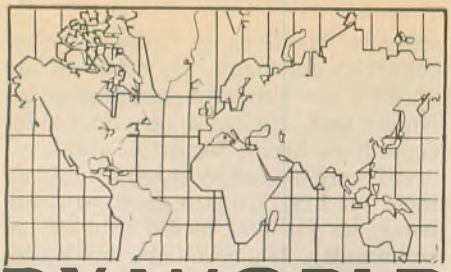
WILLIAM RIZZO
Pago Pago, Am. Samoa □

Listener

My name is Clarence Rupp. I am a caseworker for a 47-year-old gentleman with a brain tumor which, though not fatal, confines him to a chair in his house. His only hobby is shortwave. He has a Philips D-2999, and I strung 30 feet of copper wire on his roof for an antenna. He lives to listen to other countries and hams. He reads all the books I get him, and just passed his Novice test. He has a very limited income from Social Security Disability.

If I were a wealthy man, I would do more for him. He is a good guy and, before he got sick, he did a lot for his community. If anyone has any equipment such as antennas, transceivers, etc., that they'd like to donate, he would be very thankful. Donations may be sent in care of the Miller family, 17233 N. 24th Lane, Phoenix, AZ 85023 or call 602/375-9801. 73 and God bless!

FR. CLARENCE RUPP
Phoenix, AZ □



DX WORLD

John F.W. Minke III, N6JM
6230 Rio Bonito Drive Carmichael, CA 95608

Activities Calendar

07-08 Sept. JARL All Asian DX Contest (SSB)
07-08 Sept. Bulgarian DX Contest
14-15 Sept. DARC European DX Contest (SSB)
28-29 Sept. *CQ* World Wide DX Contest (RTTY)

Refer to your favorite contest section in *QST* or *CQ* for details on the above contest activities.

W100N

The following DXers qualified for *Worldradio's* Worked 100 Nations Award on the date indicated:

404) Peter K. Hittle, NØJTE; June 13, 1991
405) Michael Dieckmann, KAØIAR; June 13, 1991
406) Charles Talsma, W4PNC; June 13, 1991

As a note of interest, W4PNC made all his contacts during the period 1978 through 1987 with the bulk of the contacts from the early 1980s.

DXCC progress update

The weekly progress reports from the DXCC desk continue. These figures have been continued from our last issue, with new applications and endorsements combined:

Week ending	R	P	B
June 2, 1991	44	218	1,864
June 9, 1991	47	141	1,770
June 16, 1991	63	567	1,266

The DX community has also been helping to process the backlog, such as the North Jersey DX Association on one Saturday in June. Thanks to the NJDXA for their efforts.

Cuba (CO)

Not much to report on this one, mainly because many do not consider Cuba to be DX. But, there always seems to be a small pileup whenever one comes on. DXers in Europe reported working CO2MA on 7.002 MHz at 0130 UTC and CO5DD on 14.194 MHz at 0700 UTC.

Bolivia (CP)

We found at least four stations active from Bolivia recently:

CP1WG	7.008 MHz	2315 UTC
CP5GQ	14.016 MHz	2315 UTC
CP6UA	7.090 MHz	2345 UTC
CP6UH	7.009 MHz	0900 UTC

Uruguay (CX)

Another South American country that is sometimes hard to find is Uruguay. These three calls were found in the DX bulletins:

CX2CS	21.283 MHz	2000 UTC
CX3BBX	21.013 MHz	2030 UTC
CX7DV	28.520 MHz	0100 UTC

Djibouti (J28)

According to the *DX News Sheet*, Michel, J28DN, has returned to France after nine years of operating in Djibouti, where he accumulated some 40,000 contacts.

Faeroe Islands (OY)

Tom, LA4NL, and Hans, LA1SP, were to have operated from these islands the early part of August. OY9JD shows occasionally on the bands. Not too long ago he was reported on 6M near 50.120 MHz around 1930 UTC, working Europeans.

South Sandwich Islands (VP8)

QRZ DX reports that VP8SGB may become a regular visitor with the Family Hour DX Net on Tuesdays at 1000 UTC.

IOTA

Here is some more reported activity of islands that have been chased by the island hunters recently:

AS-023	Amami Archipelago	JQ3UXM/6
	14.020 MHz	1300 UTC
AS-076	Shikoku Island	JA5APU
	21.018 MHz	0100 UTC
EU-006	Inisheer Island	EJØA
	14.258 MHz	2345 UTC
EU-007	Blasket Island	EJ3GZ
	14.255 MHz	1930 UTC
EU-049	Lesbos Island	SV8QG
	14.260 MHz	0430 UTC
EU-087	Gulf of Bothnia Islands	SK3IK/3
	14.263 MHz	0500 UTC
EU-101	Replot Island	OH6AA
	14.259 MHz	1515 UTC
EU-121	Aranmore Island	EJ6GS
	14.208 MHz	1130 UTC
EU-127	Helgoland	DLØDWD
	14.256 MHz	0930 UTC
EU-129	Usedom Island	SP6TPM/P
	14.260 MHz	1200 UTC
EU-138	Hasslo Island	SM6CAS/7
	7.097 MHz	2145 UTC
EU-144	Dino Island	ID8/I8KNT
	14.260 MHz	0500 UTC
NA-019	Kodiak Island	NL7UT
	21.039 MHz	2215 UTC
NA-067	Ocracoke Island	AB4TL
	14.247 MHz	0600 UTC
NA-068	Miscou Island	VE1MQ/P
	14.262 MHz	0430 UTC
NA-075	Saltspring Island	VE7FEI
	14.260 MHz	0500 UTC
OC-146	Sulawesi Island	YB8RB
	21.260 MHz	1700 UTC
OC-148	Timor Island	YC9RN
	21.260 MHz	1600 UTC
OC-150	Lombok Island	YC9KP
	21.260 MHz	1600 UTC

Many of the above are part of island groups, such as Saltspring Island, which is one of the many islands in the Gulf Islands between Vancouver Island and the mainland.

The Indonesian stations listed above are sometimes on together, as they were found on a Sunday in mid-June.

Check your Field Day logs for a W7FR, operated by the Western Washington DX Club from Fidalgo Island. This one counts for NA-065.

John, AB4TL, gives out contacts from Ocracoke Island (NA-067) now and then. For faster QSL service you can reach him at P.O. Box 450, Ocracoke, NC 27960. Be sure to include an SASE with your request.

Our new IOTA Directory arrived. In our July column we stated that this directory may be obtained from *The DX Bulletin*. This is incorrect and at this writing arrangements haven't been made for Chod to handle it. Our apologies for any inconveniences we may have caused you.

If you are involved with the IOTA

program you will need a new directory. Each directory has a registration number which you will need when applying for awards. There have been many changes in island status, such as Japan where the main islands of Hokkaido, Honshu, Shikoku and Kyushu are now separate IOTA groups.

You may object to the cost or need of the directory. However, RSGB says that the IOTA program must be self-supporting without any additional expenses charged to RSGB. If the DX-CC program were to be run the same way the charges would be out of sight to many of us.

IOTA Honor roll

No, this isn't a DXCC honor roll, but rather the standings of the deserving DXers who hunt the islands. The list is too large to print here, so we have included only the North Americans. The numbers following the calls are the total different IOTA islands worked.

VE3XN-495
W9DWQ—491
W4BAA—477
W9DC—469
VE7IG—468
K2VV—433
KE4I—432
K9PPY—423
K2EYJ—403
KE8HS—402
KD7SO—389
K5MK—317
N6BOI—305
WT2O—301
K5FNR-288
K6DT—287
N3CWP-275
VE3JGC—266
KN1I—254
KM4RX—245
N6JM—236
VE6BW—231
W4BKP—219
WA4DAN—214
WF1N—213
W4UG—211
WØGLG—202
KZ4V—201
NN2C—177
KD6GC—162
WQ5Y—156
NJ1T—140
WA2YEX—137
KA1NCN—134
N5DEE—132
VE7EW—131
WA4WTG—127
NT1I—124
KA1HBV—123
NM7M—121
KB4HBH—120
K3ZPG—119

KE6KT—119	N3HHE—109
AA6ZG—118	KD9HT—109
N6PYN—118	KA1DIG—107
N4SZE—117	VY2YT—106
KY1W—112	KD9RD—105
W1KKG—111	VE7EOA—104
WB4UHN—111	N6IBP-104
KI6PG—111	KA1FOW—103
AL7HS—110	W7AWA—101

Actually, everyone who obtains the basic IOTA certificate ends up on the IOTA honor roll. With the recent increase in interest, most likely there will be a cutoff point established for honor roll standing. As of this writing, over 434 DXers have qualified for the basic IOTA certificate. Why not join in the fun? Many thanks to Henry Lewis, G3GIQ, and *DX News Sheet* for this information.

DLD Awards

One outstanding awards program which does not receive much recognition is Germany's DLD Award. When inspecting those DL cards, have you ever wondered what those DOK numbers meant? Basically, it is just a district area locater. The object is to confirm as many DOK numbers as possible. The basic award is for 100 DOKs. The next step is to work 200 of them.

QSL cards are required and must be submitted with your application. Application forms are available from H.P. Guenther, DL9XW, Am Strampel 22, D-4460 Nordhorn, Germany. With the reunification of Germany, there may be a few changes, so it would be wise to get the latest update.

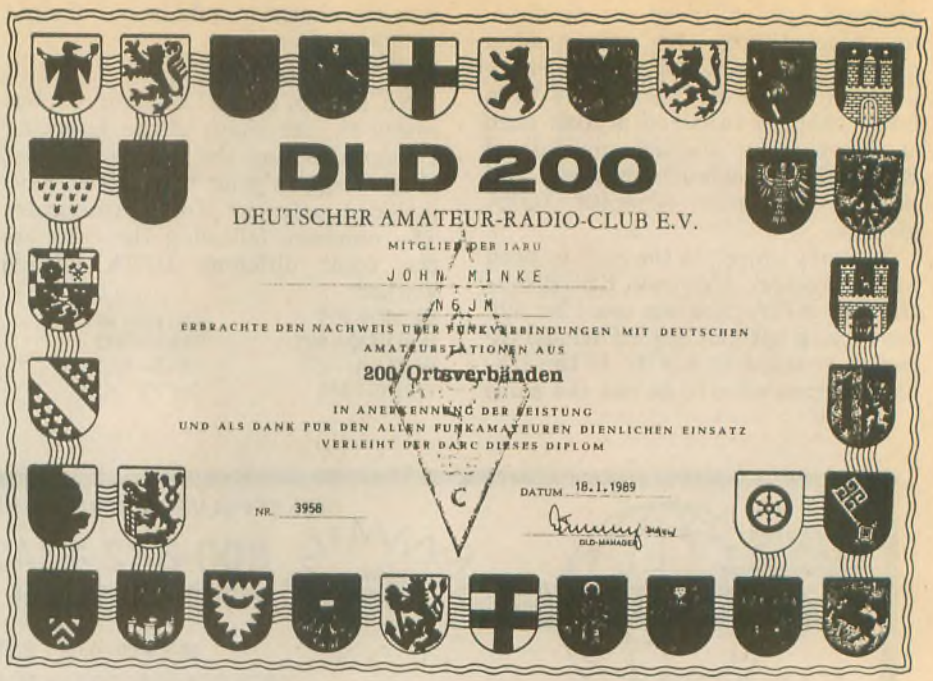
We understand that one can work on confirming DOK numbers beyond the DLD 200 level. However, this requires work on bands other than 10, 15 and 20M.

To QSL or Not to QSL

The March 1991 issue of *The Canadian Amateur Radio Magazine* contained an interesting article written by Antonio Salvadori, VE3NXQ. His item, "To QSL or Not to QSL" was based on his own QSL returns. He sent out a QSL card for every contact except for when he used a special prefix. However, he did answer QSL requests for those. The majority of his cards went via the QSL bureaus.

The QSL return rate for his own country (Canada) was a mere 32.5 percent. His average was brought down by Ontario (29.9 percent) and Quebec (18.7 percent). He had sent 100 cards for contacts made with Alberta, with a return of 39 percent.

His article also included a table containing 84 countries. The top of his list was Switzerland with a return rate of 75 percent. Venezuela was at the bottom with a return rate of only 19.7 percent. I couldn't find the United States in the standings. Are we Americans worse QSLers than the South Americans?



Germany's DLD Award is a rare prize.

Japan ranked as number 23. Of 592 cards sent out, he received a return of only 48.5 percent. This brings up an interesting point. Most QSL bureaus require that users be members of their National Amateur Radio Society to benefit from the services. In the case of the ARRL, all can receive incoming cards via the bureau, but that's not the case for outgoing cards, which require League membership. Not all Japanese amateurs belong to the JARL. This could very well explain poor QSL returns. We suspect that a lower percentage of JAs belong to the JARL than American amateurs belonging to the ARRL. And we cannot imagine any active DXer not belonging to the ARRL.

This gets back to our comment at the end of our June column suggesting the listing of non-responsive stations on QSL requests. We presently have received comments from only four readers and from what I can gather it wouldn't be a very good idea. Of course, what I had in mind was listing those stations that had failed to acknowledge after at least two attempts with a reasonable time period. Also, this would apply to stations or managers that were sent QSL cards direct only. No responses to requests sent via the bureau would be considered, as many DX stations do not receive cards via their bureaus.

Computer Contest Logs

Those of you who use a compter to prepare contest entries are urged to submit a disk in lieu of the paper work. We received a note from Billy Lunt, KR1R, at ARRL headquarters, requesting such for the recent DX contests. They are asking top scorers to submit disks as it allows them to process contest information much more swiftly and accurately. Now, what is a top score? We had less than 500,000 points and we don't feel that is tops at all.

Feedback

Don Sinex, KI6YE, comments on our error in the All Asian DX Contest listing in the June issue. Part of that was our fault (listing both sessions on SSB). When they moved the June session to September, we failed to notice that the modes were also switched, making the June session on CW with the September on SSB. For years the All Asian DX Contest was a CW-only affair the last weekend in August.

In confirmation, the SSB portion of the contest will be on the first Saturday of September, from 0000 through 2400 UTC the following day (instead of the third Saturday of June). The CW portion of the contest was on the third Saturday of June from 0000 through 2400 UTC the following day—June 15 and 16 (instead of the fourth Saturday of August).

Slide Shows and Videos

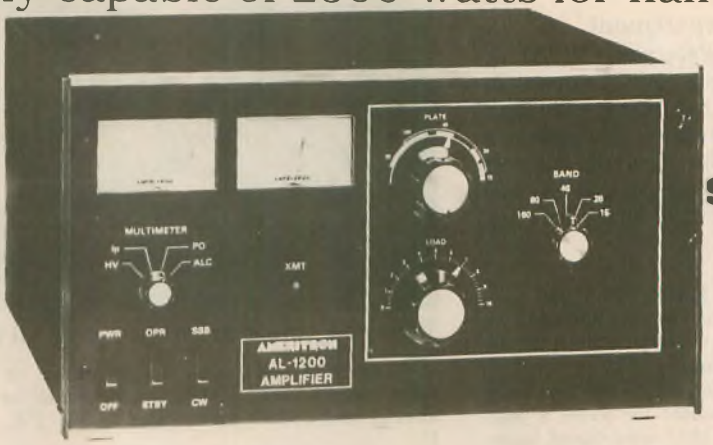
The Northern California DX Foun-

Ameritron linear loafs at full legal limit . . .

massive power supply capable of 2500 watts for half hour!

What makes the Ameritron AL-1200 stand out from other legal limit amplifiers?

The answer: a super heavy duty power supply that loafs at full legal power - it can deliver power for more than 2500 watts PEP two tone output for a half hour!



AL-1200
$2045
Suggested Retail

The heart of the AL-1200 power supply is a highly efficent Peter Dahl tape wound hypersil® transformer weighing 32 pounds. — it's equivalent to a 45 pound transformer using standard E-I laminations.

High current computer grade capacitors

You get genuine high current, full height *computer grade* capacitors with screw-on terminals — not short stubby, light duty soldered in "capacitors" that can't dissipate the heat generated by high current.

Why some filter capacitors explode

The failure of *carbon* equalizing resistors — used in most linear amplifiers — is the primary cause of filter capacitor failures.

When a *carbon* resistor gets hot its resistance drops, causing more current to flow, causing the resistor to get hotter.

This destructive cycle repeats until the *carbon* resistor opens and causes excessive voltage on the capacitor — the capacitor can explode.

Carbon equalizing resistors *can't* fail in the AL-1200. Why can't they fail? Because no-compromise *wire wound* SEVEN WATT 50 K ohm equalizing resistors — not the 2 watt 100K resistors others use — safely protect each filter capacitor. Plus, the lower value gives you better voltage regulation.

A direct short won't blow these rectifiers

The AL-1200 rectifier board uses diodes rated for a massive surge current of *200 amps* — you can accidentally short the high voltage supply and the diodes won't blow!

Will the amplifier you're considering withstand a direct power supply short?

Eimac® 3CX1200A7: the durability of glass and the power of ceramic

The AL-1200 uses one of Eimac®'s toughest ceramic transmitting tubes — the high gain 3CX1200A7. It has the durability of glass tubes and the power dissipation of ceramic tubes.

3CX1200A7: 12 times tougher than the 3CX800A7

A 3CX1200A7 has a 50 watt control grid dissipation — that's more than 12 times tougher than the delicate 4 watts grid dissipation of a 3CX800A7.

If you accidentally drive a 3CX1200A7 with your 100 watt exciter when your amplifier is off, you won't fry your control grid. But don't make that mistake if you have a pair of 3CX800A7s — unless you're ready to buy another pair.

Full legal power at half the price

A *single* 3CX1200A7 in the AL-1200 delivers the *same legal limit* as a *pair* of 3CX800A7s that cost nearly twice as much. What do you get for paying twice as much? Twice as many parts to fail.

Plus more . . .

The UPS shippable AL-1200 also gives you . . . all mode, all band coverage including WARC and MARS, Pi-network tuned input, Step-Start Inrush Protection™, multi-voltage primary, Pi-L output tank with silver-plated components, separate filament transformer eliminates poor regulation and surges, adjustable ALC, SSB/CW switch for best linearity and efficiency, operate/standby switch, transmit indicator LED, 12 VDC auxiliary output, 35% safety factor for tuning capacitors and bandswitch virtually eliminates failures, shielded RF compartment, quiet die cast blower has 4 speeds, two illuminated meters show continuous grid current, peak RF watts out, drive power/ALC, plate voltage and plate current, ball bearing vernier reduction drives on plate and load controls, optional QSK board, one year limited warranty and more.

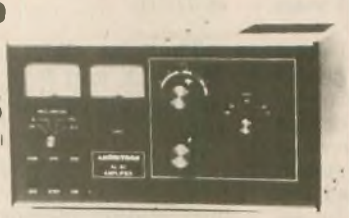
Call your dealer for your best price

Even at $2045 list it's a bargain. For your best price, call your favorite dealer and order today!

Pair of Eimac® 3-500Zs give you full legal output for . . . $1995

Want a pair of tough 3-500Z workhorses?

AL-82
$1995
Suggested Retail



The AL-82 is the same amplifier as the AL-1200 except it uses a pair of Eimac® 3-500Z tubes. It has the same super heavy duty power supply to give you full legal output. Some amplifiers With a pair of 3-500Zs can't deliver full legal output because they use a lighter duty power supply.

That's why the AL-82 costs a little more -- and why it's well worth it. Call for your best price today!

Legal limit antenna tuner

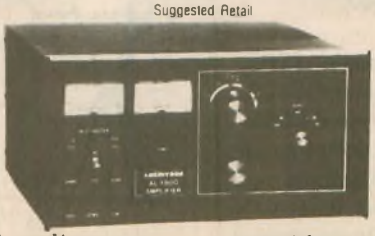
ATR-15
$399
Suggested Retail

Ameritron — the high power specialist — brings you the ATR-15 antenna tuner that's designed for legal limit amplifiers. It handles full legal power with ease.

Heavy duty silver plated bandswitch virtually eliminates switch failure. High power transmitting capacitors. 1.8-30 MHz. Peak reading SWR/wattmeter. 6 position antenna switch. Selectable 1:1 or 4:1 balun. 5¼ x 13¼ x 13½ inches. Meter lamps uses 12 VDC.

Ameritron's most powerful amplifier

AL-1500
$2625
Suggested Retail



Ameritron super power amplifier uses the herculean 8877 ceramic tube.

It's so powerful that a mere 65 watts drive gives you full legal output — 1500 watts — and it's just loafing because the power supply is capable of 2500 watts PEP.

600 Watts OUT . . . $649

AL-811
$649
Suggested Retail

New AL-811 gives you 600 watts PEP, 500 watts CW, even 400 watts on demanding continuous carrier modes like RTTY for only $649. Uses 3 811A tubes.

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. . . the high power specialist

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dation has numerous slide shows and videos available for loan to organizations wishing to show them at meetings. They may be borrowed free of charge except for postage. For complete lists and further information, write to Josephine Clarke, WB6ZUC, 207 Evergreen Drive, Kentfield, CA 94904.

Antique QSL Department

Milton (Pete) Peterson, W7AUQ, writes in response to our comment in the March issue regarding old-timer Japanese radio amateurs. He sent us a copy of a letter he received back in 1969 from Taroh Yagi, JH1WIX. We have printed the entire letter here for your interest.

Dear my old friend Milton, W7AUQ:

It's quite a long time since we had QSO on 3.5 Mc. of which first contact between Japan and U.S.A. on that band in 1932.

Your letter dated March 1968 has been hold in JARL QSL department for about a year because of no girls in that department know who is ex-J1DO T. Yagi, Hi. Fortunately, I started to write something for *JARL News* which is still publishing every 10 days by JARL headquarters for the membrs. My article in the *JARL News* is the story of my ham life named "Good Old Days." Now the girls recognized that the writer of "Good Old Days" is ex-J1DO himself and your letter QSPed to me OK finally, Hi.

My call has been changed to J2GX in 1934 and I was very active in DXing for couple years with that J2GX call. Perhaps you will remember my J2GX call of about 35 years ago, Hi.

In the article of "Good Old Days," I would like to write something about with my 3.5 Mc. activities in future issue but I have no logs and QSL cards now as the B-29s cleaned away everything during the war and my biggest desire was that who was the W7 station of which first contact between Japan and U.S.A. on 3.5 Mc. It was very lucky for me, your letter came in my hand and I got you W7AUQ OK FB! Hi. If you still keep your old logs, would you please reissue QSL card of our 3.5 Mc. QSO for J1DO again! And I wish to put your card in my "Good Old Days" story. If possible do it immediately please so the editor pushing me strongly every ten days, Hi. It will be better if you could send me some fotos of yourself and your shack.

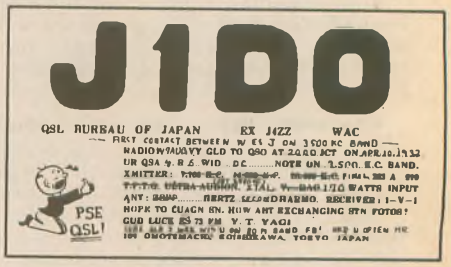
These Japanese amateurs were all licensed prior to WWII.

By the way, my second son got on the air since last year with JH1KLQ and I found he already had a QSO with you on 21 Mc. CW, Hi.

I'm 60 years old now, retired Toshiba Company three years ago. During in Toshiba, I was in charge of General Manager Foreign Trade Division, so I had many visits to your country. But, have met only few ham friends there because of very busy with the business, Hi.

Now I have lots of time in home and am going to come back on the air again in two or three months and I hope to see you again on the air soon.

That is about all now so 73's. Taroh, ex-J1DO



That he did, as he was issued JH1WIX and Pete, W7AUQ, made a contact with Taroh that September on 15M.

We have been writing this column well over 12 years and readers with outstanding memories will remember that we have included material concerning Taroh before. In the December 1980 issue we included his J2GX card for a 1938 contact he made with Al Miller, VE5KC (now VE7KC). Al also included a photo of Taroh's shack with the walls covered with QSL cards. Of course, all the cards were destroyed as mentioned in the letter above.

Then, in our September 1984 issue, we had a 1929 QSL from Taroh, who was then J4ZZ, which was provided by Ashod Hovsepian, W6EBM.

Pete, W7AUQ, informs us that Taroh is now about 83 years of age. He first came on the air in 1924. We bet that many of you have worked Taroh, not necessarily as J4ZZ, J1DO or J2GX, but as JH1WIX.

Above is a group of Japanese amateurs who had been licensed before World War II. They are (left to right): ex-J1DV (J2HV); ex-J1GL (J2IS); ex-J1DP (J2GY); ex-J1DN (J2IX); ex-J1DO (J2GX); ex-J1EC (J2HG); and J1EE (J2HE). Of course, J2GX is now JH1WIX, and the YL (J2IX) I believe is still active, using the call JH1WKS. Her old J2IX card was used in our April 1979 column. The photo is not dated, but it was most likely taken in the 1960s, judging by the fashion. In our March 1985 column we used a card from J1EE for a contact made in the 1930s.

QSL Information

Dick McGinn, WA1IMS, informs us that all QSL requests for RA1N have been answered by Pavel Guzenko, UY5YY. Anyone not receiving a reply should write again to him at P.O. Box 29, Melitopol, 332315 Ukraine, USSR.

Taras Zima, UB5LSL, offers his services for obtaining cards from Soviet stations, in three different options. The first is the least expensive with a rate of 25 cards for $1. You send the cards to him and he forwards them on to the Soviet stations you have worked.

His second option is five cards for $1. The difference here is that the stations that he sends cards to will return them to him and he will, in turn, send them back to you. If the stations he sent cards to do not respond within six to eight weeks, he will send the cards via the bureaus when he receives them.

The third option is three cards for $1. Taras will forward your cards to the stations you desire with an SASE for direct return to you.

Taras strongly advises when mailing cards and money to him that the contents not be allowed to shift within the envelope so as not to attract dishonest postal workers to remove the contents. If interested, send your cards to him at ul Lenina 23, kv 12, Komsomolskiy, Kharkov obl, 313750 USSR.

Frankly, we don't know how he can do this for the little amount that he charges, especially the three for $1. Maybe they will go surface mail. For a buck it wouldn't hurt to try his service.

This has nothing to do with QSL information, but I don't know where else to put it. Anton Koval, UB5COS, is interested in corresponding with American amateurs. He is 16 years old and is especially interested in YL operators. Anton speaks English. Contact Anton at P.O. Box 322, Cherkassy 257000, Ukraine, USSR.

QSL Help

Need help in finding a route for a needed QSL? You have checked all possible sources for a route and still can't find one? Why not submit your request to us and we will list it in our column. Some of our readers might be of help.

And, the first one to need help is N6JM! Back on November 17, 1978, we worked KH6ABH on French Frigat Shoals and never received a QSL after two attempts. This call is no longer listed in the *Callbook*. At that time the Coast Guard had a Loran Station there. Can anyone help us out with that one? French Frigat Shoals counts for IOTA.

DX Prediction — September 1991

Maximum Useable Frequency from West Coast, Central U.S. and East Coast *(courtesy of Engineering Systems Incorporated, Box 939, Vienna, VA 22180).*

The numbers listed in each section are the average Maximum Usable Frequencies (MUF) in MHz for contacting five major areas of the world centered on Africa-Kenya/Nairobi, Asia-Japan/Tokyo, Oceania-Australia/Melbourne, Europe-Germany/Frankfurt, and South America-Brazil/Rio De Janeiro. Chance of contact as determined by path loss is indicated as bold *MUF for good, plain MUF for fair, and in parentheses for poor. UTC in hours.

SEPTEMBER 1991 WEST COAST

UTC	AFRI	ASIA	OCEA	EURO	SO AM
10	*(15)*	*18	*25	*(12)*	*22
12	*(21)*	*16	*22	*(18)*	*(18)*
14	*(29)*	*19	*18	24	31
16	33	17	21	25	*38
18	34	16	*(17)*	23	*42
20	33	25	32	*(18)*	*42
22	27	*32	39	*(14)*	*44
24	23	*35	43	*(12)*	*36
2	*21	*33	42	12	*30
4	*20	27	39	*16	*25
6	*(18)*	*23	*35	14	*22
8	*(16)*	20	*29	13	*20

CENTRAL USA

UTC	AFRI	ASIA	OCEA	EURO	SO AM
8	19	*(13)*	*24	13	*20
10	*(24)*	*12	*21	*(12)*	*21
12	36	*17	*18	22	25
14	41	18	23	26	*34
16	40	16	20	25	*39
18	*40	*(15)*	*(17)*	23	*42
20	*33	26	32	*(16)*	*42
22	27	28	39	*(14)*	*43
24	*23	25	42	*(12)*	*36
2	*21	*(21)*	37	12	*30
4	*21	17	34	*15	*25
6	21	*(15)*	28	*14	*22

EAST COAST

UTC	AFRI	ASIA	OCEA	EURO	SO AM
7	20	*(13)*	*24	12	*21
9	*(22)*	*12	*21	17	*21
11	35	*17	*19	*24	24
13	*40	*(15)*	24	*27	*33
15	*41	*(13)*	*(21)*	*27	*39
17	*40	*(12)*	*(19)*	*24	*41
19	*36	*(17)*	*(27)*	20	*42
21	*30	24	37	14	*41
23	*25	25	42	*13	*40
1	*22	*(20)*	37	*12	*33
3	*18	16	33	12	*27
5	*22	*(14)*	28	*13	*24

QSL Routes

AN9A	—EA4KK	RY7QK	—UB0QZ
C6AFQ	—K1TN	RY8QN	—UB0QZ
C9RTC	—IK4QIZ	RY0QQ	—UB0QZ
CS9T	—CT1BOH	S79KMB	—KN2N
CT0A	—CT1VA	S79QZ	—DJ0QZ
CU3/K6EDX	—KA3B	SN1JP	—SP1CHV
D2ACA	—LZ2DF	SN5JP	—SP5JBE
D73CW	—HL1XP	SN7JP	—SP7CVW
ED2IF	—EA2IF	SN0JP	—SP4KCM
ED5IGE	—EA4KK	SV0HV/5	—KA5EJX
ED6EJC	—EA4KK	T30A	—K7EHI
ED9EAI	—EA4KK	TI73F	—TI4SU
EJ0A	—EI8EM	TI74A	—TI4WAM
FJ5BL	—F6AJA	TJ1GG	—I2EOW
FR5ZU/E	—FR5ZU	TJ1FN	—I2RRI
FT4YD	—FD1NZD	TV6VER	—FF6KFV
HC2G	—HC2CG	UB4JJR	—KB8RJ
HW6JUN	—FF1PFW	UR5M	—RB5MF
JA1OEM/JT1	—JA1OEM	V3YZ	—W5YZ
JA1SGV/JD1	—JA1SGV	VO7SF	—VO1SF
JJ1KZI/JD1	—JJ1KZI	VP2MR	—N5DXD
JT1JA	—JA1ELY	VP8CEM	—CX1AA
JU1JA	—JA1UT	VQ9JC	—K4FVD
KC6KW	—AG9A	YJ0AFU	—NA5U
KC6XX	—WO0G	YM2KC	—TA1KA
OG9M	—OH1VR	YM7A	—TA7A
OG0M	—OH2BDA	ZD8XX	—W4FRU
OX91REF	—F6AJA	ZD9BV	—W4FRU
P34A	—YU4YA	ZF2J1	—KG6AR
P40Z	—N4MHZ	ZW7AB	—PS7AB
P4/N4MHZ	—N4MHZ	ZW8CW	—PS7AB
R1ARO	—RV1AA	ZW8ET	—PS7AB
RY1QH	—UB0QZ	ZZ5SZ	—PS7AB
RY2QT	—UB0QZ	4A1MD	—XE1MD
RY3QB	—UB0QZ	5B4AAJ	—G0HTK
RY4QM	—UB0QZ	5K1R	—HK1LDG
RY5QC	—UB0QZ	9U5BZP	—G4BZP
RY6QO	—UB0QZ	9W6WPX	—JA0VBJ

J49CW	—P.O. Box 1390, GR-71110 Iraklion, GREECE
JV/8R1	—P.O. Box 10867, Georgetown, GUYANA
NH6ES	—Big Island ARC, P.O. Box 1938, Hilo, HI 96721
RI6G/UW4HM	—P.O. Box 8267, Samara 443067, USSR
UI6G/UW4HR	—P.O. Box 2904, Samara 443114, USSR
YN1CB	—P.O. Box 3733, Managua, NICARAGUA
YS1WF	—P.O. Box 1114, San Salvador, EL SALVADOR
ZD8ACJ	—1 The Spinney, Scarborough, North Yorks YO12 5HQ, ENGLAND
4B2SOL	—P.O. Box 147, La Paz, BCS 23000, MEX1CO *(see note 1)*

NOTES:

1. Include the operator's name with your request, along with an SASE and green stamp (or 2 IRCs).

Many thanks to the following contributors: UZ1ZZZ, UA3DCZ, UB5LSL, RB1RR (3W3RR), *(please turn to page 50)*

QUARTER CENTURY WIRELESS ASSOCIATION INC.

Guest Editor - The Owl
Who gives a hoot

Convention Deadline.

This is your last chance to get in your reservations for the September 27 and 28 QCWA National Convention in Canton, Ohio. The cut-off date for hotel and tour reservations is September 10. If you have been a procrastinator, pick up the phone now and call Dennis, K8AGB, at 216/452-3872. From here on, everything will be on a space-available basis.

Reservations have been coming in very well and it looks like there will be a fine attendance. Plans are progressing nicely and many new activities are being added. In addition to the open board meetings, several technical forums and special interest forums have been scheduled. The banquet speaker will be nationally known Roy Neal, K6DUE. He will have some very interesting comments on looking toward the future.

The tours to the Pro Football Hall of Fame and the McKinley Museum of Science and Industry have proven very popular for both OMs and YLs and the tour to Kent State Fashion Museum is very attractive to the ladies. The museum is recognized as one of the foremost fashion centers in the country. Remember the cut-off date for tour reservations.

Arrangements have been made with three campgrounds within five miles of Canton where RV accommodations are available. For those flying in, it is only a short taxi ride from the airport to the hotel but courtesy vans are being offered by members of the Canton chapter. Let them know when your arrival is scheduled or give them a call on the 146.79 repeater when you get in and a van should soon be there to pick you up. There will be convention signs on the sides of the vans.

The registration desk will be open at 8 a.m. on Friday morning, September 27 and will remain open throughout the convention. Lapel pins commemorating the convention are being offered this year. The pins will be a great souvenir and they are a fine way to demonstrate your support of the convention. We hope we will see you wearing one.

We got a letter!

The Owl just received the first letter in response to the column in ***Worldradio.*** We are all athrill. After writing the column for almost a year, we finally put in a mailing address and now we are hoping to hear from many of you. The address is: The Owl, 2012 Rockingham Street, McLean, VA 22101; phone 703/536-8469.

The letter was from an amateur inquiring about joining QCWA. What was our purpose and what were our activities? He got a full page letter in reply! But his letter pointed up the need for more publicity about QCWA. We have a great organization and each one of us should take advantage of every opportunity to publicize it. Whenever I make a casual contact on the air, I always ask the operator how long he has been a ham and, if it's been around 25 years, I ask him if he is a member of QCWA. I'm amazed at the number of people who say they aren't members yet but have been *trying to find out* about joining! Somehow we have been missing the boat. A 25-year ham shouldn't have to hunt for information. We should be knocking on *his* door.

Objectives and activities.

For the benefit of any other ***Worldradio*** readers who are curious about QCWA, the organization was founded in 1947 with the objectives stated in its constitution as, "to promote friendship and cooperation among Amateur Radio (wireless) operators who were licensed as such at least a quarter of a century ago" and "to make use of the reservoir of knowledge and experience represented within the membership of QCWA for the benefit of all radio amateurs and the furtherance of the public welfare through Amateur Radio communications."

There was also a primary objective of preserving the history and traditions of early Amateur Radio. But QCWA had no intention of remaining a spark gap organization. Its members were in the forefront of pioneering SSB, moonbounce, FM repeaters, packet, ATV, etc. As years went by and our 25-year members became 50-year and 75-year members, we recognized there had been as much real "pioneering" done in the last 25 years as there was in the first 25 and QCWA is now anxious to be recognized as an organization of modern day pioneers. It is *not* an "old man's club." In fact, some of those youngsters who got their Novice license at the age of eight became members of QCWA at the age of 33. These "young squirts" are most welcome in today's QCWA.

QCWA is a prestigious organization representing somewhere around 450,000 man-years of experience and expertise that can be used to an advantage in promoting the welfare of Amateur Radio in general. You can take considerable pride in being a member of QCWA. For more information drop a note to The Owl or write to QCWA headquarters at 1409 Cooper Drive, Irving, TX 75061-5527.

Come to the convention in Canton, Ohio, on September 27 and 28 and see for yourself! □

Bolts of lightning speed through the air at 90,000 miles per second.
—Central Arkansas Radio Emergency Net, Little Rock, AR

Visit Your Local
RADIO CLUB

For information on how to get your club listed in "Visit Your Radio Club," plus receive many other benefits, write to Club Liaison, Worldradio, 2120-28th Street, Sacramento, CA 95818.

ALABAMA

Montgomery Amateur Radio Club (W4AP). P.O. Box 3141, Montgomery, AL 36109. Meets 3rd Mon./monthly, 7 p.m., State Trooper Dist. Office, Coliseum Blvd. & Federal Dr. Nets Sun. 8:30 p.m. 146.84- and Thurs. 8:15 p.m. 147.18+. Info: Fred, K8AJX, (205) 270-0909.

ALASKA

Arctic Amateur Radio Club. Geophysical Institute West Ridge U of A, P.O. Box 81389, College, AK 99708. 1st Fri./monthly, 7:30 p.m.

ARIZONA

Cochise Amateur Radio Assn. Meets 1st Mon./monthly, 7:30 p.m. at club facility on Moson Rd., Sierra Vista, AZ. Net: W0LKI info Net every Thurs., 7 p.m., WA7KYT/R 146.16/146.76 rptr.

Scottsdale Amateur Radio Club. Meets 1st Wed./monthly, 7:30 p.m., 7375 E. 2nd St. in Scottsdale, AZ. Net is Mon., 9 p.m., 147.18 rptr.

Tucson Repeater Assoc., P.O. Box 40371, Tucson, AZ 85717-0371. 2nd Sat./monthly, 7:15 p.m., Pima Co. Sheriff Bldg., 1750 E. Benson Hwy. Net Thurs. 7:30 p.m. 146.22/82 (146.88-, 147.08-, 448.550-, & 145.15 Packet).

Western Arizona Radio Club. Meets 2nd & 4th Thurs./monthly, 7:30 p.m., First Baptist Church, 1700 Palma Rd., Bullhead City, AZ. Net Tues. 7 p.m. on 147.12+600. Info call Dave Adams, W6DRM, (602) 758-5171.

ARKANSAS

Central Arkansas Radio Emergency Net, (CAREN). Meets 1st Thurs./monthly, 7 p.m., 1111 West Capitol Ave., Little Rock, AR. Thurs. night net, 8 p.m., 146.940, swap net afterward. Severe WX net anytime 146.940. Code 8 theory classes continuously. Info, KB5IDB, Bob Hancock, (501) 771-2617.

CALIFORNIA

Amador County Amateur Radio Club. P.O. Box 1094, Pine Grove, CA 95665. Senior Citizens Center, Jackson, CA. Meets: first Thur./monthly, 7:30 p.m. WA6WIY Rptr., 146.835, 146.235. Net Tues. 7:30 p.m.

Amateur Radio Club of El Cajon. WA6BGS. P.O. Box 50, El Cajon, CA 92022. Meets 2nd Thurs./monthly, 7 p.m., La Mesa Church of Christ, 5150 Jackson Dr., La Mesa, CA. Rptrs. 147.675(-), 224.080(-). PL 107.2. Nets 147.570 Wed./Sat., 7 p.m. Info (619) 697-2770.

Associated Radio Amateurs of Long Beach, W6RO. P.O. Box 7493, Long Beach, CA 90807. Meets: 1st Fri./monthly, 7:00 p.m. Signal Hill Recreation Hall, 1708 E. Hill St., Signal Hill, CA.

Butte Amateur Radio Club. Meets 1st Fri./monthly, 8 p.m. at the Cozy Diner, 1695 Mangrove, Chico, CA 95926.

Conejo Valley Amateur Radio Club (CVARC). P.O. Box 2093, Thousand Oaks, CA 91358-0917. Meets 1st Thur./monthly at King of Glory Lutheran Church, 2500 Borchard Rd. Newbury Park, CA, 7:30 p.m. Info on 147.885/285 and 445.925/0.925 (PL 123) or call N6LQ Ernest (805) 499-5398.

Contra Costa Communications Club, Inc. WD6EZC/Rptr. P.O. Box 661, San Pablo, CA 94806. Meets 2nd Sun./monthly at 9 a.m. Hickory Post Restaurant/Lucky Lanes. Nets: 07:10—08:30 M-F; 7:30 Thur. eve. all 145.110. 224.300 & 444.275 w/possible PL 82.5. Info call Ed, KA6OFR, (707) 996-0962.

Downey Amateur Radio Club. Meets 1st Thurs./monthly, 1930 in the Cafetorium of South Middle School, 12500 S. Birchdale Ave., Downey, CA.

East Bay Amateur Radio Club, Inc. Meets 2nd Fri./monthly, 8 p.m.-10 p.m., Northbrae Community Church, 941 The Alameda, Berkeley, CA. Info: Gordon Firestein, (415) 527-9382.

Escondido Amateur Radio Society (E.A.R.S.). Meets 4th Mon./monthly, 7:30 p.m., North County Blind Activities Center, 157 E. Valley Pkwy., Ste. 1B, Escondido, CA 92025. Info Net Sundays, 8 p.m. 146.88(-) or 743-4212.

Fullerton Radio Club, Inc. W6ULI. P.O. Box 545, Fullerton, CA 92632. Meets: 3rd Wed./monthly, 7:30 p.m., Sr. Citizens Center, 340 W. Commonwealth, Fullerton. Net ea. Tue., 8 p.m. 147.975 (-600). Info, Phil Gray, KJ6UV (714) 524-5223.

Gabilan Amateur Radio Club GARC. P.O. Box 2178, Gilroy, CA 95020-2178. Meets: South Valley Jr. High School, 385 I.O.O.F. Ave., Gilroy. 2nd Thur./monthly. 7:30 p.m. Talk-in 145.47/144.87.

Hilltop Amateur Mastertie System (HAMS). Informal mtgs. weekly/Mon. 5 p.m. at Shakey's Pizza, 12924 Washington Blvd., Mar Vista, CA, except 3rd Mon. Call for location. Info, N6FD 213/823-0767.

Kern River Valley Amateur Radio Club. P.O. Box 2611, Lake Isabella, CA 93240. Meets 4th Sat./monthly at 4 p.m. (Pot Luck). Veteran's Hall, Lake Isabella WB6ODZ Rptr. 224.50 down 1.6 low-level, 144.50 simplex.

Livermore Amateur Radio Klub, (LARK). Meets 3rd Sat./monthly, 9:30 a.m., City Council Chamber, 3575 Pacific Ave., Livermore, CA. Net Mon. 1900 on 147.12+. For info: LARK, 859 Chippewa Wy., Livermore, CA 94550.

Marin Amateur Radio Club (MARC) W6SG. Box 1231, San Rafael, CA 94901. Meets 1st Fri./8 p.m.; MARC Clubhouse Bldg. 549, HAFB, Novato, CA (415) 883-9789 (Summer exceptions; contact Pete N6IYU, 924-1578). Sun. AM Club at Red Cross, San Rafael.

Monterey Park Amateur Radio Club (MPARC), K6GIP. P.O. Box 403, Monterey Park, CA 91754-0403. Meets 2nd Thurs./monthly, 7:30 p.m., Community Rm.—City Hall, 320 W. Newmark, Monterey Park. Nets: Tues. 7 p.m. 147.48 Simplex — 7:30 p.m. 28.385 MHz. Info: John Duce, N6EDX (818) 280-7052.

Moreno Valley Amateur Radio Assoc. P.O. Box 7642 Moreno Valley, CA 92303. Meets 4th Mon./monthly, 7 p.m., City Council Chambers—City Hall, corner of Cottonwood & Frederick Sts. Net Tues. 8 p.m. 146.655- (PL 1A). Info, Larry Marcum, KA6GND, (714) 656-1643.

North Hills Radio Club. Meets 3rd Tue./monthly, 7:30 p.m., Elks Lodge, on Cypress at Hackberry in Carmichael, CA. Net K6IS Thurs., 8:00 p.m. 145.190. 220 Net, Tue. 8 p.m. 224.40(-).

North Shores ARC. Meets 1st Tues./monthly, 7:30 p.m., So. Clairemont Rec. Cntr., 3605 Clairemont Dr., San Diego, CA. Info: (619) 224-1294.

Orange County Amateur Radio Club. Meets 3rd Fri./monthly, 7:30 p.m., Mercury Savings & Loan, 1895 Irvine Blvd. (4th becomes Irvine), Tustin, CA 92680. Net each Wed., 9 p.m., 146.55 Simplex.

River City A.R.C.S. Meets: 1st Tue./monthly, 7 p.m. SMUD Bldg., Room B & C, Elkhorn & Don Julio, Sacramento, CA. For info: (916) 483-3293.

Sacramento Amateur Radio Club. Contact: Gary Bryant, KB6KZZ, (916) 646-1171. Meets Sacramento Blood Bank, 32nd St. & Stockton Blvd., Sacramento, CA, 2nd Wednesday/monthly, 7 p.m. Info net every noon on Rptr. W6AK/R 146.910.

Sacramento "Old Timers" Amateur Radio Society and Sacramento Valley Chapter #169 QCWA (Quarter Century Wireless Assn.). Meets 2nd Wed./monthly, 8 a.m., Lyon's Restaurant, 1000 Howe Ave. For info contact Paul Wolf, W6RLP (916) 331-1830.

San Fernando Valley ARC. Meets 3rd Fri./monthly, 7:30 p.m., Red Cross, 14717 Sherman Wy., Van Nuys, CA. Net every Thur., 8:00 p.m. KB6C/R 147.735(-).

San Gabriel Valley ARC. P.O. Box 88, Monrovia, CA 91017-0088. Meets 1st Tues./monthly, 7:30 p.m. (except Dec.) at Bowling Green Clubhouse, 405 S. Santa Anita Ave., Arcadia, CA 91006. W6QFK, Rptr. 147.165/765.

Santa Clara County Amateur Radio Assoc. (SCCARA) W6UW & W6UU. P.O. Box 6, San Jose, CA 95103-0006. (408) 249-6909. Meets: 2nd Monday/monthly, 7:30 p.m. at Agnews Developmental Center Aud., corner of Circle Dr. & Palm Dr., Santa Clara. Net all other Mon., 7:30 p.m. W6UU/R 146.385+/442.425+ PL 107.2

Santa Clara Valley Rptr. Society (SCVRS). P.O. Box 2085, Sunnyvale, CA 94087. (408) 247-2877. 146.76 (-600 kHz), 224.26 (-1.6 MHz), 444.60 (+5 MHz). 2 meter/220 net Mon. 9 p.m. Mtgs.-3rd Fri.

Santa Monica—Westside Amateur Radio Club. Meets 3rd Thurs./monthly, 7:30 p.m., Santa Monica Red Cross, 1450 11th St., Santa Monica, CA. Info Net every Tues., 8 p.m., 146.670, -600.

Shasta Cascade Amateur Radio Society (SCARS) P.O. Box 664, Anderson, CA 96007. Meets: 3rd Wed./monthly, 7 p.m. at the C.D.F. Conf. Rm., Grape St., near Parkview Ave., Redding, CA. Net 146.64, Wed., 8 p.m.

Sierra Amateur Radio Club. Meets 3 Mon./monthly, 7 p.m., Hamilton Branch Fire Depart., Big Springs Rd., Lake Almanor, CA 96137.

Simi Settlers Amateur Radio Club. P.O. Box 3035, Simi Valley, CA 93063. Meets: 2nd Thur./monthly, 7:30 p.m., at Seventh-Day Adventist Church, 1636 Sinaloa, Simi Valley. Rptr. 147.93/33.

Southern California Amateur Transmitting Society, SCATS, WB6LRU. P.O. Box 1770, Covina, CA 91722. Meets 1st Mon./monthly, Community Presbyterian Church, 540 E. Vine St., West Covina, CA. Net, Sun., 7 p.m. 147.765-, W6QFK/R. Classes. Contact: Pat McNulty, N6GXZ (714) 622-8315.

Southern California Six Meter Club. P.O. Box 10441, Fullerton, CA 92635. USB Net Tue., 8 p.m., 50.150. FM Rpt. Net Thur., 8 p.m., 51.80/51.30 tx. FM Smplx call freq. 50.300.

Southern Humboldt Amateur Radio Club. P.O. Box 701, Redway, CA 95560-0701. Meets 4th Wed./monthly, 7 p.m., SHARC Clubhouse, Garberville, CA. Rptr. 146.19/79. Info: (707) 923-2373.

Stanislaus Amateur Radio Assoc. (SARA). P.O. Box 4601, Modesto, CA 95352. Stanislaus Co. Administration Bldg., 12th & H Streets, 3rd Tues./monthly, 7:30 p.m. 145.39 MHz WD6EJF, 223.68 MHz.

Tehama County ARC. Meets 1st Fri./monthly, 7 p.m., Sept.-June, CA Div. Forestry Training Rm., Antelope Blvd., Red Bluff, CA. For info: 145.850/145.50 W6SYY/R.

The Trinity County ARC. P.O. Box 2283, Weaverville, CA 96093. Meets 2nd Wed./monthly, at the CD Hall in Weaverville, 7:30 p.m. WA6BXN Rptr. 146.13/73.

Tri-County Amateur Radio Assoc. P.O. Box 142, Pomona, CA 91769. Meets: 2nd Mon./monthly, 7:30 p.m., 703 N. College Way, "The Faculty House," (lower level), Claremont, CA.

United Radio Amateur Club K6AA. L.A. Maritime Museum, Berth 84, Foot of 6th St. San Pedro, CA 90731. Meets 3rd Fri./monthly except Dec., 7:30 p.m. Monitors 145.52 Simplex 10 a.m.-5 p.m..

Vaca Valley Radio Club. Meets 2nd Wed./monthly, 7 p.m., Vaca Fire Dist. Stn. on Vine St. in Vacaville, CA. Repeater: WX6F 147.475 (-1 Meg) PL 107.2. Ph: (707) 447-0163.

Victor Valley Amateur Radio Club. P.O. Box 869, Victorville, CA 92393. Meets 2nd Tues./monthly, 7:30 p.m., Yucca Loma Elementary School, Yucca Loma Rd., Apple Valley, CA. Talk-in 146-940/340, info net Sun. 7 p.m. 146.940/340.

West Coast Amateur Radio Club. Serving the Greater LA/Org. Co. area and beyond on 145.44-/4zpl. Meets 3rd Thurs./monthly, nets ea. Mon. at 01715 pst/dst & on 144.33S.

West Valley Amateur Radio Assoc. P.O. Box 6544, San Jose, CA 95150-6544. Meets: 3rd Wed./monthly, 7:30 p.m. W6PIY/R. Net Tue., 8:30 p.m., 147.39+/223.96-.

Yucaipa Valley Amateur Radio Club. Meets 3rd Mon./monthly, 7:30 p.m. at Far West Savings, 1195 Calimesa Blvd., Calimesa, CA.

CONNECTICUT

Middlesex Amateur Radio Society, (MARS). 5 North Rd., Cromwell, CT 06416. Meets Tues./weekly 7 p.m., Portland Methodist Church, Main St., Portland, CT. Novice classes, VE sessions monthly. Contact Jack, WA1K, (203) 347-8754. Rptr. 147.090+.

Tri-City Amateur Radio Club. P.O. Box 686, Groton, CT 06340. Meets 2nd Tue./monthly, 7:30 p.m. Alternating, Groton Public Library at Rt. 117 & St. Lukes Lutheran Church at Rt. 12. Novice classes. Info, contact Bob, KA1BB, (203) 739-8016.

FLORIDA

Gulf Coast ARC, Inc. P.O. Box 595, New Port Richey, FL 34656. Meets 4th Mon./monthly, 7:30 p.m., Colonial Hills Civic Ctr., 87 Peacock Dr., New Port Richey. WA4GDN Rptr. 146.67/.07.

Indian River ARC, Inc. (IRARC). 597 Capri Rd., Cocoa Beach, FL 32931. Martin Andersen Senior Center, 1025 S. Florida Ave., Rockledge, FL. Meets: 1st Thur./monthly, 7:30 p.m.

Platinum Coast Amateur Radio Society. P.O. Box 1004, Melbourne, FL 32902. Meets 2nd Mon./monthly, 7:30 p.m., Brevard Co. Red Cross Hdqtrs. Bldg., 1150 Hickory St., Melbourne, FL. Talk-in on 146.25/85 or 146.01/61.

South Brevard Amateur Radio Club. P.O. Box 2205, Melbourne, FL 32902. Meets 1st Tue./monthly, 7 p.m., Melbourne Public Library, 540 Fee Ave., Melbourne, FL.

West Palm Beach Amateur Radio Club, Inc. W4HAW. P.O. Box 6834, Southboro Station, W. Palm Beach, FL 33405. Meets 2nd Tue./monthly, 7:30 p.m., Palm Beach Co. Emergency Op. Cntr., 3723 Belvedere Rd., W. Palm Beach, FL. Rptr.: 147.135 MHz. Info: Jeff, WB2OUK, 586-5120; Charlie, K2GNZ, 582-1164 or Henry, WA4HXZ, 655-4632.

GEORGIA

Dalton Amateur Radio Club (DARC). P.O. Box 143, Dalton, GA 30722-0143. Meets 4 Mon./monthly, 7:30 p.m., Dalton College Voc. Tech. Bldg., Dalton, GA. Info net: Sun. 9:30 p.m., 145.230 MHz; Wed. 9 p.m., 147.135 MHz.

HAWAII

Big Island Amateur Radio Club. P.O. Box 1938, Hilo, HI 96721-1938. Meets: 2nd Tue./monthly, 7:00 p.m., Helco Auditorium, 1200 Kilauea, Hilo. Talk-in on 146.76(–).

ILLINOIS

Amateur Cross Link Repeater Club. 29.680, 52.825, 147.225, 224.480, 921.225, 1292.10 and ATV on 916.25. Meets 1st Sat./monthly, 7:30 p.m. For info call (312) 594-1628. KD9FA Repeater/Chicago.

DuPage Amateur Radio Club, (DARC). Meets 4th Mon./monthly, 7:30 p.m., Holy Trinity Catholic Church, 111 S. Cass Ave., Westmont, IL. Club rptrs. are 145.25-, CTCSS 107.2; 224.68- and 442.55+ CTCSS 114.8.

Elgin Amateur Radio Society. P.O. Box 1351, Elgin, IL 60120. Meets in EOC Rm. of Elgin Municipal Bldg. 2nd Fri./monthly, 8:00 p.m.

Fox River Radio League. Valley National Bank, Lower Level, Northgate Shopping Ctr. & RT. 31, Aurora, IL (312) 584-4925 for more info. Meets: 2nd Tue./monthly, 7:30 p.m.

Northwest ARC/W9LM. Meets: 2nd and 4th Tue./monthly, 7:00 p.m., Oehler Funeral Home downstairs community room, Lee & Perry Street, Des Plaines, IL. Net 28.375, 8:30 p.m., non-meeting Tuesdays.

Schaumburg ARC (SARC). Meets: 3rd Thurs./monthly, 7:30 p.m., Schaumburg Park Dist. Community Rec. Cntr. at Bode & Springinsguth Rds., Schaumburg, IL. Net 145.23, 8 p.m. Thurs. Info (708) 213-0910.

Six Meter Club of Chicago K9ONA. Bank of Lyons, Lower Level, 8601 West Ogden Ave., Lyons, IL. 2nd Fri./monthly, 7:30 p.m. Club Rptrs: 146.37/97, 448.30/443.30.

Wheaton Community Radio Amateurs, (WCRA), P.O. Box QSL, Wheaton, IL 60189. Meets 7:30 p.m., 1st Fri./monthly, College of DuPage, Glen Ellyn, IL. Nets Sun. & Tue. 8:00 p.m., 145.39 MHz.

York Radio Club. Meets: 3rd Fri./monthly, 8 p.m., Elmhurst College (Science Bldg.) Elmhurst, IL. Net Mon., 8 p.m. W9PCS/147.42 simplex.

LOUISIANA

Southwest LA Amateur Rptr. Club, Inc. (SWLARC). Meets 4th Tues./monthly, 7 p.m. in the EOC Rm. Net ea. MWF, 7:30 p.m. Rptr. 146.730 minus 600.

MARYLAND

Peninsula Radio Operators Society, Inc. (P.R.O.S.) Salisbury, MD. Quarterly dinner mtgs. & VE Test sessions. Spring & fall classes. Rptr. K3SVA 146.325/146.925; KC3UV 449.05/444.05. Info: (301) 749-7444.

MASSACHUSETTS

Mohawk Amateur Radio Club. P.O. Box 532, Athol, MA 01331. Meets: 4th Wed./monthly, 7:30 p.m., at the Athol American Legion Hall, Exchange Street, Athol, MA.

MICHIGAN

Hazel Park Amateur Radio Club. Hoover Elementary School-Hazel Park, P.O. Box 368, Hazel Park, MI 48030. 2nd Wed./monthly, 7:30 p.m. Sept. thru May. 147.51 Simplex Call-In. W8JXU Club Call.

Oak Park Amateur Radio Club. Oak Park Community Center, 14300 Oak Park Blvd. (same as 9½ Mile Rd., west of Coolidge). Oak Park, MI 48237. 2nd Mon./monthly, 7:45 p.m. Talk-in on our 224.36 MHz or 146.64 MHz.

MINNESOTA

Minneapolis Radio Club. P.O. Box 25167, Minneapolis, MN 55458. Meets 3rd Fri. (exc. June, July, Aug.), Mpls. Red Cross, 11 Dell Place, Mpls, 7:30 p.m. Making waves since 1916.

MISSOURI

Joplin Amateur Radio Club. Meets 2nd and 4th Tue./monthly, 7:30 p.m. at Joplin Municipal Bldg., (basement), 303 E. 3rd, Joplin, MO.

PHD Amateur Radio Assn. Inc. P.O. Box 11, Liberty, MO 64068. Meets last Tue./monthly, 7 p.m. Red Cross Bldg. (816) 781-7313, Volunteer Examiner Coordinator.

NEBRASKA

The Ak-Sar-Ben ARC of Omaha, NE. Meets 2nd Fri., 7:30 p.m. at Omaha Red Cross near 38th and Dewey Streets. Main 2M Net Sunday night 0200Z on 146.94R-.

NEVADA

Frontier Amateur Radio Society, (FARS). Meets: 3rd Mon./monthly, 7 p.m. Denny's Restaurant across from Nevada Palace, 5318 Boulder Hwy, Las Vegas, NV. Net Mon. 7:30 p.m., 145.39 Rptr. on Black Mountain. Club info, Jim Frye, NW70, 456-5396.

Sierra Intermountain Emergency Radio Assoc. (SIERA). P.O. Box 2348, Minden, NV 89423. (702) 882-0451. Meets: 2nd Tue./monthly, 7:30 p.m., Douglas County Lib., Minden, NV. Talk-in: 147.330.

NEW HAMPSHIRE

Great Bay Radio Assn., WB1CAG. P.O. Box 911, Dover NH 03820. (603) 742-0130/742-1374. 2nd Sun./monthly, 7:00 p.m. Dover City Hall. Talk-in 147.57.

NEW JERSEY

Bayonne Emergency Mgt. ARC (BEMARC). 16th St. & Ave. A Firehouse, Bayonne, NJ 07002. Meets 2nd Tue./monthly, 7:30 p.m. Tri-Band linked repeaters: 145-430/224.280/445.575 MHz.

Garden State Amateur Radio Assoc., W2GSA. Meets 1st & 3rd Wed./monthly, 8 p.m. at Bicentennial Hall, Fair Haven, NJ. All are welcome.

South Jersey Radio Assoc. (SJRA). Pennsauken Sr. Hi Sch. at Hylton Rd. & Remmington Ave., Pennsauken, NJ 08109. Jan.-Oct. 4th Wed./monthly, 7:30 p.m. Nov.-Dec. 3rd Wed. due to Thanksgiving and Christmas. Talk-in 145.290 rptr. Club call K2AA.

NEW YORK

Communications Club of New Rochelle, NY. Harrison Street Firehouse. Richard Sandell, WK6R, (914) 834-2322. Meets: 1st Mon./monthly, 8 p.m.

Genesee Radio Amateurs (GRAM). N.Y.S. Civil Defense Center, State St., Batavia, NY 14020. Meets: 3rd Fri./monthly, 7:30 p.m. 147.285+ W2RCX.

Hall of Science Amateur Radio Club. P.O. Box 131, Jamaica, NY 11415. HOSARC, 2nd Tue./monthly, Hall of Science Bldg., 47-01 111 St., Flushing Meadow Park at 7:30 p.m. For info call Arnie, WB2YXB, (718) 343-0172.

Lockport Amateur Radio Assoc. (LARA) Meets last Sat./monthly, 7:30 p.m., Mt. Olive Church, Chestnut Ridge Rd., Lockport, NY. Info net Sun. 9 p.m. on W2RUI/R (146.82-). Contact Jim, KB2CUX, (716) 433-8564.

Orleans County Amateur Radio Club (WA2DQL). Meets: Office of Disaster Preparedness (CD), West County House Rd., Albion, NY 14411, 4th Wed./monthly, 7:30 p.m., 145.270– WA2DQL.

PROS, Pioneer Radio Operators Society. Meets: 1st Wed./monthly (except July/Aug.) 7 p.m., Masonic Temple, Rt. 78, Java Village, NY. Other Wed., 8 p.m. 145.170/144.57- Repeater KC2JY.

The Radio Club of J.H.S. 22, N.Y.C., Inc. WB2JKJ, P.O. Box 1052, New York, NY 10002. 24-hr. hotline, (516) 674-4072, FAX, (516) 674-9600. Non-profit org. using Ham Radio to enhance the education of youngsters, nationwide. Join us — "Classroom Net", 7.238 MHz, 7 a.m. E.S.T. PSE QSL!

Suffolk County Radio Club. 3rd Tue./monthly, 8 p.m. Bohemia Rec. Ctr., Ruzicka Wy. W2DQ/R 144.610/145.210, 223.080/224.680 rptr. Info call Jim Heacock (516) 473-7529.

Westchester Amateur Radio Assoc. (WARA). Scarsdale Village Hall, Scarsdale, New York. Meets: 1st Wed./monthly, 8:00 p.m. For info call Dan Grabel, N2FLR, Pres. (914) 723-8625.

Westchester Emergency Communications Assn. (WECA) 147.66/147.06, 222.80/224.40, 447.475/442.475. Meets: 2nd Mon./monthly, 7:30 p.m., Westchester County Ctr., White Plains, NY. Info: P.O. Box 831, N. Tarrytown, NY 10591. (914) 631-7424.

Yonkers Amateur Radio Club (YARC). Meets 2nd Sun./monthly, 10 a.m., 1st Pct., Yonkers Police Station, E. Grassy Sprain Rd., Yonkers, NY. Info: P.O. Box 378, Centuck Sta., Yonkers, NY 10710. (914) 963-8995. 146.265/865, 445.150/440.150.

NORTH CAROLINA

North Carolina Chapter TSRAC. Meets: Mondays, 28.350 on the air, 8:30 p.m. local time, Sat. 10 a.m. on 7240 and Wed. 9 p.m. on 7259. "The Alligators" — all mouth, no ears.

Stanly County Amateur Radio Club. P.O. Box 188, Stanfield, N.C. 28163. Meets 4th Thur./monthly, 7 p.m. at Stanly Community College, Albemarle, N.C.

OHIO

Ashtabula County ARC. Ken Stenback, AI8S (964-7316). County Justice Center, Jefferson, OH. 3rd Tue./monthly. 7:30 p.m. County Rptr., 146.715.

Clyde Amateur Radio Society (C.A.R.S.) Meets 2nd Tue./monthly, 7:30 p.m., Municipal Bldg., Clyde, OH 44811. NF8E Rptr. 144.75/145.35. 444.60 (+5 MHz). Net Sun. 9 p.m.

Dayton Amateur Radio Assoc. P.O. Box 44, Dayton, OH 45401. Meets 1st & 3rd Fri./monthly (Sept. thru June) 8 p.m., Career Academy on River Corridor Dr. Info on W8BI 146.34/94 & 222.34/223.94.

Lancaster & Fairfield County A.R.C. Meets 1st Thur./monthly, 7:30 p.m., City Hall, Basement Club Rm., Broad & Main. Info Net every Mon., 8 p.m. K8QIK/R 147.63/03 Rptr.

North Coast A.R.C. P.O. Box 30529, Cleveland, OH 44130. Meets 2nd Thurs./monthly, 7:30 p.m. at North Olmsted Middle Sch. cafeteria, 27351 Butternut Ridge Rd., North Olmsted, OH.

Northern Ohio Amateur Radio Society (NOARS). Meets 3rd Mon./monthly, 7:30 p.m., Gargus Hall, Rt. 254, Lorain, OH. Info: Rptr. K8KRG 146.70, DX Alert Rptr. 145.15. "Ohio's Largest General Interest Club"

Silvercreek Amateur Radio Assn. (SARA) Meets 3rd Thur./monthly, 7:30 p.m., Doylestown Village Hall, Doylestown OH. WD8PNF/R 147.99/39 rptr. For info call (216) 745-2573.

Toledo Mobile Radio Association. P.O. Box 273, Toledo, OH 43697. Meets 2nd Wed./monthly, 7:30 p.m., Luke's Barn, Lucas County Rec. Ctr., 2901 Key St., Maumee, OH. W8HHF 147.87/27 Rptr. Rptr. info/swap & shop, Sundays, wkly — 8:30 p.m.

Triple States Radio Amateur Club. Meets Wed./weekly on 28.480 at 8:30 p.m.; 7260 at 9 p.m. Rptrs. 146.31/91 and 146.115/715. P.O. Box 240, Rd. #1, Adena, OH 43901. (614) 546-3930.

Warren Amateur Radio Assn. Meets 1st & 3rd Tue./monthly, 7:30 p.m. at Kent State Univ. Trumbull campus, Rt. 45 in Champion, OH. Club rptr. W8VTD 146.97MHz.

OREGON

Central Oregon Radio Amateurs, (CORA). P.O. Box 723, Bend, OR 97709. Meets last Thur./monthly, 7 p.m., Bend Senior Cntr., 1036 NE 5th, Bend, OR. Net Sun. 7:30 p.m. 147.06+ MHz. Info call: (503) 382-1685.

Keno Amateur Radio Club. P.O. Box 678, Keno, OR 97627. Meets 3rd Thur./monthly, 7 p.m., Keno Fire Station. Rptr. 147.32+ W7UFM. Info: Tom Hamilton, WD6EAW, (503) 883-2736.

Umpqua Valley Amateur Radio Club. Meets 3rd Thurs./monthly 7:30 p.m., Douglas County Courthouse, Rm. 311, Douglas St., Roseburg, OR. Info W5PII/R 146.90/30.

PENNSYLVANIA

Mercer County Amateur Radio Club W3LIF. P.O. Box 996, Sharon, PA 16146. Meets 4th Tue./monthly at 7:30 p.m., Shenango Valley Med. Center, Farrell, PA. Net, Thur. 9 p.m. on 147.75/15 W3LIF, Digi. 145.010.

RF Hill Amateur Radio Club. Meets last Thurs./monthly, 7:30 p.m. at First Federal Savings & Loan of Perkasie, 600 Market St., Perkasie, PA. Nets: Wed. & Sun., 8 p.m. on 144.71 — 147.310.

Warminster Amateur Radio Club, WA3DFU. P.O. Box 113, Warminster, PA 18974. (215) 443-5428. Meets 1st Thurs./monthly, 7:30 p.m., Neshaminy-Warwick Presbyterian Church, Warminster, PA. Net on 147.690/147.090 Wed. 8:30 p.m.

TEXAS

Arlington Amateur Radio Club, (AARC). Meets 3rd Fri./monthly, 7:30 p.m., Arlington Human Resources Bldg., 401 Sanford, Arlington, TX. Talk-in—444.2, 224.8 and 147.14.

Beaumont Amateur Radio Club. Meets last Tues. of each month at the GSU Aud., South and Oxford Streets, Beaumont, TX, 7:30 p.m. Talk-in on 146.16/76 or 146.10/70. Join the fun!

Brazos Valley Amateur Radio Club (B-VARC). P.O. Box 1630, Missouri City, TX 77459. Meets 2nd Thur./monthly, 7:30 p.m., Sugar Land Community Cntr., 226 Matlage Wy., 3 blks SW of Imperial Sugar Co. at HWY US-90A & Brooks St. (HWY 58) in Sugar Land, TX. Talk-in 145.47, 442.5 rptrs.

Sun City Amateur Radio Club. Meets 1st and 3rd Fri./monthly, 7:30 p.m., 3709 Wickham Ave., El Paso, TX. K5WPH 147.240, 443.4 with remote operation on 6M and 10M.

VIRGINIA

Southern Peninsula Amateur Radio Klub (SPARK). Meets: 1st and 3rd Tue., Salvation Army Community Bldg., Hampton, VA. Rptrs: 146.13/73 & 449.55/(–5) T. VE Exam Info: (804) 898-8031, WARTZ.

Virginia Beach Amateur Radio Club (VBARC). Open Door Chapel, 3177 Virginia Beach Blvd., Va. Beach, VA. Meets First Thur./monthly, 7:30 p.m. Info on WA4KXV rptr, 146.97/37.

WASHINGTON

The Mike & Key Amateur Radio Club. Meets 3rd Sat./monthly, 10 a.m. United Good Neighbors Cntr., 305 S. 43rd, Renton, WA. Talk-in on 146.82 rptr.

WEST VIRGINIA

Jackson County Amateur Radio Club. Robert D. Morris, WA8CTO, Sec.-Treas. 308 Edgewood Circle, Ripley, WV 25271. Meets 1st Thur./monthly, 7:30 p.m., United National Bank of Ripley. Net Mon. 9 p.m. on 146.67/.07 WD8JNU/R.

Tri-state Amateur Radio Assn. Meets: 3rd Tue./monthly, 7 p.m., Green Valley Vol. Fire Dept., Norwood Rd. & 16th Street Rd., Huntington, WV. ARES net Thur. 9 p.m. on 146.76(–) W8VA/R. Info KB8EHJ (304) 824-5958.

Our local radio club has been growing steadily the past few years. It is due mainly to excellent leadership and lots of club activity. This year's Field Day, for example, was the best coordinated and the best attended, and that resulted in the best contest score the Red River Radio Amateurs have ever sent to the ARRL. I salute the leadership! To top it off, our Field Day ended with a club picnic that featured a delicious barbecued pig.

The club leadership has emerged from newcomers to ham radio who, for the most part, are graduates of the Novice class the Fargo-Moorhead club has been running for many years. We have so many newcomers to the hobby I almost feel like a stranger at the meetings.

Another thing that contributes to the welfare and growth of the club is the newsletter. Our club has a dandy. A large number of members contribute editorial materials which are collected by Dale Cary, WDØAKO, of Moorhead, Minnesota. The input goes to Dale by modem, hand-carried floppy disks or hand-written papers. He puts them into his 386 computer running *PageMaker* and does the layout for the eight-page publication.

Dale works as a serviceman for a computer sales company, so he has access to a scanner which he uses to put photos and diagrams into the paper. When he finishes the layout he saves it to a floppy disk that he brings to my shack where we run it through the Postscript laser printer I use for my desktop publishing setup. The output then goes for duplication and mailing, a process done by other volunteers. The result is a fine looking paper which has helped our club grow and prosper.

For the last six years I have been editing a 12-page tabloid size newsletter for our high school alumni association. My high school burned down in 1966 (I was there with my Arriflex camera and 16mm film capturing the fire fighters' efforts to save the great old building). No, they didn't burn it down to get me out of there; I graduated in 1935. In place of our Central High, the school board built two replacement buildings, and so our alumni constitute a sort of "last man club." Six years ago we incorporated the alumni association and I became the editor of the paper.

I don't think there are too many dues-supported high school alumni organizations that print a paper the size of ours. We get news and stories from literally hundreds of old grads. It's a fun paper and the whole project has been a huge success.

I used to do the newsletter writing on my various computers and then turn the copy over to the print shop to finish the job. Then I discovered desktop publishing. I started with the computer program, *Ventura Publisher.* Instead of cutting and pasting, I laid out the paper in the computer, put it on floppy disk, and took the disk to the printing company where they transferred it to camera-ready copy. The money we have saved by my desktop work has paid for much of the equipment and all of the software.

In order to proof my work I bought a Hewlett-Packard IIP and a Pacific Data cartridge to emulate Postscript printing. The combination worked great. I could check my work simply by pushing a couple keys and out would come a shrunken page of my tabloid newsletter. I still take the floppy with the paper layout on it to the typesetting service for camera-ready copy, but the proofs make it easy to lay out the big paper.

Recently we upgraded the printer to an HP-III with Pacific Page XL accelerator/memory board installed. This sped up the whole procedure and I'm happy as a clam at high tide (so the saying goes).

For the last two years I have been using a CD-ROM player on my computer. I bought it from Buckmaster with a *Hamcall* program disk that has all the US amateur call data on it. The little disk also contains a ton of public domain computer programs and data. For example: Part 97 of the FCC regulations is available at the touch of a button.

I also use the *Microsoft Bookshelf*

CD-ROM as my dictionary, thesaurus, quotation dictionary, almanac and Zip Code directory. All that stuff, about 600 megabytes, is on one little compact disk. It's amazing! Besides all that, the disk also sports the complete *Chicago Manual of Style,* a giant book devoted to writing and publishing advice.

For some time I have wanted to add an art and drawing program to my desktop publishing software collection. When I saw that the authors of *Corel DRAW* were going to offer their software on CD-ROM I popped the big bucks and ordered the program.

When the package arrived I naturally dropped everything and started to shove the CD disk into the slot; I was in a hurry to learn how to use the program. But my eye caught a printed instruction: "Run the video cassette tape before installing the program." There in the bottom of the box was a one-hour video tape. I shoved it into my VHS player and in one hour learned the basics of using a drawing program. What a great instructional tool! It was one of the best educational videos I have seen recently. After I finished the tape I installed the program and began to work through the tutorial book that also came with the drawing program.

I wish every software publisher would include a video tape as part of the sale. It is natural that I advocate the production of instructional video tapes, after all, I spent my working life making industrial motion pictures (and tapes) about farm and industrial machinery, surgical procedures, farm credit, art instruction, plus about everything from soup (chicken, tomato, rice, pea, corn) to nuts (almonds, pecan, walnuts). When I retired from my company we had completed over 800 audio-visual projects. The company, Snyder Films and Video, is still in business and is the only full service audio-visual producer in our state with digital video stuff in action.

Putting a video instruction tape in with a software package will speed up the learning process immensely and thereby create a batch of happy customers praising the software just like I'm doing with this column. Trying to dig out the basics of how to run a program sometimes is frustrating when you buy an expensive program and then have to wade through "read-me" files and a batch of loose papers trying to figure out how to do it. Every software program should have a video instruction tape with it! It's the way to go!

RTTY bits

Glen Pladsen, AEØQ, of Lakewood, Colorado, tells us that sending out a CQ will bring RTTY operators out of the woodwork on days the bands are quiet. He sites this example: "Friday evening at 2300 local time the 20M band was completely dead. A CQ brought Jose, PJ2MI, out and we had a nice chat. Early the next morning, 0400 local, I put out another dead-band CQ and Jose again came back to me. It shows someone is listening when the band seems dead. I wouldn't dream of calling CQ on CW!"

Dave Weakley, WB6TFH, of Springdale, Arkansas, has been packeting back and forth to Yank Marty Mullican, GØNJN, stationed in England. Dave's first try only took three days to make the trip to jolly old England and two days for Marty's return. GØNJN is using a no-disk, no-printer C-64, a PK-232 and an ICOM HT to, as Marty puts it, "work the world!" Marty also told Dave, "You can sleep tight tonight, your Air Force is awake!" If you wish to try an overseas packet exchange, send one to Marty, GØNJN @ GB7DDX.GBR.EU. If your message gets there, you'll no doubt get an answer.

I recently heard a lady complain to Bruce Williams, the nationally syndicated talk show host, that her Amateur Radio neighbor was interfering with her telephone system. "He woke us up in the middle of the night," she added. Williams then advised the caller to contact the FCC and, if that didn't get results, contact her senator or congressman. Someone should put know-it-all Williams straight on the advice he should give in like cases. Apparently the offender had supplied her with a filter and gave her the FCC phone number to call if it didn't work.

Eavesdroppings

"MOONSHINE IS NOT SELLING TOO GOOD THESE DAYS, SO A MAN HAS TO DO WHAT A MAN HAS TO DO ... THE RAIN IN SPAIN GOES MAINLY DOWN THE DRAIN ... THE SOFTWARE SAYS IT IS CAPABLE OF MAKING ABOUT 12,000 COLORS BUT I'M COLOR BLIND ... THE SUNSPOTS HAVE BEEN WORKING THEIR FIENDISH DEVILTRY ON THE HAM BANDS LATELY ... AS FAR AS I'M CONCERNED THE EARTH MUST BE THE GEO-MAGNETIC STORM CAPITOL OF THE UNIVERSE ... IT'S HARD TO TELL WHAT TOWN YOU ARE IN THESE DAYS, THE SLUMS ARE STARTING TO ALL LOOK ALIKE ... HE ONLY BROUGHT ME HOME A BOOT FULL OF SAND FROM DESERT STORM ... IT IS GETTING HARDER TO FIND THAN A LIBERAL SUPREME COURT JUSTICE THESE DAYS ... WE DROVE 6,000 MILES ON OUR VACATION AND ABOUT ALL I SAW WAS INTERSTATE CENTERLINE AND TRAFFIC DETOUR WATCHGIRLS. MY WIFE TELLS US WE WENT THROUGH SOME PRETTY COUNTRY BUT I WAS TOO BUSY DODGING HOLES IN THE INTERSTATE TO LOOK ... MY WIFE CAN HARDLY WAIT FOR FOOTBALL SEASON TO END NEXT SUMMER ... THE ANTENNA IS A SAGGING FLAT TOP 50 FEET HIGH AT THE ENDS ... THIS IS MY FIRST AMTOR CONTACT AND I DON'T THINK I KNOW WHAT BUTTON TO PUSH TO SHUT IT OFF ... I'M STILL GETTING OVER THE POISON IVY LEFT FROM FIELD DAY ... I THINK I STILL HAVE AN EMPTY ENVELOPE AT THE QSL BUREAU ... IT'S TOO DARN HOT FOR ME, I MELT LIKE THE OLD WITCH OF THE NORTH ... MY WIFE SAYS I BROKE MY LEG SO I WOULD HAVE MORE TIME FOR HAM RADIO ... CHEERS FROM THE VALLEY OF THE PRUNES."

Thanks to WØHAH, WA6YOO, WB6TFH, N8KDW, NKØA, NØBCW and WØML for their input. You can write to me at 1514 South 12th Street, Fargo, ND 58103. My packet address is WØLHS @ WØLHS.ND.USA. NOAM. 73 de Bill Snyder. DIT DIT. □

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Experience is a wonderful thing. It enables you to recognize a mistake every time you repeat it.
—Trident ARC, Summerville, SC

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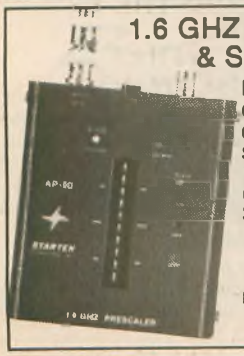

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Search And Rescue Communications

Jerry Wellman, WB7ULH
P.O. Box 11445
Salt Lake City, UT 84147

Following a recent exercise (it lasted a week and involved federal, military, state and local agencies) one Amateur Radio operator commented that all their traffic was done on packet, using voice for logistics support such as who was at what location and with what call.

I continue to predict that packet is going to be the backbone of public service communications! If you're involved with or going to be involved with search and rescue or any public service it's important you spend some time with a TNC (terminal node controller) and get to know how the packet network functions. There are a few good commercial books on packet, and some groups such as the NEDA (North East Digital Association) and TAPR (Tucson Amateur Packet Radio) have prepared instructional papers as well.

The growing packet radio information void, as I see it, concerns what to do with your packet once youve got it on the air or how to best use packet during emergencies and public service events.

In general I'm seeing greater stability in nodes and PBBS stations. Nodeops and Sysops look at their node or PBBS as a long-term project and don't take the stuff down a week after it's operational. This means our paths have become more stable and PBBS are reliable user hubs. We're also finding quite a bit of independent programming happening for the computer automated message sending or dealing with an emergency shelter database for locating people.

Coordinating packet

However, packet radio faces a big obstacle—that of coordination. A great deal of packet operators look at this mode as another user-to-user form of Amateur Radio communications, much the same as RTTY, CW or voice. In its simplist form packet *is* a user-to-user link and you'll see this happening on many local digital frequencies; there are still folk who hop across country via nodes to have a conversation with someone.

All this is okay, but packet's potential isn't a one-on-one mode. It's the ability to move lots of data quickly and efficiently, as well as the ability to *network* and *be part of* a network. Networks offer user-to-user links, single-to-many links, LAWN (local area wireless network)-to-LAWN links and automatic message routing. There are VHF-to-UHF links, FM-to-HF gateways and the digipeater. Packet also seems to have generated a lot of overnight experts armed with their TNC who have no idea what harm their five-minute beacons cause. (If you don't know, ask your local BBS or node operator!)

I also believe that the personal bulletin boards (the ones that come built into your TNC) have caused some Amateur Radio operators to limit their exploration of the features found on a full-service BBS. For example the local BBS has the ability to build a database and search the database. Perhaps your local disaster requires setting up a list of all the people in local Red Cross shelters. Rather than each shelter maintaining a list (possibly in the personal BBS of the TNC), each shelter station would send names (singly or in large lists) to the BBS database file. Other users would then use the file search command to search for needed names. (The local BBS maintains a frequency list that allows users to search for local frequencies. It has proven quite popular.)

A full-service BBS allows many simultaneous connects, which means

that if your county EOC is connected to someone else, you don't have to keep trying to connect or use voice to coordinate connects. You just dump your messages into the central BBS. This also means the BBS won't change frequency (which happens with personal bulletin boards on a TNC) when the operator forgets to check or unplugs the TNC to switch to voice. And it means messages don't get dumped if someone pushes a TNC reset, and the full-service BBS won't run out of room for large numbers of messages or long lists of shelter names.

Beyond basics

Because of the confusion with TNC-BBS and a computer based BBS, I see most users of the LAWN BBS doing message listings and maybe sending a message or two once in a while. Few users explore what other "features" are part of the LAWN BBS. Weather watchers use voice (which is great too) but don't realize they can send a weather message (the SW command). Using the LAWN BBS allows other weather watchers to get weather information just by listing the weather traffic (the LW command).

Efficiency of packet in your emergency response is only as good as your training and understanding. Limiting your packet to "user-to-user" operation reduces your efficiency. I'd urge local ARES/emergency response leaders to include packet training regularly. Identify a packet coordinator (or two) for your group and funnel information through them; avoid the temptation to let your local packet get bogged down as a user-to-user replacement for voice. Worst of all, don't assume that owning a TNC means instant expert status. Learning packet involves some technical understanding but a lot more is learning about networks. Having a good packet coordinator for your group will make a big difference in how good your group's packet response will be.

Observations

Your most important assignment? Net control station! Having your best operator as NCS makes Amateur Radio shine. It's fun to be on the front line where the action is, but it's more important to have your super operators as NCS. NCS isn't something everyone can do well. Being club president or communications officer doesn't confer NCS (or communication) skills. The best communication leaders are those who cultivate and recognize talent and place it where it is most effective.

What's your planning philosophy? Try "worst case" planning. If you plan for the worst case, you'll find fewer surprises when you respond. Take a meeting night and brainstorm a couple of scenarios. You'll be surprised what kind of worst case preparation ideas everyone will come up with. Try not to plan by yourself. Involve others and enjoy a plethora of ideas!

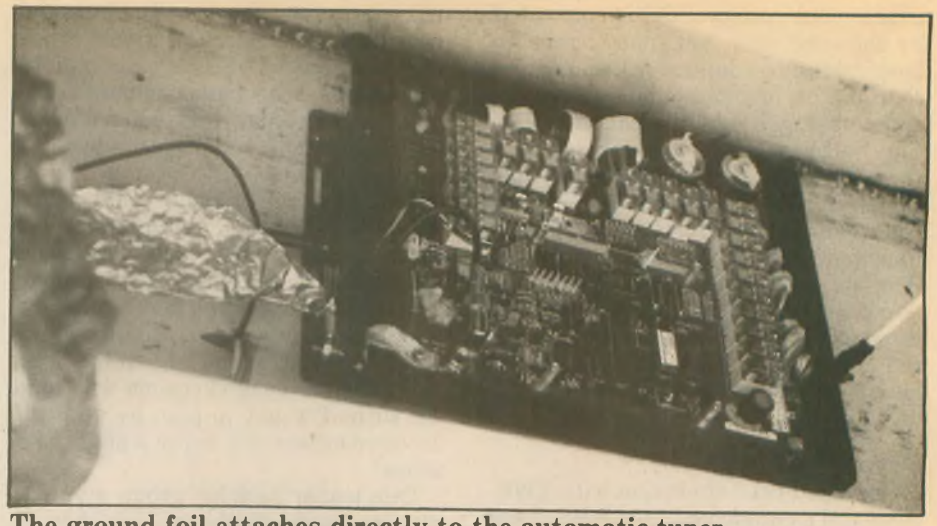
One leader said his group seems to always have problems. But then he added, "supporting a losing cause is better than no cause at all." I wonder how many "leaders" labor under self-generated losing causes. Avoid the "commander infection" where one thinks every edict must be followed without question and that no one else can possibly have a good idea. Correcting a bad decision indicates that you operate with an open mind and are willing to listen!

Do you delegate or dump? Members of your group are quick to sense when you are delegating based on efficiency or dumping because you don't want to do the task. This happens quite a bit in mission coordinator and search team assignments. If it's a neat mission with lots of action then "I'll take it," you say. If it's just sitting by the phone and filling out paperwork then you give the mission to someone else. Dumping is a great way to drive talent away from your group and discourage participation!

I read that business is changing. Consumers are voting with their feet. That holds true with volunteer public service groups as well. If you have a service that's really a service (beyond "in name only") you'll get called upon. Your consumers (state and local agencies) soon discover if you can perform or not. When members realize they're not getting called to serve, they'll find another group that does get called. (This presumes your members joined to serve and not merely to mutually appreciate each other.)

The world is run by people who show up and voice their opinion. If you don't like something you can either speak out or accept what happens. Speak up!

I appreciate your letters, packet comments and ideas. If you write with a comment, suggestion or question, I'll answer. Exchanging ideas is what makes Amateur Radio fun and progressive. □



The ground foil attaches directly to the automatic tuner.

Copper foil for grounding

High frequency, 2 to 30 MHz ham radio and marine radio SSB transceivers all require a low-reactance group connection. The same is true of all HF manual and automatic antenna tuners—they also require a solid ground connection to your vehicle chassis, sea water, or earth ground using a ground conductor with minimum reactance.

A good ground connection will also minimize a "hot" radio microphone that bites you each time you transmit. A good ground connection will clear up many garbled transmissions where RF gets back into the antenna coupler or radio circuits. And a good ground connection will lower your take-off angle on a mobile whip antenna using that ground as its counterpoise.

Big heavy wires, like automobile starting cables, won't work as a good ground connection. Round wires look like coils at radio frequencies, and coils exhibit an opposition to the flow of electrons, or *reactance*. The way we get around a ground lead looking like a coil is to take out the roundness in a ground circuit.

Copper plumber's strap, thin copper ground foil, or even aluminum Reynolds Wrap work quite nicely as a permanent or temporary low-reactance ground. Silver tinned braid is also good for a low-reactance ground, but stay away from plain copper braid. The problem with copper braid is that it begins to corrode within its individual fibers, and this may lead to a "noisy" RF ground connection when vibration sets in on your boat or vehicle.

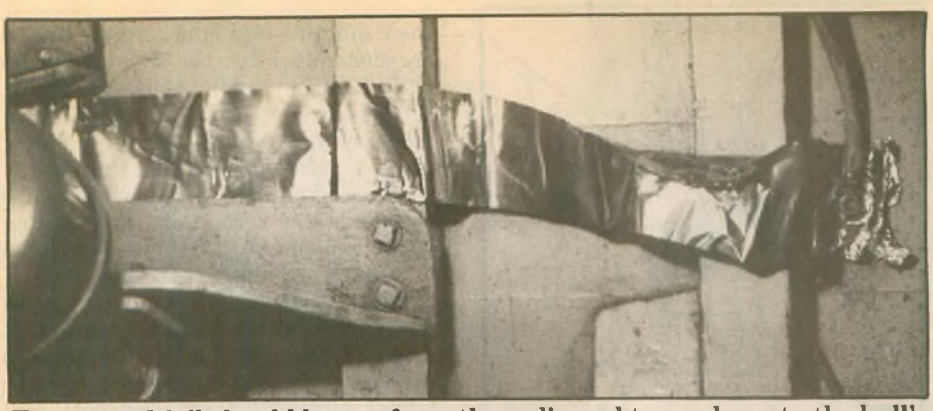
Copper foil, copper plumber's strap and other types of foil are available at airconditioning stores and hardware stores, and leading ham radio dealers also carry 3 in. width, 2-mil copper grounding foil.

For land installation, grounding foil goes on the equipment, the wall-mounted cable feed-through connectors, and onto the ground side of your antenna system. All these wide conductors then go into your earth-ground system.

In vehicles and motorhomes, the ground foil connections go to the metal chassis of your vehicle and to the main frame of your mobile chassis. It's also wise to bond the trunk lid and the hood of the vehicle—as well as the shock bumpers—into this common chassis ground.

In marine installations, the ground foil should be run down to green-wire-bonded bronze through-hulls, shafts, rudder posts, metal water tanks, and anything else in contact with the sea water or fresh water that has a green bonding wire going to it. On boats, stay off of any metal through-hulls, specifically if they are unbonded. You don't want to undo anything the manufacturer has specifically isolated for galvanic corrosion protection.

In portable installations, Don Ar-



The ground foil should be run from the radio and tuner down to the hull's grounding plate.

nold, WD4FSY, of Outbacker Antennas, uses ground foil in quarter wavelength strips to counterpoise his all-band Australian vertical whip. This is the method used in condo installations (out on the patio) where there is nothing else metal to bond to. The individual quarter wavelength ground strips offer an almost immediate tune-up of any vertical whip portable antenna installation. Use the MFJ SWR analyzer, along with an Optoelectronics frequency counter, to fine-tune the system without ever having to go on the air. Using this equipment also allows you to fine-tune your antenna and ground system without having to run back and forth between the feedpoint and your transceiver.

On your HF radio equipment and antenna tuners, most manufacturers provide a big healthy ground lug to make your ground foil attachment. The Kenwood 440 has a nice big wing nut, and the new SGC combination Amateur Radio/marine radio SSB transceiver with matching remote automatic antenna tuner also includes a big, healthy ground strap mounting lug with wing nut. But, on equipment like the Kenwood TS-140 and the ICOM IC-735, you have to improvise to make a good chassis ground connection. The ICOM set has a spot for a piece of wire, but don't use wire as a low-reactance ground! You must use something flat, and I usually attach it to some of the metal parts holding on the metallic covers. On some of the Yaesu transceivers, they also employ a nice big ground lug for making a good, low-reactance ground connection with foil.

How do you know that you might need more ground? Take some Reynolds Wrap, attach it to the back of your rig and your coupler, and attach it to your ground source. In marine installations, chuck one end of the foil overboard and let it sink down a few feet. Now run some checks, and if everything gets better after you add the temporary aluminum foil as added ground, then you know you probably could use a bigger ground plane. However, if adding the foil makes absolutely no difference, then you know you already have enough plane. Aboard boats, I usually do this procedure late at night when no one is watching—nothing looks more ridiculous than a hunk of aluminum foil hung off the side of the boat and dangling in the water!

How is your ground connection? Are you using wires instead of a flat copper ground conductor? Wires are out, and a good ground foil connection is in. All leading ham stores carry the ground foil, so there's no excuse for not running it as part of your HF SSB ground system. □

Gordo tests for a better ground by tossing foil overboard.

End bells from discarded power transformers make ideal recessed mounting brackets for panel-mounted devices. *—Dave Guimont, WB6LLO; North Shores ARC, San Diego, CA* □

DX World

(continued from page 37)

WA1IMS, KR1R, KI6YE, W7AUQ, The American Radio Relay League, Salt Lake City DX Association (KB2G), Western New York DX Association (KD2YP), Northern Arizona DX Association (W7YS), Western Washington DX Club (K7WA), *The Canadian Amateur Radio Magazine,* Northern California DX Foundation, *The K1BV DX Awards Directory, DX News Sheet* (G4DYO), *The Long Island DX Bulletin* (W2IYX), *QRZ DX* (W5KNE), and *The DX Bulletin* (VP2ML).

I am submitting this month's column almost one month earlier than I would normally do, due to an extended summer vacation. Therefore, I've tried to use material that time would have no effect on. Of course, some of it is like fine wine; it gets better as it gets older. The same applies for true-blue DXers. Don't forget to keep your DXathon logs current. All contacts made during the 1991 calendar year count.

One evening recently, my two-year-old grandson was visiting and sat himself down at my radio. Before long he had the mike in his hand and was muttering something into it that made no sense. I guess he wants to be like Grandpa. Oh, yes! The rig was off. Very 73 de John, N6JM. □

At the end of the last column, I was ready to tell you about the computer analysis of a long path QSO I had in January '90. But I should say that QSO in itself was not unusual as I had a couple dozen other long path QSOs in that period, often reaching into western or eastern Europe on a heading of 200 degrees west of north. Given that, I had to think that long path was nothing out of the ordinary; it was open in the mornings almost on a routine basis.

So let's go back to Jan. 16, 1990 when the 10 cm solar flux was 192; I had a couple of 20M CW contacts that really got my attention. First, I called UB4QN at 1508 UTC (0708 PST) and we agreed that we both were RST 589, he in Zaporohyze, north of the Black Sea, and me right here on Guemes Island, Washington. When we were done, I was then called by UT5RH, over to the west in Odessa, again north of the Black Sea. This time, we both were RST 579. Downright interesting.

For the Odessa contact, the computer program I'd written showed some interesting results: my RF started off inside the morning part of the grayline but once it went just to the west of Pitcairn Island (VR6), the path was in sunlight and continued that way in the southern hemisphere until past the northern tip of Madagascar (C9) on the upswing toward the Black Sea. From then on, it was in the dark again, just inside the evening grayline.

Okay, that takes care of grayline considerations. But did you ever think about the geomagnetic dip equator or the "equatorial anomaly" in connection with long path? I wager not. Well, the dip equator is fairly easy to discuss. Thus, I've often said in this column that while ionospheric electrons are released by solar radiation, their motions and spatial distribution are controlled by the local geomagnetic field, say up in the first few hundred kilometers from the earth's surface. In that regard, the dip equator gives a reference line on the earth's surface, where the compass dip below the horizon is zero, and when dealing with ionospheric problems, locations on a path are referred to that line.

The "equatorial anomaly" is a bit more involved, as its name implies. It refers to the fact that the F-region in the vicinity of the dip equator rises to higher altitudes than elsewhere and the electron density (i.e. foF2 critical frequency) reaches greater values in the late afternoon and early evening. These unusual regions are found in narrow strips at geomagnetic latitudes about 15 to 20 degrees from either side of the dip equator.

Now in the morning sector of local time, the great circle path from my QTH to Odessa crossed the dip equator at 135 degrees west long., about 25 degrees north of Pitcairn Island (VR6). In the evening sector, it crossed the dip equator again, now at 40 degrees east long. while going north over Ethiopia (ET). The computer program sampled foF2 values in both regions and they were quite different: about 6 MHz in the morning sector and 13 MHz in the evening sector near the equatorial anomaly.

As mentioned in the first article, the graphics part of the computer program was written to display short segments of the foF2 lines on the world map along the great circle path. That meant the program had to evaluate how fast foF2 was changing along the path, i.e. find the horizontal rate of change of foF2, in both magnitude and direction. That done, the program then put a short line on the graphics screen showing how the section of the foF2 line is actually oriented. That proves to be a big order so the sampling was done about every 1,700 km along the path, some 18 points in all.

Obviously, there's more detail here than you want to hear about or I have space to describe and that means that I'll have to limit myself to the essentials: the foF2 lines and how they bear on ionospheric tilts. To aid in your understanding, I'd suggest you refer to the foF2 map in last month's article.

As for results from the program, they showed the lines of constant frequency in the first part of the northern dawn sector as closely spaced and going in a north northeast-south southwest direction, essentially parallel to the path. The value of foF2 in this region was about 5.5 MHz and the

variation or gradient was about 0.15 MHz per 100 km perpendicular to the path.

After that, the value of foF2 slowly increased along the path but the gradient was much smaller, about 0.03 MHz per 100 km and lines of constant foF2 largely parallel to the long, looping part of the path in the Southern Hemisphere. Starting around Madagascar, however, the value of foF2 rose more rapidly, reaching a peak of 14 MHz in the equatorial anomaly, with a gradient now along the path of about 0.30 MHz and foF2 lines essentially perpendicular to the path.

When translated into ionospheric tilts, the first part of the path suggests a tilt which probably would have displaced my RF a bit westward but in the Southern Hemisphere the tilts were rather weak and of no great consequence. In the late afternoon and evening sector, the tilts were right along the path and of such magnitude as to suggest what's needed for chordal hops.

But there's more to ionospheric tilts than just horizontal gradients; in particular, there's the matter of F-layer heights. So for the full story, the vertical dimension must be added to the results from the horizontal variations of foF2. In the present instance, the region around the "equatorial anomaly" is where F-layer heights increase to large values, welling up from 300 km to heights around 500 km. At the same time, the critical frequency reaches the high values cited above and thus adds the vertical dimension to ionospheric tilting. In addition, it is supported by ray-tracing calculations across the equatorial anomaly which show chordal hops, ionosphere-to-ionosphere reflections, taking place in the early evening sector.

Now just to keep your faith, I should tell you that I repeated all the MAXIMUF calculations using IONCAP, a downright tedious and time-consuming process. I will admit there were quantitative differences in the two calculations but the MAXIMUF program got all the right results in all the right places. So there they are, good indications of where this particular example of long path got some of the necessary ionospheric tilts, chordal hops or whatever: crossing the equatorial anomaly in the evening sector.

But in closing, let me remind you that IONCAP gives you nothing but the average behavior of the ionosphere, so I haven't pulled any rabbits out of the hat! Indeed, going back 25 years to the days when old-time ionospheric buffs did their predictions with CRPL ionospheric maps and guidance from *NBS Handbook 90*, they could have done the same as I've done here. But it would have been done manually with the aid of plastic overlays, a graduated ruler and a sturdy "slip stick." (Remember that one?) That effort with only those tools would give real meaning to "tedious and time-consuming."

With the computer, however, one can explore other paths at will—just change the coordinates, time and solar flux and away you go! In that connection, a long path of interest is the one from the East Coast to Perth (VK6), as mentioned in the *ARRL Antenna Book*. On that path, one's RF gets to the equatorial anomaly early in the path but after that it's all "up hill" to Perth. That's in contrast to my path to the Black Sea, getting the chordal hops only after going "up hill" past Africa.

Finally, the mention of "going up hill" raises the question of other possible sources for chordal hops. That will have to wait for another day. Stay tuned! □

Our neighbor says, "A chicken farmer crossed an egg with an axe, but the hen just couldn't hatchet."

MMARC Sparks

Paul A. Scipione, AA2AV
MARS call AAA9PR

The AAR4CSS Army MARS station was completed and operational in 60 days.

AAR4CSS: an overnight success

We've all heard the myth many times before. Someone starts a new company at their dining room table and it does $50 million in sales the first year . . . or someone wanders into an audition for a new Broadway musical show and instantly gets the starring role . . . or a kid goes right from the local softball league to a 310 batting average and million dollar contract in the Big Leagues. Skeptical? Well, listen up, because now I'm going to tell you an "overnight success" story that really is true.

In Ocala, Florida, there is a nice bunch of local hams (mostly retired men) who make up the Silver Springs Radio Club. The 160 members get together for a leisurely meeting every month as well as help out at the annual Christmas parade and run the local RACES and hazmat communications activities. They also run two 2M repeaters and a 440 machine and like to chide the "snow birds" among them, retired hams from up north who "migrate" back home for a few months each summer. Nothing remarkable about this radio club, you say?

It all started at the regular monthly meeting the third week in November (1990), when three club members—John Williams, K4ANJ; Don Pieratt, N8CBR; and Lou Gorski, KB9HD—got up and presented an idea: "Our troops are really pouring into the Persian Gulf now and they must really be getting lonely as we move into Thanksgiving and Christmas."

"That's probably true," a couple of fellow members blurted out, "but Ocala is more than 8,000 miles away from the Gulf. There's not much we can do to help from here."

"Wrong!" our three intrepid club members got excited. "Ever hear about MARS, the Military Affiliate Radio System? Well, with a lot of hard work and good luck, we could get a MARS call and get an HF station together and run phone patches for our troops!"

Nearly everyone at the club meeting thought this was a great concept, but there was a lot of skepticism about the club's ability to pull it off in time to help our troops. But John, Don and Lou were adamant. They quickly organized club members into several emergency task forces and gave out priority assignments. They would try to accomplish the "impossible"—organize a new MARS station, get official approval, and get it on the air to run phone patches, all within 60 days or less.

Now, here's how fast the "overnight success" of AAR4CSS actually unfolded:

Day One: Several Silver Springs Radio Club members contacted Fort Huachuca, Arizona, and got an immediate positive reaction from the Chief of Army MARS, who immediately forwarded a station application kit.

Week One: Other club members began looking for a piece of land that would be big enough to accommodate the gigantic 900 ft. rhombic antenna that John Williams (K4ANJ) had originally designed and erected for all local Air Force MARS stations during the Vietnam War.

Week Two: While one club team completed the Army MARS application form and sent it overnight via Federal Express to Fort Huachuca, another team came up with the "perfect" spot for the miracle station: a 20 acre parcel of vacant land that was part of the right of way for the Cross Florida Barge Canal that had been proposed and designed in the 1960s but never built.

Week Three: Shortly before Christmas, club members received expedited approval from the Florida State Legislature for use of the land. Expedited approval was also received from Army MARS; the station now had a genuine MARS call sign, AAR4CSS, and approval to move both phone patch and MARSgram traffic from our AEM3 stations in the Persian Gulf. Another club team came up with a 60-ft. housetrailer, found abandoned on the other side of the city. But there were two big problems: several gaping holes in the side of the trailer and the even bigger problem of how to move it across town to the Barge Canal site. Were there really Christmas miracles? Only time would tell.

Week Four: Yes, Christmas miracles do happen! The local chapter of Vietnam Veterans of America (VVA) heard about the radio club's desperate need and agreed to help move the housetrailer. Led by local VVA president Joe Ernest, the combined VVA/Silver Springs Radio Club gang managed to move the beat up old trailer several miles to its new site, intact! Another

team hastily built a foundation for the trailer and cleared a road into the station site.

Week Five: The club was now into the first days of 1991 and the political and military situation in the Gulf was really getting tense. Club members reaffirmed their resolve to get the miracle MARS station on the air quickly. There were now more than 500,000 American troops in the Gulf region, with several million very concerned family members waiting for news at home. Don Pieratt, N8CBR, picked up the phone and called the president of the local subsidiary of the United Telephone Company and within days, a work party of more than a dozen technicians from UTC with half a dozen bucket trucks showed up on site with several dozen 60-ft. telephone poles. In just two days, post holes were dug and the poles were installed and members of the Silver Springs Radio Club, led by John Williams, K4ANJ, completely installed the monster 900 ft. rhombic antenna. This miracle was made possible because John had actually stored the original Vietnam War MARS station in his basement for nearly 20 years! Way to go, John!

Week Six: Things were shaping up well for AAR4CSS. The local VVA guys and several radio club members had managed to patch up the holes in the housetrailer and members donated carpeting, desks and chairs, air conditioner, and a refrigerator for the station. A pair of Collins S-line transmitter and receiver and an old National NCL1000 linear were donated. They were only days away from meeting their "impossible" deadline by going on the air. There was only one remaining problem: cows from a neighboring farm kept wandering into the station site, but club members scrounged up material for a fence.

January 20, 1990: Exactly two months to the day from the night when the MARS station idea was first suggested at the club meeting, switches were thrown on the Collins rigs and AAR4CSS went on the air, quickly making contact with AEM3USJ in the Gulf. The "miracle" had indeed happened, not because of good luck, but because of the hard work of the men and women of the Silver Springs Radio Club!

Between Jan. 20 when the station first went on the air to the Gulf and June 11 (the latest statistics that I have from the station), AAR4CSS has run a total of 12,986 completed phone patches, making it the number one Army MARS station in CONUS (with AAR2USI at Fort Monmouth the number two station at approximately 11,000 completed patches).

One reason for their success has been the free domestic phone service provided by US Sprint and the availability of some local United Telephone Co. operators in Ocala who have provided dedicated coverage every day. Like some phone company operators did during Vietnam War MARS operations, these phone operators do all the dialing to GIs' family members and briefings, so that all the AAR4CSS operators have to do is throw one switch and instantly bring the loved ones together via HF from the Gulf.

Station operators did have a big technical problem within days of going on the air, though, when their NCL1000 linear "blew up" (setting off the fire detector in the trailer!). One station member took the initiative by calling the folks at ETO in Colorado and they were immediately offered a "prototype" Alpha 87A computer-tuned 1.5kW linear at cost. That was too good a deal to pass up. The club was able to obtain the funds for the 87A linear fom the Board of Supervisors of Marion County. The 87A was put on line and provided an immediate super signal to the Gulf. Coincidentally, the woman at ETO who personally supervised the building of their linear has a son who served in Operation Desert Storm in the Gulf! Members of the Silver Springs Radio Club also passed the hat at club meetings and came up with enough money to pay for a new Icom 751 HF rig on their own.

Postscript

The dedicated men and women at AAR4CSS are still running phone patches as I write this article in late June, although fewer than 50,000 American troops are still in the Gulf and only three MARS stations are still regularly on air.

Never ones to sit on their hands, club members are now organizing a unique reunion that will bring more than a dozen MARS operators who served at various AEM3 stations in the Gulf to

John O. Williams, K4ANJ, with Don Pieratt, N8CBR, alongside working phone patch with Desert Storm from AAR4CSS in Ocala, FL. ***(photo by W4HTK)***

the trailer station outside Ocala on July 26. Many of the Gulf operators are with the Army 82nd Airborne and 101st Airborne Divisions. The club plans "a giant barbecue and enough beer to float a battleship." Already a group from Michigan has donated a box of Mars "official AAR4CSS candy bars." A local television station will be out to record the event on videotape and we will be sure to get plenty of photographs for a special MARS article on the reunion this fall in *Worldradio*!

Thanks to a group of very special people!

Here are the dedicated men and women of the Silver Springs Radio Club who have manned AAR4CSS to the number one record for phone patches from Operations Desert Shield and Storm: Don Pieratt, N8CBR; Carol Pieratt, N4VGZ; John O. Williams, K4ANJ; Ernie O'Berry, K4OSM; Lou Gorski, KB9HD; Ray Johnson, KA4TRB; Gerry Evans, KA4ZOH; Bill Britt, KA9CQU; Curtis Byrd, K8CQD; John Carr, KB4WFG; Mike Casey, KB4VOH; Jesse Cripe, N4LSV; Al Forte, WD4PQN; Ken Hanson, NC2O; Tom Hill, WD4CGE; Aden Keele, K2SN; Charles Lord, NR2F; Dan Mercer, W2FAZ; Gary Miller, WA4HHC; Paul Mosher, AB4QD; Jim Penna, WB2LJT; Al Picard, K4IQH; Joe Pitts, KI4ET: Gene Reuman, WV8F; Jim Ritter, KB4EIM; Davis Roush, WA4RPG; Jack Scott, N4NWT, club president; Nelson Snow, N2KWR; Newton Williams, N4PZX; John MacDougall, KA4WJA; and Ernie Bass, new op, waiting for his callsign.

Dr. Paul Scipione is National Coordinator of Public Relations for Army MARS. A MARS user in Vietnam and now a MARS op at AAR2USI at Ft. Monmouth, NJ, he is at work on a new book that will detail the history of MARS operations during the Vietnam War. □

County Hunter

Ace Jansen, N3AHA

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As promised in July, I will discuss how to QSL once you have started county hunting. The USA-CA award offered by *CQ Magazine* does require that all contacts be confirmed and in hand prior to applying for the award. The award application book also requires that two amateurs, other than yourself or family member, verify that you do indeed have all contacts confirmed. You can apply for USA-CA in increments of 500 or just wait until you have all 3,076, but each time you send in a list of contacts you have to have two amateurs sign off on your book. I believe that's why most county hunters just wait until the end. I did! But, if you're impatient or you want wallpaper sooner (lower number award), or don't know if you want to keep pursuing counties, then filing application books incrementally is for you. Application books are available from *CQ* for $1.25. Write to *CQ* at 76 North Broadway, Hicksville, NY 11801.

I have received one response from a reader who writes, "Considering the low return rate on QSL cards, how can anyone get all 3,076 cards in one lifetime?"

I'm glad you asked. Just imagine, if you will, 100 percent return rate on QSL cards; 3,076 QSL cards would cost about $100 to $200 for printing costs and 3,076 19¢ stamps would cost $584 (we're imagining that a card sent is a card returned, even sent as a postcard). Total cost for our imagined QSL return rate would be $684 to $784. Ouch, and that's 100 percent return. Now let's imagine we get 100 percent return rate but we decide that to get 100 percent, we have to send an SASE, i.e. two 29¢ stamps; 3,076 × 58¢ = $1,784. With QSL printing costs the total would be close to $2,000. I don't know about you folks, but for me that's a huge chunk of change. Compound this with the problem that QSL return rate is not 100 percent and you start to wonder why anyone would ever consider trying to confirm 3,076 counties.

Well, I have a solution or, rather, there is a solution. You can give up on the idea of contacting all counties by talking with fixed stations only. For one thing, there aren't active amateurs living in every county and for another thing it's too dang expensive trying to collect all the cards. The most effective method of contacting all counties and cheapest method of confirming all contacts is to make your county contacts with mobile stations. 'Nuff said. But wait, if you contact 3,076 different mobiles in 3,076 different counties you're back to square one. So, the object is to contact mobile operators who travel through several counties. This can be done either on the county hunter nets (14.336 MHz or 14.0565 MHz) or during the weekend state or national county contests.

Now, let's assume that you are making contacts with mobiles at the rate of five counties per mobile. You only need 615 QSL cards to confirm these contacts. Not only do you want to send your card to the mobile but you should send a card for the mobile to return to you with all the county contacts on one card. The best card to use is called the Mobile Reply Card (MRC). The cards are filled out as if the mobile station were sending the card to you. So you would fill out the card and provide postage for the mobile to send it back to you. Our costs have gone down for confirming all counties. Assume 100 percent return rate again; printed QSL

cards are about $40, and $8 for the 615 MRCs, and stamps (29¢ + 19¢ = 48¢) would be $295. Total costs are down to approximately $350 as a minimum. Sending an SASE every time would make the total costs around $415. That's much better than spending $2,000 to confirm all contacts, and it assumes 100 percent return rate.

Using the MRC

The card was designed to permit multiple contacts on one card as the mobile station you are working travels from county to county. You may have seen something similar when a DX station has many contacts listed for multiple bands on the QSL card. Again, this card is filled out as if the mobile is sending it to you. Here's how you would fill it out: 1) The call of the mobile you contacted, i.e. N9DEH/M; 2) Your call; 3) Date of the contact, UTC; 4) Time of contact—use UTC only; 5) Frequency of the contact, i.e. 14 MHz or 20M; 6) The signal report you *received* from the mobile; 7) The state the mobile was transmitting from; 8) The county the mobile was transmitting from; 9) Leave blank, the mobile will fill in if they have contacted all counties; 10) Leave blank, the mobile will fill in if they are a MARAC member; 11) Leave blank, the mobile will sign confirming you were in the log. Pretty simple but, make sure (1) through (6) are correct. The card is coming from the mobile; it has to make sense.

Mobile QSL Bureau

Although $350 to $415 is better than our original example, there is still a better alternative. The Mobile QSL Bureau was started in 1971 by W6CCM and acquired by NØCOL and NØCKN in 1985. It is the cheapest way I know to confirm 3,076 counties. The bureau is set up to assist the active county hunter confirm the county contacts, but it is not set up for handling fixed stations; it only handles QSL cards for mobile stations (hence the name).

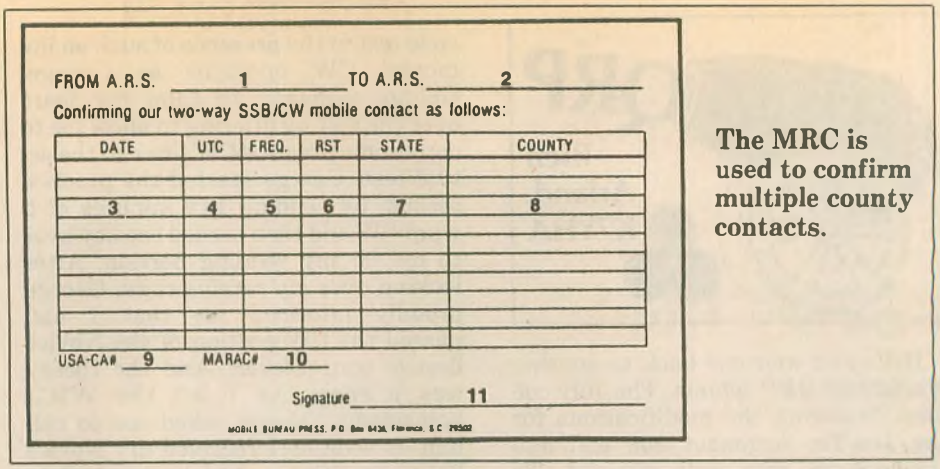
The Mobile QSL Bureau works similarly to other bureaus in that it processes the cards in bulk and makes it easier for the individual county hunter to receive cards. There are currently 4,100 county hunters in the bureau's database. The cost is 20¢ per card sent to the bureau. In our previous example this would be 615 MRCs × 20¢ or a total of $131. You can't beat that. It's recommended that your personal QSL card be sent to the mobile for the first contact with that station (common courtesy). If that were 500 first contact cards, that would be $40 printing cost and 500 × 20¢ or $100 processing charge. Total cost to confirm 3,076 contacts and send a first time contact to the mobile is $271. Consider the time spent looking up all those 615 addresses in the *Callbook*, *Callbook* price, the amount of envelopes used, etc. and you can see that the bureau is truly an invaluable service. What is the QSL return rate at the bureau? Very close to 100 percent, and cards are returned to the individual within a month to three months.

I can't stress enough how easy it is to contact all counties on the county hunter nets and how inexpensive (relatively speaking) it is to confirm those contacts by using the Mobile QSL Bureau. For more information on the bureau, write to Mobile QSL Bureau, P.O. Box 6436, Florence, SC 29502. They also have QSL cards, MRCs and county record books with coloring maps available.

CA QSO Party.

I mentioned in a previous column that I would generate a list of state QSO parties to help you contact some of the counties you need. Not having the list generated yet, I can tell you that one contest not to miss is the California QSO Party (CQP) October 5 and 6. The Northern California Contest Club ensures that all 58 counties are operated from during the contest. So, if you need some of those CA counties, jump into the contest. Also, if you have confirmed all the CA counties, a Worked All California Counties (WACC) award is available. Write to K6PU, P.O. Box 934, Los Gatos, CA 95031 for more information.

That's all for this month. Next time, in November, I'll introduce you to the Mobile Amateur Radio Awards Club, another means of assisting the active county hunter. Until then, happy hunting! □


FROM A.R.S. 1 TO A.R.S. 2

Confirming our two-way SSB/CW mobile contact as follows:

DATE	UTC	FREQ.	RST	STATE	COUNTY
3	4	5	6	7	8

USA-CA# 9 MARAC# 10

Signature 11

MOBILE BUREAU PRESS, P.O. Box 6436, Florence, S.C. 29502

The MRC is used to confirm multiple county contacts.

Hello and welcome back to another *Worldradio* QRP column. The July column, featuring the modifications for the Ten-Tec Argonaut 509 and 515 transceivers, was well received. To repeat a previous idea, I am collecting modifications for the Ten-Tec Argonaut series of QRP rigs that I will publish in a handbook format for anyone interested in improving their Argo.

Anyone who wishes to share in the development of this handbook by providing me with modification data to the 505, 509 or 515 transceivers will not only receive mention in the handbook but a free copy as well. Write to me at the following address: P.O. Box 522, Dallas, PA 18612-0522, and include your favorite mod for the Argo.

Goodbyes

I recently visited my very good friend and elmer, George Comstock, W7CJ, and his son, Don Lee Comstock, K7YLD. It was George who provided the initial "shove" that got me into this wonderful hobby we call Amateur Radio.

George gave me my Novice test in 1963. I never will forget that evening. George's wife, Wavye, met me at the door to their farm house near Potlatch, Idaho, and ushered me into the inner sanctum, George's ham shack. There sat W7CJ, in front of his National NCX-3 transceiver, hand on the paddles of a Vibroplex Bug, wearing a set of headphones (we called them "cans" back then, with one earpiece shifted back behind his right ear, "talking" via CW to one of his old shipboard buddies while holding a normal conversation with yours truly. I was impressed. I was also scared that I would not be able to pass my Novice code test in the presence of such an immortal CW operator as George. George managed to calm my fears over the test by offering to allow me to copy some practice CW prior to the actual test. George started the practice session by sending five minutes of 5 wpm CW and then turned the key over to me for my sending portion. After looking over my receive copy, George proudly informed me that I had passed the CW portion of the Novice license test. Clever! And the theory was a snap. As I left the W7CJ homestead, George asked me to call him as soon as I received my Novice license and we would set up a sked on 80M.

About eight weeks later my KN7YHA license arrived and George and I had our first of many enjoyable QSOs. Since I was using a borrowed rig, W7CJ offered to take me up to Spokane to visit HCJ Electronics, owned by Ralph Farano, W7HCJ. Here was my first exposure to walls full of used gear at bargain basement prices. I selected a Heath DX-40 TX and a Vibroplex Original Bug as my very first purchases at a real ham radio store. I remember riding in W7CJ's blue '68 Oldsmobile with the Webster Bandspanner antenna on the rear deck. His HF mobile rig was the famous Gonset "Twins."

George and others (Mike, K7TWS, and Jessie, K7TWR, Brabb, along with Mel Sims, W7CIS) kept after me to upgrade and finally I managed to pass the 13 wpm code requirement and received my General Class license. George was a constant help and reminder of what it was to be an elmer to a newcomer to the hobby. He always had time for questions and was more than helpful when it came to designing the antenna farm.

Our visit was all too short during April 1990. George was 93 years old and still very active on 2M and 80M CW. The NCX-3 had been replaced with a new Ten-Tec transceiver but the old Vibroplex still occupied a place of prominence on the operating table. Although he was somewhat frail, George's twinkling eyes and soft-spoken manner failed to betray his age. My wife, Tricia liked him instantly.

W7CJ became a Silent Key on March 14, 1991, seven days after his 94th birthday. Since I am on the East Coast it took some time for the news of George's passing to reach me. Needless to say I was deeply saddened. This world and the Amateur Radio hobby is a better place because of W7CJ. He inspired those with whom he came into contact. He was an elmer to many new hams, always willing to lend a helping hand or offer good solid advice based on years of experience. In all my years of association with George, I have never heard one person say anything derogatory about him. He was an active member of the Disciples Amateur Radio Fellowship, an amateur missionary organization, as well as a long standing member of the Society of Wireless Pioneers. George will be missed by many, but his spirit will live on in all those whom he touched.

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Books you'll like

Recently I received a review copy of the ARRL's *DX Companion; How to Work Your First Hundred Countries,* a novel little book written by Jim Kearman, KR1S. This book is designed to get the new DXer started down the road to DXCC the proper way. Well written and illustrated with cartoons, the *DX Companion* is a book that is sure to be a welcome addition to the bookshelf of almost any red blooded ham. The thrill of DX, initial organization, how to capture the elusive stations, which mode to use, propagation and antennas, working the pileups, DX newsletters, QSLing, use of the BORO, DXing during contests, use of DX nets, goal setting

(very important), and many more subjects are covered in a way certain to entertain as well as educate. This book also covers the DX packet cluster and its operation (something that is fairly new to DXing circles). The *DX Companion* is a great value for the money ($6 per copy) and is available direct from the ARRL or retail ham radio outlets.

Kits and stuff

The new K9AY 40M QRP transceiver kit from A&A Engineering arrived last week in the mail. Initial look-over makes me think that this kit will be a breeze to build and get working. The boards are high quality G-10 glass-epoxy with very good silkscreening for parts overlay. All the components are top quality and the case is an eggshell and black combo that has very nice silkscreening on both the front and back panels. I can hardly wait to begin construction and get this little rig working for Field Day. This kit is patterned after the QRP rig designed by Gary Breed, K9AY, that appeared in the December '90 and January '91 issues of *QST*. I'll be using it as a backup rig to the Argonaut II this Field Day at NX3Y. A full product review will be presented at a future date. If you write to A&A, tell them that you read about the new QRP kit in ***Worldradio.***

Jim Martin, N3DCG, made me a deal that I could not refuse. Jim had a virgin HW-8 kit, still in the box and never assembled. He said it needed a good home, so I have *another* HW-8. We are taking our time building this one, savoring the moment, enjoying the journey. Several mods have been done already, during construction. Since Heath is now out of the ham radio business, this is my last chance to build a Heathkit QRP rig. Fun and nostalgia all rolled into one!

Argonaut II

I am here to tell you that the new Ten-Tec Argonaut 535 (Argo II) *does* exist! I have one sitting on the shack bench as we speak. I am impressed. The Argo has finally grown up! Styling is much like the imported rigs: full LCD readout for frequency, clock, S/RF meter, rig status display, etc.; keypad and tuning dial entry of frequency; and memories out the wazoo! All in all, a good rig, although a bit pricey at $1,445.

This rig will be used to its fullest this Field Day when I operate with the Endless Mountains ARC (NX3Y) from Wyoming County. A full product review and detailed account of Field Day operations will be forthcoming. In the meantime, all you poverty stricken QRPers out there who want a new Argo II, start saving your pennies, get a third job, and hock one of the kids . . . it may well be worth the sacrifice!

QRP bulletins on packet

Steve, NW9G, has a monthly QRP bulletin that he puts out over packet to various bulletin boards. Typically his first three bulletins have run about three pages. Due to their length, Steve has been asked to cut down the size to facilitate ease of data transfer by several SYSOPS. Steve's QRP Bulletins have a wealth of information on operating news from around the US. Very reminiscent of the old *Milliwatt,* published by Ade Weiss, W0RSP, back in the early '70s, the bulletins have the lastest news of who is doing what in the QRP arena. It's a good ongoing source of information. Contact Steve at: NW9G @ WA9IVB.IN.USA.NA for details. □

10-10 INTERNATIONAL News

Chuck Imsande, W6YLJ
10-10 19636

Convention report

A large group of 10-10ers gathered in Arlington, Texas, on June 7, 8 and 9 for the third bi-Annual 10-10 Convention. This was held in conjunction with the ARRL Ham-Com, and the 10-10 portion of the 10-10 Convention was hosted by the Republic of Texas Chapter of 10-10. Co-Chairmen Ray Moyer, WD8JKV, and Tom Gilbreath, WD5BFO, and their entire committee did an excellent job in the arrangements, programs and social activities for 10-10 members.

It was the first time that the entire new board of directors had a chance to get together and for many it was their first in-person meeting. They met in closed-door session and worked on a number of 10-10 business problems. The following are highlights of the board's actions.

The bylaws were modified to separate the post of corporate secretary from the treasurer. This change was necessary to meet the California state requirement that the corporate secretary reside in the State of California. For the present, the president will also act as the corporate secretary. The bylaws were also modified to address the filling of director vacancies. As 10-10 has an election every two years, it was decided that any vacancy would remain open until the next election.

A new class of membership was added to the bylaws to be called "club station." A club station was defined as a unique government-issued call. A club station cannot vote or be able to apply for a family or life membership. Existing individual calls which have previously been issued a second 10-10 number may continue their membership.

The planning committee was asked to investigate adding to the bylaws a section regarding the removal of officers from office. This was in response to a petition received from a member regarding this subject.

A proposal regarding sponsorship of hardship membership was discussed and sent to committee.

A system of information bulletins will be set up to get 10-10 information out more rapidly.

The board of directors approved the selection of Tom Henderson, K4CIH, as head of the nominating committee for the next election.

A plan for a general manager was discussed and an ad-hoc committee was appointed. The committee is to report at the 1992 meeting.

The board accepted the resignation of 10th district manager Judy Long, WDØDHH, and voted to accept the request of Debby Peterson, KFØNF, to take over the entire 10th district.

An official awards guide will be published (edited by Jack Ford, KB7DUX).

Dues will be increased effective January 1, 1992. The new dues will be $7. The $1 new membership fee is being dropped, so dues will be the same for new or renewed memberships. DX memberships will be $9. US and DX life memberships are also being increased. Watch the *News* for details.

The Air Capital Chapter offered to host the next 10-10 Convention in Wichita, Kansas, in 1993.

As you can note from the above, which is only a summary of the more important items acted upon by the board, they addressed a large number of subjects and problems, and made some wise decisions. They are to be complimented on getting to the core of many of our problems and taking necessary action.

A note to 3rd district members: Chester Gardner, N3GZE, advises that his ZIP code has been changed by the Post Office to 21042.

Watch for V31RV from Belize

10-10's president, Norm Lefcourt, W6IRT, 10-10 #14981, will be operating as V31RV during the *CQ* World Wide DX contest October 25 through October 27. Norm will be a part of a group of Southern California hams going to Belize for the *CQ* World Wide contest. He will be on 10M as much as possible both before and during the contest. Look for Norm close to 28.400 and 28.600. Here's a chance to add a new country, if you need Belize.

New 10-10 computer contesting program

I have been evaluating a new 10-10 contesting program for IBM-compatible computers. This program, developed by Jim Hardy, K4HAV, appears to have everything one could want in a real-time on-line program for contest computer logging. In addition to the contesting program, Jim is adding a companion program, to take the country and other information from the contest program and transfer it to a county/10-10 record keeping data base with provisions for printouts for county bar and seal upgrades. This companion program will also have provisions for record keeping and award applications for VP numbers, DX countries, Worked All States and 10-10 Bars. Records can also be entered manually in this program, so you will be able to transfer all of your manual record keeping activities to this single program.

So far I have had no problems in manually entering my logs from the last two 10-10 contests and everything works great! I will be using this program in the August 3 and 4 10-10 QSO Party for real-time on-line computer logging and will have a report in a future column on my success using my computer for contest logging for the fist time.

Finally

If you want information about 10-10, send me $1, two first class stamps *and* and address label to 18130 Bromley Street, Tarzana, CA 91356-1701. With the new 10-10 Information Manual, which will *not* fit into a #10 business size envelope, please send only $1 plus stamps to cover the cost of printing and postage. You will receive the new 10-10 Information Manual and a copy of the latest issue of *The 10-10 International News,* 10-10's official 32-page quarterly magazine. Please include an address label for use in returning your information package.

Lost your 10-10 number? Send me an SASE and I will run a computer check and locate your lost number. Remember, 10-10 numbers are assigned only once, and if you ever had one it will be on file in our computer database. Include all previous calls, if any. 73 es cu next month. □

If your club is involved in any emergency situations, send the story and pictures to WORLDRADIO.

See your group in print — your story may help others be better prepared.

TRAFFIC

Geri Sweeney, N4GHI

Fading away

Whether you have been handling a traffic assignment for a few weeks or years, the time will come when you need to make changes or quit altogether. When the time arrives that other priorities prevent you from being there, you have a choice. You can tell the net manager that you will be unable to do it any more, or you can just stop showing up for the assignment and fade away. Please let someone know. While fading away may be easier for you, it leaves everyone needlessly hanging.

Replacements

As attrition must surely take its toll on traffic handlers, replacements must be developed or the NTS (no matter what mode) will fold. From where do the replacements come? I have no idea. Nine years ago, when I happened upon traffic handling, there were always people waiting for an assignment. Subs for any assignment were easily obtained. This has changed. We have tried, in Virginia, to set up a "traffic" table at Virginia hamfests. We take traffic and hand out information. This hasn't appeared to produce any traffic handlers at the section level. Other ideas which may need exploration are: 1) Convince radio publications, such as *QST*, to give traffic handlers more exposure through articles developing the value and pleasure of traffic handling; 2) Give talks at radio club meetings on how much fun traffic handling is (not just "how to"—but how *enjoyable* it is); 3) Encourage those who teach Amateur Radio classes to include radio activities in their sessions (contesting, DXing, QSO technique, and traffic handling); 4) Perhaps a mass mailing by the station traffic manager to all amateurs in the section, inviting them to participate, would help. If anyone has any ideas, let me know. I'm ready to try anything to augment our ranks.

ORS/PSHR

In the revised PSHR (beginning June, 1991), category number six allows 10 points for being an ORS (official relay station) appointee. The section STM (section traffic manager) or SM (section manager) makes this appointment. Field appointments require that you are a member of the ARRL. To receive an ORS appointment, you should show interest in traffic by demonstrating good traffic handling practices and by sending monthly traffic reports to the STM reflecting traffic you originated, received, sent, and delivered. Count another 10 points if you are a net manager.

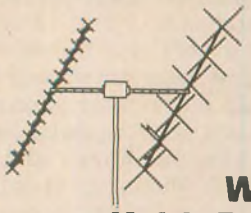
Software

Computers have spread so rapidly in the last decade that it's hard to imagine many who do not utilize one in reporting their radio activities. It's even harder to imagine a professional organization, like the ARRL headquarters, failing to keep its records updated on a computer and easily accessible to those who may need them—like the personnel in Field Services. Many of us who send a monthly report to the ARRL use a computer and a software program. SMs, STMs, SECs and section appointees must keep records. These records must be updated periodically if they are to have any meaning. Many of these appointees must send their updates to the ARRL on a regular basis so that, in the event of an emergency, they can instantly notify whoever may be concerned. Way back when, little 3½ × 5½ inch white cards were used by an STM to inform headquarters of any additions and/or deletions to the ORS or SEC list. These were kept in a "shoe box" to refer to as needed. Some years ago the ARRL installed a wondrous computer which could be used for all the records. In an effort to remain on the leading edge of technology, a bulletin board was even established so that reports could be sent over the telephone.

Having a computer is one thing. Being able to use it is another. My last list of ORS appointees was not processed. Investigation showed that this was because the information arrived in the wrong format. I sent it in as a list. All the information from the cards was there, but I was informed that it still had to arrive in the form of cards. One card to delete . . . and one card to add anyone as an ORS station. It seems the information is indeed inserted into the computer but the shoe box is still preferred for actual operations.

The wide diversity of software available today makes the exchange of data difficult. Fortunately, many products now allow interchange of data between them, but it's still not universal. Therefore, standardization should be promoted to allow the most effective exchange of data with headquarters. Along this line, members of the Roanoke League Planning Meeting (spring of 1991), requested unanimously that our director ask the board to solicit some software guidance from the appropriate ARRL committee. We would like to see: 1) a survey of those who do submit reports utilizing a software program; 2) a report as to which software lends itself to our reports; 3) if the bulletin board system at the ARRL is being utilized to its fullest advantage; and 4) more information published on how to use it. Such guidance may not be needed for those who have established their own method and wish to avoid change. But, as new appointees are made (whether a region net manager or an STM), this kind of information could enable them to avoid many start-up hurdles. □

Amateur Satellites



WB5ZDP
Keith Berglund

In addition to the glorious (and prestigious) assignment as Amateur Satellite columnist for ***Worldradio***, I am also one of the editors for *The AMSAT Journal*. Doug Howard, KG5OA; Ron Long, W8GUS; Chief Editor Drew Deskur, KA1M; and I have teamed up to make *The Journal* a great publication for AMSAT's membership.

One of the sidelights to working on the *Journal* is that I'm now on CompuServe. If you are on, or know somebody who is, feel free to leave questions or requests for RS-10/11 tracking printouts, etc. My "address" is 70312,2554 and I will reply to any questions or comments.

Field Day

I hope that Field Day was enjoyable for all of you. It was a great opportunity to show off amateur satellites and give many their first view of what amateur satellite operation is capable of (not to mention have a good time).

The amateur satellite activity for Field Day went very well with many contacts made through OSCAR-13, RS-10/11 and OSCAR-21. I participated with the Sioux City ARC using the call NFØN. We made just short of 100 satellite contacts. My compadres in Ft. Worth at W5IU made 185 QSOs and the folks in Miami, Florida, at N4IFD, made over 175 contacts mobile—in a boat!

Another mode

Over the past two years I've written many columns describing how to get started in Amateur satellites. Usually the easiest and least expensive way to do this is to start out using Mode A. As you recall, on Mode A you uplink to the satellite on 145 MHz SSB or CW and the satellite transponder converts this signal to 29 MHz for the downlink. As the Army slogan says, it's a great way to start.

Mode A is a great way to "get your feet wet" in satellites but, more importantly, it is an inexpensive way to determine if you really like this satellite business at all. I know of a few folks who tried Mode A and quickly came to the conclusion that satellite operation was not for them. They were fortunate not to have spent too much money or time. I have, however, known many more who have tried a little Mode A and decided that satellite operation is the best thing since the VFO. Many of the folks I've elmered now have better satellite stations than I do!

Well, hopefully you are one of the individuals who has tried a little Mode A and/or K (see August ***Worldradio***) and are now ready to go on to bigger and different things. The next logical step, in my opinion, is to try some Mode B operation.

MODE	UPLINK	DOWNLINK
A	145.9 MHz	29.4 MHz
B	435.5 MHz	145.9 MHz
J	144.3 MHz	435.9 MHz
L	1.269 GHz	435.8 MHz
S	435.5 MHz	2.400 GHz
K	21.2 MHz	29.4 MHz
T	21.1 MHz	145.9 MHz

Table 1. Various modes are used for different satellites.

Mode B

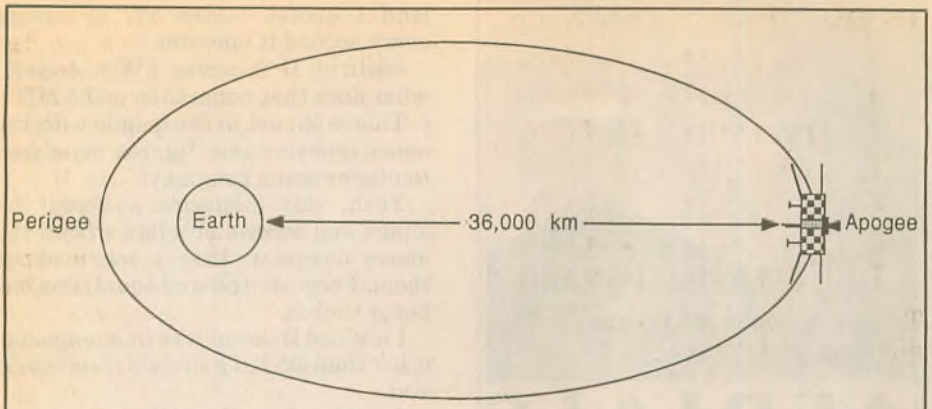
Mode B is probably the most popular satellite mode now flying. On Mode B you uplink to the satellite on 435 MHz and the satellite transponder downlinks to you on 145 MHz. The satellites presently operating on Mode B are OSCAR-13, OSCAR-21, and OSCAR-10 when available (it's sick).

For this column I'm going to discuss the flagship of the amateur satellite fleet, OSCAR-13, and how it works on Mode-B. AMSAT OSCAR-13 not only has Mode-B but, in addition, has Mode-J, L and S. Table 1 details the uplink and downlink bands of these and other modes. I'll discuss these other modes in future columns, however, so if you understand the ins and outs of Mode-B, you'll have no trouble configuring your station for these other modes.

AMSAT OSCAR-13 is in an elliptical orbit with an apogee of 22,000 miles and an inclination of 57 degrees with respect to the earth's equator (see Figure 1). It makes just over two orbits per day. What this boils down to is that AO-13 is in the visible sky for about eight hours per day. In addition, with its high altitude, the satellite will give coverage of half of the world at a time. There are many who have DXCC through this bird!

With this new-found capability comes a price (figuratively and literally). On RS-10/11, and some other low altitude polar orbiting satellites, a 2M and HF rig with omni directional antennas is all that is required. Not so on AO-13. On a good day, AO-13 may be able to give 1/2W to your QSO. The analogy that I like to give is, imagine somebody standing on the satellite with a 2M HT . . . on low power . . . with a rubber duck antenna . . . 22,000 miles away. This situation is not, by any means, impossible. What it boils down to is that you've got to be very careful when receiving OSCAR-13 signals. You've got to have directional antennas, low noise pre-amps and low loss feedline. This is not HF or even Mode-A any more. A good Mode-B station must be thoroughly thought out and carefully implemented. A station hastily constructed will yield marginal results. I'm sure that, for many of you, this will be your first introduction to "weak signal work." This is *real* communications!

Don't be scared off. As with Mode-A, I hope to show, in the upcoming months, that even with Mode-B on OSCAR-13, you don't have to be a PhD or a millionaire to do this stuff. All of the major amateur equipment manufacturers make off-the-shelf rigs capable of satellite operation, and there is a host of used equipment out there.



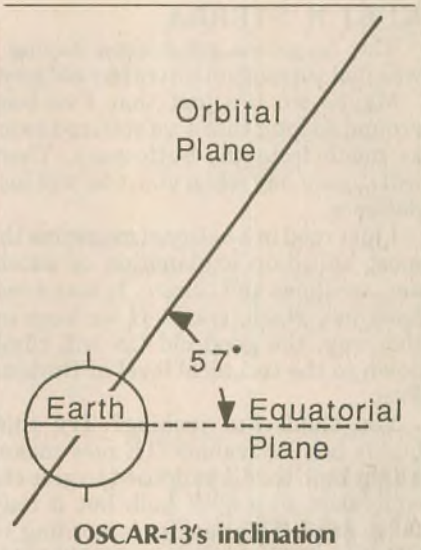
OSCAR-13's elliptical orbit

Figure 1

too. Also, homebrewing is alive and well in this satellite biz. UHF and VHF antennas are physically small and are easy to make in your garage or workshop.

The frequency of OSCAR-13's transponders can be found in Table 2. Notice that the Mode-B passband is over 150 kHz wide and the Mode-L passband is 350 kHz wide. This is more room than on all of the 40M amateur band. There is always room for your QSO. In the many years that I've been involved in amateur satellites, I've never found the satellite "full"—crowded, yes, (especially on Saturday afternoons) — but not full.

Also notice that the downlink on Mode-B is between 145.800 and



OSCAR-13's inclination

MODE	UPLINK FREQUENCIES	DOWNLINK FREQUENCIES
B	435.423 to 435.573 MHz	145.975 to 145.825 MHz
J	144.423 to 144.473 MHz	435.990 to 435.940 MHz
L	1269.351 to 1269.731 MHz	436.005 to 435.677 MHz
S	435.636 to 435.602 MHz	2400.794 to 2400.715 MHz

Table 2. OSCAR-13 modes and frequencies

146.000 MHz. This segment of the 2M band is internationally reserved for amateur satellite operation. It's real tempting to operate 2M FM simplex there; after all, you can't hear anything there on your 2M FM rig. Don't; your 45W may be reaching out a little farther than you think.

Next month I'm going to cover how a basic Mode-B station is set up and a little about some of the common rigs and antennas. For additional information on how to set up an OSCAR-13 station, AMSAT has a great publication called *A Beginner's Guide to OSCAR-13*. Call Martha at AMSAT headquarters (301/589-6062) and she'll be glad to fix you up with a copy. □

Silent Keys

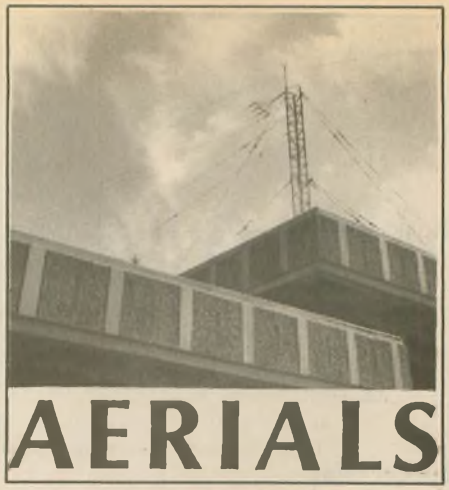
Thomas G. Banks, W5HI

Thomas Gray Banks, Jr., 80, died on February 16 at Las Cruces Nursing Center from complications of a long illness. Born in Denison, Texas, March 16, 1910, he was the son of Thomas Gray Banks, Sr., and Sallie H. Banks of Oklahoma City, Oklahoma.

Mr. Banks, a retired Sandia Corporation professional electrical engineer and a Scottish Rite Mason, was a graduate of Texas A & M University.

Mr. Banks was a past president of the Albuquerque Group of the Institute of Electrical and Electronic Engineers, and he was well known by the Margate Safari and FAA nets and other Amateur Radio operators around the world.

He is survived by his wife of 58 years, Lucile E. Banks, and family. — *Information submitted by Travis McKee, N5MQY, whom Thomas elmered into ham radio 41 years ago.* □



AERIALS

KURT N. STERBA

This magazine got a letter saying I was just turning into a crabby old goat.

Maybe so. It's just that I've been around so long that I've suffered twice as much from the buffoonery. There will come a day when you, too, will lose patience.

I just read in a national magazine the most balled-up explanation of antennas, feedlines and tuners. It was a real hash job. Hash, trash! If we keep up this way, the good old US will climb down to the technical level of Burkina Faso.

You think I'm joshing? Try this, buddy-boy. Sylvania/GTE now makes a light bulb that is supposed to give the equivalent of a 60W bulb but it only takes 55W. This results (according to Sylvania/GTE, "made in the USA") it (and I quote) "saves 5W of energy every second it operates."

Gadfry! If it saves 5W a second, what does that come to in an hour??

This is almost in the league with the super monster-gain figures for a particular antenna company.

Yeah, this magazine suffered the slings and arrows of a letter from the above company after I wrote about them. They were offered equal time but never took it.

I noticed their ad was in a magazine other than *QST*. I know why, and so do you.

Amazing how these Godzilla antennas always come out of some garage in Hoboken, but the PhDs at RCA, ITT, etc., can never come up with such.

Speaking of RCA, I wish there were some way that Walt Maxwell's new book could be made mandatory reading before one obtains a license, as well as mandatory re-reading once a year after that if one is going to either talk about antennas on 75M or write articles about them.

Maxwell was one of RCA's boffins. If only a voice could come from the sky saying, "Read this book, it is true!" and the book would slide down a beam of light into the shacks of the unenlightened.

There would be a lot of hams going to the club meetings with their tails between their legs, "Sorry, fellas, what I've been saying all these years was mush."

Everything anyone wants to know about antennas is in books—good books. The *ARRL Antenna Book* can't be beat. There are also heavier, deeper, more professional books. Jasik, Kraus, etc., are all at the local library and can be read for free. No nonsense, no pie in the sky, no monster gains—all right there.

I was reading an article in an Aussie magazine. It called The Horizontal Loop the best kept secret in Amateur Radio circles. Well, not for those who have been reading this column for many years now.

With all the yelling and screaming about antennas by city councils and environwhackos, maybe we will be sorry we always yelled "Get out of here," to aluminum siding salesmen.

Some have said that my discourses on garbage cans, downspouts and the like were boring. They missed the point! It was intended as a tongue-in-cheek way of illustrating that whatever you can get power into, will radiate. Maybe I did beat a dead horse. . . . A dead horse? Hmmm, how far apart are the horseshoes? Will the curvature reduce the radiated near field?

Bloom where you are planted!

The 1991 *CQ* World Wide RTTY DX Contest

The Fifth Annual CQWW RTTY DX Contest, sponsored by the *RTTY Journal*, is an opportunity for amateurs around the world to contact other amateurs in as many CQ zones and countries as possible using the digital modes.

Contest period: 0000 UTC September 28 to 2400 UTC September 29, 1991. The total contest period is 48 hours, but no more than 30 hours of operation are permitted for single operator stations.

Contest forms are available from *CQ*, the *RTTY Journal* and the contest director. The *RTTY Journal* address is 9085 La Casita Avenue, Fountain Valley, CA 92708. Please include a large SASE with two units of US first class postage or IRCs.

Deadline: All entries must be postmarked no later than December 1, 1991. An extension may be given if requested. Logs should be mailed to Roy Gould, KT1N, CQWW RTTY DX Contest Director, P.O. Box DX, Stow, MA 01775. □

Aerials

How 'bout the far field? Are the betting odds on a horse indicative of the SWR?

Biggest problem I can help solve is not how to add nine dB gain to your Yagi by laying Reynolds Wrap all over your backyard but, instead, how to get on the air with a bare minimum.

Are hammys becoming masochists? They move into restrictive neighborhoods and then go around weeping and wailing, "Woe is me, woe is me." Much gnashing of the teeth. Weird. There is only one bigger clown act than that—the hammy who buys the top-of-the-line XCVR, an amplifier that dims lightbulbs for blocks around, a tower that goes into the ozone layer, stacked 75M log periodics, and then gets the coax line at the flea market. Well, it is nice to have historical objects. He's spent enough money to house and feed the average family of four, and nobody can hear him. Great stuff coming; stay tuned.

(KNS goes by his monicker to avoid confrontation with Hoboken geniuses, masochists and those with more money than brains.) □

1991 California QSO Party

Sponsored by the Northern California Contest Club, this event will be held from 1600 UTC Oct. 5 to 2200 UTC Oct. 6.

Rules: Single operator entries may operate only 24 hours; off times must be clearly marked in the log and must be at least 15 minutes long. Multi-operator entries may operate the full 30 hours. Stations may be worked once on CW and phone on each band. All contacts must be simplex; no MCW. Single-op and multi-single entries are allowed only one transmitted signal. All CW contacts must be made in the CW sub-band, except for 160M. California stations that change counties are considered to be new stations and may be contacted again for point and multiplier credit. CA stations operating from a county line may be counted only as one QSO.

Object: Stations outside California work as many California stations in as many CA counties as possible; stations in California work anyone.

Exchange: California stations send QSO number and county; stations outside California send QSO number and state/province/country.

QSO points: Each complete phone contact is worth two QSO points. Each complete CW contact is worth three QSO points.

Multipliers: California stations use states and VO/VE1-7 and VY1/VE8 for a possible total of 58. Out-of-state stations use the number of different California counties for a possible total of 58. CA stations on a county line may be claimed as a multiplier for any or all of the counties they give in their exchange.

Total score: The total score is the number of QSO points multiplied by the total number of multipliers.

Frequencies: 160 through 2M excluding all WARC bands. CW on 1805 and 40 kHz up from the band edge. Phone on 1815, 3850, 7230, 14250, 21300 and 28450. Novices 10 kHz up from the band edge and 28450. Try CW on the half hour; 147.54 MHz at 2000, 0000 and 0400Z; 160M at 0500Z and 80/75M at 0300 and 0700Z.

Score submissions: All logs and summary sheets must be sent to NCCC c/o Gary Caldwell, WA6VEF, P.O. Box 8014-56, Blaine, WA 98230 by November 15. Include a business sized SASE for results. Entries of more than 200 QSOs must include duplicate sheets.

For a CQP paperwork packet containing log and summary sheets, county abbreviations and contest records, send a business sized SASE to the above address.

Awards: Certificates to the highest scoring single operator entry in each CA county, state/province and country and each station that scores 100 or more QSOs.

Trophies will be awarded to the top three out-of-state single ops; the top three California single ops; the top multi-single and multi-multi in California; and the high scoring single op and multi-op California county DX-pedition.

The Special CQP Wine Award will be awarded to the top 20 single operators in California, along with the top 20 single ops out of state. They will receive a personalized bottle of Northern California Contest Club Private Reserve California wine. Wine winners who are under legal drinking age will receive a non-alcoholic personalized award.

Special trophies will go to the CA single op and out-of-state single-op with the most CW QSOs; the mobile single op or team with the most total QSOs; the high scoring low power entry (200W or less) in CA and out of state; the top Novice/Technician entry in CA and out of state; the top scorer outside the United States and Canada; and the top club in California (five entries minimum—Northern and Southern Cal contest clubs are ineligible). □

1991 Wyoming QSO Roundup

The 1991 Wyoming QSO Roundup, a special week-long "centennnial edition" sponsored by the University of Wyoming Amateur Radio Club, will take place from 0000 UTC on October 5 (Saturday) through 2359 UTC on October 13 (Sunday).

Frequencies: All bands (160, 80, 40, 20, 15, 10, 6, 2M etc., but not WARC bands) and modes may be used. Each band and mode combination counts as a different band/mode category. Suggested operating frequencies are: CW—50 kHz up from band edge; SSB—50 kHz down from band edge; Novice/Tech CW—25 kHz up from subband edge; Novice/Tech SSB—28390.

Exchanges: Non-Wyoming W/VE stations send RS(T) + state or province. DX send RS(T) + serial number (001, etc.). Wyoming stations send RS(T) + county.

Scoring: A station may be worked only once per band/mode category for QSO credit (e.g. 20M QSOs with the same station on CW, RTTY and SSB will count for three QSO credits). Repeater, cross-mode and cross-band QSOs will not count. *Multipliers:* Non-Wyoming stations use band/mode Wyoming counties; Wyoming stations use band/mode Wyoming counties, states, provinces, and DXCC countries.

Non-Wyoming station score equals total band/mode Wyoming counties multiplied by total Wyoming QSOs. Enter the number of Wyoming counties worked for each band and mode in the appropriate space on the entry form. Add these numbers together in the COUNTY TOTAL column, and enter the total number of Wyoming QSOs in the QSOs ON THIS BAND column. Total the last two columns in the appropriate TOTALS boxes. Finally, multiply the two totals to come out with your score.

Wyoming station score equals band/mode (Wyoming counties + US states + VE provinces + DXCC countries) multiplied by total contest QSOs. Enter the number of W/VE and DX Mode Multipliers in the appropriate boxes on the entry form. Do the same for the QSOs ON BAND boxes. Total all the columns. Add the totals of all the multipliers together and multiply by total QSOs to determine your final score.

University of Wyoming Amateur Radio Club members please indicate by writing UARC after your county on the entry form.

Awards: Will be determined by a committee of the UWARC and will include certificates for top scorers in a wide variety of categories. Certificates of participation will be given to all submitting logs and entry forms with an SASE.

Logs and entry forms (available by sending an SASE to the address given below) should be postmarked by November 15, 1991. Please send log, entry form, and large SASE for return of certificate to Bill Wright, KF7AP, 1304 Sheridan St., Laramie, WY 82070. □

Alaska

ANCHORAGE ARC will be having their 20th annual Hamfest and Electronic Fleamarket on September 21 and 22. Contact Anchorage ARC, P.O. Box 101987, Anchorage, AK 99510-1987. □

California

SONOMA COUNTY RA will be holding their ninth annual ham radio flea market September 28 from 8 a.m. to 2 p.m. at the Holy Ghost Hall in Sebastopol. Features include a radio clinic, door prizes, and an auction at 11:30. Admission and parking are free. Indoor or outdoor flea market spaces are $10. Reserve early. Vendor set-up starts at 7 a.m. Talk-in on 146.13/73. Contact SCRA, Box 116, Santa Rosa, CA 95402. □

Colorado

BOULDER ARC announces their annual swapfest, BARCFest '91 on September 29 from 8 a.m. to 2 p.m. at the Boulder County Fairgrounds, in the Exhibit Building. Featured at this year's event are ATV, AMSAT seminars and FCC seminars followed by question and answer sessions. VE exams, refreshments, and a shopping mall across the street for those non-ham spouses and harmonics. Admission is $3, and vendors can purchase table space for $10. Contact Kim Elmore, N5OP, 1103 South Gay Dr., Longmont, CO 80501; 303/530-2903. □

Connecticut

CANDLEWOOD ARA will be holding their flea market on September 22 from 8 a.m. to 3 p.m. at the Elk's Club in Danbury. There will be a ham gear raffle, door prizes, and plenty of parking. Admission is $4, kids under 12 are admitted free. Vendor tables are $8; tailgating is $6 (prices include one admission). Talk-in on 147/72-12. Contact Bob Elton, 60 Padanaram Rd., #18, Danbury, CT 06810. □

Florida

SUNCOAST ARC will hold the first Pasco County Hamfest on September 29 from 8:30 a.m. to 3:30 p.m. at the New Port Richey Recreation Center. A W5YI testing session will be conducted. Admission is $3 at the door, YLs and kids under 12 are admitted free. Vendor tables are $5 by pre-registration. Talk-in on 145.35 and 146.10. Contact SARC, P.O. Box 7373, Hudson, FL 34676; 813/847-4043. □

Georgia

LANIERLAND ARC will be holding their hamfest on September 15 from 9 a.m. to 3 p.m. at the Georgia Mountain Center in Gainesville. FCC exams will be held at 8:30 a.m. sharp. Admission is $4 in advance; $5 at the door. Indoor fleamarket tables are $10 each. Dealer set-up time is from 6 a.m. to 9 a.m. Talk-in on 146.07/.67. Contact Rick Coker, AB4GS, 5417 Raintree Trace, Oakwood, GA 30566; 404/967-2087. □

Illinois

SANGAMON VALLEY RC will hold its hamfest on September 29 at the Sangamon County Fairgrounds near Springfield. VE testing, tailgating, refreshments, and other activities are planned. Admission is $3; vendors can purchase tables for $10. Talk-in on 146.805 (-600). Contact SVRC, P.O. Box 8252, Springfield, IL 62791, or call Don Pitchford, WD9EBK, 217/789-4519. □

NORTHERN ILLINOIS DX ASSOCIATION, INC. will be sponsoring the W9DXCC convention and banquet on September 7. Programs include recent DXpeditions, presentations on propagation, DX packet cluster and other DX-related topics. Contact Paula Uscian, WF9K, c/o NIDXA, P.O. Box 519, Elmhurst, IL 60126.

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PEORIA AREA ARC will sponsor its 32nd annual hamfest, Peoria Superfest '91, on September 21 and 22 from 8 a.m. Saturday at the Exposition Gardens in Peoria. Featured will be the ARRL Illinois State Convention, large outdoor flea market, indoor vendors, forums, ladies activities, funfest Saturday evening, VE exams Sunday at 10 a.m., and much more. Parking is free, and the site is handicapped accessible. Admission is $5, good for both days. Vendor set-up is at 6 a.m. Talk-in on 146.76/16. Contact PAARC, P.O. Box 3508, Peoria, IL 61612-3508; 309/685-6698. □

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BOLINGBROOK ARS is holding its 7th annual Hamfest and Computer Fair on September 8 from 8 a.m. at the Inwood Recreation Center in Joliet. Hourly drawings will be held for door prizes, and a VE exam session will be conducted from 9 a.m. to noon. Admission is $3 in advance; $4 at the gate. Dealer tables can be reserved for $10; flea market tables, $5. Dealer set-up is Saturday from 3 p.m to 6 p.m., and Sunday at 5 a.m. Talk-in on 147.33 (+0.6), 224.54 (−1.6), and 146.82(−.06). Contact BARS, P.O. Box 1009, Bolingbrook, IL 60440; 708/759-7005. □

Indiana

AMERICAN RED CROSS ARC will be sponsoring the first ever ARC II hamfest on September 7 from 7:30 a.m. at the National Guard Armory north of Warsaw. Refreshments will be served by the ladies of ARC II. Admission is $4.50 Indoor tables are $10, outdoor spaces are free with admission on a first-come, first-served basis. Talk-in on 146.985 and 442.550. Contact ARC II, c/o John McClements, WB9FIF, 113 15th St., Winona Lake, IN 46590; or call John Sparks after 3 p.m. at 219/269-5187. □

Kansas

WASHBURN RC will be sponsoring a hamfest on September 7 from 9 a.m. to 5 p.m. at Washburn University in Whiting Fieldhouse. Features include exams, seminars, packet, MARS, and XYL activities. Admission is $3 in advance, $5 at the door. Vendors can purchase swap tables for $5 in advance or $7 at the door (price includes one admission). Vendor set-up is at 7 a.m. Talk-in on 146.955 (−) WVØS repeater. Contact Rob Nall WVØS, 2612 SW Arrowhead Rd., Topeka, KS 66614; 913/272-3559. □

Kentucky

MARSHALL COUNTY ARA and PADUCAH ARA will hold the annual Kentucky Lake Hamfest on September 21 from 7 a.m. at the Gilbertsville Elementary School Gymnasium. VE exams will be given at 9 a.m. Talk-in on 146.985 or 147.060 repeaters. Contact Kentucky Lake Hamfest, P.O. Box 534, Benton, KY 42025. □

Massachusetts

SOUTH EASTERN MASSACHUSETTS ARA announces their 4th annual hamfest and flea market on September 8 from 8 a.m. to 3 p.m. at the club grounds in South Dartmouth. A full VE exam session will be conducted. Admission is $2. Table space is available for $8 in advance, or $10 at the door. Talk-in on 147.000/147.600 and 149.490/144.890. Contact Michael Enos, P.O. Box 9064, North Dartmouth, MA 02747. □

Michigan

ADRIAN ARC announces their 19th annual Hamfest and Computer Show on September 29 from 8 a.m. to 3 p.m. at the Lenawee County Fairgrounds in Adrian. VE exams will be conducted. Admission is $3 in advance; $4 at the gate. Indoor table space is $6 and tailgating is $3. Talk-in on 144.770 and 145.370. Contact Dennis Boydston, WE8Z, 2383 E. Clearview Dr., Adrian, MI 49221; 517/265-8054. □

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L'ANSE CREUSE ARC will be holding a Swap and Shop on September 15 from 8 a.m. to 2 p.m. at the L'anse Creuse High School in Mt. Clemens. VE exams will be held at 11 a.m. Admission is $3 in advance, and $4 at the door. Table space can be rented for $10. Talk-in on 147.08 (+) or 146.52. Contact Jerry Luh, KA8QBC, 732 Brookwood Ln., Rochester Hills, MI 48309; 313/651-7387. □

Missouri

OZARKS ARS will hold its Annual Club Congress and Swapfest on September 8 from 9 a.m. at the Monett City Park. Bingo will be held at 10 a.m. and a pot luck dinner at 12:30 p.m. Talk-in on 146.37/.97. Contact OARS, P.O. Box 327, Aurora, MO 65605; 417/678-3375. □

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ST. PETERS ARC will be having their swapfest on September 29 from 7 a.m. to 2 p.m. at the O'Fallon Civic Center Park. Refreshments, food and SPARC 2M "U" antennas available. Admission is $1, and tables are $1.50. Contact Mike, NØLBM, or Diane, NØCLF, Trail, P.O. Box 311, Warrenton, MO 63383. □

New Hampshire

CONTOOCOOK VALLEY RC will hold their annual Fall Flea Market on September 15 from 8 a.m. to 3 p.m. adjacent to the conventional flea market. General admission is $1; vendors, $5. Talk-in on 146.895 and 146.94 repeaters, 52 simplex. Contact K1OPQ @ packet WA1WOK-2, or evenings 603/746-5090. □

New York

METRO 70CM NETWORK will hold an electronics fleamarket on September 29, from 9 a.m. to 3 p.m. at Lincoln High School in Yonkers. Unlimited free coffee will be available, as well as free frequency checks, free parking, door prizes, and VE exams from 10 a.m. to 2 p.m. No tailgating as this event is held indoors. Admission is $4, kids under 12 are admitted free. Tables can be rented or bring your own. Vendor set-up is at 7 a.m. Contact Otto Supliski, WB2SLQ, 53 Hayward St., Yonkers, NY 10704; 914/969-1053. □

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HALL OF SCIENCE ARC, Inc. will hold a hamfest on September 15 from 9 a.m. at the New York Hall of Science parking lot—Flushing Meadow Park in Queens. Featured will be a tune-up clinic, ARRL films, door prizes, free parking and an Amateur Radio exhibit station. Admission is $4 for buyers and $6 per space for table space. Talk-in on 147.195 and 445.175 repeaters. Contact Stephen Greenbaum, WB2KDG, 85-10 34th Ave., Apt. 323, Jackson Heights, NY 11372; or call 718/898-5599 or Arnie Schiffman WB2YXB 718/343-0172. □

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ELMIRA ARA will be having their 16th annual Elmira International Hamfest Computerfest on September 28, from 6 a.m. to 4 p.m. at the Chemung County Fairgrounds in Horseheads. Features include a pancake breakfast, free flea market, FCC examinations at 9 a.m., free parking, a QSL contest, and a bunny hunt. Admission is $3 in advance, $4 at the door. Talk-in on 147.96/36 and 444.20. Contact Dave Lewis, R.D. 1 Box 191, Van Etten, NY 14889. □

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SARATOGA CO. R.A.C.E.S. ASSN., INC., will host its fifth hamfest on September 14 from 8 a.m. at the Saratoga County Fairgrounds in Ballston Spa. There will be food, seminars, and VE exams off the grounds with limited space for walk-ins. Admission is $4, and tables inside the prepaid area are $5 each plus admission per person per table. Talk-in on 147.00 or 147.24. Contact N2FEP via the *Callbook* or 518/587-7388. □

North Carolina

JOHNSTON ARS, INC., will sponsor JARSFEST '91 on September 29 from 8 a.m. to 4 p.m. at the American Legion Complex in Benson. VE exams begin at 10 a.m., and the auction is at 2:30 p.m. A complimentary test table will be available for checking your bargains. Admission is $4 in advance, $5 at the door, kids under 12 will be admited free. Tables are available to rent for $6. Tailgating, weather permitting. Contact JARS, Rt. 1, Box JARS, Benson, NC 27504; 919/884-5479.

Ohio

TUSCO ARC is sponsoring a computer/hamfest on September 21 and 22 from 10 a.m. to 9 p.m. Saturday, and noon to 5 p.m. on Sunday at the Monroe Mall in New Philadelphia. Admission is free and tables are available. Talk-in on 146.13/73. Contact Howard Blind, KD8KF, FRD 1, Box 1361, New Philadelphia, OH 44663; 216/364-5258. □

CLEVELAND HAMFEST ASSOCIATION will present the Cleveland Hamfest and Computer Show on September 29 from 8 a.m. to 4 p.m. at the Cuyahoga County Fairgrounds in Berea. There will be forums, commercial vendors, a flea market, non-amateur activities, and VE exams at 2 p.m. Talk-in on 146.73/13 from 6 a.m. to noon. Contact Ed Stevens, WB8ROK, 18607 Fairville Ave., Cleveland, OH 44135-3915; 216/267-5473. □

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FINDLAY RC is having its 49th Annual Hamfest on September 8 from 8 a.m. at the Hancock County Fairgrounds in Findlay. There will be indoor vendors, an outdoor flea market, forums, overnight camping, and free *parking*. Admission is $4, and tables can be rented at $12 for the first table, $8 for each additional table. Talk-in on 147.75/.15 and 449.15/444.15. Contact FRC, Box 587, Findlay, OH 45839. □

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QCWA CANTON CHAPTER is hosting the 1991 National Convention on September 27 and 28 at the Parke Hotel in Canton. Contact Arthur Schermerhorn, W8FEC, c/o 505 E. Mohawk Dr., Malvern, OH 44644. □

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CHAMPAIGN/LOGAN ARC announces its hamfest and computer show on September 22 from 7 a.m. to 3 p.m. at the fairgrounds in Urbana. Tailgating space will be available after the indoor tables have sold out. Admission is $8 in advance, and $10 at the door. Vendor set-up is at 6 a.m. Talk-in on 147.00+ W8EBG/R or 147.51 simplex. Contact Paul Amerine, KC8NM, P.O. Box 185, West Mansfield, OH 43358-0185. □

Pennsylvania

UNIONTOWN ARC will hold its 42nd annual GABFEST on September 7 at the club grounds on the old Pittsburgh road. Plenty of good food and prizes available, as well as free parking and free swap and shop set-up with registration. Admission is $3 each or two for $5. Talk-in on 147.045/645 and 144.57/145.17. Contact John Cermak, WB3DOD, P.O. Box 433, Republic, PA 15475; 412/246-2870 or 412/246-9383. □

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COLUMBIA-MONTOUR ARC will hold their hamfest on September 15 from 8 a.m. at the Beach Haven Carnival Grounds north of Berwick. Plenty of seating and free parking. Admission is $3, XYL and kids under 16 are admitted free. Tailgating space available for $1 plus admission price per 8 ft. Talk-in on 147.225 or 146.52. Contact Dave, WC3A, 717/752-6851, or Fred, WB2YTA, 717/356-7113. □

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BUTLER COUNTY ARA will be sponsoring their 14th annual hamfest on September 8 from 9 a.m. to 4 p.m. at the Butler County Farm Show Grounds at Roe Airport in Butler. Overnight campers are welcome, and handicap parking is available. Free outside flea market; indoor vendor's space is $10/8 ft. table. Admission is $1, kids under 12 are admitted free. Talk-in on 146.52 W3UDX simplex until noon. Contact G.H. Wetzel, W3DMB, 784 Mercer Rd., Butler, PA 16001.

•

FORT VENANGO MIKE AND KEY CLUB will hold a hamauction on September 21 from 8 a.m. at the Venango County 4-H Fairgrounds between Polk and Franklin. Food pantry opens at 8 a.m., and the auction starts at 10 a.m. Admission is $2, kids 12 and under are admitted free. Spaces at the indoor flea market are $5 each. Talk-in on 147.120, 145.230 and 145.190. Contact Jim Clinefelter, N3BAT, 814/437-1781; Bruno Wolozyn, K3MHB, 814/677-8694; or write to FVMKC, R.D. #1, P.O. Box 591, Cranberry, PA 16319. □

Rhode Island

RHODE ISLAND AMATEUR FM REPEATER SERVICE will hold their annual Fall Auction and Flea Market on September 21 from 8 a.m. to 3 p.m. at the VFW Post 6342 in Forestdale. Auction begins at 11 a.m. Admission is free, and spaces are available for $5 each on a first-come, first-served basis. Talk-in on 146.76. Contact Rick Fairweather K1KYI, P.O. Box 591, Harrisville, RI 02830; 401/567-0232 between 7 p.m. and 8 p.m. □

Virginia

TIDEWATER RADIO CONVENTIONS, INC. will sponsor the 1991 16th Annual Virginia Beach Hamfest—ARRL Virginia State convention and computer fair on September 21 and 22 from 9 a.m. to 5 p.m. Saturday, and 9 a.m. to 4 p.m. Sunday at the Virginia Beach Pavilion Conference Center. Gordon West, WB6NOA, will again be the guest speaker. Plenty of free parking. Admission is $5 in advance, $6 at the door. Booth space is available at $75 each, and commercial 8 ft. tables at $30 each. For general information, contact Manny Steiner, K4DOR, 3512 Olympia Ln., Virginia Beach, VA 23452; 804/340-6105. Dealers and exhibitors can contact Lewis Steingold, W4BLO, 804/486-3800. □

Vermont

CENTRAL VERMONT ARC announces the third annual Fall Foilage Hamfest on September 21 from 9 a.m. to 3 p.m. at the National Guard Armory in Berlin. Features include Rivendel and other dealer displays, and VE exams at 1 p.m. Admission is $2. Tables can be reserved for $6 in advance or $8 at the door. Tailgate space is available for $4. Talk-in on 146.625. Contact Gregg Carbin, N1HHX, 14 Vine St., Barre, VT 05641; 802/479-5216. □

Washington

WALLA WALLA VALLEY ARC, INC., is sponsoring the 45th Annual W7DP Hamfest on September 21 and 22 from 8 a.m. to 5 p.m. at the Ferndale School Gymnasium near Milton-Freewater, Oregon. Features include Demos, ARRL section meeting, XYL activities, snack bar, potluck, VE exams Sunday afternoon, and much more. Registration and admission are free. Swap tables for radio gear only are also free. Talk-in on 147.28/8 repeater. Contact Ralph Taylor, N7DWD, P.O. Box 321, Walla Walla, WA 99362; 509/525-3002. □

Information in "New Products" is supplied by the manufacturers to acquaint *Worldradio* readers with new products on the market.

Marine grade coaxial cable

Amateur Radio Specialities has introduced a new line of marine grade coaxial cable for the Amateur Radio market. This new high quality line of coaxial cable, manufactured by Ancor Marine Electrical Products, comes in all popular 50 ohm cable types including RG-213/U, RG-8X and RG-58C/U. The cable is pre-cut in lengths of 100, 75, 50 or 25 feet with silver plated, teflon insulated PL-259 connectors soldered to each end. The unique characteristics of this coax lend the cable to Amateur Radio applications where uncompromising performance is required. Features are:

- Super tough white PVC jacket for excellent abrasion and ultra violet protection. RG-213/U and RG-58C/U PVC jackets are non-contaminating.
- 100 percent tinned copper braid and stranded center conductor for extra long life.
- Exclusive heat-shrink tube with heat activated sealant for total weather tight antenna connection.
- Greater than 98 percent copper braid coverage for maximum shielding and minimum signal loss while maintaining flexibility.

Made in the US to marine grade standards and UL ratings, cable types RG-213/U and RG-58C/U feature solid polyethylene dielectric and a nominal velocity factor of 66 percent. RG-8X features foam polyethylene dielectric and a nominal velocity factor of 78 percent. All cable types are also available in bulk spools of 500 or 1000 feet.

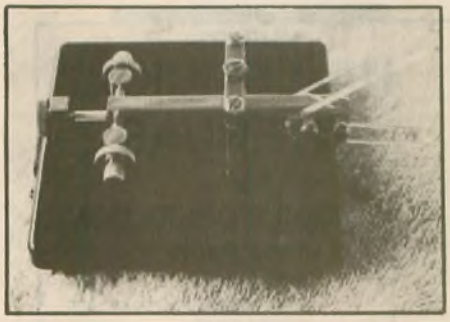
For more information and prices, contact Amateur Radio Specialties at 1-800/634-9903 or write to P.O. Box 7086, Newport Beach, CA 92660-7086. □

World-class keys and paddles

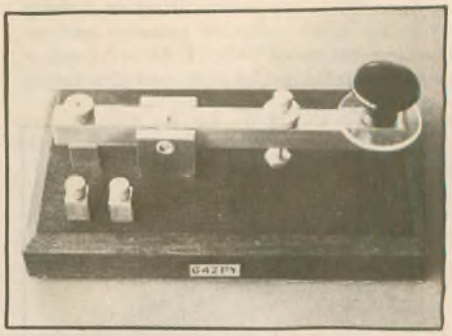
Gordon Crowhurst, G4ZPY, announces the availability of his superb quality keys and paddles for radio amateurs. Many present owners of G4ZPY's meticulously crafted paddles say their glamour and performance defies comparison and they are enjoying CW like never before. Each G4ZPY item must meet exacting standards before being shipped, thus production time varies between two and eight weeks, depending on orders.

G4ZPY's economical new Kit Key makes an attractive addition to any station, and it handles like silk. All critical parts are preasembled. You simply mount the components on the weighted mahogany base and solder two wires.

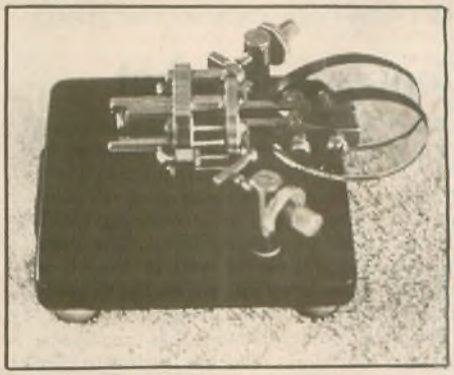
All working parts are satin finished brass. Fine-thread screws are used on all adjustments. Audible clicks on "make" and "break" add classic telegraph sound to this smooth operating pump key.



The G4ZPY Single Lever is both fascinating and delightful because it is a "touch key." Dot and dash contacts are set at 2 thousandths of an inch, and a rear spring adjustment varies tension. Large and easy-to-handle fingerpieces make using this paddle a unique and pleasantly refreshing experience.



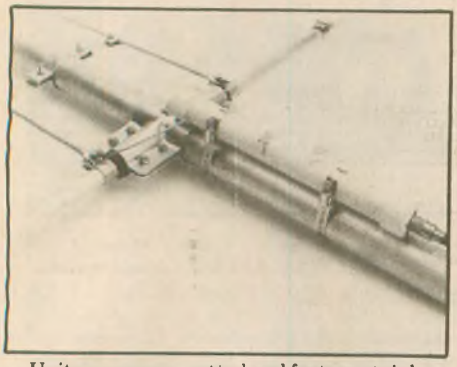
Most popular in the G4ZPY range is the "VHS" Twin. This dual lever iambic paddle sports brass upper pieces polished to the lustre of fine gold and is fitted with thick customized oval fingerpieces. It is mounted on a glazed black steel base fitted with non-skid feet and a stereo-type jack for easy connection. Individual adjustments are very precise, and there is absolutely no play or slack in this outstanding CW instrument.



For information and details on these G4ZPY keys of distinction, write (enclosing two IRCs) to G4ZPY Paddle Keys International, 41 Mill Dam Lane, Burscough, Ormskirk L40 7TG, England. □

Ferrite bead balun

Aztec RF has introduced a deluxe, external ferrite bead-over-coax 1:1 balun. Now recognized as the most reliable, effective method of constructing a coreless balun for 160 through 10M, external ferrite beads over Mil-Spec Teflon coax assure effective choking action for clean radiation patterns and no measurement errors. Teflon UHF or N connector has a shield-hood for fully coaxial isolation of current paths.



Units are epoxy-potted and feature stainless hardware. The Model DXB-1 has eyes for wire antennas; Model DXB-2 mounts on all yagi booms with kit supplied. Each costs $49.95 (plus $4 shipping); order from Aztec RF, Box 1625, Valley Center, CA 92082; 619/751-8610.

Contester headset

The Hy-Gain Amateur Radio products group of Telex Communications, Inc. has introduced the Contester boom-mike headset. It features a noise cancelling dynamic mike that favors the voice range (100 through 8000 Hz) for maximum intelligibility. The mike boom rotates so it can be worn on the left or right side of the head and automatically shuts off the mike when placed upright.

The company recommends that the mike be adjusted so it almost touches the lips to take full advantage of the noise cancelling feature. Also, the mike should be placed at the corner of the mouth to avoid sibilants; the popping P, the hissing S or sharp T sounds. It's best to speak at normal voice levels. Shouting is counterproductive because it distorts the signal and often makes transmissions unintelligible.

The headset's dynamic headphone receivers have a 50 through 15,000 Hz frequency response and compatible impedance for amateur transceivers. The five ft. (1.5 M) headset cord is unterminated to accept any connector suitable for the user's transceiver.

Washable cotton "socks" come with the headset and slip over the foam filled earcushions for long term comfort. According to the company, the Contester is of the same rugged construction as the headsets Telex makes for commercial broadcasters, pilots and professional football coaches. The headset carries a suggested list price of $102.

For further information or to order, contact Telex Communications, Inc., 9600 Aldrich Avenue South, Minneapolis, MN 55420; 612/884-4051. □

World time at a glance

The Geochron World Time Indicator demonstrates—beyond a shadow of a doubt—precisely where the sun is rising and setting every minute of the day.

The geochron is a clock of the world: its display is a Mercator projection map illuminated to simulate the sun's light as it is cast on the planet. The map scrolls left to right at a speed of one inch per hour, synchronous with the earth's rotation. At a glance, the Geochron illustrates which parts of the world are in daylight and which are in darkness. Closer examination will reveal the sun's declination: A black dot near the center of the map indicates the point of the earth at which the noontime sun appears directly overhead. Because the hours of sunlight change as the earth progresses through its seasons, the light pattern on the Geochron changes also, almost imperceptibly, from day to day.

The time of day or night around the world is indicated on the time scale at the top of the map. International time zone boundary lines are drawn on the Geochron map. As the map moves, the time zone arrows indicate the correct time in each zone.

To complete the big picture, the 3×2 ft. wall mount timepiece displays the day of the week and month at any point on the globe. Manual controls also allow you to display the times of sunrise and sunset on desired dates during the year.

The principal objective of the Geochron is to provide a device capable of pictorializing, on a flat surface, global solar time and its modifications as well as related natural phenomenon. It does that in easy-to-understand fashion. Geochron is the perfect addition to your ham shack!

Suggested retail price: $1,295. For further information or location of your nearest dealer, contact Geochron Enterprises Inc., 899 Arguello St., Redwood City, CA 94063 or call toll free at 1-800/342-1661. □

Firmware/Software Package

Kantronics announces the release of firmware version 4.0 for the Kantronics All Mode (KAM) TNC. In conjunction with this release Kantronics also announces a new multi-mode software package for the PC and compatibles, Host Master II™.

The Host Master II terminal software makes the multi-mode signal keyboard system a reality. With a PC compatible computer, the KAM (version 4.0), and HF and VHF transceivers, operation is possible in any HF mode and VHF or UHF packet at the same time. Support is provided in Host Mode for simultaneous operation of CW, ASCII, RTTY, FEC, ARQ or NAVTEX on HF while operating packet on VHF or UHF.

Additional features like scrollback for monitor/receive windows, built-in editor and multiple user programmable buffers, activated by single keystroke, enable easy operation of a multi-channel and multi-mode station.

Host Master II and KAM 4.0 is the next step in the state of the art from Kantronics. For more information contact your favorite dealer or call, write or FAX Kantronics Inc., 1202 E 23rd St., Lawrence, KS 66046; 913/842-7745; FAX 913/842-2021. □

When will AMSAT-OSCAR-13 be in range?

ROSS FORBES, WB6GFJ

Those just starting out in the world of OSCAR communications would like to know when they can hear a satellite. The following charts are produced to give you a rough idea as to when OSCAR-13 will be within range of your location. The three charts as printed are centered on the following geographic locations: East = New York City; Mid = St. Louis, MO; West = Reno, NV.

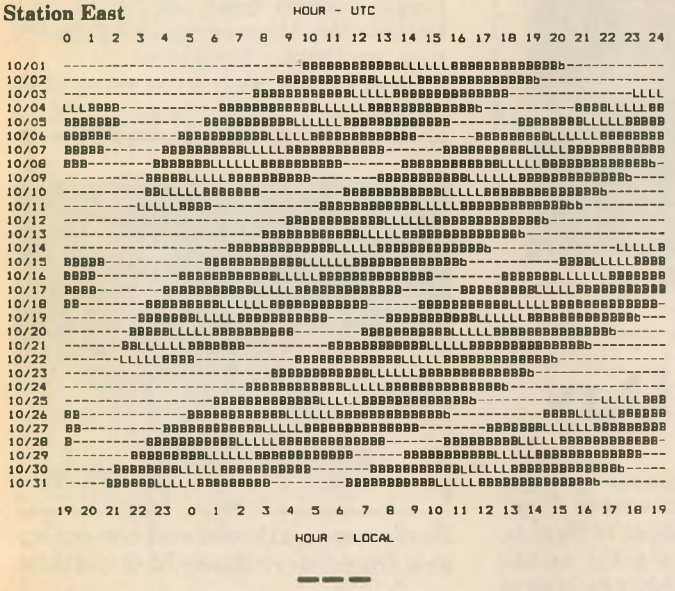
As you read the chart nearest your location, keep in mind the following details — all dates and times are given in UTC. The date is printed on the left hand column and the UTC hour along the top.

A dash mark indicates the satellite is out of range and therefore not able to be heard. The letter "B" indicates OSCAR-13 is audible at that location and signals should be heard between 145.810 and 145.880 MHz (SSB and CW). A letter "O" indicates the satellite is audible, but the only signal you will hear is the telemetry beacon on 145.810 MHz. The letter "L" indicates the satellite is audible but you will hear signals between 435.650 and 436.000 MHz (SSB and CW).

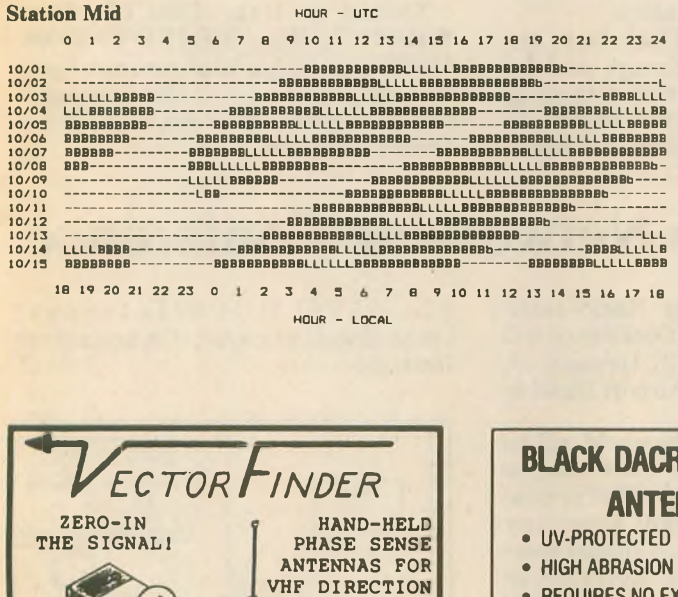
Remember, if a letter is printed on the chart, you should be able to hear OSCAR-13.

For more information about OSCAR, please send a SASE to either of the following: Project OSCAR, P.O. Box 1136, Los Altos, CA 94023-1136; AMSAT-NA, P.O. Box 27, Washington, D.C. 20044. □

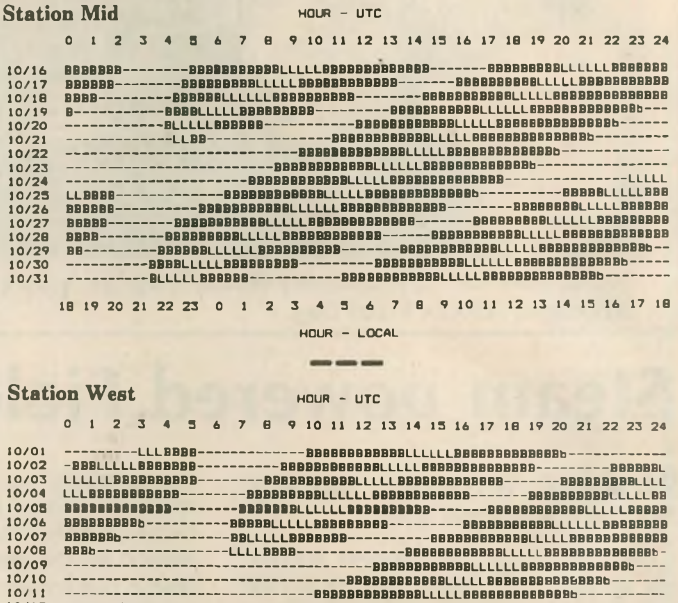
Station East



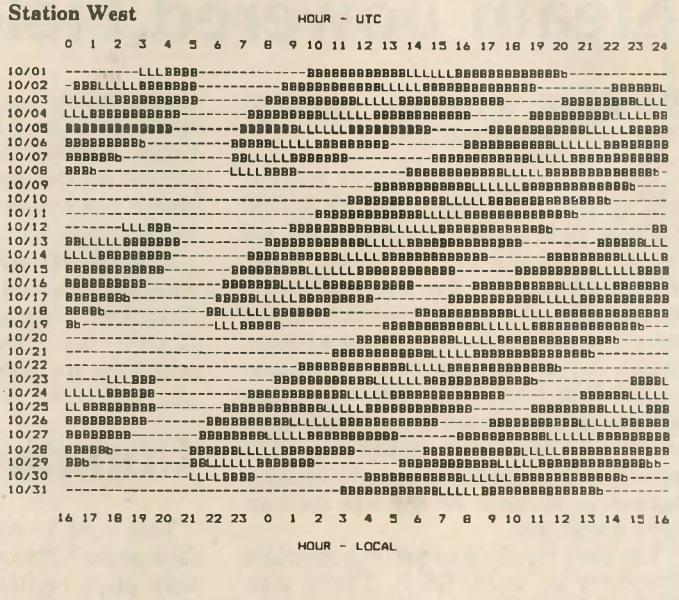
Station Mid



Station Mid



Station West



Norm Stevens' 1918 Rumley steam engine powered Southern Michigan ARC's Field Day.

Steam powered Field Day

HOWARD WILCOX, N8EHQ, Southern Michigan ARC

Our 1991 Field Day project started out at the 1990 Field Day as a half serious, half joking comment. As we were cleaning up the site Don, WB8RVT (better known as Rivet), remarked to Dan (our Field Day chairman) that it would be fun to use a steam engine for power some year. As it happened, Dan has a neighbor who owns an old Rumley steam engine and likes to take it to shows. When Dan approached him with the idea, he readily agreed to bring it to the site for our 1991 Field Day.

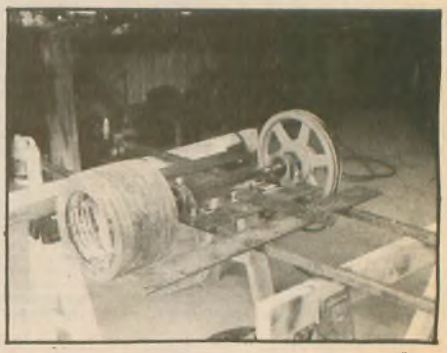
The next hurdle was getting the club members to work QRP. There was quite a bit of discussion about the problems involved but it was finally decided we should go for it. I agreed to work with Dan to plan the best way to set everything up. Ken, KB8BWU, offered us the use of a flat belt pully off his IH Farmall and all the wood we would need to fire the engine. Things were kind of dormant through the winter, as I went to Arizona for three months, although we had people looking for usable parts.

When I finally got back in the Spring, we had a pretty good idea of how things should go together. The parts were being gathered and it seemed to be going well. I had planned a fishing trip to Canada for the week of June 8 to 15, thinking I would have two weeks to make the frame and get everything mounted after I got back. Friday night, June 7, I found out when Field Day really was; needless to say, there were some nervous people waiting to hear from me when I got home. It only took a couple of days to collect all the parts and make up the frame, but by then we didn't have time to run a test with the engine.

The night before Field Day, the weather started to change and by Saturday morning we were setting up in cold rain. The steamer arrived on schedule; we staked down the frame holding our pulleys and alternators, wired the alternators to a couple of big batteries and were ready to go on the air at 2 p.m. Saturday afternoon.

As it worked out, there was an antique car show and an arts and crafts show in the vicinity so we drew a lot of people in to see what was going on. The local paper sent out a photographer and reporter, so we got good publicity along with having a lot of fun. Most people seemed quite impressed with the idea of a steam engine being used to turn two small alternators.

I don't know what we're going to do for next year, but it's going to be hard to top this year's project—we'll see . . .



Parts were gathered and the pulley and frame were assembled quickly.

Thanks to Dan, KB8CBP; Don, WB8RVT; Ken, KB8BWU; Ivan, N8FBV; and other hams and non-hams who supported us with their ideas and parts; we made this Field Day a great one for our club. □

Computer Networking Conference

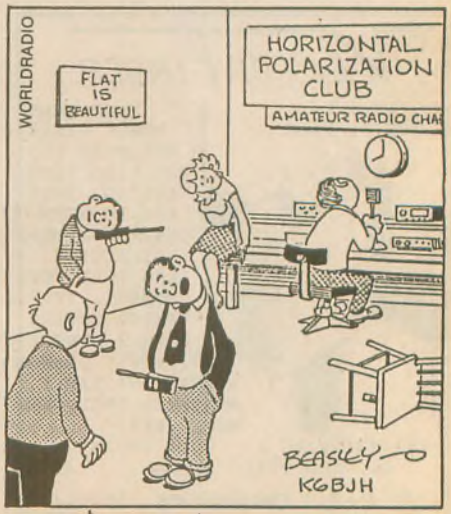
The ARRL Amateur Radio tenth Computer Networking Conference will take place September 27 through 29, 1991, at the Radisson Airport Hotel in San Jose, California.

Hams from around the world will be presenting papers on what they're working on in packet radio. The presentations and papers might cover any subject from satellites to spread spectrum, from protocols to hardware, or any other topic related to how hams are, or will be networking.

In addition to the usual presentation of papers all day Saturday, this year's conference will be surrounded by other interesting and informative activities.

For information, contact Glenn Tenny, AA6ER, Fantasia Systems, Inc., 2111 Ensenada Way, San Mateo, CA 94403; 415/574-3420 or FAX 415/574-0546; UUCP/Internet: tenny@well.sf.cs.us; Compuserve: 70641,23. □

Mailman: "Is this QSL card yours? The name is obliterated."
Ham: "It's not mine. My name is Warren."



WELL, I'LL BE DARNED---WE ALWAYS THOUGHT THE AUDIO HAD TO BE HORIZONTALLY POLARIZED, TOO!

VE exam schedules

As a service to our readers, **Worldradio** presents a feature listing those VE exams, times and locations which are sent to us. Please remember that our deadline for publication is three months in advance. For example, if your VE group is scheduling an exam for September, please have the information to us by mid June.

Worldradio, 2120 28th St., Sacramento, CA 95818.

Please mark the envelope "VE Exams."

List the location, any information examinees should have (advance registration, etc.) and the name and telephone number of a person to contact for further information.

p/r=pre-register w/i=walk-in

Date	City	Contact	Notes
Arizona			
Oct. 12	Little Rock	Chuck (501) 888-7517	w/i OK
Oct. 5	Tucson	K7OPX (602) 886-7217	w/i only
California			
Oct. 5	Burbank	KE6AR (818) 349-0927	w/i
Oct. 12	Camarillo	N6SR (805) 484-4461	p/r pref; w/i OK
Oct. 26	Carson	AA6TC (213) 830-0242	w/i OK
Oct. 6	Chico	W6YKU (916) 342-1180	p/r pref
Oct. 26	Chula Vista	(619) 465-EXAM	p/r by 10/16
Oct. 6	Clearlake	Art, (707) 994-0646	w/i only
Oct. 5	Concord	Gene (415) 254-5090	w/i only
Oct. 5	Cupertino	(408) 243-8349	w/i OK
Oct. 5	El Cajon	(619) 465-EXAM	p/r by 9/25
Oct. 26	Fairfield	Jerry (916) 662-0801	w/i only
Oct. 17	Fountain Valley	KI6WK (714) 846-6984	p/r
Oct. 6	Hanford	Carleton (209) 924-4221	w/i only
Oct. 31	Long Beach	KA6HOQ (714) 897-6331	w/i OK
Oct. 5	Los Angeles	Ali Hassan, AA6WC (213) 778-6226	w/i OK
Oct. 19	Redwood City	Dudley (408) 245-4801	w/i only
Oct. 16	Sacramento	Lyle, AA6DJ, (916) 483-3293; (916) 925-0159	Novice/Tech only; w/i
Oct. 19	San Diego	KB6WB (619) 465-EXAM	p/r by 10/9
Oct. 12	San Marcos	(619) 465-EXAM	p/r by 10/2
Oct. 12	San Pedro	N6DYZ (213) 325-2965	w/i OK
Oct. 12	Santa Maria	KI6XG [805) 922-8509	w/i OK
Oct. 26	Stockton	Vern, K6DOP (209) 887-3297	w/i
Colorado			
Oct. 14	Boulder	Barbara, N0BWS (303) 530-2903	p/r pref.; w/i OK
Oct. 12	Denver	W0IJR (303) 366-9689	w/i OK
Oct. 19	Westminster	N0CFM (303) 451-1231; N0HNR (303) 278-4280	p/r or w/i
Connecticut			
Oct. 27	Milford	NB1M (203) 933-5125; WA1YQE (203) 874-1014	w/i
Oct. 23	Shelton	WJ1T (203) 736-0488	w/i pref.
Oct. 20	West Hartford	Larry, K1IED, (203) 644-2356	p/r pref
Hawaii			
Oct. 19	Hilo	AH6P (808) 959-8893	w/i
Idaho			
Oct. 12	Boise	W7JMH (208) 343-9153	w/i
Illinois			
Oct. 15	Aurora	N9AKE (708) 892-1252	w/i pref
Oct. 19	Loves Park	W9SS (815) 877-6768	p/r; w/i
Oct. 19	Morton	NT9C (309) 266-6756	w/i OK
Oct. 12	Oak Forest	KA9HDN (312) 247-0650	w/i
Indiana			
Oct. 5	South Bend	NI9Y (219) 255-4455	w/i OK
Oct. 18	South Bend	NY9A (219) 232-6883	w/i OK
Oct. 6	Terra Haute	K9EBK (812) 466-2122	w/i OK
Iowa			
Oct. 26	Council Bluffs	AA0BS (712) 322-1454	w/i OK
Maryland			
Oct. 27	Hagerstown	Norma Jean Bollinger, NC3X (717) 597-8231	p/r
Oct. 12	Laurel	NT3Z (301) 761-7115	w/i
Oct. 19	Laurel	WB3GXW (301) 572-5124	p/r pref
Massachusetts			
Oct. 7	Boston	WN1U (617) 436-2413	w/i
Oct. 23	Cambridge	KA1MQX (617) 253-3776	w/i
Minnesota			
Oct. 12	St. Paul	KD0CL, (612) 881-7181	p/r pref
Mississippi			
Oct. 5,6	Biloxi	AA5SP (601) 875-9341 days; (601) 875-0222 eves	p/r req
Missouri			
Oct. 5	Antonia	Jim, WD0GDY (314) 671-4243	no w/i
Oct. 10	Granite City	Larry, NZ0P (314) 524-3254	w/i OK
Oct. 5	Kimberling City	NQ0G (417) 739-2888	w/i
Oct. 19	St. Louis	N0IS (314) 892-4434	w/i OK
Nevada			
Oct. 19	Reno	K7HRW (702) 827-8450 day, or (702) 972-3933 night	p/r 30 days prior, w/i OK
New Jersey			
Oct. 19	Bayonne	WA2QYX (201) 451-9471	w/i OK
Oct. 17	Bellmawr	WA2VQG (609) 546-7710	w/i
Oct. 12	Cranford	N2XJ (201) 635-7686	
Oct. 9	Fort Monmouth	WB2GYS (908) 532-5353	w/i
Oct. 7	Sayreville	K2FD (201) 442-9215	w/i
New York			
Oct. 12	Greenvale	WA2BGE (516) 921-0085	w/i OK
Oct. 27	North Babylon	KA2RGI (516) 957-0218	w/i OK
Oct. 6	Yonkers	AC2V (914) 237-5589	w/i OK
Ohio			
Oct. 5	Cincinnati	Herb, WA8PBW (513) 891-7556	p/r pref.; w/i OK
Oct. 5	North Olmstead	Dan, KB8A (216) 267-5083	
Oct. 12	Toledo	NC8M (419) 825-3423	
Pennsylvania			
Oct. 5	Erie	W3CG (814) 665-9124	w/i
Oct. 3	Philadelphia	ND3Q (215) 482-0386 or (215) 879-0505	w/i
Tennessee			
Oct. 12	Memphis	Harry, W4MI (901) 357-8148	p/r by 10/10
Texas			
Oct. 19	DFW Airport	KF5BL (214) 252-8015	w/i
Oct. 19	El Paso	K5IE (915) 598-8493	w/i OK
Oct. 20	El Paso	K5IE (915) 598-8493	w/i OK
Oct. 8	Houston	ND5F (713) 464-9044	p/r pref; w/i OK
Oct. 26	San Antonio	K5JWK (512) 657-1549	w/i
Virginia			
Oct. 12	Harrisonburg	Marshall, N4ZKH (703) 856-8012	
Oct. 12	Williamsburg	WJ4X 424-4764 call beforehand	w/i OK;
Washington			
Oct. 19	Renton	WA7UVJ (206) 854-4031	w/i only
West Virginia			
Oct. 19	Huntington	K8KVX (304) 736-6542	w/i OK
Wisconsin			
Oct. 5	Racine	NW9P (414) 658-8390	w/i

Attention: Teachers -- Send us an order for sample issues of *Worldradio*, one for each of your students!

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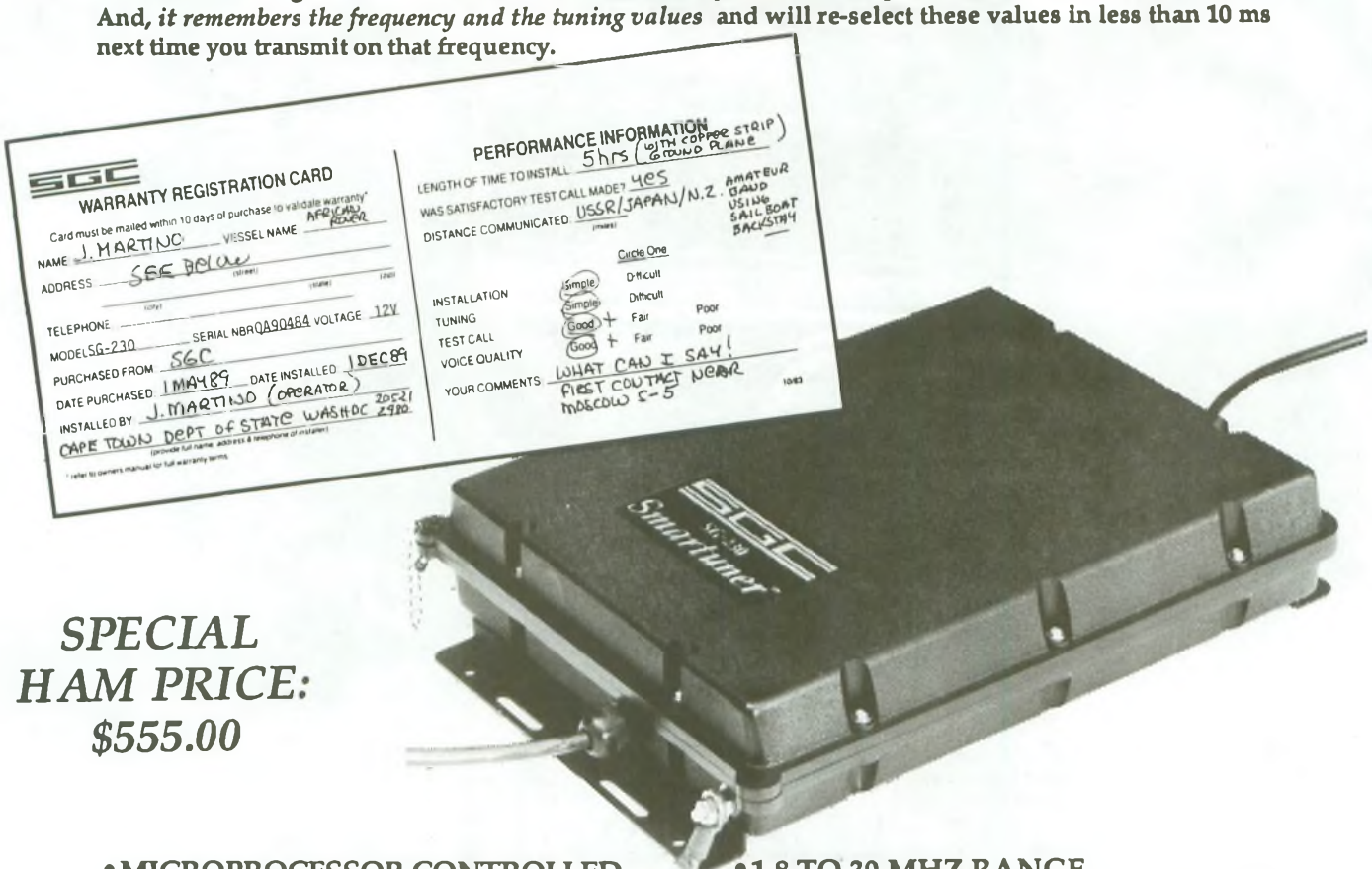

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Selected as the official radio of the World Radiosport Team Championships, a cultural exchange event of the 1990 Goodwill Games™, the IC-765 exemplifies ICOM's commitment to excellence in performance. The IC-765 incorporates the finest technology with the best designs to produce unbeatable HF operation for competitors worldwide.

The IC-765 sports: **Band Stacking Registers**. Each band's VFO's retain the last selected frequency, mode and filter choice when changing bands. Produces the equivalent of 20 VFO's; two per band. Great for multiband DX'ing! **99 Fully Tunable Memories.** Store frequency, mode and filter selections. **Direct Digital Synthesizer (DDS).** Assures ultra-fast PLL switching and lock-in for excellent PACKET, AMTOR and CW QSK operations.

Unlimited Operating Capability! The three step attenuator cuts multistation overloads. Additional features include a **Built-in AC Supply, 100 percent duty cycle** for consistent high quality operation, **Fully Automatic Antenna Tuner, Iambic Keyer, Narrow 500Hz CW Filters** and **CW Pitch Control.**

The IC-765 general coverage receiver covers all bands and all modes.

Backed by ICOM's full **one-year warranty**, the IC-765's world class performance and superb reliability make it . . . the Choice of Champions!

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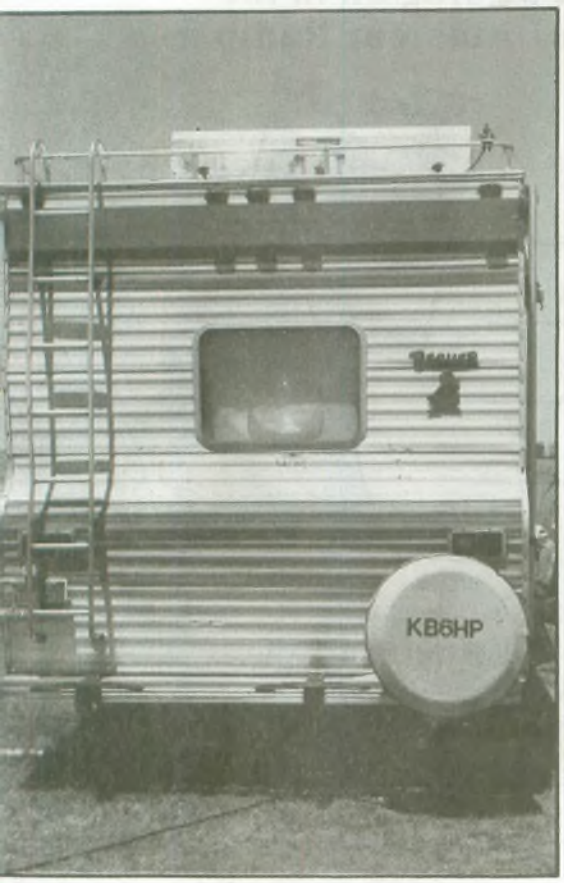

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