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# Worldradio

Year 20, Issue 9

March 1991 • \$1.25

## Lithuanian hams describe siege

Lou Ann Keogh, KB6HP

Amateur Radio operators around the world heard their transmissions ... courageous Lithuanian hams sounded their plight as Soviet troops with armoured vehicles attacked the main television tower and studio in the capitol city of Vilnius on January 13, 1991.

Lithuanian citizens, aware that communication facilities as well as government buildings would be the prime targets in such a siege, surrounded both the television broadcast station and the Parliament Building. Despite these efforts, the broadcast station fell to Soviet control; tanks and guns cut a swath through the crowds and 14 people were killed.

The Parliament Building, however, was another matter. Lithuanian hams had had the foresight to install an Amateur Radio station atop the building. With a dipole antenna and a multi-band HF rig, Rytis (who never gave his personal call sign on the air) operated the Parliament station LY2WR, immediately informing the outside world of the ordeal.

Government spokesperson Rita Dapku relayed messages on 20M SSB for the elected government. American and Canadian Amateurs copied statements naming the designated Prime Minister-in-exile, Mr. Saudargas (ex-UP2OZ), should that become necessary. At the request of the "democratically elected parliamentarian" Deputy Zigmas Vaisvila, the United States' Department of State was notified and given a continual description of events in Vilnius as they took place. American hams with strong signals into Lithuania handed off the relaying responsibilities as 20M propagation shifted from the East to the West Coast. The correct telephone number for the Eastern European desk at the State Department was then land-lined to Belgian DXer ON4UN, Joahn Devoldere, who was able to maintain 40M contact with the besieged government when 20M gave out to the Americas.

As of January 22, the schedule with Lithuania was still being maintained by US and Canadian hams. Remarkably, there has been no attempted interference. Of course, an occasional DX enthusiast hearing an LY call sign has carelessly jumped in to try for a new country, but there has been no malicious transmission interference.

Lithuania, which was an independent state prior to World War II and

then annexed by Stalin in 1940, has sacrificed greatly to reassert its claim of independence. There is concern that with the outbreak of hostilities in the Middle East, their plight will be forgotten. The task now taken on by their western ham friends has been to relay news back to the Baltic States that despite the war in the Persian Gulf, they are still a topic of great concern to European and American governments.

## She keeps gulf GIs, families in touch

*The following article is reprinted from the Press-Tribune, Roseville, California.*

### ALICIA KENT

Inside a mobile home in Sabre City, antennas stretching to the sky, Mildred O'Brien, W6HTS, received a coded message from a soldier in Saudi Arabia.

The translated message, which came via Germany, said, "Wishing you a Merry Christmas and a Happy New

Year. Received your gift. Wish we could be together."

The next morning, O'Brien, an Amateur operator for MARS, passed the message on to another operator, forming a link from soldiers in Saudi Arabia to their hometowns all over the country.

Everyday from 6 to 10 p.m. and then again the next morning from 9 to 11 a.m., O'Brien, who has been crippled (please turn to page 3)



Mildred O'Brien, 80, loves all of her 42 years of transmitting via MARS.



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# Mildred O'Brien

(continued from page 1)

since she was 16 and is now confined to a wheel chair, is known by her Air Force call, AFA6QT, or her Amateur call sign, W6HTS. But throughout her 42 years of transmitting, other hams have called her Whiskey 6 Hot Tomato Soup.

Her humor sharp, O'Brien remembered that her husband used to call her "Whiskey 6 High Tootin' Suzy," or, when he got angry with her, "Half Tame Squaw."

What O'Brien loves the most is phoning local families—from Newcastle to Fair Oaks—and giving them the much-anticipated messages that often come from soldiers in the Philippines, Japan and Korea.

Surrounded by plaques and MARS awards, she smiles and says, "When I call them by phone, boy I love that." Her clear blue eyes light up when she adds, "It's a very rewarding hobby. It makes you feel so happy when you can deliver a message."

Since her husband of 42 years died 15 years ago, the static and voices of the radio operators have kept O'Brien company. "I could turn it down, but I like to hear it. I don't want to miss any of the messages," she says, reaching down from her wheelchair to pet her blue-eyed Siamese cat, Hammy. Throughout the day, even when she is not transmitting, she listens for incoming messages.

O'Brien, who sold her 20-year-old car last year because she said she doesn't need it, keeps busy inside her home, often stopping mid-sentence to listen

to a message and planning her day around broadcast times. Every Friday night, she takes the controls and is in charge of all the MARS operators in New Mexico, Nevada, Arizona and California. And Tuesday evenings are reserved for an informal Morse Code class which she has taught since she got her Amateur Radio license in 1948.

But her busiest times come in the midst of emergencies and natural calamities. During the aftermath of the Loma Prieta earthquake in 1989, she connected people to family members around the state.

Her commitment to Amateur Radio began as a family effort, when her 12-year-old son and then her husband first got their Amateur Radio licenses. "They thought ol' Mom should get involved," O'Brien remembers, adding that she didn't know anything about radio transmission when she first began. In 1951, all three of them joined MARS. Armed with an Advanced license, she began working at McClellan Air Force Base in 1956 and retired 21 years later as the base's MARS supervisor.

But she has no plans to put away her microphone and retire from MARS. When asked when she'll stop transmitting, O'Brien looked surprised and explained, "I won't stop. Not unless I can't talk anymore." □

## The cat that knew Morse code

JODY NELIS, Jr., K3JZI

This is the strange story as told by the radio officer of a ship.

This radio officer adopted a black cat named Maggie, and it became fascinated by the loudspeaker in the ship's radio room. The cat used to spend hours sitting in front of the speaker, just as though it was in cat heaven.

The radio officer, during the long night watches with nothing to do, got the idea to teach the cat the ship's call sign as an experiment. For weeks he initiated the ship's call on a buzzer, simultaneously tapping the cat's right forepaw on the office table.

After a time, sure enough, that cat would recognize the ship's call when other ships called and it would stand up and meow. When the operator

turned in at night, he used to leave the speaker on, with Maggie the black cat keeping guard and wearing a happy expression.

Early one morning, weeks later in the middle of the Pacific Ocean, the radio officer awoke to find Maggie on his bunk frantically pawing his face. So he dashed to the radio room and discovered another of the company's ships calling for medical assistance for one of its firemen, who had symptoms of appendicitis.

This story is the cat's meow and the radio officer swears it is the truth. This reporter suggests that the cat's unofficial call might be "K8AT." —Greater Pittsburgh VHF Society Inc., Trafford, PA □

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## PUBLISHER'S MICROPHONE

Sheer courage! No Amateur who was  
listening to 20M on the night of Satur-  
day, January 12, 1991, will ever forget  
the transmissions from Lithuania.  
Brave Amateurs risked the conse-  
quences to go on the air and tell what  
was happening in their country.

The latest to make the brilliant move  
to Worldradio Super Booster (Lifetime  
Subscriber) status are: Robert Buck,  
W7IZU, Las Vegas, NV; Dan Magro,  
KV6I, Los Angeles, CA; and Edward  
Eliot Caine, KA6OFR, Sonoma, CA.

As Mark Twain said . . . regarding  
the demise of Amateur Radio as  
bleated about in certain quarters: in  
1985, 17,373 people became Amateur  
Radio operators; in 1990 the number  
was 26,134. Dividing the latter by the  
former gives us 1.50. In 1985, 16,184  
Amateurs upgraded their class of  
license. In 1990 the number was  
26,699; the ratio was 1.83. Perhaps a  
five dollar hand calculator should be  
sent to the sage of New Hampshire  
with directions for use included.

With some newcomers to our ranks  
about to enter via the codeless method,  
I do hope that they will receive a warm  
welcome.

It is hoped that the oldsters among  
us will not repeat the "lids, kids and  
space cadets" chant of some years  
back. It will accomplish more (in the  
long run) if there is *not* a caste system  
of any nature.

There will be far more upgrading,  
club participation and the like if these  
new Amateurs are made to feel as full  
members of the fraternity.

While it may be true that their burn-  
ing desire to be part of this great avoca-  
tion did not extend to overcoming that  
truly arduous task (an ordeal mastered  
by half-bright 12-year-olds) — the tor-  
tuous five-words-per-minute CW test  
— we should just let it be.

What is happening, however, is that  
we're already hearing that it will be the  
too-difficult theory test that will be the  
roadblock to new blood arriving on the  
scene.

No doubt some steps will be taken  
along that line. After that, we expect  
there will be a call that having to be  
supervised while taking the test is an  
insult to one's integrity. Eventually,  
we'll probably see the test being mailed  
to the applicant's home where, utiliz-  
ing the honor system, he'll take the test  
all alone.

One of the most brilliant statements  
written in a club bulletin recently was  
in the *Suffolk County* (New York)  
*Radio Club QTC*: "We cannot expect

them to be interested in something  
about which they know nothing."  
Some call Amateur Radio the  
"stealth" hobby.

There is one untapped group out  
there; we've never heard of any in-  
dividual or club making the effort to in-  
volve them. Most communities have  
temporary or permanent facilities for  
children who do not have homes. Those  
kids would be thrilled if someone came  
out and showed some concern for them.

Because these kids don't have  
parents to drive them to the regular  
licensing classes, the instruction could  
occur right at the institution. The  
staffs at these children's homes should  
be pleased that an opportunity such as  
this is being given to the youngsters.

Most of you reading this would prob-  
ably have a difficult time trying to im-  
agine what it's like to grow up without  
close parental guidance, but it is the  
fate of many.

They could use a little help. It  
wouldn't hurt anyone to donate that  
old unused rig which has been gather-  
ing dust for years. If radio clubs spon-  
sored children's home efforts such as  
this, local radio stores might even give  
discounts if they knew that the used  
gear was going to children's homes.

These kids would probably be quite  
excited to be asked to go on Field Day.  
Nobody else is paying much attention  
to them.

Just a little effort, such as a licensing  
class one night a week, could end up  
making a really big difference in the  
lives of some young folks who present-  
ly don't have a whole lot going for  
them. They might be very appreciative  
(in later years) of what Amateur Radio  
did for them, and maybe they'll pass  
the torch on to others.

—Armond, N6WR

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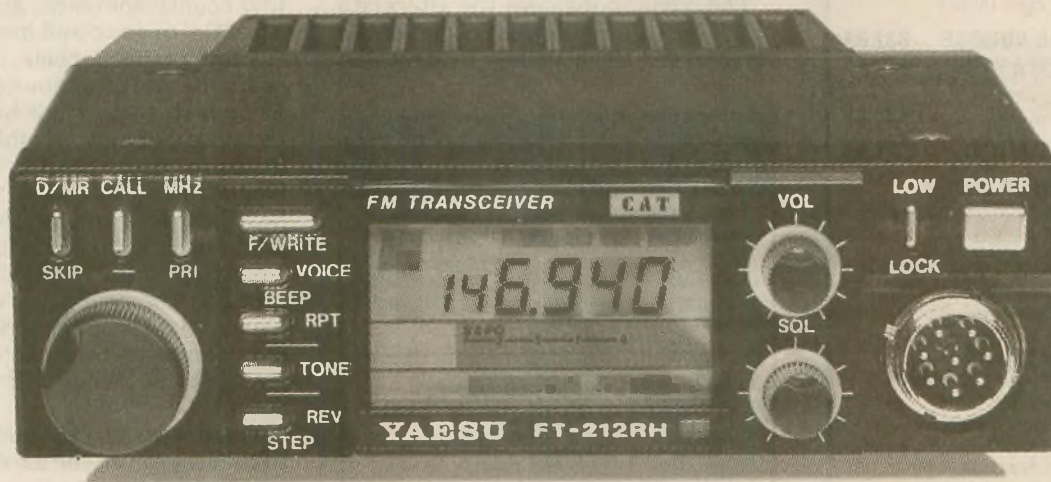
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# Hams gear up for major earthquake

The following article is reprinted from the 12/3/90 Daily Herald, Provo, Utah.

## PATRICK CHRISTIAN

While many people were out buying 72-hour kits for today's predicted major earthquake—which hadn't occurred as of late this morning—area Amateur Radio operators tested their readiness for a disaster.

Thursday night they were out in the cold practicing for the big emergency after they answered a surprise alert for a simulated emergency test.

Dave Cahoon, who helped organize the radio roll call, said that a call for a simulated emergency test was broadcast, and 35 Amateur Radio operators who are members of the Amateur Radio Emergency Services responded that they would brave cold temperatures to participate.

Much of the earthquake furor has stemmed from New Mexico scientist/business consultant Iben Browning's prediction of a major earthquake Sunday or today.

Members of the Amateur Radio Emergency Services frequently practice for a big quake or other disaster. The last test for Amateur Radio Emergency Services was on a warm morning this spring.

The scenario includes the aftermath of a 7.5-richter-scale convulsion of the earth under Utah Valley. Bridges and

underpasses are knocked out. There is no electrical power either, so only battery-powered radios or radios connected to emergency backup generators work.

And you can't get gasoline from the electrically-operated pumps at service stations. Members of the Amateur Radio operators group are advised to always maintain a minimum of a half tank of gas in their cars.

The test in spring was a good test of human ingenuity under weather conditions—good for radio equipment and humans alike.

But on Thursday night, equipment and the human factor was put to worsening conditions of darkness and cold temperatures. Frigid temperatures can severely challenge radios and the battery life to keep them broadcasting. It's also more difficult for the operators to work in the harsher conditions of winter.

"We were testing equipment, batteries, cold weather gear preparedness, flashlights and the ability to find addresses," said Mike Nielson, spokesman for the group of Amateur Radio operators.

After answering the radio roll call, participants were given difficult-to-find county addresses around Geneva Steel Co. to go to and broadcast from.

They grabbed their jump kits—a radio operator's counterpart to a 72-hour emergency kit but containing radio equipment, flashlights, spare batteries, spare parts, antennas for longer range use, food, water, paper, pencils, maps, and anything else they might need for extended assignments.

Getting to the locations in the dark was half the challenge, even without having to work in the cold with their radio equipment to make critical radio transmission links with other operators.

There were also simulated obstacles to challenge even the most experienced radio operator.

"Your fuse just blew on your mobil,"



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**Mike Nielson, spokesman for the Amateur Radio Emergency Services, was one of 35 Amateur Radio operators who braved cold weather to prepare for a major disaster.**

one of eight directors told a participant. If the participant was prepared enough to have an extra fuse in his jump kit, he could continue.

"How much food do you have?" asked Ted Arbon, another director. "OK, you prepared to stay three days?"

Director Howard Gardner told a participant his coaxial cable broke and needed to be fixed if the participant had the tools in his jump kit.

Other obstacles included simulated car problems, bad roads, radio problems, food, water and clothing problems and others.

Keith McQueen, who coordinated the operations, said the simulated

emergency tests are designed to challenge participants' preparedness and ingenuity so they will be better prepared in a real emergency which could occur at any time. He said that in a real emergency the hams could work with the sheriff's office.

Nielson said he doubts many people are aware of what his group does or know that they are always ready. According to Nielson, a major quake or other disaster could knock out power and phone systems. At that point, the assistance of Amateur Radio operators would be invaluable to establish critical communications links to help coordinate emergency and medical services. □

## Stateside hams

Whenever QSLing direct to VU2, it is imperative that whatever return postage enclosed be properly disguised and, if possible, double enclosed. There have been many recent problems, mostly local, involving pilferages, tampering and customs QRM, especially, when "green stamps" are involved. So any letters or QSLs sent direct must be in proper and good quality envelopes, otherwise the mail is likely to get way-laid! — *Information submitted by Zal Kabraji, VU2DK* □



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The G5RV MULTIBANDER antenna is an excellent all band (3.5-30 MHz) 102 foot dipole. On 1.8 MHz the antenna may be used as a Marconi type antenna when used with a tuner and a good earth ground. The proper combination of a 102 foot flat-top and 31 feet of 300 ohm KW twinlead transmission line achieves resonance on all the amateur bands from 80 through 10 meters with only one antenna. There is no loss in traps and coils. The impedance present at the end of the 300 ohm KW twinlead transmission line is about 50-60 ohms, a good match to the 70 feet of RG8X mini loam coax. It comes completely assembled ready for installation, handles 2 KW PEP and may be used in a horizontal or inverted "V" configuration.

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	(no xfmr or cable, with 31' bal. feedline)		
G5RV JR	40-10	51'	\$29.95 PPD
	(no xlmr or cable, with 26' bal. feedline)		

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The FCC has revised the examination requirement for the Technician Class Amateur operator license by removing the requirement for proof of ability to send and receive texts in Morse code telegraphy. After these revisions become effective, an examinee will not be required to prove that he or she can send and receive texts in Morse code telegraphy signals to qualify for a Technician Class Amateur operator license.

The FCC noted that offering a codeless class of license that authorizes control operator privileges at stations which transmit exclusively above 30 MHz provides an entry level opportunity to otherwise qualified persons who find telegraphy a barrier to pursuing the purposes of the Amateur service. Therefore, the FCC has established the Technician Class as the codeless class of license. This license includes all Amateur operator privileges above 30 MHz. The Commission also amended the rules to grandfather frequency privileges below 30 MHz to current Technician Class licensees. In addition, the Commission decided to re-

tain the Novice Class operator license opportunity to persons who desire to pursue the purpose of the Amateur service and who can pass a telegraphy requirement in place of the more comprehensive written examination requirement for the codeless Technician Class operator license. (*FCC Report No. DC-1777, Docket 90-55, 12/13/90*)

Regarding the privileges, ARRL President Larry Price observed that the FCC formula is likely to be less acceptable to many Amateurs than the League's (ARRL news release, 12/12/90). Noting that the ARRL Board was holding its regular meeting on January 18-19, 1991, Price said that the timing looks good for a careful review of the Commission's action at that meeting. (*Westlink Report 12/21/90*)

On August 1, 1990, the FCC proposed exempting from the 13 and 20 wpm telegraphy examinations Amateur operator licensees who are incapable of passing those examinations due to severe handicaps. Because of the international requirements, however, no exemptions would be granted from the 5 wpm telegraphy examination. The rules adopted require a physician's certification and a release permitting disclosure to the FCC of medical information pertaining to the handicap. The Commission said that the term "physician" would be limited to practitioners with full medical privileges, that is, doctors of osteopathy or doctors of medicine. (*FCC Report No. 1778; PR Docket 90-356*)

In the matter of whether a disabled person will be able to give a volunteer examination for an element from which he was exempted, the Report and Order left to VE coordinators to certify disabled VEs, saying that a disabled licensee could, in some cases, administer exam elements themselves had not taken. The Commission used the following example: an Amateur Extra class licensee, acting as a volunteer examiner and having been exempted himself from the 20 wpm examination, would still be capable of administering a receiving exam to another applicant by the use of taped CW and a written copy of the text sent. This amendment of the Commission's rules becomes effective Feb. 14, 1991. (*The ARRL Letter, 12/31/91*)

The ARRL and the Radio Amateur Satellite Corp. (AMSAT), are registering concern over the fate of Amateur spectrum at the 1992 World Administrative Radio Conference (WARC-92). This conference of the ITU will be able to modify allocations in several key parts of the spectrum. In comments filed with FCC, ARRL supports the proposed 40M Amateur reallocation to 6900-7200 kHz worldwide. The Amateur Service would have exclusive access to the 7000-7200 kHz segment, and primary access to 6900-700 kHz with secondary access available to land mobile radio. (*W5YI Report 12/15/90*)

The FCC's Second Notice of Inquiry in WARC-92 proposed to internationally allocate 148-149 MHz on a secondary basis to low-Earth orbit (LEO)

## 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 Jan. 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 17326.

Radio District	Group A	Group B	Group C	Group D
0	Am. Extra AA0DE	Advanced KF00Y	Tech./Gen. N0MVF	Novice KB0IEE
1	W01J	KC1ZA	N1IJD	KA1YBO
2	AA2CY	KE2YQ	N2LOF	KB2LXI
3	WI3T	KD3VK	N3IUE	KA3YHI
4	AC4BU	KN4UW		KC4VHA
5	AA5WT	KI5MR	N5RXM	KB5OOX
6	AB6AN	KK6VH		KC6QQB
7	AA7HF	KG7LW	N7QCI	KB7MLI
8	AA8CY	KF8KY	N8NGD	KB8LMH
9	WY9P	KF9AZ	N9KKN	KB9FZO
North Mariana Is.	AH0J	AH0AG	KH0AM	WH0AAP
Guam	KH2O	AH2CI	KH2EV	WH2AMU
Johnston Is.	AH3D	AH3AD	KH3AE	WH3AAG
Midway Is.		AH4AA	KH4AE	WH4AAH
Hawaii		AH6KV	NH6YC	WH6CJT
Kure Is.			KH7AA	
American Samoa	AH8D	AH8AE	KH8AI	WH8ABA
Wake Wilkes Peale	AH9A	AH9AD	KH9AE	WH9AAH
Alaska		AL7MR	NL7VU	WL7BZW
Virgin Is.	NP2J	KP2BV	NP2EB	WP2AHF
Puerto Rico		KP4RM		WP4JST

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## The first 600 watts makes the most difference

The AL-811 gives you 600 watts PEP output -- that's nearly 2 full S-units over your barefoot rig.

That could mean the difference between hearing "You're Q-5 armchair copy" and "Sorry can't copy you, too much QRM."

Now you won't have to stand aside while the "big guns" steal your DX. You'll be able to log some of those stations first.

Going from 600 watts to the full legal limit gives you less than one S-unit increase. But is that fraction of an S-unit worth the 3 to 4 times more money it'll cost you?

The AL-811 gives you a powerful punch at a price that's easy on your wallet.

## All band, all mode coverage

The AL-811 covers all HF bands (10/12 meters with easy user mod). There's no compromise on WARC and most MARS bands -- you get a 100% rated output.

You can operate the AL-811 on all modes. You get 600 watts output PEP SSB and 500 watts output CW. You even get 400 watts on demanding continuous carrier modes like RTTY, SSTV, FM and AM.

## How the low cost 811A tube resists premature failure - even when your amplifier is mistuned

811A tubes resist premature failure in two ways.

**First**, they're constructed with widely spaced elements that minimize the chance of elements touching and causing a short -- even if the plate gets hot enough to melt.

**Second**, they use a directly heated thoriated tungsten filament cathode that prevents the electron emitting layer from instantly stripping off -- even if mistuning causes a sudden, severe current overload.

**Indirectly** heated oxide cathode tubes (like the \$400 3CX800A7) can be rendered instantly useless if their electron emitting layer is stripped off because of a severe current overload due to mistuning.

The Ameritron AL-811 is excellent for the newcomer because it's tough enough to withstand momentary mistuning. And the tubes are so inexpensive that you can replace one for mere pocket change.

**The Ameritron advantage: extra heavy duty power supply that gives you peak performance year after year**

The heart of the AL-811 power supply is



its heavy duty power transformer with a high silicone steel core weighing a hefty 17 pounds.

A full wave bridge using 52.5 ufd of total capacitance (four 210 ufd, 470 volt capacitors) produces 1500 volts under full load and 1700 volts no load. That's excellent high voltage regulation!

Full height computer grade filter capacitors with screw terminals are used -- not short stubby, light duty soldered-in "high technology" capacitors that can't dissipate the heat generated by high current.

The rectifier diodes are rated for a massive surge current of 200 amps. They won't blow even if you accidentally short the high voltage supply.

Wire wound, 7 watt, 50 K ohm equalizing resistors safely protect each filter capacitor -- not 2 watt, 100 K ohm carbon composition resistors that can open and cause your filter capacitors to explode or fail.

The Ameritron AL-811 power supply is built tough so you get peak performance year after year.

## Tuned input provides excellent load for any rig

A Pi-Network tuned input provides a 50 ohm load for your rig. Even fussy solid state rigs can deliver their full drive to AL-811.

Low loss slug tuned coils -- tunable from the rear panel -- let you optimize performance. High quality low drift silver mica capacitors maintain proper tuning.

## Output tank: optimum Q on each band

The low loss pi-network output tank of the AL-811 has been carefully designed for optimum Q on each band and built with quality RF components.

The result is peak performance over each band, wide impedance matching range and exceptionally smooth tuning with efficiencies close to 70%. Even a 3:1 SWR load won't damage the tubes or tank components.

A ball bearing vernier reduction drive makes plate tuning precise and easy.

## Quiet pressurized ventilation keeps your tubes safely cooled

A quiet fan pressurizes the cabinet with over 20 cubic feet per minute of cool air.

This large volume of air flow keeps the 811A tube temperature safely below the tube manufacturer's rating -- even with a key down carrier at 500 watts output.

## Two illuminated meters

Two illuminated meters give you a clear picture of your AL-811 operating conditions so you can tell right away if something is wrong.

The Grid Current meter continuously checks for improper loading. The other meter switches between high voltage and plate current to warn of abnormal conditions.

## Ameritron exclusive Adapt-A-Volt™ power transformer

Too high line voltage stresses components and causes them to wear out and fail. Too low line voltage causes a "soft-tube" effect -- low output and signal distortion.

Ameritron's exclusive Adapt-A-Volt™ power transformer has a special buck-boost winding that lets you compensate for stressful high line voltage and performance robbing low line voltage.

This makes your components last longer and gives you peak performance -- regardless of your line voltage.

## Plus more . . .

An Operate/Standby switch lets you run barefoot, but you can instantly switch to full power if you need it.

A transmit LED tells you when your rig is keying your AL-811.

A 12 VDC keying relay makes it compatible with all solid state and tube rigs. A built-in back-pulse cancelling diode protects your rig's keying circuit.

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satellites. Amateurs pioneered LEO satellites and now several organizations have applied to FCC for LEO licenses. Some engineers believe that the 140 MHz bands may turn out to be quite suitable for LEO use for both up and downlinks. Thus, changes to 420 MHz may not be needed in the end. (W5YI Report 12/15/90)

On November 16, the ARRL and FCC lawyers argued the relocation of 220-222 MHz to narrow band business interests in the US Court of Appeals for the District of Columbia. On December 3, the Court of Appeals denied the League's Petition for

Review of the FCC's decision to award the 220-222 MHz segment to land mobile users. The ARRL was to have seven days to request a re-hearing. The explanatory memorandum attached to the judgment is informative, but of no precedent value. (W5YI Report, 12/15/90) □

## Operating in Russia

This is a fascinating time to visit the Ukraine in that they are in a transition period between communism and a free market economy, and we had ample opportunity to witness the dislocations as well as the hope they have for the future.

I had applied for a license last January and when I had not heard from the Central Radio Club up to the time I left, it seemed improbable that I would meet any hams, let alone operate. Surprisingly, as soon as we moved into a city (Kherson, Odessa and Kiev, each for one week at a local university) I received a telephone call from the local radio club saying that Moscow had telephoned them that I would be in their city for a week and that I was granted operating permission during that period. This seems to be the new way to do it in Russia.

None of the clubs had an iambic key so I ended up using a microphone! The highlight and surprise was calling CQ, SF Bay Area and getting AA6PI who had written a letter for me in Russian to the Central Radio Club requesting permission to operate, and who gave the young people and staff at the Kiev station a real thrill when he spoke to them in very good Russian. Curiously, the Kiev station at the Polytechnical Institute is the same station the Colvins used during their stay there. 73, Jo — Josephine Clarke, WB6ZUC, Kentfield, California. □

## From Walvis Bay

Dear Friends,

We concluded our operation today in the recently announced new country of Walvis Bay. Our call was ZS9/W6KG and, in many ways, it was our most successful operation in Africa since our start in August this year. We made 8,000 QSOs with radio Amateurs in 152 countries. We had a surprise visit here by two of our most active YASME directors, Martti Laine, OH2BH, and Wayne Mills, N7NG. The two of them were on their way to Penguin Island where they had a big DXpedition, assisted by Chris Burger, ZS6BCR, and Pertti Turunen, OH2RF.

Here in Walvis Bay we stayed at the QTH of ZS9S, Capt. John Smith. We used his antennas and our equipment. Probably ZS9S and Ian, ZS9A, are the most active permanent residents of Walvis Bay. Five years ago, Ian was the Postal Chief and in charge of issuing ZS3 licenses to radio Amateurs in the area now known as Namibia. Our call was given to us by Ian.

While we were operating in C9QL, before coming to Walvis Bay, we announced in our letter of November 6 that radio conditions were poor and that the sunspot cycle was declining. We found out here in Walvis Bay that most of the weak signals were caused in part by a malfunction in the front end of our transceiver. As we passed through Namibia on the 15th of November, a thief stole a large bag containing some 220 feet of RG8 coaxial cable that we use to connect our tri-band beam to our station. The stolen coaxial cable was replaced and repairs to our transceiver were made by Amateurs Rudy Wiechers, V51W, and Derek Moore, V51DM, both of Electro-Com Company in Namibia. They did this below cost and we owe them many thanks. 73 es 88, Lloyd, W6KG, and Iris, W6QL, Colvin. □

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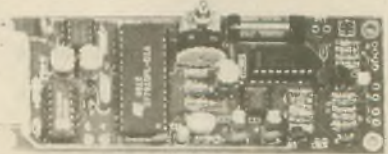
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At the Radio Club of America's annual banquet, held on Nov. 16, 1990, ARRL Atlantic Division Director Hugh Turnbull, W3ABC, received the Fellow Award. Kenneth M. Miller, K6IR (standing at Hugh's left), is the club's director and chairman of the Grants-in-Aid Committee which has made contributions to help the ARRL fund WARC-92, aimed at preserving our Amateur frequencies. □

## NARTE certification available

The National Association of Radio and Telecommunications Engineers is granting its entry level Class IV certificate to Advanced and Extra class Amateurs. The NARTE program covers broadcasting as well as commercial aspects of satellite, microwave and land mobile communications and certification provides a means whereby Amateurs may enter the commercial field.

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for industry, contact NARTE at P.O. Box 15029, Salem, OR 97309. — *The ARRL Letter* □

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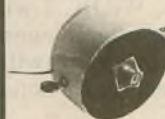
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# Dear Kurt

(more on the Isoloop)

WALT MAXWELL, W2DU

I have been reading the discussions on the AEA Isoloop in your column with great interest. Although I am usually in 99 percent agreement with you, I have a few comments for your consideration concerning the Isoloop that I hope will shed some light on its radiation effectiveness. By quoting excerpts from the first edition of *Antennas*, by John D. Kraus, W8JK, I will show why the radiation effectiveness of the Isoloop compares favorably with the half-wave dipole, despite its small physical size.

First, some basic fundamentals of radiation appear to have been overlooked. One of these fundamentals is that the maximum effective aperture of a radiator is directly proportional to its directivity. (I'll get around to gain later.) Another fundamental (that is practically unknown among many Amateurs) is that the maximum effective

aperture of a very short dipole (one less than 0.1 wavelength) is only slightly smaller than that of a half-wave dipole. The aperture of a short dipole is 0.119 square wavelengths, with a directivity of 1.5 relative to isotropic, 1.76 dBi. Compare this with the aperture of a half-wave dipole which is 0.13 square wavelengths with a directivity of 1.64 relative to isotropic, 2.15 dBi). Thus by simple subtraction we see that the difference in directivity between the very short dipole and a half-wave dipole is only 0.39 dB. Before anyone becomes hysterical when considering this extremely small difference in directivity between the two dipoles, let me assure you that these values appear in Kraus on pages 49-54, and in Table 3-1. So you see, the physical size and effective aperture of dipoles aren't necessarily directly proportional. In fact, the maximum effective aperture of a half-wave dipole is approximately represented by a rectangle  $1/2 \times 1/4$  wavelength on a side ( $1/2 \times 1/4 = 0.125$ ), but is more closely represented by an ellipse having an area of 0.13 square wavelengths with the major axis slightly longer than a half-wavelength. And repeating what I stated earlier, the aperture of the short dipole is a slightly smaller ellipse of 0.119 square wavelength. However, as I said before, I'll get around to gain and efficiency later.

The next fundamental of importance that has been overlooked is that the small loop with a circumference less than  $1/3$  wavelength has exactly the same maximum effective aperture, directivity and radiation pattern as the short dipole described above. This is stated in Kraus, pages 170-171, and can also be seen when comparing the data in his Table 3-1 with that in Table 6-1.

The fundamentals described above all share their place in the level of importance, but the prime fundamental that has been overlooked in evaluating the performance of the Isoloop is in the different kind of the residual reactance

that appears in the small loop compared to that in the short dipole, and in the critically different reasoning used in selecting the means for canceling the reactance.

We all know that the residual reactance in a short dipole is capacitive, but many don't know why. The reason is this: Current traveling outward from the input terminals drops to zero when it reaches the ends of the dipole, because it sees an open circuit. At an open circuit the current reverses its polarity and direction, and returns to the input terminals. When each half of the dipole is a quarter-wavelength the returning current is in phase with the current that arrives from the feed line, thus there is no reactance developed and the dipole is resonant. However, when each half of the dipole is shorter than a quarter-wavelength, the returning current arrives at the input terminals earlier in phase than the next wave arriving from the feed line. Consequently the impedance seen at the input terminals of the short dipole contains capacitive reactance because the resultant current at the terminals is leading the voltage. This is the capacitive reactance that is required to be cancelled by inductive reactance supplied by an inductor. And therein lies the only reason why a sufficiently conductive short dipole is inefficient in practice: the resistive loss in the inductor required to cancel the capacitive reactance dissipates a large portion of the applied power as heat. As a result the gain suffers, becoming less than the directivity. When there is no power loss converted to heat, directivity and gain are equal.

And now we come to the fundamental point that is crucial to the reason why the gain of the small loop can far exceed that of a short dipole in practice, and indeed, can approach that of a half-wave dipole. Consider what happens to the current flow when the short dipole is curved around to form a small loop and with the ends of the dipole connected together. The current now sees no open circuit when reaching the point where the dipole ends are connected, so instead of reversing its direction and polarity, it flows continuously until arriving back at the input terminals. And here is the big difference relative to the short dipole: Because there was no phase reversal of the cur-

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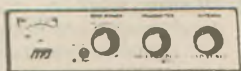
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rent at an open circuit, as there was in the short dipole, on arriving back at the input terminals of the loop, the returning current now arrives later rather than earlier relative to the new wave arriving from the feed line. Consequently, because the phase of the resultant current at the terminals is now lagging the voltage, the terminal impedance of the small loop contains inductive reactance, the opposite of the capacitive reactance appearing in the short dipole. And what a difference this makes, because now the residual reactance can be canceled with a low-loss capacitor, instead of a lossy inductor, and it is relatively easy to construct capacitors with extremely small losses.

From the standpoint of the residual reactance developed at the input terminals of the short dipole versus that

of the small loop, the reader may find this concept easier to grasp if the short dipole is compared to an open-circuited transmission line shorter than a quarter-wavelength (capacitive), while the closed small loop is compared to a short-circuited transmission line shorter than a quarter-wavelength (inductive).

As stated earlier, if it were not for the ohmic resistive losses in the inductance required to compensate for its residual capacitive reactance, the gain of the short dipole would be nearly equal to that of a full half-wavelength dipole. Fortunately for the small loop the ohmic resistive loss in a properly-designed capacitor used to compensate the residual inductive reactance is almost negligible. And when the loop itself is constructed of material of high

conductivity and sufficient surface area, the gain of the loop approaches the directivity, which indeed indicates high efficiency, nearly equaling that of a half-wave dipole.

Now for the last topic concerning gain and loss—matching the very low radiation resistance of the small loop to a 50-ohm source. Many seem to be worried that such a large difference in resistances will result in a large loss of power in the matching operation. Not to worry—because close inductive coupling between the feed line and the loop can achieve a perfect conjugate match between the two resistances with negligible loss of power.

In summary, it is apparent that there is a solid engineering basis for the radiation efficiency of the small loop to approach that of the half-wave dipole.

## Kurt replies:

I am second to none in my respect for Mr. Maxwell. I have always been flattered to receive, over the years, nice letters from such an authority.

His latest book from the ARRL should be required reading for anyone with any interest in antennas. It will also absolutely frazzle some of those who hold forth on 75 Phone spewing forth misinformation.

Yes, small antennas can do well. I quote, "A short vertical antenna, properly designed and installed, approaches the efficiency of a full-size resonant quarter-wave antenna. Even a 6 ft. vertical on 7 MHz can produce an exceptional signal." (From *The ARRL Antenna Book*)

One can interpret "approaches" or "almost" to their own desires. There are, today, Luftwaffe pilots who say they "almost" won the Battle of Britain.

How about an antenna three feet tall being used on 20M? Would you agree with the statement, "Performance from this type antenna is comparable to that of many full-size quarter-wavelength vertical antennas?"

Such is a description in the same book describing a helically wound vertical .05 wavelength tall. One could, instead of making a vertical, configure it as a dipole being .05 on each side of center feed or, 28 feet for 80, 14 feet for 40, 7 feet for 20, etc.

The helical winding requires about a half-wavelength of wire on each side of

center. With No. 16 wire a kilowatt could be handled. One could most likely interlace the 15 and 10M windings all on one pole.

Some matching would be needed but it would not be difficult or expensive and could most likely be done in the shack with a tuner. One could log the various settings for the various bands and portions thereof and immediate repeatability would be possible.

So if we are attempting to radiate a signal "almost as good as," there are many relatively inexpensive ways to do it. If one is suffering from extreme space constraints, it would still seem possible to install a square of wire, eight feet on a side somewhere; it could be suspended from the ceiling, horizontally, or vertically from the floor to the ceiling. (I know of one Amateur who made DXCC with a wire loop in the basement.)

A recent issue of *SPRAT*, the QRP magazine from G-land told of such an 8 ft. square (with 3W) on all bands from 40 and up, working all over. It was fed with open wire and a tuner made up of two toroids and two BC type 365 mmfd capacitors. It isn't even necessary to make the wire a square; a rectangle up to a 3:1 ratio would still work fine.

Yes, one can be "comparable" but at far, far less cost than is assumed. It really isn't necessary to spend the equivalent of a very fine used transceiver. Wire and pliers will do it for you.

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# Keeping your computer from being your strongest signal

LEE ZALAZNIK, KI6OY

As computers play a bigger role in one's Amateur Radio station, there comes a time when one wants to use a computer for RTTY, SSTV, HF packet or as a helper during that fast paced DX contest. I have directed this article to all the Amateurs who built their own IBM PC/XT clones like I did by buying the components and putting them together.

After you played all the games, learned DOS and printed pretty pictures, it's time for your computer to start earning its keep in Amateur Radio. You hook up the computer through your TNC, which you used on VHF 2M packet to the HF radios to get on the bandwagon with HF packet. Having done all of that you're ready, set, go...but wait a minute, what is that noise up and down 20M? It sounds worse than the woodpecker and changing bands does not help. Finally as a last resort you turn off the computer

and low and behold the noise is gone.

Why all the noise and how does it get generated? Well, the computer uses digital electronics such as AND, OR and NOR gates and some memory devices. They also run at very fast speeds in the order of nanoseconds. These speeds are in the RF range that causes part of the problem, but there is more. When a digital signal goes from one to zero very fast, harmonics are produced and these harmonics can fall within the RF and HF frequencies. In fact this is how you get harmonics out of a 100 Hz oscillator by having a square wave.

Back in your computer there is a mass of digital signals going up and down ones and zeroes at a very fast rate. They mix and this is the noise you hear on your HF radio. Some of the harmonics are suppressed on the system and expansion boards by using bypassing capacitors between power and ground. These capacitors keep the har-

monics down as far as other digital signals but not as far as HF radio equipment.

How to solve the computer RFI problem. First turn on your HF radio equipment without your computer on and listen for any background noise and that will give you an idea of what your radio noise is like. Next turn on the computer and listen to see if there is any difference in the noise generated by the computer. When I first used my computer with the FT-757GX, the computer noise was from S2 to S9 depending on what band I was on. 20, 15 and 10 were the worst with S9+ noise while tuning. 40M was S2 without the RF amp on the FT757GX but still not workable.

The following is a step by step check list by equipment to check out. I assume there is an outdoor antenna with quality coax lead in.

Checking out system unit RFI. With the keyboard, video monitor and printer disconnected from the system unit, turn on the computer and check for any noise leaking from the metal cabinet. If the noise is there, scrape the paint off the lids where they make contact. Also make sure that the system board is grounded to the metal chassis with metal standoffs. I had originally used fiber washers to insulate the

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standoffs from the system board. Removing the fiber washers from the standoffs that could ground the system board helped the computer RFI problem.

Be careful when deciding which holes in the system board to use for grounds. Look for holes that are on the edge of the board that go to the system board's ground plane. Also scrape the paint off the chassis where the standoffs connect and use star washers on the screws that connect the standoffs to the chassis. Finally check to make sure that all other components' (i.e. power supply, hard disk or floppy disk drive, etc.) chassis in the system unit are grounded. If components are not grounded, scrape paint and use screws with star washers to bite into the metal chassis.

Most manufacturers of expansion boards which include memory, clock, serial ports and parallel ports do not adhere to the RS232 standard. Check and make sure that Pin #1 is grounded to chassis. I found that in the expansion board I was using, Pin #1 was not used and chassis was shorted to a 5-volt logic signal via a screw on the serial port connection. I insulated the screw with a fiber washer and grounded Pin #1 to the expansion board ground.

The reason to ground Pin #1 is that in the PK232 Pin #1 is shield ground in their supplied cable. This will help prevent RFI from leaking from the cable that goes from the RS232 serial port to the PK232.

Either make or buy cables that use shielded wire. Some cheap serial and/or parallel cables do not use shielded wire. When I first got my PK232, I used an unshielded serial cable to extend the supplied serial cable and the noise was very bad but taking that unshielded cable out made some improvement. Also try to keep the cables that connect between the system unit and the peripherals short to under 8.5 ft. if possible because 8.5 ft. is near quarter wave length on 10M. This can make the ground at the peripheral not the same ground potential as at the system unit at the higher HF frequencies.

I also checked the grounding out in the PK232 I have and found that the screws that hold the printed circuit board to the metal chassis were not tight. This caused Pin #1 on the RS 232 connector to be floating above ground and the metal chassis. Once the screws were tightened the noise from the TNC and computer seemed to go to a greatly reduced value.

When the printer was on there was some noise from it and I again took the cover off and checked the ground on the printed circuit board and found no screws that were loose, but the printer cable hood was not making very good contact and the noise would come and go. So I pushed the metal part of the hood together to tighten up the printer port connection on the computer side.

After careful inspection of both the keyboard and monitor, I grounded via a separate wire ground both the chassis of the keyboard and monitor to the chassis of the system unit. The keyboard and monitor noise is possibly from the long cables on both.

I did check the possibility of computer RFI from coming in through the

AC power lines. I checked this out by connecting the FT757GX to a shielded dummy load while the computer was on. The results were that there was no noise. If there is noise present on your transceiver, I would recommend that using noise suppressing AC power strip will reduce this path of the computer RFI.

In further experimentation I have found that taking the low pass filter out which is connected between the antenna tuner and the FT757GX transceiver seemed to increase the noise level greatly. Normally a low pass filter is used to decrease harmonics from the transmitter but in this case it keeps the frequencies above 30 MHz out of the receiver. Also several different configurations and lengths of coax were used. The results were no change in the noise level. I thought that the low pass filter was just attenuating the signal enough to cut the noise out but as far as I could ascertain that there is no change in signal levels between having a low pass filter or not.

Antenna systems are an additional consideration. Using an indoor antenna would leave little if any isolation between the receiver and the computer. I have a 2M transceiver with an indoor antenna and an outdoor beam antenna. When I used the indoor antenna the computer noise does keep the squelch open even with the squelch full on. But using the outdoor beam antenna the receiver has normal squelch and does not receive the computer's noise. I could see additional isolation if one used a HF beam and tower. This could give up to 20dB isolation over a low dipole or a G5RV.

The bottom line in eliminating computer RFI is how much interference did all this work take care of. Well after all is said and done I have reduced the noise coming from the computer (at times S9+) so that now the only thing I hear is the background noise of the receiver on the 80, 40, 20 and 15M bands. On 10M there is a little noise from the computer but the S-meter stays at S1 and does not affect the reception of HF packet. Eliminating RFI from computers is not easy and just doing one thing will not eliminate all the RFI, but doing all or more of the above will make it livable. □

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# Special Events...

## Cherry Blossom Festival

The Macon ARC will operate special event station W4BKM in connection with the 9th Annual Macon Cherry Blossom Festival.

Operation will be from 1400Z to 2300Z March 22 and 23. Suggested frequencies are ( $\pm$ QRM) CW—7.130, 14.030, 21.130 and 28.130; SSB—7.250, 14.250, 21.320 and 28.320.

For certificate, send QSL and 9 $\times$ 12 SASE to W4BKM, Macon ARC, P.O. Box 4862, Macon, GA 31208.

## EI Activity Day

The Irish Transmitters Society (IRTS) is promoting a special activity day on Sunday, March 17 (St. Patrick's Day). Their purpose is to get as many EI counties as possible on the air on that day to help Amateurs achieve the Worked EI Counties Award.

The WEIC Award, issued by IRTS, is available to licensed Amateurs worldwide who have worked EI or EJ stations located in at least 20 of the 26 counties of Ireland. There are additional endorsements available for working all 26 counties and for individual bands

and all mode contacts. It is available also to SWLs on a heard basis.

Detailed information on the WEIC Award and membership in the IRTS is available from the IRTS, P.O. Box 462, Dublin 9, Ireland or from Joe Duffin, W2ORA, 4 W. Central Avenue, Moorestown, N.J. 08057 (SASE please).

## Farout from St. Patrick

The Farout ARC of Dayton will operate special event station WB8SMC/8 from St. Patrick (Shelby County), Ohio during the period 1700Z March 16 to 1700Z March 17, 1991.

Frequencies of operation will be in the lower halves of 80-40-15-10M Novice CW and 10M Novice Phone; 80-40-20-15M General Phone.

The Farout ARC QSLs 100 percent to Amateurs and SWLs alike. To QSL, send a business size SASE to Farout Amateur Radio Club, P.O. Box 9181, Dayton, Ohio 45409-9181.

For further information, contact Charlie Cotterman, KA8OQF, 26 Mello Avenue, Dayton, OH 45410.

## Open house

The Chicago Amateur Radio Club, W9CAF, will sponsor an Amateur Radio open house from 11 a.m. to 4 p.m. on March 10 at the DeVry Institute of Technology in Chicago.

Featured will be operating stations on SSB, CW and packet, an exhibit of early radio and other electronic equipment and a videotape showing of the highlights of Amateur Radio.

Admission and parking are free. The general public is warmly encouraged to attend.

For more information, write to CARC, 5631 W. Irving Park Road, Chicago, IL 60634.

## Norwegian Lady

The Virginia Beach ARC will activate special event station WA4TGF from 1400Z March 23 to 2000Z March 24 to commemorate the 100th anniversary of the arrival of the Norwegian Lady to our shores.

Approximate frequencies are 3.875, 7.275, 14.275, 21.275 and 28.363 MHz.

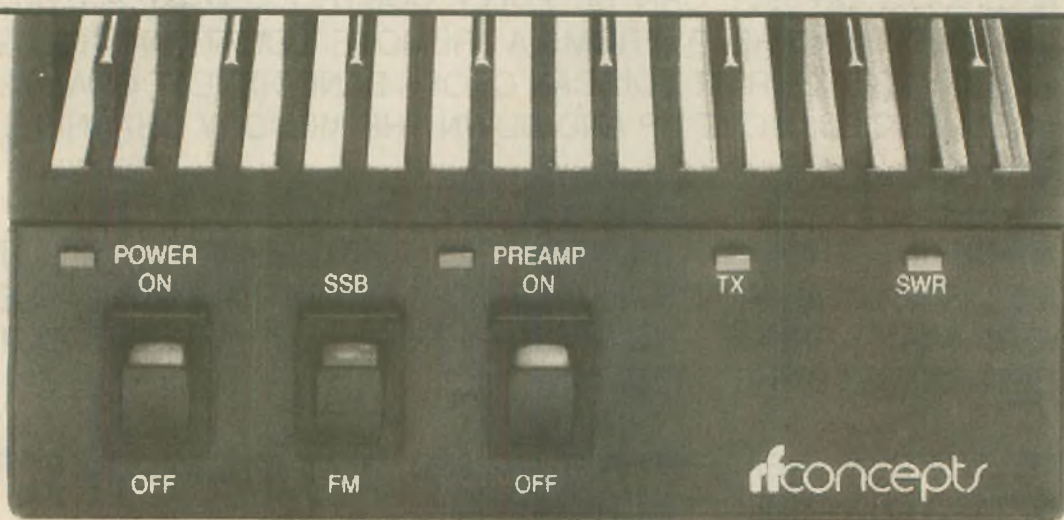
A certificate will be available to all Amateurs contacted by sending QSL and SASE to VBARC, P.O. Box 62003, Virginia Beach, Va. 23462.

## Voice of America

The Piscataway Amateur Radio Club (PARC) will commemorate the historic Voice of America relay station WBOU that operated in Piscataway from 1942 through 1964.

PARC members will operate using their own call signs/VOA from 0000Z, March 16 until 2400Z, March 17 in the lower General portion of 75, 40, 20 and 15M and the Novice 10M band.

For certificate, send QSL and 9 $\times$ 12 SASE to: PARC, attn: KB2UV, P.O. Box 1233, Piscataway, NJ 08854.



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### 220 MHz Amps

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RFC 3-312, 30W in=120 out

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# STATION APPEARANCE

## Ruth Monsees, KC4GLU

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.



This month's winner, with an impressive array, is Ruth Monsees, KC4GLU, of South Pasadena, FL. She shares the station with her husband Art, W4BK, who was the inspiration for her getting a Novice in July and a Technician in September, all at the age of 76. She said the college prep physics she taught years ago, and a life-long enjoyment of listening to Amateurs, both seemed to help.

Following is a description of the equipment.

Our equipment includes a Ten Tec Omni transceiver, a Yaesu 2M transceiver, a 4-element yagi monobander beam for 10M as well as a Ringer Ranger antenna for 2M operation. These antennas are located atop a 20 story high rise building.

A Commodore 128 computer with associated interface is used for CW operation. A dummy load is used extensively for tune-up before putting the equipment on the air. □

Worldradio will trade a paper for a copy of your monthly bulletin or newsletter. Send us the name of your editor. In exchange for your monthly bulletin, your editor will receive a monthly issue of Worldradio. Send bulletins to: P.O. Box 189490, Sacramento, CA 95818.

## Amateur "Hi"

This month's winner is Jerry Rupelt, KA8BWI, of North Ridgeville, OH.

My adult daughter informed me that I should call a Mike Kaus as soon as possible.

Being in business, I come in contact with quite a few people, but for the life of me I couldn't recall any Mike Kaus. After about a half hour, I confronted my daughter and asked what, exactly, the man had said.

She responded, "When I answered the telephone, the man asked for Jerry and I told him you were not at home. Then he said to have you call Mike and he even spelled his last name, 'K-A-U-S'".

Immediately I recognized that it was Mike, K8US, president of the Northern Ohio Radio Society. □

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SSD-5*	80-40-20-15-10M space-saver dipole-specity L 42'-105' 52'-110ppd	.....	
SSD-4*	80-40-20-15M space-saver dipole-specity L 48'-393	.....	60'-396ppd

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# ..... AWARDS .....

## Atlantic Division awards

Nominations are now being sought for the 1991 awards to be presented at the ARRL Atlantic Division Convention. The Convention is held in association with the Rochester, New York Hamfest, in May. The awards are commemorated by handsome plaques to be presented at the hamfest banquet.

Amateur of the Year nominees should be outstanding all-round Amateurs from the Atlantic Division with a strong record of service to the Amateur community.

Steven White, WA3IAO, of Philadelphia, Pennsylvania, was named 1990 Amateur of the Year. Since becoming licensed at age 14 in 1967, White has achieved a well-rounded record of service and creativity in both ARRL programs and local radio club leadership. White serves as ARRL State Government Liaison for Eastern Pennsylvania and participates in the League's Volunteer Counsel program. He is also active in public service and emergency communications, from the floods in the 1970s to the National Disaster Medical System exercises in the 1980s. In addition, he has been an articulate spokesman for Amateur Radio on popular broadcast radio talk shows in Philadel-

phia. As president of the Suburban Amateur Radio Club, White has developed a number of innovative projects, including revival of an inactive military recreation and MARS station at the Aviation Supply Office in Philadelphia. Creative ideas must be turned into reality via a great deal of hard work. Steven White's record of "making it happen" led to his selection for this prestigious award.

An award for lifetime service to Amateur Radio, the Grand Ole Ham, is open to Atlantic Division OMs and YLs who have been licensed at least 30 years or are at least 50 years of age.

New for 1991 is an Atlantic Division Technical Achievement award which may be presented to an individual or to a group.

Complete information on the awards and nomination procedures is available from Richard Goslee, K2VCZ, 24 Elaine Drive, Rochester, NY 14623. The deadline for nominations is April 10, 1991. □

## Young Ham of the Year

Attention parents, teachers and students! The nominating period is now open for the 1991 Westlink Report Young Ham of the Year. The award, which has wide industry support, is given annually to a radio Amateur who is 18 years of age or younger, and who best epitomizes the accomplishments of youth in Amateur Radio as related to community service on a local, regional or national level; service to Amateur Radio on a local, regional or national level; promotion of international good-will through Amateur Radio; promotion of high ethical and moral values through Amateur Radio; education through and/or with Amateur Radio or any combination of the foregoing. To qualify, a candidate must hold a valid FCC Novice Class or higher Amateur license, be a resident of the United States and attend an accredited learning institution. Letters of nomination are due no later than March 20, 1990 and must be detailed, accurate and contain substantiating data to any and all claims made.

Thanks to the cordiality and generosity of the ARRL Midwest Division Convention and its General Chairman Chuck Miller, WA0KUH, Westlink Report is proud to announce that for the second consecutive year, the 1991 award presentation will take place at the ARRL Midwest Division Convention in Kansas City, Missouri in early April. Send nominations and substantiating documentation to 1991 Young Ham of the Year Award, The Westlink Report, 28197 Robin Avenue, Saugus, CA 91350. □

## Dayton ARC scholarships

The Dayton Amateur Radio Association is now accepting applications for the 1991 Scholarship Program. There will be eight \$1,500 scholarships available this year. The program is open to any FCC licensed Amateur Radio operator graduating from high school in 1991. There are no restrictions on class of license or planned course of study.

Information and application forms are available by writing to DARA Scholarship Committee, 317 Ernst Avenue, Dayton, Ohio 45405. □

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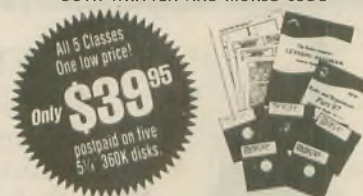
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# DAYTON Hamvention

April 26, 27, 28, 1991

## Early Reservation Information

• General Chairman, Dave Grubb, KC8CF

• Asst. General Chairman, Ross Brown, WABDQH

- Giant 3 day flea market • Exhibits
- License exams • Free bus service

Flea market tickets and grand banquet tickets are limited. Place your reservations early, please.

### Flea Market Tickets

A maximum of 3 spaces per person (non-transferable). Tickets (valid all 3 days) will be sold IN ADVANCE ONLY. No spaces sold at gate. Vendors MUST order registration ticket when ordering flea market spaces.

### Special Awards

Nominations are requested for "Radio Amateur of the Year," "Special Achievement" and "Technical Achievement" awards. Contact: Hamvention Awards Chairman, Box 964, Dayton, OH 45401.

### License Exams

Novice thru Extra exams scheduled Saturday and Sunday by appointment only. Send FCC form 610 (Aug. 1985 or later) - with requested elements shown at top of form, copy of present license and check for \$5.25 (payable to ARRL/VEC) to: Exam Registration, 8830 Windbluff Point, Dayton, OH 45458

### 1991 Deadlines

Award Nominations: March 1

License Exams: March 26

Advance Registration and banquet:

USA - April 4 Canada - March 31

### Flea Market Space:

Spaces will be allocated by the Hamvention committee from all orders received prior to February 1. Notification of space assignment will be mailed by March 15, 1991. Checks will not be deposited until the selection process is complete.

### Information

General Information: (513) 454-1456  
or, Box 964, Dayton, OH 45401

Lodging Information: (513) 223-2612  
(No Reservations By Phone)

Flea Market Information: (513) 767-1107

### Lodging

Please write to Lodging, Dayton Hamvention, Chamber Plaza, 5th & Main Streets, Dayton, OH 45402 or refer to our 1990 Hamvention program for lodging information which includes a listing of hotels and motels located in the areas surrounding Dayton.

HAMVENTION is sponsored by the Dayton Amateur Radio Association Inc.

## Advance Registration Form

Dayton Hamvention 1991

Reservation Deadline - USA-April 4, Canada-March 31

Flea Market Reservation Deadline: February 1

Enclose check or money order for amount indicated and send a **self addressed stamped** (#10) envelope.

Please Type or Print your Name and Address clearly.

W

3

Name \_\_\_\_\_

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City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

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(Max. 3 spaces)

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Admission ticket must \$150/3 adjacent \$ \_\_\_\_\_

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## What next?

I found the article by Craig Haggart ("No-code not detrimental," Off the Air, Nov. '90) quite amusing. True; we do not build our own equipment, as we did 35 years ago when I first became licensed. At that time, equipment building was very much a part of Amateur Radio. It's needless to go into detail as to why home construction has become practically non-existent or why most people do not complain about learning electronic theory. Electronic theory can be learned simply by reading a book, and it doesn't require a whole lot of "book reading" in order to pass the theory test in the Amateur license examinations today. However, code cannot be mastered by simply reading a book. One must put forth some effort in order to learn Morse code, which is probably the main reason that the no-code license came about. Today, we are living in a "get all that you can for nothing" society.

I was a railroad telegrapher before becoming an Amateur Radio operator. So I learned both American Morse and International Morse, and I used both codes during my early years of ham radio. I am still about 99.9% CW on the HF bands. During my years as an Amateur Radio operator, I have run in to many people who were telegraphers for railroads, Western Union, the

Armed Forces, press radio, merchant marines, etc. To these people, code would be no problem. Because they prefer CW operation, these people feel the same way towards learning theory as the no-code people feel towards learning Morse code. Most of these ex-operators would have no trouble in passing the 20 wpm code test—believe me, as I have "elmered" one or two of these people into hamdom. If we can pamper one group with a no-code license, why can we not pamper another group with a no-theory class of Amateur license? In case anyone believes this letter to be meant as "tongue-in-cheek," think again. I am dead serious.

VERLE D. FRANCIS, W0SZF  
Brackettville, TX

## Defining requirements

Recently I read that the Israel Amateur Radio Club proposed a typing test on a terminal keyboard as an entry level examination requirement (W5YI/CQ p. 105, August '90). Although the idea, perhaps just as well, was defeated at the IARC 30 to 6, it brings to mind once again the entry requirements for other modes.

One may rationalize the elimination

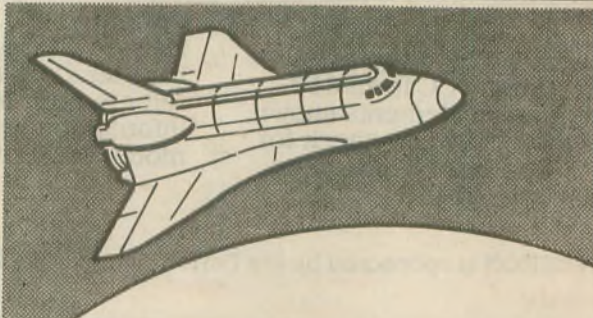

of the code requirement on the basis that a suitable modem and terminal can do the sending and receiving, although perhaps we should still have a test on CW protocols (AR, SK, Q signals, etc.) to facilitate proper entry on the keyboard for interface with manual operators and thus more efficient operation.

However, inasmuch as the state-of-the-art is not yet ready for economical automated voice transmission nor, if it were, would it necessarily enjoy wide popularity, perhaps we should have an examination for proper voice operation. If we were to be required to demonstrate knowledge of automated languages and protocols, should we not also be required to demonstrate ability to speak English (and/or Spanish, etc.) as well as the ability to properly use voice protocols such as "this is," "from," "over," "roger" and other general voice procedures? How about basic grammar while we're at it?

The point is that for any mode we could define an entry level of operational knowledge. The question is how to define and implement it and whether it makes sense in terms of insuring a minimum level of competence for on-the-air operation.


EDWARD F. ERICKSON, W2CVW  
So. Amboy, NJ

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## "Shambolic" shack

I do enjoy reading your magazine; indeed I have just renewed my annual subscription. However, I must ask you if the column you have on "Station Appearance" is for real? Surely this is the sign of a sick mind! It must take the poor chaps simply ages to get their stations looking like a museum exhibit — and all you offer is a subscription to *Worldradio!*

Come on now, how about opening up the competition and allowing the "normal" people to join in? You could at least offer a week on a Caribbean Island and throw in an ICOM 781 for good measure! After all, it is only fair after wearing out all those feather dusters and using up several cans of polish.

Perhaps you should take a leaf out of the RSGB magazine, *Radio Communication* ("Most Shambolic Shack in Britain Award" Dec. 1989) and let the average hams (loaded with spouse, kids, pets, cars, boats, mortgage, second job, night-school, etc.) send you pictures of their shacks. As you can see from the photo, the boys in G-land really know how to organize a shack! Let's see if you can beat that!

B. BURKE, KM4MV/G4HIY  
Virginia Beach, VA

## Booby prize

I have some comments about the Station Appearance which appears nearly every month in *Worldradio*.

Come on, let's get real. No self-respecting ham has a shack that neat, clean and orderly—not a speck of dust, no papers, pens or pencils . . . just beautiful equipment that looks like it's never been used.

For the next award, let's consider a typical shack: mine, for example.

First of all are those little yellow papers with the sticky stuff on the back. My desk is littered with them. Some are so old I can't figure out what they mean. I have one wrapped around the microphone that says "THINK!" That's for when my mouth runs so much faster than my brain, which is often!

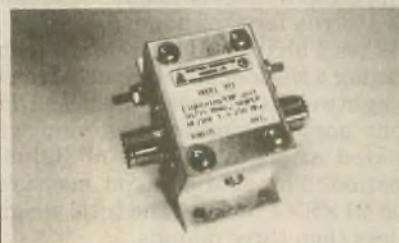
There are two telephones. One is an older model for phone patches; it works great. The newer phone has all the perks that Ma Bell pushes — memories, redial, etc — full of components for the RF to invade. It's not very good for patches, but it works great for contests on commercial radio.

Next on the desk is a big coffee cup in a wooden holder proclaiming "World's Greatest Grandma." It holds about 30 pens and pencils, only half of which



(photo courtesy of Radio Communication, Dec. 1989)

## IT'S NICE TO FOOL MOTHER NATURE!



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Operating Temp.	-65 to 125 Celsius
Discharge inductor	Toroidal, insulated
Back-EMF GDU	600-1000V, ceramic body construction, G.I. Clare
VSWR	Less than 1.1:1 over rated spectrum
Insertion loss	Less than .1db
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Finish	Natural aluminum
DC resistance across	47K to 250K ohms, resistive
Capacitive effects	Less than 1pF
GDU specs.	Meets REA PE-80 IEEE 587 CCITT K12
Environmental	Recommended for indoor service at input bulkhead to station's grounding system. May be used outdoors if protected from direct rain exposure.
Warranty	One year standard

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## Product Review

### Compact antenna

MATT BEHA, N8BPI

What can an Amateur Radio operator do when deed restrictions prohibit an antenna? Or when the presence of an antenna causes neighbors to conveniently blame every occurrence of TVI on the ham? Or when the XYL says the antenna farm is going up over her dead body? I've experienced problems with all three of these scenarios. I presently live in a subdivision that prohibits large antenna arrays, and if I could put one up, there would be major domestic war at my QTH. My XYL has her good reasons for feeling the way she does, because at a previous QTH we had a neighbor who visited us, almost as regularly as the postal carrier, complaining about TVI. At first, when I had a dipole which was hard to see from a distance, I had nary a complaint. But soon after I erected a more visible vertical, this particular neighbor was over complaining that I was ruining her TV. Interestingly enough, many of her complaints came at times when I wasn't even on the air, and once when I hadn't even been home. But because I had an antenna in my back yard, my hobby became the scapegoat for every passing airplane or CBer.

When I decided to get back on the air recently, I knew I was going to have to come up with an antenna that was inconspicuous. I'd seen many advertisements for compact antennas, but I was skeptical. In fact, while living in an

apartment years earlier, I had tried one of the so-called miniature antennas and found it sorely lacking. So I was hesitant to go that route again. Then, through the grapevine, I heard about a "flagpole vertical." I talked to a ham who was using one, and I got glowing reports. I wrote to the company immediately, asking for literature and current prices. No reply. I wrote again, and still no reply. In fact, two years later, I'm still waiting. Apparently they have gone out of business. So, back to square one.

About the same time, I spotted a review for the "Isotron," a compact, albeit radical design in antennas, and wrote for literature. When I received the information, I decided this could be the answer to my problem. The Isotron, developed by Ralph Bilal in Florissant, Colorado, comes in several different versions, one for each band from 160 through 10M (including an 11M version). Since I am a 20M fan, I shipped off a letter to Ralph requesting the Isotron for that band.

When I arrived home from work one evening a week or so later, an extremely lightweight box was sitting on my front porch. I opened it up and was amazed at the small size of Ralph's creation. The 20M Isotron measures just 21x8x4 inches. The total weight is less than three pounds.

I decided it was time to try this miniature marvel out and see whether it would live up to my expectations. I read the instructions several times until I was reasonably sure that I understood how to erect and tune the antenna. There's nothing more frustrating than putting something together and discovering you have done it wrong because you missed a key word or phrase (or neglected to read the instructions at all).

Ralph's instructions are pretty straight forward, and I tried out the tuning procedure several times on the ground before erecting the antenna. I decided on a chimney mount using a set of straps I had picked up at my local Radio Shack. I also picked up a sufficient length of their RG-8U coax cable, making sure that it was the new version with the improved shielding. The antenna went up with little difficulty and a minimum of time. With the help of my son, KA8UGL, we tuned the

Isotron to the section of the 20M band that I decided I wanted to work. In less than two hours (and part of that time was spent installing the mast on the chimney), I was ready to go on the air. For purposes of testing the antenna, the XYL gave me temporary permission to erect a reference dipole for comparison.

As I tuned around on 20M, I was amazed at what I heard. While I had had high hopes that this tiny little antenna would work, the logical part of my mind had told me that it wasn't possible. Yet this little mite was pulling in stations. Time to call CQ. I tuned up on SSB and gave a call. To my great delight, I received an answer from Jim, WB4SXR, whose QTH is in Bristol, Tennessee. Jim was mobiling home from work when he heard my call. When I described the Isotron to him, he marveled at my S-7 signal. He waited while I switched to the dipole and then had to admit that my signal had gone up to an S-8, but the results were still pleasing. I could live with one S-unit for an antenna that was the size of one element on my TV antenna.

After signing with Jim, I called CQ again, and this time N4CYJ returned my call. From his maritime mobile on the Potomac River, Bill gave me a reading of S-1 to S-3. Switching to the dipole didn't help much. Perhaps conditions were deteriorating. So, with the dinner call sounded, I decided to shut it down, relatively satisfied with my first results from the Isotron.

A few nights later, when work and family schedules permitted a little time at the rig, I decided to try CW. I found an empty spot on the dial and called CQ. Lo and behold, WA2JND returned my call. Jack told me that my signal was registering 599 in Schenectady, New York. The dipole got the same reading. This new antenna was going to be fun!

My next contact was in the other direction. Again on CW, my CQ went out into the ether and was answered by WNØM, Jerry. He told me that I was a 589 in Grand Island, Nebraska. When I switched to the dipole, Jerry read little difference.

Another CQ pulled in KB4BFM in Virginia. Louis gave me a 579 signal report from historic Williamsburg. When I switched to the dipole, my signal went up slightly, but hardly enough to get excited about. I was becoming sold on the Isotron.

My next CQ netted a signal report of 599 from N5LDX, Gene, in Dallas, Texas. He became very interested when I told him about the Isotron. Gene and I tried a comparison with the dipole and, once again, noted little difference.

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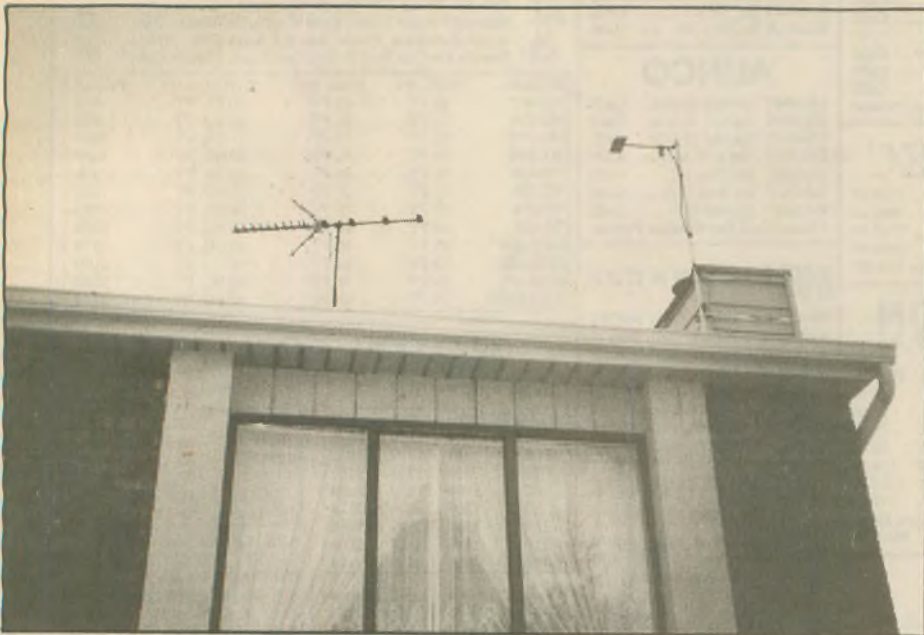
Over the next few evenings I continued giving the Isotron a workout. One evening I heard a TF calling CQ. I haven't worked much DX in a while, so I had to look up the prefix. Iceland! Wow! I was pretty excited to hear the Isotron pulling this station in. Unfortunately, a lot of other people were excited, too, and I got lost in the pile-up. Still, I was impressed that I was pull-

but it's still a far cry from the amount of space you would need to run dipoles on those bands. The 160M model, for example, measures a mere 22×16×15 inches. Bilal even has a special combination price on the 80 and 40M antennas which you can mount back to back using one feedline.

I mentioned the low price of these antennas. They range from about \$30

for the 10M version to about \$65 for the 80M antenna (plus a modest shipping charge for each antenna). The 160M version runs about \$150. But consider that the 160M Isotron replaces a lot of high priced real estate where you would need to construct a 160M dipole. All the antennas, which are warranted against defects in material and workmanship for a period of one year, are available directly from the manufacturer. Write Ralph Bilal at Bilal Company, 137 Manchester Drive, Florissant, CO 80816 for an illustrated brochure on these amazing antennas. He'll probably also include copies of other reviews that have been published about the Isotron.

Any of these antennas would be an ideal solution for the apartment-dwelling Amateur, and I think they would also bear a serious look from clubs or individuals who enjoy Field Day. Their light weight and trim size makes them ideal for Field Day type conditions, and the 10 through 20M or 40/80M combinations can go up on a single mast. Another likely use would be for the motor home or weekend cottage user who wants an inexpensive, easily transportable antenna. All in all, I'm impressed by these antennas. Whether you enjoy CW or SSB, the Bilal line deserves serious consideration if you're in the market for a compact, serviceable HF antenna. □



Dwarfed by a small TV antenna, the 20M Isotron attracts little attention, but it gets big results on the air.

ing in a signal from Iceland. Then I heard a VE7 calling and was pleased to have Frank in Victoria, British Columbia, come back to my call. Now, Victoria is no short distance from south central Michigan, and Frank gave me a 579 signal report on the Isotron. A switch to the dipole only raised it to 599.

I've had a lot of fun with the Isotron, working New Brunswick, Long Island, New Jersey, Vermont and others. I highly recommend this antenna, and I have plans to try the 10M and 15M versions soon. Since my younger son plans to get his Novice license soon, I may add an antenna tuner so we can use all the bands. The 10M Isotron is slightly shorter, measuring 16 inches in length. The 15M antenna is the same length as the 20M gem but with a slightly smaller profile. Ralph Bilal says you can stack the three on one mast using a single feed line. While I haven't seen the three together, I can imagine that even this array would not cause any kind of an eyesore in any neighborhood and would have the added benefit of little wind resistance.

Bilal Company also makes 40, 80 and, as mentioned earlier, 160M antennas. The configuration is slightly larger than the higher band antennas,

## Off the Air

(continued from page 23)

work. There's a rubber band ball from all the evening newspapers, and the dog climbs on the desk to steal it at least once a day. There is a can of kitty treats which the dog and cat fight over every morning. Various notes hang off the top shelf. One is my astrological forecast. It says, in part, "Put your trust in fate; everything will work out in time. You finally are able to break

bad habits." Does this mean I'll quit smoking and gumming up my radios?

Under the glass on the desk top is a



Patty's, WB6DRG, typical shack

schedule of Maritime Mobile Nets, circa 1986 from Worldradio by Roger Krautkremer, W6SOT, and edited by Gordon West, WB6NOA. I'm sure we all need a new one. We might have to wait until the mess on 20M gets straightened out.

We won't even talk about what is underneath and behind the desk. It hurts too much to think about it. Worldradio, what do you think about a booby prize?

PATTY SMITH, WB6DRG  
Torrance, CA □

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### March QSO Party.

We hope you enjoyed the QCWA QSO Party on CW February 9 through 10. Now you have a chance to hear the voices behind those fine fists in the Phone Party on March 8 through 9. The party begins at 0001 on Saturday, March 9 and ends at 2400 UTC on Sunday, March 10. Suggested frequencies are: 3.900-3.930, 7.230-7.260, 14.280-14.310, 21.350-21.380 and 28.600-28.630 MHz.

Don't forget to listen on the Novice and Technician bands, too, and be sure to keep an ear out for our DX members and listen "down in the mud" for the QRP stations. KL7DG has suggested a pause for QRP and DX at 15 minutes after the hour. Give it a try.

### QCWA Novices.

The subject of Novices and Technicians brings up several important points. While the majority of QCWA members hold higher grades of licenses, there are still a number of fully qualified members who hold Novice or Technician licenses. Most of these are "retreads" who came back into Amateur Radio after many years of being sidetracked by family and business obligations. We are very glad to have them back.

### No-code license.

Incidentally, QCWA is pleased with the FCC decision on "restructuring" the Amateur licenses to accommodate a no-code license. The final decision was essentially what was proposed by the QCWA Board of Directors in its comments to the FCC on PR 90-55. We were pleased to see the Novice and Technician Class licenses retained and consider the no-code Technician a progressive step.

### Elmers needed.

Now that a no-code license has been established, it behooves us "old timers" to accept the new no-code Technicians into Amateur Radio and give them every encouragement and assistance. This is a place where QCWA can shine. Experience doesn't come in the

envelope along with the license. The best of the old timers wasn't an instant expert even back in the good old days of bread board rigs and two modes of operation (CW and AM). Now, with the sophistication of new technology and the proliferation of new and exotic modes of operation available to Amateurs, it is more important than ever that a newcomer have an elmer who can look over his shoulder and give him some guidance and the benefit of years of learning the hard way. Don't sit back and criticize the new Amateurs who aren't instant experts. Give them a few minutes of your time and your patient encouragement. That is the way we will develop good Amateurs for the future.

### Young and old.

QCWA can play a great role at both ends of the age spectrum. Certainly one of your greatest needs now is to kindle an interest in young people to pursue technical fields of study, and Bill Cross of the FCC PRB says, "We will look to the Amateur Service to expand the pool of experimenters, engineers, and technicians."

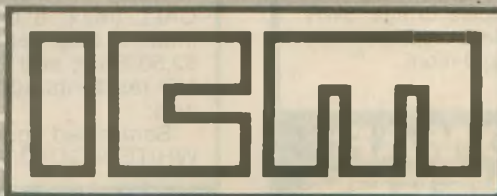
At the other end of the age spectrum are the retirees who have devoted their lives to productive pursuits and now find themselves presented with a "gold watch" and a rocking chair. I'm convinced that rocking chairs have killed

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more people than hard work ever did! Many of these people need a challenging activity that will keep their minds stimulated and give them a place where they can continue to contribute something of value to their fellow man. What greater opportunity could you offer them than Amateur Radio? Here is another challenge for QCWA members. Seek out those retirees who may be looking for a stimulating activity

and a way to keep contact with the "outside world." Bring them into Amateur Radio. We all will benefit.

Last month's column mentioned the very active Arizona chapter of QCWA and the big meeting they had in December. The Arizona chapter will be sponsoring the 1992 QCWA National Convention.) We now have a very interesting photo to follow up on that meeting. Shown here is our old friend



**Barry Goldwater, K7UGA, with Leo Meyerson, W0GFQ, and Lew McCoy, W1ICP, at the Arizona chapter meeting in December.**

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Barry Goldwater, K7UGA, (center) with Leo Meyerson, W0GFQ, at his left and Lew McCoy, W1ICP, at his right.

### Scholarships.

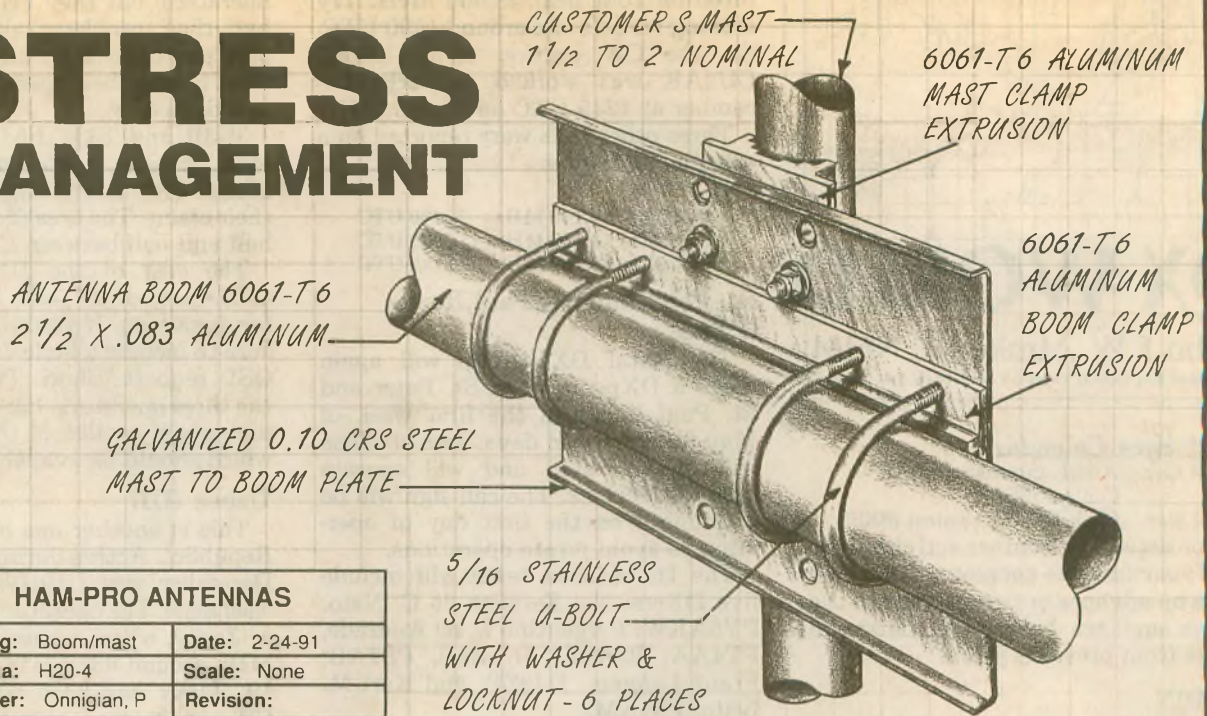
Announcements will be going out next month for the seven QCWA scholarships which will be offered for the 1991-1992 academic year. Applications will be available in April and May and must be filed with the Foundation for Amateur Radio prior to June 30. The QCWA scholarships require the recommendation of a QCWA member. Please help us search out some deserving students and make them aware of this very worthwhile program.

### When does your ticket expire?

Have you taken a look at the expiration date on your Amateur license lately? That date has a nasty way of sneaking up on you. Every few months we hear of someone who suddenly discovered he has been operating without a valid license for the past year or more. Don't let this happen to you! Dig out that license and take a look at it. □



# STRESS MANAGEMENT



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H15-4	15 m	8.80	1.65	\$475
H10-3	10 m	6.46	1.79	\$245
H6-6	6 m	9.41	1.91	\$250
H144-15H	2 m	13.73	1.68	\$225
H144-15V	2 m	13.73	1.93	\$225
H220-17	1.25 m	13.53	1.29	\$230
H432-24	70 cm	16.14	1.76	\$235

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# DX WORLD

**John F.W. Minke III, N6JM**

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## Activities Calendar

02-03 Mar. ARRL International DX Contest (SSB)

23-24 Mar. CQ WPX DX Contest (SSB)

For details on contest activity, consult your favorite contest column. We have no advance notice on some of the above and are basing the dates on those from previous years.

## W100N

The following DXers were awarded Worldradio's Worked 100 Nations Award recently: 384) N4THE, Donald G. Meredith (all 10M SSB), Jan. 10, 1991; 385) KJ6CA, Robert J. Rhoads, Jan. 10, 1991; and 386) KL7UR, Robert M. Christl, Sr. (all CW), Jan. 10, 1991.

## Azore Islands (CU)

A few calls have been reported from this island group recently. On 80 and 75M the following were reported:

CU2AK	3.795 MHz	0500 UTC
CU2AT	3.594 MHz	0015 UTC
CU2BQ	3.798 MHz	0615 UTC

CU2BQ was also reported on 40M near 7.068 MHz operating SSB around 2300 UTC, working Europeans. Also reported on this band were CU2AK at 0100 UTC on 7.011 MHz and CU3AN at 2130 UTC on 7.060 MHz. CU2DX was reported

often on 10M near 28.500 MHz. Try looking for this one around 1500 UTC. On the CW portion of the band, CU2AK was worked in early December at 1245 UTC on 28.036 MHz.

Three other calls were reported on a selection of bands:

CU1EZ	50.110 MHz	1430 UTC
CU2ES	14.160 MHz	0030 UTC
CU3LD	18.142 MHz	1145 UTC

## St. Peter and St. Paul Rocks (PY0S)

The Natal DX Group will again make a DXpedition to St. Peter and St. Paul Rocks in the first week of May for about ten days. Two stations will be activated and will operate around the clock. The call sign will be announced on the first day of operation to avoid pirate operations.

The DXpedition team will include five DXers: Nei Ferreira de C. Neto, PY5AKW; Pergentino L. de Andrade, PT4AA; Ronaldo B. Reis, PS7AB; Franz Langner, DJ9ZB; and Karl M. Leite, PS7KM.

All bands are planned, 10M through 160M, including the WARC bands. The operation will be mainly on SSB and CW, although some RTTY and 6M work is anticipated.

Transportation will be provided by the sailboat *Shanty* which will sail directly from Natal, taking about five days.

Each operator has contributed \$500 towards the cost of the operation, and the total cost of this operation is estimated at about \$11,050. The cost of transportation alone is about \$3000. The group is still in need of \$8550. Those wishing to contribute may contact the group directly at Natal DX Group, Caixa Postal 597, 59022 Natal, RN, Brasil; 084/223-2484. We recommend any cash contributions be sent via registered airmail.

## Banaba Island (T33)

Peter, OH1RY, reports on the recent Banaba Island DXpedition and would like to thank all who gave them a call. Peter reports, "There was some confusion with another DXpedition to the same island by the Germans. We feel sorry about the lack of cooperation among the German group. We had published our DXpedition to all the bulletins and asked for more

operators, but they kept silent. They had their problems also when their ship was delayed by almost one week. That is why their operation was cut to two days only."

T33R and T33T had started operation almost upon landing on the island, with almost 33,000 contacts to their credit. The breakdown was about half and half between CW and SSB.

The cost of the DXpedition was \$13,000, and the team is still looking for donations. If you worked them, be sure to include a little extra with your QSL request. Sigg, TF3CW, one of the three operators, has put together a high-quality video of the DXpedition which should be available this Spring.

## Uzbek (UI)

This is another one of those Soviet Republics. Active during the month of December was UI9BWF, located at Tashkent. The operator gave his name as Jacky, whom we worked on 14.236 MHz around 0330 UTC on December 19. Jacky has been worked also on CW, as he was reported on 14.009 MHz at 0245 UTC in the fifth call area. Try looking for him from 0330 UTC between 14.204 and 14.236 MHz.

Several other calls were reported, most of them on 20M:

RI1DA	14.024 MHz	0345 UTC
RI8AI	14.019 MHz	1300 UTC
RI8AO	14.025 MHz	0330 UTC
RI8BQ	14.244 MHz	0300 UTC
UI8GBK	14.021 MHz	1400 UTC
UI8ZAA	14.228 MHz	0245 UTC
UI8ZAC	14.177 MHz	0330 UTC
UI9AAB	14.048 MHz	1200 UTC
UI9AAC	14.165 MHz	0330 UTC

There were also at least two reports for 40M activity. This includes RI10A on 7.008 MHz at 1200 UTC and UI9ACQ on 7.011 MHz at 1230 UTC.

## Canada (VE)

To commemorate the 100th anniversary of Ukrainian settlements in Canada, the Department of Communications has authorized the use of special prefixes by Canadian Radio Amateurs from March 1 through April 30. The prefixes may be substituted as follows: VA1 to VA8 for VE1 to VE8, respectively; VO7 and VO8 for VO1 and VO2, and VC1 and VC2 for VY1 and VY2. VC9 may also be used for VY9.

Additionally, the call VA100U will be active during this period on all bands, CW and SSB. QSL requests for this call should be sent via John Sklepkowycz, VE3IPR. Please include return postage, but don't send US postage. Bureau requests are OK.

## Turks and Caicos Islands (VP5)

The South Florida DX Association will once again sponsor a DXpedition

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to the Island of Providenciales in the Turks and Caicos Islands, from March 1 through 8, which will include the ARRL International DX Contest. They plan to use all modes (CW, SSB, RTTY, AMTOR and packet), and will also include operation on the WARC bands and 160M. The call to be used will be VP5V, and will include operators Scott Cronin, WS4E; Bruce Phegley, W4OVU; Harry Lersner, N2AWM; and Julio Ripoll, WD4JNS. QSL requests will be handled by Julio.

### India (VU2)

There has been much activity from India recently, according to the number of calls reported in the DX bulletins, with a majority of it on 20M. The following is a list of calls:

VU2AU	14.188 MHz	1630 UTC
VU2DK	14.196 MHz	1530 UTC
VU2EN	14.009 MHz	1415 UTC
VU2GX	14.005 MHz	0230 UTC
VU2HI	14.203 MHz	1230 UTC
VU2IOC	14.015 MHz	1330 UTC
VU2LX	14.029 MHz	0145 UTC
VU2MYL	14.210 MHz	1200 UTC
VU2NI	14.007 MHz	0130 UTC
VU2NTA	14.002 MHz	0115 UTC
VU2PC	14.009 MHz	0200 UTC
VU2RKR	14.014 MHz	0145 UTC
VU2TE	14.032 MHz	0130 UTC
VU2TH	14.011 MHz	0145 UTC
VU2TIC	14.010 MHz	1230 UTC
VU2TJ	14.020 MHz	0145 UTC
VU2TS	14.005 MHz	0145 UTC
VU2TTC	14.018 MHz	1215 UTC
VU2WAP	14.198 MHz	0130 UTC
VU2XW	14.185 MHz	1400 UTC

*Long Skip* reports that there is an Indian World Wide Net that can be found on 14.185 MHz at 1100 UTC. When working this one we suggest that North Americans also check long path beam headings.

On 40M VU2TEC has been reported several times during December. Try looking for this one after 1230 UTC between 7.003 and 7.006 MHz. There have also been some 10M reports such as the following:

VU2AQ	28.085 MHz	1330 UTC
VU2BK	28.054 MHz	1300 UTC
VU2DNU	28.572 MHz	1445 UTC
VU2GI	28.390 MHz	1345 UTC
VU2GRS	28.540 MHz	1300 UTC
VU2HVR	28.460 MHz	1030 UTC
VU2MY	28.510 MHz	1330 UTC
VU2NBT	28.024 MHz	1100 UTC
VU2RMS	28.466 MHz	0915 UTC
VU2RX	28.541 MHz	1115 UTC

The first report was for an RTTY contact. We also suggest that you check the 15M band as there were a few reported here.

VU2HG	21.007 MHz	1800 UTC
VU2JYY	21.294 MHz	1300 UTC
VU2NTA	21.005 MHz	1730 UTC

So, there you have it! The selection also allows you your choice of CW, SSB, or both. One WARC band report was found with that of VU2GX on 24.930 MHz at 1400 UTC early in December working the East Coast.

### Afghanistan (YA)

A few days prior to Christmas we received a registered letter from Romeo Stepanenko, aka 3W3RR, in Moscow. His anticipated DXpedition to Afghanistan at the end of December was still on. He has been reported signing YA0RR in the early part of January. His signals were weak and we had seen reports of him operating CW on 15 and 40M.

*QRZ DX* reports that they were to have moved to another location in order to be able to use beam antennas and amplifiers. Romeo is accompanied by Larry, YL1WW.

The team is still in need of financial support. Individuals who wish to help with the costs may send their donation to Ed Kritski, NT2X, P.O. Box 715, Brooklyn, NY 11230. Romeo also stated that his operation had been approved by the DXCC desk.

### Marion Island (ZS8MI)

*QRZ DX* reports that ZS8MI had been on 14.028 MHz around 0130 to 0300 UTC for several successive days. And in *Long Skip*, the official organization of the Canadian DX Association, this station had been reported on SSB on 14.227 MHz between 1345 and 1430 UTC. He was also reported on 14.162 MHz at 1420 UTC.

### Penguin Islands (ZS9Z/1)

The DXpedition to the Penguin Islands following the November World Wide DX Contest netted approximately 33,200 contacts during the six days of operation. Included with the team were operators N7NG, OH2BH, OH2RF and ZS6BCR.

The DX Advisory Committee is to act on this one soon and should be

favorable as it meets points 1 and 3 of the DXCC country criteria. The Penguin Islands belong to South Africa and are separated by Namibia. We are sure many DXers didn't bother to try to work them as they are not presently on the DXCC country list.

### IOTA

The following is a selection of calls reported recently that are credit for the IOTA program. Not listed are islands that count separately as DX-CC countries:

AS-22	Bear Islands	4K4QQ
	21.017 MHz	0030 UTC
AS-65	Kolyuchinsjaya Bay Is.	4K4POL
	14.015 MHz	0215 UTC
EU-12	Shetland Islands	GM3RFR
	14.032 MHz	1145 UTC
EU-20	Gotland Island	SM1ALH
	21.257 MHz	1700 UTC
NA-34	Anna Maria Island	KM4RX
	21.250 MHz	1645 UTC
NA-08	Ellesmere Island	VE8RCS
	14.160 MHz	2230 UTC
NA-75	Gulf Islands	VE7FEI
	14.222 MHz	0100 UTC
NA-88	Bocas Del Toro	TI2LAK/HP4
	14.260 MHz	2245 UTC

All SM1 (SK1 and SL1) calls are on the Isle of Gotland, so if you hear or work one, you have this one for your credit.

According to *The DX Bulletin*, Rich Assarabowski, K1CC, was scheduled to operate from French Polynesia during the Christmas holidays. Signing FO0CC, Rich was to have operated from Tahiti (OC-46) and Bora Bora (OC-67).

Ralph Hirsch, K1RH, operated from St. Helena Island (NA-110) off the South Carolina coast from February 8 through 15, signing K1RH/1H0. From what we understand, the appended prefix is legal as long as it isn't assigned to another country. As for WPX credit, we cannot answer that one. Anyway, if you worked Ralph, you have NA-110 for IOTA credit.

During the last sweepstakes on SSB we worked N1CYG, located on Fripps Island, a barrier island off the South Carolina coast, which should count for NA-110.

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## The Colvins

Norm Brooks, K6FO, recently worked Charles Signor, 9Q5EE (our former Worldradio DX editor), via satellite, who reported that the Colvins were denied a license to operate in Zaire. Sig offered to let them use his call, but they declined. Lloyd and Iris were also unsuccessful in obtaining a license in Congo (TN).

On January 22, Lloyd and Iris were scheduled to leave for Burundi (9U), Rwanda (9X), Uganda (5X) and Tanzania (5H). They hoped to be more successful in these countries. On February 20, they will leave from the city of Dar es Saalem, on the east coast of Tanzania. For more information on

the Colvins, be sure to see them in Visalia this April.

## DXCC update

As of January 6 the backlog of DXCC applications and endorsements had been reduced to 3,474, the majority of them being endorsements. The week ending that date the DXCC desk had processed 72 new applications and 122 endorsements. On Friday, Jan. 4, they had begun processing new applications received on September 27 as well as endorsements received on July 12.

Remember the new policy now, you are allowed one submission free per calendar year regardless of the

number of QSL cards and endorsements. Anything in addition is a big \$10!

## NANNY Award

This sounds like something like an award for working grandmothers. Actually, it is the idea of Jack Bock, K7ZR, a member of the Western Washington DX Club. Known as the Nightmare Alex Alpha-Numeric Yearly Award, it is basically a club award but is available to all DXers.

The object is to work 250 out of a possible 260 alpha-numeric combinations consisting of the last number and the first letter of the station's call sign during the calendar year. For example, JA1ABC counts as 1A; C21NI counts as 1N, etc. The award can also be endorsed for a single mode. Contacts made with stations within one's own continent do not count. For those who chase a lot of DX it would be sort of fun filling in the blanks.

## World famous DXathon

Don't forget Worldradio's DXathon. Your results for 1990 should have already been mailed in. We received one from Art Wallace, KC6EYZ, who utilized both CW and SSB to collect 155 points. Arts says it was a fun first year in ham radio. We say that's very good for a newcomer. Art's effort amounted to 107 different nations based on the Nations Criteria. For DXCC purposes, this amounted to 145 on SSB and 88 on CW. Art uses Collins S-line and a GAP DX VI vertical. Start keeping record of your 1991 contacts for this yearly award.

## Antique QSL department

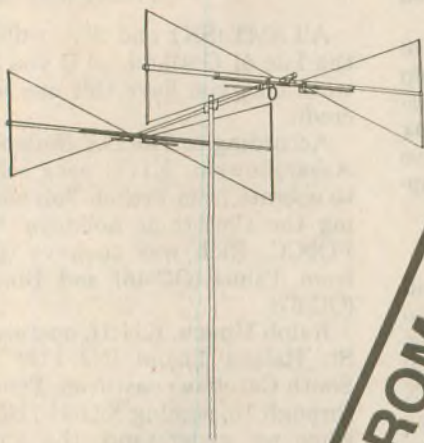
No, the following QSL card is not from Grenada. This was the prefix for Japan back in 1948, the same as before the war. The call J3GNX was assigned to the US occupational forces in Japan.



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This station was worked by Norm Brooks, W6WLI, during the summer of that year on phone (which was AM in those days). W6WLI is now K6FO and a staff member of Worldradio.

We have run antique Japanese cards in the past 12 years, with a bit of history to them. This includes former territories Korea and Manchuria, held by the Japanese prior to World War II. There are several Japanese Amateurs on the air today who held pre-war calls. We are wondering if any of them still have QSL cards from that era which we could use in this column?

### QSL information

Worked a station several years ago and never received a card? Don't give up. Try again. We were checking our logs for contacts needed for our IOTA credits and found one for Baffin Island for which we never received a card. This was WB0ICS/VE8 whom I worked almost 18 years ago. His manager was then given as WA1PEL. As the manager is still in the Callbook we tried again and received the missing card in less than two weeks. Manager Bill's comment, "Glad to confirm Baffin Island for you. Haven't received a QSL for Dave in over 10 years."

Neil Penfold, VK6NE, would like to know of DX stations or QSL managers who keep the logs following a DXpedition. Neil says he just received some QSL cards for VK0HI, an operation that took place nearly eight years ago. Our suggestion here is to pack them up and store them away someplace, provided you have the room. Anyone have any input on this? Notice my own experience in the preceding paragraph.

John Hill, W5CBN, writes that he is the QSL manager for XP1AX, which was the call for The Greenland Expedition Society venture to Greenland, the summer of 1989, in search of six P-38F fighter planes and two B-17E bombers which were all forced down while ferrying to England in July of 1942. There is an interesting article covering this in the February 1990 issue of *Flying*.

Mark Floyd, WU8A, caught a typo error in the January issue regarding the QSL manager for the HK0TU Malpelo Island DXpedition. The call should read HK3DDD, not KH3DDD. Try P.O. Box 25827, Bogota 1, Colombia. Actually, the KH3 call hasn't been issued by the FCC yet and it wouldn't have been in the Callbook.

DX QSL Associates (434 Blair Road N.W., Vienna, VA 22180) offers various supplies for the QSLer such as European QSL-size Airmail envelopes, fill-in-the-blanks QSL cards, etc. They also offer mint postage stamps from countries around the world. If in-

# DX Prediction — March 1991

Maximum Usable 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.

## CENTRAL USA

UTC	AFRI	ASIA	OCEA	EURO	SO AM
8	18	12	22	(12)	21
10	(17)	11	20	(11)	20
12	31	15	17	21	25
14	38	16	26	25	34
16	40	(15)	23	24	38
18	39	(14)	20	21	40
20	32	26	(26)	14	41
22	27	27	35	(13)	40
24	23	24	40	12	39
2	21	(18)	33	11	32
4	20	(14)	30	11	27
6	20	(13)	26	12	23

## MARCH 1991 WEST COAST

UTC	AFRI	ASIA	OCEA	EURO	SO AM
10	(14)	16	23	(12)	20
12	(13)	15	21	(11)	(17)
14	(25)	17	17	21	31
16	30	16	23	24	38
18	33	15	20	21	40
20	32	25	(25)	14	41
22	27	32	34	(13)	40
24	23	34	39	(12)	40
2	21	31	41	11	32
4	18	23	35	11	27
6	(16)	20	32	13	23
8	(15)	18	27	(12)	21

## EAST COAST

UTC	AFRI	ASIA	OCEA	EURO	SO AM
7	18	(12)	22	12	21
9	(19)	11	20	15	20
11	35	15	16	23	24
13	40	(13)	28	26	34
15	40	(12)	24	26	37
17	43	(12)	(21)	24	40
19	35	(15)	(18)	21	41
21	29	23	31	14	40
23	25	24	38	13	39
1	22	(17)	32	12	32
3	20	(14)	29	11	27
5	20	(13)	25	11	23

terested, write to them for further information and price list, or phone Brian, WV4V, at 703/938-1442.

### QSL routes

AA2GH	-G2KMQ	KE9A/VS6	-WE9R
AH0F	-JA2NQC	KH0/JA2SWJ	-JA2SWJ
	(See Note 1)	NL7GP/NP2	-NL7GP
BV2FB	-AA6BB	PJ6/W4JNS	-WD4JNS
CN2RM	-N27E	PJ4V	-WD4JNS
CT3DJ	-OH2SX	PJ9A	-OH6XY
CU3LB	-KB3JKB	SV2ASPIA	-SV2UA
ED4CW	-EA4CW	T30WV	-DK2WV
EI4VJ	-G3HZL	T33WV	-DK2WV
FO6CC	-K1CC	UI9BWF	-UA3TT
FQ0M	-F5IN	V29M	-KQ2M
FSS/XE1L	-WA3HUP	V31AW	-K4HMS
FT4WC	-F6GVH	V31JV	-N4RNR
J6LJN	-W8QID	V31JW	-N4RNR
J73EH	-WA4WIP	V31K	-W6ASP
OY2VO	-O29DP	V31KF	-W5ASP
P4/N2BAT	-N2BAT	V47KP	-K2DOX
T3Z	-N7YL	V47NXX	-AA4FS
TF1MM	-TF1PS	V73AZ	-N6ASF
TY1DX	-IK6FGH	V73BX	-DK2WV
VP8GAV	-GM0LVI	VA100U	-VE31PR
HC8U	-W6UE	VK6BA	-VK6NE
HI8DMX	-JA1ELY	VK9YJ	-VK3AWY
HP1XBB	-W4YC	VK9YQS/LH	-VK3OT
J6DX	-W8UMD	VK9YQS/0	-VK3OT
J6LRU	-W8ILC	VP2EY	-HB9SL
J6LSC	-N9AG	VP2/N2BAT	-N2BAT
J28A	-K31PK	VP5N	-WB8GEW

VP5VDE	-VK2DXI	4K1ADQ	-UA1ADQ
XE3HLV	-K8LJG	4S7EF	-N1HBF
XP1AX	-W5CBN	4U11TU	-N6TR
XQ0X	-CE3ESS		(See Note 3)
XU0AA	-JA1NUT	4U1WB	-KK4HD
	(See Note 2)	5N30MTN	-5T5HH
XW3UB	-JA3UB	5U7NU	-P6FNU
XW3YL	-JA3UB	5W1RA	-W6RQ
ZD8VJ	-G4ZVJ	8P9EM	-G3VBL
ZF2AG/8	-N8AJ	8P9FK	-N2BAT
ZF2PL/ZF8	-SM3TLG	8Q7AJ	-K9AJ
ZF2PR	-K1XM	9J2SZ	-SP8DIP
ZK1KH	-ZL2NBK	9M2ZR	-WA2HZR
ZK3KM	-JR3OIB		(See Note 1)
ZL0AAG	-DK1RV	9M8AX	-9M2AX
3D2QB	-SM3CER	9M8BZ	-9M2BZ
3W4DK	-UA3DK	9M8ULU	(See Note 4)
3W4DX	-RW4DX	9M8ZR/2	-WA2HZR
4C1RCA	-XE1RHZ		(See Note 1)

(please turn to page 58)

If at first you do succeed — try to hide your astonishment.

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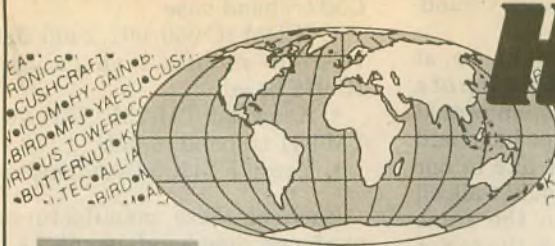
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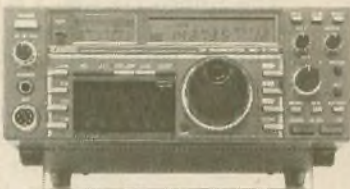
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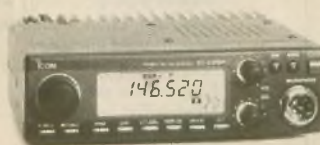


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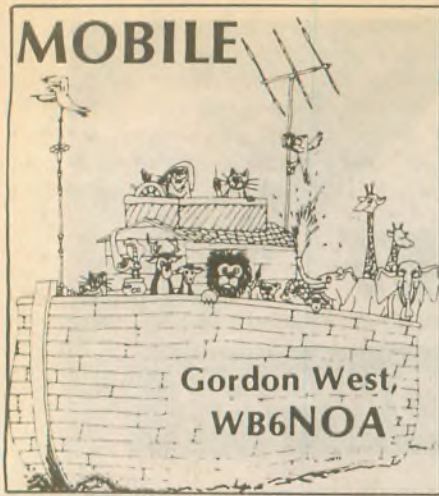
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### Cross-band mobile remote

Dual-band hand-held and mobile transceivers have some hidden secrets which might give your little portable the same power and receiving capabilities as your big mobile VHF/UHF transceiver. A cross-band remote can also give you a powerful signal for your hand-held when run through your cross-band remote base high atop a hill. But before you begin to set up your remote base system, be sure to check with your local VHF and UHF frequency coordinators who should assist you in selecting and coordinating the right frequencies for your cross-band system.

A cross-band mobile transceiver acts as a repeater from one band to another. I use it regularly in classroom demonstrations where my little hand-held won't quite reach out to a distant repeater. I tune the dual-band mobile to the distant repeater station first. I make sure the mobile unit is on high power and the repeater offset and tone is pre-set. I then energize the cross-band link to transmit the 2M repeater out on 446 MHz, a local UHF simplex channel. Every time the mobile unit receives the 2M signal, it simultaneously retransmits it out on 446 where I can pick it up easily in the classroom a few hundred yards away.

When the repeater drops its carrier, the mobile unit cycles back to dual receive, and I begin transmitting on my hand-held on 446 MHz. The mobile unit picks up my 446 MHz transmission, cross-bands it to the 2M

repeater on transmit, and presto! My mobile unit is now a full-blown, cross-band repeater for extending my hand-held dual-band range.

Another application might be at your home if it is located at the top of a hill. The remote base system would allow you to transmit on one band and come out on another, just like in our classroom situation. You could walk all over downtown and have the same capabilities as if you were at the top of the hill at your house. It would require a dual-band transceiver at both ends of the circuit — a dual-band mobile on a power supply at the house, and a dual-band hand-held to receive on one band and transmit at the other. Again, be sure to check with your local area frequency coordinator to insure that your home dual-band remote base conforms with local frequency coordination.

The dual-band hand-held, 2M and 440 MHz, does not necessarily need to be modified for automatic repeat cross-band operation. You will simply be transmitting on one band and listening on another. Dual-band mobile transceivers capable of cross-band repeat capabilities are available from Alinco, Heath, ICOM, Kenwood, and Yaesu:

- Alinco DR-510T, 570T and new DR-590T VHF/UHF twin-band mobile transceivers.

- Heath (Standard Radio) C5600 twin-band mobile and Standard Radio C50 tri-band base.

- ICOM IC-900, 901, 2400, 3210 and IC-2500 mobile transceivers and IC-970 base.

- Kenwood TM-721, 731, 701, and TM-941 tri-band mobile.

- Yaesu FT4700 twin-band mobile.

Each of these manufacturers also produces dual-band (some call them twin-band) hand-helds which could also be modified for cross-band repeater operation, but I don't recommend doing this, as your hand-held could lock up on an incoming receive signal and overheat while it's operating as a cross-band repeater. Hand-held transceivers are not designed for continuous key-down operation, so use a dual-band hand-held as the extension of your mobile or base cross-band repeater set-up.

It would also be a good idea, if you use your mobile or base set-up as a cross-band repeater a lot, to install a small fan on the transmitter heat sinks. This would insure that you don't roast your finals when someone gets long-winded on the receive side of the cross-band link.

The Alinco DR-590 VHF/UHF FM twin-band mobile transceiver has one additional outstanding feature which no other mobile unit has: remote frequency control. This would allow you to change memory channels, frequencies, tones and offset to your cross-band remote Alinco set high atop a mountain or at your mobile until. Say your vehicle is parked at the top of a hill, giving your signal a big boost. However, down at the bottom of the hill, you want to change either your input channel or the cross-band "repeaters" output frequency. The Alinco will take DTMF command tones and allow anyone with the right key command to reprogram the remote control input and output frequencies.



Going cross-band remote with full QSY and QRT capabilities on the Alinco DR-590 mobile transceiver.

For example, you can enter the remote code "D99" to turn on the cross-band repeat function and work either simplex or repeater from your

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dual-band hand-held. To move to and work another repeater from your cross-band remote, you'd first turn off the cross-band repeat function and enter your personal access code, and while still holding the PTT, enter "DO1." This turns off the cross-band repeat function.

To change the memory channel, enter your access code again and then enter "CO2." This puts you into memory mode. Keep holding the PTT and enter "CO8," and go up to the next memory channel. Now move your hand-held to the same UHF frequency, and enter your access code again. Turn on the cross-band repeat function by "D99." Move your hand-held back to the VHF band and begin to work the new repeater.

It's handy to set the Alinco dual-band mobile unit memories as the same memories in your hand-held so that you can re-access the remote control functions on the sub-band side. You can even write into the remote control transceiver other memory channels you haven't already entered, too. *The Alinco DR-590 is the only transceiver which allows remote programming of both the main band as well as the sub-band from a distant dual-band hand-held transceiver.* Alinco has now published a supplemental sheet to their

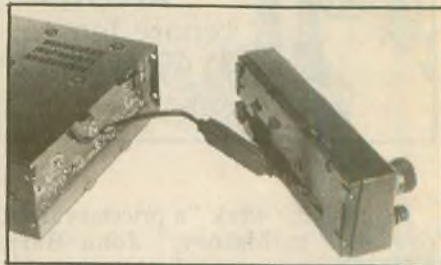
Model DR-590 mobile set for this advanced procedure.

Turning a dual-band mobile or hand-held transceiver into a cross-band repeater is usually within the scope of a manufacturer's warranty and instruction manual. In other words, most manufacturers don't consider this "an illegal modification," and if you don't know how to clip the wire or add the diode to your particular dual-band mobile or hand-held rig, call the manufacturer or your local radio dealer and ask for cross-band repeater modifications. But again I caution you not to modify your hand-held for cross-band repeat, because it will heat up too quickly on high power.

Of primary importance is how you use your new cross-band capabilities to stay legal with local frequency coordinators and remain in strict adherence to the Part 97 rules for a repeater station. Some folks consider cross-band repeaters as "remotes," yet others feel they are truly classified as "repeaters." Check this out ahead of time with your local frequency coordinator.

To facilitate cross-band repeater modification for the Alinco 590T, open up the transceiver and carefully separate the back cover of the front panel, using a narrow-bladed, flat-tipped screw driver and locate the only small

blue wire loop; cut it. Reassemble the transceiver and reset the CPU by simultaneously pressing the function key and the power on switch. To access the cross-band repeater mode, simultaneously press the function key and the VHF band key. In the crossband repeater mode, the VHF and UHF indicator icons will alternate back and forth every three seconds. To get out of the cross-band repeater mode, simultaneously press the function key and the UHF band key.



Preparing the remote head on the Alinco DR-590 for cross band remote control.

Get set for a powerful extension of your little hand-held—to have the same capabilities as your mobile or base station that runs up to 50W output into a giant antenna system for both simplex and repeater operation—all radio controlled from your hand-held. □

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He calls his work "a priceless front row seat to history." John Barr, N6WMK, is a top-notch magazine photographer, represented by the giant international photo distribution service, Gamma, of Paris. We've all seen his pictures hundreds of times, never realizing he is also an Amateur Radio operator.

As a photo journalist, he works mostly for major US magazines such as *Time*, *People*, and *Newsweek*. He also does commercial work, often helping major US corporations create their public images. Or, he's apt to grab a packed bag and dash to nearby Los Angeles Airport on sudden notice to cover a breaking "hard news" story anywhere in the world.

So, his life is indeed fascinating. As he points out, his shooting such pictures allows one to see things firsthand that most others see only via the media. "It's a big responsibility when your picture will be the way people will view the subject, whether it's a politician who wants to be President, a celebrity, or anything else," he says. "The responsibility never leaves your shoulders."

A few of the events he recently covered for *Time* were the "surrogate mother" case in Santa Ana, The Keating Savings and Loan trial and the opening of the Nixon Library. Stories he covered for *People* include "The Big Green Initiative," "The San Francisco Earthquake One Year Later," "Elvis Lives," "Tom Metzger of the Ku Klux Klan" and "Women Going to War."

"I find it essential to be neutral and fair in covering a story, to let the readers draw their own impressions," says Barr. Obviously, this ability is gained from experience.

John's interest in photography started when he was in the fifth grade — the same time he developed an interest in shortwave listening. John grew up with a camera around his neck

and knew early-on exactly what his goal was. At age 15, after he had already been working part-time for a hometown newspaper, he was hired by UPI.

John doesn't travel as much as before, when he flew 80-100 thousand miles a year, visiting as many as 30-40 countries. Now his work is concentrated in the Western US. He says he sometimes gets to Asia and always to Europe at least once a year.



John T. Barr, N6WMK

He's met countless hams overseas and has secured licenses in a dozen or so different countries. "All Amateurs should plan their trips ahead, he urges. It isn't difficult, in many places, to obtain permission to operate. And operating portable, to me, is wonderful fun; through many an open hotel window I've thrown out an antenna. With HF on low power and uncertain main power, it's a great challenge."

Perhaps that constructive aggressiveness comes from his drive to get quality pictures, which requires very hard work. Editors give him their preconceived idea of the story elements and he must do his best to come back with appropriate photographs. Some assignments are for "front of the book" (world or national material) and others are for "back of the book" (show business, profiles, etc.) John must

know if the story is to be a cover story, a feature or something to fill a small space.

Once a magazine has used its "first rights" and published the pictures, the photos are turned over to Gamma, where they may be used hundreds of times again by other publications worldwide.

There's much more to his work than just photography. First he has a conference with the story editor, and then he travels to the location, deciding on the exact spot and situational setting, sometimes explaining the significance of his choices and convincing a subject to cooperate.

"Occasionally I must wear a reporter's hat in order to call in facts which the magazine may not have," John explains. I remember the time when the Shah of Iran abdicated and the Ayatollah took over. I went with the Shah in exile to an island off Panama. There wasn't a *Time* correspondent on hand, so the story you read was reported by me during those three weeks."

At times, John has run into considerable danger and tragedy. "The most touching was the terrible volcano disaster in Columbia. It was hard to look at and photograph a place where an estimated 25,000 people and probably 30,000 animals died. I thought I had developed a thick skin after so many years of covering news, but that was the worst."

After shooting his pictures, he must then get them back to the magazine headquarters. First the pictures must be very carefully captioned, meaningfully, with everyone identified and material accurate; each roll of film is coded to the caption envelopes so that when they go to the lab they are identified before being processed. "Here in our country, Federal Express works great, but overseas it can become complicated. We must arrange our own air freight or at times seek a passenger willing to hand-carry film to meet the deadline."

Back at home he currently makes time for his fine station near Los Angeles Airport, complete with linear, a good tower and beam. "I'm sharing it with my wife, Linda and our nine-year-old daughter, Elizabeth, as they just received their Novice tickets."

John credits his friend, Bruce Muscilino, W6TOY, with the encouragement four years ago to finally earn his own ticket, now an Advanced Class. "Radio and photography have a lot in common," he points out; "they both communicate."

And what type of QSO does N6 WMK seek? "An interesting conversationalist," he replies. Not surprisingly, he's one himself. □

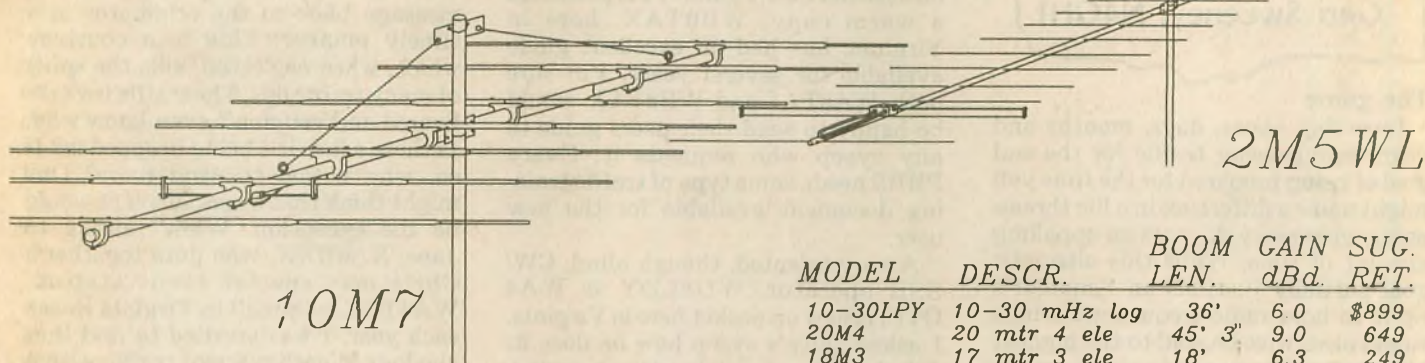
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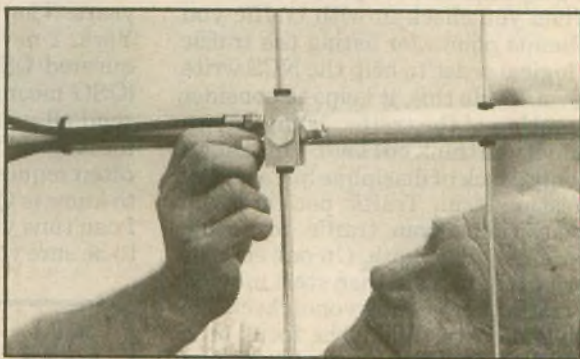
#### WHO'S BEHIND ALL THIS?

Mike Staal, K6MYC, former co-founder and antenna designer for KLM till '86 is at it again! This time with a strong family effort behind him. M<sup>2</sup> is about to become a force in the antenna market.

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10M4	10 mtr 4 ele	23'	9.0	169
10M7	10 mtr 7 ele.	45'	10.5	499
6M5	6 mtr 5 ele	15' 10"	9.3	149
6M7	6 mtr 7 ele	25' 6"	10.5	229
6M2WL	6 mtr 9 ele	39' 6"	12.4	379
6M2.5WL	6 mtr 11 ele.	50' 2"	13.0	449
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18XXX KIT	Cuts KLM 2M16LBX to 2M18XXX	36' 3"	15.3	69
2MCP14	2 mtr 14 el cir	10' 6"	10.3	149
2MCP22	2 mtr 22 el cir	18' 7"	12.5	225
2M6WLHD	2 mtr 19 ele HD	41' 8"	15.8	379
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EB-432	70 cm horiz omni		1.0	109
440-18	70 cm multi-use	11' 4"	14.5	109
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think about your participation and evaluate how well you execute your part in this team game. It can be a lot of fun.

#### Packet

My PBBS sysop (WA3TAI in Maryland) tells me that he has been working on a packet user's guide. I am promised a warm copy. WB0TAX, here in Virginia, has had an excellent guide available for several years. I'm sure both WA3TAI and WB0TAX would be happy to send their users guide to any sysop who requests it. Every PBBS needs some type of traffic training document available for the new user.

A very talented, though blind, CW/SSB operator, WD8LDY @ WA4DTE, is now on packet here in Virginia. I asked Dave's sysop how he does it. John's reply was: "He uses an instrument called a 'versa-braille.' It reads ASCII text and then forms the letters in braille on a membrane sheet that Dave can read."

#### Mind your Ps and Qs

Most games are enjoyed more by the serious player when they have complex rules and subtle interpretations. Much of passing traffic on CW involves knowing your procedures and Q signs. If you don't know all the Q abbreviations, be sure to keep your handy ARRL published "pink card" on hand. I recently received a note from a traffic handler which said he loves to work QSG but every time he asks someone to QSG, he is ignored. Of course, it's frustrating if the other person doesn't understand. Perhaps it's even more frustrating if he doesn't even realize you have made a request. You could send an "AS" and take a peek at your pink card. After I checked mine, I came to the conclusion that no one has ever asked me to QSG. You seem to learn the Qs you use a lot. It turns out that I've been QSGing with one operator for years. That's W2RQ, Bill, up in New York. I never asked, and he never requested QSG. We just always did it. (QSG means, "I copy you well so just send all your traffic non-stop between messages.") Another Q which isn't often requested but certainly essential to know is QSV: "send a series of Vs so I can tune you in." I guess the moral is to be sure you have your pink card han-

dy and if you hear a strange Q sign, check it.

#### Service

An article in the 1RN newsletter, *The Networks* (Nov/Dec 90) pleads for the obvious. When you have received a message which you cannot deliver, you have a responsibility to service a message back to the originator in a timely manner. This is a courtesy which, when neglected, kills the spirit of many traffic ops. The traffic isn't delivered and you don't even know why. Is there a hole it's being dropped in? If so, why bother to send more? One might think that a special event would be the exception. While talking to Jane, KA6UXX, who puts together a Christmas special event station, WA4TGF, at a mall in Virginia Beach each year, I was startled to find that she logs in each piece of traffic with a return phone number. Thus, service and/or reply messages can be delivered to the originator. We must all have stories where we tried to trace a message and couldn't even do that. The game just isn't fun if the service is not reliable. If we accept traffic, we have the obligation to pass, deliver or service it.

#### Books

Anyone who has copied the same preamble and message 10 times in a row (even twice in a row), understands that it's not only boring but a great waste of time. This is a simulated emergency game. Books were created to help you be more efficient. It prepares you to handle 500 Health and Welfare messages. It's one more aspect of traffic handling that you should master and utilize. Books are particularly great for heavy traffic like at a special event station. Since the preamble and the text are the same, you only need to copy the various addresses. Every three addresses becomes one piece traffic. Since they don't always come in threes, every part of three becomes one piece of traffic. You should list your traffic as 1, 2, 3, etc. rather than as a book of whatever. If the signature is the same, it should be under the text, as always. If it changes, it goes after each address. The terminology on SSB is to say "break" between each address/signature or signature and next message. On CW you send "break" for a signature and AR between each member of the book. Each new address begins with its message number. Books can be very useful.

#### Correction

In my last article, I tried to show how to send traffic on packet. Spacing is just as important on packet as on any (please turn to page 43)

#### The game

Investing hours, days, months and years into passing traffic for the end goal of being prepared for the time you might make a difference in a life threatening emergency devours an appalling amount of time. While this altruistic goal partially justifies an Amateur's right to hold radio frequencies which would otherwise be sold to the highest bidder, the players need some more immediate feedback.

If you consider each net a simulation of the real thing (i.e. an emergency) and then evaluate your own performance, you can get this feedback. NCS could consider how well the traffic was moved. If, after review, NCS notes that the net could have benefitted by pairing stations to pass traffic in a more efficient order (perhaps letting the person with one piece of traffic send it before the person with five pieces of traffic), then a lesson is learned to play the game even better next time. Liaison stations could see how fast and accurately the traffic can be copied. If you can't read your own handwriting to pass this traffic along to the next person, you're not playing the game competently.

Stations checking in can even give themselves high marks for following NCS instructions. This includes checking in at the appropriate time and not making comments unless asked. Everyone who sends and receives a message can grade themselves on how well they followed the procedures.

When you check in with traffic you get bonus points for listing the traffic in a logical order to help the NCS write it down. To do this, it helps to consider the routing of the traffic. Many have a proclivity to think out loud. This shows not only a lack of discipline but a lack of professionalism. Traffic nets come in all variations from traffic to social. Most are a bit of both. On one end the priority is to list and then start moving the traffic before everyone checks in with comments. While the focus on a traffic net is traffic (it's listed and passed as the first priority), members also have time to socialize. Part of playing the game is that you enjoy it, but you will enjoy it even more if you play it well. To play it well, you need to know and use procedures. You also need to

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## 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. Located 3 mi. East of Sierra Vista and 3 mi. South of HWY 90 on Moson Rd., Sierra Vista, AZ. Net each Thur. at 7 p.m. on 146.16/76. Further info call Rich (602) 458-3928.

**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 rpt.

**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.

### CALIFORNIA

**Amador County Amateur Radio Club.** P.O. Box 1094, Pine Grove, CA 95665. Senior Citizens Center, Jackson, CA. Meets: 1st Thur./monthly, 7:30 p.m. WA6WY 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 Thur./monthly, 7:30 p.m. at Buck Knives, 1900 Weld Ave., El Cajon, CA. Club Rptr. 147.675 (-); Nets Sat. & Wed. 7 p.m. on 147.570 simplex. Info (619) 698-6644.

**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 Chico Community Hospital Conf. Cntr., 670 Rio Lindo, Chico, CA 95926.

**Contra Costa Communications Club W6EZR.** P.O. Box 661, San Pablo, CA 94806. Meets 2nd Sun. at 9:00 a.m. Hickory Post Restaurant/Lucky Lanes. For info call Don K6DPQ, (415) 222-2449.

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

**The Electronic Museum ARC.** Meets 1st Fri./monthly, 7:30 p.m., Electronic Museum at Foothill College, Los Altos, CA 94022. Call-in 145.271/44.670.

**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, 8:00 p.m., 146.88 (-) or 743-4212.

**Fresno Amateur Radio Club, Inc.** P.O. Box 783, Fresno, CA 93712. Meets 2nd Fri./monthly, 8:00 p.m., Manchester School, 2307 E. Dakota, Fresno, CA. W6TO/R 146.34/94.

**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. Common Wealth, Fullerton. Net: ea. Tue., 8 p.m. 147.495 simplex. Info, Gracie Hastings, N6FSL (714) 990-9203.

**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.

**Golden Empire Amateur Radio Society (VEC).** P.O. Box 508, Chico, CA 95927. Club call W6RHC, Repeater 146.25/85. Meets: 3rd Fri./monthly, 8 p.m. at 1528 Esplanade, Room 110B, Chico.

**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., Park & Rec. Bldg., 13671 Frederick Ave. Net: Tues. 8 p.m. 146.655- (PL 1A) & 224.460-. Info: Larry KA6GND (714) 656-1643.

**North Hills Radio Club.** P.O. Box 41635, Sacramento, CA 95841. 3rd Tue./monthly, 7:30 p.m., Carmichael Elks Lodge, 5631 Cypress Ave., Carmichael, CA. Net 145.19 Thur. at 8:00 p.m.

**North Shores ARC.** (619) 272-1409 So. Clairemont Recreation Center, 3605 Clairemont Dr., San Diego, CA. 1st Tue./monthly, 7:30 p.m.

**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.

**Radio Amateur Mobile Society.** P.O. Box 214091, Sacramento, CA 95821-10091. Meets 2nd Tue./monthly, 7:30 p.m., Carmichael Elks Lodge, 5631 Cypress Ave., Carmichael, CA. Net Saturday a.m., 224.84 at 8:30 & 146.79 at 9:00.

**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.

**Riverside County Amateur Radio Assoc. c/o County Emergency Services Div.,** 4080 Lemon St., Ste. 8, Riverside, CA 92501. Meets: 2nd Thur./monthly, 7:30 p.m., Riverside County Office of Ed., 3958 12th St. Nets: Mon, 7:15 p.m., 222.860/224.46 and 7:30 p.m., 146.28/88. Info, call Steve Rathbone, KF6ZH, (714) 687-7793.

**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" Ham Radio Brkfst. Club 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 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 Mon./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 + PL 100.0 / 144.425 + 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.

**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 Foothills Amateur Radio Club.** P.O. Box 3262, Auburn, CA 95604. Meets: 2nd Fri./monthly at Auburn Fire Station, 226 Sacramento St., Auburn, CA. Nets 7:30 p.m. Tue. 28.443 MHz, Thur. 145.43 MHz link with 223.86 MHz.

**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.

**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 W6EJF, 223.68 MHz. **The Trinity County ARC.** P.O. Box 228, 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., 8:00 p.m. Talk-in 145.58 Simplex.

**West Coast Amateur Radio Club.** Tamara School, 17340 Santa Suzanne, Fountain Valley, CA. Meets 3rd Thur./monthly. 145.44-4Z.

**Western Amateur Radio Assoc.** Meets 1st Tues./monthly, 7:00 p.m., Cerritos Park East. 166th St. and Carmentia Ave., Cerritos, CA. Rptr., N6ME 145.400/224.180MHz.

**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.

**West Valley Amateur Radio Assoc.** 18011 Saratoga — Los Gatos Road, Los Gatos, CA 95030. 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.

### DELAWARE/PENNSYLVANIA

**Penn-Del Amateur Radio Club.** P.O. Box 1964, Boothwyn, PA 19061. Sponsor of KA3TGW/Rptr. on 224.220 serving all of S.E. Penn. and Northern Del. Info net every Thurs. at 20:00 hrs. or call Hal Frantz (302) 798-7270.

### 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 Hqtrs. Bldg., 1150 Hickory St., Melbourne, FL. Talk-in on 146.25/85 or 146.01/61.

**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.** 10, 6, 2 mtrs., 220, 440, 900, 1.2 MHz. ATV. Meets: 1st Sat./monthly, 7:30 p.m. Info: net Sun., 8 p.m., 147.225 MHz. KD9FA Rptr./Chicago.

**Bolingbrook Amateur Radio Club.** Meets 3rd Mon./monthly, 7:30 p.m., Bolingbrook Pk. Dist. Rec. Ctr., Briarcliff Rd., Bolingbrook, IL. Info net Thursdays, 8 p.m., WD9AKO/R 147.33 MHz + 600 and WA9DIP/R 224.54 MHz - 1.6. Info hotline (708) 759-7005. ARRL affiliated club.

**Central Illinois Radio Club, W9AML.** Meets 4th Wed./monthly, 7:30 p.m. (from Sept. to May), McLean Co. Law & Justice Center, ESDA Rm., Bloomington, IL. Club Rptr. 146.94 - 600kHz.

**Chicago Amateur Radio Club.** Founded 1926. Meets 1st and 3rd Wed./monthly on Northside of Chicago, 7:30 p.m. Info call (708) 869-HAMS or (312) 545-3622.



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

**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.

**Hamfsters Radio Club, W9AA.** P.O. Box 42792, Chicago, IL 60642. Meets 1st Fri./monthly, 8 p.m., Crestwood Civic Center, 139th & Kostner Ave., Crestwood, IL. Nets: Sun. 8 p.m., 28410 MHz and Mon. 9 p.m., 146.43 MHz.

**Metro DX Club.** Meets 3rd Fri./monthly (except Dec.), at Oak Forest Hospital, (employee quarters), 159th St. and Cicero, Oak Forest, IL, at 8 p.m. Christmas party in Dec. Net: DX/Club info, every Tues., 8 p.m., 146.46 Simplex.

**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.

**Peoria Area Amateur Radio Club.** Meets 2nd Fri./monthly, 7 p.m., Red Cross Bldg., corner of Knoxville & Armstrong, Peoria, IL. Info on W9UVI rptr. 146.250/146.850.

**Schaumburg ARC (SARC).** Meets: Schaumburg Park District Community Rec. Cntr. at Bode and Springinguth Roads, Schaumburg, Illinois. Third Thur./monthly, 7:30 p.m. Net 28.350, 8:00 p.m. Thur.

**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.

## KANSAS

**Pilot Knob Amateur Radio Club.** Meets 1st Thurs./monthly, 7 p.m., 525 Shawnee St., Leavenworth, KS. ARES net every Thurs., 7:30 p.m. 147.60/147.00. For info call (913) 682-6904.

## LOUISIANA

**Baton Rouge Amateur Radio Club W5GIX.** P.O. Box 4004 Baton Rouge, LA 70821. Meets last Tue./monthly, 7 p.m., Catholic High School cafeteria, 855 Hearthstone Dr., Baton Rouge, LA. Net 8:30 p.m. each Sun. on 146.79.

## MASSACHUSETTS

**Mohawk Amateur Radio Club.** Meets: 4 Wed./monthly, 7:30 p.m., American Legion Hall, 325 Pequign Ave., Athol, MA. (One block north of downtown traffic lights, past the bridge.)

## MICHIGAN

**Farmington Amateur Radio Club.** Meets 2nd Wed./monthly, 7:30 p.m., Wheeler Street Fire Station, Farmington Hills, MI. Contact: Jim, WA8SEL, 474-8765. Talkin: 146.49MHz.

**Hazel Park Amateur Radio Club.** Hoover Elementary School-Hazel Park, 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 9 1/2 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.

**Top-Of-Michigan A.R.C.** Meets 2nd Tues./monthly, 7 p.m. at the State Police Pst., Gaylord, MI. Net Tue., 9 p.m. EDT 146.82/22.

## 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

**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.

## 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, Tom Bull, NW7S, 642-5033.

**Las Vegas Radio Amateur Club (LVRAAC).** Meets: 2nd Tue./monthly at 7 p.m., Nevada Power Bldg. Wengert Rm., 6226 W. Sahara Ave. (Near Jones), Net Tue. 8:00 p.m. on 146.94 MHz. Info: Call George at 459-2586.

**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.

**Delaware Valley Radio Assoc. (DVRA).** Our Lady of Good Counsel Church. 137 W. Upper Ferry Rd., West Trenton, NJ 08628. Meets: 2nd Tues, Wed./monthly, 8 p.m.

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

**Jersey Shore Chaverim.** Meets 1st Sun./monthly, 9:30 a.m., JCC, 100 Grant Ave., Deal, NJ, Sept. thru June. Net 1st Thurs./monthly, 9 p.m. local on 145.110, KC2Q. For info call (201) 222-3009.

**South Jersey Radio Assoc. (SJRA).** Pennsauken Sr. Hi Sch. at Hylton Rd. & Remington 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 W2RUJ/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 Gabel, 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.

## NORTH CAROLINA

**North Carolina Chapter TSRAAC.** Meets: Mondays, 28.350 on the air, 8:30 p.m. local time. "The Alligators" - all mouth, no ears

## OHIO

**Amateur Radio Fellowship (ARF).** Greg Ash, KA8TOA, Sec. 423 Pioneer Ave., Kent, OH 44240. Meets: 1st Sat./monthly at Kent Wally Waffle. KA8YKT rptr. 147.075.

**Ashtabula County ARC.** Ken Stenback, A18S (964-7316). County Justice Center, Jefferson, OH. 3rd Tue./monthly. 7:30 p.m. County Rptr., 146.715.

**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 Town Hall on Dover Center Rd. between Lorain & Butternut Ridge Rds. 10 miles west of downtown Cleveland.

**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 216-925-2363.

**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.; 7259 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

**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, WD6EAV, (503) 883-2736.

## PENNSYLVANIA

**Butler County Amateur Radio Club.** P.O. Box 1787, Butler, PA 16003-1787. Meets 1st Tue./monthly, 7:30 p.m. at Red Cross Bldg., 312 Mercer St., Butler PA 16001. Call-in: W3UDX 147.96/36. Net 10:10 p.m. nightly.

**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.

## TENNESSEE

**Nashville Amateur Radio Club.** Meets 3rd Thurs./monthly at Lock 2 Metro Park off Pennington Bend Rd. Grilled hamburgers at 6 p.m., mtg. at 7 p.m. Call Jerry, KK4TV, at 754-2326 for info.

## TEXAS

**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!

**Sun City Amateur Radio Club.** Meets 1st and 3rd Fri./monthly, 7:30 p.m., 3709 Wickham Ave., El Paso, TX. K5WPH 147.240/147.840 Rptr. with remote operation on 220, 440, 6M, and 10M.

## VIRGINIA

**Southern Peninsula Amateur Radio Club (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. For info (804) 497-1235.

## 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 WD8JUN/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(-) W8VJR. Info KB8EHJ (304) 824-5958.

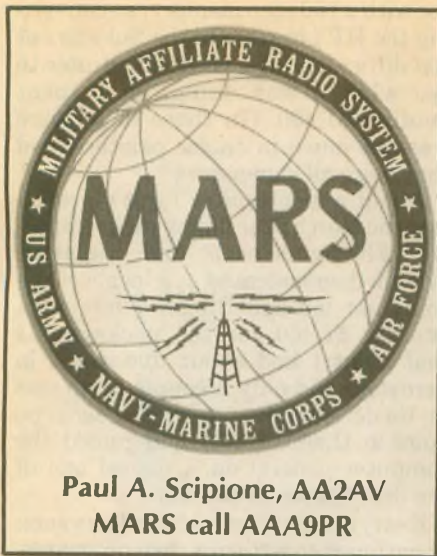
## WASHINGTON

**Mike & Key Amateur Radio Club.** 3rd Sat./monthly, 10 a.m. Tukwila Com. Ctr., 4101 So. 131st St., Seattle, WA. Net. Wed. eve., 7:30 p.m. 146.22/146.82 rptr.

## WYOMING

**University ARC.** 146.01/61 Meets: 1st Tue., 7:30 p.m. Sept.-May U.W. Physical Plant Bldg., 15th & Lewis St., P.O. Box 3625, Laramie, WY 82070. June-Aug: Bernie Club picnics Wed.





**Paul A. Scipione, AA2AV  
MARS call AAA9PR**

**PAUL A. SCIPIONE, AA2AV**

*Dr. Paul Scipione is a consumer psychologist and Professor of Marketing in the School of Business Administration at Montclair State University in New Jersey. He is also National Director of Public Relations for Army MARS and is writing a book on the history of MARS operations during the Vietnam War.*

"AEM3USC this is AAR2USI. I have Donna on the line. Please have Jim initiate the phone patch, over." I threw the switch on the Collins KWM2 to receive and started to fill out the log-book as I listened for when to throw the switch back the other way. I had promised myself not to get too involved, but the emotions of the call swept me up into a timewarp that took me back to another war—Vietnam. On my end of the call was a 27 year-old wife and mother of two small children; on the other end, nearly 8,000 miles to the east in Saudi Arabia with Operation Desert Shield, was her 29 year-old husband, an Army staff sergeant in the 101st Airborne Division, the same division I served with in Nam.

I could hear the intense feelings in their voices—the fear, the loneliness, the love—and the 22 years back to my time in Nam just melted away. Instead of Donna and Jim it was Linda and myself. I choked up when I heard Donna tell Jim, "I want you to know that the kids and I are with you every minute, every second of the day. We'll be together again soon. Until then, here's a big kiss and hug that will never end."

After all the calls I was able to make from Nam to my wife, parents and friends, I promised myself that someday, somehow, I would repay the wonderful favor that some thoughtful radio Amateurs had done for me. A year ago I signed up for the Army MARS network in New Jersey and got

the MARS callsign, AAR2WH. I started checking into the various statewide nets a couple nights a week, but something was missing. Yes, we were keeping lines of auxiliary communication open for some potential emergency in the future. But the operating still had a "hobby" quality to it. Maybe someday . . .

Then, when Saddam Hussein and his mindless thugs invaded Kuwait and President Bush and other world leaders reacted by sending hundreds of thousands of allied troops to Saudi Arabia, my involvement with MARS



**From hobby to life line**

began to take on a different feeling. I volunteered as an operator for AAR2USI at Fort Monmouth, NJ, spending several mornings each week running phone patches from Saudi Arabia. Now there is no more "hobby" quality to my involvement in MARS, but it isn't "work" either. It is a commitment. It is providing a vital life line, making a difference in the lives of very special people, and it feels good!

There are now nearly 12,000 American radio Amateurs operating in the various MARS systems (5,000 in Army MARS, 3,500 in Navy/Marine

MARS, and 2,900 in Air Force MARS). We could use a lot more help! If you would like to take your "hobby" and make it a "life line," you can contact the three MARS systems for membership information.

**Air Force MARS:** Chief, Air Force MARS, AFCC/DOYX, Scott AFB, IL 62225-6001; 618/256-6522.

**Army MARS:** Robert Sutton, Chief Army MARS, US Army Information Systems Command, Fort Huachuca, AZ 85613-5000; 800/633-1128.

**Navy/Marine MARS:** Robert D. Loe, Chief, Navy/Marine MARS, Naval Communication Unit, Washington, DC 20397-5161.

**Calling all Vietnam-era ops!**

MARS officials have asked me to write a book about the history of MARS operations during the Vietnam War (1964-1975), by far the most active period in the 65 years of MARS service. I have developed a data base of more than 200 Nam era MARS ops (from both the US and Vietnam end of the nets), I estimate that there are several thousand more yet to be heard from. If you are a Nam-era MARS op or know one, please contact me for a MARS Nam questionnaire. The book (to be published in 1992) will have a section with the names and current callsigns and QTHs of MARS Nam ops to help reunite old friends. Write to AA2AV, 5 Burr Drive, Metuchen, NJ 08840; or telephone 908/548-8096. The MARS Nam net meets each Sunday at 7 p.m. EST/4 p.m. PST (2400 UTC) at 14.330 ± QRM. Please join us! □

**Traffic**

*(continued from page 40)*

other mode. On a separate line I typed: ST ZIP @ NTSXX (I'm leaving three spaces for one this time . . . hi). It appeared in print as: ST ZIP NTSXX, and the @ had disappeared.

This brought a very friendly reply to me from N6AXD @ N6AZD. Aside from pointing out the error, Don agreed that knowing the distant end BBS call sign is of utmost importance. He says that if you don't know it, you can ask your sysop to help locate it or you can use the white pages file server that is in your regional area. While many sysops may not be traffic handlers themselves, they are quite willing to help you be a better one. Recently I replied to a packet message from a friend. The next day my sysops sent me a message saying the the PBBS I sent it in care of wasn't listed and if I could tell him where it was geographically, he could add it to the list. □

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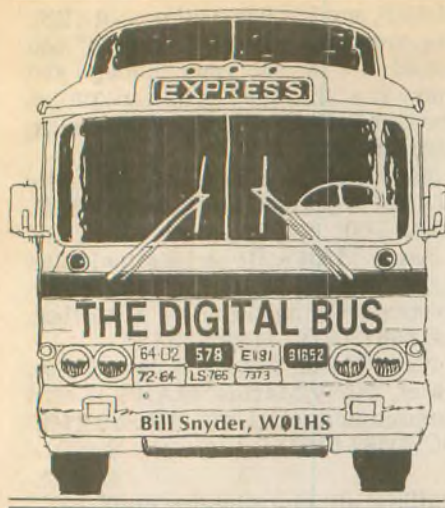
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One of the few nice things about old age is the reminiscing mood which overtakes a person now and then. After 58 years as a licensed ham operator you can't help but have a big collection of memories to ruminate about. And lately the old-age disease, *cogitatus too-muchus*, has hit me. I don't know if it's therapy or fun, but I seem to be doing more of it each day.

This morning I was in the process of booting up my new 386 computer (with a 124 meg hard drive and 4 megs of extended memory) to write this column when I got to thinking about my first micro-computer. It was a Sol (with 32K of RAM) made by Processor Technology in California, and although it

seems a million years ago, it was only 1976 when I purchased it.

On my new one I also have a CD-ROM loaded with the Microsoft Bookshelf program which contains the *American Heritage Dictionary*, *Roget's Thesaurus*, *World Almanac*, *Chicago Style Manual*, *Bartlett's Quotations* and a Zip Code directory. More than 600 megabytes on one single disk! It's the world's greatest writer's helper, though I wish Microsoft would bring out up-dated disks. The Almanac, for example, is getting pretty old.

Computing has come a long way since that Sol computer entered my life. The Sol first came out as a kit: a jillion resistors, capacitors and chips with a great big book containing "tab B in slot B" instructions. I believe the price of the kit was about \$2,200 for all the parts and two memory boards that would hold a total 32K of RAM. I remember paying \$450 for a third board with 16K more RAM, which was necessary to make my primitive word processor run better. The operating system was in a magnetic tape cassette, and it took about five minutes to load into the Sol so it would run.

The boot-up chip for the computer was on a small proprietary printed circuit board that slipped into a socket on the back of the mother board. The computer case was made with hardwood ends, although the rest of the console was metal with holes cut into it so the keys on the keyboard could stick out. Naturally, the case leaked RF like a sieve. But who cared? We were computing!

In order to use the darned computer for anything practicable, I had to learn how to write programs in Basic. My first program was developed to plot camera moves for a small Oxberry animation stand I used in my industrial motion picture producing business. Prior to the Sol I had been using a Hewlett Packard HP-65 calcula-

tor with a 100 step memory, so converting the HP program to the Sol was not too difficult. But I needed a printer to see what I was doing, so I spent another \$1,400. (In those days there was not much in choice printers, and they were all expensive.)

About a month after I got started I saw the North Star floppy disks (capacity 77K bytes each) and operating system demonstrated at a local college computer lab and Bingo! There went another \$1,400 for the package. At that point I had about five grand in hardware and only a couple programs in Basic (complete with Snyder-type bugs in them). But I had joined the computer generation. I owned one of the first micros in the city.

Everything ran great for a few years; I continued to write my own programs, and I purchased a better word processor and some games for my grandchildren to play when they came to visit my studio. Then one day the Sol failed to boot. Panic set in! It was a "Catasrscope," as comedian Jimmy Durante used to say.

The manufacturer, Processor Technology, was no help; they had gone broke and closed their doors. I was busy making industrial and educational films so the insides of a computer were Greek to me. We had Fargo Computer Club going, but no one had the knowledge I needed to get my Sol up and running. I was "up the creek," as the saying goes.

I did manage to diagnose my problem; I believed it was in the proprietary EPROM chip which booted the machine. The boot-up code was listed in the instruction book, but I couldn't find a replacement chip from any supplier.

At that point I happened to remember a software dealer named John Dvorak in California. He marketed stuff for the Sol, so I tried calling him. He was hard to catch, but I finally tracked him down at home. John gave



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me the name of a former Sol dealer who he thought might have the programmed chip I needed. He also gave me a phone number for a guy named Lee. "Call Lee if you can't get help from the dealer," John told me.

I called the dealer but his phone had been disconnected. I called the other number; it was a California company (the name of which I didn't catch), and I asked to speak to Lee. In a moment he answered and I explained my problem. I told Lee I didn't know where I could get the chip I needed.

"Well," he said, "that chip is no longer available, but you can use a substitute." With that he gave me the number of the programmable chip I needed to get. "Now with that chip you just can't plug it in after you program it. You'll have to cut some traces and install jumpers to change a voltage." My heart sank some more. "I wish I had the drawings in front of me," said Lee.

"I've got them right here," I said hopefully.

"Well, I think you cut the trace to pin number 21, then put a jumper from the 5V bus to pin number so and so..." Lee gave me instructions from memory. I followed on the schematic of the unit. Everything he said seemed to make sense. My morale rose about fifty points!

When Lee finished the instructions I thanked him, and as an afterthought I said, "What did you have to do with the Sol, Lee?"

I could hear him smiling over the phone. "I designed it," he said.

Now that I look back on the Sol computer, it was the best micro in its day, I'm sure. It's just too bad that Processor Technology went belly up, because I'm sure they would have been one of the big guns in today's market, that is, of course, if they'd had a branch in the Orient.

### Marty's experiment

Last month I reported on the early results of my packet message experiment with Marty Mullican, G0NJJ, in

England. It began with the December issue when I gave the instructions of how to send a packet message to Marty. Many of you did try sending one, and I'm sure if your message made it across the pond you got an answer. In his reply to everyone who sent a message, Marty asked that the recipient mail a printout copy of the one from him to me.

Since that time I have been getting copies of the messages from Marty. It is interesting to read the headings and see how fast, or slow, the overseas arm of the packet network moves. Tom Hagerman, N0DST @ WD4KAV. FL.USA.NA, had his message to Marty fly over in two days, but the answer back required four. Not bad service.

N0DST also reported that he delivered two packet messages from California that had gone through 12 relays and still made it to Florida in less than 13 hours. "Don't we wish the system worked like that all the time?" asked Tom. "That must be a speed record, especially for a route with 12 pack-ohms of resistance!" he concluded.

Alaskan Bernie Engebretson, NL7TQ @ KL7NC.AK.USA.NA, received his answer from Marty in five days. Bernie commented on how long it took my message to Marty to get to England. "It must have been the way you held your jaw when you typed it in," said Bernie. By the way, if you wish to try a packet to Alaska, say hello to Bernie for me.

### Eavesdroppings

"I BOUGHT A NEW RIG WITH TOO MANY BELLS AND THIS-TLES—THINK I GOT STUCK! ... SAW A USED ICOM-751 ADVERTISED FOR ONLY 2500 BUCKS IN A DIVORCE SALE—WONDER WHAT CAUSED THE DIVORCE? ... I HAVE BEEN HANDLING TRAFFIC FOR THE MUDDLE EAST ... I JUST GOT INTO COUNTY HUNTING AND I THINK I ONLY NEED 2784 COUNTIES NOW ... I'D LIKE TO SEND MY BRAG TAPE TO YOU, BUT IT GOES ON FOREVER ... MY GEAR HERE IS

THE OLD-FASHIONED GARDEN VARIETY, BUT IT STILL BLOOMS OKAY ... I USE MY COMPUTER FOR LOGGING, CONTESTING AND THE FINAL AMPLIFIER FOR HEATING THE SHACK ... MOVED HERE FROM ANCHORAGE IN 1954 BUT HAVEN'T MET MANY OF THE LOCAL HAMS AS YET ... I HAVE A WIND-POWERED TRACTOR THAT I LOANED TO MY NEIGHBOR WHO, AFTER HE GOT DONE USING IT, PUT IT IN THE BARN AND NOW HE CAN'T GET IT STARTED TO BRING IT BACK TO ME ... THE POWER COMPANY HAS TOO MUCH POWER ON HAND FOR MY NEIGHBORHOOD SO THEY LET IT LEAK OUT ALL OVER THE PLACE."

Thanks to the following for their contributions to this column: WA4MCZ, WB6QHS, N6EEG, W6PZJ, N0FBA, KA0FIN, W2KGV, WY6V, W0HAH and W0PCI. My packet address is W0LHS @ W0LHS.ND.USA.NA and my mail goes to 1514 South 12th Street, Fargo, ND 58103. 73 and DIT. □

Just when you learn to make the most of it, most of it is gone.



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No code—two words guaranteed to spark conversation in Amateur Radio circles. Over the past month the local BBS has been clogged as the opinions flash coast to coast.

It's been educational watching the messages (and the reactions) and it prompted some thought with regard to search and rescue. Many years ago there was a CB radio group in central Wyoming which handled a great deal of local public service communications. The yearly parades, community events and even the weather emergencies got the group active. One very fun event was a yearly winter motorcycle race; I fondly recall those snowy races, huddled in a motor home trying to maintain communications in mid-winter. After a year, however, the group was fractured when no clear mission was defined.

All of a sudden the great CB explosion hit. The group found scores of additional members, each with a desire to help but with little experience or understanding. With the group already fractured by internal bickering, the new folks just took over. After a while their inexperience got the best of them and local events could no longer rely on the quality of communications provided. Once the group had no "call outs," it died.

Moral of the story? Amateur Radio could experience an influx of new members eager to participate. In the past week I've had three co-workers and six neighbors excited enough to ask me where to get the books to study and where to take the test. That's nine people who have heard about the no-code license from someone. It's curious too, because while they heard about no-code, they came to me, an active Amateur Radio operator, to get information.

Where are they going to go to learn about Amateur Radio? To your club meetings, to your swap fests, to the

bunny hunts, on your nets and on your activities. Maybe they'll want to participate in field day.

### Two possibilities

I can see two things happening. If we belittle their involvement and interest, they'll group together on their own. They'll probably make the mistakes we made, as they may not have an elmer to guide them.

On the other hand, if we involve these newcomers and actively seek their participation, we have the chance to get them excited about *all* aspects of Amateur Radio. I see some great potential for some really neat operators—if we recognize that these newcomers will also be Amateur Radio operators. They're not CBers, they're not all children, they're not a sub-species. They'll be school teachers, lawyers, mechanics, students, home bodies, youth, ministers, mayors or even neighbors—but they'll still be Amateur Radio operators.

Plan for additions to your emergency communications group. Get the new operators involved and trained, be they Novice, Technician, codeless Technician, General or beyond. Let your group present a solid mission objective with some fun ways to get newcomers involved. There is great potential; whether your local situation becomes good or bad is up to you. The choice is yours! (Wellman's law of participation: Not getting involved is a bad choice!)

### Downed plane

He took off from the Tooele, Utah airport about 1 p.m. Faster than expected, a sudden snow storm socked in the airport so he couldn't return. Had he known his plane would have mechanical problems, he would not have taken off. Just after takeoff, the engine quit.

The Great Salt Lake is quite an expanse of water, though it isn't very deep. One can wade out for hundreds of

yards and not get deeper than four or five feet. In the winter it's windy and cold (the salt keeps the water from freezing). Winter on the lake is often fatal. Imagine your plane cartwheeling into the water, and finding yourself upside down with water coming into the cockpit.

At about 3 p.m. concerned friends reported him overdue. The Civil Air Patrol was called. Several members were in their vehicles and responded to the call. The sheriff's offices from two counties alerted their SAR teams. The FAA's radar plotted the plane's descent into the lake.

Another rapidly approaching storm front promised more snow, gusty winds and instrument problems. Many of the CAP ground responders were Amateur Radio operators. Several members of the local ARES group also responded. Slowly, the group made its way along a railroad causeway. Snow, slush, fog and cold caused several large 4WDs to get stuck. Mike Mladejovsky, WA7ARK (and a CAP Lt. Col.), entered the search area at about 6 p.m. Using a handheld spotlight they slowly drove along the causeway looking for wreckage.

Suddenly the radios came alive. Mike heard a voice from out on the lake. About eight miles out on the causeway, the crash had been located and a helicopter and boats were needed. Soon the LifeFlight helicopter was on the scene. Coordinating with the ground teams, the chopper located the crash, but propwash from the chopper made it impossible to get close.

The sheriff teams were getting close with boats and rafts. One sheriff member donned a dry suit and waded out to the wreckage. The pilot was OK. He was sitting on top of the wreckage and had seen the vehicle lights.

Friends and rescuers shook their heads. Wow! The newspaper and TV headlines said he was lucky. Lucky is right. The pilot spent eight hours on the lake on a cold Utah January day. I've researched plane crashes in Utah, and I've compiled a book of over 1,500 crashes. Even with all this information, I was hard pressed to find where others had survived such an ordeal.

The crash site was in the shadow of the CAP repeater. The sheriff teams had to relay into their dispatch on simplex as well. There was also the problem of all the vehicles and the chopper being on the railroad causeway when trains were due and the weather was getting worse.

A remote base on 220 MHz was used to monitor simplex. No one had any 220 gear at the scene, but the remote base solved the problem. A UHF repeater linked many of the Amateurs on



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scene. Messages were relayed from Amateurs on scene to the CAP mission coordinator. The two sheriff's departments, the Parks and Recreation folks, the Highway Patrol, the Civil Air Patrol and medical folks all have their own frequencies. Their channels were busy, and messages were relayed from one channel to a dispatcher or a deputy, then to another deputy and then on to the second frequency.

People survive when others would assume otherwise. This rescue pointed out the value in being prepared. When

the call came, there was no time to get ready. The Amateur network provided a lifeline and was often the only link from the search commander to the scene. Of the responders, none of the Amateurs' batteries failed, none had radio problems, and they all cooperated with the agencies involved. The common Amateur Radio frequency saved time when time was critical.

If you're not ready to respond, get ready before you're called! Would the pilot have lived overnight while the teams got ready? He's glad he didn't

have to find out.

If you're not involved, listen. During the three hours of the rescue, not one Amateur operator got on to complain or ragchew. I'm sure there were several that really wanted to get involved, but they cooperatively stood by, helping only when asked.

This is the example we need to set for new and old alike. When a teary-eyed thanks was given, it was all worthwhile, especially for KD7OD, Kelly; KA7GZH, John; and N7HIU, Frank. □



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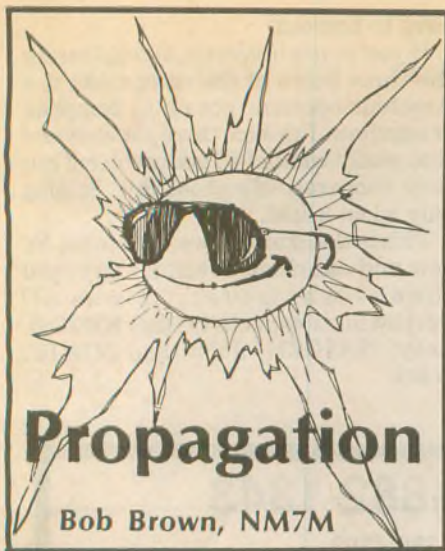


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As Americans, we're devoted to the democratic, free-enterprise system in business, politics and other aspects of our life. In Amateur Radio, however, we've moved away from the early days when homemade gear was the rule and Amateur operators expressed their individuality through the equipment they built for their stations. Now things are a bit different, but there's still one last bastion of free-enterprise in our hobby: our approach to antennas.

What we do about antennas and their relation to HF propagation is another matter, those with fixed antennas choose the directions in which they want their RF to go, while those with beams choose headings according to their interests at the moment. The latter may vary, depending on whether a DXpedition is out there or a contest is in progress with another country. In that regard, you know there's a wealth of simple computer programs available for calculating beam headings, but whether the bands are really open in any direction at a given time of day remains to be seen. So let's think about it.

For starters, let's go for the "big picture" first and get down to the "nuts and bolts" of computing later. So let me throw out an idea that may be new to you: MUF programs are really two-dimensional! That's true, as they only deal with how RF fares along a vertical

plane on a great circle route from points on the Earth's surface to the ionosphere and back.

I'm not saying anything to suggest that that type of plane is as bad as the one in earlier history, that of a flat Earth before the times of the great explorers. However, I would suggest that whatever one finds from a MUF program does not represent a necessary and sufficient condition, as mathematicians would say, for RF to be heard at point B if it starts from point A. Obviously, that requires an adequate signal strength at point B. But like the MUF problem, it's something that's subject to calculation with the aid of computers.

I'd suggest that we need to move up from the two-dimensional world of MUF calculations to the "real world" using MUF results as well as those from the third dimension which is out of the plane. This enables us to treat the fact that signals spread out horizontally as well as vertically in going from point A to point B.

With that, we should be able to consider not only how RF waves advance along a great circle route and encounter the ionosphere, but also how they diverge or spread out along the way, resulting in our signals becoming weaker and weaker with increasing distance. Surely that's simple enough, just like illumination from a light bulb. And it's something we should take into account as well as the other obvious point, whether the ionosphere will refract or return our RF back to ground level hop by hop.

Now that was a geometrical argument, one favoring a more complete treatment in making propagation calculations. I can make others to support the idea of making signal strength calculations.

Whether your RF gets through or not certainly depends on the power output of your transmitter; that's not in any MUF program. Another point is D-region absorption; there's a world of difference between day and night on a path, especially on the lower bands like 80 and 160M and, again, that's not found in MUF calculations. Beyond that, there's a difference between surface reflections off of sea water and the sands of the Sahara. You won't find

that in a MUF program. And you certainly know that antennas make a big difference, that personal touch that you bring to DXing. MUF programs don't include anything about antennas and, by omission, suggest that an HF "rubber duckie" is the match of a 7-element Yagi at 100 feet. Really!

OK, you might argue that I'm belaboring the point, even suggesting that signal strength calculations are superior to MUF calculations when it comes to getting down to cases in HF propagation. In a sense, you're absolutely correct. But you have to understand that signal strength calculations cannot get there alone without the benefit of MUF programs. In short, the two must be considered together in any sort of serious propagation calculation. Further, the full development of HF propagation programs requires not only the various factors that I've mentioned above, but also the E-region cut-offs. In some cases, they can be a limiting factor too.

Without getting into the mathematics of the situation, let me just outline some of the important steps that are followed here. First, there is the matter of distance between points A and B; that will be a side result of the beam heading calculation. Then there's the matter of the number of hops; that will depend on what information we have about the height of the F-layer. When that's settled, usually with no more than about 3,750 km per hop, we obtain the radiation angle for the path. Next, we have to find the angle at which the RF is incident on the F-layer. Finally, knowing that, we can check the data base of critical frequencies at the mid-points of each hop. When those are corrected for oblique incidence and checked against our operating frequency, say making up a MUF plot, we can see whether our RF can make it through or not.

Then comes the signal strength calculation. Thus, there's the matter of the distance from A to B which will determine the signal loss due to spreading. Some consideration is required for the ground reflection losses along the way, which are the same, day or night. Finally, we need to calculate the absorption losses wherever our RF passes through the D region in the daylight hours. If we do that, hour by

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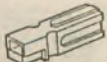
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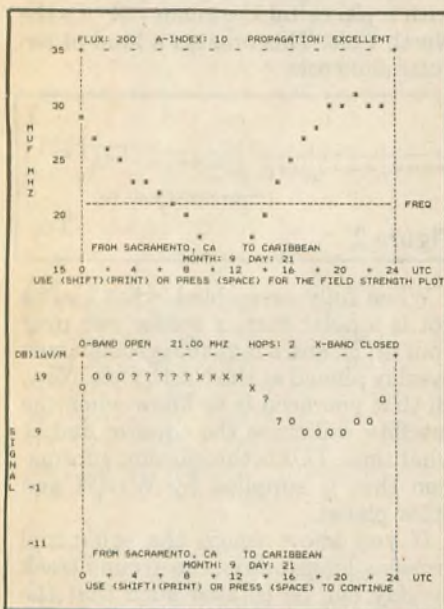
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hour, we'll see just when we can make it through from A to B, given all I've said above.

To all that, you say "Talk is cheap; show me what you mean!" OK, take a look at the figure, which represents two screen dumps from a program I've put together. It illustrates a path from the HQ of Worldradio to some generic sandpit out in the Caribbean. The upper half of the figure shows the part of the MUF curve that's above the operating QRG. The lower half shows how the signal strength would go in the course of a day. When the MUF is above the QRG, the signal diagram shows an "O," an "X" when it is below the QRG and "?" when the predicted MUF is within  $\pm 2$  MHz of the QRG.



OK, that was one of my creations, the PROP&MUF program. Maybe you've seen others on some computer BBS or advertised in various ham magazines. From looking at the figure, I think you can see the point I'm trying to make. Whenever the MUF is above your operating QRG, there is a chance that you can get through from A to B; however, be sure to look at the signal strength plot to find the times when the D region is working for or against you. If you enjoy calling "CQ DX" on a dead band, OK; I prefer to "shoot fish in a barrel" and operate when everything is going my way. That's when a "full-service" propagation program can help you.

Having said all that, let's talk computing. If you're one of the vanishing breed who likes to do BASIC programming, perhaps you can find a MUF and signal strength program on your BBS that's in BASIC. The pioneer of them all was MINIMUF, from the Naval Oceans System Center in San Diego. It showed up in QST in 1982. It has some

serious problems, not the least of which is overly optimistic MUF predictions of 10M openings during solar minimum.

A number of other BASIC programs are around, those out of Radio Netherlands include MICROMUF 2+, MAXIMUF and IONPRED. The latter is a signal strength program and does hop-testing to actually show which ionospheric mode is in effect at a given time, say 2F or 1E 1F, etc.


But if you're not into programming, you can purchase something from a variety of offerings, all the way from NOAA's IONCAP, the top-of-the-line program for IBM PC/ATs, on through

various programs advertised in the ham publications or offered on a shareware basis. Running such a program on one's machine is one thing, but its running time is another. Thus, while I truly admire IONPRED, even with a good machine, all that hop-testing takes a lot of time. With those remarks, I'd offer a word of caution to those who have "classic computers," like the Commodore 64; don't expect the print-out from a complete propagation program to leap out at you in a short time. In any event, there's plenty out there to help you on your way to fame and glory as a DXer. Look into them; you might be impressed. □

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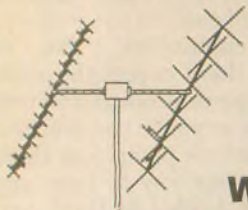
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# Amateur Satellites



**WB5ZDP**  
**Keith Berglund**

I'm still getting quite a lot of requests from folks who don't have a computer for a printout of when RS-10/11 will be in view. The offer still stands, however I think these folks will find this month's column particularly interesting.

It's very gratifying to read the letters from guys who previously thought that satellite operation was only for big guns with megga-bucks and EME type stations. They say that they are now working nearly every RS-10 pass with equipment already in the shack. One W4 station wrote to tell me that he had been a ham for 16 years and that most aspects of Amateur Radio had become boring. Now, however, since discovering that Amateur satellite work didn't require a PhD and a lot of money, he is working RS-10 with a homebrew J pole and 25W and says that for the first time in years, he feels just as excited as when he was a Novice.

I still have the feeling that there are a lot of potential satellite operators out there who don't use the birds because they don't have a computer for satellite tracking. With this in mind I felt it was time to blow the dust off of my closet shelf and take a giant step backwards.

## A bit of history

Back in the OSCAR-6, 7, and 8 days, Mode A was alive and well (remember, on Mode A the uplink is on 2M and the downlink is on 10M). These satellites, like RS-10/11 were low altitude, polar orbiting birds. As we all recall, back in the early '70s computers were only owned by large companies or universities. What it boiled down to is that Joe Ham still needed some way to track the satellites without a computer. That's why the OSCAR-Locator was invented.

## The OSCAR-Locator

The prime objectives that any tracking method should satisfy are: 1) it should tell you when the satellite will be in view; 2) it should tell you where to

point your antennas when it is; 3) it should be simple to use; 4) it should be accurate ( $\pm 1$  min. or so); and 5) it should be cheap! The OSCAR-Locator satisfies all of these criteria nicely.

The OSCAR-Locator is a graphical method of satellite tracking. You still need someone like AMSAT or the ARRL to give you some basic data every now and then, but this information is free. Now, as then, the information is broadcast over W1AW or can be obtained by mail.

## How it works

First, you'll need a map of the world looking down from the north pole; the equator should show as a circle around the perimeter with the lines of longitude clearly marked. The USA will be found between about 70 and 130 degrees west.

Then, you'll need a graphical representation of the Range Circle of a satellite, as shown in Figure 1. This graphic is often referred to as a "spiderweb." With the center of the

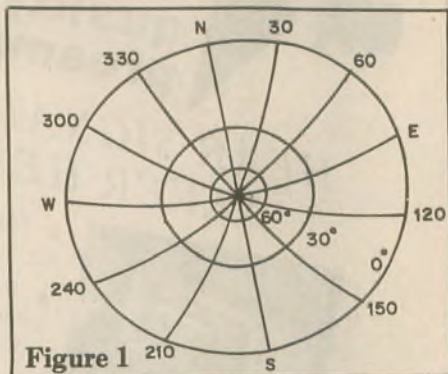


Figure 1

spiderweb placed over your QTH on the polar map, you get a graphical representation of where you would need to point your antennas if the satellite were at any given place in the circle. If the satellite is not inside of the circle, it is out of view. If it is inside of the circle, you get an approximate azimuth and elevation for any given point. Note that the spiderweb will

change shape if tracking a higher or lower altitude satellite. Also note that the shape of the spiderweb will be distorted if the latitude of the QTH of the observer station changes dramatically. Figure 1's spiderweb assumes a latitude of 46 degrees north, but is reasonably accurate for any station in the continental United States.

The next missing piece of the puzzle is how and when to locate the satellite inside of your range circle. Figure 2 is an illustration of a satellite "ground track." This ground track line is a representation of how the satellite moves over the polar map. Like the spiderweb, this ground track will be different for different satellites. The usual method of using this ground track is to copy it onto a clear piece of plastic and then, with a pin or tack, pin the "X" to the North Pole. This creates a kind of circular slide rule.

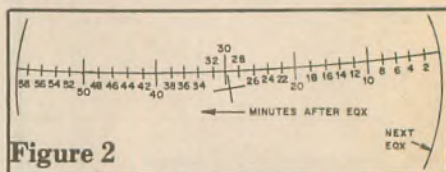


Figure 2

When fully assembled, what you've got is a polar map, a spider web over your QTH, and a movable groundtrack overlay pinned at the North Pole. Now, all that you need is to know when the satellite will cross the equator and at what time. This is the missing information that is supplied by W1AW and other places.

If you know where the equatorial crossing longitude is, the ground track overlay can be rotated such that the zero minute mark is on that point. Then, knowing the time of the crossing, you can count the minute tick marks until the satellite crosses into your range circle.

Figure 3 is a purely fictitious example of a satellite pass. In this example let us say that W1AA announces that RS-10/11 will cross the equator at 86 degrees west at 11:00 UTC.

The first step is to rotate the ground-track overlay until the zero minute mark is on 86 degrees west. This reveals that at 11:00 exactly the bird is out of view but should be in view in about three and a half minutes. Looking at the spiderweb and the ground-track, at 11:03.30 UTC the satellite will just come over your horizon at approximately 165 degrees azimuth and 0 degrees elevation. Examining the groundtrack further, six minutes later the bird will be at about 145 degrees azimuth and 30 degrees elevation. At 11:12 the satellite should be at 95 degrees azimuth and about 50 degrees elevation. Finally, loss of signal (LOS) should be at 11:21 UTC.

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The next pass can be predicted by knowing how many minutes it takes for the satellite to make one orbit (period) and how many degrees west the satellite will move with each orbit (increment). Actually the satellite stays in the same plane, and the Earth moves under it! So, for example, on RS-10/11 the period is 104.95 minutes and the increment is 26.36 degrees west. Using the previous example, the next equatorial crossing would be at 12:45 UTC (11:00 + 105 minutes), and the next equatorial crossing point would be at 112 degrees west (86 + 26 degrees).

### Where to get information

I had a nice conversation with Jon Bloom, KE3Z, of the ARRL technical department. Jon informs me that the ARRL still is, and always has been, an avid supporter of AMSAT and the Amateur space program. As previously mentioned, W1AW broadcasts equatorial crossing times of RS-10/11 and other satellites on a regular basis. In addition to the W1AW broadcasts, you can get a printout of a month's worth of crossing times by writing the League and requesting them. Send an SASE with one unit of postage to ORBIT Calendar, ARRL Technical Dept., 225 Main Street, Newington, Conn, 06111.

The OSCAR-Locator itself can be purchased in one of two ways. The ARRL bookstore still has it for sale, but it's a little out of date. The overlays and spiderwebs required for RS-10/11 and FO-20 can be purchased by sending \$2 to the ARRL technical department at the above address.

One other place to find the OSCAR-Locator is in the 2nd edition of the

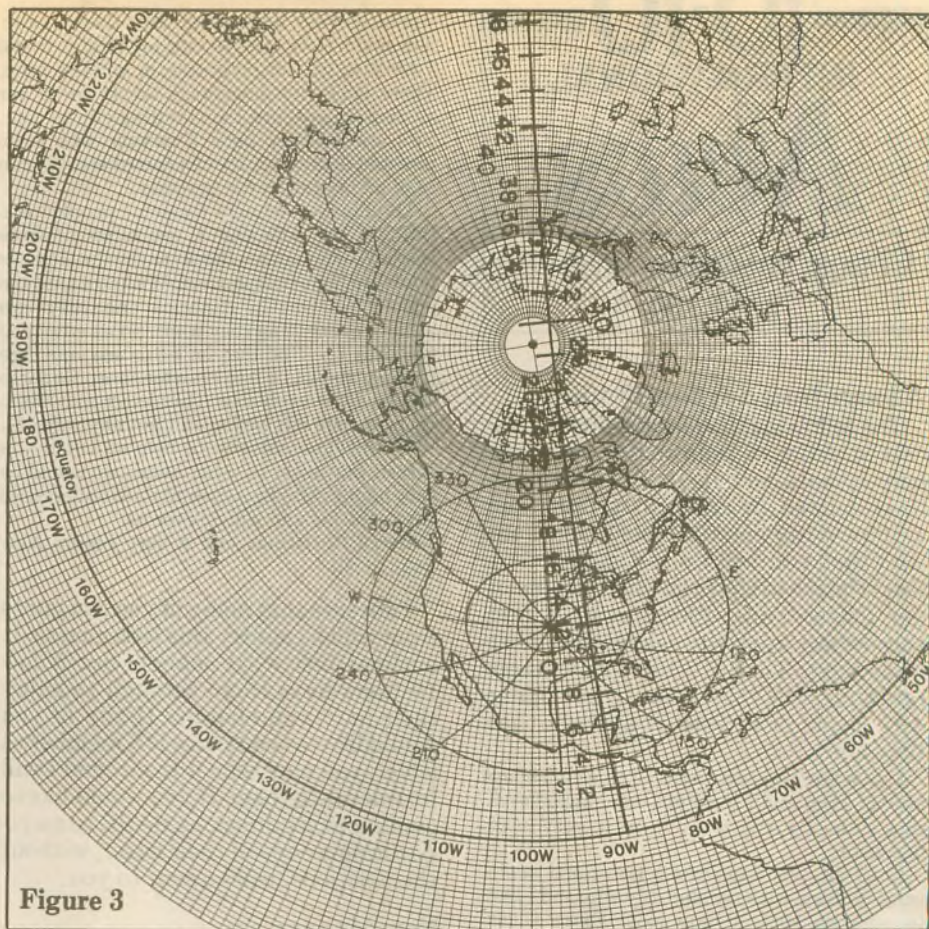


Figure 3

*Satellite Experimenters Handbook* written by Dr. Martin Davidoff, K2UBC, and published by the ARRL. You'll have to trace the spiderweb and groundtracks onto a piece of clear plastic but I have found that this is easy to do. In addition to the OSCAR-Locator, you'll find some of the finest information on Amateur satellites written. Good Luck. □

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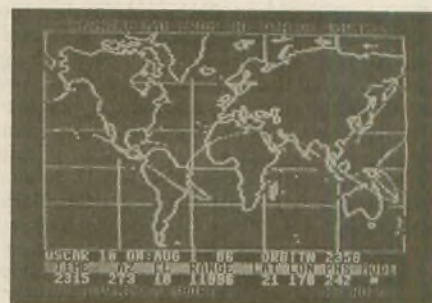
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# 10-10 INTERNATIONAL News

Chuck Imsande, W6YLJ  
10-10 19636

## A letter from a fellow 10-10er

The following is a letter quoted as received from a fellow 10-10er. The names, calls, and 10-10 numbers have been deleted in order to protect the writers. After you read this letter, I am sure that you will be as touched as I was relative to the problems of some of our fellow hams. Please read it and then reflect upon the values that most of us have. These 10-10ers have their problems, but they seem to be coping with them, or at least it appears that they are.

I have been a new member of this club since May of 1990 and I have got one magazine of this club. By the way, it is a very nice magazine.

But I am made to write a letter and share some problem with my club. My wife and I like to work on 10M. I have local Extra Class license and we like DXpeditions very much. We have worked from the mountains near the Black Sea sometimes specially for WW contest. So we wanted to join your club a long time ago. But there are some problems. We can't send the entrance fee and the membership dues to the Club. We can't change our local money to dollars or to IRCs in this system. There aren't absolutely any IRCs here and we can buy dollars only at the black market. But it is strictly forbidden by the law. By the way, we can't send any foreign currency by post. So when I sent my membership dues, that was very hard; I risked greatly. Because they check our letters. If they find a dollar or IRC, they take it out. So I can give a good advise to my friends in America. Do not send any currency in an envelope. There will be a new payment again for the next year. I would like to stay in this club further but I can't send the payment. So what can we do?

My XYL and I are interested in everything; we want to get information as much as we can. We want to have a lot of friends in the world, but we can't realize these dreams here, though we have enough money. I am a radio engineer and I have my own business. We are both 28 years old, and everything is interesting to us that goes on in the world, but we live here like in prison. We would like freely to take part in any meeting of this club in your country. It

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would be very interesting. But there's problem again. If we want to visit my foreign friend I have to get an invitation in written form. There isn't any democracy whatever in our system. In my turn I am inviting you to visit. You are welcome here. Everyone who is interested in my country can come here. We can send an invitation for anybody.

The life is good only for some people here. But we, my wife and I, are different from them. We sometimes think maybe the God has punished us for something? We know that the people are free in America and they can achieve everything they want. So we envy you and pray the God that he let us see your free country and let us free even for short. So these are our little problems. This letter may seem very strange but we haven't got any way out. We don't dare ask you to help us but if you spread this letter to other hams, we would be very happy. Maybe somebody will understand our problems and will answer us.

Merry Christmas and a very happy New Year to all!

I am sure that many of you can guess from which country this letter came. It outlines just what some of our fellow 10-10ers have to go through to enjoy their ham radio hobby. If any of you would like to send these DX members a letter, you may send it to me, and I will forward it to them. If you would like to communicate direct, an SASE to me requesting a copy of their letter, without the deletions, will be sent to you.

## New Monday net

The Monday 10-10 Net has been revised in that the Alternate Net is now operating on 28.380 MHz at 1800Z rather than 28.775, the former frequency. Dusty, K6MPN, 10-10 #45795, is the net control for the

Alternate Net. The regular net still operates on 28.800 MHz at 1800Z with Lovergne, KD6JC, #33704, as net control.

It was the wish of the Board of Directors to provide at least one day of Alternate Net operation within the Novice/Technician subband to allow those 10-10 members an opportunity to check in. It has been suggested that another Alternate Net be established on Saturday in the 25.3/28.5 band to allow those working during the week the opportunity to also have a 10-10 net to check in to. An action on establishing a Saturday Alternate Net would have to be cleared through Sherm Sherman, K6PTF, #17977, net manager. If you are interested in becoming the Saturday Alternate Net control, let Sherm know.

## New 10-10 County Hunter Award

Just in case you missed the announcement last month regarding the new 10-10 County Hunter Award, here is a recap. Work 100 US counties, exchange 10-10 numbers *and counties*, and send your application to the award manager, Alice Jenkins, NR4R, One Mitchell Lane, Rossville, GA 30741. Rules and an application can be yours for a business size self-addressed, stamped envelope to the award manager. There is also a 10-10 county hunter record book that lists all counties within each state available from Alice for \$5 (\$7 foreign). Using this record book is a necessity if you do not have a computer with a data base program to keep your county records.

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## QSL cards

It is important to show your 10-10 number and county on your QSL card in addition to the other necessary information such as your name, address, etc. Many awards require such information. If you just had cards printed and forgot to have your 10-10 number and county included or are a new 10-10 Member and have a stack of cards you want to use up, there are a couple of ways to solve the problem. One way is to just print the information on the card. Another is to have a small rubber stamp made and stamp the information on the card.

## New information manual

After many months of work, 10-10 now has a 24 page information manual. This 5½×8½ inch booklet contains everything you'd like to know about the 10-10 organization. All officers, managers, awards, a net guide and a brief history of 10-10 is included. It tells about membership, chapters, contests, paper-chasing, the daily 10-10 net and details about 10-10 awards. It contains a cut-out application form and list of district managers with their addresses. Inside the front cover is the official ARRL-ICAO phonetic alphabet and inside the back cover is a time conversion chart converting time zones to UTC time for both standard and daylight savings time.

This 10-10 information manual is designed to be kept as a ready reference at your operating position. A copy will be sent to each new member as soon as they are received by the district managers. Existing members can obtain a copy from me for \$1. No SASE is required but an address label would be appreciated.

## Finally

If you want information about 10-10, send me a \$1 and an 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 don't send an SASE; just send \$1 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 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 data base. Include all previous calls, if any. 73 es cu next month. □

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## SOFTWARE

**MFJ, 1286 Grayline Advantage Software** - For IBM and compatibles, 5.25". This software package is an advanced DX tool which predicts DX propagation for all time zones and locations. It gives an accurate grayline display and shows the overhead position of the sun. A detailed world map tracks the movement of the earth with night areas shaded. It displays UTC time in all 24 time zones. This software is very easy to use ..... 24.95

**Shareware** - For IBM and compatibles, 5.25". Contains antenna design programs, satellite finders, and RTTY & CW programs ..... 9.95

**GRF Computing, TS-COMM Software** - For IBM and compatibles, 5.25". If you have computer control capabilities on your Kenwood radio, this is the program for you! It allows use of all features supported by your interface. The package includes: a real-time date/clock display with selectable UTC/local time. WWW propagation forecasts, alert timer, terminal program and more .. 59.95

**MFJ, 1281 Easy DX** - For IBM and compatibles, 5.25". This is an excellent DXCC logging program which alerts you when a needed prefix appears on a local DX cluster. Includes packet software ..... 29.95

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This month we are going to look at getting organized. Since this year's theme for the QRPer column is DXing, let's deal with three outstanding log/record keeping software packages that will go a long way towards organizing an active QRPer's efforts at chasing DX, contesting and hanging some well earned "wall paper" in the shack.

The first software package, The Total Ham Plus is from Dick Miller, WD4AZG, of Remware, Inc. (P.O. Box 1566, Manassas, VA 22110). Dick has put together an impressive ham radio database management package that will accomplish the following: logging (regular, net and contests, including duping), checklists for DXCC, WAS, WAZ, WAC and county hunters, QSL card processing, QSL card labels, log printouts, information screens, beam headings, prefix lists, etc. Beam headings are customized for each customer with information provided by the user (nice touch).

The Total Ham Plus is a rather large program on eight 5¼ inch, 360K disks. System requirements are 100 percent IBM compatible computer, 640K

RAM, hard disk drive or dual 360K floppy drives. While the program will run on dual floppy drives, Dick highly recommends that it be installed on a hard drive to keep the speed up and to be less hassle to the user. The Total Ham Plus is designed to be running while you are on the air. All areas of the program are available at the touch of a button so you will be able to log and dupe at the same time, as well as have beam headings, country, zone and state check lists, QSL and other information available right when you need it, not after you have signed off.

Dick's software comes with extensive, well written documentation that details how to install, run and customize the program to your needs. In addition, the manual details each menu and applications screen for a complete walk-through of each area of the program. The manual will answer 99.9% of your questions. For those real unusual cases, you can always call Remware and discuss the problem directly with the man who wrote the program. That's what I call support.

The menus in The Total Ham Plus are of the lite-bar type. Up/down arrows move the highlighted bar around the menu. Pressing *enter* will select the highlighted option. The menus allow for quick return to previous menus and a help box which shows more information on what the selected option does is displayed at the bottom of the screen. Certain log printouts are done in compressed print mode. During initial set-up, the program prompts you for the necessary information, ensuring that your printer is set up correctly to use all the features of the program.

Highlighting *logging* on the main menu and punching the *enter* button will take you to the logging menu. Here you will be asked to select from regular logging, contest logging, net logging or log maintenance. From here you select the type of logging needed and then go to that portion of the program where band and mode selections are done.

From there it is on to the actual application. The speed is quite good, even on my stock IBM PC/XT (with no turbo board... yeah, I know, it's a drag at 4.7 MHz!).

The Total Ham Plus software package is available from Remware for \$59.95 plus \$2 shipping (US and Canada) or \$5 overseas. An additional \$5 will get you the software on 3½ inch floppy disks. I like this program a lot and while it is a little on the pricey side, it is one darn good piece of software.

The KT5X Contester, from the genius of Fred Maas, KT5X, and distributed by Desert Designations (Rt. 9 Box 86-H, Santa Fe, NM 87505), is one of the better known pieces of software in contesting circles. My review version (5.11) came on two 5¼ inch 360K floppy disks with a comprehensive instruction package. System requirements are IBM PC, AT and compatible using DOS 2.1 or higher, color graphics card or emulation (CGA or EGA) and at least 128K of RAM. This program can be used with a single disk drive but works best when installed on the old hard drive. Having used several other contest programs, I was intrigued by this particular software package because of its adaptability to everything from sweepstakes to QRPer ARCI QSO parties.

The KT5X Contester is a very versatile logging program. Once it is installed on the hard drive you are ready to initiate the program. The program prompts you through the initial set-up to customize the parameters to your particular location. Once you start a log (following the detailed instructions) you can configure that particular log to whichever contest you are currently engaged in. This program will count multipliers per contest, band or mode; just tell it ahead of time and it's all automatic! Duping is automatic and dupes are allowed to be logged, if you desire. Help screens are immediately available, as is the current ARRL DX-CC listing and international call sign prefixes.

Ever wonder how many QSOs you make per hour? The KT5X Contester gives you this information at the touch of a button. Bearings are obtainable during the logging process by either prefix or grid square (a nice touch for the VHF contester). Old logs can be entered in a non-real time mode for duping and printing. Dupe sheets and QSL labels are available also. A sweepstakes library compiled from contesters' logs also comes with the KT5X Contester program. This includes between one-half to three-quarters of the stations actually encountered during sweepstakes. The sweepstakes library notifies you of the station being worked and lets you know if it is a new

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section multiplier (another nice touch). All you have to do, providing nothing is unchanged, is hit the button and the station is in the log. Priced at \$39.95 the KT5X Contester software package is a good value for the money. If you are an avid contester, you'll find that this contest program will definitely make life easier.

Finally, the WJ2O Master QSO Logging Program (MQSOLP) by Dave Farnsworth, WJ2O, is an outstanding software package. The program consists of three 5¼ inch 360K disks. System requirements are IBM PC, AT or compatible, 640K, hard drive (recommended) or dual 360K floppy drives. Version 2.0 was furnished for this review and is a rather large program which lends itself well to hard drive installation. Its purpose is to serve as one main database to log all of your QSOs, print various logs, reports and labels, and input data from other sources (including the KT5X Contester program).

The MQSOLP is a very versatile data base management package. Logging programs include a DXCC log, master logging program, net operations logger, QSL and label printer, selected reports printer and selected files transfer. In addition, available data includes international prefix allocations, net data, DXCC countries list, state abbreviations, international time zones, Q-signals, etc. There's lots of information available here at the touch of a button.

Once this program is installed on the hard drive, you are in for an experience. Type *log* and hit *enter*, and you'll be in the main menu. You can even personalize all your QSL information and have this printed out when you print the QSL cards.

The master log is the heart of the MQSOLP. All other program modules support the master log. The screen displays the DXCC country name,

local and UTC time, total QSOs (both DX and US), complete log data for the station in QSO and some supplemental data including Continent, ITU zone, CQ zone and DXCC country number.

The detailed documentation accompanying the MQSOLP goes through each selection of the main menu and gives detailed information on each area and how to customize that area to your particular needs. In all, it's a very comprehensive documentation package. Four appendices are included to provide information on using help screens, transferring Lotus™ files, backing up data files, and accessing reports reference.

The ability of the MQSOLP to import data files from the KT5X Contester program further enhances the usefulness of this software package. The speed is good, despite my sloooooow IBM PC/XT 4.7 MHz clock. For further information and prices, contact Dave Farnsworth, WJ2O, 2945 Main Street, McConnellsville, NY 13401.

These three ham radio logging programs are just the tip of the iceberg. Many other pieces of software exist to make life in the shack a little more comfortable for the active radio Amateur. I hope that these reviews will provide enough information to let the prospective user make an intelligent decision when buying. Thanks go to Dick, WD4AZG, of Remware, Fred, KT5X, of Desert Designations and Dave, WJ2O, who were kind enough to provide the software for review.

Don't forget that I have made arrangements to copy *The Hotware Handbook*, first edition (non-copyrighted), in its entirety for anyone interested in obtaining HW-8 mods. I will pass these along at cost plus shipping (\$6 plus 75¢ first class postage). Send a check or money order to me at P.O. Box 522, Dallas, PA 18612-0522. 73 es gud DX. □

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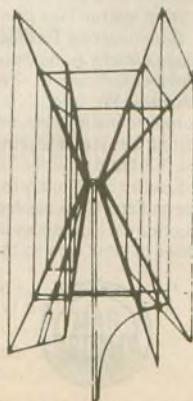
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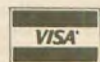
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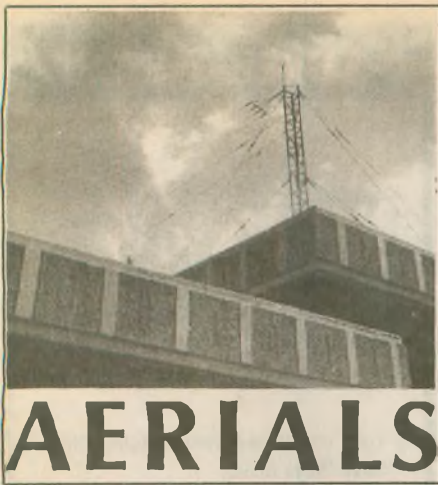
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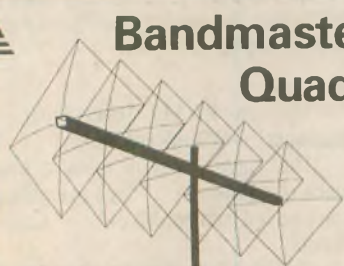




# AERIALS

Baffling! An Amateur Radio operator moves into a swanky neighborhood, signs the restriction document and then cries that he "can't put up an antenna." Well, I'm sympathetic to those who seem to have more money than brains. This may be a solution for you.

Forwarded to me from Worldradio was a 10M quad from Lightning Bolt Antennas (R.D. #2, Rt. 19, Volant, PA 16156; 412/530-7396). Some may already be sequealing like a stuck pig, "I can't put up a quad." Wait! I didn't put this antenna up. I put it down, right on the ground.



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

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Q-440-6	440 MHz 6 Element Quad	\$ 44.95
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Q-28-2	10 Meter 2 Element Quad	\$179.95
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Yep, the reflector is lying on the ground and four feet up is the driven element. Tell your neighbors, if they peek over, that it's a lawn sculpture or something.

Some will prattle on that in this manner the signal is going straight up—vertical incidence or something like that. Partially true. But it's a whole lot better than no incidence at all, right?

Testing time was the ARRL 10M Contest in early December. The nice thing about this contest is that it's all on one band so you are not sitting there worried that you are missing something on the other bands; you can go to bed and get a good night's sleep as long as you get up early enough to get the big opening.

How did it work? Well, how does 28 contacts in 30 minutes sound? This was with but a poopy 100W. I went up and down the band answering the CQers. I even got a station that is one long, long shot from here.

Now, I'm the first to admit that gain is gain and there's nothing more important than height. But on the second call I got one that is way out there.

The retort can be, of course, "Is it conditions or the antenna?" Well, I'm competing with other stations, calling the one I'm after, and if I'm going like :11, :12, :13, :13, :14, :15, :16, :17, :18, :18 . . . I'll let you be the judge. When you move up and down the band and you've already worked everybody you hear, what can the answer be?

Admittedly, there were a few (very few) stations that the local big guns worked that I didn't hear. But with no height (okay, four feet) and only two

elements, aimed up, I couldn't complain, and neither could you. It sure beats crying in your martini that you can't put up an antenna and work HF.

I'm having a great time. This is like Sweepstakes with DX thrown in. I've got Alaska to Florida, Hawaii to Maine.

Yes, those in the elegant neighborhoods can just plop a Lightning Bolt in their back yard and spend the weekend just checking off the multipliers. The wires make up a square about eight feet by eight feet. Instead of moaning about your self-induced misfortune you can get Japan, France, Spain, Germany, Holland and a whole bunch more.

I think a contest is a great place and time to test an antenna. When the best DX stations have 3,000 or 4,000 contacts, you know they are always being called. Someone else besides you is always calling them. If you are getting answered quickly, you know that you are in the ball game.

There were some really smooth operators in this contest. 8P9EM (G3VBL) was particularly impressive. HC2G, AH3C, KP2A, GW4BLE, IJ4R and VP2EXX were among the better heard.

Later in the contest, I hobbled outside and turned the antenna up. It looked like a box kite, right there on the ground. Instead of a diamond configuration this was square with two of the fiberglass arms (the points of) right on the ground. I worked five stations in ten minutes. I could have done better except that I had worked everybody else I heard and couldn't call them again. Turning the dupe sheet over and over and seeing the station already there got really boring.

They say the quad works well when it's low. Well, this was as low as it could get—right on the ground. I even had some stations complimenting my signal.

Lightning Bolt also makes multi-element and mono-band quads for higher HF bands. Obviously, the one I used worked well.

(Kurt N. Sterba, being picked up by his chauffeur on Monday morning and asked, "Did you have a pleasant weekend, Sir?" could only reply, "Yes, I did.") □

## 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.

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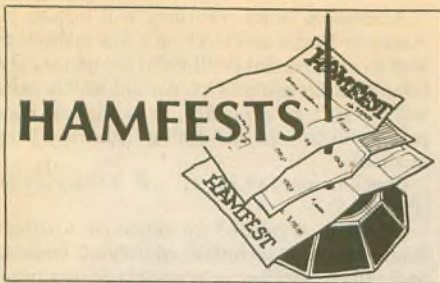
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## Arizona

The ARCA Spring Hamfest, hosted by the SCOTTSDALE AMATEUR RADIO CLUB, will be held on Saturday, March 16 from 7 a.m. to 4 p.m. at Scottsdale Community College in Scottsdale.

Admission is \$2 per car. Swap space is available for \$5.

Programs include an ARRL forum, RTTY, DX, packet, satellites, microsats, live station demonstrations, repeater owners' meeting and commercial exhibitors.

Talk-in on 147.18/147.78 and ZIA link.

For information or reservations contact Allen Sklar, AA7BJ, P.O. Box 10878, Scottsdale, AZ 85271-0878 or call 602/491-0802. □

## Connecticut

The RADIO AMATEUR SOCIETY OF NORWICH (RASON) will sponsor its annual spring auction on Saturday, March 23 at the Montville Fire Department in Montville.

Setup will begin at 9 a.m. and the auction will be held from 10 a.m. until sold out.

Admission is free and there will be food available. Bring your own equipment to be auctioned.

Talk-in on 146.73 repeater.

For further information contact Bob Dargel, KA1BB, at 8 Willow Lane, East Lyme, CT 06333; 203/739-8016 or 739-1300. □

## Florida

On March 16 and 17 The PLAYGROUND AMATEUR RADIO CLUB of Fort Walton Beach will hold their 21st annual North Florida Ham/Swapfest at the Shrine Fairgrounds.

Doors open at 8 a.m. each day.

Features include a huge flea market, commercial exhibits, various forums, free parking and plenty of RV parking, with 50 spaces having full hookups at \$10 per night.

Talk-in on the club repeater 146.19/79.

Admission \$3 in advance or \$4 at the door. Swap tables are available for \$10 (one day) or \$15 (both days).

For further information contact The Playground Amateur Radio Club, P.O. Box 873, Ft. Walton Beach, FL 32549. □

## Illinois

The STERLING-ROCK FALLS ARS 31st Annual Hamfest will be held on March 17 at the Sterling High School Field House in Sterling.

Large flea market area and space to accommodate self-contained campers overnight will be available. Setup will be on Saturday from 6 to 9 p.m. and on Sunday beginning at 6:30 a.m.

Doors will open to the public at 7:30 a.m. Tickets are \$3 in advance and \$4 at the door. Tables are available for \$5 including electricity. Bring your own cord.

Talk-in on 146.25/146.85 W9MEP repeater.

For information, tables or tickets, contact Sue Peters, Sterling-Rock Falls Amateur Radio Society, P.O. Box 521, Sterling, Illinois 61081 or call 815/625-9262. □

## Indiana

The Indiana Hamfest, sponsored by the MORGAN COUNTY REPEATER ASSOCIATION, will be held on March 10 at the Indiana State Fairgrounds Pavilion Building in Indianapolis.

Doors will open to the public at 8 a.m. The event will be held indoors with 60,000 square feet of space.

Admission is \$7 at the door. Flea market tables are available for \$12 each. No space without the table will be sold. Advance reservations are suggested.

Talk-in on 145.25.

For further information or table reservations contact Aileen Scales, KC9YA, 3142 Market Place, Bloomington, IN 47403; 812/339-4446. □

## Kentucky

The LINCOLN TRAIL AMATEUR RADIO CLUB will sponsor its 11th annual hamfest which will be held at the Pritchard Community Center in Elizabethtown on Saturday, March 23.

Activities planned include ARRL VEC license exams (walk-in) and numerous forums. There will be free parking, new dealers and flea market vendors.

Admission is \$4 in advance or \$5 at the door; vendor spaces are \$5 each and includes one table and one chair. Each vendor must buy a regular admission ticket.

Talk-in on 146.52 and 146.38/98.

For advanced tickets and set-up reservations, contact Whitey Hensley, WD4GDA, P.O. Box 342, Vine Grove, KY 40175; 502/877-2234. □

## Michigan

The 33rd annual SEMARA Hamfest will be held on Sunday, March 24 at Grosse Pointe North High School in Grosse Pointe Woods. Among the activities scheduled are an ARRL forum, DX forum, satellite forum and a packet radio forum. Also planned is a Volunteer Exam session.

Advance reservations tables are \$8 each and advance reservation tickets are \$2 each. Reservations may be made by writing to SEMARA Swap, P.O. Box 646, St. Clair Shores, MI 48080-0646. An SASE is requested when ordering. For further information, please call 313/527-3497. □

## Missouri

On Friday night, March 8, the JEFFERSON BARRACKS AMATEUR RADIO CLUB will be holding their 31st Annual Amateur Radio Auction at the Concordia Turner's Hall in south St. Louis City.

The doors open at 5 p.m. and the auction starts at 7:30 p.m.

Talk-in will be on the 144.61-145.21 and 146.34-146.94 repeaters after 5 p.m.

## R-X Noise Bridge



- Learn the truth about your antenna.
- Find its resonant frequency.
- Adjust it to your operating frequency quickly and easily.

If there is one place in your station where you cannot risk uncertain results it is in your antenna.

The Palomar Engineers R-X Noise Bridge tells you if your antenna is resonant or not and, if it is not, whether it is too long or too short. All this in one measurement reading. And it works just as well with ham-band-only receivers as with general coverage equipment because it gives perfect null readings even when the antenna is not resonant. It gives resistance and reactance readings on dipoles, inverted Vees, quads, beams, multiband trap dipoles and verticals. No station is complete without this up-to-date instrument.

Why work in the dark? Your SWR meter or your resistance noise bridge tells only half the story. Get the instrument that really works, the Palomar Engineers R-X Noise Bridge. Use it to check your antennas from 1 to 100 MHz. And use it in your shack to adjust resonant frequencies of both series and parallel tuned circuits. Works better than a dip meter and costs a lot less.

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Free coffee and cake will be served during the evening. Each year between 700-900 people attend. This event is the kickoff to the hamfest season and also the oldest continuous ham event in the St. Louis area.

For further information contact Carl H. Hohenberger, WB0BZP, 5266 Parker Ave., St. Louis, MO 63139-1340; 314/351-7084. □

## New Jersey

The Flemington Hamfest, sponsored by the CHERRYVILLE REPEATER ASSOCIATION II Inc., will be held on Saturday, March 16 from 8 a.m. to 2 p.m. at the Hunterdon Central Regional High School Fieldhouse located at Routes 31 and 523, approximately one mile north of the Flemington Circle.

The hamfest will feature a large indoor flea market, tailgating, new equipment dealers, VE exams, cafeteria service and free parking. The event is handicapped accessible.

Admission is \$4 in advance and \$5 at the door.

Talk-in is on 147.975/147.375 MHz duplex and 146.520 MHz simplex.

For further information or table reservations, contact Marty Grozinski, NS2K, c/o Cherryville Repeater Association II Inc., P.O. Box 308, Quakertown, NJ 08868. Marty may be reached by telephone at 908/806-6944 or 908/788-4080. □

The SHORE POINTS AMATEUR RADIO CLUB will sponsor its 9th annual hamfest, "Springfest 91," on Saturday, March 2 at Holy Spirit High School on Route 9 in Absecon.

Doors will open to sellers at 7 a.m. to set up, and to the public at 9 a.m.

Admission is \$4 (XYLs enter free). Reservations will be accepted for 8 ft. tables in the heated indoor selling area at \$5 each. Outdoor tailgating will be available on the day of the hamfest, weather permitting. Limited AC is available indoors.

Food and drink will be available.

Talk-in on 146.385/985.

For further information write to SPARC, P.O. Box 142, Absecon, NJ 08201. □

## Ohio

The CHAMPAIGN-LOGAN AMATEUR RADIO CLUB will sponsor a hamfest and computer show on March 3 at the Kenton Sr. High School Athletic Facility in Kenton.

Doors will open for setup at 7 a.m. and to the public at 9 a.m. until 3 p.m. Ham gear, electronics and computers will be featured.

Admission is \$4 at the door or \$3 in advance. Tables are available for \$8 in advance or \$10 at the door.

Talk-in on 147.60/00 or 147.51 simplex.

For further information or reservations, contact Jerry Temple, N8MTZ, 402 Chesney St., Kenton, OH 43326; 419/675-5281. □

The LAKE COUNTY AMATEUR RADIO ASSOCIATION will sponsor its 13th annual LCARA hamfest at Madison High School in Madison on Sunday, March 24 from 8 a.m. to 3 p.m.

Admission is \$4. Features will include an Amateur Radio and electronic flea market, as well as commercial exhibits of computers and related radio equipment. An indoor fox hunt will be at 1 p.m. on 2M, drawings for door prizes will be held and dining facilities will be available.

Check-in on 147.81/.21 and 222.90/224.50 (PL 141.3).

LCARA, organized to advance Amateur Radio through technical education, training and public service, is a non-profit organization. Proceeds from the hamfest are used to support the association's volunteer radio communications and services throughout Lake County.

Tables are available (\$5 for a 6 ft. and \$6.50 for an 8 ft.); contact Roxanne, Lake County Hamfest, 5777 Fenwood Ct., Mentor on the Lake, Ohio 44060 or phone 216/257-2036 or 216/352-6756. □

The TOLEDO MOBILE RADIO ASSOCIATION will sponsor a hamfest on March 17 at the Lucas County Recreation Center in Maumee.

Doors will be open from 8 a.m. until 5 p.m. Admission is \$4 in advance or \$5 at the door. Talk-in on 147.27 or 442.85 repeater.

For further information, contact Bob Hanna, K8ADK, 2154 Circular Dr., Toledo, OH 43614. □

The giant three day Dayton Hamvention is scheduled for April 26, 27 and 28. For details, see full-page ad this issue. □

# This is your LAST CHANCE to enter the 1990 WORLD RADIO DXathon!

All entries must be submitted on official DXathon entry forms or a reasonable facsimile, and must be postmarked no later than 28 February 1991. See prior issues for complete rules. Send entries to Worldradio DXathon, 2120 28th Street Sacramento, CA 95818. HURRY, HURRY, HURRY!

## DX World

(continued from page 33)

C56/6W6JX HK0AZW	—P.O. Box 200, Kaolack, SENEGAL —P.O. Box 120, San Andres Island, COLOMBIA
JT8AA OX3FV	—P.O. Box 22, Altaj, MONGOLIA —Kim, DK-3930 Groennedel, GREENLAND
T22KY UM8QDX VP8CEO	—P.O. Box 3, Tokaimura 31911, JAPAN —P.O. Box 1, Kadzhisai 722 452, USSR —P.O. Box 260, MPA, Port Stanley, FALKLAND ISLANDS
XU1DK	—Liaison Office DK, P.O. Box 80, Kojimachi, Tokyo 109-21, JAPAN
YS1DRF	—Richard Dandine, Ira Calle Poniente 3718, Colonia Escalon, San Salvador, EL SALVADOR
9M8SEA	—MARTS, P.O. Box 725, 93714 Kuching, Sarawak, MALAYSIA

### Notes

1. This station requests that QSL cards be sent direct only. Do not use the bureau.
2. The latest address for this manager: Shin Onisawa, 200-9 Naka, Mohka, Tochigi, Japan.
3. Applies for 1990 ARRL 10M Contest only.
4. CW contacts with this station go to WA2HZR (direct only); SSB contacts same address as 9M8SEA.

Many thanks to the following contributors: WA2PEL, K1RH, WD4JNS, WV4V, W5CBN, W6TUR, WU8A, VE3IPR, PS7KM, UM8QDX, VK6NE, 3W3RR, The Salt City DX Association (KB2G), Western New York DX Association (KD2YP), Western Washington DX Club (K7WA), American Radio Relay League, *The DX Magazine* (VP2ML), *Long Skip* (VE3IPR), *DX News Sheet* (G4DYO), *The Long Island DX Bulletin* (W2IYX), *Inside DX* (N2AU), *QRZ DX* (W5KNE) and *The DX Bulletin* (VP2ML).

My son was finally married at the end of 1990. It wasn't all that bad, as his father-in-law used to be a radio Amateur. Too bad he let his license expire; we could have made a DXer out of him. The best DX to you this coming year. And, if you are one of those who have marriage in your plans, remember your priorities. Very 73! de John, N6JM. □

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## The Union of Clubs

This contest is organized by the Karelian DX Club ("Kivach") and will be held annually on the third weekend of March, beginning in 1991. It will begin at 1600 UTC and end at 1600 UTC the next day.

**Suggested frequencies:** CW and SSB from 1.8 up to 28 MHz except WARC bands.

**Classes:** One operator—all bands, SSB/CW; one operator—all bands, SSB; one operator—all bands, CW; one operator—one band, SSB/CW, on every band; multi operators—all bands, SSB/CW, one rig; QRP stations—no more than 5W output; SWL; members of UC.

**Rules:** You cannot change the band if you work there less than 15 minutes. Duplicate QSOs are valid on different bands.

**Exchange:** For non-members of UC—RST/RS plus the number of QSO (beginning from 001); for UC members—RST/RS plus the short name of the club and the club member number. UC members call CQ TEST; non members call CQ UC.

**Multipliers:** Each new country according to P-150-S list and each new membership number on each band.

**Scoring:** One point inside own country; three points inside own continent; five points for another continent. For QSOs with UC members—seven points inside own country; nine points inside own continent; 11 points for another continent. Double points for QSO on 1.8 or 3.5 MHz.

**Final Score:** Multiply the sum of the points by the sum of the multipliers.

**Reporting:** Logs should be sent to Dimo V. Frolov, VA1NDY, P.O. Box 4, Petrozavodsk-14, 185014 Karelia, USSR. Include two IRCs or \$1 to receive contest results. □

## Wisconsin QSO Party

The Wisconsin QSO Party, sponsored by the West Allis Radio Amateur Club, will take place from 1800Z March 10 to 0100Z March 11, 1991.

**Modes:** CW and Phone. All stations may be worked once per mode on each band. In addition, mobiles may be worked once per mode per county that they operate from (no repeater QSOs).

**Entry classes:** Single Operator Fixed, Multi Operator Fixed, Multi Xmtr/Multi Op Fixed; Single Operator Mobile, Multi Operator Mobile, Multi Xmtr/Multi Op Mobile; Single Operator Novice, Multi Operator Novice, Multi Xmtr/Multi Op Novice; Single Operator Tech, Multi Operator Tech, Multi Xmtr/Multi Op Tech.

**Exchange:** Wisconsin stations send county; non-Wisconsin stations send state/province.

**Frequencies:** CW—3550, 3725, 7050, 7125, 14050, 21150; Phone—3890, 7290, 14290, 28400.

**Scoring:** Phone contacts count one QSO point; CW contacts count two points.

**Wisconsin stations:** Multiply the sum of QSO points by the sum of Wisconsin counties (max 72), plus states (max 50) plus provinces (max 13). Note: DX countries count for QSO points but not as multipliers.

**Non-Wisconsin stations:** Multiply the sum of QSO points by the number of Wisconsin counties (maximum 72).

**Wisconsin mobiles/portables:** Add 500 bonus points for each county that you operate from, outside your home county, with a minimum of 15 QSOs per county to qualify.

**Awards:** Non-Wisconsin: Awards will be presented to the following: a.) highest single operator score in the QSO Party; b.) 10 highest single operator scores in each entry class; c.)

highest multi-operator score in each entry class; and d.) highest aggregate club score (club member stations to be located within 50 miles of the club except for mobiles).

**Logs:** Entries must contain a log consisting of: Time (GMT), call, band, state/province, Wisconsin county, mode and a complete score summary including your name, address and call. Circle new multipliers as worked. Logs containing more than 100 QSOs must be accompanied by a dupe sheet (separate dupe sheet for each mode). Mobile entries must indicate county changes in log and submit a separate dupe sheet for each county. Entries must be postmarked by April 15, 1991 and sent to Wisconsin QSO Party, West Allis Radio Amateur Club, P.O. Box 1072, Milwaukee, WI 53201. □



Wayne M. Sutherland, NQ7Q, proudly displays his 1989 DXathon medal.

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## Worldradio,

Many thanks for the Third Place North America medal in the 1989 Worldradio DXathon. This was a surprise, since I thought I might receive merely a certificate of participation.

I was first licensed in April, 1980, and DXing is one of my main hamming interests. I have worked a hundred nations (W100N #360) and have about 180 DXCC countries confirmed. My station during 1989 consisted of a Kenwood TS430S transceiver, Hallicrafter HT-44 transmitter and an SX-117 receiver fed into a Hygain TH3 tribander at about 36 feet. All contacts were made without the aid of an amplifier.

Good luck with the 1990 DXathon. I enjoy reading Worldradio! 73, Wayne M. Sutherland, NQ7Q, Laramie, Wyoming. □



**NEW PRODUCTS**

Information in "New Products" is supplied by the manufacturers to acquaint *Worldradio* readers with new products on the market.

## Antenna rotator

Yaesu announced that a new light-duty rotator has been added to the existing line of rotators.

The G-250 Antenna Rotator has been designed for light to medium UHF, VHF, FM radio and television antenna arrays for remote control operation. The controller is a desktop unit which provides 360 degree indication of actual antenna compass direction.

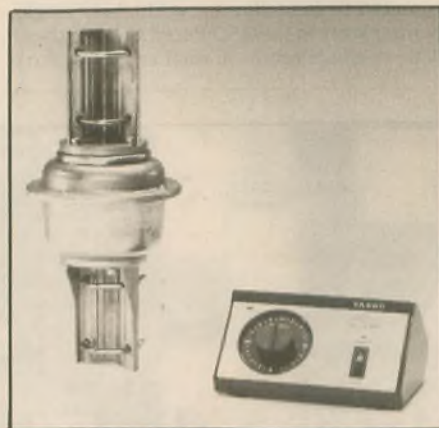
Like all Yaesu rotators, the G-250 is designed to last a lifetime, housed in weather-proof melamine coated die-cast aluminum. It is permanently lubricated to insure maintain-

ance-free operation under all climate conditions.

Specifications include a power consumption of 37 VA; 360 degrees rotation time of 45 seconds at 60 Hz; rotation torque of 14 FT-lbs; and a stationary torque of 43.3 FT-lbs. The rotator weighs 4 lbs. and the controller weighs 2.5 lbs.

The G-250 is available now for the suggested retail price of \$111.

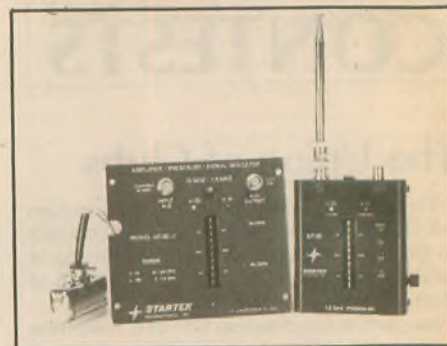
Yaesu U.S.A. is a wholly-owned subsidiary of Yaesu Musen Company, Ltd. which designs, manufactures and markets Amateur Radio equipment and commercial land mobile two-way radio equipment worldwide. □



## Amplifier-prescaler

The model AP-90 amplifier-prescaler from Startek International Inc. can extend the range of any frequency counter, capable of measuring to 1600 MHz or 1.6 GHz. Two MMIC amplifier stages produce a superb sensitivity threshold of typically 1-5 mV RMS which will dramatically improve the performance of many counters as well. The AP-90 also provides a 10-segment LED bar graph indicating the relative strength of the input signal. The signal threshold and range of the bar graph can be calibrated from the front panel via small screwdriver holes. There are two overlapping ranges, 10 to 500 MHz and 300 to 1600 MHz. A surface mount-microstrip design is responsible for the excellent circuit

performance and small instrument size. The cabinet is constructed of rugged, attractive anodized aluminum measuring approximately 3.4×3.8×1 inches, weighing about six ounces. Input impedance is 50 ohms, the output signal is 1 to 2V peak-to-peak into 50 ohms or more. The unit is powered from 110 VAC with an AC adaptor included with the unit.



The AP-90 accessory instrument works so well, it can add considerable life and usefulness to any counter requiring better sensitivity, higher frequency range or the input signal strength indicator. The AP-90 is designed and assembled in Ft. Lauderdale, Florida and sold with a full year parts and labor limited warranty.

A special panel mount version, model AP-90-H, is available as a custom plug-in accessory for the Hewlett-Packard 5245L/M, 5246L and 5248L/M counters.

The model AP-90 (including AC adaptor) sells for \$159.95, the model AP-90-H (for HP 5245 series counters) for \$179.95. For further information, call 800/638-8050 or 305/561-2211; FAX: 305/561-9133. □

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## Morse terminal kits

Now you do not have to buy expensive equipment to professionally send and receive the International Morse Code. We have designed interface circuits and cables that plug into your computer and the key and phone jacks of your transceiver. Software is included that decodes and displays the English letters and numbers which correspond to the Morse code received.

Features of the receive section include automatic speed tracking and selection of close or wide spacing between the characters. It will copy stations up to 40 wpm.

A deluxe keyboard keyer is included for sending Morse code. It allows preprogrammed messages to be sent by pressing only one key. This eliminates having to type repetitive messages such as CQs, weather reports, your QTH, etc. These messages can be loaded or saved to a disk or tape for the COCO and can be easily changed. Messages can also be sent from a disk or tape file. A type ahead buffer allows you to complete your message without

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waiting until it is sent. This also allows errors to be removed before being sent.

One of the following computer packages is required: a.) an IBM compatible computer with an RS-232 communications port configured as COM-1; b.) a Tandy MSDOS computer with a 1/2 inch audio output jack with volume control and two joystick ports; or c.) a Radio Shack Color computer 1,2, or 3 with at least 32K of memory, Extended Basic, and a disk drive or computer cassette player.

You will need a solid state transceiver with a key up voltage of less than 15 volts. (Vacuum tube transmitters can be used with a keying relay. We can provide suggestions for building a keying relay.); a "Y" adapter is needed to connect the receiver's audio to the receive cable. An external speaker or earphones can then be used to monitor the received signal.

Prices range from \$39.95 to \$49.95 (add \$3 shipping). For further information contact Dynamic Electronics Inc., Box 896, Hartselle, AL 35640; 205/773-2758. □

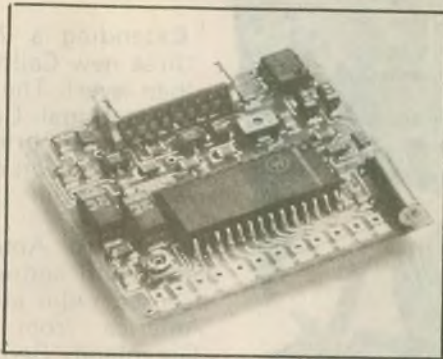
## Digital encoder-decoder

A new microminiature Digital Coded Squelch encoder-decoder is now available from Communications Specialists, Inc. This Orange, California manufacturer has augmented their line of add-on tone signaling products with the addition of the DCS-23 that is compatible with all DCS systems such as: "Digital Private Line," "Digital Channel Guard," "Digital Call Guard," etc.

The new board is constructed using surface mount technology and measures a minute 1.36×1.18×.25 inches, which permits installation on all mobile and most portable radios. All industry standard digital codes are field programmable using simple PCB jumpers. The board's design uses a crystal controlled

CMOS microprocessor which permits operation on a very low 6 to 20VDC at 8mA. All connections are made with color coded jumper wires connected to a microminiature plug and socket.

The price of the DCS-23 is \$59.95 and it is covered by a one year "no hassle" warranty.



Same day delivery is available from local stock. An illustrated brochure and instruction sheet are available at no cost. For more information and a complete product list, contact Communications Specialists, Inc., 426 West Taft Avenue, Orange, California 92665-4296; 800/854-0547 or 714/998-3021. □

## Electronic 2nd Op

Radio Amateur Callbook Inc. announces the availability of version 3.0 of the N6RJ Electronic 2nd Op. This latest program, compatible with any IBM PC/XT/AT or true compatible computer equipped with a hard drive, is loaded with new features.

The logging function is now instantaneous, easily usable as a "real-time" log book. It provides instant record keeping for the various DXCC, CQ WAZ, and Russian Oblast awards.

It gives worldwide beam headings from the user's exact location (latitude and longitude). It calculates sunrise and sunset times for any day for all DXCC countries plus 195 other locations. It prints QSL labels, singly or in batches. It automatically accepts K1EA contest log data. It provides extensive support for OSCAR users, and it has a WWV timer for propagation forecast alerts. It is compatible with Microsoft Windows, and it includes a very comprehensive manual.

This new improved version of the popular N6RJ Electronic 2nd Op is available with either 3 1/2 or 5 1/4 inch diskettes (for Drive A of the computer). Both are \$59.95, available at Amateur electronic dealers or directly from the publisher, Radio Amateur Callbook Inc., 925 Sherwood Drive, Lake Bluff, IL 60044. (Please add \$3 shipping on direct orders.) □

## Don C. Wallace, W6AM

This book describes the history of Amateur Radio, as experienced by Don Wallace. He was on the air in 1911, before the first radio regulations.

Don was the radio operator for President Wilson at the Versailles Peace Conference. He was the winner of the Hoover Cup, for the best home-built Amateur Radio station.

Don was a charter member of WAC in 1926. He went on to install 16 rhombic antennas on 120 acres in Rolling Hills, at that time the largest and most powerful Amateur Radio station in the world. By 1957 W6AM achieved the top of the ARRL DXCC honor roll, a spot he occupied most of the next 28 years.

Written by Jan D. Perkins, N6AW, this book is 350 pages hardbound. Its prepublication price is just \$19.95, available from Wallace & Wallace, 11823 E. Slauson Avenue, Suite 38, Santa Fe Springs, CA 90670. □

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# 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	Date	City	Contact	Notes
<b>Arizona</b>				Mar 16	Melrose	WB1F (617) 322-7654	w/i
Apr 6	Tucson	K7OPX (602) 886-7217	w/i only	Apr 20	Melrose	WB1F (617) 322-7654	w/i OK
<b>California</b>				<b>Mississippi</b>			
Apr 6	Burbank	KE6AR (818) 349-0927	w/i	Apr 20	Gulfport	AA5SP (601) 875-9341	p/r pref.; w/i OK
Apr 13	Camarillo	N6SR (805) 484-4461	p/r pref; w/i OK	Apr 9	Ocean Springs	AA5SP (601) 875-9341 day; (601) 875-0222 eves	p/r pref; w/i limited
Apr 7	Chico	W6YKU (916) 342-1180	w/i only	<b>Nebraska</b>			
Apr 6	Concord	Gene (415) 254-5090	w/i only	Mar 26	Omaha	AJ0A	w/i
Mar 30	Escondido	KB6WB	w/i	<b>Nevada</b>			
Mar 30	Fairfield	Jerry (916) 662-0801	w/i only	Mar 16	Minden	W7QO (702) 265-3430	w/i
Apr 7	Hanford	Carleton (209) 924-4221	w/i only	Mar 9	Reno	WS2Z (702) 826-6028	p/r or w/i
Mar 2	Modesto	K16PR (209) 383-2166	w/i	Apr 13	Reno	WS2Z (702) 826-6028	p/r; w/i
Apr 20	Redwood City	Dudley (408) 245-4801	w/i only	Apr 20	Reno	K7HRW (702) 827-8450 day; or (702) 972-3933 night	p/r 30 days prior, w/i OK
Apr 20	San Diego	KB6WB		<b>New Jersey</b>			
Mar 16	San Dimas	K6THQ (714) 596-9383	p/r 1 week prior	Apr 20	Bayonne	WA2QYX (201) 451-9471	w/i OK
Apr 20	San Dimas	K6THQ (714) 596-9383	p/r 1 week prior	Mar 21	Bellmawr	WA2VQG (609) 546-7710	no p/r
Mar 9	San Pedro	N6DYZ (213) 325-2965	w/i OK	Apr 18	Bellmawr	WA2VQG (609) 546-7710	w/i
Apr 13	San Pedro	N6DYZ (213) 325-2965	w/i OK	Apr 13	Cranford	N2XJ (201) 635-7686	
Apr 13	Sonora	WA6NSK (209) 586-4917	w/i	Mar 13	Fort Monmouth	WB2GYS (908) 532-5353	w/i
<b>Colorado</b>				Apr 10	Fort Monmouth	WB2GYS (908) 532-5353	w/i
Apr 6	Boulder	N0BWS (303) 530-2903	p/r pref.; w/i OK	Apr 1	Sayreville	K2FD (201) 442-9215	w/i
Apr 13	Denver	W0IJR (303) 366-9689	w/i OK	<b>New Mexico</b>			
Mar 16	Westminster	N0CFM (303) 451-1231; N0HNR (303) 278-4280	p/r or w/i	Mar 2	Alamogordo	WA5IPS (505) 437-5896	w/i
Apr 20	Westminster	N0HNR (303) 278-4280	w/i come early	<b>New York</b>			
Mar 11	Boulder	Barbara McClune (303) 530-2903	w/i	Mar 1	Camillus	KB2ERJ (315) 487-0298	w/i OK
<b>Connecticut</b>				Mar 24	North Babylon	KA2RGI (516) 957-0218	w/i OK
Mar 31	Milford	NB1M (203) 933-5125; WA1YQE (203) 874-1014	w/i	Apr 28	North Babylon	KA2RGI (516) 957-0218	w/i OK
Mar 2	Norwalk	WB1U (203) 847-2541	w/i	<b>North Carolina</b>			
<b>Idaho</b>				Apr 13	Yadkinville	N4XRY (919) 699-8469	w/i
Apr 13	Boise	W7JMH (208) 343-9153	w/i	<b>Ohio</b>			
<b>Illinois</b>				Mar 23	Norton	KA8MPH (216) 882-6387	p/r pref.; w/i OK
Mar 10	Bloomington	NX9M (309) 662-3910	w/i OK	<b>Pennsylvania</b>			
Mar 16	Bolingbrook	NW9K (815) 886-5135	w/i OK	Apr 6	Erie	W3CG (814) 665-9124	w/i
Mar 16	Loves Park	W9SS (815) 877-6768	p/r; w/i	Mar 4	Pennsburg	K3ZXQ (215) 679-5764	
Apr 20	Morton	NT9C (309) 266-6756	w/i OK	Apr 4	Philadelphia	ND3Q (215) 482-0386 or (215) 879-0505	w/i
Mar 9	Oak Forest	KA9HDN (312) 247-0650	w/i	Apr 1	Pottstown	K3ZXQ (215) 679-5764	
Apr 13	Oak Forest	KA9HDN (312) 247-0650	w/i OK	<b>South Dakota</b>			
<b>Indiana</b>				Mar 8	Rapid City	KA0SEZ (605) 394-1298;	p/r 30 days prior; w/i OK
Apr 6	South Bend	NI9Y (219) 255-4455	w/i OK			NU0F (605) 348-6564	
Apr 7	Terre Haute	K9EBK (812) 466-2122	w/i OK	<b>Texas</b>			
<b>Iowa</b>				Mar 16	DFW Airport	KF5BL (214) 252-8015	w/i
Mar 17	Des Moines	NA0R (515) 964-0900 or (515) 967-3890	w/i	Mar 9	Eddy	N5KZD (817) 859-5374	w/i
<b>Kansas</b>				Apr 13	Midland	KT5G (915) 694-9450	w/i OK
Mar 6	Great Bend	WA0PSF (316) 792-5363	p/r pref.; w/i limited		Midland	KT5G (915) 694-9450	w/i OK
<b>Maryland</b>				<b>Virginia</b>			
Mar 23	Laurel	(301) 572-5124	p/r pref; w/i	Apr 6	Williamsburg	WJ4X 424-4764	w/i OK, call beforehand
Apr 27	Laurel	(301) 572-5124	w/i limited	<b>West Virginia</b>			
<b>Massachusetts</b>				Apr 20	Huntington	K8KVVX (304) 736-6542	
Mar 20	Cambridge	KA1MQX (617) 253-3776	w/i	<b>Wisconsin</b>			
Mar 10	Gloucester	AG1F (508) 922-3307	w/i	Apr 6	Racine	NW9P (414) 658-8390	w/i
Apr 6	Marlboro	KZ1D (508) 460-9059	p/r; w/i				

## New headquarters

The International Radio and Computer, Inc. has closed its operation at

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