

# Worldradio

Year 23, Issue 4

October 1993 • \$1.25

## FEATURED IN THIS ISSUE

**Adena, OH** — Triple States ARC

40-meter net

**Cabin Creek, WV** — Balloon chase

**Gaylord, MI** — NTS traffic

**Hilo, HI** — Sailing with Amateur Radio

**Manchester, NH** — New England ARRL Convention

**Patterson, NJ** — Best friend

**Staten Island, NY** — Step right up



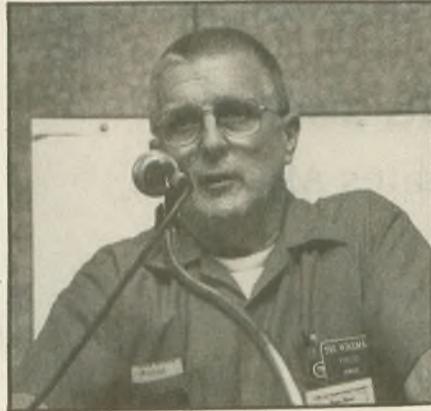
## COLUMNS

- 10-10 News •Aerials •Amateur Hi •Amsat-Oscar schedule
- Amateur Radio Callsigns •Awards •Computers & Basic Stuff •Construction
- Contests •Continuous Wave •Digital Bus •DX Prediction •DX World •FCC Highlights
- Hamfests •Mobile •New Products •Off the Air •Old Time Radio •Product review
- Propagation •Publisher's Microphone •QCWA •QRP •Search & Rescue •SPACECOM
- Special Events •Station Appearance •VE Exams •Visit Your Local Radio Club
- Visit Your Local Radio Store •With the Handi-Hams •World of DX Contesting
- YLs on the Air

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# Words from the wise at Manchester, NH

The Manchester, NH convention sported an excellent program. Some of the featured speakers were (left, top to bottom) Vince Kajunski from the FCC; Kevin Keller, WB9MUP; Dale Clement, AF1T; (center, top to bottom) Press Jones, N8UG; The grand young man of New England Amateur Radio, Milt Chaffee, W1EFW; Rudy Adler, W1GUA; (right, top to bottom) Frank Finger, NU1A; John Langer, WB2OSZ; Richard Critz, KB4N.



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## New England Division ARRL Convention

**ARMOND M. NOBLE, N6WR**

And a grand time was had by all! The New Hampshire Amateur Radio Association, over the weekend of 24-25 July, '93 put on an event packed with interesting activities.

The entry fee for a day-and-a-half of a good time was only \$4. Even the Holiday Inn in Manchester, NH got into the act by having a reasonably priced snack line in the lobby. "Coffee in a hotel only 50 cents?" was a comment happily uttered by attendees.

All the ARRL brass, elected and staff, were there. You could tell them what a good job they were doing or suggest that they have a new award for Working 100 Stations With the Same Suffix as your callsign on 75 Phone between the hours of midnight to six a.m. Politely, they say that such will be referred to Kirk Kleinschmidt for further study.

The major transceiver manufacturers were there to answer questions, a rather large indoor flea market thrilled nostalgia buffs and parts seekers.

Information and education: All day Saturday and a half-day Sunday there were three seminars going on at once. Here's a partial list:

SWR Myths and Realities: John Bloom, K3EZ, ARRL Senior Engineer  
AMSAT Forum: Steve Haber, N1LHW; Drew Dusker, KA1M, AMSAT VP; Steve Ford, WB8IMY, Editor *QST*

satellite column.

Antennas, Feedlines, Grounds & Other Mythical Creatures: Ed Hare, KA1CV, ARRL Laboratory Supervisor.

Slow Scan Television Doesn't Have To Be Expensive Anymore: John Langner, WB2OSZ.

Radio Direction Finding—From HTs to Doppler: Kevin Keller, WB9MUP, and John Garrett, WN9T.

The Truth and Fiction About Wire and Cable: Press Jones, N8UG.

DXpedition to the Seychelles S79S: Paul Young, K1XM and Charlotte Richardson, KQ1F.

The ARRL and NASA — Launching SAREX: Rosalie White, WA1STO, ARRL Educational Activities Dept.

QRP Contesting: Jim Fitton, W1FMR, and Randy Rand, AA2U, (8 band QRP DXCC with wire antennas.)

Yankee Clipper Contest Club: Three hour forum for big guns and little pistols.

Official Observers and the Amateur Auxiliary: Rick Palm, K1CE, ARRL Field Services Manager.

Introduction to Digital Signal Processing: Jon Bloom, KE3Z.

Chip and Dale's Most Excellent Microwave Adventure: Chip Taylor, W1AIM and Dale Clement, AF1T. (How to have fun on 10 GHz without a roomful of test equipment or an engineering degree.)

Introduction to Packet Radio: Stan Horzepa, WA1LOU, *QST* packet column.

National Traffic System Forum: Richard Critz, KB4N, NH Section Traffic Manager.

Portable VHF/UHF/Microwave Operating: Dale Clement, AF1T. Hilltopping.

Amateur Television, Where to Start: Ron Baker, WB4HFN, and Stewart Dunn, W1ELX, fun with video.

2 Meter Moonbounce: Larry Blouin, K1MNS, (86 countries on 2M EME.)

FCC Forum: Vince Kajunski, Engineer In Charge, Boston Field Operations Bureau. The real scoop and Q&A session.

Beyond Packet — The Future of Digital: Stan Horzepa, WA1LOU, author, ARRL's "Your Gateway to Packet Radio".

QRP Home Brew Seminar: Jim Fitton, W1FMR, tiny transmitters.

QCWA, What and Why?: Frank Finer, NU1A, licensed in 1932.

Army MARS, Past Present and into the 21st Century: Rudy Adler, W1GUA, and AAM1EC, Region 1 Emergency Coordinator.

Attendees couldn't help knowing more when they left than when they arrived. Plus, they had the joy of seeing old friends and making new ones. WR

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## The Gambia

Warren Hill, KF7AY reports that he and fellow Central Arizona DX Association members Michael Bill, AA7NO, and Tony Rogozinshi, N7BG, will be signing C56V from the capital city of Banjul for the CQ WWSSB DX contest weekend (30-31 Oct). Beyond the contest, they can be spotted using CS5/ (home call) and plan to be active on CW and SSB on 80 through 10M, including the WARC bands. Tentative dates of operation are 28 Oct.- 3 Nov.

QSL to Gary McClellan, KD7E, 3422 E. Altadena Ave., Phoenix, AZ 85028, or to home call for all contacts outside the contest. For low band operation, local sunrise in The Gambia will be approximately 0615Z and local sunset will occur around 1754Z. WR

## Changing of the guard de KB6HP

An introduction is in order. From 1985-1986 I had the pleasure and privilege of serving *Worldradio* as Editor, and until recently as Consulting Editor. Well, I'm back again at the Editors desk.

First licensed as WD6AIV in 1977, I am an old-timer to some and a newcomer to those whose first gear was lovingly built from scratch.

This community of ours which makes up the Amateur Radio Service is comprised of a great variety of fine people;

I count many as my friends. I am looking forward to renewing old friendships and acquaintances and to making many new ones in the future. 73 de Lou Ann Keogh, KB6HP WR

## Special call signs

Reissued and "vanity" call signs will become available to amateurs—for a fee. Hold on to your check book for a while though.

Previously the FCC has been unable to issue unused calls because of antiquated computer systems and lack of funding for the necessary personnel to take on the task. The computer system is no longer an issue (see FCC Highlights, page 8).

The funding problem was solved when the new budget included a provision allowing the FCC to assess and collect fees for specialized calls.

How the FCC will decide to handle the details will be subject to the usual rule making process, and could take a year or more to complete. WR

## Young ham of the year

Kevin Boudreaux, N5XMH, from Terrytown, Louisiana was presented with the 1993 Westlink Report Young Ham of the Year Award at the ARRL National Convention in Huntsville, Alabama in August.

His service during and after the onslaught of Hurricane Andrew was the basis for the award. Then 14 years old

and newly licensed, Kevin provided communications at a Red Cross shelter housing 250. Look for more on N5XMH in a coming issue. WR

## ARRL Foundation '93-'94 Scholarships

The ARRL Foundation, Inc., located at the Newington, Connecticut, headquarters of the America Radio Relay League, Inc., will administer 16 scholarships in the 1993-94 academic year. Several scholarships feature multiple awards, allowing for a minimum of 22 actual awards granted. Award amounts are \$500 to \$5,000 with 10 awards at \$1,000 or above.

The ARRL Foundation Scholarship Program is open to all licensed radio amateurs pursuing a course of accredited study beyond the high school level. Some of the scholarships ask for ARRL membership or state geographic or academic preferences. Complete information and an application form can be had by writing prior to 1 February 1994 to: The ARRL Foundation Scholarship Program, 225 Main Street, Newington, CT 06111; 203/666-1541 Ext. 203, M-F, 8-4 EST.

## CONTENTS

### FEATURES

- New England division ARRL Convention — 1
- Balloon chase links hams — 6
- Vicarious adventure — 11
- My best friend — 14
- Step right up — 18

### COLUMNS

- |                              |                                      |
|------------------------------|--------------------------------------|
| 10-10 International — 58     | New Products — 69                    |
| Advertisers' Index — 75      | Off the Air — 26                     |
| Aerials — 64                 | Oldtime Radio — 30                   |
| Amateur "Hi" — 24            | Product Review — 28                  |
| Amateur Radio Call Signs — 8 | Propagation — 46                     |
| AMSAT OSCAR schedule — 71    | Publisher's Microphone — 4           |
| Awards — 20                  | QCWA — 42                            |
| Computers & Basic Stuff — 50 | QRP — 54                             |
| Construction — 62            | SAR Communications — 56              |
| Contests — 68                | Silent keys — 22                     |
| Continuous Wave — 34         | Spacecom — 52                        |
| Digital Bus — 48             | Station Appearance — 24              |
| DX Prediction — 38           | Subscription, <i>Worldradio</i> — 11 |
| DX World — 35                | VE Exams — 72                        |
| FCC Highlights — 8           | With the Handi-Hams — 33             |
| Hamfests — 66                | World of DX Contesting — 59          |
| MART Classifieds — 73        | YEs on the Air — 44                  |
| Mobile — 40                  |                                      |

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## PUBLISHER'S MICROPHONE

**W**e now present the names of those who will find themselves, as they walk to their chairs at the next meeting of their radio club, being greeted by other members seated on the floor and reaching up with the plaintive cry, "Alms, Sahib." The latest to become **Worldradio** Super-Boosters (lifetime subscribers) are:

- James Johns, Jr., KA0IQT, Groton, MA
- Milton Klein, NX3D, Sewickley, PA
- William Sill, KD3XR, Tunkannock, PA
- Steven Karty, N4UHO, Vienna, VA
- Raymond Corcoran, WA9VVU, Arlington Heights, IL
- Dale Onderisin, KA9KHX, Joliet, IL
- Preston Koelling, N0HNQ, Forest City, AR
- Carl Dierks, AA7WQ, Cheyenne, WY
- Mike Orlando, KC6QYA, Costa Mesa, CA
- Richard Giles, KH3AF, doing good things for his country at an APO.

Talk about a strange set of priorities! At a time that the US Congress is making the Mafia look good by comparison, here is what the government is worried about: FCC officials giving forums at the conventions. The legal beagles are calling the travel expenses a gift that could influence the outcome of FCC decisions.

Uh huh. Certainly after having given up a weekend at home, sitting in a cramped airline seat, another night in a miserable hotel room, why that official, after a bribe like that, will have such a feeling of obligation that Monday morning the first thing he will do is clear out all the radio stations from the

AM broadcast band and assign it to the 160M crowd.

What the FCC could better spend its time on is getting the licenses issued quicker. Observers are wondering why so many of the newly licensed amateurs never get on the air. It could well be that by the time their licenses get to them the euphoria has worn off.

Blocks of calls could be issued to the various examination points and issuance could be immediate. Yes, surely every reason will be given why this can't be done. However, right now one out of every 15 people has a cellular telephone and the number is issued by the store immediately upon purchase.

Ron Levy, K2AIO, wrote in the *North Jersey DX Association Newsletter*, "The March 29, 1993 *U.S. News & World Report* published a short article stating that a new study on the potential health hazards from exposure to electromagnetic fields had found no evidence of

increased levels of leukemia, brain cancer or lymphoma among those who live or work near power lines.

"Cancer rates for electricians, machinists and mechanics who regularly work in high levels of EMF were not higher than the general population."

This is not to say that everything is without risk, of course. Professor Walter Williams, in his newspaper column, warned of the cancer danger to a 40-pound child who started now and ate 1,000 apples a day for the rest of its life.

Ray Wigglesworth, KO4LM, Fredericksburg, VA, wrote in about high taxation having killed the US amateur equipment and electronics industries. "Overtaxation is what is still killing businesses," he wrote.

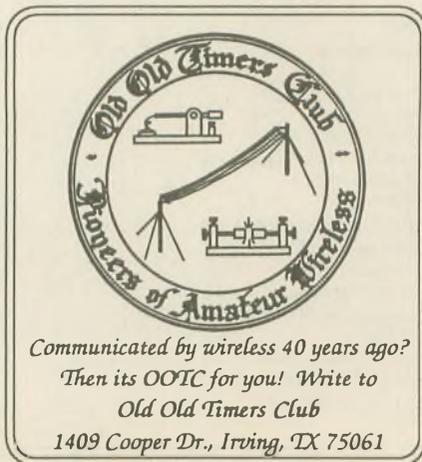
I'm sure many were pleased to see that Japan recently has instituted a capital gains tax of 20 percent. It had been zero. So there will be just a bit less risk capital for them to play with. They can pay taxes on inflation. The playing field will be a bit more level now.

A letter came in from a reader who said he had passed the Extra CW test but in QSOs could only copy about 15 wpm with accuracy and asked, "How have other hams crashed through this 20 wpm wall? Well, when the visitor to New York City asked the policeman, "How do you get to Carnegie Hall?" the answer was, "Practice!" Every QSO gets one closer and closer.

There is also the immersion method. That is: Go into a contest, and then 24, 36 or 48 hours later you will emerge from your shack copying a whole lot faster than when you went in.

Speaking of contests, Look for me in the California QSO Party 2-3 October. DX Editor John Minke, N6JM, will be operating from one of California's rare counties.

— Armond, N6WR



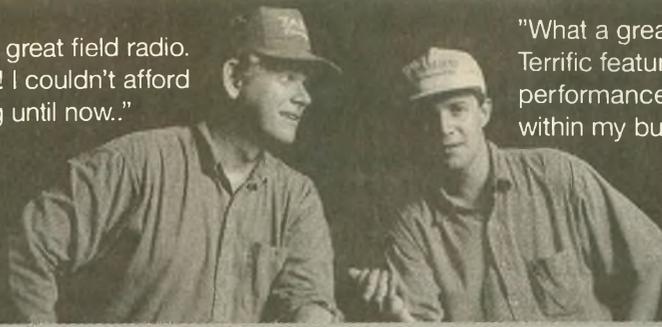
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# Balloon chase links hams

**TED WOLFE, WD4KHL**

In early June an event in our region did more to bring together hams with varying interests and from disparate communities than anything in recent memory. It was, of all things, a balloon launch. I am sure similar experiences have been recorded elsewhere, but the coming of the balloon launches here was an experience.

While the June launch is the subject of this story, a bit of background is required to lead into the June story.

A few Huntington, WV area hams including Ron, WA4GSS, and Seth, KB8KMI, who are interested in both Amateur television and balloons, planned a launch in April. They discussed their plans on area repeaters and sought the assistance of other hams to watch for the balloon and to help track it. They signed on a few to help out and the recovery effort was monitored on our linked repeater system in the area.

Many who monitored that initial launch and recovery effort were entranced by what they heard and volunteered to "join the fun" for the next one.

The next one was already planned for June. Because of the increased interest after the first launch and before the one in June a Monday night planning net was held each Monday night on the linked repeaters during the month of May.

As the June launch date approached the volunteers were organized into mobile chase teams, satellite trackers were signed up to provide azimuth and elevation reports based on transmissions from the balloon payload, net control operators assigned for the various associated search nets, and details were released on the on-board equipment.

The payload would include two ATV cameras. One was black and white, the other a color camera (believed to be the first color ATV camera carried aloft by a ham sponsored balloon). Also on board would be a 2M repeater (146.52 in, 144.340 MHz out), and telemetry beacons on 10M and on 147.450 MHz.

The flight profile called for the balloon to attain a height of around 120,000 feet at which time it would deflate and free-fall some 35,000 feet before the parachute deployed to slow the balloon's descent.

The launch was scheduled for Saturday, 5 June, from the airport at Huntington. But the weather that day was windy and overcast with much cloud cover and the launch had to be scrubbed, disappointing many. But when the net control operators polled those who had checked in to the nets to determine how many would return the next day, Sunday, most elected to return; by now they were hooked on the adventure.

The plotting team with its computer program used information provided from NOAA's early Sunday weather balloon launch to work out a projected path for the ham launch. On the plotting team were Paul Adams, KC4ZSV;

Larry Rowe, N8RDS; and Larry Lilly, N8RTT. I hope my narrative is correct insofar as names and calls and assignments are concerned. If I missed or misplaced someone, my apologies. But all calls used in the story were in the net logs on launch day.

A preliminary plot of the balloon's projected path indicated its course would take it into coal mining areas of southern West Virginia. As miners at that time were on strike the sponsors felt it would be difficult to secure permission to enter private property in pursuit of or in order to reclaim the balloon once it landed. With that as a consideration the launch was changed from the airport at Huntington to a smaller one nearby at Minford, Ohio, northeast of Portsmouth. From there the balloon would take a more northerly path and bring it closer to Charleston, the state's capital city.

The Huntington area launch was coordinated with a similar effort by a group of hams in New Hampshire. Coordination between the two launch sites was via long distance telephone calls.

On Sunday the nets came up about 8:00 a.m. but the launch, because of the move to Minford, didn't take place until 12:08 p.m. EDT. The New Hampshire balloon was launched two minutes later.

Major net controllers on Sunday were N8SAT and WA4ICM. Phil, K8MHR, in St. Albans was active as an alternate along with Tiny, N8MFV.

By launch time the six satellite operators had their stations up and running in order to feed azimuth and elevation reports to the plotters. They were: James Stiles, Huntington, N8VIS; Joseph Pickens, Jr., Given, WV, N8UXE; James Williams, Jr., Whitesville, WV, N8GXF; Charles Huffman, Ashland, Ky, W4LYZ; Ron Ferrell, Belpre, Ohio (the most distant from where most of the action took place), WD8RGS; and John Harmon, Charleston, N4OKL.

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Also standing by were thirteen ground (mobile) chase teams made up of one or more hams. Those teams were led by: (1) Gary, K8KFJ; (2) Fred, N8TVP; (3) Ray, N8SLD; (4) Frank, N8OLC; (5) Tom, K8TW; (6) Don, KA8KVD; (7) KA8OJU and N8TXF on Bolt Mountain; (8) Seth Staker, KB8KMI; (9) Charles, KB8BFM, accompanied by Brian, N8PQI; (10) Ron, WA4GSS; (11) Rob, WM8S; (12) Fred, KB8LJP; and Seth Lavender, KB8OKH, a teenager from Belle with his non-ham father as his driver.

Search Air One was Bob Adams, N9DMK, who with his non-ham pilot, O. W. Meadows, Jr, took off from a small privately owned island airport at Chesapeake, WV. The pilot may now be a candidate to become a ham.

Search Air Two was Karl Yeager, KB8LMN, St. Albans, also with a non-ham pilot. Later, both pilots told their ham passengers they had so much fun that they refused compensation for the fuel consumed on the flights.

The 2M launch and recovery net started on four linked repeaters in Charleston, Huntington, Liberty and Parkersburg, WV.

Before the day was over more than two hundred ham calls had been logged by net control operators on the linked system. Checkins were from locations in Ohio, Indiana, Kentucky, West Virginia, Pennsylvania, Virginia, Tennessee and North Carolina. The net was aware of two other repeaters joining the link during the search but from the checkins it is assumed even more repeaters may have linked into the coverage without our knowledge. But the attitude was "the more the merrier."

Chase teams saturated an area south of Charleston. When the effort moved into the Sumerco area the remote facility of the 147.27 Scott Depot repeater was used to add the NU8K 147.345 repeater to the system. NU8K is associated with the Logan ARC and that club's 146.97 repeater at Logan. NU8K's signal blanketed the final search area. Two hams who knew the area well were quite helpful with advice to the chase teams nearest where the balloon came down. They were Rob, WM8S, and Tiny, N8MFV.

A team on foot in hilly terrain finally spotted the balloon and its payload.

Andy Wright (a teenager whose call I failed to catch) in a team with his father is credited with spotting the balloon high in a treetop near dusk. A recovery party vehicle had been parked within yards of the tree but the balloon wasn't sighted till Andy looked up and then, pointing, commented "there it is."

Because of imminent darkness the team was unable to retrieve the balloon from its high perch. The site was marked and Jim, KD4HPQ, led another team in on Monday to retrieve everything — the balloon and its expensive payload — intact. The landing point was two miles from the top of Sumerco Mountain in the Hilbert Public Hunting Area, 3.5 miles off Joe's Creek Road (at latitude 38.15.21 north, longitude 81.54.41 west). That was within one thousand feet of the touchdown point predicted by the plotters!

A post recovery or critique net was held on the linked system on Monday evening, June 7, from 8:00 to 9:35 p.m. It began with a telephone linkup with Bill Brown, WB8ELK, who headed up the concurrent launch in New Hampshire. Brown reported equipment aboard their balloon did pick up the output of the repeater aboard the Huntington balloon but a desense problem in the latter negated plans for balloon-to-balloon repeater relay. It was first thought no one succeeded in working the balloon repeater but a later report disclosed an Ohio ham near Columbus successfully worked Seth, KB8KMI, before the desense problem became too pronounced.

A suggestion was made that the next launch include a cross band repeater to eliminate the desense problem. Phil, K8MHR, suggested since everyone had so much fun we should organize a picnic for some time in July to which all who participate could come for eyeball QSOs. Many new friends were made and met on the air during the operation. More than one ham was heard to say the

activity had caused more intercity ham cooperation between Charleston and Huntington hams than any other event in recent memory. A committee was named to pursue the picnic proposal and is working on it as this is written.

Ron and Seth requested those who received and recorded good video from the onboard cameras to provide copies of same to the sponsors so they could integrate the footage into a video they are preparing on all phases of the flight. The completed video will be distributed so those who took part can view the whole effort from the planning, the launch, the flight, and the successful recovery.

The consensus at the end of the critique: almost everyone said "let's do it again soon!"

That is likely to come about in the fall after the mountain foliage begins to thin out. And that will give the balloonists time to prepare a more sophisticated electronic payload for the next launch.

If you haven't participated in something like this you don't know what you're missing.

PS — I'm only the writer. For more info on balloons and ATV and the launch covered above, contact Seth Staker KB8KMI, 103 Ricketts Road, Huntington, WV 25705. WR

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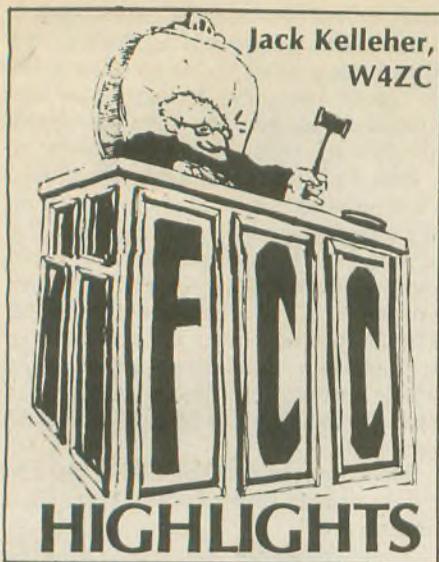
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### Pizza, anyone?

In last month's column the FCC's decision on permitted and prohibited communications was anticipated "shortly." The Commission's Report and Order was adopted on 15 July, and released on 28 July.

The summary of the FCC's action states: "... we have decided to amend the amateur service rules substantially as proposed by the League in order to allow amateur operators more flexibility to provide communications for public service projects as well as to enhance the value of the amateur service in satisfying personal communications needs. Amendment of the rules as the League requests will allow licensees to use amateur service frequencies, for example, to facilitate events such as races and parades, to support educational activities, to provide personal communications such as making appointments and ordering food, to collect data for the National Weather Service, and to provide assistance voluntarily even where there are other authorized radio ser-

vices available. We believe that this action will expand the benefits derived from the amateur service by the general public as well as amateur service licensees.

The Report and Order states further that: "comments convincingly support the proposal" (to amend the Rules). "Although some comments urge caution to prevent exploitation of the service, they show that the present rules hamper amateur operators from serving the public as well as diminish the value of the amateur service in satisfying personal communication needs. The vast majority of comments support our proposal to relax the prohibition against using the amateur service as an alternative to other services such as the maritime services, land mobile radio services or the cellular telephone service. They believe that the current prohibition is overly cautious and unnecessary. We concur. The capabilities of modern mobile communication services have all but eliminated the incentive to use the amateur service instead of those services. We will relax, therefore, the current prohibition, as proposed, to provide amateur operators greater flexibility for public service and personal communications."

Specific changes to Part 97.113 (Prohibited Communications) are given in the Appendix to the R&O. For example, retransmission of signals between a space shuttle and its associated earth stations requires that prior approval be obtained from NASA, and that such retransmissions be for the exclusive use of amateur operators.

### Annual VEC's conference

Volunteer Examiner Coordinators, representing more than 98 percent of all radio operator license examinations conducted in the Amateur Service, met on 17 and 18 June in Gettysburg, Pennsylvania. Topics covered, as reported in the *W5YI Report* for 1 July, included Question Pools, Telegraphy Standard, Paperwork Efficiency, Question Topic Requirements, Club and Military Recreation Station Call Signs, Temporary Foreign Licensing, Commercial Radio Operator Exams, Examination Accountability, Amateur Radio Call Signs, the Gettysburg Computer System, Reducing Examination Irregularities, and VEC Instructions (guidelines).

The meeting included presentations by some of the many FCC officials who attended the Conference. In particular, John Johnston, Chief of the Special Services Division, spoke on the subject of call signs. His remarks are summarized in the *W5YI Report* viz: "The Amateur Radio Call Sign System adopted in 1978 provides for seven prefix blocks, 93 prefixes (AA-AL, K, KA-KZ, N, NA-NZ, W, WA-WZ), five format arrangements (1x2, 1x3, 2x1, 2x2 and 2x3) in each of the 10 regions. Although a total of 14,888,860 combinations are possible, only four percent of the available call signs are assigned. Currently, the FCC is processing about 125,000 applications annually at a cost of 2.5 work years.

The FCC does not have the ability to assign specific call signs and the present Group A, B, C, D will remain. A new computer system coming on line

## 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 1 August 1993.

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

Radio District	Group A Am. Extra	Group B Advanced	Group C Tech./Gen.	Group D Novice
0	AA0OI	KG0HJ	N0XYO	KB0LKT
1	AA1HA	KD1QE	N1PUO	KB1BOO
2	AA2OW	KF2QK	N2VVX	KB2QNJ
3	AA3FE	KE3JJ	N3PTK	KB3AXR
4	AD4HV	KQ4ZF		KE4FAC
5	AB5OQ	KJ5OP		KC5BYC
6	AB6VF	KN6OS		KN6ZMC
7	AA7XP	KI7PL		KB7WKF
8	AA8LZ	KG8CS	N8ZUK	KB8PDB
9	AA9HT	KF9QO	N9UIZ	KH9ITU
North Mariana Is.	AH0U	AH0AN	KH0CB	WH0AAX
Guam	NH2R	AH2CT	KH2HB	WH2ANH
Johnston Is.	AH3D	AH3AD	KH3AG	WH3AAG
Midway Is.		AH4AA	KH4AG	WH4AAH
Hawaii		AH6MY	WH6NX	WH6CQT
Kure Is.			KH7AA	
American Samoa	AH8H	AH8AF	KH8AX	WH8ABB
Wake Wilkes Peale	AH9C	AH9AD	KH9AE	WH9AAI
Alaska		AL7PE	WL7LZ	WL7CHF
Virgin Is.	WP2A	KP2CC	NP2GO	WP2AHU
Puerto Rico		KP4VN		WP4MHO

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shortly is being programmed, however, to provide personalized Amateur call signs, which would require a fee. Johnston would like that fee to go to the FCC to help finance Amateur Radio administration.

In the future it might be possible for Amateurs to obtain any unassigned call sign, "will" a call sign to heirs or friends — or retire it permanently."

On 24 June the FCC began a proceeding to prepare for a 1993 World Radiocommunication Conference (WRC-93) scheduled for 15-19 November in Geneva, Switzerland. (The restructured ITU—see "A New ITU, this column, June '93—provides for a WRC every two years beginning in 1993.) WRC-93 will recommend issues for the 1995 and 1997 Conferences. Among the issues that the FCC has identified for possible inclusion in '95 and/or '97 is high frequency broadcasting. We hope that the Radio Amateur community will be invited to participate in developing this issue in view of the long-standing problem of broadcast interference in the 7 MHz band.

Another topic of interest to amateurs which may be on the agenda is wind profiler radars. A recent proposal by the FCC to allocate the frequency 449 MHz to wind profiler radar systems has elicited comments from the ARRL that the proposed allocations should be based only on careful coordination processes and site selection, to avoid interference to amateurs, who share the band 420-450 MHz on a secondary basis with government (military) radiolocation operations. (Ed: Frequencies from 400 to 1000 MHz have been proposed from time to time for wind profilers. A Recommendation adopted at WRC-92 notes that the World Meteorological Organization, in 1989, requested advice and assistance from the ITU in identifying appropriate frequencies near 50 MHz, 400 MHz and 1,000 MHz to accommodate allocations and assignments for wind profiler radars.)

### FCC nominations

*Westlink Report* for 15 July says that: "Attorney Reed E. Hundt is expected to be nominated by President Clinton to become the next chairman

of the Federal Communications Commission. Hundt, 45, is a well known Washington anti-trust litigator with the firm of Latham and Watkins. He is said to have little background in communications law, but an excellent understanding of the nation's future telecommunications needs. He has advised the Wireless Cable Association, Hughes Communications and individual cable operators in efforts to gain access to cable programming, and served on the presidential transition team.

### Radiation hazards

Earlier this year we noted (June '93) that the FCC proposes changing its guidelines for evaluating environmental RF radiation to reflect the guidelines adopted in 1992 by the American National Standards Institute (ANSI) and by the Institute of Electrical and Electronic Engineers Inc. (IEEE). The *W5YI* report on this action (15 June '93) includes an interesting account of a joint study by the EPA and the FCC in 1990.

The study involved several amateur radio installations in southern California. The objective was to obtain information on the potential impact of RF fields on ham operators and others who might be present in the immediate vicinity of the station "... where it is reasonable to assume that persons who might not have control or knowledge of their exposure could have access."

Nine amateur stations were selected which had a variety of antennas and transmitting equipment capable of operating on different frequencies. Stations ranged from simple to complex. Antennas used included Yagis, Quagies, inverted Vs, horizontal dipoles, verticals, VHF disconses ... and others. Primarily, HF and VHF frequencies were used for transmissions with operating power levels ranging from 100 watts or less to as much as 1,000 watts.

"Key down" measurements were made at one or two meters above ground at different distances from the antennas. Measurements were also made at various locations inside buildings and inside the ham shack at

the operating position. An attempt was made to use high power levels in order to create worst case scenarios.

The results of the test showed that while some field strengths at HF can be relatively high, the potential hazard may be less than for lower field strengths measured at VHF where the highest specific absorption rates (SARs) occur in human beings. Ground level field strength readings at HF were actually low. You had to get into the main beam path to obtain significant radiation levels.

It appears that vehicle-mounted amateur antennas which are closer to the ground create the greatest possibility for significant exposure in publicly accessible areas. There were several cases where the peak levels of RF exposure exceeded limits recommended for "uncontrolled" environments. It was also found that dipole antennas which are often strung just above a roof or yard presented high field strength readings. Generally, RF field strengths encountered inside ham shacks were well below IEEE recommended exposure limits.

The study concluded that "Precautionary measures should be sufficient to prevent exposure of the amateur operator and other persons to RF levels in excess of protection guidelines. Examples of such measures would be:

- a) using the minimum power necessary for a transmission;
- b) minimizing transmission time so that time-average exposures are acceptable;
- c) determining where high-field areas exist and restricting access to them during transmissions, and
- d) mounting antennas as high above ground as practical. WR

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# A vicarious adventure

**ISAMU "HAM" KANESHIRO,  
AH6HB**

For the past three years I have been checking in regularly to the JA Maritime Mobile Net on 15M to give weather reports and other news happenings in this part of the world, such as our volcanic eruptions.

It was during one of these transmissions that I first made contact with Kyoko Imakiire, JJ6PPT, a YL from Japan. She was 25 then, sitting in a sailboat in the middle of the Pacific Ocean, traveling from Kagoshima to California. At that time I had no idea she was practicing to sail around the world by herself.

Imakiire completed a nine-month solo non-stop circumnavigation of the globe. She made the journey in a 35 ft. yacht specially designed for single-handed sailing and named *Kairen*, meaning "To join the oceans." She went home to Japan to a triumphant welcome where 10,000 people, and more than 50 boats in the water, greeted her. At age 27, she became the youngest woman to make the solo journey.

Throughout her trip I had been in constant contact with her. From the vicinity of Tahiti, I followed her all the way around Cape Horn, South America, into the Atlantic Ocean. I lost contact when she neared Cape Town, South Africa, but resumed communication when she turned around Tasmania and headed north to Australia along the Great Barrier Reef.

From then on I was able to converse with her as she went through the Solomon Islands, Micronesia, through Guam, Saipan, and home to Kagoshima. The journal she kept is in the process of being transcribed into a book.

What impressed me more than anything else was the extent of her knowledge of sailing, navigation, wind currents, and localities of all the small islands in the vast oceans. Last year she had taken part in the annual Melbourne-Osaka yacht race and was familiar with the difficulties involved in maneuvering in that area of the Pacific Ocean.

I marveled at how much she must have studied to absorb all the details needed for survival, from the right kind of foods to the conditions necessary to keep up her physical well-being. She depended on dried food and canned goods for sustenance and sometimes ate fresh flying fish that simply jumped into her boat when she shined a flashlight into the water at night.

Once, along the coast of Australia,

she encountered problems with her rudder. Her support crew from Kagoshima came to her rescue by flying over in a helicopter to drop off the replacement rudder with a surprise package of fresh fruits and vegetables, meat and ice cream.

We struck up a friendship through our Amateur Radio activity, a hobby turned into a valuable tool of communication. I was grateful for my knowledge of Japanese and her limited use of English phrases. I know I helped

to keep up her spirits and pass away some of the lonely hours she experienced. When she couldn't contact her mother in Kagoshima as she rounded Cape Horn. I was able to convey messages to a thankful parent. Kyoko's mother has her own call sign, JM6IWQ.

Since receiving my Amateur Radio operator's license in 1940, I have made many friends in the international world of the airwaves. Certainly, this YL from Japan turned out to be one of the most interesting contacts. It gave me a vicarious satisfaction when she achieved her ambition and made her dream a reality. WR



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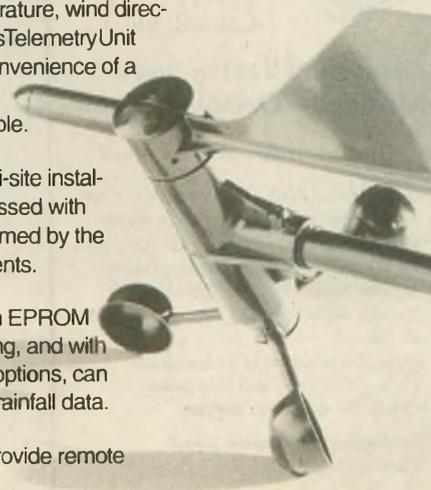
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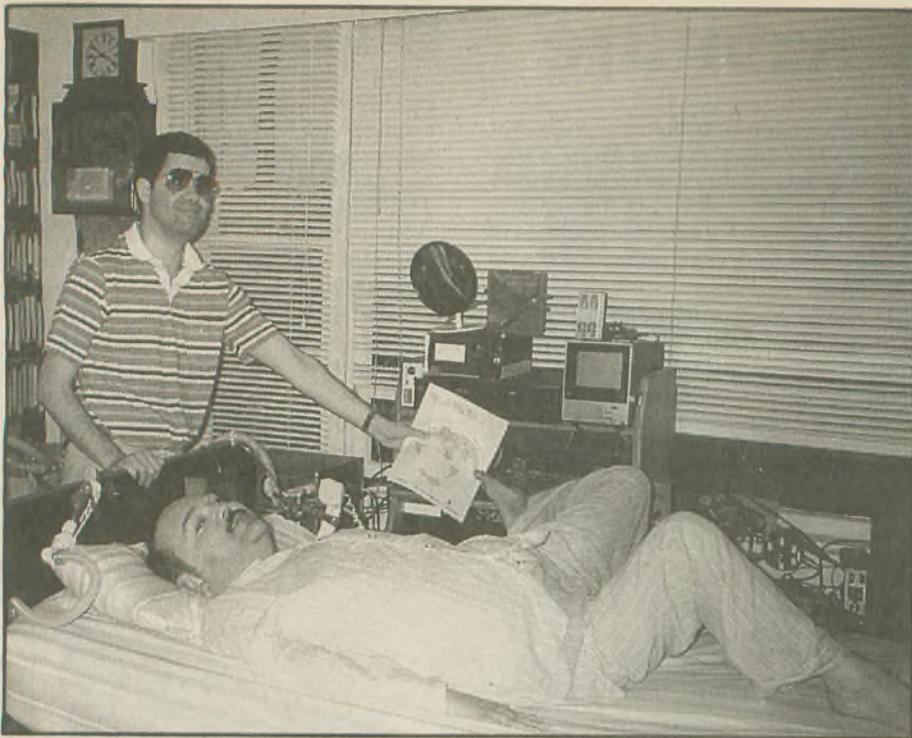
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## Gift for a Lifetime

North Carolina's chapter of Triple States Radio Amateur Club held its Firecracker Hamfest on July 10th. The drawing for first prize, a Lifetime subscription to *Worldradio*, was won by Robin Lentz, WA4NLE.

Mr. Lentz receives the audio cassette version of the magazine for the visually impaired and decided that his friend Jackie Bost, KA4CMC, should receive the prize. Mr. Bost, 46, contracted polio at age 14. He operates both HF and VHF utilizing foot switches and has his microphones at the head of his bed.

He also logs and takes notes, printing with his left foot-though when net controlling, he just notes the last two letters of the calls as he knows his net members' call signs.

Both Robin, 36, and Jackie are Advanced Class amateurs. Robin uses a Ten-Tec rig with an audible frequency readout, and Jackie is on the air with a Kenwood 440S. — Submitted by Walter Bastow, N4KVF.

## Peck of trouble

**RICH LAWTON, N6GG**

We were working in the yard the other day when my wife Velma said, "I hear the phone ringing, but it sounds like it's on top of your tower."

Problem was, I'm a CW man and no way will I put a phone on top of my tower! Not to mention the fact that my tower is 100 ft. tall!

Looking up, I saw a buff-colored bird a bit larger than a robin with a long beak, and it was pecking on the boom of my 20M yagi — while making the sound of the old Ma Bell ringers!

I threw a rock and turned the rotor control. I don't take to birds ringing my bell. It flew off, only to return in a few minutes. Hmmm.

The bird let out a shrill call that sounded like a KW Amtor station in the FEC mode and then she gave me another ri-i-i-n-g.

"Gotta do something," I thought, "or my beam will become radar tinsel. Ah-ha. Bright tinsel, bright idea!"

I took a trip to the drug store and purchased two very real looking plastic snakes, each about two feet long. They looked ominous and squiggly. I found them in the same box as the giant

spider toys — must be for wierdo kids!

Armed with lacing twine, cutters and two snakes in my shirt, I hooked up my safety belt and headed for the top of my tower, looking for bird ringer damage. Finding none, I tied one snake to the mast above the beam, but the other snake slipped and dropped away to the ground. Didn't break.

Results? Fantastic! My first string snake has done a fine job so far. No more Ma Bell clone ringers. The second snake will be my back-up in case the first snake gets its bell rung.

Then there's always the giant spiders. — Santa Clara Valley Repeater Society, Sunnyvale, CA **WR**



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## Reflections

Take a moment to reflect on what experiences you've had in Amateur Radio. If you have something to share with *Worldradio* readers, write an article! All your news, features and letters are happily accepted at our 28th Street offices (2120 28th St., Sacramento, CA 95818).

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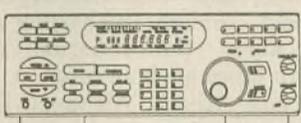


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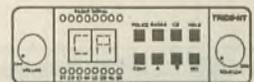
Five banks of 20 channels each. Covers 29-54, 118-174, 406-512 and 806-954MHz (with cell lock). Size: 4 3/8 x 6 15/16 x 1 5/8. Weight: 4.5lbs. Fax fact document #550

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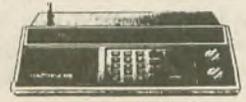
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Coverage of above hand holds is: 29-54, 136-174, 406-512 except 100 which also adds 118-136 Air Band Fax facts #475

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# My best friend Billy

## GARDNER HALL, WB4LAO

Seeing Billy Crafts for the first time was a rather shocking experience for a carefree 11-year-old. As I watched him lying in his portable bed at the front of the church building during services, I could see that he was completely paralyzed except for his arms and facial muscles. He was unable even to move his head to look at those who talked with him. It was depressing to wonder what kind of life a person imprisoned in such a body could have, and my first impulse was to get away from such a distressing sight.

In spite of my initial fear of Billy, something drew me to him. His hearty laughter as he joked with the group of people gathered around his cot after services indicated that the owner of the wretched body was a happy man who enjoyed life in spite of the painful rheumatoid arthritis that had crippled him. But more than anything else, my timidity about Billy was replaced with curiosity when my father told me that he was an Amateur Radio operator, call letters K4KJD.

I had heard of ham radio operators, and had even heard that they were able to talk with people in other countries, though such a capability seemed too marvelous to be true. And yet, here was a man who was actually one of that select group. I began to shyly approach Billy's portable bed after

church services to see if I could overhear anything about this amazing ham radio business. Before I knew it, he noticed me and began talking to me about his hobby, answering my shy questions with a reassuring smile. Thus began one of my most rewarding friendships.

One day my father told me that Billy Crafts had talked to him about something called Field Day, where hams would get together in the woods and talk to as many people as they could. Billy wanted my father to drive me out to his place where the event would be held. Though still feeling a little shy about the situation, I couldn't turn down such an offer.

Field Day in Athens, Alabama, in 1967, had more attractions for a curious 11-year-old than any candy store. There were all kinds of interesting and friendly hams out in Billy's woods, like Mitch with his southern drawl and Walt, who said "CQ Field Day from WB4 Funny Yellow People" with his hilarious "Yankee" accent. (He also said, "You're 5-9 in Alabanana," much to the delight of all the kids.) There was Elmo, the grumpy yet loveable antenna expert, and Page who had a radio called a TR3. John Hugh, everyone's favorite "redneck," had a flattop haircut which was either five years too late to be in style or 20 years too early. (We kids couldn't convince John Hugh to say "WB4 Funny Yellow People" because he insisted on saying "WB4 France, Yokahama, Pacific.")

And, of course, there was Billy out in the yard in his cot exhorting Walt to "turn that quad Northeast so we can get all those good ol' Yankees" on 20M phone. Billy's Field Day strategy

(one shared by others) was to spend a lot of time working that seemingly inexhaustible supply of stations in the area around New York City, where it seemed there were more hams than people in China. Whenever things slowed down a little he wanted to make sure Kathy, Walt's daughter, got on the mike because "those Yankees can't turn down her sweet sounding CQs."

When Billy found out that Field Day had hooked me, he began inviting me to his house on Sunday afternoons. I was accustomed to going home with friends my own age, but I soon began to consider Billy my best friend, even though he was an adult. I wasn't the only teenage boy who felt that way. Others, like Earl, WB4LCU, and Danny, WB4NCT, considered Billy to be their best pal, too.

Those Sunday afternoons in the fall at Billy's house were always full of fun. Though I would have loved to have spent all afternoon playing with his wonderful radios, we first had to watch Billy's boy, Joe Willie Namath, play for the Jets and, just before leaving, watch the Bear Bryant show on TV. However, in between the game and the Bear Bryant show there were always a couple of hours to turn on Billy's Drake 2B, his Collins transmitter and talk to the world. Billy would let me sit on the side of his bed and share the mike. In this way he taught me ham lingo, how to try to speak slowly for South American hams who were learning English, and other basic operating practices.

Billy was able to scrape up an old army surplus receiver for me (an ARR-7), a license manual and some code tapes. At first I didn't think I could learn the code and the theory and was content with listening to hams and writing them letters to get QSL cards from them as an SWL. But Billy insisted that I could get my ticket and marked the important parts of my manual for me to study. I studied those marked manuals diligently, mainly during Mrs. Killen's history class (the license manuals were smaller in the late 60s than they are today and fit nicely in our history books; while it appeared that I was in-

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**SPEAK TO THE WORLD**

tently concentrating on my history book during class, I was actually going over Ohm's Law). Thus with Billy's help, I was able to get my ticket and make several upgrades.

As I began going to more and more club functions, I began to see the tremendous amount of love that other hams had for Billy. They bought most of his gear for him, as well as his expensive adjustable hospital bed. Some of the hams in Huntsville who worked on the space program were able to get special gadgets for him that were developed for space, which made life much easier for him. (I remember in particular a ball-point pen that wrote when positioned upside down, which was an oddity in those days.) Radio amateurs in Alabama elected him SCM (equivalent to section manager today) and he was able to travel in his special car to conventions and hamfests, where he always seemed to be the center of attention.

Billy was able to give nothing but his love in return for all the generosity of his fellow hams, and that was all they wanted. His radio opened up a world that rheumatoid arthritis tried to take away from him, and gave him an open door to express his love for life, for God and for others.

Billy was often sick because his paralyzed body could not fight off infection well. But life seems eternal to teenagers, and I took it for granted that he would always get well. I should have known that his fragile body couldn't last forever. When Jimmy, Billy's brother, interrupted my PE class one morning to tell me that Billy had died, I could hardly believe him at first. As the truth dawned on me, I felt numbed. I tried in vain to hide my tears from my teenage companions in the gym. Billy was gone, but his influence will always remain in those of us who were privileged to know him.

Even now, I miss Billy's voice and his tall tales on the air as do hundreds of other amateurs, especially in Alabama. And yet in thinking of him, I don't pity him or feel he was "robbed" of happiness by his disability. His life, though all too short, was a full and meaningful one, thanks to his faith in God, his love for others and Amateur Radio. WR

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# NTS traffic

## DENNIS LANCASTER, N8JCL

What is NTS? Well, the initials stand for the National Traffic System. NTS is a vital service amateurs provide to anyone to send and receive messages anywhere in the country (and some foreign countries).

The parties involved in sending and receiving messages do not have to be amateurs. Handling messages for non-amateurs is called third-party traffic. Third-party traffic is limited to only those foreign countries that have third-party agreements with the United States.

Amateur radiograms are like telegrams and are limited to 25 words or less. To send a radiogram the amateur needs a complete address and telephone number of the receiving party. It's also a good idea to get an address of the sending party. That way if there is a return message it can be delivered without too much trouble.

MARS traffic is Military Affiliate Radio System and can be sent to any serviceperson, anywhere in the world. To send MARS traffic use the standard ARRL NTS format.

Every radiogram, NTS and MARS, have a preamble that looks like this:

1 R HXC N8JCL 15 GAYLORD MI  
1200Z OCT 5

The first number (1) is your number. Any number can be used. Usually, traffic handlers start the calendar year with number 1 and consecutively number from there.

The R stands for "routine" and is the precedence of the message. This is the most used precedence. There is also welfare, emergency and priority traffic, and these should be used only under emergency situations.

The HXC is a code for handling instructions. These are rarely used. The HXC code prompts you to get a reply from the addressee. A good traffic handler will ask for a reply without this code.

Just a word about handling traffic: If you accept a piece of traffic and find you can't deliver it (to the addressee) you should originate the traffic back to the sending station stating why the message was not delivered. It's not mandatory, just good operating practice.

The next thing is your call (in this case, N8JCL). This is the call sign of the amateur who started this traffic and is the originating station.

The number 15 is the "check" or word count. Some messages will contain the letters ARL before the "check." This means that the message contains ARRL numbered radiograms. It is a means to send more than 25 words in a message.

Gaylord MI is the place of origin. This is not your station location but the sender's location. If you live in Gaylord and take traffic from someone in Elmira, then the place of origin is Elmira, not Gaylord.

Next is the time this message was filed. Most traffic handlers disregard this unless the message is of higher precedence than routine.

Date field is next and the month should be spelled out. Do not use numbers for months. Spell it out—Oct, Nov, Dec, etc.

The text of the message should not contain punctuation or contractions. End sentences or thought groups with an X (transmitted as "x-ray" and counted as a word).

Send your friends a radiogram on their birthday, anniversary or just as a friendly hello. NTS traffic is fun and shocking to your non-amateur friends across the country. —*Top-of-Mi ARC, Gaylord, MI*

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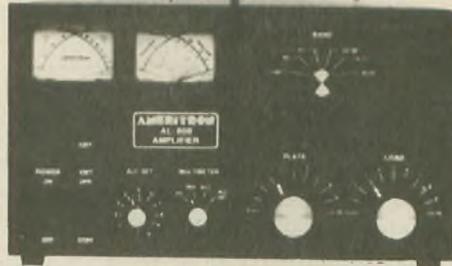
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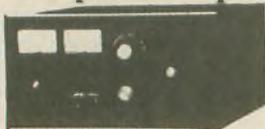
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This linear gives you full legal output using a pair of Eimac® 3-500Zs. Some competing linears using dual 3-500Zs don't give you 1500 watts because their lightweight power supplies can't use the tubes to their full potential.

AL-1200  
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Suggested Retail



Get ham radio's toughest tube with the Ameritron AL-1200—the Eimac 3CX1200A7. It has a 50 watt control grid dissipation—12 times tougher than the 4 watt rating of the 3CX800A7—yet you get the same full legal output as you get from a pair of 3CX800A7s.

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Legal limit antenna tuner

Remote Coax Switches

QSK-5 Pin Diode T/R Switch

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Ameritron — the high power specialist — brings you the ATR-15 antenna tuner that's designed for legal limit amplifiers. Heavy duty silver plated bandswitch virtually eliminates switch failure. High power transmitting capacitors. 1.8-30 MHz. Peak reading SWR/wattmeter. 6 position antenna switch. Selectable 1:1 or 4:1 balun. 5¼ x 13¼ x 13½ inches. Meter lamps uses 12 VDC.

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ADL-1500X  
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RCS-8V  
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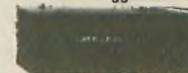
RCS-8V, DC-UHF 5 KW Coax Switch. Replace 5 coax feedlines with one with this Remote Coax switch. Weatherproof box mounts outdoors on your tower or mast. Attractive control unit sits on your operating desk. Low SWR to 450 MHz. Low loss. Rated at 5 KW to 30 MHz, 1 KW at 150 MHz. RCS-8VN, \$169.95 with "N" connectors.

RCS-4, \$134.50. 4 position HF switch. Similar to RCS-8V. No control cable needed. Handles 2500 watts PEP.

RCS-4  
**\$13450**  
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**\$349**  
Suggested Retail



Self-contained, connects externally to most HF amplifiers. Handles 2.5 KW PEP, 2 KW CW. Six time faster than vacuum relay. 6x4x9½ inches.

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**MFJ-1272B** **'34'**

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Two massive 250 pf transmitting variable capacitors can handle amps of RF current and 6000 RF volts. Logging scales.

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Tiny 36 inch diameter high efficiency loop antenna covers 10-30 MHz continuously with low SWR. Handles 150 watts.

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Mobile Antenna for 144/440 MHz

**MFJ-1724B/BB** **'14'** dual band magnet mount mobile antenna for 144/440 MHz has 19 inch stainless steel radiator, low SWR. UHF mobile (MFJ-1724B) or BNC handie talkie (MFJ-1724BB) connector.

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# Step right up

CAROLE PERRY, WB2MGP

Seventeen years ago, I observed some engineers who were hams in the electronics company where I worked having a good time on the radio. "That looks like fun," I said. "I think I'll try for a ham radio license."

"It is fun!" was the response. "But you'll never get a license, because you're a female!" And so the gauntlet was dropped. With that excellent bit of motivation, I went on to get a license, get involved and have fun, and I have been responsible for bringing thousands of young people into ham radio. Every year, I make it a point to send my 1987 Dayton Ham of the Year QSL card to those engineers along with my sincere thanks for their shrewd advice. They're all good sports about it, but don't think this scenario isn't heard by hundreds of other women all the time.

In 1981 I made a choice to do some substitute teaching at a local intermediate school in Staten Island, New York, when the electronics company relocated. After three months, a very supportive principal offered me a position in the Industrial Arts/Technology department. He encouraged me to create a pilot program called "Introduction To Amateur Radio." The course was a resounding success. The children in my sixth, seventh and eighth grade classes loved it; and so did their parents.

I created a curriculum package consisting of 26 lesson plans for a teacher to use to teach all areas of the school's curricula through high motivational ham radio lessons, a video tape which shows children having a good time with ham radio in my classroom, a code practice oscillator custom-made for my program (for kids to have fun with), a spacecode tape, and other

materials that are created specifically for children.

Word of mouth soon spread that Mrs. Perry's ham radio room was a fun place to be. Today, 11 years later, I teach 12 ham radio classes consisting of over 450 students a term. The beauty of the course is that there's something in it for everyone. Since I get children with all different backgrounds and abilities, I must provide them with material that can challenge the bright kids and allow the more "reluctant learners" to master skills as well. Amateur Radio in a classroom allows the teacher such a myriad of techniques and activities to use that all the children can learn, have fun, and feel good about themselves.

Here is truly a course that helps children to develop self-esteem. Many of my students have already been labeled "losers" by the time they get to my class. In the ham radio class, everyone leaves having experienced some level of success in at least one of the many skills to be mastered.

I always encourage the children to study with their parents, because it's more fun to learn the code that way. Parents love the idea of being involved with their children in this new area of study. Many of them go on to take the FCC exam with the children. And, of course, they always pass. I tell the children that it's smart to study at home with the person who has the money so that they can be sure to get ham equipment when mom or dad gets a license, too. Everyone has a good time. One year we had so many parents interested in the program that we began a license course at the school taught by retired hams in the evening.

With encouragement from my principal, I formed a marketing company called Media Mentors, Inc. to sell my curriculum package to other schools across the country. To date there are over 200 other schools using the package. It has been my privilege to travel to different schools in other states and to meet other teachers and share ideas.

Two years ago, I began writing a column called "Hams With Class" for 73 magazine. The purpose of the column is to share ideas I've gathered from other ham radio instructors as well as from my own experiences over the past 11 years. I also write for *Radiofun* magazine and *The NARA Communicator*. If you know any instructors who are doing creative things with young people, please have them write to me so I can showcase their good work.

One of the really fun things I do with my classes is being net control of the CQ All Schools net which I run with Gordon West, WB6NOA, every Tuesday and Thursday on 28.303 MHz at 1730 UTC (12:30 p.m. EST). School kids from all over the country check in to the net to speak with each other. We've had the incredible experience of having astronauts Jay Apt, N5QWL, Ron Parise, WA4SIR, and Ken Cameron, KB5AWP, all check in and speak at length with the kids. Another wonderful contact with K4AF, the Pentagon Amateur Radio Society, led to my visiting there and running the net from their station. You just never know who will pop up to say "hello" to the children. We invite all interested and interesting hams to join us.

The best part of using ham radio in the classroom is that I never get bored, because there's always something exciting going on somewhere in the world that we can experience firsthand on the radio. I love what I'm doing so much that it's just the most natural thing in the world for the children to be having fun while they're learning.

I often think back to the male hams who really believed that women had no place in our hobby. I make it a point to stress to my young ladies that whatever it is in life they might aspire to; no matter who tries to dissuade them from it; no matter how hard it may seem to attain it; just do it!

At this time I'm looking for articulate, involved young hams who would like to appear at national convention youth forums with me. Please inform any interested youngsters to contact me at P.O. Box 131646, Staten Island, NY 10313-0006 or 718/983-1416. —YL *World*, April/May.

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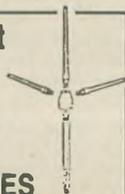
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The Triple States Radio Amateur Club 40M Net meets on Wednesday evenings at 9 p.m., EDT on 7.260 MHz. First row: N8MBM; K8AN; K8UGO; N4NCK; KF8RL. Second row: WB8AQF; WD8MGX; KA3DSX; KC8WO; K4CRP. Third row: N8MTO; N4KVF; KB2ETW; WD8U. Fourth row: WB4AQK; W3RIK; WB4FOK. Fifth row: KE4S; KQ8X; WC8H; KA8YFA; KA3HNM; K8VAI. — Submitted by Ralph McDonough, K8AN

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**Saturday:** Trends in Amateur Radio, Future of Contesting, Digital Signal Processing, Control and Analysis of Satellites, Spread Spectrum: Communications for the 21st Century, Transmitter Hunting, Future of DX'ing, Beginning Packet, TCP/IP and Other Advanced Packet Topics, QRP Technology

**Sunday:** Antenna Ordinances, DSP in Amateur Radio, Advanced Direction Finding Techniques, Why CW?, Introduction to Spice, Antennas, AARL Forum

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# Awards

## ARRL Atlantic Division

### RICHARD GOSLEE, K2VCZ Amateur of the Year Award

The 1993 ARRL Atlantic Division Amateur of the Year is Tony Young, WA3YLO, of Bowie, Maryland. This award is presented to an outstanding all-around amateur from the Atlantic Division with a strong record of service to the amateur community.

Tony is currently the president of the Foundation for Amateur Radio, a consortium of radio clubs in the Baltimore-Washington, DC, area which administers an extensive program of college and technical school scholarships for licensed amateurs. He is an active member and past president of the Anne Arundel Radio Club, and serves as ARRL affiliated club coordinator for the Maryland/District of Columbia Section.

On the air, Tony contributes to public service communications through the Anne Arundel Radio Club and the National Traffic System. Tony's call sign is familiar to traffic-handlers on all modes from the local nets to eastern area.

Of his many activities, none more clearly demonstrates Tony's dedication to Amateur Radio than his leadership in the Anne Arundel Radio Club's license training courses. He has helped train more than 200 students, most of whom are now licensed, and has shared information on AARC's program with others through presentations at the ARRL East Coast Educational Workshop.

## Grand Ole Ham Award

Recognizing lifetime service to Amateur Radio, the Grand Ole Ham award may be conferred upon Atlantic Division OMs and YLs who have been licensed at least 30 years or are at least 50 years of age. The 1993 Grand Ole Ham is Jim Spencer, W3BBB, of Lansdale, Pennsylvania.

Jim was a founding member of Philadelphia's Phil-Mont Mobile Radio Club in 1949 and remains an active, driving force in the organization. He currently serves as one of the club's directors.

He is perhaps best known for his skills as a builder. As a mobile radio club, Phil-Mont equipped and maintained a series of mobile communications vans used in public service and emergency work. Each of these units was largely designed and completely built by Jim Spencer.

In 1960, Jim designed and built a modern ham radio display station, W3TKQ, for Phil-Mont at the Franklin Institute Science Museum. Thirty years later, he re-designed and re-built the station from scratch, making it one of the most beautiful amateur stations now in existence. The cover photo for the July, 1992 *QST* shows W3TKQ, operated daily by volunteers from Phil-Mont. Over the years, Jim has earned the respect of amateurs not only in his home club but also in the amateur community at large.

## Technical Achievement Award

The 1993 Atlantic Division Technical Achievement award has been presented to John Hansen, WA0PTV, of Fredonia, New York. This award recognizes outstanding technical accomplishments in any field of Amateur Radio.

John has contributed to packet satellite technology by developing software related to automation of satellite stations. He established the world's first packet satellite gateway node, then wrote software that allows operators who do not have satellite stations to access the PacSats. This software is now in widespread use and is popular in countries where many hams cannot afford specialized

satellite equipment.

Currently an assistant editor of the *AMSAT Journal*, John has spoken at a number of AMSAT forums and has published articles in several magazines including *QST* and *73*.

An active member of the Northern Chautauqua Amateur Radio Club, John has participated in public service communications and taught successful licensing courses. He has also promoted interest in Amateur Radio at the State University of New York in Fredonia, where he is chairman of the economics department.

The awards were conferred at the Atlantic Division Convention, held in conjunction with the Rochester, New York, Hamfest on 15 May 1993.

## DARA scholarships

Tom Holmes, N8ZM, president of the Dayton Amateur Radio Association, has announced the winners of the organization's 1993 scholarships. They are:

Barbara Curry, N4TCC, of Ironton, Ohio

Steven Fook, N2PIF, of Holbrook, New York

Martin H. Gruen, KA2LVD, of North Lauderdale, Florida

Dwight A. Harris, Jr. N0NTM, of Fairfield, Iowa

Jerry A. Hensley, Jr., N8HUT, of New Paris, Ohio

Dean Madsen, KE0WO, of Storm Lake, Iowa

David C. May, KA7STL, of St. George, Utah

Matthew Minney, N8PIG, of Shock, West Virginia

Each student will receive \$2,000 toward tuition at the school of their choice. The program is initially open to any FCC licensed amateur graduating from high school in the year the award is given. There are no restrictions on the license class or the course of study selected by the student.

Information and applications for the 1994 program will be available after 1 January by written request and SASE to: DARA Scholarship Program, 45 Cinnamon Ct., Springboro, Ohio 45066-1000. The deadline for submission of applications is May 15, 1994.

(please turn to page 70)

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# FAR Scholarships

The Foundation for Amateur Radio is pleased to announce 1993 winners for the forty-nine (49) scholarships which it administers.

These scholarships were open to all Radio Amateurs meeting the qualifications and residence requirements of the various sponsors, the Foundation is a non-profit organization, incorporated in the District of Columbia, representing more than fifty clubs in Maryland, the District of Columbia and Northern Virginia. It is devoted exclusively to the scientific, literary educational pursuits that advance the purposes of the Amateur Radio Service.

Announcement of our 1994 awards will appear in the March or April issues of the major Amateur Radio publications and radio club newsletters.

## 1993 Scholarship winners

John W. Gore Memorial Scholarship - \$1000:  
 Brian D. Kuebert, N4UEZ - Warrenton, VA  
 Edwin S. Van Deusen Memorial Scholarship - \$1000:  
 Bernard P. Andreoli, WM3L - Old Forge, PA  
 QCWA Memorial Scholarships - \$800 each:  
 Shawn E. Allen, KB8IYA - Stumptown, WV  
 Dori M. Baker, AA8IT - Lynchburg, VA  
 Jeffrey Giesberg, KB2ZCB - Dumont, NJ  
 Craig A. Gullickson, KC6CEX - Fresno, CA  
 Beverlie L. Hartnett, W3NZK - Duncansville, PA  
 Charles A. Hill, KA3RWC - Seneca, PA  
 Matthew T. Johnson, N5OKP - Midland, TX  
 Steven D. Kraft, KE9RW - Menomonie, WI  
 Richard E. Kutter, KB8LOE - New Madison, OH  
 Kenneth R. Leitch, KB5OKI - El Paso, TX  
 Ralph Hassinger Memorial Scholarship:  
 David B. Perrin, KC1TS - Contoocook, NH  
 Robert Cresap Memorial Scholarship:  
 Elizabeth Skolaut, KAØYSP - Great Bend, KS  
 Max Jacobson Memorial Scholarship:  
 Patrick J. Tobin, KAØZEO - E. Grand Forks, MN  
 Meyerson Family Living Scholarship:  
 Taras B. Zima, UB5LSL/KD6VWO - Greenville, CA  
 Radio Club of America Scholarships - \$500 each:  
 In Memory of Jack Poppele:  
 Michael Ambrose, KC1UK - Monroe, CT  
 In Memory of J Alan Biggs, K4AA:  
 Keith J. Leitch, KB5JVM - El Paso, TX  
 From the Leo Meyerson Fund - \$500:  
 Grant Kesselring, NØICI - Ottumwa, IA  
 In Memory of David Talley, W2PF:  
 Guy Shechter, N5URI - Houston, TX  
 From the RCA Grant-in-Aid Fund:

Daniel M. Reynolds, NØLAI - Hibbing, MN  
 Richard G. Chichester Memorial Scholarship - \$1000  
 Sponsored by Patricia and Jack Chichester (W9AMF):  
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 Young Ladies' Radio League Scholarship - \$1200:  
 Diane M. Weldon, KA1NOJ - Marlborough, MA  
 Columbia Amateur Radio Association Scholarship - \$1000:  
 G. Colin Pitts, N3KHC - Annapolis, MD  
 Baltimore Amateur Radio Club Scholarships - \$1000 each:  
 Rodney T. Frank, KA3ØZF - Largo, MD  
 Joseph P. Nunemaker, N3KHP - Lanham, MD  
 Elisa Niemtzow, KA6WWY - Gaithersburg, MD  
 Edward J. Calhoon, N3GJI - Arnold, MD  
 Ralph V. "Andy" Anderson, KØNL Scholarship - \$1000:  
 Melissa L. Benish, N3FAC - Pittston, PA  
 Dade Radio Club Tropical Hamboree  
 scholarships - \$1000 each:  
 Tony Drake, KC4ØBY - Bradenton, FL  
 Andrew L. Glasbrenner, KØ4MA - Jacksonville, FL  
 Rose Ellen Bills Memorial Scholarship - \$2000:  
 Diane R. Magen, KG5CS - Grand Forks, ND  
 Victor C. Clark Memorial Scholarship - \$1000  
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 Frederick Radio Club Scholarship - \$1000:  
 Wayne E. Wisner, KA3YEE - Frederick, MD  
 10-10 International Net Scholarships - \$750 each:  
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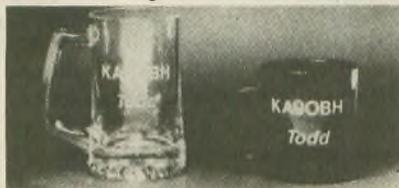
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# Silent keys

## Kenneth H. Langenbeck, W4NW

Kenneth Langenbeck, W4NW, died on 11 July at the age of 71 in Vienna, Virginia. He became licensed when he was 12 years old and was still active up to the time of his death. He loved to participate in the Sweepstakes contest every year, particularly on CW.

Before WWII Kenneth (at that time W6LVB) and friend W6LDJ packed a Model A Ford with equipment and headed from our home town of Santa Ana, California, to a motel in Las Vegas for the contest because Nevada stations were few and far between then. The manager of the motel couldn't figure out what was going on, and as I recall, they won for that section.

I met Ken in junior high school when we were both 15 years old. He was licensed in 1935 and I was licensed in 1938. Kenneth was an outstanding, accomplished man and will be missed by his many ham friends. — *Information submitted by Robert E. Haven, W6DWU.*

## Robert N. Obert, W1UWU

Robert N. Obert, W1UWU, became a Silent Key on 10 December 1992. A lifelong resident of Milford CT, W1UWU was president of the Milford Amateur Radio Repeater Association, member of QCWA, 10-10 International, and SCARA. He was an active Mason, and a Shriner. Mr. Obert is survived by his wife Joan, a daughter and two grandchildren. — *Information submitted by Joan Obert.*

## Dwayne Eskridge, W6LKE

Dwayne Eskridge, W6LKE, died 30 April 1993. He was well known for his contributions to his country and to ham radio. Many remember him as the radio operator for the FBI who was at Pearl Harbor on 7 December 1941 when he sent the alert to his superiors of the Japanese attack. He held many positions of trust and loyalty in the ARRL. He was section emergency coordinator for the Amateur Radio Emergency Service. He was an Official Observer as well as a radio monitor for the OO organization. He was a member of the Mt. Diablo Amateur Radio Club and the Radio Club of America. He was a lifetime member of the ARRL, a member of QCWA and of the Society of Wireless Pioneers. He was an Eagle Scout and an active adult scouter, counseling in the Radio Merit Badge. He was a member of the Masonic Lodge, American Legion and the Society of former Special Agents of the FBI. He is survived by his wife of 50 years, Virginia Eskridge of Walnut Creek, California, his daughter, Constance, his son, Dwayne, and his brother Robert. The ham community and the world are a better place for his having been here. We will miss him. — *Information submitted by Richard M. Shap-pee, WA5HQJ*

## Donald Harrington, N7ION

Donald Harrington, N7ION, died on 9 May 1993 in Bend, Oregon. Born in 1920 in Elsie, Michigan, he moved to the West Coast in 1959 when he was transferred to the San Francisco Bay Area during his 26-year career with Conn Organ Corporation. He retired in September 1980, but he continued to service electronic organs all over the western states.

His favorite activity while in retirement was his association with the Central Oregon Radio Amateur Club. He was the club treasurer for two years and was an integral part of club activities and functions.

Donald also served on the Red Cross Disaster Team and was active in the Civil Air Patrol.

He is survived by his wife, Judy, family and many friends. — *Information submitted by Judy Harrington.*

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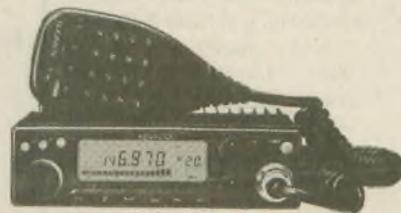
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## STATION APPEARANCE

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

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

Alan Marcus, WB9FRM, is this month's winner. Alan is the founder and current president of the North Shore Radio Club, which he began in his basement in 1980.

My station console consists of a converted piece of Danish Modern furniture (the legs were removed, a boxed-in bottom was added and wheels were installed so that the console will slide in and out for easy access to the rear of the



equipment).

The equipment is all Heath: an SB104A transceiver, an SB604 power supply and an SB644 separate supply. On the top is a Heath HM102 power meter and an SB630 phone patch/console. The equipment goes to S0-239 connectors installed in the paneling. There

is an intercom between the station and the house. I have been a ham since 1971 and have always had the same call sign. I hold an amateur Extra Class license and have conducted many Novice licensing classes. I am active on low bands (both CW and phone), 2M FM and on packet (not in the photo). **WR**



## Amateur "Hi"



John Lovering, KC1XG, sends this as a new chapter for the Handbook: "Amateur Radio and Monkeyshines."

As a school teacher at Triton Regional School in Byfield, Massachusetts, I have run into many unique problems dealing with 12 to 14-year-olds learning Amateur Radio. Recently, while relocating our school club station, I ran into a situation from a source I never expected. We have a program at our school where small capuchin monkeys ("organ-grinder" monkeys) are being trained as part of the Tufts University program to aid quadriplegics. Currently we have four monkeys in residence at the school.

After installing a G5RV and a 2M

vertical, running new coax and ground lines to our first-floor radio shack, I discovered a few problems not covered in any ham literature. It seems that the monkeys love to climb and swing on coax ... in fact, they climbed and swung their way up the side of the building onto the roof! We got them back but had to reroute the cable inside the building. Next, they pulled off all the sealer and tape from the ground rod connections and yanked on the ground cables.

Finally, there is nothing that can keep a 13-year-old Novice-in-training attentive to Morse code practice when you have an 18 in. monkey sitting on the window ledge in front of the transceiver, pushing his nose and lips up against the window, picking the mud from his toes, and hopping up and down and screeching to get attention!

I've been told by the director of the monkey program: Don't ever leave a window open; they (the monkeys) would love to get their little hands on all those shiny knobs and colored wires! **WR**

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# Reflections of a QSL manager

DAVE MILLER, NZ9E

The following is a sort of "compilation" of things that I've discovered in my five years as a QSL manager for a DX station in a remote part of the world. I've never liked the term, "manager," the only thing I've *managed*, is to keep up pretty much with getting the cards out when we've cleared them, i.e., verified that the QSO really did happen, on such-and-such date, etc. It might seem pretty obvious that anyone sending in a card, must have had a QSO with the DX station in question. Not so. We've run into a number of cards for which she, the DX station is a YL, couldn't find any log entry, and she's very thorough in her logging. The only conclusion that we've ever come to is that some of these cards that are not "real" contacts, must be from people who thought that they were talking to the DX station, but really weren't! Have you ever thought that you were talking to someone and weren't? Not me, but it happens! I can understand it a bit when the mystery station is not from a normally English speaking country, they might get confused, but it's happened with American stations. During a contest or a DX pile-up things can get pretty hectic and even confusing, but these weren't necessarily from those situations either. Mysterious is the only word for it.

I even received a QSL card one time from a European station who wanted a couple of *blank* cards ahead of time saying he would just fill in the information after he made contact. This was for a one-day special even that had been mentioned in the magazines over there too. I sent his card back with a note saying that that was not how we played the game; first the contact, then the card, but thanked him for his interest. What else can you do? That was probably the strangest one of all.

Who do you suppose are the most accurate radio amateurs in the world in filling out their cards and providing information in legible form? If you said the Japanese, give yourself a point. They have a completely different language, with a whole different alphabet,

but they are always "dead on" with regard to time, date, signal reports (each way, no less), etc. I love doing cards for the Japanese, she doesn't have to search her log because the date isn't a day off (or more), the time isn't a few hours plus or minus, and even the year is correct. The Japanese are accurate and take pride in being so.

Americans? Well, we're not the worst by any means, but we're not the best either! It's hard to generalize, some Americans are very good at correct QSL card information, but some are awful. The Japanese are consistently excellent. I even had one Japanese station instruct me on how to fill out his return card! He had a "V" in his call sign (V for Victor) and he told me to make the "V" like this, please not like this "U" or the card would be rejected by his award committee. The Japanese fellow was telling me how to write in plain English! I wasn't at all offended; he must have lots of experience with Americans who didn't take the time to write a "V" like a "V" rather than like a "U." Sad isn't it? One thing that's impressed me positively, though, is the number of hams, from all parts of the world, and Americans no less, who *do* include an SASE with their request for a card from the DX station. I did have one fellow ask me what an SASE was when I sent him the DX card using my own stamp and little note saying: "Always include an SASE when QSLing via a manager, this is a

voluntary effort for your convenience." It's a Self-Addressed Stamped Envelope, by the way, and it's to keep the QSL manager from going broke sending back the DX station's card to you because *you* want it. The DX station probably doesn't really need your card all that badly, when you stop to think about it, and the manager wasn't even involved in the QSO, so he or she is not too eager to pay for the card that you need, plus the postage on it! A lot of us don't really stop to think of the whole thing in these terms, but that is what the reality of the situation boils down to. I've had several people write back apologizing for "not thinking" after getting my little note from above, and sending a couple of stamps to make up the difference. I feel bad then, they're always so darn polite about it! Getting back to the point, I'm amazed and proud that about 95 percent of all hams include an SASE or, if they are from overseas, an addressed envelope with an IRC, an International Reply Coupon which should be redeemable for one air mail stamp, that is, if you can find a postal employee who even knows what an IRC is! I did once! Ninety-five percent of the cards having an SASE with them is darn good, I think.

There is a myth that QSL managers make all sorts of money because everyone sends a "green stamp" with the cards they really want. I don't know. I've received a number of them, which I send to the DX station, unless part of it is for return postage in which case I deduct the return postage cost and send the rest. It doesn't amount to all that much,

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but there is a worthwhile fund set up for that sort of thing and that is where it goes. I don't want to make a profit from ham radio — it's illegal and that wasn't my intention in the first place. There may be some who do; I've heard rumors, but rumors are rumors so draw your own conclusions.

A number of countries are not served by the QSL bureau system; *QST* prints a list of them from time to time. If a DX station happens to live in such a country (mine does), cards won't get through — there's no one to handle them. They can't be sent out via the bureau either — same reason. So if a DX station in one of those countries is going to send or receive card via the bureau, they have to have a QSL helper (manager) in a country that does have bureau service, as ours does. That was the main reason for helping her from the start, as well as the fact that I like talking to her and she really didn't know anyone else when she first started the hobby. That's it. We usually "clear" her cards over the radio once a week. Sometimes we're not in contact every week because other things come up, but it usually isn't more than two or three weeks' delay. Sending direct to her would mean months of waiting, but many do and that's their prerogative. "Give them the choice," is what we always say.

I personally never ignore a card and have never thrown one away without an answer. The few that we cannot verify, are sent an SWL — only card. They obviously heard her, so in that area of the report I put "SWL ONLY." I include a little note as well explaining why they didn't get a two-way card. I've only had one fellow who insisted that he worked her, and even complained to her directly. We never did send him a card, but it made for a funny conversation one evening. I only got one card back, out of perhaps three thousand so far. It would have to have been from a Japanese station. I made an error on the date. It was my fault, but it had to

be a Japanese station. He sent a really nice note "apologizing", for bothering me. It was my own dumb fault and he

apologized. At least he didn't tell me how to make the card out right this time . . . no, wait a second, he did. WR

## A wire gauge in the shack?

ROBERT KUEHN, W0HKF

Ever since the year '01, ham radio mags have been telling Johnny Ham what size wire to wind his coils with or make his antenna out of. But they never offer him any help in figuring out what gauge any piece of wire he finds in his junk box actually is.

Well, they do make wire gauges of course — a metal disc with holes all around it, about 1/8 inch in from the periphery. All the holes have slots of various sizes connecting them to the outside edge of the disc. Then if a wire can be slid snugly through any notch, that's what gauge wire it is.

But whoever saw a wire gauge advertised in a ham radio catalog? Once when I was a boy I was offered a good deal on a used wire gauge and I used it

quite a while before I happened to notice it was stamped "BWG" (British Wire Gauge) instead of "AWG" (American Wire Gauge). No wonder I had trouble finding the band in those days! BWG and AWG are as different as Centigrade and Fahrenheit.

But aside from reading it off the label on the spool, there are several ways to tell wire sizes. The good old Handbook has a copper wire table giving the resistance, diameter and turns per inch for each gauge. So you can 1. Measure off a few feet and find the resistance with a digital ohmmeter, or 2. Measure the diameter in thousandths of an inch with a micrometer or 3. Wind a coil one inch long on a round pencil and count the number of turns. — *Ground Wave*

## Off The Air

### Gather the facts

Charles Persons made some important contributions toward understanding some effects of RF energy on the human body in the April issue. (See Off The Air, "The RF Exposure Myth.")

However, I take exception to using his exposure experiences to RF energy as the only basis to call this a myth.

His experience is limited to the effects in only a small portion of the RF spectrum; that is, the broadcast band and the 10 MHz diathermy with all its spurious frequencies. To probe any problem in a scientific manner, one must examine the ramifications of all parameters that could have an effect.

I too have been subjected to various

amounts of RF power and frequencies in my career spanning 50 years from a broadcast station, radar, TV and my ham stations plus hand-helds, and at 67 I have not developed cancer. Why?

Since no one, especially the scientific community, can provide concrete proof that the human cell structure is or is not adversely affected by exposure to RF fields at this time, the door is open to speculation and perhaps irrational fears on the part of the uninformed and unscientifically oriented public. It is of no help when the press jumps upon this case and exploits it in, or under, the guise of informing the public.

Perhaps we as hams could assist the scientists gathering information pertinent to this issue. Could the ARRL, for example, set up a committee wherein all the clubs would collect information according to a standard form, providing information on members with cancer, type of cancer, bands operated, power of the stations, hand-helds, and other equipment used and for how long, and circumstances of fatal cases? Transmitter sites surrounded by residential areas could also be surveyed for cancer incidence rate.

Let us not dismiss the problem by using limited information but rather work toward resolving the issue using sound techniques and comprehensive information.

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# Disabled Amateur prepares for exam

FRANK SPICER, KA2ZOR

As a totally blind and deaf Amateur, my preparations for taking Amateur exams were a little different from everyone else's.

I prepared for my Advanced exclusively with an Optacon, a device that allows the blind to read print. For the examination itself the text was

given to me in code by a computer.

I prepared for the Extra by reading three books in print, plus other printed material, all on the Optacon, plus one Braille book. I chose to use the Optacon for the examination itself.

I had used Brailled examinations for Novice and General.

The United States is one of the few countries in the world that requires their "handicapped" Amateurs to pass the same examination as anyone else. I think this is great. Why? Because at least then the handicapped have a

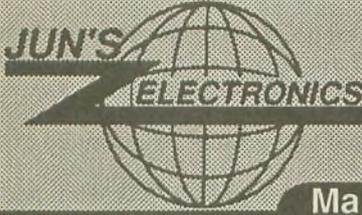
knowledge of what is going on in their hobby.

I had questions in my examination on satellite, moon bounce and pulse. I'll probably never use any of these. But what's wrong with knowing a little about them?

I had three questions on using a graph. That's sort of out for a blind Amateur, but I had figured out how to come close by using mathematics, so it didn't hurt me one bit. And it was nice to be expected to be like others.

—ARNS Bulletin

WR



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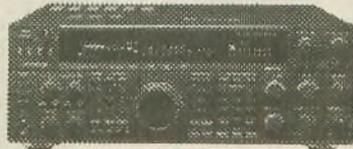
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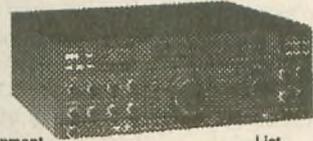
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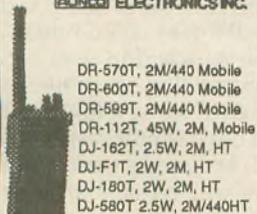
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# Product Review

## JPS model NIR-10 Digital Signal Processor

STEVE HALL, WM6P

Many new accessories are advertised each month in the ham radio magazines that I receive. Many appeal to different areas of amateur radio whether they be for CW, HF DX, SATELLITE, RTTY or VHF/UHF DX. I have successfully applied this accessory to each of these modes.

In all cases the audio from receivers has objectionable noise mixed with the desired signal whether it be digital or analog signal. The quest for an improved signal to noise ratio is the same regardless of mode. In some cases the noise is the neighbor's electric motor or a nearby powerline. All too often the interfering noise is an adjacent frequency signal or even the internal receiver noise of your own rig. In these cases I have been able to use this DSP filter to improve the signal to noise ratio (SNR). At my station I have wired the audio from several receivers to a switch console so that individual audio lines may be selected for filtering depending on the transceiver in use.

### Modes of operation

The JPS NIR-10 has three audio filter modes, some of which can be used

simultaneously. Noise and Interference Reduction (NIR) mode removes noise and heterodynes. Notch Filter mode eliminates multiple heterodynes. Bandpass (BP) allows three widths of audio filtering. Each is a powerful addition to your receiver.

Hooking up the filter is fairly simple as it is driven from receiver audio. This may be either low impedance speaker audio or low level audio such as you might find at the accessory jack on some receivers. Either a speaker or headphone may be connected to the NIR-10 as an output device for listening.

The unit has an excellent internal audio amplifier that alone improves many receivers performance. (It is surprising how many \$1000 plus receivers lack a good low noise audio amplifier.)

Lets look at various applications and see how many may apply to your communications needs.

### HF SSB

One of the most common annoyances on HF is a carrier or heterodyne generating a continuous signal in the receivers bandpass. Most state of the art receivers have various ways of attacking a heterodyne including a notch filter, crystal bandpass filter or some form of band pass tuning. Typically a single heterodyne is not too great a challenge but if more than one is present, normally only one can be eliminated. The NIR-10 can handle a number of heterodynes simultaneously as it can distinguish between voice and other (noise) audio signals. This allows it to only pass the voice signals, rejecting all other audio.

Should the offending signal be another

voice signal, a different mode is used, this is the bandpass mode. The bandpass can be varied in both width and frequency with independent controls. The wide position (1800 Hz) is used for voice signals and is extremely efficient. If the offending SSB signal is at least 2 KHz above or below the desired signal, it can be completely eliminated, such that it is no longer detectable. This is accomplished without distortion of the desired signal. I have never used a filter this effective before. In spite of the various filters, including notch and variable bandpass on my Kenwood TS-850S the NIR-10 is a significant addition for HF applications.

One note here that applies to all modes and applications. As this unit operates on the audio output of your receiver it must have some of the originally desired signal still present in the audio to capture. While this sounds rather obvious, during my tests I found that if the interfering signals were strong enough, they had raised the AGC and reduced the gain of the receiver to the point that only the noise remained in the audio output. While this is the extreme case, it can happen if the interfering signal is much stronger than the desired signal. Under these circumstances the manufacturer recommends reducing the RF GAIN to minimize AGC action and increasing AUDIO GAIN on the receiver. This should help.

At times this unit's performance will appear magical, but it cannot deliver a signal that does not exist. Good IF filtering is still very important.

While the NIR-10 does not have a squelch function, it does reduce noise on HF to the point that the normal background noise is no longer as objectionable.

Any number of audio filters are available that use some form of analog filtering, some using active stages, some passive. Frequently they suffer from either ringing, in the case of active filtering or from attenuation and poor skirts in the passive units. The NIR-10 suffers from neither. As you tune the bandpass across the audio spectrum to filter out an offending heterodyne, the signal will seem to either be passed at full amplitude or be completely eliminated. The bandpass appears to have vertical slopes. You really do have to try it to believe it.

The Medium position has a width of 600 Hz and the Narrow is 250 Hz, take your pick for CW operation. Again, because the Narrow position does not introduce ringing which is common on many competitive filters, it is very effective for CW. If band conditions were not too crowded I frequently used the 600 Hz. This unit will particularly assist receivers that may not have narrow IF filters.

WR

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## RTTY/AMTOR

The 600 Hz bandpass worked quite well for FSK signals. Unfortunately as this unit introduces a 130 millisecond delay between input and output it can not be used on AMTOR ARQ mode but will work fine on RTTY, ASCII or AMTOR FEC as timing is not a consideration. This delay is the time required for the unit to digitize the audio, process it and release it to the output. For the first few hours of operation using this unit, the delay is disconcerting. As you tune your receiver, the audio output lags by 130 milliseconds. You tend to overshoot signals a little if you are tuning fast. But after a few hours of operation it is hardly noticed and is no longer an issue. For critical tuning of digital signals it is very easy to hit the bypass switch for a moment and then switch it back in line. If tuning slowly, the delay is not noticed at all.

## Weak Signal VHF/UHF

One area of ham radio that I have taken pretty seriously is weak signal work on 2 meter sideband. Here heterodynes and crowded bands are rarely a problem. The real enemy is white noise. This may be either band noise or commonly internal receiver noise.

On this mode, serious sidebanders spend a lot of money to improve the signal to noise ratio even a few tenths of a dB. I have upgraded my station to include low loss coax, large directional antennas and mast mounted GaAsFET preamps. This is standard equipment for many who enjoy weak signal work. The NIR-10 should be added to the equipment list of those who seek to have the best weak signal stations.

During frequent contacts from my home in Ventura County to Sacramento over a 400 plus mile path, the reduction of internal receiver noise of the IC-275 becomes quite important and I now rely on DSP to help.

Using the noise reduction mode, 6 to 10 dB reduction is not uncommon using a near minimum setting of the controls. Additional reduction of noise is possible but some alteration of the character of the signal begins that limits further effectiveness of additional filtering. I am hesitant to say that as more processing is used distortion is introduced as this is

not the case. The filtering algorithms attempt to pass only those portions of the audio that meet the criteria of a voice signal. As components of the white noise are increasingly filtered out, portions of the white noise that sound like voices remain. This actually begins to confuse the listener but this is only the case if processing is carried to an extreme.

During this test I used a dual trace scope to simultaneously view both the input and output of the filter. As the amount of processing gain was increased with the front panel control I could see the noise level drop with almost no change in the voice signal waveform in either amplitude or shape.

While this filtering will not bring completely undetectable faint signals out of the noise, it will improve the SNR which greatly relieves operator fatigue and allows weak signals to be more intelligible. Certainly a worthwhile improvement. If you sometimes monitor a weak signal calling frequency waiting for a QSO then this filter is for you.

## Transmitted audio

An application that I did not test but should be of interest is filtering of audio prior to transmission. In some unusual applications, the microphone is in a extremely noisy environment such as aircraft or motorcycle. I am confident that this unit would cancel a significant portion of the ambient background noise. As the NIR-10 operates off of 12 volts it would be easy to adapt to mobile operation. With proper switching, it could be transferred from transmit to receive automatically. But again this would be a most unusual application.

## Conclusions

Based on the success of digital signal processing and the drop in cost of this technology I am certain that all of the next generation of top of the line HF amateur transceivers will employ DSP in the receive audio circuitry. This will replace the existing notch filter on the better units. As the DSP processors become faster they will be used not only in the audio circuits but will be introduced into the IF circuitry. This will make DSP technology even more effective. Fortunately we can add DSP to existing radios today and begin to enjoy the benefits now.

Due to the versatility of the filter I find it useful regardless of the mode in use. The JPS NIR-10 has become a permanent fixture of my station.

Manufacturer: JPS Communications, Inc., P.O. Box 97757, Raleigh, NC 27624-7757; (919)790-1456.



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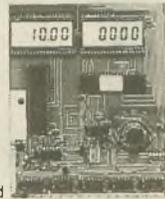


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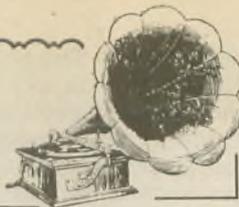
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# OLD-TIME RADIO



## Ham radio — a life-long hobby

**JAMES RIFF, K9JSC**

As a young man my interest in electronics was satisfied when I first learned that I could talk to my school buddies without the use of a telephone, and I could build the equipment myself.

It all started when a friend loaned me a Model T Ford spark coil and said we could hear each other on our kitchen radios. One day after school connected it to a short length of wire and a couple of flashlight batteries and sent a few clicks out to my friend. We would set up schedules during school, and during lunch send a couple of dots and dashes, confirming our contacts later that afternoon in class. We soon learned that

this was illegal, and we could be in trouble with the feds! We had heard that we could do this legally if we had a ham license. A quick trip to the public library gave us the address of the ARRL, and soon information began to arrive telling us how to be hams.

I was 14 years old that hot summer day of 1957 when I took the FCC test at the federal court house in Chicago. 1958 brought high school and many diversions that put ham radio on the back burner. Late in my senior year I found out that my high school had an Amateur Radio club and a station on campus. During my study period I would work a few stations, and the thrill was

back. Off to college, and again ham radio fell by the wayside while the rigors of college life took up all available spare time.

A new job was the assignment of my post-college life, and the solar cycle was favorable for pleasant DX contacts. Again I was reacquainted with my old hobby, and the pleasures of radio were again savored. Along came marriage and a family, and the ham gear was stored away while the kids grew up. From time to time I would listen to the 2M local repeaters on a short whip antenna, but no great interests were met. When the kids packed off to college and my free time became extensive, I began to look again to the hobby of my youth, ham radio. A new antenna and HF transceiver were connected up just as solar cycle 22 assisted in making the DX a long lost thrill again. With the many new countries, and especially the IOTA islands, a whole new world had sprung up before me.

Life, like the solar cycles, seems to perk up on some parallel schedule, for when I am 63 years old cycle 23 will be under way and hopefully I will be lucky enough to be around to again enjoy the thrill. But then again, cycle 24 and 25 could be within reach if the good Lord is willing and the antenna holds up! WR

## Improving your CW speed

There are many ways CW speed can be increased. There are numerous code tapes, listening to CW QSOs, computer-generated CW programs, etc. I personally think the best way is to actually use CW on the air and have a CW QSO with someone.

In trying to improve speed, I don't recommend calling CQ, but answering one. The reason? Simple. Most individuals can send faster than they can copy.

If you can't find a CQ, as a last resort call it yourself. Remember to slow your speed down to the fastest speed you can copy comfortably. Having at least one per day will help your speed

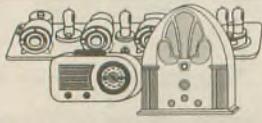
tremendously (and it doesn't hurt for sending practice either!).

Another way is to listen in on CW traffic nets. Notice I did NOT say check-in, but just listen. Try copying everyone. There are several daily in the 80M CW band that I recommend. They are:

Net	Time	Frequency
Virginia Slow Net	1830	3680
Ohio Slow Net	1810	3708
Maryland Slow Net	1930	3716

There are more, but these are just a start. Notice two of those mentioned are in the 80M Novice band. —SPARKGAP □

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## 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- & Thurs. 8:15 p.m. 147.18+. Info: Fred, K8AJX, (205) 270-0909.

## ALASKA

**Anchorage Amateur Radio Club, Inc.** Meets 1st Fri./monthly, 7 p.m., Alaska Pacific Univ. Carr-Gottstein Cntr., 4101 University Ave., Anchorage, AK. Fred S. Wegner, KL7HFM, Pres.

**North Pole Hamsters ARC.** Meets 1st Mon./monthly, 7 p.m., VFW Bldg., Old Rich Hwy. & VFW St., P.O. Box 56424, North Pole, AK 99705.

## ARIZONA

**Central Arizona DX Assoc., (CADXA).** Meets 1st Thurs./monthly, 7 p.m., Salt River Project Pera Club, 1/2 mi. West of 68th & Continental Dr., Scottsdale, AZ. Rptr. K5VT 147.32/92. Packet Cluster nodes (S): 145.09, 144.93, 145.03. Info: Warren Hill, KF7AY, (602) 396-2218.

**Cochise Amateur Radio Assn., (CARA).** Meets 1st Mon./monthly, 7:30 p.m. at club facility on Moson Rd., Sierra Vista, AZ. WA7KYT/R 146.16/76 rptr.

**Scottsdale Amateur Club.** Meets 1st Wed./monthly, 7:30 p.m., Scottsdale Sr. Cntr., 7375 E. 2nd St., Scottsdale, AZ. Net Tues., 7 p.m., 147.18 rptr. Info: Barney Fagan, KB7KOE, (602) 861-2817.

**Tucson Repeater Assoc.,** P.O. Box 40371, Tucson, AZ 85717-0371. Meets 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).

## CALIFORNIA

**Amador County Amateur Radio Club.** P.O. Box 1094, Pine Grove, CA 95665. Meets 1st Thurs./monthly, 7:30 p.m., Jackson Sr. Cntr., 229 New York Ranch Rd., Jackson, CA. Info: call 146.835.

**Amateur Radio Club of El Cajon, WA6BGS.** P.O. Box 50, El Cajon, CA 92022. Meets 2nd Thurs./monthly, 7 p.m., La Mesa Church of Christ, 5150 Jackson Dr., La Mesa, CA. Rptrs. 147.675(-), 224.08-. PL 107.2. Nets 147.570 Wed./Sat., 7 p.m. Info: (619) 697-2700.

**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.

**Conejo Valley Amateur Radio Club, (CVARC).** Meets 2nd Thurs./monthly, 7:30 p.m. Thousand Oaks Elks Lodge, 158 Conejo School Rd., Thousand Oaks, CA 91360.

**Contra Costa Communications Club, Inc., WD6EZR/R.** P.O. Box 20661, El Sobrante, CA 94803-0661. Meets 2nd Sun./monthly (except May & Dec.), 7 a.m., Baker's Square Restaurant in Richmond, CA. Info: Ed Caine, KA60FR, (707) 996-0962.

**Downey Amateur Radio Club.** Meets 1st Thur./monthly, 7:30 p.m., So. Middle Sch., 12500 S. Birchdale, Downey, CA. Wkly nets—Thurs., 7:30 p.m. 146.175(+). For info: P.O. Box 207, Downey, CA 90241-0207.

**East Bay Amateur Radio Club, Inc.** Meets 2nd Fri./monthly, 8 p.m.-10 p.m., West Co Times Bldg., 4301 Lakeside Dr., Richmond, CA 94806. Info: Rachel Lewellen KB6LHR, (510) 233-5034.

**Fullerton Radio Club, Inc., W6ULI.** P.O. Box 545, Fullerton, CA 92632. Meets: 3rd Wed./monthly, 7:30 p.m., Sr. Citizens Ctr., 340 W. Commonwealth, Fullerton. Net ea. Tue., 8 p.m. 147.975 (-600). Info: Bob Hastings, K6PHE (714) 990-9203.

**Gabilan Amateur Radio Club (GARC).** P.O. Box 2178, Gilroy, CA 95021-2178. Meets odd months, 2nd Thurs., 7:30 p.m., First Interstate Bank, First St., Gilroy and even months for brkfst., 2nd Sat., 8:30 a.m.

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

**Golden Triangle ARC, (GTARC).** Meets 4th Mon./monthly, 7:30 p.m., Sharp Health Care Activities Rm., 25500 Med. Ctr. Dr., Murrieta, CA 92562.

**Kern River Valley Amateur Radio Club.** P.O. Box 2611, Lake Isabella, CA 93240. Meets 4th Sat./monthly, 4 p.m. with potluck supper following. Talk-in on 144.50 Simplex.

**LeeDeForest Amateur Radio Club.** Meets 3rd Thurs./monthly, 7:30 p.m., San Jacinto Civic Cntr., 625 S. Pico Ave., San Jacinto, CA.

**Livermore Amateur Radio Club, (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 Secretary, P.O. Box 3190, Livermore, CA 94551-3190. (510) 447-3815.

**Manteca Amateur Radio Club (MARC).** P.O. Box 545, Manteca, CA 95336. Meets 1st Thurs./monthly, #1 Firehouse, 7 p.m. Talk-in on club rptr. 146.985- PL 100Hz. Info: (209) 823-3611.

**Marin Amateur Radio Club (MARC).** W6SG. Box 151231, San Rafael, CA 94915-1231. Meets 1st Fri./8 p.m.; MARC Clubhouse Bldg. 549, HAFB, Novato, CA. (415) 883-9789 (Summer exceptions; contact Pete N61YU, 924-1578). Sun. AM Club at Red Cross, San Rafael.

**Mount Diablo Amateur Radio Club.** P.O. Box 23222 Pleasant Hill, CA 94523. Meets 3rd Fri./monthly, 8 p.m., Our Savior's Lutheran Church, 1035 Carol Ln., Lafayette, CA. Net Thurs. 7:30 p.m. on 147.06(+). Info: George K16YK, (510) 837 9316.

**North Hills Radio Club.** Meets 3rd Tue./monthly, 7:30 p.m., Elks Lodge, on Cypress at Hackberry in Carmichael, CA. (P.L. 162.2) Net K61S Thurs., 8 p.m. 145.190. 220 Net, Tue. 8 p.m. 224.40(-).

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

**Orange County Amateur Radio Club.** Meets 3rd Fri./monthly, 7:30 p.m. at 907 E. Vermont, Anaheim, CA. (Between Anaheim Blvd. & State College) Call in on 146.55 simplex. Contact Ken Koehechy W6HHC at (714) 541-6249.

**River City A.R.C.S.** Meets 1st Tues./monthly, 7 p.m., SMUD Bldg., Don Julio at Elkhorn, Sacramento, CA. License classes offered. For info contact Lyle, AA6DJ, (916) 483-3293.

**Sacramento Amateur Radio Club.** Meets 2nd Wed./monthly, 7 p.m. Sac. Blood Ctr., 32nd St. + Stockton Blvd., Sacramento, CA. Info net every noon on rptr. W6AK/R 146.910. Jim L. White, N6UGO, (916) 773-5890.

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

**Santa Clara County Amateur Radio Assoc., (SCCARR) W6UW & W6UU.** P.O. Box 6, San Jose, CA 95103-0006. (408) 249-6909. Meets 2nd Mon./monthly, 7:30 p.m., United Way, 1922 The Alameda, San Jose. Net all other Mon., 7:30 p.m. W6UU/R 146.385+442.425+ PL 107.2

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

**Santa Cruz County Amateur Radio Club, Inc.** Meets last Fri./monthly at Dominican Hosp. Ed. Bldg., Soquel Dr., Santa Cruz, 7:30 p.m. Net K6BJ 146.79 Mondays at 7:30 p.m.

**Santa Monica—Westside Amateur Radio Club.** Meets 3rd Thurs./monthly, 7:30 p.m., Santa Monica Red Cross, 1450 11th St., Santa Monica, CA. Info Net every Tues., 8 p.m., 146.67-

**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 ARC.** P.O. 3262, Auburn, CA 95604. Meets 2nd Fri./monthly, 7:30 p.m., Firehouse, 226 Sacramento St. Auburn. 10m, Wed. 7:30 p.m., 28.415, 2/220m, Thurs. 7:30 p.m., 145.430- (PL 94.8) & 223.86-

**South Bay ARC.** P.O. Box 536, Torrance, CA 90508. Meets 3rd Thurs./monthly, 7:30 p.m., Torrance Airport, 3301 Airport Dr., Torrance, CA. Talk-in on WB6MYD rpt. 244.38/78. Info: (310) 328-0817.

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

**Stanislaus Amateur Radio Assoc., Inc. (SARA).** Meets 3rd Tues./monthly, 7:30 p.m., Stanislaus County Admin. Bldg. (lower level conf. rm.), 11th & H St., Modesto, CA.

**Tri-County Amateur Radio Assoc.** P.O. Box 142, Pomona, CA 91769. Meets: 2nd Mon./monthly, 7:30 p.m., Covenant United Methodist Church, corner of Towne Ave. & San Bernardino Rd. in Pomona, CA.

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

**Vaca Valley Radio Club.** Meets 2nd Wed./monthly, 7 p.m., Vaca Fire Dist. Stn. on Vine St. in Vacaville, CA. Rptr.: WD6BUS 145.470- PL 127.3. Alan McCarthy (707) 446 0200.

**Victor Valley Amateur Radio Club.** P.O. Box 869, Victorville, CA 92392. Meets 2nd Tues./monthly, 7:30 p.m., Victor Valley Museum, 11873 Apple Valley Rd., Apple Valley, CA. Talk-in 146.94-, info net Sun. 7 p.m. 146.94-

**West Valley Amateur Radio Assoc.** P.O. Box 6544, San Jose, CA 95150-6544. Meets: 3rd Wed./monthly, 7:30 p.m. (except Dec.) Cambrian Sch. Dist. Office, 4115 Jackson Dr., San Jose, CA. W6PIY/R. Net Tue., 8:30 p.m. 147.39+, 223.96-

**Willits Amateur Radio Society, (WARS).** P.O. Box 73, Willits, CA 95490. Meets 4th Mon./monthly, 7 p.m., Brooktrails Fire Dept. (northwest of Willits). Talk-in: 145.13-, PL 103.5.

**Yuba-Sutter Amateur Radio Club, (YSARC).** P.O. Box 1169, Yuba City, CA 95991. Meets 2nd Tue./monthly, 7:30 p.m., Yuba City Police Bldg., 1545 Poole Blvd., Yuba City.

## COLORADO

**Denver Radio Club.** Meets 3rd Wed./monthly, 7:30 p.m., St. Joseph Episcopal Church, 11202 W. Jewell Ave., Lakewood, CO. Club net: Sundays, 8:30 p.m. 147.33 MHz.

## CONNECTICUT

**Shoreline ARC, (SARC).** P.O. Box 256, Westbrook, CT 06498. Meets 3rd Thurs./monthly, 7:30 p.m., Westbrook Ingham Sch., (203) 245-1969. Call-in: 145.29.

**Tri-City Amateur Radio Club.** P.O. Box 686, Groton, CT 06340. Meets 2nd Tue./monthly, 7 p.m., St. Lukes Lutheran Church on Rt. 12. Info: Bob, KA1BB, (203) 739-8016.

## DELAWARE/PENNSYLVANIA

**Penn-Del Amateur Radio Club.** P.O. Box 1964, Boothwyn, PA 19061. Sponsor of KA3TWG/Rptr. on 224.22 covering Delaware & Tri-state area. Info/net Thurs./wkly, 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., 3852 Prime Place, New Port Richey. WA4GDN rptr. 146.67-

**Indian River ARC, Inc., (IRARC).** 597 Capri Rd., Cocoa Beach, FL 32931-3011. Meets 1st Thurs./monthly, 7:30 p.m., Martin Andersen Sr. Ctr., 1025 S. Florida Ave., Rockledge FL.

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

## GEORGIA

**Dalton Amateur Radio Club, Inc., (DARC).** Meets 4th Mon./monthly, 7:30 p.m., Magistrate Court Bldg., corner of Waugh St. & Thornton Ave., Dalton, GA. Info: Bill Jourdain, N4XOG, (404) 226-3793.

## HAWAII

**Big Island Amateur Radio Club.** P.O. Box 1938, Hilo, HI 96721-1938. Meets: 2nd Tue./monthly, 7 p.m., HELCO Auditorium, 1200 Kilauea Ave., Hilo. Talk-in on 146.68-, 146.76-, 146.88-, 147.02+ & 147.04+.

**Emergency Amateur Radio Club, (EARC).** P.O. Box 30315, Honolulu, HI 96820-0315. Meets 4th Thurs./monthly, 7 p.m., Lincoln Elem. Sch., 615 Auwaiolimu, Honolulu. Nets: nightly 7:30 p.m., 146.88 & 146.80. Rptrs: 146.76-, 148.80-, 148.88-, 148.98- 146.94-. Info: (808) 621-5916.

## IDAHO

**Kootenai Amateur Radio Society, (KARS).** P.O. Box 5222, Coeur d'Alene, ID 83814. Meets 2nd Mon./monthly, 7:30 p.m., Sheprock Bldg., Coeur d'Alene Airport.

## ILLINOIS

**Chicago FM Club Inc., (CFMC).** 146.76 (PL 107.2)/224.10/224.18/443.75 (PL 114.8). P.O. Box 1532, Evanston, IL 60204. Ham help line: (312) 262-6773. Info net Tues., 9 p.m. on 146.76. Meets 3rd Wed./monthly, 8 p.m.

**Chicago Suburban Radio Assn., (CSRA).** P.O. Box 88, Lyons, IL 60534. Meets 3rd Wed./monthly, 7 p.m., Mid City Nat'l Bank, 7222 W. Cermak Rd., N. Riverside, IL.

**Fox River Radio League.** Meets 2nd Tue./monthly, 7:30 p.m., Old Bank Bldg., 900 No. Lake St., lower level, Northgate Shopping Ctr. & Rt. 31, Aurora, IL.

**Hamfesters Radio Club, W9AA.** P.O. Box 42792, Chicago, IL 60642. Meets 1st Fri./monthly, 8 p.m., Crestwood Civ. Ctr., 139th & Kostner, Crestwood, IL. Nets: Sun. (local) 0100 UTC, 28.41 MHz; Mon. 9 p.m. 146.43 S., Packet Mailbox 145.07. Info: (708) 535-3496.

**Peoria Area Amateur Radio Club, (PAARC).** Meets 2nd Fri./monthly, 7 p.m., 1401 N. Knoxville Ave. Info: (309) 685-6698. Rptrs: 146.25/85 & 147.675/075.

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

**The Starved Rock Radio Club, W9MK.** P.O. Box 22, Tabor St., Leonore, IL 61332. Meets 1st Mon./monthly, 7:30 p.m. Rptr. net 7 p.m. Wed./wkly., 147.72/12.

**Tri-Town Radio Amateur Club.** P.O. Box 302, Hazel Crest, IL 60429. Meets 1st & 3rd Fri. (Sept.-June), 8 p.m., Hazel Crest Village Hall, 3000 W. 170th Pl. Net Wed. 146.49. Info: (708) 335-9572.

**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 p.m., 145.39 MHz. 440 MHz net on Tues., 8:30 p.m. on 444.475 MHz.

## MICHIGAN

**Chelsea Amateur Radio Club, Inc.** Meets 4th Tue./monthly, 7 p.m., Society Bank, 1478 Chelsea-Manchester Rd., Chelsea, MI 48118.

**Hazel Park Amateur Radio Club.** Hoover Elementary School-Hazel Park, P.O. Box 368, Hazel Park, MI 48030. Meets 2nd Wed./monthly, 7:30 p.m. Sept. thru May. 146.64(-) Call-in. W8JXU Club Call. Net Sun., 9 p.m., 146.64(-).

**Michigan Amateur Radio Alliance, (MARA).** O-11555 8th Ave. NW, Grand Rapids, MI 49504. Meets 1st Thurs./monthly, 7 p.m., T.J. Mfg., 1739 Elizabeth, Grand Rapids, MI. STBY 145.78+ 145.41.

**Oak Park Amateur Radio Club.** Oak Park Comm. Ctr., 14300 Oak Park Blvd., (same as 9 1/2 Mile Rd., west of Coolidge) Oak Park, MI 48237. Meets 2nd Mon./monthly, 7:45 p.m. Talk-in on our 224.36 MHz or 146.64 MHz.

**Utica Shelby Emergency Communications Assoc., (USECA).** P.O. Box 1222, Sterling Hgts., MI 48311-1222. Meets 2nd Tue./monthly, (Sept.-June), Donald Bemis Jr. High Sch., 12500 Nineteen Mile Rd., Sterling Hgts, MI (between Schoenher & Clinton River Rds.) Talk-in on 147.18+ 100Hz PL. 24-hr. hot line: (313) 268-6730.

## MINNESOTA

**Minneapolis Radio Club.** P.O. Box 583281, Minneapolis, MN 55458-3281. Meets 3rd Fri. (exc. June, July, Aug.), Mpls. Red Cross, 11 Dell Place, Mpls, 7:30 p.m. Making waves since 1916. Net 147.03(+), 7 p.m. Mon.

## MISSISSIPPI

**Jackson Amateur Radio Club, Inc.** Meets 3rd Thurs./monthly, 7 p.m., Am. Red Cross Bldg., Riverside Dr., Jackson, MS 39202.

## MISSOURI

**Gateway To Ham Radio Club, NODN.** Young hams of all ages. Meets 1st Sun./monthly, 2-4 p.m., Sacred Heart Sch., 10 Ann Ave., Valley Park, MO 63088 (St. Louis). Net Sun., 8:30 p.m. 146.94 rptr. Beginners classes, VE exams, Club station & mtgs. Info: Rev. Dave Novak (314) 225-1952 (voice or fax).

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

## NEBRASKA

**The Ak-Sar-Ben ARC of Omaha, NE.** Meets 2nd Fri./monthly, 7:30 p.m., Omaha Red Cross near 38th & Dewey St. 146.34/94. Contact Jim Miller (NØORV), (402) 253-8272

## NEVADA

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

**Sierra Intermountain Emergency Radio Assoc., (SIERA).** P.O. Box 2348, Minden, NV 89423. (702) 265-4278. Meets 2nd Tue./monthly, 7:30 p.m., Douglas County Lib., Minden, NV. Talk-in 147.33.

## NEW HAMPSHIRE

**Great Bay Radio Assn., WB1CAG.** P.O. Box 911, Dover, NH 03820. (603) 755-2600/335-6643. Meets 2nd Sun./monthly, 7 p.m., Rochester Fire Dept. Training Rm.. Talk-in: 147.57.

## NEW JERSEY

**10-70 Repeater Assn., Inc.** 235 Van Emburgh Ave., Ridgewood, NJ 07450. Meets 1st Wed./monthly (except July & Aug.), 8 p.m., VFW, Valley Rd., Clifton, NJ. Rptrs.: 146.10/70, 223.24/224.84, 449.15/444.15.

**Bergen Amateur Radio Assoc., (BARA).** P.O. Box 304, Hackensack, NJ 07601. Meets 1st Sun./monthly, New Milford Elks Lodge, Patrolman Ray Woods Dr., New Milford, NJ 07646. Nets: 28.350 Mon. 9 p.m., 144.40 9 p.m. Wed.

**South Jersey Radio Assoc., (SJRA).** Pennsauken Sr. Hi Sch. at Hylton Rd. & Remington Ave., Pennsauken, NJ 08109. Meets Jan.-Oct., 4th Wed./monthly, 7:30 p.m. (Nov.-Dec. 3rd Wed.). Talk-in: 145.29 rptr. Club call K2AA.

## NEW YORK

**Amateur Radio Assoc. of the Tonawandas, (ARATS).** P.O. Box 430, No. Tonawanda, NY 14120. Meets 3rd Tues./monthly (except July & Aug.); 7:30 p.m., Sweeney-Hose Co., 499 Zimmerman St., No. Tonawanda, NY. Talk-in: 146.955/355 rptr. W2PVL.

**Genesee Radio Amateurs, (GRAM).** N.Y.S. Civil Defense Ctr., 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, 7:30 p.m. Info: Charlie, WA2JUU, (518) 420-0046.

**New York City Rpt. Assoc.** P.O. Box 140819, Staten Island, NY 10314-0019. Meets 2nd Thurs./monthly, 8 p.m., Eger Nursing Home. Talk-in rptrs. 146.88/447.375. Info: (718) 998-1088.

**Orleans County Amateur Radio Club, (WA2DQL).** Meets at Emergency Management Office, West County House Rd., Albion, NY 14411, 2nd Mon./monthly, 7:30 p.m. 145.27 — 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. 145.1701 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 — "ClassroomNet", 7.238 MHz, 7 a.m., E.S.T. PSE QSLI

**Suffolk County Radio Club, (SCRC).** Meets 3rd Tues./monthly, 8 p.m., Bohemia Rec. Ctr., Ruzicka Way, Bohemia, NY. Talk-in: 145.21 rpt. Morten Eriksen, KA2UIU, (516) 929-6911.

**Westchester Amateur Radio Assoc., (WARA).** Meets 1st Thurs./monthly, 7:30 p.m., Scarsdale Town Hall, Scarsdale, NY 10583. All invited. Info: Dan Grabel, N2FLR, Pres. (914) 723-8625.

**Westchester Emergency Comm. Assoc., (WECA).** Meets 2nd Mon./monthly, 7:30 p.m., Westchester County Ctr., White Plains. Contact WB2VUK or call WECA INFORLINE (914) 962-9666 or WECA landline BBS (914) 738-6857 for details. Talk-in WB2ZII/R 147.66/06 MHz.

**Yonkers Amateur Radio Club, (YARC).** Meets 2nd Sun./monthly, 10 a.m., 1st Pct., Yonkers Police Station, E. Grassy Sprain Rd., Yonkers, NY. Info: P.O. Box 378, Centuck Sta., Yonkers, NY 10710. (914) 963-8995. 146.865-445.15/440.15.

## NORTH CAROLINA

**North Carolina Chapter TSARC.** Meets Mondays, 28.35 on the air, 8:30 p.m. local time, Sat. 10 a.m. on 7240 and Wed. 9 p.m. on 7259. "The Alligators" — all mouth, no ears.

**Rowan Amateur Radio Society, (RARS).** Meets 2nd Mon./monthly, 7:30 p.m., Ruffy Holmes Sr. Ctr., 1120 Walnut St., Salisbury, N.C. Info: Ralph, WB4AQK, (704) 636-5902.

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

## OHIO

**Ashtabula County ARC.** Ken Stenback, AIBS (964-7316). County Justice Ctr., Jefferson, OH. Meets 3rd Tue./monthly, 7:30 p.m. County rptr., 146.715.

**Clyde Amateur Radio Society (CARS).** Meets 2nd Tue./monthly, 7:30 p.m., Municipal Bldg., Clyde, OH 44811. NF8E rptr. 447.625/442.625. 444.60+ MHz). Net Sun. 9 p.m.

**Firelands Area Rptr. Assn., (FARA).** Meets 4th Tue./monthly, 7 p.m., Ohio Veterans Home, Sandusky, OH. WB8LLY rptr. 146.805-/205. Net Sundays, 8 p.m. Info: Rob Harshbarger, N5XR8.

**Greater Cincinnati Amateur Radio Assn., (GCARA).** Meets 4th Wed./monthly, 7:45 p.m., Cincinnati Museum of Nat. History, 1720 Gilbert Ave. Amateur Radio Station WBZD. Info: WA8STX or (613) 563-7373.

**Lancaster & Fairfield County ARC.** Meets 1st Thurs./monthly, 7:30 p.m., American Red Cross, 121 W. Mulberry St., Lancaster, OH 43130. Info net Mondays, 8 p.m., K8QIK/R 147.63- rptr.

**North Coast ARC.** P.O. Box 30529, Cleveland, OH 44130. Meets 2nd Thurs./monthly, 7:30 p.m., North Olmsted Middle Sch. cafeteria, 27351 Nuttmut Ridge Rd., North Olmsted, OH.

**Northern Ohio Amateur Radio Society, (NOARS).** Meets 3rd Mon./monthly, 7:30 p.m., Gargus Hall, Rt. 254, Lorain, OH. Info: rptr. K8KRQ 146.70, DX alert rptr. 145.15.

**Springfield Independent Radio Assoc., (SIRA).** Call-in 145.45—224.26. Meets 2nd Tues./monthly, 7:30 p.m., Mercy Hosp. & 4th Tues./monthly, 7:30 p.m., Am. Red Cross. Info: Rodney Myers, KB8WV, (513) 399-1022.

**Toledo Mobile Radio Association.** P.O. Box 273, Toledo, OH 43697. Meets 2nd Wed./monthly, 7:30 p.m., Luke's Bam, Lucas County Rec. Ctr., 2901 Key St., Maumee, OH. WB8HFH 141.87- rptr. Rptr. info/swap & shop, Sundays, wkly—8:30 p.m.

**Triple States Radio Amateur Club.** Meets Wed./weekly on 28.48 at 8:30 p.m., 7260 at 9 p.m. Rptrs. 146.91- & 146.115/715-. P.O. Box 240, Rd. #1, Adena, OH 43901. (614) 546-3930.

**Van Wert Amateur Radio Club, Inc.** 1220 E. Ridge Rd., Van Wert, OH 45891. Call-in: 25/85. Meets 1st & 3rd Sat./monthly, 8 p.m.

## OKLAHOMA

**Enid Amateur Radio Club, Inc.** W5HTK, W5QYE, W5AUB. P.O. Box 261, Enid, OK 73702. Meets 4th Thurs./monthly, OK Hwy. Patrol Stn.

## OREGON

**Central Oregon Radio Amateurs, (CORA).** P.O. Box 723, Bend, OR 97709. Meets last Thurs./monthly, 7 p.m., Bend Sr. Ctr., 1036 NE 5th, Bend, OR. Net Sun. 7:30 p.m. 147.06+ MHz. Info: (503) 382-1739.

**Keno Amateur Radio Club.** P.O. Box 653, Keno, OR 97627. Meets 3rd Thurs./monthly, 7 p.m., Keno Fire Stn. Rptr. 147.32+ W7UFM. Info: Tom Hamilton, WD6EAW, (503) 883-2736.

**Oregon Coast Emergency Rptr., Inc.** P.O. Box 254, Florence, OR 97439. Meets 3rd Sat./monthly, 9 a.m. for brkfst. Net, Wed. 7 p.m., 146.80. Info: 997-2323 or 997-3081.

**Salem Amateur Radio Club, (SARC).** Meets 4th Tues./monthly, 7:30 p.m., Four Corners School, 500 Elma Ave., SE, Salem, OR. Talk-in 146.86. Info: (503) 390-1386.

**Umpqua Valley Amateur Radio Club, Inc.** 450 S.E. Leland St., Roseburg, OR 97470. Meets 3rd Thurs./monthly, 7:30 p.m., Douglas County Courthouse, Rm. 311, Douglas St. Roseburg, OR. Info: WSPII/R 146.90- or (503) 673-1310.

## PENNSYLVANIA

**Mercer County Amateur Radio Club, W3LIF.** P.O. Box 996, Sharon, PA 16146. Meets 4th Tue./monthly, 7:30 p.m., Shenango Valley Med. Ctr., Farrell, PA. Net, Thurs. 9 p.m. on 145.35 W3LIF, Digi. 145.01.

**Warminster Amateur Radio Club, WA3DFU.** P.O. Box 113, Warminster, PA 18974. (215) 672-9985. Meets 1st Thurs./monthly, 7:30 p.m., Neshaminy-Warwick Presbyterian Church, Warminster, PA. Net on 147.6901/147.090 Wed. 8:30 p.m. and 28.450 Sun. 9 p.m.

## TEXAS

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

## VIRGINIA

**Southern Peninsula Amateur Radio Club, (SPARK).** Meets 1st & 3rd Tue., Salvation Army Community Bldg., Hampton, VA. Rptrs. 146.13/73 & 449.551(-)5 T. VE Exam Info: (804) 898-8031, W4RTZ.

**Virginia Beach ARC.** Meets 1st Thurs./monthly (except July), 7:30 p.m., St. Andrews United Methodist Church, Tucson & Princess Anne Rds., Virginia Beach, VA 23462.

## WASHINGTON

**The Mike & Key Amateur Radio Club.** Meets 3rd Sat./monthly, 10 a.m., Salvation Army Renton HQ., 720 Tobin St., Renton, WA. Talk-in on 146.82 rptr. Doors open at 9:30 a.m.

## WEST VIRGINIA

**Jackson County Amateur Radio Club.** Clark Stewart, W8TN, Pres., 104 Henrietta St. Ravenswood, WV 26164. Meets 1st Thurs./monthly, 7:30 p.m., United Nat'l Bank of Ripley. Net Mon. 9 p.m. on 146.67/07 WD8JUN/R.

**Tri-State Amateur Radio Assn. Club** mtgs. 3rd Thurs./monthly, 7 p.m., monthly brkfst 1st Sat., 9:15 a.m., Green Valley Vol. F.D., 16th St. & Norwood Rd., Huntington, WV.

## WYOMING

**Sheridan Radio Amateur League,** 146.82. 926 La Clede, Sheridan, WY 82801. Meets 4th Thurs./monthly, 7 p.m., Sheridan College Tech. Cntr.; Saturdays, 8 a.m. at J.B.'s. Info: (307) 674-6666, WA7B.



### What's the best for me?

*A review of some of the most adaptable gear for persons with vision impairments.*

Q.: "What kind of H.F. rig would you recommend for a person who can't see a frequency readout?"

A.: Whew! That's a hard one, because there are so many rigs out there, and so many different modes and types of operation! The Kenwood TS-440SAT with voice module and built-in antenna tuner is available on the used market in the kilobuck range, and is particularly easy to use because the "voice" button is located in the corner of the front panel, controls are straightforward, and external control via a data port is possible. The current model Kenwood TS-450SAT is similar. Courage HANDI-HAMS has instruction manuals for both rigs read onto cassette tape. The Ten-Tec OMNI-VI has a large LED frequency display as well as available voice, and the voice button is conveniently located in the lower right corner of the panel.

At almost \$2300, this fine rig may be out of reach. For tighter budgets, a rig without voice, such as the versatile Yaesu FT-747GX, may do the job. With 20 memories and a click-style main dial, counting up or down from WWV is a snap! If you can't see the Yaesu's crisp 1/2" backlit readout, you can still control the rig by adding a QSYer, an external keypad frequency entry device. This makes frequency entry as simple as touching a few keys on a telephone-style keypad. The QSYer automatically selects the proper mode for a given part of the band: "CW", for example, if you enter 14.050. The Yaesu is available in the \$500-\$750 range, depending on whether you buy new or used, and the QSYer is around \$100 from Stone Mountain Engineering, (404) 879-5756.

Q.: Well, then, how about 144/440 rigs?

A.: It's a jungle out there in VHF/UHF land! I'm not going to stick my neck out and make any specific suggestions, but here are some things to look for: If a handheld is your choice, select one with easy to use, large buttons and controls. Avoid units with thousands of tiny, randomly-placed buttons. And demand direct keyboard entry, because once you learn the keyboard, you can control the radio. Similarly, some mobile rigs allow direct keyboard frequency entry from the microphone. Choose one of these over a less easily controlled rig. For any VHF/UHF radio, a DIGITALKER, which is an external handheld frequency counter, will speak the radio's transmitted frequency.

Q.: I have a talking computer. Can I use it in the ham shack?

A.: Can you ever! Diane Scalzi, WI8K, has some suggestions and also tells how she operates packet:

Last year I started using SAM, a callbook database on diskette. I have been quite happy with the way the program interacts with my speech synthesizer and computer. This product is produced by R.T. System, P.O. Box 8, Lacey's Spring, AL 35754, 205/882-9292. With this database, it is possible to search for amateurs by callsign, name, address, license class, and year born of each amateur in the U.S. and Canada. You can also print mailing lists and labels, and use it with other software, such as logging programs. I think you can now purchase other information that wasn't available when I bought my copy in Dayton. I advise that you set the

"video direct" parameter under the options to "no" when setting the program up. Personally, I love being able to look something up in the callbook without having to bug my husband! And while I'm at it, I'd like to plug another product that has impressed me lately: the Language Master SE, manufactured by Franklin Electronic Publishing. This device contains a spell checker, dictionary, thesaurus, grammar guide, word games, and more. Everything is accessible using synthesized speech. There is also a display screen for use by sighted people. The print can be enlarged for partially sighted users. The price, around \$500.00, isn't cheap, but for me it has been well worth it. I like to use the Language Master SE, especially when I'm writing. For information, call (800) 762-5382.

Finally, I'm excited to announce that my packet station is now on the air. I am running a PK-88 and a KDK radio, putting out about 10 W. Perhaps because of my rather weak signal, the sending and receiving of information is sometimes slow, and reading the screen isn't always most efficient, but I do eventually hear everything that is going on, and it is wonderful! There is so much to learn. I had to do relatively little to get good interaction between the PK-88 and Arctic Vision. The process of refining the operation of the system has been quite a challenge, but it has been worth it. Packet radio is a marvelous mode. I would love to hear from you or anyone else who would like to contact me via packet. You can reach me at the following address: WI8K @ WB8H.SEMI.MI.USA.NA.

Thanks, Diane! Other notables in the area of computers include the HAM-CALL CD-ROM from Buckmaster, (800) 282-5628, and HOSTMASTER rig control software by California Software.

That's a small sampling of gear that is adaptable for use by persons who have vision impairments. If you want to reach me via packet, my address is WAØTDA @ WBØGDB.MN.USA.NA. WR

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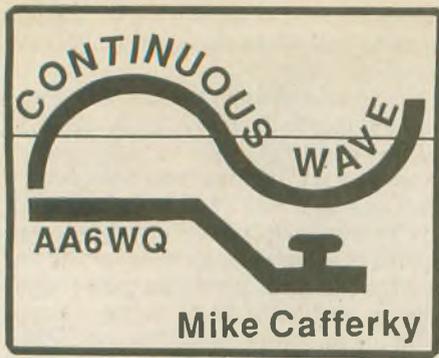
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## Laws of CW and QSOs

1. The most difficult words to copy are always the most important words.
2. Your mind will more likely go blank if the other operator begins to ask a question.
3. The more important the call sign you wish to respond to, the more likely you will forget to turn on the VOX.
4. If you set a schedule with another operator, you will find a QSO on that frequency at the appointed time.
5. Just when you think you have a clear space to send CQ, someone tunes up on that frequency.
6. When you want to impress a more experienced operator, you run your letters together.
7. If you hear a CQ right when you turn on your rig, you are more likely to

send a response quickly if your antenna is down.

8. AA6WQ's Corollary #1 of QRM: If any frequency can have QRM, your frequency will have it.

9. AA6WQ's Corollary #2 of QRM: The QRM will disappear as soon as your QSO is completed.

10. AA6WQ's Corollary #3 of QRM: If one operator suggests you QSY because of interference, his directions will be covered by QRM.

11. AA6WQ's Catch-all Corollary: If something can interfere with your QSO, it will.

12. When you are about to copy the central thought of the QSO, that is the time someone comes in to the shack with an important question.

13. It is easier to blame poor copying on QRM, QRN and QSB than on lack of experience.

14. The less experience an operator has, the more likely he will wait until the QSO is finished to tell you that he can't copy you.

15. The probability of misspelling near the end of a word is directly proportional to the length of the word.

16. Speed is essentially a question of spacing.

17. AA6WQ's Corollary #1 on Ears: Both sending and copying are done with your ears.

18. AA6WQ's Corollary #2 on Ears: You will never send faster than your ear will allow.

19. AA6WQ's law #1 of CW humor: Licensed radio amateurs and children are the only ones in our culture allowed to laugh at their own jokes first. Hi. Hi.

20. AA6WQ's law #2 of CW humor: The number of "HIs" sent by a brass-pounding comic varies inversely with how funny the joke was.

21. Some days the fist just won't do what it is supposed to do. The other days it is the keyer's fault.

22. The more involved an operator gets with CW the more likely he or she will forget where to plug in the microphone.

It has been a lot of fun writing for *Worldradio* these past three years. I have received an opportunity to publish a computer simulation game and a new book with McGraw-Hill Publishing. Regrettably, this will be my last Continuous Wave column. I have enjoyed receiving your letters these last three years. Keep up your CW and I'll see you on the air during my commute back and forth to work. No. I'm not bailing out of CW in favor of some other operating mode. I just have a whole load of writing to do to meet the publishing deadlines. 73. WR



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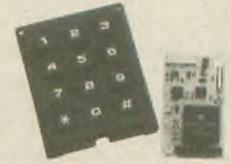
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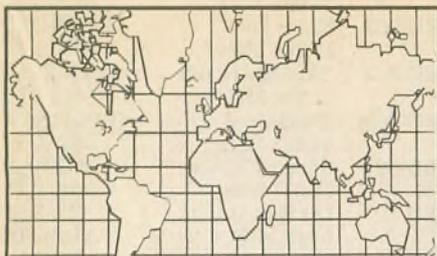
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**W-100-N**

No applications for *Worldradio's* Worked 100 Nations Award were received this month.

**Ghana (9G)**

A couple calls have been reported active from Ghana recently. 9G1MR has been reported on 20 meters between 14.215 and 14.255 MHz at 0600 and 1900 UTC and on 15 meters between 21.238 and 21.312 MHz between 1800 and 1930 UTC. He was also worked by Europeans on 75 meters around 2100 UTC near 3.799 MHz.

The other active call is that of 9G1SB. Look for this one on 14.184 MHz between 1800 and 1900 UTC. He has also been found near 14.227 and 14.260 MHz, and on 15 meters between 21.245 and 21.255 MHz between 1200 and 1430 UTC.

Other calls reported include the following:

9G1NS	21.215 MHz	1600 UTC
9G1SA	14.184 MHz	1815 UTC
9G1UK	14.184 MHz	1700 UTC

**Oman (A4)**

A few calls were found on the bands from Oman recently, such as the following:

A41JR2	1.242 MHz	1300 UTC
A41LK2	1.211 MHz	1200 UTC
A41RS2	1.258 MHz	1800 UTC
A45ZZ	18.160 MHz	1500 UTC
A47RS2	1.008 MHz	1430 UTC

**Pratas Island (BV9P)**

The DXpedition to Pratas Island, as of mid-August, has been put on hold. There is a rumor that it could take place the first week in October.

**Angola (D2)**

The *DX Bulletin* reports that Kim Bjoern, OZ1ACB, is now active signing D2EYE from Luanda in Angola. Kim operates barefoot using a dipole on 10 though 160 meters. Check 14.010 to 14.033 MHz, 21.014 to 21.020 MHz and near 28.020 MHz on CW, and 14.195 MHz on SSB. His rig has been damaged so he is limited to 5 khz steps in frequency selection. Therefore, if he is

operating split, send exactly 5 kHz higher. Kim plans to be in Angola through December.

If you need Angola on one of the WARC bands, look for D2EYE on 17 meters between 18.076 and 18.140 MHz between 1530 and 1900 UTC or on 12 meters near 24.900 MHz from 1400 to 1800 UTC.

Also active from Angola is Chris, D2SA, who has been reported often on 15 meters SSB. Try the segment 21.250 to 21.300 MHz after 1300 UTC.

If you need a CW contact look for Chris near 14.023 MHz around 1430 UTC or 28.022 MHz at 1300 UTC.

**Jan Mayen (JX)**

There has been some activity from Jan Mayen, mostly that of JX3EX working into Europe. Listen for this one near 14.198 MHz at 2000 UTC, 14.248 MHz at 1700 UTC, or 21.260 MHz at 1800 UTC.

JX3PF has also been reported, and this one with a deserving DXer in Minnesota, who worked him on 14.026 MHz at 1745 UTC the latter part of June.

**Guantanamo Bay (KG4)**

KG4DX has been fairly active from Guantanamo Bay. This one has been reported on CW on 14.012 MHz at 2145 UTC, 14.039 MHz at 0500 UTC and 21.024 MHz at 2215 UTC. For SSB contacts try 14.222 MHz at 0700 UTC or 21.318 MHz at 0200 UTC.

The only other call reported from Guantanamo Bay was KG4CB who was worked on 30 meters at 0100 UTC on 10.119 MHz.

**Bangladesh (S2)**

We have reports of at least three stations that have been active from Bangladesh recently. These include the following:

S21A	14.270 MHz	1700 UTC
S21B	21.289 MHz	0700 UTC
S21ZG	18.072 MHz	1600 UTC

**Congo (TN)**

The only call reported from Congo recently is TN1AT. Look for this one on or about 14.247 MHz around 2300 UTC.

**Mellish Reef (VK9)**

Planning for the 1993 DXpedition to Mellish Reef continues to be right on track. The dates for this operation are

September 19 through 28. The call to be used will be released just prior to the DXpedition. Following are the proposed transmitting frequencies. This will be a split frequency operation, so please do not transmit on the DXpedition frequencies. On CW they will use 1.825, 3.505, 7.025, 10.107, 14.005, 18.077, 21.002, 24.897, 28.005 and 50.120 MHz. On SSB look for them on 1.825, 3.799, 7.123, 14.195, 18.145, 21.295, 24.945, 28.445 and 50.120 MHz. Check 14.080 and 21.080 MHz for RTTY.

All major DX foundations, many local DX clubs, and hundreds of individual DXers have joined in the effort to help fund this major DXpedition. Thanks to all!

All equipment to be used in the DXpedition is scheduled for arrival in Australia by August 1, which will allow six weeks to inventory and check out all of the equipment before departure.

The operation will take place from Herald's Beacon Islet, the only part of the reef to remain above water at high tide. Two separate, completely self-contained sites will be utilized, one at the north end and one at the south end. This will allow for maximum separation and will facilitate using two stations on the same band, one on CW and the other on SSB. One 30-foot tower and multiple 20-foot antenna masts will be used.

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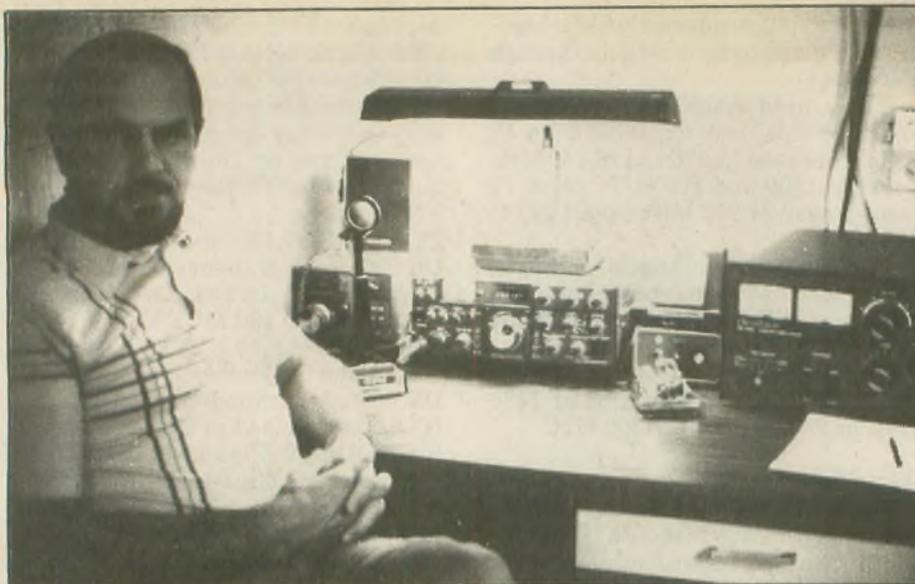
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Dick Miller, OA4CWR, of Lima, Peru, pauses from operating for his picture. Dick holds stateside call K3JXO, and has operated from various locations around the world as EL2D, VU2JXO and XE1XRO. Ron Faulkner, W6TUR, was a fellow operator with Dick over 30 years ago at KA2KS in Japan. They catch each other on the air occasionally and catch up on the latest with their families. — Photo courtesy of W6TUR

The DXpedition team members will converge on Bundaberg, Australia, and will depart for Mellish Reef no later than 0600 UTC on September 15. The team has chartered the *Nina Q1*, a 63-foot, twin-masted schooner. Travel time is estimated at 3 to 4 days.

The calls of the team members include VK4CRR, VK2BJL, VK2BEX, P29DX, V73C, WA4DAN, K5VT, and G3WGV. QSL requests will be handled by VK4CRR, Bill Horner, 26 Iron Street, Gympie, QLD 4570, AUSTRALIA. As usual for all direct replies, please include an SASE or SAE with IRCs or \$1.00. Any donations included with your requests will be gratefully received.

### Christmas Island (VK9X)

*DX News Sheet* reports that VK6VZ is planning a trip to Christmas Island. No other details are available. However, a German group is planning a DXpedition for this October.

### Marion Island (ZS8)

According to *DX News Sheet* the current operator at ZS8MI on Marion Island has made over 15,000, which is questioned by editor Brendan McCartney, G4DYO. Says Bren, "That seems somewhat unlikely as he seems to spend most of his life on nets!"

According to Jim Smith, VK9NS, DX Editor for *Amateur Radio Action*, the present operator, Christie De Kock, ZS1CDX, requests \$3.00 for a special QSL card.

Anyway, Christie has been reported often near 14.195 MHz, usually between 1000 and 1400 UTC.

### IOTA

The OH-KY-IN Amateur Radio Society plans activity from Chincoteague Island in Virginia (NA-083) during the weekend of the October Worldwide DX Contest. They will be signing with K8SCH/4 and some activity is planned on October 28 from Assateague Island (NA-139). Chincoteague Island is on the land side of Assateague Island and we question if not the same IOTA reference number applies. Anyway, work them and worry later. QSL requests should be sent via N8FU.

As usual, during the summer months much IOTA activity shows on the bands. And, with the first annual IOTA contest in July many islands were activated with the IOTA chasers working several new ones. Here is a selection of what has been worked during the summer months, outside the IOTA contest:

EU-020	Gotland Island	SM0DTK/1
	14.004 MHz	0500 UTC
EU-031	Napoletano Archipelago	IC8/IK8TEO
		0600 UTC
EU-040	Bugio Island	CT4NH/P
	14.261 MHz	0545 UTC
EU-043	Gotland Island	SM1BSA

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	14.009 MHz	0530 UTC
EU-067	Naxos Island	SV8/DK6AO
	14.262 MHz	0900 UTC
EU-072	Skiathos Island	SV8/IK3GES
	21.260 MHz	0800 UTC
EU-083	Tino Island	IP1/I1HYW
	14.261 MHz	0530 UTC
EU-094	Glenans Island	F6HKA/P
	14.011 MHz	0545 UTC
EU-107	Les Sept Iles	TM5SGE
	7.060 MHz	1130 UTC
EU-131	Lido Island	IK3PQH
	14.250 MHz	0600 UTC
EU-149	Vaika-Pakri Island	ES2RW/2
	14.256 MHz	2300 UTC
EU-162	White Sea Coast group	4K3WQ
	14.260 MHz	0145 UTC
AS-007	Honshu Island	JS2KSS
	14.020 MHz	1345 UTC
AS-107	Koh Samet Island	E22DX
	14.260 MHz	1430 UTC
NA-007	Southampton Island	VE8PW/P
	14.260 MHz	0300 UTC
NA-008	Ellesmere Island	VE8RCS
	14.037 MHz	0400 UTC
NA-019	Kodiak Island	NL7WA
	14.260 MHz	2100 UTC
NA-036	Vancouver Island	VE7FPM
	14.010 MHz	0515 UTC
NA-055	Swans Island	W3AKD/P
	14.262 MHz	0315 UTC
NA-090	Isla Cozumel	XF3/W5BOS
	14.260 MHz	0530 UTC
NA-111	Long Beach Island	W2OB
	14.258 MHz	1800 UTC
NA-125	Sept Iles Archipelago	VE2/F5JYD
	14.260 MHz	1815 UTC
NA-152	Sarichef Island	KL7OH
	14.263 MHz	0200 UTC
NA-156	Cape Dorset Island	NU2L/VE8
	14.260 MHz	0015 UTC
OC-078	Ulithi Atoll	V63CS
	14.025 MHz	0615 UTC
OC-156	Yawasa group	3D2RF
	14.260 MHz	0530 UTC

The first of what will be an annual IOTA contest appeared to be a success with many island stations participating. Many stations reported in the above listing also participated in the big bash. The contest may have also been an incentive for new comers to get involved in the IOTA program.

Franco, I4LCK, reports that he made over 9000 contacts during his visit to Mozambique, where he operated from some of the offshore islands (AF-061 and AF-066) as C9LCK/P. He hopes to be able to start mailing the cards out early September.

Chuck Newberg, KL7OH, is on often from Sarichef Island (NA-152). Chuck says to QSL via the bureau or via the listing in QSL Routes. The *Callbook* is incorrect. Chuck says he also operated from the island as WL7ADG from 8 September 1978 to 31 October 1978, and 1 June 1979 to 9 April 1981, and as KL7OH from 10 June 1983 to 16 March 1986. He was then off the air until 20 June 1993 and found out he was on NA-152!

### DXCC

The DXCC Desk has received documentation for the following calls and



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### MA-550

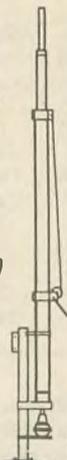
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55' Freestanding Crank-Up  
Handles 18 sq. ft. at 50 mph  
No guying required  
Extra-strength construction  
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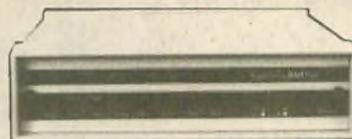


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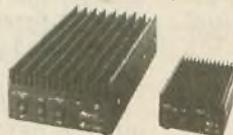


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# DX Prediction — October 1993

Maximum useable frequency from West Coast, Central US and East Coast (courtesy of Engineering Systems Incorporated, Box 939, Vienna, VA 22183).

The numbers listed in each section are the average maximum useable 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	(13)	9	*16	(9)	*14
10	(13)	9	14	(9)	14
12	27	9	14	17	25
14	31	12	*21	19	*28
16	32	(11)	18	18	*31
18	*31	(11)	(16)	(15)	*32
20	26	(19)	24	(11)	*32
22	21	20	28	(10)	*30
24	*18	(18)	29	9	*26
2	*16	(12)	23	9	*22
4	*15	(11)	20	9	*19
6	(14)	(10)	17	*9	*17

## WEST COAST

UTC	AFRI	ASIA	OCEA	EURO	SO AM
10	(11)	12	*16	(9)	15
12	(10)	11	*15	(9)	14
14	(21)	11	*14	17	26
16	(24)	11	*18	17	31
18	25	(11)	(15)	(14)	*32
20	26	19	23	(11)	*32
22	21	25	28	(10)	31
24	(18)	*26	31	(9)	*29
2	14	23	30	9	*24
4	*13	15	26	9	*20
6	(12)	13	22	10	*18
8	(11)	*12	*19	(9)	*14

## EAST COAST

UTC	AFRI	ASIA	OCEA	EURO	SO AM
7	(14)	(9)	(15)	*9	*15
9	(13)	9	14	(9)	*14
11	27	9	14	18	23
13	31	10	*23	*20	*27
15	33	(9)	(19)	*19	*30
17	*33	(9)	(17)	17	*31
19	*28	(9)	(21)	(12)	*32
21	23	(18)	27	(10)	*31
23	*19	(18)	29	10	*28
1	*17	(12)	22	9	*23
3	*15	(11)	19	9	*20
5	*14	(10)	(17)	9	*17

has approved operations beginning the following dates:

4S7/NZ9Z	13 Jan 1993
6Y5/VE1AI	23 Mar 1993
8Q7AF	17 Mar 1993
AH1A	25 Jan 1993
D2SA	18 Mar 1993
S75S	28 Dec 1992
TU4EA	14 Apr 1992
T5HLL	15 Mar 1993
VP5/W2IQ	01 Jan 1993
XU7VK	01 Dec 1992
ZB2JL	08 Jan 1993

## DXCC Backlog

The DXCC Desk reports as of the end of July the DXCC backlog of unprocessed applications was down to 114, (16,345 QSL cards). Applications being sent out at the end of July were received less than two weeks earlier. Five applications were received prior to that time.

## DXAC Actions

The DX Advisory Committee voted 6 yes and 10 no on the question of adding band or mode specific Honor Rolls to the

DXCC program. Those voting against the proposal were concerned about the proliferation of awards.

The DXAC also voted unanimously against the proposal that would have changed the Countries List Criteria Point 2, Separation by Water. Under the failed proposal, distances would have changed from 225 [2(a)] and 500-mile [2(b)] separations to 100 miles [2(a)] and 100 miles [2(b)]. Committee members felt there was insufficient support for the proposed change.

## Antique QSL Department

Reg Tibbetts, W6ITH, dug deep into his files of old QSL cards and came up with a few of much interest, such as that of K7FST, of Kotzebue, Alaska. According to Reg, back in the 1930's Zone 19 had no active amateur operation, and needless to say every deserving DXer wanted that zone. Chuck DeRemer, operator of K7FST, decided to fly a ski-fitted plane across the strait to Siberia and operate from East Cape in Zone 19.

Chuck got on the air and worked quite a few DXers, including Reg, W6ITH. Chuck later told Reg after returning to Alaska that when he was operating at East Cape, out of the fog on the horizon there was a Russian Army Patrol. He loaded the gear on the plane and got out of there in a hurry, never to

return as hoped to Zone 19. Reg was "Contact No. 5" according to the QSL card. The date was 1 January 1939. The band was not indicated, nor was the signal report.

The card also says that Chuck was a member of the IRE, which was the Institute of Radio Engineers, which merged with the American Institute of Electrical Engineers (AIEE) in the 1960s to become the Institute of Electronic and Electrical Engineers (IEEE), (or was it Electrical and Electronic). Your editor used to be a member, joining the IRE as a student back in the 1950s.



## QSL Comments

There was an interesting comment in a recent issue of *The WNYDXA Report*, the official newsletter of the Western New York DX Association, KB2NMV, Editor, that caught our eye, and we thought we would print this as food for thought.

"Not in Log revisited; rumor has it that the crew working on 9G1AA cards have found evidence of some pretty slick SLIM work. . . literally hundreds of requests that are not in the log. Most are in time periods within one hour after the operation QRTed on a particular band/mode. One must remember that for some DXers, working a timed operation is a crap shoot to begin with; I hope those touting severe penalties for dupes take note of what happened in this case."

## QSL Information

David Block, KA0VCW, is looking for QSL routes for the following calls he worked in the last WPX CW Contest: 4K1F, ZA1JW, V64VV and V67SVF. According to *The W6GO/K6HHD QSL Manager List* the route for 4K1F is via P.O. Box 3506, Dniepropetrovsk 320018, UKRAINE. There is no listing for ZA1JW. As for the V64VV and V67SVF, you most likely worked VB4VV and VB7SV. Both were active in the contest.

5A0RR -- P.O. Box 812, Sofia 1000, BULGARIA  
 8R1AL -- Oswaldo Lara, MD, P.O. Box 10822, Georgetown, GUYANA  
 9M6LS -- Lucius Solomon, P.O. Box 308, Papar 89608, Sabah, MALAYSIA  
 A71AN — P.O. Box 22199, Doha, QATAR  
 BA4AD -- P.O. Box 085-0227, Shanghai, PEOPLE'S REPUBLIC OF CHINA

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BV4JB -- Yu-Ming Chang, P.O. Box 35, Tuofen, TAIWAN  
 C93BB -- P.O. Box 321, Halfway House 1685, REPUBLIC OF SOUTH AFRICA  
 C93BC -- P.O. Box 321, Halfway House 1685, REPUBLIC OF SOUTH AFRICA  
 CY9CWI -- WIARC, P.O. Box 884, Pointe-Claire/Dorval, QC H9R 4Z6, CANADA  
 D2EYE Nabibe, -- Kim Bjoern, c/o Tombwa/ADPP, CP 345, Luanda, ANGOLA (See Note 2)  
 E22DX -- Viroj Supapak, P.O. Box 7, Bangkok 10220, THAILAND  
 J52AK EA-KL7OH -- P.O. Box 359, Bissau, GUIN-BISSAU  
 -- Chuck Newberg, P.O. Box 117, Shishmaref, AK 99772  
 SU2MT -- Mohamed Tartoussiah, P.O. Box 1616, Alexandria, EGYPT  
 TI4/AA7JM -- Varel S. Grimes, P.O. Box 83, San Isidro de Heredia 3017, COSTA RICA  
 TM5SGE -- RC des Scouts et Guides d'Europe, BP1713, F-87025 Limoges CEDEX, FRANCE  
 ZS8MI -- Christie De Kock, P.O. Box 244, Stellenbosch, 7599 Cape Province, REPUBLIC OF SOUTH AFRICA

### QSL Routes

3B1DB	--NA5U (See Note 3)	G0CEO/P	--JH1FNS
3B8DB	--NA5U (See Note 3)	GW5LP	--G5LP
3B9DB	--NA5U (See Note 3)	H44/P29JA	--JH7SB
3D2CK	--I4LCK	H80/DL2GBT/P	--DL2GBT
3D2RF	--WA6SLO	H80/DF3GY/P	--DF3GY
3D2RWR	--ZL1AMO	HG8SDS	--HA8IB
3G40C	--CE2CQB	HG93HQ	--HA5NK
4K2BY	--DL6ZFG	HL93A/2	--HL1XP
5H3FOE	--GOGWA	HL93A/5	--HL1XP
5H3OT	--J01ALS	HL93IWD	--HL1IWD
5R8DD	--JA1SWL	HS0ZBI	--NW3Y
5R8DP	--JA1OEM	I80C	--IK0AZG
7Q7CE	--IN3VZE	I10ICO	--IK0AZG
7Q7XX	--JH3RRA	IL3/IV3UHL	--IV3UHL
8Q7AA	--JG2XYV	IM0DMG	--IS0CDS
9E2A	--JH1AJT	IM0XIA	--IS0CDS
9G1MR	--IK3HHX	IP1/1HYW	--IK1GPG
9G1UK	--G4HZR	IT9VDQ/1E9	--IT9VDQ
9J2MT	--JP2BMM	J3/CT3FN	--HB9CRV
9K2BI	--KA9WON	JW6MY	--LA6MY
9V1WE	--JH1FNS	KC6CC	--JA3IG
A22KY	--LA9KY	KC6IG	--JA30IN
A35AF	--NA5U	KC6IJ	--JA30IN
A35HX	--DJ9HX	KC6IL	--JA30IN
AP5A	--KC7V	KC6IM	--JA30IN
BT2000BJ	--BY1QH	KC6KY	--JA30IN
BV0MM	--BV2DD	KC6LI	--JA30IN
C50BI	--6W6JX	KC6OG	--JA30IN
C91AI	--CT1DGZ	KC6TZ	--JA30IN
C91AJ	--CT4RM	KC6UP	--JA30IN
C91W	--W8GIO	KD4GLC/C6A	--KD4GLC
CS4B	--CT1DIZ	KG4DX	--K0IEA
CS8B	--CT1EEB	KN4NLT5	--KC4MJ
D2EYE	--OZ1ACB	LA/PA3FBT	--PE1LAG
D2SA	--F6FNU	LX0SAR	--DL5VU
DL/G0CEO/P	--JH1FNS	OA4CWR	--K3JXO
DU/K25Z	--NA5U	OH/G0CEO/P	--JH1FNS
E22DX	--HS1HSJ	OH/OG0CEO/P	--JH1FNS
E31A	--JH1AJT	OJ0/AH6MM	--WA6IET
E35A	--N6FW	OX3GX	--WA3KSN
EA9/KA3V	--NA5U	P29VR	--W7LFA
EA9/K5BDX	--NA5U	P40P	--NX1L
ED6TIE	--EA5OL	P40WW	--KD6WW
ED7TI	--EA5OL	PY0TM	--PY1RO
EJ5TCR	--EI6HY	PZ5RZ	--PA0NAT
EJ6FR	--EI6FR	R93DS	--U29OYR
EJ6HA	--EI6FR	RO4OB	--SP7LZD
ES2RW/2	--ES2RM	SV0I/SV5	--N6PIX
EV3WZ	--DL5BAC	SV8/N6DLU	--N6DLU
FH744LU	--I4ALU	SV9/DL6DQI/P	--DL6DQI
FH744LU/P	--I4ALU	T24JJ	--JA2FJP
FK8FU	--NA5U (See Note 5)	T92A	--S57MX
FO0AR	--JA8FCG	T99C	--S57MX
FP/N8T1B	--NU8Z	TC9ML	--NA5U
FP/K48POW	--NU8Z	TG9KML	--NA5U
FP/KD0PF	--NU8Z	TK1/2EOW	--I2EOW
FP/KF8QE	--NU8Z	TL8HB	--WB8TGP
FP/N8CC	--NU8Z	TM2CC	--FE1LV
FP/KB8ECC	--NU8Z	TZ6ABM	--F1JDC
FP/KB8OPT	--NU8Z	UD8F	--UD6DFP
FP/K8AQM	--NU8Z	UI8ACI	--G3LZK
		UI9AWX	--G3LZK

U0500	--SP7LZD	Z32AM	--YU5DX
V31BR	--N5FTR	Z32ET	--YU5DRS
V63CS	--G4WZF	Z32FM	--YU5FM
VE3UWC/VE8	--VE8RCS	Z32GX	--YU5GBC
VE8PWP	--VE8RZ	Z32JA	--YU5XTC
VP2MFL	--NA5U	Z32KO	--YU5FSO
VP2MFY	--NA5U	Z32KV	--YU5FCA
VP5M	--WT1S	Z32LM	--YU5XLM
VQ9KC	--AA7AN	Z32MB	--YU5MB
VR2EK	--G3AUA	Z32VP	--YU5XVP
WA2UJH/CY9	--NW8F	Z32CEF	--YU5CEF
WA2UJH/CY9	--NW8F	Z32DRS	--YU5DRS
WV2B/CY9	--WV2B	Z32GBC	--YU5GBC
XF3/W5BOS	--W5BOS	ZB2/K5BDX	--NA5U
XT2BW	--WB2YQH	ZB2/KA3V	--NA5U
XU3DWC	--PA0RYS	ZC4MF	--KC7V
XU5WW	--LZ3WW	ZF2J	--KG6AR
YJ0ARW	--ZL1AMO (See Note 1)	ZF2QM	--W6OSP
	Note 1)	ZK19HX	--DJ9HX
YJ0AYL	--NA5U	ZK1XI	--NA5U (See Note 4)
YT11	--YU1BFG		
YWSLT	--W1AF	ZK1XR	--N7NKG
YZ7UN	--YU7GMN	ZK1XT	--NA5U (See Note 4)
Z31AA	--YU5AA		
Z31CN	--YU5CN	ZK2HX	--DJ9HX
Z31DX	--YU5DX	ZS0PI	--DJ4LK
Z31PK	--YU5XVD	ZS9/OZ1EYE	--OZ1ACB
Z31PK	--YU5KVD	Z7B/AB	--PS7AB
Z31VV	--YU5XCS	ZX0A	--PY5BVL

### Notes:

1. This manager requests QSL cards be sent direct only; no bureau cards.
2. Please include large s.a.e. and a green stamp! OZ1ACB is another route given.
3. This route applies for the years 1980 to 1988 only.
4. This route applies for November and December 1985.
5. This route applies for contacts made since October 1988.

Many thanks to the following contributors: WF1N, WA4DAN, NA5U, W6ITH, W6TUR, AA7JM, KL7OH, N8FU, KA0VCW, Salt City DX Association (KB2G), Western New York DX Association (KB2NMV), Northern Arizona DX Association (W7YS), American Radio Relay League (K5FUV), *(Amateur Radio Action, The DX Magazine)* (VP2ML), *Long Skip* (VE3IPR), *The W6GO/K6HHD List*, *The Long Island DX Bulletin* (W2IYX), *DX News Sheet* (G4DYO), *QRZ DX* (W5KNE), and *The DX Bulletin* (VP2ML).

By the time you read this the fall months will be upon us. And, with that in mind, it is now time to prepare for the upcoming contests and activity. Check out your antennas now as the winter months aren't the best times to be climbing towers. We surely, don't want you to miss N6JM in Sierra County during the annual California QSO Party in early October. 73 es gl DX de John, N6JM.

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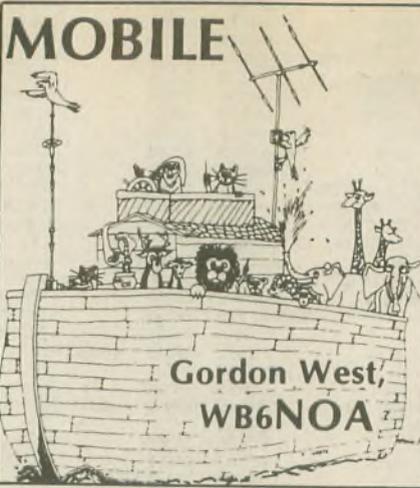
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## Operating in Mexico

If you are planning a trip to Mexico, it is important to obtain an official Mexican authorization to use your equipment in this host country. Without the proper and valid Mexican paperwork, your equipment could be confiscated when you pass into their country, or worse yet, you could land in jail if caught operating a ham rig without their official paperwork in a local Mexican village or port.

The Mexican written authorization for you to use your ham equipment in their country is not an official reciprocal operating permit. As of this summer, no reciprocal operating agreement formally exists between the United States and Mexico. Don't ask me why. I wish I knew because an official reciprocal operating agreement between our two countries would sure make licensing matters easy.

You cannot accomplish the Mexican radio authorization easily in the United States at their local embassy. Usually you must go into a big Mexican city that

has an office of Telecommunications and Communications, abbreviated SCT. Use your local Mexican embassy to find out where the nearest SCT office may be near your planned border crossing.

You will need the original and several copies of your Amateur license, plus about 100 US dollars in Mexican currency, plus the original and a copy of your tourist permit for your upcoming stay in their country.

Since the tourist permit is only issued immediately before your stay in Mexico, this means you cannot accomplish your paperwork months ahead of your planned Mexican trip. You must do it days or hours before you actually plan to bring your gear into Mexico. I have seen many hams park at the border, go into town and obtain the Mexican radio authorization, come back out, and then cross the border with all of their equipment. This is a far safer way to go than venturing into Mexico without the permit in hand.

Southern California ham operators originally had to drive to Mexicali to accomplish this process. Things are now easier for them — they may now contact Oscar Rivera Hernandez at 011-52-668-03191 in Tijuana, and get it all handled just across the border from San Diego. It's about a half-day deal if you have all of your paperwork in order. It rarely can be done by phone at home unless you have "the right connections."

The Mexican license process requires patience, humility, and an adventurous spirit; it's much like a treasure hunt. Many times you will be asked to pick up various pieces of paperwork to complete the process — usually requiring a walk down to a bank for the deposit of your funds, a hike over to the tourist bureau for an official stamp, or something like this. As long as you go into this process

## New Amateur Publications



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1993 - 1994 edition

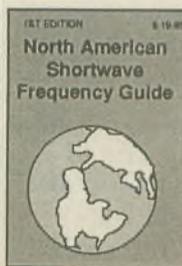
Maps of all 50 states, Canada, and all countries in North America showing open repeater locations, frequency, offset & PL tones 10.6, 2 meter, 220, 440 MHz & 1.2 GHz

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realizing that you are a visitor in their country, things should go smoothly. Items like Kenwood or Yaesu wall maps, Icom ball caps, and other ham radio memorabilia many times have a profound effect on how quick you can end up with your written authorization.

What you will ultimately end up with is a typed letter authorizing you to use your equipment in Mexico with an XE and a number of their district preceding your US call sign. No longer do they issue you a specific Mexican call sign.

If this were an official reciprocal operating agreement, rules are universal that you end up with band privileges only to the extent of what you would have in the United States. But Mexican authorizations don't spell this out because they have an altogether different licensing structure.

If you are operating within Mexican jurisdiction with a valid Mexican radio authorization permit, and use the assigned XE identifier in front of your US call sign, the United States Federal Communications Commission will not take action on your operation.

Most recently, several US maritime mobile stations were issued notices of violation by the Douglas, Arizona, FCC monitoring facility for operating on frequencies not authorized by their US license — even though they were operating in Mexico. I contacted the engineer in charge, Stephen Tsuya, and indeed he



### A Mexican authorization for Amateur Radio is required before you head south of the border.

verified that his engineer, Larry G. Minyard, had signed those notices of violation. In further investigation, we found that these US hams were forgetting to say the XE authorization in front of their own US call sign when operating in Mexico. Since they omitted including the Mexican XE authorization as they stated their call sign, they were considered in international waters, and sub-

ject to US regulations. And even though these Americans may indeed hold the Mexican authorization, their failure to actually say the "XE" in front of their call sign landed them the pink slip.

Two interesting points here: If you are operating in Mexico, make darn sure to always say the "XE" in front of your US call sign and indeed keep your official (please turn to page 43)

# BATTERIES

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## QCWA Files With FCC

On July 26, the QCWA filed a request with the FCC to administrate assignment of Amateur Radio calls to clubs and the military. QCWA was one of five groups to request appointment. The criteria for appointment was that the organization must have one percent of the amateur population and also have an IRS 501 C-3 non-profit status.

QCWA asked to be assigned five groups of licenses: NQ 1-0 for QCWA organizations NO 1-0 for OTC organizations NS 1-0 for SWOP organizations plus two other general use categories. No FCC action is expected for 60 days.

For many years QCWA and other groups have petitioned the FCC to reassign old calls upon request. There is a good possibility this may come to pass.

## Message Center

1. Walt Brink, W3WPY: Just to let you know I've finished Chapter 3 of *Chesapeake*. Are you related to any of those people?

2. Bob Baird, W9NN: Thank you for the list of the 54 Charter Members of QCWA dated October 1948. Wonder how many readers knew that date and number. See you on the FOC frequencies.

3. Tom Atkins, VE3CDM: Glad you subscribe to *Worldradio*. You'll find Armind Knoble's editorials a little conservative and stuffy, but the columnists are excellent. Welcome aboard.

4. Merle Parten, K6DC: It's about time you rejoined QCWA. You're old enough and rich enough to afford it. Now, get those two other members of Santa Barbara's Organized Chaos, W6GTI and W6THN, to sign up too. You will win one lollipop for each one you sign.

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5. Everybody else: Make October your month to invite a friend of 25 years amateur radio experience to BE ONE of US. You may buy yourself one lollipop for each person you recruit. Report back here periodically.

## Chapter 11

Congratulations to Chapter 11. That's QCWA Chapter 11, not IRS Chapter 11. At their recent meeting in Redwood City, CA, the Chapter Board voted to send \$50 to the QCWA Scholarship Fund in memory of recent Silent Keys. A worthy and appropriate action. Other Chapters might wish to follow. Ken Williams, K6HIO, is the dynamic president of the Redwood City chapter. Kelsey Smeltzer, KK6AW, is the energetic Vice President and Newsletter writer. Long-time QCWA *Worldradio* columnist and QCWA Board member, Esther Given, W6BDE, is on the Chapter Board. Also, did you read that Chapter 11's Walt Reed, W6ASH, won the QCWA CW Contest and Bip Bachman, W6BIP placed fourth! Not bad for one chapter. Bip was recently profiled in the National Contest Journal as "Mr. San Francisco" for giving out his section to Sweepstakes, ORS, and other contests for over 60 years. Good Show, Bip!

## Radioman 2nd Class USN to BG, USMC, First Class

Remember the story in our August column about QCWA President Emeritus, Leland Smith, W5KL? He has the very unique distinction of starting his military career in the early '30's, as USN Radioman 2nd, and retiring from the Marine Corps in 1970 as a Brigadier General — that's spelled with a Capital B and a Capital G, folks, especially in USMC. In the Marine Corps a Colonel is the closest most jarheads will ever come to God unless he, or now, she, gets



**BG Leland Smith, K5KL — one of us!**

shot, at which time he or she may fly by a BG on the way up. Here's Leland's reply as to how he made this singular transformation and advancement.

"While in my Navy uniform one day I chanced upon a Marine Corps recruiting sergeant, all dressed up in his spic and span blue uniform. When I expressed interest in his uniform, his service ribbons and hash marks, he could see I was an easy mark. He explained that in the Marine Corps, a Private is the same rank as a 2nd Class Petty Officer in the Navy and that as soon as I arrived at Parris Island, SC, I would get my uniform. Well, the minute I waded ashore at Parris Island from the motor launch I realized I had been misled. There was no blue uniform for me and a few hours later when the Post barber shaved all my hair off, which never did come back — the hair that is — I felt it my duty to get even. So I did what I was told to do to the best of my ability, stayed out of trouble — and lo advanced through all the ranks to Brigadier General in the United States Marine Corp." Leland's conscience musta tweaked him after he penned the above explanation, because about a week later, he wrote a further clarification. "...the story about me and the recruiter, etc was embellished a bit for interest. I should have told you I was in the Naval Reserve at the time, (the early picture was taken) on a cruise, aboard a four stacker, and that I asked for a discharge so I could enlist in the Marine Corps Reserve to join an organized battalion. We went up fast prior to WWII and I was a Sergeant Major on active duty at the Marine Barracks, Portsmouth, VA when I was commissioned from the ranks as a 2nd Lt. in

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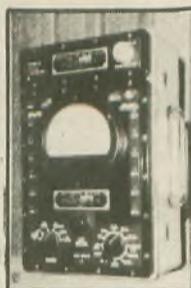
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1940. I was at Parris Island when WWII began—I was W3JJQ in VA and W4AGI at PI. The only rank I never held was Warrant Officer.

"It was after WWII that I finished college (BA and MA degrees — and acceptance as a candidate for PhD — did not complete due to a transfer). I was retired at the MB (Marine Barracks), San Diego in 1970."

Leland concludes, "Now about those push-ups. What you did not say in your earlier story was those 253 push-ups were with only one arm. (We reported in our July column that Leland had broken the QCWA push-up record which, at the time, stood at 8). Back when I was in the Corps, we never dreamed of using both arms in doing our daily push-ups." Ah-hhhh, we may get another clarification letter from Leland.

### W7SW Too Young For QCWA

My old young friend, "Happy" Scott, W7SW, is so anxious to join QCWA that he has already sent in his application and dues although he is not eligible to join until January 1994! He lives in Rome, as in Julius Caesar, but roams



Fanny keying Champ, W7SW

the world as a computer consultant and top flight DXer and DXpeditioner. Example: he was with the first western operators to open up Amateur Radio from Albania. He also manages to send us a small rock for the DXCC ROCK collection of the Northern California DX Foundation from each of the various countries he visits.

Scotty's fame also includes a little-known form of athletic prowess. He took first place, with a show-stopping performance, in the Fanny Keying section of the First Annual Fist and Fanny CW Keying Contest at the 1991 International DX Convention in Visalia, California. The Fanny Key, you can guess what that is, was hand-crafted by QCWAer Jim Maxwell, W6CF. Hope you can survive a couple of more months, Scotty, until you're eligible and your QCWA Certificate arrives. WR

## MOBILE:

(Continued from page 41)

Mexican paperwork handy for anyone who might challenge you. Secondly — exactly what privileges on the different bands do we have when operating within Mexican jurisdiction?

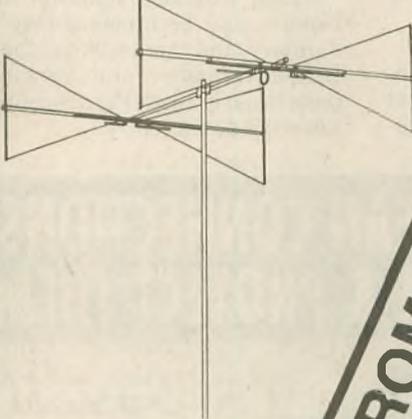
Many maritime net controllers will not handle any 20M, 40M or 15M radio traffic from authorized stations in Mexico that do not possess a US General Class license or higher. Yet other maritime net control operators feel they have no right to question an authorized foreign station as to the privileges their foreign authorization allows, especially if that foreign station is operating in a country with which we do not have a reciprocal operating agreement. Keep in

mind that we indeed have a third-party agreement with Mexico, so the big debate is whether or not a no-code Technician Class Mexican-authorized station could come up on frequency on 40M and pass traffic into and out of the US. My own view is to pass a US General Class code and theory test.

But most important is to always obtain a Mexican Amateur Radio authorization before you hit their town with your ham radio gear under your dash or poking out of your navigation station aboard your boat. With a Mexican authorization in hand, valid for the duration of your stay, and renewable as your tourist permit, you'll be operating legally in their country; a great way to stay in touch with other hams throughout the area, or throughout the world. WR

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### YL Events

Sep 25-26	JLRS Party Contest (SSB)
Oct 2-3	JLRS Party Contest (CW)
Oct 13-15	YL Anniversary Party (CW)
Oct 16-17	Scout Jamboree On-the-Air
Oct 27-29	YL Anniversary Party (SSB)
Nov 13	ALARA Contest

### YL Contests

YLRL Vice-President Carla Watson, WO6X, has announced that the contest operating period for the YL Anniversary

Party has been extended to 36 hours. The CW portion will run from 1400 UTC, 13 October 1993, until 0200 UTC, 15 October 1993, and the SSB portion will run from 1400 UTC, 27 October 1993, until 0200 UTC, 29 October 1993.

YLAP has traditionally been YLRL's largest contest, so it's a good chance to meet some new YLs and make contacts for some of the YL awards. The JLRS (Japanese Ladies Radio Society) and the ALARA (Australian Ladies Amateur Radio Association) contests are also good opportunities, and we are expecting several of the Korean YLs to participate this year in all of the contests. I'll be glad to send you complete rules and lists of the suggested frequencies, if you need them.

All YLs are welcome in these contests, and both the JLRS and ALARA contests are also open to OMs. A special feature of the JLRS Party Contest is that all participants who send in a log will receive a certificate of contest participation and a list of the contest winners in January, 1994. In addition, stickers will be added to the certificate for every year that you participate in the contest during the next 10 years.

YLRL will also sponsor "Meet the Novices and Technicians Day" in mid-January, and there will be other YLRL, British, Canadian, and German YL contests in early 1994. Future columns will have the dates.

### YL Awards

A unique YL certificate that's not very well known is the Grandmother's Club Certificate. Available to all licensed amateurs, the trick to earning it is that you must work ten YLs who already hold the certificate, but those names are kept secret. You must ASK.

The award was founded by Mary Meyer, W9RUJ, in 1958, and was meant to be a friendship certificate. You find the grandmothers as you visit. Mary wanted to encourage genuine QSOs, and the tradition has been preserved. The present custodian is Phyllis Douglas, K7SEC, 701 N. Camino del Codorniz, Tucson, AZ 85748., and she holds the secret list, which is never published.

To earn this award, work ten members who hold the certificate and are listed with Phyllis as a grandmother. Send a list giving the following information (no QSLs): Name, call, QTH, her certificate number and the date of her Grandmother's certificate. Also give your name, call, QTH, and the QSO date, time, and band. After receiving



**Hae Ok Kim, HL1LAV.**

the certificate, you can earn a gold seal for working five great-grandmothers. Be sure to enclose an SASE and \$1.00 with your application.

If you are a grandmother, you will have the letter "A" with your certificate number. YLs who are not grandmothers and OMs will have the letter "B." YLs who have previously earned the "B" certificates who are now grandmothers should let Phyllis know so that she can transfer you to the "good for contact" list. And YLs who have earned the certificate and are now great-grandmothers, should let Phyllis know so she can put you on that list. And here's a tip to get you started — the YLAP and other contests should bring out several potential contacts. Just ask!

### YL Clubs

PARKA (Polar Amateur Radio Klub of Alaska) has eleven active members in Anchorage. The group gets together often and holds regular meetings once each month, alternating social meetings held at different restaurants with technical meetings, held in a different

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member's home each time. The PARKA members are active in ARES (Amateur Radio Emergency Service), and their weekly net meets after the ARES Net each Thursday evening, on 147.90/30 MHz, at 8:00 p.m. local time. Several have participated in ARES drills and true emergencies. Lil Marvin, NL7DL, is the ARES Emergency Coordinator for Anchorage and serves as net control. Lil is also the new YLRL Alaska District Chairman and is secretary for the Anchorage Amateur Radio Club.

### YL Meetings

Both the YL-ISSB and YLRL recently held meetings. The YL International SSBers met in Des Moines, Iowa, on 23-27 June 1993, and the timing was excellent as they enjoyed beautiful weather and missed the flooding that would soon occur. Rex White, WA0AVW, hosted a barbeque dinner right in cornfield country on the first evening. Other events included a YL luncheon, the business meeting, a banquet on Saturday night, and a farewell breakfast on Sunday morning.

Flo Reitzel, KU7F, is President of YL-ISSB, an emergency system which meets to handle any emergency traffic that may exist, and to work toward awards when there is no emergency traffic. Several Top Flight Operator awards and many plaques were awarded at the meeting. A highlight was the attendance of Minnie, NA0V, and Rick, K0RDJ, Connolly, as Rick has been battling severe health problems. The 1994 meeting will be held about 30 miles from Gettysburg, Pennsylvania, next June. For additional information about YL-ISSB, contact Pablo Neiman, N5JRE, 209 Pine Trail, Higden, AR 72067.

The Young Ladies' Radio League convention was held in Wichita, on 8-11 June 1993. President Dana Tramba, N0FYQ, hosted the meeting, which welcomed DX visitors Nozomi Gohara, JH3SQN, and her OM Ken, JH3SQM; Nobuko "Ton" Uchihira, JR6XIX, and her OM Yoshiki "Dom", JR6XIW; and Masako Kato, JA0CYL, and her daughter Yukari. Included in the events were a get-acquainted social on the first evening, with Dorothy, Toto, the Wizard, and the other Oz characters; a DX program, with slides from the YL Asian Meeting '93; a slide show, presented by Rich High, W0HEP, on his recent trip to Lithuania; the business meeting, a banquet, with speaker Kathryn Martin, N4USW, who spoke as country humorist Miz Maudie, and a farewell breakfast, with a short motivational talk by Kathryn. The convention station KB0FUN was in constant operation.

YLRL is the largest and oldest all-YL organization, with over 250 DX members. Membership applications are available from Phyllis Douglas, K7SEC, whose address is listed above.

### DX YL News

Their DXpedition to FP-land in late June got off to a rocky start when Mary Lou Brown, NM7N, and Alice King, N4DDK, were driving to Canada to meet Nellie de Lazard, XE1CI, and Elizabeth Anderson, VE7YL. Not only did they get caught up in a terrific traffic jam for a Grateful Dead concert in Pennsylvania, but they blew a head gasket on Mary Lou's RV. Undeterred, they rented a van and drove to Nova Scotia, adding an extra \$2,000.00 in expenses. An obstruction northwest of their operating position blocked signals to and from Japan, but the four operators made between 4000 and 5000 QSOs. Mary Lou and Alice then went on to operate from Zone 2 in the Sept-Iles region of Quebec. QSL to Elizabeth.



Nell Devitt, NB6A, at KB0FUN.



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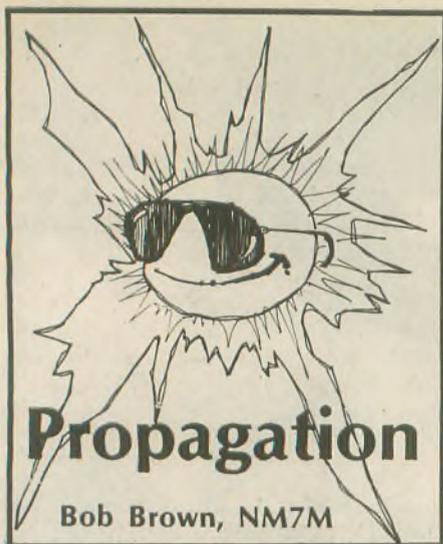


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Ever try to reconstruct a dream? I'm in the process of doing that right now. It seems that I had a crazy dream about working DX. As a matter of fact, the dream was quite specific, recalling two of my minor conquests in days of yore: FB8WK on Crozet Island and XU1SS in Cambodia. Maybe it was the delicious but spicy dinner I had at a local Mexican restaurant the night before but there it was, rattling around in my head. Strange!

Those thoughts having survived my awakening, I went back to my logs and looked for what was so out of the ordinary. Sure enough, there it was, "Only DX signal on the band" in both instances. In the case of Crozet Island, I didn't even know where it was located until the next day; then, to my great amazement, I found it was almost on the opposite side of the earth. Now that I've been into long path DXing, I simply call that "antipodal." As for the XU1, it was well known at the time and the QSL showed that it was operating from a refugee camp, the war raging around it.

But the "Only DX signal on the band" brings up the question of exotic modes of propagation, out of the ordinary or unexpected. I say "exotic" as they were dreamed up by theorists rather than the sort of thing that is obvious, say earth-ionosphere hops. In fact, if you look into my previous article about signals from the RS-12 satellite, you can see how one can actually hear hops occur, one after the other.

Don't take my remark about "dream-

ing up" exotic modes as being derogatory in any sense. The more exotic modes were developed to explain something mysterious in the way of propagation. The one thing that comes to the fore in the case of long path is the strength of signals. That was the inspiration for the notion of chordal hops, two consecutive refractions by the ionosphere without an intermediate ground reflection. That conserves signal strength by avoiding a loss at ground reflection and two oblique traversals of the D-region.

But to gain acceptance, the suggestion of chordal hops required that a suitable ionospheric mechanism or structure be found. Happily, that was the case for signals going across the geomagnetic equator in the late afternoon/early evening hours. At those times, the equatorial ionosphere has two high regions of above normal ionization and by using computers, it was possible to trace rays right across the equator and show the reality of the proposed mechanism.

A summary of the ways that hops of that nature may be obtained is shown in Figure 1, taken from Davies' book, *Ionospheric Radio* (Peter Peregrinus, Ltd. 1991). The figure not only shows a chordal hop like the one across the geomagnetic equator but also a case involving an intermediate E-layer reflection, the M mode mentioned in a previous article.

Exotic modes can "cascade," as it were, one after the other. Of course, that is true of any sort of ionospheric mode but it immediately raises questions about the probability of such events, singly or in sequence, and considering that propagation takes place over time, also their actual durability or stability. Before getting to that, let's look at the first step of the complex mode in Figure 1, the scattering of RF coming from the source and then going into that mode.

Most of our experience leads us to think of the ionosphere as going through quasi-static states, changing slowly as the day proceeds, the seasons change or the solar cycle grows and decays. But sudden changes can and do occur, largely from the impact of solar plasma on the outer reaches of the earth's magnetic field. Those disturbances, giving rise to

magnetic storms, can propagate inward. You know that for a fact, as sometimes even signals on low-latitude paths are disrupted.

So it should come as no surprise to think that regions smaller than the ionosphere as a whole can be disrupted, even independently or out of phase with others of comparable size. But if one's RF goes into such a region, it will not find an orderly ionosphere, the electron density changing gradually with distance or time. Indeed, it could encounter one situation now and another one seconds or minutes later.

All that means that RF will not advance in its usual way but, instead, perhaps will be suddenly deviated or scattered in a direction to follow a new path. That's what's represented by the first step in Figure 1, RF undergoing a scattering by an irregularity and going off in a new direction. But this not only is a way to start off on a chordal hop; it can also be the start of something even more exotic, ducting.

You don't have to go to Webster's Dictionary to know what ducting means for HF propagation: It involves a way to convey RF energy along a channel in the ionosphere with a minimum of loss in signal strength. Thus, for us an RF signal takes the place of fluid running down a channel, being ducted without loss or leakage, etc.

But the ionosphere is a pretty wispy place; how can that be accomplished, you ask? Well, if you dig hard into the matter, you'll find it's possible to have all electrons in the right place, in the right configuration, for it to happen. But the idea of ducting is not new, coming to us from WWII from experience with radar and even HF propagation.

In the case of radar, it was found that airborne systems were reporting reflections from ships beyond the usual horizon, even when corrected for atmospheric refraction. For some reason, radar signals were not being refracted as usual; instead, a new agent or whatever was intervening from time to time and carrying the radar signals to greater distances.

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When all was said and done, it was found that the humidity in the atmosphere could do the trick, even unusual temperature profiles near the surface. In short, instead of the radar signals being refracted or bent so they hit the ocean, the curvature of their paths was lessened to the point that they essentially matched the curvature of the earth, at least for some distance. So they were "ducted" along, carried essentially around the curved earth.

On the next point, I am not sure of my facts but it is worth throwing out, just for the light it must have provided in the dark times of WWII. In exploring the case of HF propagation, the idea of ducting was also considered, perhaps stimulated by the VHF radar experience. At any rate, that part of the US ionospheric program was under the supervision of Dr. Donald H. Menzel, W1JEX, who just happened to be a distinguished astronomer in his own right. The proposed channels for HF radio signals were termed "Donald's Ducts!"

But back to reality; it is possible to have HF waves ducted along, essentially following the curvature of the earth, if the electron density distribution is just right. One such arrangement involves a valley between the E and F-1 layers. Thus, if such a dip in electron concentration does exist, HF waves can travel up and down, moving along the valley, if they enter with their direction of propagation essentially in the direction of the valley or duct. That's why it's important to have some scattering by irregularities to reorient the wave.

Thus, if you think about it, say RF coming up from an antenna somewhere on the ground, the RF will be on an ascending path and unless it peaks at the altitude of the valley/duct, it will require some sort of scattering to change its direction enough to be propagated horizontally down the duct. That's for a guided mode of propagation where there are two "walls" which confine the wave, the upper and lower edges of the valley in the electron distribution.

There's another guided mode where only an upper wall, such as the E or F-region, is involved—the so-called "whispering gallery" mode. It gets its name from various rooms or enclosures where sound waves are transmitted from one location to another, even brought to a focus, with little in the way of loss of intensity. Thus one could whisper at one location and easily be heard at the corresponding focus.

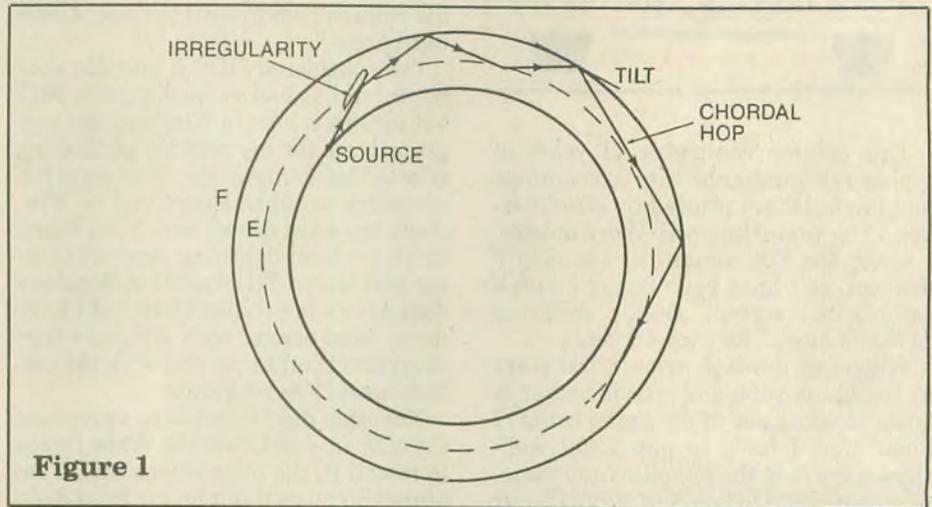
I can't recite a list of such structures around the world but I recall hearing about a "whispering gallery" in one indoor courtyard of an Italian monastery and also a large dining room in Yugoslavia. But those are solid struc-

tures, their walls fixed in position and with constant properties, quite different from what makes up our ionosphere. (You can see that I have concerns about the stability or temporal duration of any "whispering gallery.")

The right direction is still required for RF waves to be guided in that sort of geometry. This is thought to occur at day-to-night transitions, with electron density irregularities or fluctuations and discontinuities such as sporadic and auroral E-layers. Earlier I mentioned the possibility of exotic modes "cascading," one into the other. With

any "whispering gallery," the cascading is more like a string of "ifs": "If this, then if that and if the other thing!"

Coming full-circle, when we get down to exotic modes of propagation, we can point to many interesting possibilities but few certainties and considerable difficulty in finding any "fingerprints." So, in the last analysis, we come back to the fact that knowing about normal propagation will get the job done, at least within its limitations, and the exotic moments make it all the more interesting and rewarding when it comes to DX. WR



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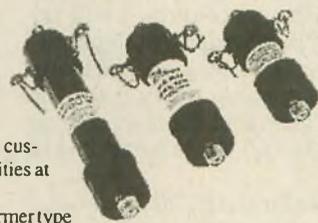
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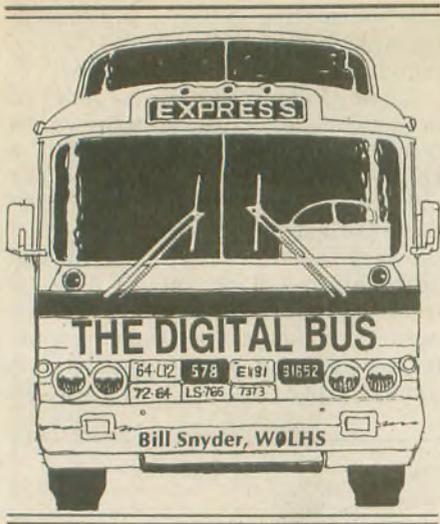
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This column completes 11 years of typing my ramblings into a computer and having them printed by *Worldradio*. Prior to starting with *Worldradio*, I wrote the DX column in the *RTTY Journal*, so I have been facing a blank cathode ray screen, usually suffering "writer's block," for over 13 years.

When I sit down to write, I first stare at the blank tube and wonder what is going to come out of my aging brain. I know that I have to put 1,700 well-chosen words in the computer and somehow transmit it to Lou Ann, KB6HP, our editor. To get my "creative juices" flowing, I sometimes just punch in a paragraph or two like the one above. If the "juices" are productive, I erase the starter paragraphs before I send the column, but this time, I feel "dry," so this will probably be transmitted with the other 1,600 words I am obligated to send.

When I finish this column, I will try sending it to *Worldradio* by telephone. I now have a fast modem installed in my computer, so I'm going to try it for the first time — if I can find the instructions that Editor Lou Ann sends from time to time.

When I wrote for the *RTTY Journal*, I had DX to report in a sinking solar cycle, so I had to scramble to find something to write about. Now, Jules Freundlich, W2JGR, handles the DX column for W6IWO, Dale Sinner, the *Journal's* publisher, and I sometimes marvel how Jules gets all the juicy DX information he puts in the column. If you enjoy the

digital modes you should subscribe to the *RTTY Journal*. Jules lives in Minneapolis and has his beam on top of a 16-story apartment complex. It must really collect DX information!

### Computer stuff

When I bought a new computer six months ago, I was happy because it had a 340-meg hard drive. My first hard drive was only 20 megs, the next 40, the next 80 and then 125. Each time I thought I had enough storage space, but now I'm looking at my 340 and thinking of adding another one of the same size. There must be a law that states: "Your file storage rises to meet the size of your hard drive."

I've considered DOS 6 and file doublers, but I've had so much trouble with *Ventura Publisher in Windows*, the program I use for my desktop publishing efforts, that I am gun shy. Ever since the computer world was captured by *Windows*, my hard drives have been filling up faster than lightning. And my cursing gets worse. I'll admit that *Windows* does have a few things I like, but I have more "fatal errors" with *Windows*-type programs than I ever had with the old-fashioned DOS programs.

The other day I received an upgrade of *Corel Draw 4* on CD-ROM. When I went to install it, the instructions said it required 35 megs if put on my hard disk, but only about 5 if it regularly runs off the CD-ROM. I had to opt for the CD-ROM world because I only had 32 megs of hard drive space left free. Graphics gobble up space like crazy. Of course the CD-ROM version is much slower than the on-board hard disk method, so I am practically out of storage space and only six months into a new computer with space galore, so I thought.

I use the new computer for writing and desktop publishing. It's a 486DX-66 in a tower case with a CD-ROM outrigger attached. The printer is a Hewlett Packard LaserJet 4 with a Winjet 1200 en-

hancement board installed. I also have a Hewlett Packard Scanjet IIc and a high-speed modem hooked into the computer, too.

I print, on a volunteer basis, a number of publications. First, I do our local ham club newsletter, although it is edited on his computer by Dale Carey, WD0AKO. Then I do posters, newsletters, etc. for the Cass County Historical Society, a non-profit organization that runs a 15-acre historical village near Fargo. (I have served three years as a board member there, too.) My biggest job, however, is a quarterly tabloid for the Fargo Central High School Alumni Association.

My old high school burned down in 1966 and was never rebuilt. It was replaced by two new schools instead, so our association is a "last man's club," so to speak. We sponsor reunions and all that, but our newsletter is really a fun part for me. I get stories and news from our aging alumni all over the world.

I'm also into history and I've been writing my recollections for posterity (grandkids, who else?). This year, for example, marks 40 years since I helped put Fargo station WDAY-TV on the air. I was its first photo and film director, so I recently wrote a long story about the early days of my TV experience. We were all pretty dumb in those days about the wonderful ways of television. Here's one example:

The RCA salesman who took the order for the TV equipment apparently didn't know too much about projectors sold by anybody but his boss, RCA. As a film man, I liked the Eastman Kodak 16mm film projectors because they had an intermittent movement rather than a take-down claw to pull the film through the projection gate. By having a large sprocket intermittently pulling the film, the usual torn sprocket problem was virtually eliminated.

Julius Hetland, the chief engineer, liked the Telop machine for projecting opaque still photos, so we ordered the Eastman projectors and the Telop machine instead of those recommended by RCA at the time. In order to get two film projectors, a slide projector, and the Telop stills to be focused on a single film chain camera, all of them were optically multiplexed into the chain through lenses, front-surfaced and partial mirrors.

The Telop machine was a trade name for an old-fashioned opaque projector, something like the toys we had as kids. It was designed to project still pictures into the film chain for transmission. The big Telop machine had two places for holders which each held six 4x5 still photos in a long frame. One holder went in the top of the machine and the other was on the bottom. The pictures were alternatively projected into the film chain as selected by the operator. It was a

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hand-fired operation.

The moment the engineering department finished hooking up all the projection machinery to the film chain and put it to a test, a large flaw was discovered: The Telop pictures came out backwards on the monitor screen! Due to the mirrors and partial mirrors in the optical path to the pick-up tube, everything was correct but the Telop projector. Somehow the images became reversed from right to left.

"What the hell is this?" the chief engineer said in a loud voice, a change from his usual quiet manner.

"That's what we get for not buying everything all RCA," one other engineer said.

We were only a few days from going on the air when the chief came to me with his problem. "Can you flop a couple of Telop prints over from left to right for a test?" he asked. "We are having a temporary problem with the multiplexer."

I made a couple of flopped test prints and the problem was solved; however, my photo department had to copy and reverse all the correctly printed opaque 4x5 cards received from advertising agencies.

So on 1 June 1953 WDAY-TV went on the air with all of the Telops, as we called the 4x5 stills, being photographically reversed left to right. The plan was to get the proper multiplexing system worked out as soon as possible, but time has a way of going fast when you are having fun, and so the project was delayed for months, then put off until we moved from our first temporary studios to a brand new building two years later. At that point we had two film chains and so the Telop machine optical path was normal. Now my photo department was stuck with flopping two years of Telops back to right side right. It was a big job!

It wasn't long before WDAY-TV abandoned the Telop process and went strictly to 35mm slides, as color was forecast to invade the world of television and color slides were easier to do than color prints.

## EAVESDROPPINGS

THE SEWER BACKED UP AND LEFT A FEW CALLING CARDS FROM MY NEIGHBORS . . . IT WAS A WET SUMMER AND I'M AWFUL GLAD TO GET BACK INTO MY BASEMENT SHACK AGAIN . . . MY WIFE IS HAVING WALL-TO-WALL HEADACHES AND SHE SAYS MY HAM RADIO IS THE CAUSE OF THEM . . . OUR HAM CLUB MEETS IN TWO DIFFERENT RESTAURANTS FOR BREAKFAST ON SATURDAY, ONE FOR EARLY BLOOMERS AND THE OTHER FOR THE DEAD FLOWERS . . . THE DEMOCRATS ARE TAX AND SPEND AND

THE REPUBLICANS ARE BORROW AND SPEND—NEITHER PARTY KNOWS HOW TO CHOP AND MEND . . . WE'RE FROM NORTH DAKOTA WHERE YOU DON'T NEED TO TRAVEL TO GET AWAY FROM IT ALL . . . I GOTTA GET ON FACTOR SO I CAN TALK TO MY KID IN THE EAST CAUSE HE KEEPS RAVING ABOUT IT . . . I SPENT THE SUMMER LOOKING FOR AN EARLY FALL—OF THE FLOOD WATER, THAT IS . . . MY GRANDMOTHER USED TO SAY THAT A SMALL MIND WAS USUALLY FOUND IN A PERSON WITH A BIG HEAD . . . MY FIRST HAM RCVR WAS A THREE TUBE BREADBOARD WITH PLUGGED-IN COILS, A GRIDLEAK AND CAPACITORS THAT WERE CALLED CONDENSERS IN THOSE DAYS . . . A GRIDLEAK WAS A RESISTOR NOT A SNEAKY GRIDLOCK SENATOR . . . I'M ON AN ADVISORY BOARD FOR AN OUTFIT THAT WON'T TAKE ADVICE . . . IF MONEY IS THE ROOT OF ALL EVIL, WHAT IS THE ROOT OF ALL GOOD, MONEY?

If you would like to communicate with me, my mailing address is Bill Snyder, W0LHS, 1514 South 12th Street, Fargo, ND 58103. My packet address is W0LHS @ W0LHS.#SEND.ND.USA.NA. 73 de North Dakota where Bill Kurti, WC0M, our ARRL section manager, said the above eavesdropping which reads: ". . . where you don't need to travel to get away from it all." DIT DIT. WR

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# Computers & BASIC STUFF

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There's a popular theory flying about that claims to be an easy way to use the sun's shadow to determine true directions. The claim goes something like this: If you mark a spot cast by the sun's shadow, then wait exactly one hour and mark the shadow again, a line perpendicular to the two marks points to true north. Obviously, such a theory sounds attractive to an amateur who wants to have an accurate beam headings for his antenna.

The theory isn't a new one — I saw the same thing several years ago in a proposal for an Air Force survival guide. Trouble is, the theory is flawed. The sun's shadow seldom tracks across the ground exactly west to east, therefore any perpendiculars will seldom point north or south.

Consider an Arctic explorer, lost on one of those days when the sun never sets. He knows that the sun doesn't set because he's been marking its shadow every hour for the past 24 hours, and the marks outline a circular track. What's worse is that he's drawn lines perpendicular to adjacent marks, and each points to one of 24 different directions! Can they all be true north?

Not likely. But if the explorer (or anyone, for that matter) knows the local noon time (the time the sun stops rising and starts descending), then the shadow method achieves some degree

of accuracy. The trick isn't in timing an exact hour between shadow marks, but timing so that noon falls exactly between start and stop times. (By the way, the last shadow mark is the one closest to the east.)

There are other, highly accurate ways to use the sun to find directions. If you could somehow know where the sun is at any given moment, then you'd know the exact direction its shadow was lying. Navigators use similar techniques all the time. Navigators and astronomers generally refer to published tables listing the celestial positions of the sun, moon, planets and stars. We could use similar tables, or we could let our computers make orbital predictions for us.

Our town's public library has *Practical Astronomy with your Calculator*, by Dr. Peter Duffett-Smith, and in it are a number of easy explanations, formulas and examples for simple solutions to astronomical problems. Using this book for reference we can easily build a program to compute the sun's position at any given time on any given day. Our Suntracker program starts by asking for latitude, longitude, date and time (lines 20-70). Coordinates are to be entered in degree. minute format, using a period as a separator. (The routine in line 30 converts degrees. minutes to decimal degrees). Use a minus (-) sign for locations in the southern hemisphere. Enter the date as DDMMYY (September 30, 1993 is 300993) and UTC time as HHMM. Dates must be for the years 1980 through 2079. The routine in lines 80-100 calculates the number of days since the solar reference date, January 0.0, 1980. Lines 110-130 calculate obliquity and tilt, lines 140 and 150 derives a changing "constant" which is used in lines 160-190 to find a reference on earth to match the celestial reference (navigators call it the "first point of Aries, astronomers call it a conversion to Greenwich mean sidereal time).

Lines 200-240 calculate the sun's geo-

centric ecliptic longitude, which is converted to declination and right ascension by lines 250-340. Line 350 derives the sun's position as a reference called the Greenwich hour angle.

The rest of the program is basic trig that converts the Greenwich hour angle and declination to azimuth and elevation.

To check the program type in the following for Tucson: Lat 32.13, Long 110.59, DDMMYY 310893, and UTC 1600. If everything is running correctly the azimuth should be 105 and the elevation should be 37.2 (in decimal degrees).

There are several ways to use the info. One is to wait by your antenna mast for sunrise or sunset, then note a landscape feature directly in front of (or beneath) the sun at the given time. When your antenna boom points to that feature, then you know that its true direction is the same as the sun's azimuth at that time.

Or, you could use the stick-in-the-dirt trick. The shadow will fall directly opposite of the sun's azimuth when the stick is perfectly vertical over a horizontal surface. It would then be easy enough to then use a protractor to find other directions including true north.

Suntrack is accurate to better than a quarter degree when used with GW-BASIC. It should also work with other BASICs as well, but the accuracy may be a little off. In our Tucson example above, the values for some of the variables are ZN = 105.0572, F2\*RA = 37.22722, S1 = 59.95915 and OP = 8.483484.

From the mailbag: Thurman Smith-

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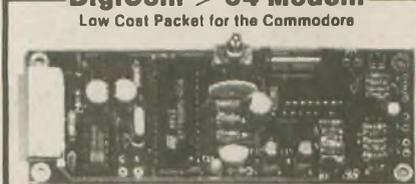
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ey, N6QX, has a program he calls "ILIMIT" for designing a single IC battery charger, His address is 56 Center Street, Chula Vista, CA 91910. . . Carl Zelich, AA4MI, has a Commodore 64 version of

the FM Deviation Tool program in the August issue. His address is 250 Diana Blvd., Merritt Island, FL 32953. . . Jim Gray, K7MS, has an "Airlines" program. No, not the flying kind; it's an air

transmission line calculator which allows you to make new lines or find the Zo of existing lines. His address is Box 317, Colorado City, CO 81019. As always, include an SASE when you write.

```

0 REM: SUNTRACK.BAS, IN GW - BASIC, BY KD5DL
10 PI = 3.141592654: RA=180/PI: DA = PI/180: O = 0
20 INPUT "LATITUDE (DD.MM) ",L: GOSUB 30: LA =
  B: GOTO 40
30 B = SGN (L) * (INT (ABS(L)) + ((ABS(L) - INT(ABS(L))) *
  10/6)): RETURN
40 INPUT "LONGITUDE (DDD.MM) ",L: GOSUB 30: LO = B
50 INPUT "DATE (DDMMYY) ",L: F = INT(L/10000): G =
  INT(L/100) - 100 * F
60 Y = L - 100 * G - 10000 * F: D = Y + 1900: IF Y<80
  THEN D = D + 100
70 INPUT "UTC (HHMM) ",L: UTC = INT(L/100) +
  (L - INT(L/100) * 100) / 60
80 H = INT ((D-1) * 365.25) - 722829: IF G<3 THEN G = G + 12:
  D = D - 1
90 I = INT (D/100): J = 2 - I + INT (I/4): K = INT (365.25 * D)
100 JD = J + K + INT(30.6001 * (G+1)) + F - 723244
110 V = (H + 29218.5) / 365.25
120 W = (46.845 * V + .0059 * V^2 - .00181 * V^3) / 3600
130 Y = 23.452294 - W: Y1 = SIN (Y * DA): Y2 = COS (Y * DA)
140 KA = 6.6460656 + 2400.051262 * V + 2.581E-05 * V^2
150 MA = 24 - (KA - (24 * (D - 1900)))
160 JR = (JD - H) * .0657098 - MA
170 KB = UTC * 1.002738 + JR
180 IF KB>24 THEN KB = KB - 24: GOTO 180
190 IF KB<0 THEN KB = KB + 24: GOTO 190
200 JF = (JD + UTC/24) * 360/365.2422
210 IF JF>360 THEN JF = JF - 360: GOTO 210
  
```

```

220 K = JF - 3.762863
230 M = 360/PI * .016715 * SIN (K*DA)
240 N = JF + M + 278.83354
250 IF N>360 THEN N = N - 360: GOTO 250
260 W1 = SIN (N * DA) * Y1: OP = ATN (W1/SQR
  (1 - W1*W1)) * RA
270 P = SIN (N*DA) * Y2: Q = COS (N*DA)
280 R = ATN (P/Q) * RA: IF R = 0 THEN 300
290 IF R>0 THEN 340
300 IF Q<0 THEN R = R + 180: GOTO 350
310 R = R + 360: GOTO 350
320 IF Q<0 THEN R = 180: GOTO 350
330 GOTO 350
340 IF Q<0 THEN R = R + 180
350 S1 = KB*15 - R: IF S1<0 THEN S1 = S1 + 360
360 E1 = S1 - LO: IF E1>360 THEN E1 = E1 - 360
370 IF E1<0 THEN E1 = E1 + 360
380 F1 = (SIN (LA*DA) * SIN (OP*DA)) + (COS (E1*DA) * COS
  (OP*DA) * COS (LA*DA))
390 F2 = ATN (F1/SQR (1 - F1*F1))
400 G1 = (SIN (OP*DA) - (SIN (LA*DA) * SIN (F2))) / (COS (F2)
  * COS (LA*DA))
410 IF G1>1 THEN G1 = 1 ELSE IF G1< - 1 THEN G1 = - 1
420 G2 = (-ATN (G1/SQR (1 - G1*G1)) + PI/2) * RA: IF SIN
  (E1*DA)<0 THEN ZN = G2
430 IF SIN (E1*DA) = >0 THEN ZN = 360 - G2
440 PRINT "AZIMUTH = "; INT (ZN * 10) / 10; "ELEV =
  "; INT (F2 * RA * 10) / 10: GOTO 70
  
```

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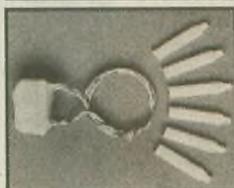
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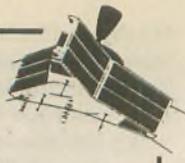
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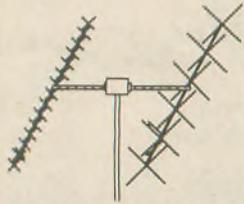
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# SPACECOM



**K7YHA**  
**Rich Arland**

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Field Day 1993 is history! Field Day is that one weekend in June when thousands of us "hit the bush" to pursue Amateur Radio on a more "primitive" level.

Several days prior to FD-93 I ran the orbital predictions (for Field Day weekend) for RS-10/11 and 12/13 and posted them on the local BBS (K3RLI) along with a short dissertation on how to successfully make some FD contacts using these two LEO birds. My message was posted on several other BBSs in the PA, NJ and NY area, so the material received some dissemination. I also included a request that clubs attempting to make SATCOM contacts during FD-93 send me a brief synopsis of their attempts (successful or not) for publication in *Worldradio*.

The Endless Mountains Amateur Radio Club, Using the call NX3Y, had a 4A effort going in the outback around Tunkhannock, PA. Keith, NX3Y, dropped a message on the BBS to me detailing their SATCOM efforts. The EMARC group managed five contacts on RS-12 using mode K that netted them 100 bonus points and several extra QSO points. NX3Y's SATCOM gear consisted of a solar powered IC-735 for the 15M uplink and a Yaesu transceiver for the 10M downlink. Antennas consisted of a 10M vertical and a dipole on 15M. Keith reported that EMARC garnered a total of 4,948 points. Not bad, Keith.

Keith's success points out what I have been saying all along in this column:

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You don't need any fancy gear or antennas to enjoy satellite communications on the LEO birds. Mode K via RS12/13 is an excellent starting place for the beginning SATOP.

## Edsel Murphy and the QRP Commandos

The Wyoming Valley QRP Commandos (my FD group) hit the bush in a local state park. Our 2A (battery) total QRP effort netted us about 2,390 total points. Unfortunately, my SATCOM QSO occurred prior to the start of FD-93, when I decided to check out the mode K gear. I managed to work K1TO in CT and we exchanged 559 reports. The FD SATCOM gear consisted of a Ten-Tec Argosy-II XCVR (at 5W output) for the 15M uplink and a Radio Shack HTX-100 10M XCVR for the receive downlink. Antennas utilized were a Radio Works 40M vertical radiating dipole (VRD) through a tuner for the uplink and a Radio Works full sized Carolina Windom for the downlink.

During the contest I was obsessed with making CW contacts on the 40M station, so I put off doing the SATCOM QSO until the very end. WRONG! Since Edsel Murphy loves Field Day, I experienced first hand what it's like to be in "SATCOM Hell"!

The pass I had chosen was the next to the last pass during the contest for RS-12. This was a 17+ minute pass and, based upon my pre-FD contact with K1TO, I figured that I would not have any problems netting the one contact needed for the SATCOM bonus points.

Prior to the pass, everything was adjusted and I was ready. Within a few seconds of predicted AOS, I heard the RS-12 beacon on 29.408 MHz. It took a few precious minutes for the bird to gain enough altitude to where I could hear my downlink signal coming back. Then I hit the keyer button and sent: "CQ RS FD de K7YHA." Nothing. Again: "CQ RS FD de K7YHA." Still nothing.

One more time: "CQ RS FD de K7YHA." I could hear my signal in the downlink passband. What was wrong? Did everyone else on the bird have receiver problems? Hit the button: "CQ RS FD de K7YHA." Again: "CQ RS FD de K7YHA." Where is everyone? Panic? Who's panicking? Slap the keyer: "CQ RS FD de K7YHA." Nothing. Again: "CQ RS FD de K7YHA." Still nothing. Bummer!

I was still CQing and listening as RS-12 slid over the horizon and LOS occurred. Casey had struck out. It was truly a black day in Mudville! I was contemplating slashing my wrists with my rusty messkit spoon, when Mike, KA1RIX, (a fellow "dittohead") came into the tent with a bottle of our favorite beverage, Snapple. Over a couple of bottles of intellectual brew, Mike managed to calm me down and convince me that the rest of the QRP Commandos were not going to send me off to the gulag for "psychiatric evaluation and re-education."

No, the Wyoming Valley QRP Commandos did not get a satellite QSO during FD-93. In effect, we lost an easy 100 bonus points and an additional 10 QSO points due to overconfidence on the part of the head rocket scientist (namely, me). Moral #1: Don't procrastinate. Bag the satellite as soon as possible after the start of the contest. If you don't make it on the first attempt, you will have many more chances. Moral #2: Just because you can easily make SATCOM contacts at your home station, don't become too complacent thinking that you will not have any trouble bagging the bird while out on Field Day. Remember, Edsel Murphy lives!

## New Satellites

1993 was another banner year for amateur satellite operators with the actual launch of a Phase-3 bird and the pending launch of several others. Let's take a brief look at what is in store for the amateur satellite community in the upcoming months.

## ARSENE

The first amateur radio satellite to fly in 1993 was the French ARSENE, launched on 13 May at 0056Z via an Ariane launch vehicle from the ESA facility at Kourou, French Guiana. ARSENE flew as a secondary payload with the ASTRA communications satellite.

Problems with the ARSENE 2M downlink arose soon after launch. The 2M downlink was not being received by ground control stations. According to Steve Ford, WB8IMY, the ARRL HQ gang was able to hear the 2 meter engineering beacon, weakly. The lack of good telemetry data from ARSENE's

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2M beacon forced the satellite control station to fire up the S-band beacon. Strong S-band telemetry enabled the controllers to get a read of on board systems and confirm that most were operating with in parameters.

All this time ARSENE was in a very low transfer orbit. Perigee was down to about 200 km or 120 miles! One hundred five hours and forty nine minutes after launch, ARSENE's kick motor was fired which moved the satellite into an elliptical orbit with a 16,000 km (9,600 mi) perigee and a 40,000 km (24,000 mi) apogee. A nice ending to a very sticky situation.

Currently (mid August) ARSENE's S-band linear transponder, featuring a 16kHz passband centered on 435.100 MHz (uplink) and 2.446540 GHz (downlink), is working great. Current trends are to employ recycled TVRO satellite dishes from 5 to 10 feet in diameter as the S-band downlink antenna. An S-band down converter (like those offered by SSB Electronics) is placed at the feedpoint and the IF signals are fed into a multi-mode V/UHF transceiver. Uplink considerations include 10 to 50 watts of RF into 18 to 30 elements on the 70 cm uplink frequencies. ARSENE employs hard limiting on the transponder, so strict uplink power discipline is an absolute must for this satellite.

Keps for ARSENE are available from most packet BBSs. Mode-S on ARSENE is not like OSCAR-13. Larger diameter dishes (most reports I have seen use recycled TVRO dishes in the 5-10 foot diameter range) are required along with up to 50 watts of 70cm uplink to produce reliable downlink signals. Compare this to the 2 foot diameter dishes and about 10 watts of 70cm uplink power required for OSCAR-13 and you can see that there will be a substantial increase in the hardware for ARSENE Mode-S.

## RS-15

The Russians still have not launched their RS-15 LEO satellite. According to Pat Gowen, G3IOR, AMSAT-UK, the Commonwealth of Independent States (CIS) has postponed the launch of RS-15 until sometime toward the end of 1993 or the spring of 1994. Pat's insight into this sticky situation reveals that the CIS is under a lot of strain economically, and has placed a hold on any further amateur satellite launches. If RS-15 flies prior to the end of 1993, let us count our blessings and start making contacts.

A description of RS-15's capabilities follows: RS-15 is a 144 pound spacecraft that was designed by a group of Russian satellite enthusiasts headed by Alexander Papkov, UA3ZUW and Victor

Samkov. The satellite features an upgraded version of the BRTK transponder complex which incorporates a Mode-A linear (noninverting) transponder and two 10 meter beacons, a BBS with 2 MB of memory and a 64 channel telemetry system and command complex. The downlink transponder will produce a power output of about 5 watts while the beacons will broadcast using 400 milliwatts or 1.2 watts output, depending upon command instructions sent by RS3A, the Laboratory of Space Technology of Tisolkovski Museum of Cosmonautics club station in Kaluga C.I.S. Here is a brief look at the Mode-A transponder complex:

Uplink Passband: 145.857MHz to 145.897MHz  
Downlink Passband: 29.357MHz to 29.397MHz

Beacon #1: 29.398MHz  
Beacon #2: 29.353MHz

Translation Constant:  
116.5MHz

When finally launched, this newest Russian LEO bird will have an almost circular orbit of approximately 1400 miles (2300 Km) in altitude with a 67

degree inclination that will provide excellent intercontinental coverage for Mode-A contacts. RS-15 promises to be an outstanding source of satellite DX. Currently none of the LEO satellites offers coverage from the east coast of the U.S. into Hawaii. This means that an east coast SATOP trying for Satellite WAS must use one of the high orbit birds in order to obtain a KH6 QSO. RS-15 promises to fill this gap and allow LEO coverage over a much wider geographical area.

## UNAMSAT-1

The Autonomous University of Mexico (UNAM) has designed and built a new OSCAR which was due for launch in 1993. UNAMSAT-1's primary mission is the detection of high velocity meteors that originate outside our solar system. Once the meteor data has been collected it is stored aboard the satellite and downlinked using standard AX.25 packet radio format. When UNAMSAT-1 is not involved in searching for meteors, it will be configured as a standard PACSAT store-and-forward satellite like the microsats. As soon as more information on the uplink and downlink frequencies are available, they will appear in this column.  
(please turn to page 55)

# OSCAR and Weather Satellites

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## Reminiscences of a lightweight contender

Madison Square Garden, 1972. "Ladies and gentlemen . . . in this corner, the challenger. Weighing six pounds, from Sevierville, Tennessee. The low-power contender — the Arrrrr-goooo-naaaaaaaut." The crowd goes wild.

And so it was — or certainly could have been — when Ten-Tec weighed in to the low-power CW/SSB transceiver market with the Argonaut 505, beginning a love affair with legions of QRP operators that continues today.

Dan Lakenmacher, N5UNU, of Houston, Texas, recently wrote that he was interested in knowing more about the Argonaut series. After more than 20 years on the bands and three significant model upgrades, it's a great time to tune through the Argonaut's history. With the tutelage of Ten-Tec's Paul Clinton, WD4EBR, here's a look at the original: The Argonaut 505.

In the November 1972 edition of *QST*, the ARRL's Edward P. Tilton, W1HDQ, first sang the praises of the 505. "Members of the headquarters staff who specialize in HF operation have had good results with the Argonaut on all the bands, with both CW and SSB," Tilton wrote. "All experienced that special glow of satisfaction and initial surprise when stations came back to them. . ."

The Argonaut is a solid-state CW/SSB

transceiver capable of operation on 80, 40, 20, 15 and 10M. Power output is rated at 2W, and receiver sensitivity is less than 0.5mV. At 4½ inches high, 13 inches wide and 7½ inches deep, it was heralded as one of the finest portable rigs of its era.

The receiver features AGC, offset tuning, a tuned MOSFET RF amplifier and mixer, speaker and provisions for headphones. There's a 9 MHz crystal filter with a 2.5 kHz bandwidth.

The transmitter, with 5W input, features a broadband final amplifier, a 50-70 ohm output impedance, press-to-talk, CW break-in, SWR bridge, CW sidetone, IC balanced modulator, 700 Hz CW offset and shaped keying.

The 505 has automatic sideband selection which is reversible. It runs off 12V and draws 150mA on receive, 800mA on transmit—ideal for battery operation. The 505 has a vernier dial for tuning, and frequency readout — which is analog — accurate to plus-or-minus 5 kHz.

A resonate control on the front panel peaks both the receiver and transmitter. The drive and microphone gain controls are on the back panel. Sensitivity control for the SWR indicator is on the front panel.

The fact that there are so many 505s still in use is testimony to its fundamen-

tally solid design. We'll continue our climb through the Argonaut family tree with a look at the 509 and 515. So stay tuned.

## The HW-8 Handbook (cont.)

Ken Brown, KV5A/9, of West Frankfort, Illinois, and E. Russell Cox, K8JC, of Saginaw, Michigan, have recently lamented the scarcity of modification books for the Heathkit HW-8 QRP transceiver.

A call for help in the August QRP column brought gracious offers from around the country, including from Scott Richardson, AA6U, of Riverside, California; Ron Wilhelmy, W16B, of Rancho Santa Fe, California; and David Kidd, KA7OZO, of Oregon City, Oregon.

It also prompted a response from the person who compiled and edited the handbook: Michael Bryce, WB8VGE, of Massillon, Ohio. "All copies have been sold out for some time," he wrote. "But, I'm planning a short reprint of the HW-8 Handbook. There will be several corrections made in the reprint. So, in the meantime, ask your readers if they would like a reprint and if there is enough response, I'll push up the printing date."

Fair enough. If you'd be interested in a copy of the special reprint, let me know. I'll pass your response along to Bryce, and perhaps we can coax him into an earlier press run.

## Attention MFJ 90 Series ops

Joseph Falcone, AA8HV, of Southfield, Michigan, wants *Worldradio* QRP column readers to know that the "MFJ 90s Radio Club" is forming "for users of the popular MFJ 90 series of QRP radios, such as the MFJ 9040, 9020, etc." Club dues will be nominal "and the club plans on having a bimonthly newsletter. In addition, the club is expected to be sponsoring QRP contests and special events stations," Joseph says.

If you're interested in more information about the club, write to him at 3000 Town Center, Suite 2370, Southfield, Michigan 48075.

## A peek at the QRP Plus

Dale Hunt, WB6BYU, of Yamhill, Oregon, says that he was very impressed with Index Laboratories' QRP Plus, a fully synthesized, processor-controlled all-band CW/SSB transceiver, at June's SeaPac Convention.

"Being an old Ten-Tec fan, I was pleased to see that (the designer) had used the Argonaut as a starting point for his design, then made it even more simple," he writes. Dan offers these observations:

*No mode switch.* "One of the things I dislike about the fancy rigs is they used USB to receive CW on the lower bands. On the QRP Plus, the usual sideband is

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Although Dale didn't have an opportunity to operate the rig, he was "impressed with the human engineering of the unit."

Company specifications show that the rig runs 5W on 160 through 10M. It features SCAF digital audio filters from 100 Hz to 2,400 Hz on receive, and has full break-in, multiple memories, and RIT. It measures 5½ inches wide, four inches high, and six inches deep. The price: \$595. For more information, con-

tact Index Laboratories, 19913 48th St., Longbranch, Washington 98351; 206/884-3855.

### QRP survey

QRP clubs and groups of every size and stripe are being contacted to gather information for the *Worldradio* QRP column's "QRP Organization Directory," the first of what will be an annual update at the beginning of each year.

If your group has not yet received a questionnaire, please drop a letter of inquiry to the address at the head of this column, and one will be mailed to you directly. Include the name of the organization you're representing. Don't delay. Remember: He who hesitates may be left out!

### QRP ARCI Fall QSO Party

QRP Amateur Radio Club International's Fall QSO Party — CW runs from 1200Z 16 Oct. to 2400Z 17 Oct. It's a great time to test new gear and antennas and to meet other avid QRPers across the bands.

TECHSAT-1's uplink and downlink frequencies are as follows:

**Uplink Frequencies:**  
 145.850 MHz (9600 BPS)  
 145.980 MHz (9600 BPS)  
 145.930 MHz (1200 BPS)

**Downlink frequencies:**  
 1269.700 MHz (9000 BPS)  
 1269.800 MHz (9600 BPS)  
 1269.900 MHz (1200 BPS)

In addition to this store-and-forward PACSAT configuration, TECHSAT-1 will also carry two emergency transmitters which are totally independent of the main system and will function in the 70 cm and 23 cm bands. The 110 pound satellite will be 3-axis stabilized after launch (via a CIS launch vehicle) into a sun-synchronous orbit about 420 miles (700 Km) in altitude. WR

## SPACECOM

(continued from page 53)

### TECHSAT-1

Israel will soon orbit their first Amateur radio satellite. TECHSAT-1 is currently under construction at the Israeli Institute of Technology. The satellite will carry a multi-user packet radio store-and-forward package as well as Global Positioning System receiver, telemetry suite and radiation experiments package. In addition the satellite will incorporate digital signal processing and a CCC camera will provide measurements of the Earth's ozone layer. These experiment packages are compatible with all existing digital communications software used on A-16, LO-19, UoSAT-22 and UoSAT-24.

### Catalog of the month (update)

June's column carried a suggestion to get the parts catalog of KA7QJY Components, Danny Stevig's small parts company based in Utah.

Danny writes that he's moved and changed the name of his company. It's now Dan's Small Parts and Kits, 1935 S. 3rd W. No.1, Missoula, Montana 59801. But just about everything else is the same. He continues to offer a fine assortment of components and kits for the homebrewer at very competitive prices. Dan's Small Parts and Kits can be reached by telephone at 406/543-2872. WR



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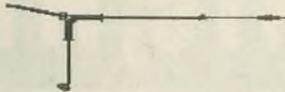
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**Jerry Wellman, WB7ULH**  
P.O. Box 11445  
Salt Lake City, UT 84147

### When is a "sale" not a sale?

For several years I've driven by a store that has displayed a huge yellow banner announcing a "clearance sale." The sign is tattered and faded from the weather — it's been there for a long time. Giving in to a little curiosity I walked into the store and asked them about the sale. There were no sale tags, the clerk explained, but everything in the store was for sale and they wanted to clear it out.

One of the definitions of the word "sale" is "a special offering of goods at a reduced price." That's what we normally associate with the word we see on a large banner outside a store. If you look at the various ways to define a "clearance sale" you can see the clerk is correct in saying they want to sell everything, clearing their tables to make way for more merchandise. Obviously the store wants me to think there are some good deals, but when questioned, they hold to their definition of the sign.

### ICS sale

How we define things often doesn't match what's intended, but we justify our definition by playing word games — technically correct, but not what was intended. In many structures and responses volunteer groups claim to be operating under the Incident Command System, but how are they defining ICS? Let's look at an example.

Perhaps your ARES group is responding in support of a large event and you are tasked with providing communications links between various agencies. As the ARES leader, you send 10 operators to 10 agencies. Each operator has an assignment to relay messages to either a county or state EOC. How would you structure this under a typical ICS?

If it was just you and 10 operators, this might be your structure: You would serve as the Incident Commander. Because you were short handed, you would also function as the planning chief, the operations chief and the logistics chief. Having 10 operators exceeds your typical span of control, but you can probably handle it.

So what do you call your 10 operators if you were to draw an ICS chart? My suggestion would be the label of "single resource." Your chart would show you as the IC and directly under your direction would be the 10 resources, or your 10 operators. Maybe you have another five agencies to staff and you get additional help. Now you could designate someone as the operations chief and place the 15 "single resources" under operations while you continue to handle planning and logistics.

In one similar situation, the radio operators were all given the title of "incident commander." I didn't hear what the team leader's title was, but I would have to assume he/she was the "supreme incident commander." (Grin.) This was really confusing to me trying to understand one group's response with 15 commanders.

Let's clarify just a little. ICS is a structure for command, control and response. There are definite functions associated with the incident commander's job. It's the functions that define the title. Each agency for each incident can have its own incident commander. These "commanders" often report to the jurisdictional incident commander who coordinates their response.

### Many chiefs?

For example, you're asked to assist on a missing plane search. The Civil Air Patrol may have overall authority and call the shots. As the ARES leader, you function as your own group's incident commander directing the planning, operations and logistics for *your* group. The CAP's IC will let you know what is needed and then you direct your group's response to meet the search needs. Making each operator an "IC" implies each has authority to deal directly with the CAP IC; you can imagine what confusion this would cause.

Each ICS function, such as planning

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chief or operations chief, carries certain responsibilities. It would be confusing to have two operations chiefs or two planning chiefs. ICS is a structure that allows you to operate efficiently as a group and not miss critical functions. Responding without planning, logistics support or operational control is a foolish response. You waste resources and time—neither of which the missing person can afford.

ICS is not just a bunch of fancy titles. If you just assign titles you're missing what ICS is all about. ICS addresses functions. When you are doing a "function" you have the title. The title just puts you on an ICS chart so you know who you supervise and whom you report to. The title implies the responsibilities that come with the function you're performing.

### Understanding is key

When you understand ICS, you know what the functions are and how to operate using those functions. You then understand the differences between planning, logistics and operations and why the logistics chief doesn't make assignments for the strike teams.

ICS is more than just picking titles out of a hat as people check in. ICS has already been refined and defined as a standard—please take the time to learn ICS *before* you misuse it. The difference between amateur and professional is the prior learning and experience before plunging onward.

### More structure

I received a super letter from Lou Dartanner, N6ZKJ, last week. Many of you will recognize her name in association with LTronics (the people who make direction finding gear). She provided me with a wealth of information concerning net control training. She's a member of the Santa Barbara South

County ARES and is their Net Control Team Leader.

What impressed me is this group's structure and how they're using an ICS structure to handle day-to-day operations. ICS works well for your normal structure as long as you realize that it changes when the emergency hits.

What changes is that your day-to-day commander may not be the "incident commander" when the emergency strikes—the structure goes into the "response mode." For example, Lou is the NCS team leader for day-to-day operations. She conducts NCS training. Yet when the group responds, she could fill the slot as an NCS station or a field team leader or member (or another function depending on her training and qualifications.)

In talking to Lou and looking over the material she sent, it is obvious some thought and planning went into their structure. Their day-to-day functions follow ICS and it fits well into supporting an ICS response structure. From what Lou explained, this is not a title-only structure but one where functions are assigned and responsibility delegated.

I contrast her excitement and activity with members of other groups who have called and are disappointed be-

cause they operate almost under a dictator arrangement where everything must be approved and controlled by one individual. Lou's enthusiasm, I feel, directly relates to a structure that allows people to learn, grow and improve. Discouragement and grumbling often reflect a structure that suppresses individual development. If you're in the latter group, take a look at how you're organized—maybe you need to consider a change.

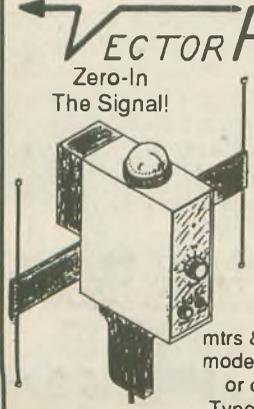
### Such a deal

Lou has done a fine job preparing some NCS training materials—and she has given permission for me to make copies for you. As a bonus I'll throw in some ICS stuff to help you get excited about ICS.

I'll foot the bill and spend the time to make copies. Your job is to send a large (8 1/2 by 11 in.) envelope with *four* stamps. That should cover the postage and I won't have to scrunch it all up in a small envelope.

It would be nice if you contributed your ideas as well! If you have computer programs for search and rescue, training material or other items of interest, share the wealth!

Until next month, 73 from Salt Lake City. WR



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# 10-10 INTERNATIONAL News

Chuck Imsande, W6YLJ  
10-10 19636

## 10-10 Convention

The every-other year 10-10 Convention will be held in Wichita, in conjunction with the Kansas State ARRL Convention on September 25-26, 1993. A great time is being planned for 10-10 members with special activities just for 10-10, including a 10-10 Banquet for Saturday night.

Come and meet your 10-10 Net officials, many of whom will be present. For detailed information, send a #10 SASE to Ed Redwine, K5ERJ #11843, at 9 Yellowrose Ln., Augusta, KS 67010. Join a group of your fellow 10-10ers and enjoy the Kansas State ARRL Convention plus the 10-10 activities.

## Summer QSO Party

This is being written as the Summer SSB QSO Party comes to an end at 2400Z on August 8, 1993. The band has been known to be in better condition than it was over the contest weekend, but there were some stations on most of the contest period. Although most of the evening hours on Friday and Saturday were confined to locals, it was disappointing that our 10-10 friends in Japan, Australia, New Zealand and other parts of the Pacific did not make it into Southern California during those Friday and Saturday evening hours. I was lucky to work a number of South American stations during the late afternoon hours on Saturday.

It is well known that we are in the declining side of the sun spot cycle, but even at the lowest period we can expect some openings, even though short in duration. It requires hard work to catch those new numbers.

## The Bighorn Museum of Amateur Radio

Located just a short 60 miles east of Denver, Colorado, is the Bighorn Museum of Amateur Radio, operated by 10-10 member Don Zielinski, KØPVI #9902. Don has assembled an impressive array of amateur radio equipment from the earliest of "home brew" receivers and transmitters to some of the latest equipment. And amazing as it may seem, most of the early equipment is in operating order.

The museum is located at Exit 316 off Interstate 1-70 and is open evenings from 5-10 pm and on weekends from 8 am to 8 pm. The admission is free. For more information and how you can obtain a 60-minute video tape of the museum, contact Don at PO Box 229, Byers, CO 80103. Sounds like the video tape may be a good program for your local ham club.

If you are going to Wichita, and driving, and just happen to be driving near or through Denver, CO, take an extra few of hours and visit the Bighorn Museum of Amateur Radio. Don has a barbeque scheduled at the museum for September 28th for those 1010 members leaving the Wichita Convention. Let Don know if you plan to enjoy his hospitality and barbeque at the above address.

## Jim Beswick, W4YHF #11718, SK

Jim Beswick, W4YHF #11718, long time 10-10 member and volunteer has become a SK. Jim was the 4th District Manager covering GA, AL and PR for many years and most recently he was the Editor of the 10-10 Awards and Certificate Guide. Jim was always there when 10-10 needed him and he and his efforts will be missed by 10-10.

## Address change

For those in the 1st District, Al Kaiser, N1API #25468, the 10-10 District Manager for Area 1 has advised that the Post Office has changed his ZIP code to 06451. Please note the new ZIP on all correspondence to Al.

## Home alone "2 1/2"

Bill Seaborn, N9ASC, #28018, found himself home alone just before the January 1993 10-10 QSO Party. Bill braved the cold weather and climbed up on to the roof to optimize his "killer 10 meter dipole" for the Party, but while there a wind gust blew down his ladder.

To get attention, Bill waved frantically at some neighbors who were outside. Knowing Bill to be a friendly man, they waved back! Finally a visitor recognized the problem and retrieved the ladder so Bill could get down and work well over 100 contacts in the QSO Party. It is hoped that Bill will agree that his Home Alone episode doesn't need a sequel.

... Tnx to The City of Lights Chapter NEWS.

## 10-10 Worked all Counties — Award #1

We have just received word from 10-10's County Hunter Award Manager, Alice, NR4R #31223, that Arnold Josephson, K6SIW #48519, of Bakersfield, CA, has accomplished the unbelievable task of working a 10-10 member in all 3076 USA Counties. For his effort, Arnold will receive a nice plaque for his wall indicating 10-10 Worked all Counties Award #1.

If you would be interested in getting involved in 10-10 County Hunting, send a #10 SASE to Alice Jenkins, NR4R #31233, 10-10 County Award Manager, One Mitchell Lane, Rossville, GA 30741. 10-10 also has a 10-10 County Record Book that makes keeping track of all of those 3076 Counties easy.

## Information about 10-10?

If you are not now a 10-10 member and would like to learn more about the 10-10 organization, send a green stamp (\$1.00) to help cover the cost of printing and postage, along with two first class stamps and an address label for the return of the 10-10 information package. Please no SASE as the 10-10 information package requires a 9 x 12 envelope. You will receive a copy of the 24 page Informational Manual along with a copy of the latest issue of the 32 page 10-10 International News. Send to: Mike Elliott, KF7ZQ #54625, 140 Parkway Drive, Boise, ID 83706.

## Finally...

If you have let your 10-10 membership dues expire, or have lost your 10-10 number, the same as above (\$1.00 + 2 stamps + address label) to Mike will get you the info package along with your lost 10-10 number.

73, es cu next time . . .  
Chuck, W6YW #19636

WR



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# Worldwide DX CONTESTING



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## Japan International DX Phone Contest

Robert G. (Bob) Cox, K3EST, again showed the contest skills which have kept him among the world's elite contesters for the past decade by totaling 550,886 points in the Japan International Phone 'test held 13-15 November 1992. Bob's top score for the world in the all-band category earned him a free round-trip ticket to Japan for presentation of his plaque. The ticket was donated for the event by Uasushi Kumagai, JA7RHJ.

Bob also received a plaque donated by Yutaka Tanaha, JH3DPB. Continental winners also receiving plaques were: Africa, 5U7M—170,059 points; Asia, RH0E—405,275; Europe, RY2U—124,930; Oceania, VK2BEX—505,872, second in the world; North America, runner-up, N7AVK—457,184; and South America, HK3JJH—59,160 points. These were all in the multiband category.

Other plaque winners from the US and Canada included the following stations whose scores were high for North America in the single-band categories: K6ILM, 80M; KC7EM, 40M; KJ6GQ, 20M; N9KAU, 15M; and W7ZR, 10M. The high multi-op station for North America was KM0Q.

In addition, plaques were awarded to the following zone winners, based on the CQ zones, in the all-band category: Zone 3 — KA6ZYF, Zone 4 — K0GAS, and Zone 5 — K3ZO.

The top scoring stations from the host country were: single-op, multiband — JA1DXR with 256,900 points; 80M — JA0JHA, 6,572 points; 40M — JA2BAY, 25,852 points; 20M — JA2NDQ, 34,704 points; 15M — JE4VVM, 87,890 points;

and 10M — JG1EGG, 105,840 points. The top Japanese multi-op entry was JJ3YBB with 482,238 points.

## October contests

The autumn DX contest season peaks in October with the VK/ZL phone contest and the RSGB 21/28 MHz phone contest the first weekend of the month. These are followed by the VK/ZL CW contest the second weekend, the RSGB 21/28 MHz CW contest the third weekend, and finally, the most popular contest of the year, the CQ Worldwide Phone DX Contest on the final weekend of the year. Dates and times are as follows (*please note that the RSGB 21/28 MHz Phone event has been moved up a week earlier this year*).

- 2-3 October: VK/ZL Phone Contest, 1000 UTC 2 Oct. — 1000 UTC 3 Oct.
- 3 October: RSGB 21/28 MHz Phone Contest, 0700 — 1900 UTC, 3 Oct.
- 9-10 October: VK/ZL CW Contest, 1000 UTC 9 Oct. — 1000 UTC 10 Oct.
- 16-17 October: Worked All Germany Contest, 1500 UTC 16 Oct. — 1500 UTC 17 Oct.
- 17 October: RSGB 21/28 MHz CW Contest, 0700 — 1900 UTC 17 Oct.
- 30-31 October: CQ Worldwide DX Phone Contest

## Working the 1993 IARU Contest from ZF2

Declining propagation! If band conditions in the 1993 IARU Contest are a portent of things to come as sunspot numbers erode, contest scores will drop for the next several years. No new all-band records will be set, and even high monoband scores on the lower frequency bands will be a struggle. Jim Raffer-

ty's 40M record score in the CQ Worldwide Phone Contest would appear to be safe for several years, but who knows for sure? Good young operators are learning the ropes and new equipment continues to be more sophisticated.

At ZF2JI the number of contacts dropped by over 25 percent from 1992, using the same equipment and QTH, and unbelievably, there was not even one QSO on 10M despite attempted skeds with US stations. In past years, 28 MHz has been the mainstay of contest operations from Cayman. Even 15M was almost a bust, although it did yield some interesting multipliers including FO5IW in IARU zone 63, 3C1TR and TL8NG in zone 47, 5Z4BI in zone 48, D2SA in zone 52, TU5DX in zone 46 and others. Twenty meters saved the day with strong support during the wee hours from 7 MHz, but even on 20 the propagation was unusual in that steady pileups of Europeans were logged with only weak signals from W/K. At one point, 197 consecutive European stations were worked without a break as signals skipped over the US and Canada. The IARU Contest was operated by K4IIF as a single-op, all-band entry, but in October we will have a multi-op, multi-transmitter entry. Hopefully, conditions will be better.

## DX contest results and rules

K4IIF receives single copies of the results of most of the overseas DX contests, as well as official rules, application blanks and log sheets. We have been making copies for anyone sending an SASE. However, this is getting a bit

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Liv Johansen, LA4YW (foreground) is contest manager for NRRL and is in charge of the 1993 Scandinavian Activity Contest. She plans to have the results out by June 1994. Liv has been licensed since 1978 and comes from an Amateur Radio family. Her father is LA9MN, her mother is LA1TP and her brother is LA2SN. In the background is Torfinn, LA4OFN. He and Liv were operating LA7HQ during the 1992 IARU Contest. (Photo by LA9GY)

out of control and we need help if we are to continue this service. In the future, please send \$1 to cover the cost of making copies plus a large envelope with two units of postage for the rules, application blank and a log sheet for each contest. For the results send a similar envelope and \$1. If there are separate

CW and phone weekends, please send a separate envelope for each. For reasons unknown, we have been unable to obtain info for the Venezuelan and Romanian DX Contests, although we have tried for three years. Do not request those two contest results unless we announce their availability in the future.

### 34TH Scandinavian Activity Contest (SAC)

SSA Contest Manager Jan-Eric, SM3CER, reports that SAC 1992 was a rousing success with 636 logs submitted on CW, including 53 on diskette, and 545 SSB logs, including 40 on diskette, for a total of 1,181 entries. SRAL (Finland) again won the Scandinavian Cup with 45,257,179 points. SSA (Sweden) was second with 26,263,428 points; NRRL (Norway), third with 8,966,611; EDR (Denmark), fourth with 6,227,569; and one entry from FRA (Faroe Islands), scoring 11,952 points. The Finns have been virtually impossible to beat since the formation of the historic OH-DX Ring 25 years ago.

### Top performers from North America

Among North American contestants, K3ZO recorded a continental high of 80,754 points in the single-op, multi-band category, with VO1SA second with 71,936. However, the positions were reversed in the SSB weekend with VO1SA recording a continental high (and second in the world) of 105,549 points while K3ZO finished second with 48,240. Plaque winners by continent were:



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**John Golomb, KZ2S, was high for the US in the CW weekend of the 1992 WAEDC Contest with 973,350 points. John made 1,288 total contacts with 1,287 QTCs and 378 multipliers. The antenna system included 6/6/6 on 10M, 4/4/4/4 on 15, 5/5 on 20, 2/2 on 40 and a two-element wire beam and beverages on 80.**

while K3ZO finished second with 48,240.

Plaque winners by continent were:

	CW	SSB
Africa	ZD8LII	EA9KB
Asia	UH8EA	UH8EA
Europe	UB2JZ	9H1EL
N. America	K3ZO	VO1SA
S. America	PY2OU	HC1OT
Oceania	VK2APK	VK2APK

A tip of the *Worldradio* hat to UH8EA who has the world high score for the non-Scandinavians on both CW and SSB.

Scandinavian stations winning plaques were:

	CW	SSB
Single-op, multiband	OG8PF	OH2BH
Multi-op, single-TX	OZ9EDR	OH5NQ
Multi-op, multi-TX	OH0W	OH0W

Awards were also given for each U.S. call area as follows:

W/K Call

Area	CW	SSB
1	K2SX/1	KA1DWX
2	AA2EM	AA1AB
3	K3ZO	K3ZO
4	W9WI/4	KX4R
5	W5FO	W5FO
6	KA6ZYF	W6EUF
7	W7YS	No entry
8	N8II	N8II
9	N9KAU	W9SS
10	No listing*	No listing*

\*The official results omitted the tenth call area. This may have been a misprint.

Congratulations to SM3CER for the excellent job of compiling the results and printing the booklet which was well organized and presented. Jan-Eric expressed astonishment at the number of "Big Guns" and top contesters who listed VO/Newfoundland (deleted in 1949), UN1/Karelo-Finnish Republic (deleted in 1960), and DM, Y2-9/German Democratic Republic (deleted 1990) as country multipliers despite their removal from the country list.

In line with the regular practice of rotating responsibility among the Scandinavian societies, SAC for 1993 is un-

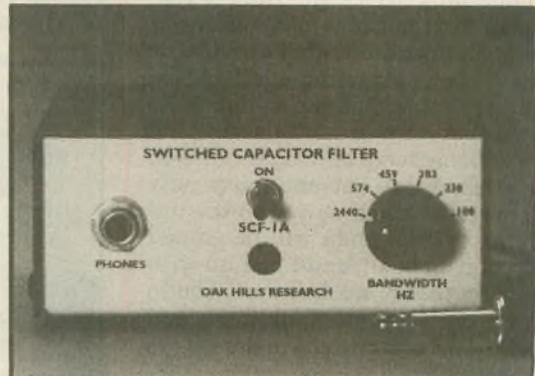
der the direction of NRRL Contest Manager Liv Johansen, LA4YW, and the 36th SAC in 1994 will be arranged by EDR, Denmark.

### RSGB Contests

For RSGB Contest fans, results will be listed in next month's (November issue) column. WR

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# CONSTRUCTION

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### DEAN FRAZIER, NH6XX

Are you tired of the several weekly trips to the sidewalk to rid yourself of the excesses of a 'More is Better' society? Had enough of large plastic bags which seem to give up the ghost at the wrong time, in the wrong place, usually on your nicely-shined shoes, or, here in Hawaii, on your bare feet? Got sore fingers from one twist-tie too many? If this describes you, then the TRASH CAN ANTENNA may just be your bag. The logic of its use as an antenna is indisputable; garbage cans used as antennas = fewer cans to take out!!!!? But no plastic fantasies, please. . . plastic trash receptacles just do not work as antennas.

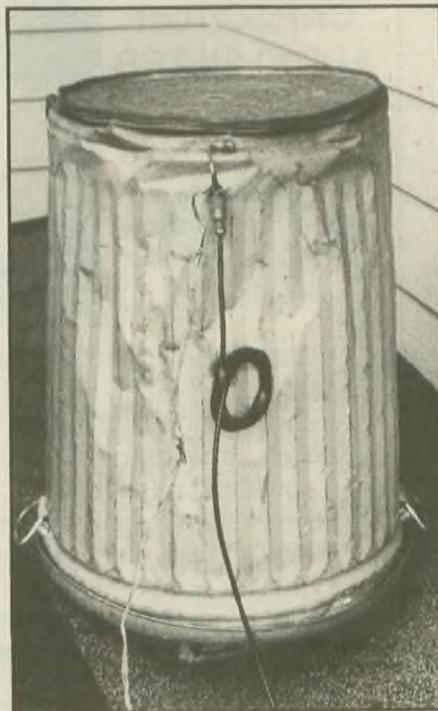
No kidding. I'm sick and tired of taking something out of a box, surgically removing a vacuum-sealed cellophane wrapper, then extracting another box, to take off its cellophane wrapper, to open this box, to pull out a packet, and then wreck my teeth tearing the end off the silly thing, to get one lousy jelly bean. I expend more energy on the unwrapping process than will be gained from said jelly bean, and I end up with a pile of trash. Sound familiar? Add to this your daily generic junk mail, and you and I, we're knee-deep in the BIG T. . . TRASH!

Deciding to blow the lid of the problem I opted for another road, not oft taken. . . to rededicate those 'ugly trash cans' . . . and use them to create 'beautiful' antennas for amateur radio.

As the photo shows, the trash can antenna, mono or multibander, is indeed a thing of beauty and thus a joy forever, taking its natural place in the settings of my QTH rooftop.

Modification for HF work couldn't have been simpler; coax, SO-239 connector, some wire for a counterpoise, and, in the case of 40 meters, a coil to provide resonance, thereby putting  $XL = Xc$  'in the dumper'.

The can loaded up on 12 and 17 meters with no help from added coils or capacitors. . . all that was needed was some minor tuning via a simple L circuit. Very rigid quality and comparison of antennas testing was accomplished with Ron, KD6FZ, Del Mar, CA, and Tony, ZL2ANT, North Island, NZ, simultaneously, clearly showing the omnidirectionality of Trash Can Radiation. (Circular Polarization, anyone?) We had one heck of a good time discussing the pros and cons of center fed vs. end fed, grounded vs ungrounded, phased and unphased, mono and multibanded RECEPTACLES DE REFUSE, 11/14/92. We weighed carefully the merits of garbage can size and configuration as a function of the most appropriate amateur band on which to operate. 20 meters



40M experimental, 30 gallon.

was ruled out preemptorily; we did not want to make matters worse. Plans were hastily drawn, to take advantage of fair propagation, for further testing, with an eye on 40 meters, until things got a bit 'ripe'...you see, through all these exchanges of ideas and opinions, I was mostly using the garbage can. . . and going momentarily QRX, I discov-

ered that the previous night's stale, discarded pizza (now RF re-cooked) was apparently causing a bit of R-F (use) to odiferously 'float' around the shack and surrounding environs. Can you imagine 'floating' at the speed of light while trying to eat stale, RF re-cooked pizza? The pizza's once-soft, then hard, now soft again whatused-to-be cheese flowed like Hawaiian lava down the walls of the can, as a result of several applications of 400 watts of RF power. But through it all, the can functioned as an antenna.

Signal reports were 5/2 to 'trashy' in both California and New Zealand. Ron seemed more concerned about the food smells emanating from the Sandwich Islands while Tony's concerns were mainly centered around impedance and the possibilities of employing parasitic garbage cans to enhance the sometimes stinky signal. Don't forget, however, that these bands were worked 'bare can'! . . . with no significant alteration of your basic Can, Garbage, 30 Gallon, Metallic, 1 each.

Subsequent to these escapades it was found that the can would simply not load up on 40 'au natural,' and so heavy mathematics and electromagnetic radiation theory were called upon to sort out the difficulties.

The reasoning was thus: the contacts on 12 and 17 meters had been made with the can in a cubby between my original house and its new extension, with the can some 17 feet above physical ground. When it became dark I had moved the can up higher some 8 feet, and thus the capacitance to ground had decreased. This meant that the inductance required for resonance had increased, but I had run out of inductance from my simple L-circuit tuner.

Being too 'bagged' from carrying trash cans and bricks (antenna hold-downs) up and down stairs all afternoon, I bypassed the mathematical design stage and simply reached into my trashy junk box, found a 4 inch length of 2 inch PVC tubing, and some #16 insulated household solid copper wire. I wound 14 turns of wire on the coil to a length of 3 inches, leaving a bit at each end for connectors; 14 turns because that's the number of turns I got when I ran out of wire. A lug was soldered to one end of the coil wire, an SO-239 connector to the other, and

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in the dark of night, with flashlight, put the needed (and guessed-at) inductance coil on the can.

The rest is history: she loaded up on 40 meters just fine, and contacts with Shide, JA2BAY, Japan, Tom, NØHYB, Kansas, Ed, KC9RY, Arizona, were made, with signal reports of 5/9 + 10, 5/8, and 5/9 respectively. Ken, KD1KI, in Massachusetts gave the can a 5/3, while Paul, AA1AX, also of MA reported 5/5. And the can seemed to handle 500 watts with no low odors, having by now worked its way through the 'burn-in' phase of RF Garbology. Of note is that none of these fine gentlemen, all skilled operators, could tell the difference between the can and my 40 meter dipole, except to the extent that the can seemed to have a fuller, rounder, mellower audio quality. (Beam me up, Scotty).

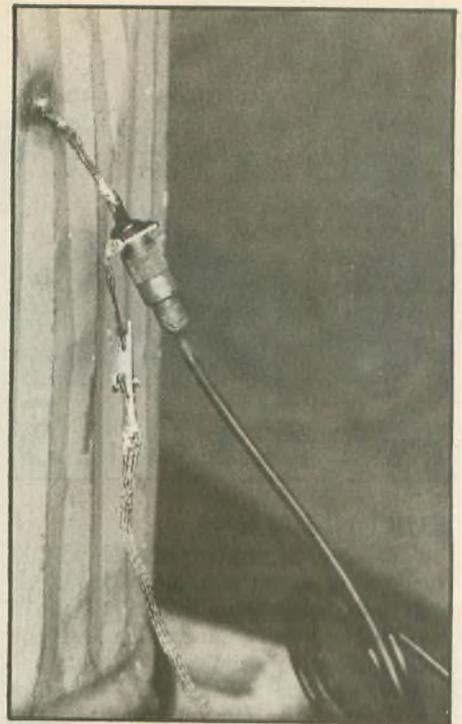
As if having dreamed a fantasy, I awoke the next morning, 11/15/92, and realized there was at least one more opportunity to see if in fact all the above had indeed been a dream: the Hawaiian 40 Meter Friendly Net at 9:00 AM...as the can had to come down before dark...against my wishes. But the previous experiences and events indeed were not imagined as contacts with Les, KH6KB, Sam, KH6AFS, Ralph, KH6AAI, and Bob, KH6CIZ, were conducted, the 'can' hanging around 5/9 and sometimes into the red on 50 watts. Realize that this net included most of the Hawaiian Islands, and these contacts, while not DX, were not exactly just next door either. Everyone seemed to have a bit of a chuckle at the prospects of talking into a garbage can.

By now you may be thinking 'This is a pretty trashy article'. But stop and ponder for a moment about that which is going on here. Do not many hams somehow think that the physical shape to the antenna determines the signal strength (microvolts) at the receiving end? You can hear it all the time on the bands...lots of chatter about how the configuration of the antenna creates the sound of the audio, and the S-meter readings. But apparently the truth is, we're talking about point sources of radiation. Compared to the distance traveled by the signal, indeed the antenna is a mere point. All that really matters is that the signal coming from the feeder 'sees' an electrical environment which is purely resistive at the desired frequency, e.g. sees no reactance, where XL=XC, that is, sees a continuation of itself, a resonant environment. If the characteristic impedance of the radio is 50 ohms resistive, the radio wants to see 50 ohms looking into the feeder, no reactance (XL = XC). The feeder wants to see, looking into the antenna (or whatever...the 'load') 50 ohms resistance too, no reactance at

the desired frequency of operation. Under these conditions (current in phase with the voltage at the feed point) maximum power (watts) is transferred from the radio to the load and subsequently radiated into space. The feeder could care less what physical shape is required to produce these electrical conditions. True, we can alter the physical angle at which the signal launches from the antenna, but we can do this in many ways, including tilting (leaning over) the garbage can. We can to some degree alter the shape of the resulting pattern of radiation in the horizontal and vertical planes by rearranging the physical structure of this radiating load, but for maximum power out, and thus maximum field strength at a distance, we still need a load which is purely resistive of a value which matches the feeder, and a load which does not display reactance at the desired frequency. Note that nothing in these latter electrical requirements refers to the physical, mechanical configurations of the radiating load.

So the point of the Trash Can Antenna exercise was to show that one should not be too impressed by the physical characteristics of an antenna, only to the extent of strength and durability against the elements, but one should be very concerned by its electrical properties e.g., the feed point impedance...is it purely resistive and of the correct value for your feeder? And what about the horizontal and vertical radiation patterns to be expected at your QTH, at your intended height above ground, and over your soil, which may or may not be average soil...data about which you may be hard pressed to find in an antenna advertisement.

So by now it should be clear that, to gain a more meaningful understanding of what's really going on, a ham needs to do a bit of boning up on electromagnetic radiation theory, which requires a lot of mathematics, and I don't mean arithmetic. Thus while you are working toward, and waiting for, the spark of understanding to flash brightly in your minds eye regarding these matters, don't be too hard on yourself. This is indeed a complex subject. No one really understands how it works...all we have is some very limited models which work, or seem to, same of the time. I would be the last ham to profess that I've got it



Side loading-note "counterpoise."

figured out. But apparently a garbage can has a handle on it!

So perhaps more time spent sifting through the refuse would cause the light of understanding to glow a bit brighter. But I digress.

Anyway, the can worked fine, equally as well under the particular conditions, as a dipole, and the entire project was a lot of fun, which, after all, is the bottom line. And just as importantly, I discovered for myself that which had been pointed out by Lester Moxon, G6XN, and others long before I had heard of amateur radio; that it is very difficult to NOT make an electrically conductive object serve as a radiator of RF energy. If a simple dipole is +2.15 dB compared to an isotropic radiator, one can do no worse than, via a very inefficient 'radiator', work against one's self and 'lose' more than +2.15 dB.

Finally, on a personal note, the planned community in which I live on Oahu disallows the erection of visible antennas...but the covenants do not contain any 'No-Nos' about trash cans on the roof, which containers, paradoxically, 'can' just be the ultimate in invisible antennas. And that's no TRASH. WR

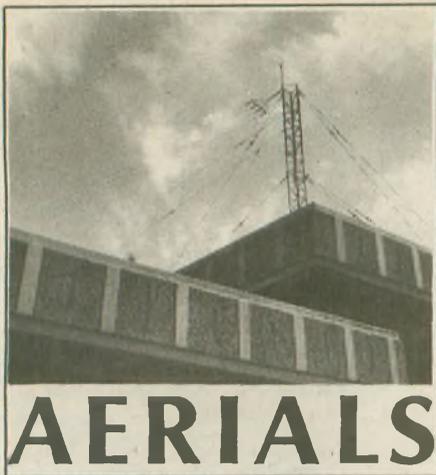
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## KURT N. STERBA

I get letters coming in that say I just keep going over the same material. If that is so, here's why: In a July issue of a periodical for amateurs, under the byline of a columnist, was this:

Knowing the SWR at the antenna feedpoint, the amount of power loss can be determined:

SWR	Power loss in dBs
1:1	0
1.5:1	.2
2:1	.5
3:1	1.3
5:1	2.6

Quick, my medicine. I am hyperventilating. The above is absolutely not true.

Is there some massive conspiracy out there conniving to totally confuse the hams? Could it be that there is a scheme afoot so that when hams go for a job interview they, when answering oral questions, come off like ignoramuses?

I remember the time when amateurs were the knights of the electronics industry. They were given the jobs because they were amateurs. If this keeps up, and word gets out, they will instead be rejected because they are amateurs.

Everybody who already knows all this stuff can stop reading here. The old-timers who remember when pilots landed airplanes by listening for tones in their earphones won't need what follows. But, if this month's column can save but one struggling newcomer, it will be worth it.

First. No statement can be made about power loss unless frequency, the type of feedline and the length of feedline are mentioned.

Second. I find it just incredible that I have to be writing this in 1993.

We're not talking about a dispute in cutting-edge technology. It is truly painful to see woefully inaccurate statements dished out to the unsuspecting.

Here is the true story. Anything else is just tripe: The following may be reprinted by any club bulletin, magazine, wire service, SSTV, bulletin board (cork

or otherwise), time capsule, WGE, in any language including sign, daily or weekly newspapers in any country or possession. Hey, I don't care if your mother, holding you on her knee, told you differently. That sweet dear lady was wrong if she said anything other than the following:

Start with a perfectly matched line. Transmitter has 50-ohm output and at the end of the line is a 50-ohm (non reactive) load. Perfection. If this line (perfectly matched) would normally have a loss of 1dB, here is what would happen:

SWR-2. Additional loss caused by standing waves (dB) 0.2. Yes, that's point 2 (1/5 of something of which you can't tell the difference).

SWR-3. ALCBSW-dB 0.5, 1/2 oostycttd.

SWR-4. ALCBSW-dB 0.8, 4/5 oostycttd.

SWR-5. ALCBSW-dB 1.2, Toscaninni noticed.

As you see, it takes an SWR of about 5:1 to have the additional loss equal the perfect line loss.

Yes, using your tuner, with an SWR of 5:1 (if your normal line has a 1dB loss) will result in an additional loss

that borders on the unnoticeable.

Okay. Let's go to an extreme. SWR, 15:1. Loss? Just a tiny smidge over 3dB. That's one half an S-unit.

SWR, 20:1 (what kind of a glob do you have that gives you 20:1?). Additional loss: 4dB. Yes, all that.

But wait, what kind of line gives us 1dB loss in the first place?

One hundred feet of RG-8 foam at 30 MHz. At 15 MHz, the loss in the same 100 feet would be roughly half of that at 30 MHz. And, for 75M phone, the loss would be about one third of that (for the same 100 feet) which it displayed at 30 MHz.

At 0.3 (zeero point three) line-loss-when-matched (dB) situation, the ALCBSW, at 20:1 SWR comes to: 2dB.

Now, all of this is not some closely guarded secret held by some monks in a mountainous hideaway. It's in the books. Right there for everybody who will pop a few bucks or borrow the book from a friend or the library. This radio stuff is really a lot more fun when you know what it's about.

To go even further, you saw the situation when we had a line with 1dB loss at 30 MHz. What would you guess the results would be with a line that the loss was half of 1dB at 30 MHz (good 300-ohm line)? How about one-inch open wire at 30 MHz (100 feet) — 0.175 dB? Then we present (let's hear a big cheer) two-inch open wire! Loss: 1/10 of 1dB. Yes, zero point one.

At that point you don't even care what the mismatch is (as long as the tuner can handle the range); we have, realistically, lossless line at HF frequencies.

Lossless line means lossless, period. It is really sad that there is just so much rot out there. You know, I've seen references to "loss at the feedpoint." In reality, the loss is in the line, when there is loss.

If as much goofy stuff were printed about amplifiers as there is about antennas I'd think we'd have shrapnel flying down the streets of America from exploding amplifiers.

Now I'm looking at a book that is aimed at radio amateurs. It is written by an amateur. The book takes a whole page on "effect of VSWR on transmitted power and says, and I quote:

VSWR	Proportion of power transmitted (%)
1:1.0	100
1:1.1	99.8
1:1.2	99.2
1:1.5	96.0
1:2.0	89
1:3.0	75
1:4.0	64
1:5.0	55
1:10	32
1:15	24
1:20	19

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**YO 5.0** automatically optimizes monoband Yagi designs for maximum forward gain, best pattern, and minimum SWR. YO models stacked Yagis, dual driven elements, tapered elements, mounting brackets, matching networks, skin effect, ground effects, and construction tolerances. YO optimizes Yagis with up to 50 elements from HF to microwave. YO runs hundreds of times faster than MININEC. YO is calibrated to NEC for high accuracy and has been extensively validated against real antennas. YO is intuitive and highly graphical. YO 5.0, \$75. YOC 5.0 (assembly language, much faster), \$100. NEC/Yagis 1.0 (professional accuracy reference), \$50.

YOC and NEC/Yagis require a math coprocessor; MN and YO come with both coprocessor and noncoprocessor versions. All except AO run on any IBM PC compatible with graphics. All programs include extensive documentation. Add 7.25% CA, \$5 overseas. Visa, MasterCard, U.S. check, cash, or money order. 3.5" or 5.25" disk.

Brian Beezley, K6STI  
507 1/2 Taylor, Vista, CA 92084  
(619) 945-9824, 0700-1800 Pacific Time

This is absolute rubbish! Why are the hams and publishing companies engaging in this self-mutilation? Doesn't anyone ask: "Well, if the power wasn't transmitted, where did it go, duuuuhhh?"

Does the writer and the publishing company really believe that a 3:1 SWR results in 25 percent "loss" no matter what frequency, what kind of line, or how long (or short) the line is? How can normally decent, well-meaning people, able to read the English language, and we suppose with some degree of education, keep making an absolute botch?

Maybe if *QST* ran an article with the words enlarged about three times, in real "see Spot run" style, and had the article signed by all the hams with alphabet soup after their names — Ph.D., MS, MSG, MGYSGT, BS, or whatever, maybe things would get turned around.

As it stands now, with all this goofy data and the bizarre dB claims by manufacturers, it's a mockery of reality. Maybe the *ARRL Antenna Book* should do a couple of pages entitled, "Silly Stuff You May Have Read Elsewhere That Isn't True!"

Isn't the summer nice? (I hate the snow.) I've been outside more lately and have done some interesting things to share with you. No matter what I read between now and then, I'll just let it go so we can get on to some practical radiating devices.

Please buy my book. With all the wire, poles, coffee cans, bedsprings and garbage can lids I've bought for the experiments, I need the dough.

Should you be mobiling down great stretches of highway, here's a tip on



## Tape those terminals

**BILL BURNETTE, W7UNE**

Recently, while cleaning up the shack, I dropped a 9V battery into my pocket and forgot about it. About an hour later I had a burning sensation on my leg. My first reaction was to wonder what I had spilled on my leg. Seconds later I put my hand in my pocket and found a quarter (coin) too hot to handle. The quarter had made solid contact across the terminals of the battery!

The burn on my leg was insignificant but consider the consequences, had the short occurred in a drawer or junk box—possibly a disastrous fire.

It only takes a short time to place a piece of tape across the terminals of an unused battery . . . even one which is being thrown away. Even well used batteries may still have enough life to start a fire. Tape those terminals! WR

how to make your HF signal much BIGGER. Get one of the large magnetic mounts from the Lakeview company. Put one of their HF Hamsticks in the mount and put it on the roof of your car. The difference between that and the bumper mount is BIG.

If the half-wave elements arranged in a parasitic array can accurately be called the Yagi-Uda, shouldn't the cubical quad thus be called the OrrMoore?

*(Kurt N. Sterba, the mystery man of antenna writers, rides his white horse on behalf of all truth seekers. He does his best to see that none of his readers fall victim to the killer dBs.)*

## The book

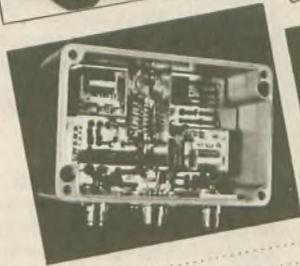
"Aerials II", the brilliant sequel to "Aerials" by KNS and LP, is available for (considering the true value) the paltry sum of \$11. Please add \$2 for the postage and envelope and the trained monkey that puts the book in the envelope. Californians, to help pay for the highways and Willie Brown's salary, must add 85 cents. Get the economy moving. Send your check, CC (numbers and exp.) MO, ingots, bullion, to *Worldradio Books*, P.O. Box 189490, Sacramento, CA 95818. WR

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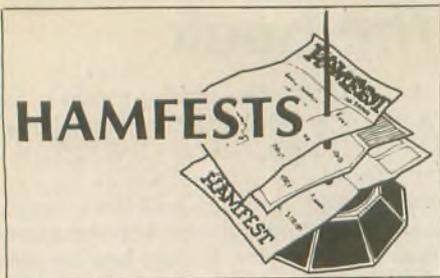
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## Alabama

MOBILE ARC will sponsor a Ham and Computer Fest on 23-24 October beginning at 8 a.m. at the ABBA Shrine Temple. Features include VE exams at 9 a.m. Admission is \$3, ladies get in free. Tables are \$15, advance registration is a must. Talk-in on 146.82(-). Rag-chew on 149.94(-). Contact M.A.R.C., P.O. Box 81791, Mobile, AL 36689, or Richard Ireland, KD4TTD at 205/824-2749.

## Arizona

The OLD PUEBLO RADIO CLUB is sponsoring the Tucson Hamfest on 17 October from 7 a.m. to 1 p.m. at the DeAnza Drive-In. Features include hourly drawings. Admission is \$1. Vendor admission is \$4 per space and includes a free cup of coffee and free drawing ticket. Talk-in on 146.22/82, 146.28/88, 146.52. Contact A.J. Pawlowski, KB7KZ, 3418 W. Green Trees Dr., Tucson, AZ 85741; 602/742-2605.

## California

THE LIVERMORE AMATEUR RADIO KLUB is sponsoring the East Bay Area Radio/Electronics/Computer Swap Meet on 7 November from 7 a.m. to noon at Las Positas College. Features include covered spaces in event of rain, refreshments and free parking. Admission is free. Sellers pay \$10 space fee. Talk-in on 147.045(+) from the west and 145.350(-) PL100 Hz from the east. Contact Noel Anklam, KC6QZK, at 510/447-3857 evenings or leave message at 510/783-2803.

## Colorado

The ROCKY MOUNTAIN RADIO LEAGUE, INC. will sponsor the 1993 RMRL Hamfest on 24 October from 8 a.m. to 2 p.m. at the Jefferson County Fairgrounds. Features include VE testing, ARRL forum, refreshments and door prizes. Admission is \$3 per person. Tables are \$10 in advance or at the door. Talk-in 145.22(-)MHz. Contact Joe Dickinson, WT0C, 303/795-3397.

## Connecticut

The TRI CITY ARC will sponsor their annual Ham Radio Auction on 30 October at the Senior Citizens Center, Waterford Municipal Complex. Set-up is 9 a.m. and the auction from 10 a.m. until sold out. Admission is free and there will be food available. Wheel chair accessible. Talk-in on 146.67(-) repeater. For information call KA1BB at 203/739-8016.

## Florida

The PELICAN and GATOR Chapters of the QUARTER CENTURY WIRELESS ASSOCIATION is hosting the 46th annual national convention in Clearwater FL on 29-30 October.

The LAKE AMATEUR RADIO ASSOCIATION will hold their Annual Hamfest and Electronics Expo on 6 November from 9 a.m. to 5 p.m. at the Lake County Fairgrounds in Eustis, FL. Features include VE Exams at 1 p.m., demonstration on Packet Radio and ATV. Admission is \$4 in advance and \$5 at the door. Tables are \$12.50 each, tailgate spots are \$5 each. Contact Cole A. Ruck, KC4UIG at 407/273-1624 evenings.

## Georgia

The ARC OF AUGUSTA is sponsoring a hamfest on 8-9 October from 6-9 p.m. on Friday and 8 a.m. to 5 p.m. on Saturday at the Augusta College Sports Complex. Features include dealers, forums, demonstrations, flea market, refreshments, handicapped access, free parking and RV parking. Preregistration for VE exams is at noon on Saturday. Admission is \$4 in advance and \$5 at the door. Free admission for children 12 and under. Tables are \$10. Vendor set-up times are 3 p.m. on Friday and 6 a.m. on Saturday. Talk-in on 145.49(-) or 145.11(-). Contact Ed Butorajac, KM4QQ, P.O. Box 3072, Augusta, GA 30914-3072; 706/789-1918.

## Illinois

The CENTRALIA WIRELESS ASSOCIATION ARC is sponsoring a hamfest on 17 October starting at 8 a.m. at the Kaskaskia College Gymnasium. Features include free parking, food, refreshments and a VE exam test session beginning at 11 a.m. Admission/main prize tickets are \$2 each or 3 for \$5. It will not be necessary to be present to win the main prizes. Market tables are available on a reserved in advance basis at the rate of \$1 per foot. "Bring your own tables" is at \$.50 per foot. Tailgaters may set up on the parking lot at no charge. Vendor set-up time is 6 a.m. Talk-in on 147.27(+) and 443.2(+). Contact Bud King, WA9U, P.O. Box 1166, Centralia, IL 62801; 618/532-6606.

## Indiana

The MIAMI COUNTY ARC, TIAGA ARS and CASS COUNTY ARC is sponsoring the Indiana Tri-County hamfest on 2 October beginning at 8 a.m. at the Miami county Fairgrounds. Features include prizes, indoor vendors, free tailgating and forums. Admission is \$4 in advance and \$5 at the gate. Kids under 12 are free. Vendor indoor spaces are \$5 per 8 foot table. Commercial vendors may set up outside for a flat \$5 fee. Talk-in on 147.345 and 147.180. Contact the Cass County ARC, P.O. Box 1092, Logansport, IN 46947.

The BOONE & CLINTON COUNTY AMATEUR RADIO CLUB is sponsoring a hamfest on 31 October from 8 a.m. to 4 p.m. at the Boone County 4-H Fairgrounds, warm & dry Community Building. Features include dealers, flea market, free parking, free tailgating, food and VE testing. Admission is \$3. Vendor table and space is \$5. Talk-in on 147.105 and 443.150. Contact Tim French, KA9WDJ, P.O. Box 186, Lebanon, IN 46052; 317/324-2618.

## Kentucky

The SOUTHERN KENTUCKY AMATEUR RADIO GROUP will sponsor a hamfest on 30 October from 8-2 p.m., Franklin, KY. Features include free parking, free coffee, ladies activities; centrally located. Admission is \$4. Tables are \$3. Talk-in on 146.665(-) and 146.52. Contact Ed Schwab, KA4REF, P.O. Box 9656, Bowling Green, KY 42101; 502/843-4389.

## Maryland

The COLUMBIA ARA is sponsoring a hamfest on 17 October from 8 a.m. to 3:30 p.m. at the Howard County Fairgrounds. Proceeds benefit CARA Scholarship, Amateur classes and Repeater System (including open autopatch). Admission donation is \$5 per person, Unlicensed spouse and children are free. Tailgating donation is \$10 per space (includes one admission per space). Table donation is \$20 each (includes one admission per table). Talk-in on 146.52 simplex, 147.135(+) to 223.92(-). Contact CARA, P.O. Box 911, Columbia, MD 21044.

## Michigan

The SOUTHWEST MICHIGAN AMATEUR RADIO TEAM and KALAMAZOO ARC is sponsoring a hamfest on 17 October starting at 8 a.m. at the Kalamazoo Central High School. Admission is \$2 in advance and \$3 at the door. Tables are \$1.50 per foot, with a 4 foot minimum. Vendor set-up is at 6 a.m. Talk-in on 147.040. Contact Gary Hazelton, KB8PL, 75075 M-40, Lawton, MI 49065.

The UTICA SHELBY EMERGENCY COMMUNICATIONS ASSOCIATION will sponsor a hamfest on 24 October from 8 a.m. to 2 p.m. at the Student Community Center, Macomb Community College. Features include ham gear, computer hardware and software, seminars, food, commercial suppliers and VE testing (preregistration required, contact Bill, N8CVC, 313/468-8345). Admission is \$4 and 11 and under free. Tables are \$12 each. Talk-in on 147.18+, 147.42 simplex. Contact Virginia Przekaza, N8NLS, 34473 Coachwood, Sterling Hts, MI 48312; 313/268-0691.

## Minnesota

The TWIN CITIES FM Club is sponsoring the Hamfest Minnesota and Computer Expo on 30 October at the St. Paul Civic Center. Features include fleamarket, VE Exams, seminars, retailers, manufacturers, prizes and food. Admission is \$5 in advance and \$6 at the door. Fleamarket tables are \$18 each. Talk-in on 146.76(-) repeater. For more information write P.O. Box 5598, Hopkins, MN 55343 or call 612/535-0637.

## New Jersey

The BERGEN ARA will sponsor its annual fall hamfest on 9 October from 8 a.m. to 2 p.m. at the Fairleigh Dickinson University in Teaneck, NJ. VE exams available. Admission is \$2, XYL and Harmonics free. Vendors \$10 per parking space. Space with power \$20 (pre-registration required for power). Talk-in on 146.79(-), 145.620 simplex. Contact Jim Joyce, K2Z0, 201/797-0151.

The JERSEY SHORE, NEPTUNE ARA, OCEAN-MONMOUTH ARC and GARDEN STATE ARA is sponsoring the 6th Annual Shore Area Ham and Computerfest on 10 October from 8 a.m. to 3 p.m. at the Allaire Airport, Wall Township, NJ. Features include dealers, food, prizes, free parking and VE testing starting at 9:30 a.m. Admission is \$5 in advance and \$6 at the door. XYLs and kids under 12 are free. Indoor tables are \$25 each, outdoor 10 ft. wide spaces are \$10 each (\$8 each additional space). Vendor set-up time is 6 a.m. Talk-in on 145.110 (NK20). Contact Shore Area Hamfest, P.O. Box 635, Eatontown, NJ 07724-0636; 908/922-8121.

## New York

The RADIO AMATEURS OF GREATER SYRACUSE will hold their 38th Hamfest on 16 October from 8 a.m. to 3 p.m. at the Academy Green American Legion Hall in Syracuse. Features include vendors, tech talks, meals professionally catered, wheelchair accessible, ARRL and computers. Admission is \$5. Outside flea market is \$3, set-up at 7 a.m. Talk-in on 146.91 and 147.30. For more information contact RAGS, Box 88, Liverpool, NY 13088; WA2PUU at 315/469-0590.

The RADIO CENTRAL ARC is sponsoring a hamfest and convention on 6-7 November from 9 a.m. to 4 p.m. at the Suffolk Community College, Long Island Expressway Exit 62. Features include all-indoor flea market, dealers, computer show, cafeteria, VE exams, DX, QSL verification, guest speakers, seminars and forums. Admission is \$5 for one day or \$8 for two days. Tables are \$20 for one day or \$30 for two days. Vendor set-up time is 7 a.m. Talk-in on 145.150(-) 4Z and 449.525(-) 2A. Contact Valerie DeRicco, N2NYB, 516/874-3669.

## North Carolina

The MAYSVILLE HAMFEST will be held 10 October beginning at 8:30 a.m. Features include free admission, prizes, outside tailgating and limited inside space are free, VE exams will be given (no pre-registration, but candidates must be at the exam site by 9 a.m.) Talk-in on 145.21 or 146.685. Contact Andy Griffith, W4ULD, 203 Lord Granville Dr., Rt. 2, Morehead City, NC 28557; 919/726-5924.

## North Dakota

The FORX ARC is sponsoring a hamfest on 16 October starting at 8 a.m. at the Grand Forks Civic Auditorium. Features include flea market, forums, auction, foxhunt, banquet and VE testing at 10 a.m. Admission is \$5. Vendor set-up at 7 a.m. Talk-in on 146.94. Contact Bob Smith, ND1H, 1203 Shakespear Rd., Grand Forks, ND 58203; 701/745-9498.

## Ohio

The NORTHWEST OHIO ARC will sponsor a hamfest on 10 October starting at 6 a.m. at the Lima Ohio Allen County Fairgrounds. Features include free camping (\$7 charge for electricity for camper), all night security, VE exams at 9 a.m. and handicap accessible. Admission is \$4 in advance and \$5 at the door. Tables are \$8 in advance to WD8BND, P.O. Box 211, Lima, OH 45802. Vendor set-up time is after 3 p.m. on 9 October. Talk-in on 146.67(-). Contact Neil B. Parent, KE8OM, 145 N. Spring St., Bluffton, OH 45817-1107.

The MARION ARC presents its 19th annual Heart of Ohio Hamfiesta and Computer Show on 31 October from 8 a.m. to 3 p.m. at the Marion County Fairgrounds Coliseum. Features include prizes, refreshments and free parking. Admission is \$4 in advance and \$5 at the door. Tables are \$8. Talk-in on 147.30(+) repeater. Contact Steve Eckard, WS8S, 6583 South St., Meeker, Marion, OH 43302; 614/499-3565.

## Oklahoma

The ENID ARC is sponsoring a hamfest on 6 November at the Garfield County Fairgrounds,

Hoover Building. Features include dealers, RV hook-ups, free parking and VE exams at 10 a.m. (walk-ins welcome). Admission is \$2. Tables are \$1 each. Talk-in on 145.29(-). Contact Fred, N5QJX, 2714 E. Walnut, Enid, OK 73701; 405/242-3551.

## Pennsylvania

The FORT VENANGO MIKE & KEY CLUB is sponsoring a hamfest on 16 October beginning at 10 a.m. at the Venango County 4-H Fairgrounds. Features include prizes, auction, flea market and food. Admission/parking is \$2 and also gets you a chance on the door prizes. Gates open at 8 a.m. Talk-in on 145.23(-) and 145.19(-). Contact Jerry Almes, W3DTW, P.O. Box 591, Cranberry, PA 16319; 814/432-3647.

## South Carolina

The SUMTER ARA will sponsor its 7th annual hamfest on 23 October from 8 a.m. to 4 p.m. at the Sumter County Exhibition Center. Features include ARRL Convention, overnight camping available, full hook-up, Friday night dealers appreciation cook-out, "Quick left foot" competition code test, prizes, indoor display/selling and flea market area, and VE exams (walk-ins only). Admission is \$5. Flea market tables are \$6. Early morning set-up allowed. Contact Dan Mask, WB5SGH, P.O. Box 193, Sumter, SC 29150; 803/775-9106.

## Tennessee

The MID-SOUTH ARA will sponsor MemFest '93 on 9-10 October beginning at 9 a.m. at the Shelby Farms Show Place Arena, Memphis, TN. Features include RV camping on site, non-ham activities, ARRL Delta Division Convention, forums and VE exams from 9 a.m. to noon. Admission is \$6 at the door. Tables are \$20 per 8 ft. for the weekend and \$15 per 110V AC. Talk-in on 146.88(-), 449.00/444.00 and 1272.00/1292.00. Contact Nita Wofford, N4DON, 2966 Cordell, Memphis, TN 38118; 901/363-4971.

The KINGSPORT, BRISTOL and JOHNSON CITY RADIO CLUBS will sponsor the Tri-Cities Hamfest will be held on 16 October at the Appalachian Fair Grounds, Gray, TN. Features include indoor and outdoor flea markets and RV hookups. Admission is \$5. Mail inquires to P.O. Box 3682 CRS, Johnson City, TN 37602.

The CHATTANOOGA ARC is sponsoring a hamfest and computer convention on 23-24 October beginning at 9 a.m. in Chattanooga, TN. Features include a snack bar on the premises, forum for children interested in becoming hams and close to family attractions. Admission is \$5, children under 12 free. Talk-in on 146.79(-). Contact Charles E. Curle, AD4F, P.O. Box 3377, Chattanooga, TN 37404; 615/698-9703.

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## Texas

The TEMPLE ARC will host Ham Expo '93, indoor tailgate swapfest, on 9 October from 7 a.m. to 2 p.m. at the Bell County Expo Center. Features include VE exams, transmitter hunt, fully equipped test bench for equipment checks and handicapped accessible. Admission is free. Vendors have choice of table or indoor tailgate space for \$10 by 30 September. Vendors set-up at 6 a.m. Electrical hookups are available. Talk-in on 146.82. Contact Temple ARC, 2014 S. 53rd, Temple, TX 76504; 817/986-1257.

The INTERNATIONAL HAMFIESTA will be held on 9-10 October 8 a.m. to 5 p.m. Saturday, 8 a.m. to 3 p.m. on Sunday at the Texas National Guard Building. Features include RV parking (no hookups), seminars, refreshments, entertainment, QCWA breakfast and VE exams. Admission is \$5 in advance and \$6 at the door. Tables are \$10, tailgate spaces are \$10. Contact Milly Wise, W5OVH, P.O. Box 31628, El Paso, TX 79931; 915/751-4160.

The CLEAR LAKE ARC will be holding its annual auction on 23 October starting at 8 a.m. at the Webster Fire Station #2. Talk-ins will be on either 146.640(-) or 442.750 (+) (103.5). Contact CLARC, P.O. Box 57714, Webster, TX 77598; 713/488-4426.

## Vermont

TIDEWATER RADIO CONVENTIONS, INC will hold their 18th annual Virginia Beach hamfest and computer fair on 2-3 October beginning at 9 a.m. at the Virginia Beach Pavilion. Features include guest speakers, Gordon West, WB6NOA and Roy Neal, K6DUE, forums, flea market, tailgating, VE session, DX card check, refreshments, manufacturers, dealers, T hunts, free parking and prizes. Admission is \$5 in advance and \$6 at the door. Talk-in on 146.97. Contact Lewis Steingold, W4BLO, 1008 Crabbers Cove Ln., VA Beach, VA 23452; 804/486-3800.

## Wisconsin

The KETTLE MORAINÉ ARC will hold its 15th annual ham and computer swapfest on 10 October from 8 a.m. to 1 p.m. at the Waukesha County Exposition Center. VE exams are available. Admission is \$4 in advance and \$5 at the door. Admission ticket is required in addition to table reservation. Table reservations are accepted until 3 October. Tables are \$5 for each 4 foot length. Vendor set-up time is 6 a.m. Contact KMRA Swapfest, P.O. Box 411, Waukesha, WI 53187-0411.



BOY, THAT READOUT REALLY JUMPS RIGHT AT YOU, DOESN'T IT?

# CONTESTS

## YL-AP

**CW:** 1400 UTC Wednesday, 13 October, 1993 to 0200 UTC Friday, 15 October, 1993.

**SSB** 1400 UTC Wednesday, 27 October, 1993 to 0200 UTC Friday, 29 October, 1993.

You may operate only 24 hours of each 36-hour contest period. Show time breaks on your log.

**Eligibility:** All licensed women operators worldwide are invited to participate. Only YLRL members are eligible for the cup awards and the plaques. Non-members will receive certificates.

**Procedure:** Call "CQYL"

**Operation:** All bands may be used. No crossband, net or repeater contacts. On CW or SSB only one contact is permitted with each station on each band.

**Exchange:** Station calls, QSO numbers, RS(T)s, and U. S. (lower 48) ARRL section/Canadian province/country. Log entries must show, time, band, date and transmitter power.

**Scoring:** (A) CW and SSB are scored as separate contests. Submit separate logs for CW and SSB.

(B) YLs located in a U.S. (lower 48) ARRL Section or Canadian province (designated as: NA-YLs) score one point for each QSO with a YL located in a Canadian province or U.S. (lower 48) ARRL section. Score two (2) points for each QSO with a station not located in a U.S. (lower 48) ARRL section or Canadian province.

(C) All stations not located in a U.S. (lower 48) ARRL section or Canadian province (designated as: DX-YLs) score two (2) points for a QSO with a YL on another continent, and score one (1) point for a QSO with a YL on the same continent.

(D) Each contestant multiply the score claimed under (B) or (C) by the sum of each different U.S. (lower 48) ARRL section, Canadian province, and country worked.

(E) Each contestant using power output (at all times) of: 100 watts or less on CW or 200 watts PEP or less on SSB multiply the score claimed in (D) by: 1.5, the low power multiplier. Those not using low power are not entitled to a power multiplier and are limited to maximum power outputs of 750 watts on CW and 1500 watts PEP on SSB.

**Logs:** To qualify for awards, all logs must show the operator's U. S. section/Canadian province/or country; claimed score; and YLRL membership status (member or non-member.) For each

QSO, logs must show: date; time; the call of the station worked; and power output used. If you work 200 or more QSOs, submit separate logs for each band and submit a dupe sheet. File separate logs for each contest; show claimed score, and sign each log. Please print or type logs, and submit no carbon copies (photocopies ok). No logs will be returned.

All logs must be postmarked no later than 30 November 1993.

Send all logs to: Carla Watson, WO6X, 473 Palo Verde Dr., Sunnyvale, CA 94086.

**Awards:** In each contest (CW and SSB) the highest scoring NA-YL will be declared the NA-YL winner and the highest scoring DX YL will be declared the DX winner. Those winners who are YLRL winners will receive a YL-AP cup. Those who are non-YLRL members will receive a first-place certificate. NA and DX second and third place scorers will be awarded certificates regardless of YLRL membership. A certificate will be awarded to the highest SSB and CW scorer in each U.S. call district, Canadian province, and Country. The Corcoran Award (plaque) will be made to the YLRL member earning the highest combined score (CW and SSB) within a U.S. state (lower 48) or Canadian province. The Hager Award (plaque) will be made to the YLRL member earning the highest combined score (CW and SSB) at any DX location.

## Suggested frequencies

**CW:** 80M: 3.540-3.725 MHz. 40M: 7.040-7.070 MHz. 20M: 14.040-14.070 MHz. 15M: 21.120-21.150 MHz. 10M: 28.150-28.200 MHz.

**SSB:** 80M: 3.940-3.970 MHz. 40M: 7.240-7.270 MHz. 20M 14.250-14.280 MHz. 15M: 21.380-21.410 MHz. 10M: 28.300-28.610 MHz.

**NOTE:** Since band allocations in other countries are often different than in the U.S.A. NA YLs should look for DX-YLs in other parts of the bands.

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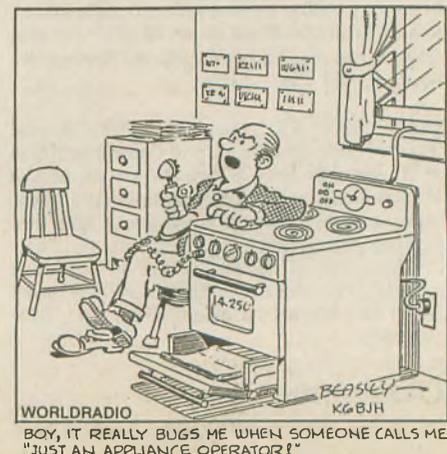
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**NEW PRODUCTS**

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

## Startek ATH-15 counter

The Startek model ATH-15 is an all new, top quality, sub-compact RF counter with an instant reading, integrated signal strength bar graph, ultra high sensitivity, auto trigger and hold and many more features in a battery portable instrument.

The ATH-15 can now automatically trigger and read, display and hold an input signal in less than 8 percent of a second (less than 80 milliseconds).

Startek was the first company to offer "shirt pocket" sized counters ranging over 3 GHz, first again adding the RF signal bar graph feature to the sub-compact counters and now first again with the auto trigger and hold circuitry in an inexpensive, portable frequency counter.

Other standard features and innovations not found in most comparable equipment include: ultra fast response time, auto-polarity power input, manual and automatic hold switch and indicator, two ranges — six gate times, high capacity NiCd's, battery charge indicator, low-power design — longer battery operation, key IC socketed for serviceability,



top quality components, a StarCab anodized aluminum cabinet, glass-epoxy UL/FR4 PC boards, TCXO timebase and more.

These counters utilize LSI and surface mount technology coupled with experienced RF layout, packaging and low power design. The result is unbeatable sensitivity, frequen-

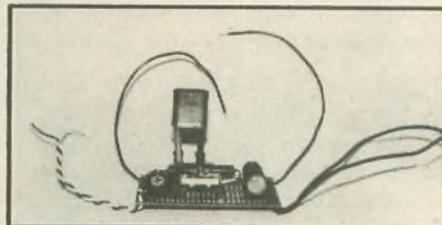
cy range and bar graph performance in a sub-compact size with three to five hours portable operation from the standard internal NiCd batteries.

Startek "shirt pocket" RF counters are ideally suited for finding or identifying frequencies, counter surveillance, repair and adjustment of equipment, monitoring RF output from transmitters and signal generators, use with antenna analyzers, field strength measurement applications and much, much more.

Startek also offers other frequency counter models, all made in Ft. Lauderdale, Florida, and sold with a full year parts and labor limited warranty. Delivery from stock. For further information call 305/561-2211; orders call 800-638-8050; FAX 305-561-9133.

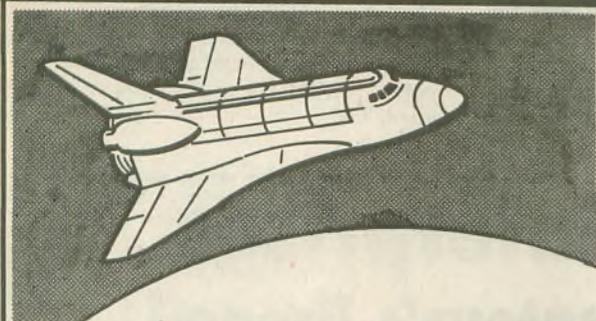
## DWM QRP transmitter

Announcing! The DWM Enterprises Basic 40M QRP transmitter. What makes our transmitter different from all the others? DWM supplies you with plans and instructions to help you homebrew your own 30M Basic transmitter as well!



DWM's transmitter is fully assembled—no lost parts or incorrect instructions as with some kits. Alligator clips are used for crystal connection so you're not tied down to just one size of crystal like other transmitters. Information is supplied on where to obtain inexpensive crystals. 2½W output—plenty of power to work DX! Great for vacations, trips, camping. Just team it up with your portable general coverage receiver for an impressive

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Many ATV repeaters and individuals are retransmitting Space Shuttle Video & Audio from their TVRO's tuned to Satcom F2-R transponder 13. Others may be retransmitting weather radar during significant storms. If it is being done in your area on 70 CM - check page 460 in the 93-94 ARRL Repeater Directory or call us, ATV repeaters are springing up all over - all you need is one of the TVC-4G ATV 420-450 MHz downconverters, add any TV set to ch 2, 3 or 4 and a 70 CM antenna. We also have downconverters and antennas for the 902-928 & 1240-1300 MHz bands. In fact we are your one stop for all your ATV needs and info - antennas, transceivers, transmitters, amps, etc. Most items shipped within 24 hours after you call.

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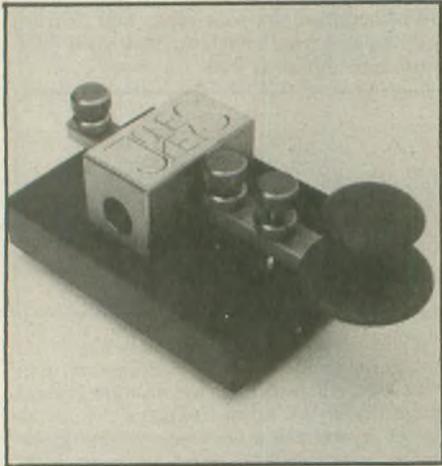
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## New Jones Key

Palomar Engineers has introduced a new hand key produced by Peter Jones Engineering of England. It has many of the features of the Jones dual-paddle key: heavy steel base with a brilliant red finish, rotary ball bearings and tension spring enclosed in a solid machined brass block, instrument knurled heads on all adjustment screws, serial number engraved on the brass block, solid heavy duty construction throughout.



A "Navy" knob is standard. Electrical contacts are under the base. Pure copper contacts will key any transmitter old or new. A nice solid keying touch is provided by the 3/4 lb. weight of the key. This is a key for the professional. Price \$118 + \$4 shipping/handling in U.S. & Canada.

For a free catalog describing the Jones keys and Palomar's electronic keyers write to Palomar Engineers, P.O. Box 462222, Escondido CA 92046 or telephone 619-747-3343, FAX 619-747-3346.

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## AWARDS: *Cont. from p. 20*

### WACS-USA Award

The Vancouver Mountain Radio Club is offering a beautiful certificate called the WACS-USA Award, Worked All Club Stations - USA.

The rules are: Work a bonafide club station once on any band in each of the 50 states. The call sign must be issued to a ham group, college, university, school, military base, or government

station such as the Veterans Affairs hospitals and V.A. Domiciliaries. A person who is using his own personal call sign for a club station call sign is not eligible.

Work a club station 2M through 160M on any band and you must have a QSL card to verify contact. Contacts must have been since 1 January 1980. Send \$3, SASE, and your 50 QSL cards, one for each state (your QSLs will be returned to you), to: Vancouver Mountain Radio Club, Attn: Mr. D. Simonsen, K7AEJ, P.O. Box 1622, Vancouver, WA 98668-1622.

## Cleaning capacitors

### FRANK LAMBERT, WB4OUF

After talking to several people on the air and the subject of restoration techniques comes up, I have found that sometimes what one takes for granted is possibly unknown to another. One thing in particular comes to mind and there are usually a lot of eyebrows lifted when I mention this. It is the technique I use to clean air variable capacitors. It has worked so well for me I wanted to share it with all who might be interested. It's not my idea; I read it somewhere years ago.

I remove the capacitors from the chassis, spray them with "Fantastic" or "409" and let them sit and soak for several minutes, then rinse clean in water. Then I immerse them in a mixture of 1/3 lemon juice (citric acid) - "Real Lemon" - and 2/3 boiling water. I

let them boil for three to four minutes then place them in clear boiling water (rinse) for about half that time and let them drip dry. Then I spray them with compressed air to remove any water residue, re-lubricate the shaft bearing surfaces lightly with WD-40, re-install in the rig and they work great and look even better!

One word of caution, however. No plastic insulators, or anything that might become soft at 212 degrees F.! I don't recommend this technique on brass plates either. The citric acid etches the oxidation and the boiling solution "floats" the crud out of the bearing surfaces.

Note: Most E.F. Johnson, National and Bud capacitors are made with brass plates (sometimes plated so that they may resemble aluminum.) Other Cardwells use aluminum plates, but the plates are assembled on brass supports. - *AM Press Exchange, Woodlawn, TN* WR

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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>				<b>Indiana</b>			
11/6/93	Tucson	Joe, K7OPX 602/886-7217	w/i	11/9/93	New Carlisle	219/654-3007; or KK9T 219/654-8084	p/r
11/27/93	Tucson	Micki, AA7RR 602/883-8305 or 883-0202 after 11 a.m.	pr; w/i	11/12/93	Logansport	Bill, WA8HSU 219/722-1338	w/i OK
<b>Arkansas</b>				<b>Kansas</b>			
11/13/93	West Memphis	Gene, AB5BL 501/739-4029	w/i OK	11/4/93	Great Bend	WAØPSF 316/792-5363 days, 316/792-4249 eves	w/i OK
11/20/93	Mountain Home	Gerald, WM5W 501/430-5123	p/r	<b>Kentucky</b>			
<b>California</b>				<b>Maine</b>			
11/2/93	Fremont	Greg, KJ6EP 510/791-6818		11/26/93	Alfred	N1KMZ 207/985-4825	
11/6/93	Cupertino	408/243-8349		<b>Maryland</b>			
11/6/93	Los Angeles	Ali, AA6WC 213/778-6226	w/i OK	11/7/93	Landover	Freddie, NG3G 202/546-9348 or 301/773-2898	
11/6/93	Ontario	Harry, KM6LO 818/810-0442	w/i OK	11/20/93	Laurel	WB3GXW 301/572-5124 after 6 p.m.	p/r pref. w/i ltd.
11/13/93	Adelanto	Arnie, NF6I 209/295-7947	w/i OK	<b>Michigan</b>			
11/13/93	Jackson	Kenna, KR6M	w/i OK	11/13/93	Dearborn	Stan, K8SB	w/i OK
11/13/93	Redding	AA6IY & KG6XF 408/255-9000		<b>Missouri</b>			
11/13/93	San Jose	N6DYZ 310/325-2965	p/r pref.; w/i ltd. w/i only	11/6/93	Antonia	Jim, WAØFQK 314/942-2268	no w/i
11/13/93	San Pedro			11/11/93	St. Louis	Grant, KA0YYI 314/567-8777 (24 hours)	p/r only
11/13/93	Sunnyvale	408/255-9000 24-hr.		<b>Nevada</b>			
11/18/93	Long Beach	W6LRF 714/847-6370; N6LUH 310/592-1713	w/i OK w/i only	11/6/93	Elko	Joe, N7JEH 702/738-7110	p/r pref.
11/20/93	Culver City	Walt, KM6MQ 714/373-6077	w/i OK w/i only	11/20/93	Minden	Carl, W7QO 702/265-3430	w/i only
11/20/93	Cupertino	408/243-8349		<b>New Jersey</b>			
11/20/93	Eureka	707/826-0767		11/13/93	Cranford	24-hr. hotline: 201/377-4790	
11/20/93	Porterville	Phil, WA6WRS 209/535-4288		11/10/93	Fort Monmouth	MARS 908/532-5354	w/i
11/20/93	Redwood City	Joe, KB6OWG		11/18/93	Bellmawr	WA2VQG 609/546-7710	w/i
11/20/93	Sacramento	Lyle, AA6DJ 916/483-3293		11/20/93	Bayonne	Bob, N2IYY 201/435-5953	w/i OK
11/20/93	Stockton	Ed, N6XMA 209/952-5996	w/i only	11/20/93	Pennington	Don, AA2F 609/737-1723	p/r pref. w/i OK
11/27/93	Fairfield	Jerry, AA6NO 916/662-0801	w/i only	<b>New York</b>			
11/27/93	Vacaville	Irene, KK6XB 707/446-8376	w/i only	11/6/93	North Tonawanda	Vern, AA2AC 716/634-5276	p/r only
11/28/93	Berkeley	Gary, N6YBD	w/i only	11/7/93	Yonkers	AC2V 914/237-5589	w/i OK
11/28/93	San Jose	AA6IY & KG6XF 408/255-9000		11/9/93	Hicksville	Bob, W2ILP 516/953-7895	w/i only
11/28/93	Sunnyvale	408/255-9000		11/13/93	Albany	Bud, WF2B 518/283-2337	w/i OK
<b>Colorado</b>				<b>Nebraska</b>			
11/13/93	Denver	Glenn, WØIJR 303/360-7293, 24-hr. message	w/i OK	11/21/93	Asheville	Hary, AA2AB 704/891-5481	w/i OK
11/20/93	Westminster	AAØBZ 303/421-2795; NØHNR 303/278-4280	p/r or w/i	11/30/93	Omaha	George, NWØM 402/253-8272	
<b>Connecticut</b>				<b>North Carolina</b>			
11/20/93	Groton	WM1Q 203/449-0732	w/i only	11/13/93	Marion	Cecil, WB4UCF 704/724-4007	w/i OK
11/24/93	Shelton	WJ1T 203/283-1044	w/i pref.	11/13/93	Spruce Pine	David, KK4PW 704/675-9044	
11/28/93	Milford	NB1M 203/933-5125; WAIYQE 203/874-1014	w/i	11/14/93	Salisbury	Isabelle, AB4UX 704/284-2414	w/i OK
<b>Florida</b>				<b>Ohio</b>			
11/1/93	Dunedin	Marv, WC2G 813/938-7810	p/r or w/i	11/6/93	Cincinnati	Herb, WA8PBW 513/ 891-7556	w/i OK
11/13/93	South Miami	Ross, AC4KZ 305/233-7462	w/i OK	11/13/93	Vin Wert	Bob, KA8IAF 419/795-5763	p/r only
11/20/93	Melbourne	WB9IVR 407/724-6183	w/i OK	11/18/93	Youngstown	James, N8IRL 216/534-1394	p/r only
11/23/93	New Port Richey	Marv, WC2G 813/938-7810	p/r or w/i	<b>Oklahoma</b>			
<b>Georgia</b>				<b>North Carolina</b>			
11/13/93	Augusta	Jim, N4JA 404/790-7802	w/i OK	11/19/93	Pawhuska	KY5J 918/287-3517, WT5Z 918/287-3665	w/i OK
11/28/93	Sandy Springs	John, AB4GK 404/381-5291	w/i OK	<b>Idaho</b>			
<b>Illinois</b>				<b>Ohio</b>			
11/7/93	Paris	WØBX 217/463-2213	p/r; w/i	11/6/93	Cincinnati	Herb, WA8PBW 513/ 891-7556	w/i OK
11/13/93	Oak Forest	David, NF9N 708/448-9432	w/i	11/13/93	Vin Wert	Bob, KA8IAF 419/795-5763	p/r only
11/14/93	Bloomington	Ken 309/662-3910	w/i OK	11/18/93	Youngstown	James, N8IRL 216/534-1394	p/r only
11/16/93	Aurora	N9AKE 708/892-1252	w/i pref.	<b>Oklahoma</b>			
11/20/93	Loves Park	Paul, WB9HGZ 815/987-6754	p/r; w/i	11/19/93	Pawhuska	KY5J 918/287-3517, WT5Z 918/287-3665	w/i OK
11/27/93	Alsip	Ron, K9FYG 708/597-2491	p/r; w/i	<b>Idaho</b>			

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Date	City	Contact	Notes	Date	City	Contact	Notes
<b>Oregon</b>							
11/10/93	Roseburg	KB7CMB 503/672-5997	w/i OK	11/6/93	Chattanooga	Alan, WA4QCH 404/866-1200	p/r
<b>Pennsylvania</b>							
11/4/93	Levittown	K3TX 215/946-1040 or 736-3333	p/r pref.; w/i OK	11/8/93	McMinn County	Evan, WA4PNI 615/263-9300	w/i OK
11/4/93	Philadelphia	ND3Q 215/482-0386 or 215/879-0505	p/r pref.; w/i OK	11/14/93	Jasper	Charles, DK4XX 615/942-5116	p/r pref.
11/5/93	Nazareth	Robin, WA3T 215/820-9110	w/i	11/19/93	Carter County	Joe, K4BKI 615/543-4022	p/r only
11/6/93	Erie	W3CG 814/665-9124	w/i	11/27/93	Greeneville	Jack, K4EPC 615/638-7056	w/i OK
11/13/93	Butler	W3DMB 412/282-6777	p/r	11/27/93	Henry County	Mackie, AA4YF 901/247-5489	w/i OK
11/13/93	Tamaqua	AI, W3TI 717/668-3098	w/i only	11/27/93	Memphis	Win, W2GLJ 901/754-4552	w/i OK
<b>Rhode Island</b>							
11/11/93	Providence	NN1U 401/231-9156 or 401/454-6848	w/i OK	<b>Texas</b>			
11/27/93	Slatersville	Bob, W1YRC 401/333-2129	w/i OK	11/9/93	Houston	ND5F 713/464-9044	p/r pref.; w/i OK
<b>South Carolina</b>							
11/6/93	Greenville	John, ND4N 803/288-0136	w/i OK	11/13/93	Midland	KT5G 915/694-9450	w/i OK
11/20/93	Charleston	Pat, AC4IH 803/553-3871	w/i OK	11/20/93	Tomball	Paul 713/351-8930	
11/20/93	Sumter	Dan, WB5SGH 803/775-9106	w/i OK	11/27/93	San Antonio	K5JWK 512/657-1549	w/i
<b>Tennessee</b>							
11/4/93	Morristown	Roy, KF4CB 615/586-3491	w/i OK	<b>Virginia</b>			
<b>Washington</b>							
				11/6/93	Portsmouth	Art, AA4AT 804/484-2857	w/i OK
				11/19/93	Roanoke	Gordon, KC4DY 703/268-1017	w/i OK
				11/20/93	Hampton	Bill, N4BDH 804/487-8611	w/i OK
				<b>Wisconsin</b>			
				11/23/93	Stanwood	Don, KO7I 206/652-0248	w/i
				11/27/93	Bremerton	Dave, AA7IA 206/698-9205	w/i
				11/13/93	Kaukauna	W9MDP 414/832-6279	w/i
				11/13/93	Oak Creek	Norman, KB9QL 414/764-5998	w/i OK

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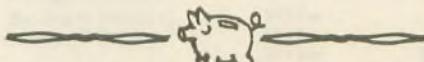
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- |                                 |                                |                                 |
|---------------------------------|--------------------------------|---------------------------------|
| A & A Engineering - 50          | IMRA - 34                      | QSL's by W4MPY - 26             |
| Ace Communications - 13         | Jade Products - 55             | R.A. Enterprises - 70           |
| Amateur Radio Specialties - 22  | J-Com - 54                     | Radio Engineers - 57            |
| Ameritron - 16                  | Jun's Electronics - 27         | Radio Place, The - 56           |
| Antennas West - 21, 24, 29,     | K1EA Software/Harvard Radio,   | Renaissance Software &          |
| 46, 48, 52                      | Inc. - 18                      | Development - 49                |
| Antique Radio Classified - 30   | Kantronics - 11                | R & L Electronics - 23          |
| Artaci Publications - 40        | K-Com - 51                     | RLD Research - 7                |
| Atlas Radio - 45                | Kilo-Tec - 20, 69              | R. Myers Communications - 53    |
| AVC Innovations - 54            | Lakeview Co. - 24, 57          | Rose - 14                       |
| AXM Enterprises - 18, 33        | Lawailoa Retreat - 46          | Rupp Electronics - 63           |
| Aztec RF - 62                   | Lightening Bolt Antennas - 15  | Software for Amateur Radio      |
| B.A. Fox - 10                   | MARCO/Medical Amateur Radio    | - 33                            |
| Battery-Tech - 41               | Council, Ltd. - 12             | Solder-It Company - 70          |
| Bilal Co. - 10                  | Maxcom, Inc. - 10              | S&S Engineering - 29            |
| Brian Beezley, K6STI - 64       | M. Bohnhoff, Inc. - 7          | Startek Int'l, Inc. - 76        |
| Buckmaster Publishing - 8,      | Media Mentors - 20             | Synthetic Textiles, Inc. - 68   |
| 25, 42                          | MFJ Enterprises - 17           | Tibi Productions - 36           |
| Butternut Electronics - 43      | Michael Klein - 56             | Townsend Electronics, Inc. - 15 |
| Caig Laboratories - 44          | Microcraft Corp. - 26          | Unadilla Antenna Mfg. Co.       |
| Caps Unlimited - 20             | Midwest Wood Products - 30     | - 47                            |
| Chicago FM Club - 19            | Mouser Electronics - 51        | Universal Radio, Inc. - 52      |
| Communications Specialists - 34 | Mug Factory, The - 21          | Van Gorden Engineering - 7      |
| Courage Center - 38             | Nemal Electronics, Inc. - 59   | VIS Study Guides - 6            |
| Cubex Co. - 68                  | Oak Hills Research - 61        | Visit Your Local Radio Club     |
| Douglas RF Devices - 42         | Old Old Timers Club, The - 4   | - 31, 32                        |
| Electron Processing - 67        | OTM Enterprises - 15           | Visit Your Local Radio Store    |
| Elizabeth Woodbridge - 6        | Pacificon - 19                 | - 71.                           |
| Embroidery Warehouse - 49       | Palomar Engineers - 3, 12, 22, | WJ20 Software - 58              |
| Engineering Systems, Inc. - 46  | 39, 40                         | W5YI-VEC - 50                   |
| Fallert's Engraving - 24        | Pass Publishing - 25, 28       | W9INN Antennas - 12, 35         |
| G.G.T.E. - 14                   | Pavillion Software/Harvard     | Wallace & Wallace - 35          |
| Grapevine Group, The - 60       | Radio, Inc. - 48               | Wireman, Inc. - 14              |
| Ham Radio Outlet - 37           | P.C. Electronics - 69          | WW Sales - 30                   |
| Henry Radio - 2, 65             | QCWA - 21                      | Yaesu USA - 5                   |



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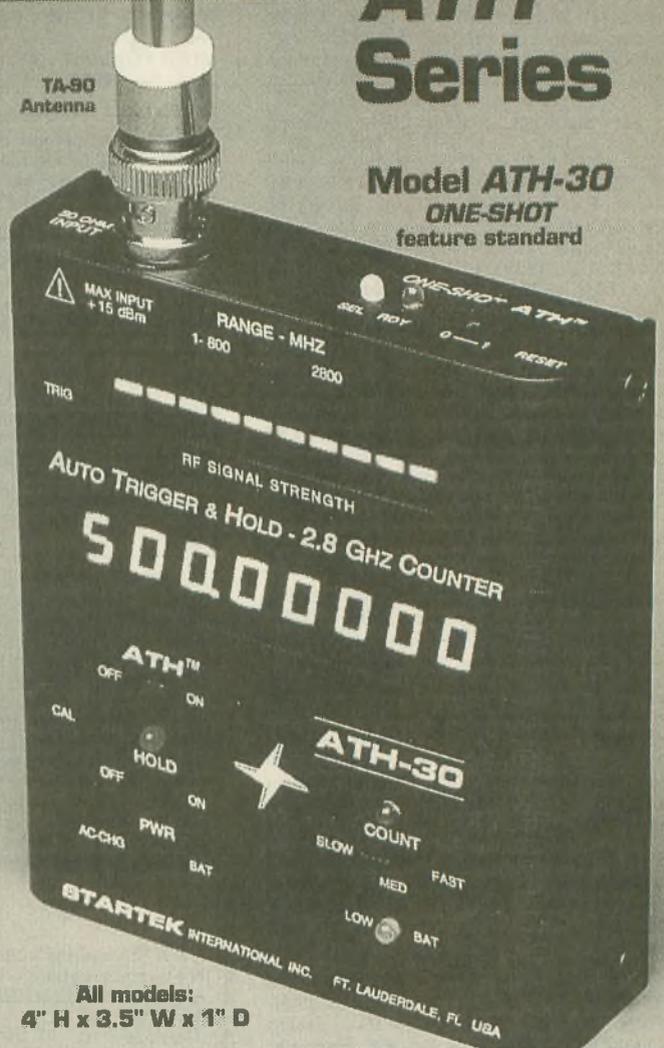
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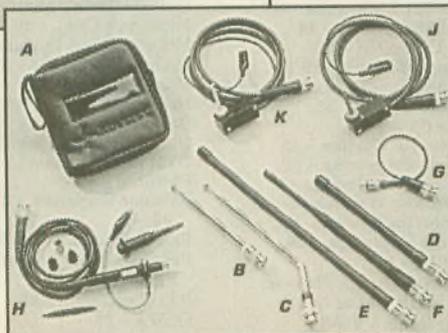
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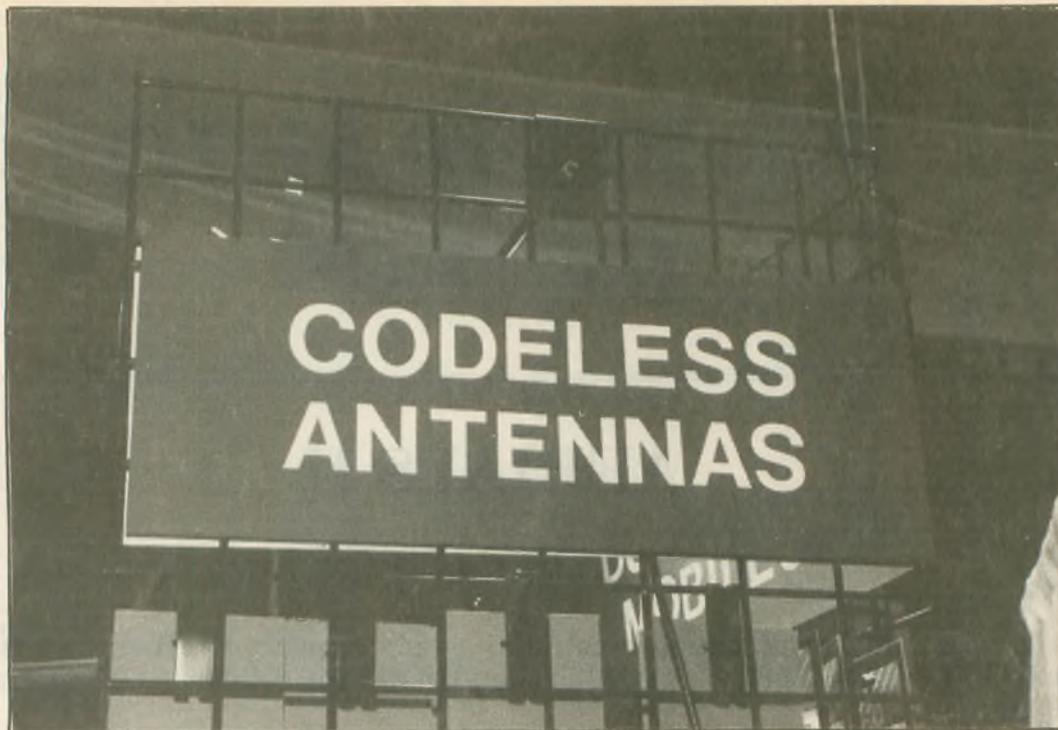
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