World Radio
Year 17, Issue 12 June 1988 • $1

Call for papers

HAMBIT '88, the third international congress of Amateur Radio and digital techniques — which in past years was sponsored by the Italian Amateur Radio Association (ARI) — will be held in Florence, Italy, on November 27, 1988.

Original work papers are invited in either Italian or English on (but not limited to) the following topics: Telecommunications; electronic circuit simulation and CAD; uses of computers in measurements; digital signal coding, decoding and processing; civil security applications and computers as aids for the handicapped. Applications may use any kind of computer including Sinclair, Commodore, Apple, MSX or MS-DOS.

A special Hambit '88 award will be presented to the author(s) of the best contribution for a tactile electronic board project simulating a video display for the blind.

Papers (not to exceed 20 pages) should be typed, double-spaced, on 8½" × 11½" paper with 1⅜" margins on all sides, camera-ready for photoreproduction. The cover page should contain only the title, full name of the author(s), affiliation, address, telephone number and a signed copyright release relinquishing all rights. A short biography and an abstract is also requested.

Two copies should arrive no later than August 31, 1988, at: Hambit '88 Coordinator; Carlo L. Ciapetti, I5CLC; Via Trieste, 36; 50139 Florence, ITALY. Authors will be notified of acceptance by telegram before September 30. —*NeW5YT Report* □

Radio at ICC'88

A technical session featuring recent developments in Amateur Radio is part of the IEEE International Conference on Communications '88 to be held June 12-15 at the Wyndham Franklin Plaza Hotel in Philadelphia, Pennsylvania. Open to all radio amateurs as well as ICC'88 participants, the session will take place Wednesday, June 15, from 12:15 p.m. to 1:45 p.m.

(please turn to page 62)

Mike Kashuba, KI6OI, explains HF station set-up to a group of young people who attended River City ARCS' pancake breakfast fundraiser, April 9, at Highlands High School, North Highlands, California. Standing behind Mike (with cap on) is Dick Hagerty, KI6OF. Also behind Mike is Margery Auvinen, who brought several 7th graders to the breakfast. Not shown and to the left is a solar panel, providing power for the station. ***(Photo by Armond Noble, N6WR)***

Pancakes & packet

Alan Christian, WW6B

How would you interest high school students in Amateur Radio, and perhaps ultimately in an electronics career? The River City ARCS believes that a club station at the local high school is one answer to this question.

The River City Amateur Radio Communications Society (ARCS) approached two Sacramento (California) school districts in late 1987. We asked if we might sponsor Amateur Radio clubs in select high schools that offer technology curriculums.

These stations would introduce communications and electronics technology to students who might not otherwise be exposed to it. Interested students could get on the air without having to purchase equipment — an important factor in the two districts we approached, since they attract youth from low-income areas.

The schools told us they had no money available for such a project, but we were also told that space for a station installation could be provided if we came up with the equipment.

The club's board of directors defined our school station as a low-cost HF transceiver with dipole antenna(s). Money left over after buying the HF rig would buy a VHF FM transceiver, TNC and computer to put a packet station on the air as well.

With equipment defined and at least three schools lined up for station installations, all we needed was some equipment. Since we are not a large, affluent club, a fund-raising project was the next order of business. Pancake breakfasts have been traditional fund-raisers for non-profit organizations, so we decided to give one a try.

Pancake grills and radio equipment were operational by 7:30 a.m. on April 9, at Highlands High School in North Highlands. Ozzie Osborne, KI6ZK, our vice president and an instructor at

(please turn to page 18)

Congressman writes

Jean Priestley, KA2YKN (Pennsauken, New Jersey) recently sent us this letter, copies of which were sent to the Amateur Radio community in her district.

Honorable Dennis R. Patrick
Chairman, FCC
Washington, D.C.
February 25, 1988

Dear Mr. Chairman:

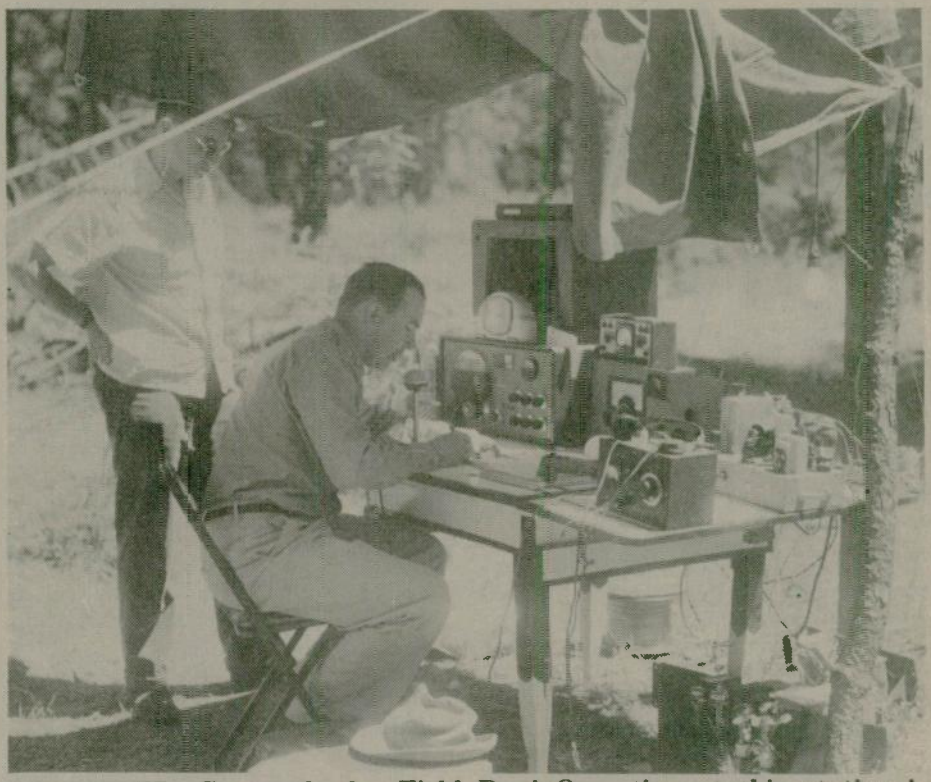
I am writing to express my concern regarding the Federal Communications Commission proposal to reallocate the 220-222 MHz Amateur Radio frequency band from Amateur Radio to land-mobile radio.

On behalf of Amateur Radio operators in New Jersey who form an indispensable communications network during emergencies, I urge you to reject this proposal. As you no doubt can see from the strong opposition expressed by Amateur Radio operators, the proposal contained in Docket 87-14 would adversely affect Amateur Radio operators on a number of levels.

We are all aware of the valuable contributions Amateur Radio operators offer during emergencies. The Amateur Radio operators also use the 220-222 MHz Amateur Radio band for a number of other important applications, including research for "weak signal" techniques, packet-radio communications techniques, radio control of repeater stations and high-volume emergency communications.

The reallocation of the 220-222 MHz band would not only pose a financial hardship on many Amateur Radio operators whose equipment will no longer be applicable, but will also severely restrict our nation's emergency communications network. I urge you and the other commissioners to reject the reallocation of the 220-222 MHz band.

With best wishes,
JAMES S. FLORIO
U.S. Congressman
New Jersey, 1st District
Washington, D.C. □



REMINDER: Get ready for Field Day! Operating at this station is W6WLI, on Field Day 1948. (W6WLI is now K6FO — Norm Brooks.)

CONTENTS

FEATURES

COLUMNS

Worldradio

June 1988
Vol. 17, No. 12

TM
Subscription Dept.
Worldradio
1779 Tribute Rd., Ste. L
Sacramento, CA 95815
1-800-365-SUBS

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

STAFF

Publisher.....Armond Noble, N6WR
Editor.....Christine Wilson, KA6TAL
Assistant Editor.....Christine Toppenberg
Associate Editor.....Norm Brooks, K6FO
Consulting Editor.....Lou Ann Keogh, KB6HP
Advertising Director.....Helen Noble
Ass't Adv. Director.....Rosalie Hernandez
Graphics Director.....Dianne Dunning
Circulation Mgr.....Dorothy Campini

Worldradio (USPS 947000) is an international conversation. You are invited to participate.

Our goal is to be a valuable resource of ideas and experiences beneficial to the Amateur Radio Community. We publicize and support the efforts of those who bring the flame of vitality to this avocation.

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

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

Worldradio is an independent newspaper not affiliated with any other firm, group or organization. Its pages are open to all. Permission is hereby automatically granted to reprint from this publication with appropriate source credit. If there is something useful, we wish to share it.

Subscription rates: $12.00 per year, $22.00 for two years, $31.00 for three years and $120.00 for life; $3.00 extra per year for surface mail delivery outside the U.S. Please remit international postal money order. IRCs will be accepted.

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

PUBLISHER'S MICROPHONE

This, the June issue 1988, is our 17th Anniversary issue. You'll notice that we have eight more pages than usual. If more companies would take a clue from our present enlightened advertisers, and we got some more ads, we could add more text pages.

We first recognize the latest to become **Worldradio** Super-Boosters (Lifetime Subscribers): Eric Nelson, WB2CAU, Dix Hills, NY; Neil Higgins, Sr., KD8JC, Lincoln Park, MI; Jim Longthorne, WA6KPW, Rosemead, CA; and Don Chattoin, KQ6N, Huntington Beach, CA.

How 'bout the conditions around the 15th of April? Maybe it was a little present as a solace for those who just finished their taxes. As one 20M op said, "I don't believe this. Incredible signals." And they were.

In the middle of people trying to work Turkey, India and the like, do we really need someone calling CQ for a phone patch to San Jose? No, not San Jose, Costa Rica, but San Jose, California! All the way from Texas! At the price of late night phone calls, it's cheaper to call than pay the electric bill on the amplifier.

Must we, when giving the call letters of the other station, announce "in Florence, Italy"? Are we telling him something he doesn't know?

And you feel a bit sorry for an American out in a semi-rare spot admitting that he can't understand how to make his rig go "spit."

Field Day is coming up. Like to see a change in the rules. Let's have everybody start setting up at the same time. Would make it more realistic. One doesn't start putting up antennas for the big emergency the day before it occurs.

How about the ARRL coming out with a deluxe version of the World Map. Much bigger, to cover more of the wall.

Heard an SM station talking about his first transmitter (1946) being a 6L6 on a piece of wood. That brought back memories — winding a coil, light bulb dummy load . . . ah nostalgia.

Curly (WA7TIC) and Sherry (N7FBK) Stroy said, "We would like to add our appreciation to the many others on your efforts and endeavor to put a class "A" amateur publication on the market. Your coverage and articles pertinent to our great hobby are appreciated. We are much involved in ARES and Search and Rescue."

John Brischler, W2SGI, Little Ferry, NJ, wrote to us about the small lapel pins we've been talking about. He said, "I've had a lapel pin (1″ × 7/32″) for about 40 years. It was given to me by W2YUH (SK) for helping him get his ticket. They were made by SREPCO in Dayton, Ohio. Saw the ad in *QST*, December 1948. 'An attractive metal button with highly polished raised letters against a black background $1.10 postpaid.' It was a great idea in 1948 and still is."

Well, how about someone doing it today? Then Dick Hill, KA2FFI, wrote, "**Worldradio** does a fine job of presenting amateur information. I would personally like to see a bit more of East Coast activity in the QCWA and 10-10 areas of your monthly."

Dick, you get our standard answer to those who want to see more East Coast news here — send it in!

Speaking of QCWA . . . it kind of bugs me that cities much smaller than Sacramento have QCWA chapters and we don't. Maybe someday some here will get off their duffs.

Robert Johnson, N7CFX, Seattle, WA, wrote, "I start with Kurt and Lil and then read from cover to cover."

Sidney Kirtley, KB9WP, Sharpsville, IN, told us they use material from **Worldradio** in their club paper and said, in part, "The inputs and attitudes of the different hams and situations lead us into a mixture of articles that appeals to all whom we send our letter to. I wish to thank **Worldradio**, along with the Tipton County ARC, for being the international flavor of the Amateur Radio community, along with the real world attitudes and letting us sprinkle these ideas into our publication. Thank you, **Worldradio**, for being there . . ."

Sid, we thank YOU for being a part of it.

Let's hear from you.

— Armond, N6WR

220 MHz
Model FT-312RM
Now Available

Introducing the only mobiles that double as answering machines.

Now you can stay in touch—even when you're away from your radio.

With Yaesu's 2-meter FT-212RH and 70-cm FT-712RH, an optional, internal digital voice recorder serves as a convenient answering machine for you and your friends. And that's just the beginning!

High performance mobiles. The FT-212RH features wideband receive coverage of 140-174 MHz (144-148 MHz Tx), while the FT-712RH covers 430-450 MHz. An oversize amber display includes an innovative photo-sensor which increases the display brightness during the day. The function buttons are arranged in a chromatic musical scale—ideal for visually-impared operators. You get 45 watts output on 2 meters, 35 watts on 70 cm.

An autodialer DTMF microphone with 10 memories, each ready to store telephone numbers up to 22 digits long.

And, like our FT-211RH Series mobiles, you'll enjoy surprisingly simple controls, yet highly sophisticated microprocessor-based flexibility. Including 18 memories that store frequency, offset, PL tone, and PL mode (CTCSS unit optional). Band or memory scanning. Offset tuning from any memory channel. Memory channel lockout for scanning. High-low power switch.

All in an amazingly small package, shown actual size below.

Digital voice recorder option. Only Yaesu brings you the advanced technology found in our digital voice recorder option.

You can store messages or your call sign—in your own voice, not a synthesized replica—or give your friends a private code for leaving messages on your radio. All they need is a DTMF microphone! Then you can play back your messages either in-person, or remotely by using another radio with a DTMF microphone. And you've always got security because you can command your radio to respond only to in-person playback requests.

Visit your Yaesu dealer today. And test drive Yaesu's FT-212RH and FT-712RH mobiles. The only radios with the power to keep you in touch. Always.

YAESU

Yaesu USA 17210 Edwards Road, Cerritos, CA 90701 (213) 404-2700. **Repair Service:** (213) 404-4884. Parts: (213) 404-4847

Prices and specifications subject to change without notice. PL is a registered trademark of Motorola, Inc.

2nd Annual Emergency Response Institute

Christine Wilson, KA6TAL
Editor, WORLDRADIO

Fires were raging and helpers were desperately needed, including Amateur Radio operators who could serve as "shadows" for firefighters.

One young man, new at this business, told his supervisor, "This was fun. But I'm hungry now. When's lunch?" Lunch, it turned out, was 8:00 that night.

Laughter filled the auditorium as Dave Larton, N6JQJ, shared this story. Many of the radio amateurs in that room knew from hard-learned experience that fires don't take "lunch breaks."

Once again, Amateur Radio operators from throughout Northern California had gathered in the San Jose area to discuss emergency communications. The occasion: the 2nd Annual Emergency Response Institute (ERI), held March 26-27, in Cupertino. Apple Computer had donated their excellent facilities for the occasion.

As main coordinator of the institute, Larton (Santa Clara Valley Assistant Section Manager) emceed both days and spoke on three of the topics covered that weekend.

This year's ERI focused on problems encountered when dealing with various agencies in emergencies. Several amateurs present at the ERI experienced some of these difficulties late last summer while assisting with communications during the fires that burned out of control for days in the Sierra foothills.

"Terminology is a tremendous problem," said Larton. Another problem, he added, is lack of coordination. "Coordinate with other agencies what facility will be used in times of emergency. Without a lot of preplanning, the whole system falls apart."

Example: When several local agencies were asked what facility they planned on using in a major emergency, they each said "the fairgrounds."

Because of several misunderstandings and frustrating experiences, the amateurs learned the importance of Incident Command System. (See "Incident Command System," page 18, May '88 **Worldradio.**)

Eric Tofsrud, N6OIM (right), demonstrates the ATV equipment he used during the Pope's visit to California last September. Assisting him is Bob Mammarella, KB6FEC.

Impressive ATV footage of the fires was also shown, and Weo (WN6I) and Sharon (N6MWD) Moerner shared their own experiences with the packet operations they handled during the fires.

Dave Wold, an Emergency Coordinator with State Office of Emergency Services (OES), shared some humorous anecdotes about the difficulties experienced by the OES and the Palo Alto chapter of Red Cross while providing ATV coverage of the Pope's visit to Laguna Seca last September. (See "Operation Vatican via ATV," page 22, December '87 **Worldradio.**)

Also representing OES that weekend was Stan Harter, KH6GBX, Chief State Radio Officer. He presented a three-hour certified training session for RACES officers and others who were interested.

While discussing Safety in the Field, Larton gave several tips to keep in mind:

1) Know your exact mission requirements.

2) Know exactly how long you'll be gone.

3) Take the right equipment.

4) Know your limitations (physical and mental).

5) Think SAFETY!

6) Know when to ask for help; don't guess.

7) Communicate clearly.

8) Be a *communicator;* refer questions to qualified personnel.

9) Know when to say no!

10) Know when it's time to go home.

Larton said that amateurs sometimes forget why they're "out there," and become part of the agency they're trying to help. They should remember that they are only communicators.

Bill Robinson, WB6OML — Public Information Officer for Santa Clara Valley Section — touched on this subject too, while discussing Handling the Competition: You.

When working with local hams outside of your own area, he said it's very important to know when to leave and let the locals handle the emergency. "It's important that (the locals) be 'plugged in' so they will develop more ARES resources toward helping their neighbors next time there's a problem," said Robinson.

"*Appointments* for ARES supervisors come from the ARRL," he said, but the *authority* comes from all of us who are out in the field."

Other tips: Local ARES officials should be notified when hams are activated. Document everything. Recognize the other guy's right to be a hero . . . especially if you're in his town.

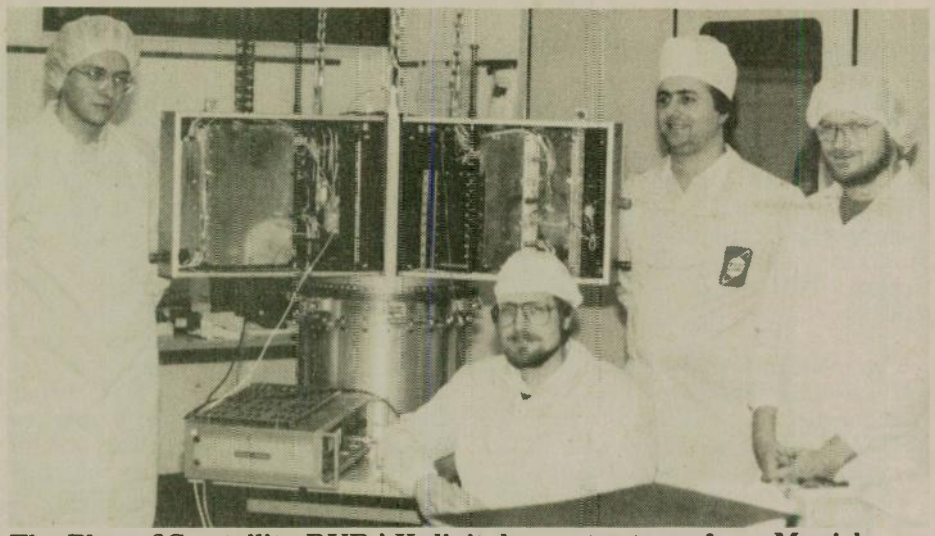
Diplomacy is important in other areas too, especially when trying to motivate volunteers. Craig Smith, N6ITW, talked about this subject, having become an expert at it during the five years he's been an ARES official in San Mateo County.

One key to success, according to Smith, is recognizing the needs and wants of volunteers. Organization is an important part of this.

"As more agencies look at ARES/RACES," Smith said, "they'll want to know our organizational plan. Which means a documented record of plans.

Goals should be specific, reasonable and attainable. Encourage volunteers to reach these goals in a certain time frame, and when they've reached them, reward them with letters or awards. If they *don't* achieve their goals, don't chastise them over the air, Smith warned. Use the phone or a letter.

(please turn to page 67)



The Phase 3C satellite RUDAK digital repeater team from Munich consists of Gerhard Metz, DG2CV; Hanspeter Kuhlen, DK1YQ; Knut Brenndoerfer, DF8CA; Stefan Eckart, DL2MDL. Team member Peter Guelzow, DB2OS, was not present.

Teams prepare new OSCAR for launch

Teams from AMSAT NA and AMSAT DL arrived in Kourou, French Guiana on March 29 to begin final preparations for the launch of Phase 3C, now expected in less than two months. Launch is pegged at June 1.

They began work upon arrival at the European Space Agency facility in Kourou which is located on the northeast coast of South America. Initial tasks include uncrating the spacecraft and support equipment. The team will then apply thermal coatings and other materials needed for flight. The first team's tasks will require about two weeks to accomplish.

A second team will deploy for Kourou around mid-April for the critical spacecraft fueling operation. The propellant fuel and oxidizer fluids are extremely hazardous and must be handled very carefully.

In early May, a third team was deployed to Kourou for final preparations and spacecraft monitoring.

As anticipated, a revised table of Phase 3C operating frequencies has been issued. These update the preliminary values issued in February and represent a close approximation of the expected on-orbit operating frequencies.

Mode B	Uplink:	435.420-435.570	MHz
	Downlink:	145.975-145.825	MHz
	General Beacon:	145.812	MHz
	Engineering Beacon:	145.985	MHz
Mode JL	Uplink 1:	1269.620-1269.330	MHz
	Uplink 2:	144.425-144.475	MHz
	Downlink:	435.715-436.005	MHz
	Downlink 2:	435.990-435.940	MHz
	General Beacon:	435.651	MHz
	Engineering Beacon:	435.677	MHz
		(Same as RUDAK down)	
RUDAK	Uplink:	1269.710	MHz
	Downlink:	435.677	MHz
Mode S	Uplink:	435.601-435.637	MHz
	Downlink:	2400.711-2400.747	MHz
	Beacon:	2400.325	MHz

Further information may be obtained from AMSAT HQ, P.O. Box 27, Washington, D.C. 20044. Call during normal business hours: (301) 589-6062. □

The deadline for news releases and special announcements is the 10th of the month, *two months prior to issue date.* Example: Deadline for the August issue is 10 June.

The C-64 on 12V

A successful 12V DC conversion of the Commodore C-64 for Field Day use and portable packet operation is available from the California State OES RACES.

For a copy of the conversion procedure, write to Don Root, WB6UCK, P.O. Box 6299, Whittier, CA 90609-6299. His telephone during working hours is (213) 620-5607.

— Utah ARC, Salt Lake City, UT □

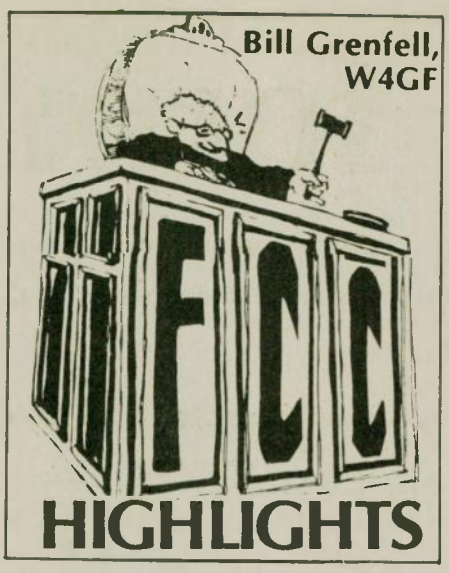
RACES called out after train derailment

On Thursday, April 7, two Southern Pacific trains derailed at Le Grand, California (about 15 miles southeast of Merced). One train was passing the other at a low rate of speed when one of the cars derailed, causing a derailment of 12 cars.

Since several of the cars displayed placards indicating contents of an industrial solvent, Merced County RACES was called out to assist with assessment and information disbursement. Responding to the scene were Leon Sutherland, K6LWO; Fred Silveira, K6RAU; Michael Siegel, KI6PR; Helen Pope, K6GSK; Janet Siegel, KB6SBH; and Bob McMillion, WB7UGZ.

The possible hazardous materials spill was soon dismissed. The tanks in question were empty and improperly labeled. RACES' primary function, at that point, was to assist with the flow of information from the scene to the information officer.

After conferring with on-scene officials and assuring that no immediate danger existed, RACES was secured from the operation. RACES received commendations for its quick response from the county fire chief and county emergency services. — *Stan Harter, KH6GBX, Chief State RACES Officer*



The FCC has accepted the late comments filed by United Parcel Service in the Docket 87-14 proposed reallocation of the 220-222 MHz and to land mobile services. While unsuccessful in getting the Commission to reject the UPS original comments, the ARRL did succeed in getting the FCC to extend the reply comment period to March 31. (*ARRL Letter,* 03/29/88; *Westlink Report,* 03/18/88)

•

On March 24, the FCC began a proceeding, PR 88-139 to modernize the U.S. Amateur Radio Service rules. The Notice was not available as this was written, but is said to be an 87-page document. Comments will be accepted until August 31. (*ARRL Letter,* 03/29/88)

•

The reply comment period on the RM6196 TV Answer, Inc. petition for creating a return pushbutton radio link via 216.25, 218.25 or 220.25 MHz between a consumer watching TV and a video programmer on TV station, has been extended to May 2, 1988. (*ARRL Letter,* 03/29/88; *FCC HIGHLIGHTS* 03/07/88)

•

In a recent New Orleans court case, a mobile telephone user sued a radio operator for taping a conversation the ham thought was about criminal activities, and giving the tape to the FBI. The court ruled it is not reasonable to expect privacy on a car phone conversation that can be picked up by anyone's radio receiver scanner.

•

"The Canadian Department of Communications (DOC) has officially announced that it is committed to entry level no-code Amateur Radio." . . . "We understand that ARRL Board Members are carefully following the progress . . . in Canada." (*W5YI Report,* 03/15/88; *Westlink Report,* 03/04/88)

•

Two petitions (RM-6274 and RM-6275) seeking expansion of the repeater segment of the 6M band to include 51-52 MHz have been filed with FCC. Commentary cutoff was March 18, 1988. (*ARRL Letter,* 03/29/88; *Westlink Report,* 03/04/88)

•

On February 22, Amateur Extra Class licensee Jerry E. Gastil, K6DYD — who pleaded guilty to intentionally jamming the San Diego FBI radio network — was fined $1,000 and placed on three years (FCC-supervised) probation.

The Court ordered him to perform five years of community service in the way of providing and maintaining a two-way radio system for the San Diego YMCA. He could have received 10 years in prison and been assessed a $250,000 fine. Whether he will be permitted to retain any or all of his FCC-issued licenses was to be determined later by the Commission. (*Westlink Report,* 03/04/88; *W5YI Report,* 03/15/88)

•

"The FCC will intrude into frequency coordination, despite earlier pronouncements to the contrary. A Chicago area ham has been told to put his repeater on the air by a local FCC official because he (the official) feels that the local frequency coordinator was not responsive enough in processing a request for coordination."

The ham asked ". . . pointedly what would happen if he did turn the system on, and it resulted in formal complaints from other hams or the frequency coordinator. They replied that they would then instruct all parties concerned to cooperate to find a solution, but did not elaborate any further." (*Westlink Report,* 03/04/88)

•

"The ARRL Board of Directors appears to be acting to defuse the potentially explosive situation created by the FCC's decision that multiple repeater frequency coordinators to coordinate the same amateur relay operations and spectrum in the same geographic region will be permitted." The decision is cited as leading to a lawsuit in California and ". . . the threat of similar actions in several other parts of the country including the Midwest and New England."

A resolution directed to the FCC by the Board of Directors of the ARRL ". . . is making its displeasure with the current situation very plain to the FCC and possibly to those now in the process of challenging the established

(please turn to page 16)

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 April 1, 1988.

For more information about the call sign assignment in the Amateur Radio Service, see Section 97.51 of the FCC Rules, or write to the FCC, Consumer Assistance Branch, Gettysburg, PA 17326.

Radio District	Group A Am. Extra	Group B Advanced	Group C Tech./Gen.	Group D Novice
0	WG0L	KE0UK	N0JCX	KB0CFX
1	NQ1N	KC1IY	N1FPV	KA1RUS
2	WF2H	KE2FT	N2IBH	KB2FKF
3	NO3C	KD3HM	N3GCM	KA3SWX
4	AB4HM	KK4ZW	N4SMH	KC4EKF
5	AA5FH	KG5IW	N5MJA	KB5FUB
6	AA6HS	KJ6FF	N6RUN	KB6WSG
7	WM7M	KF7IV	N7KUR	KB7EKE
8	WD8X	KE8QZ	N8JJE	KB8EJW
9	NY9H	KE9JZ	N9HJN	KB9ALH
N. Mariana Is.	AH0E	AH0AD	KH0AJ	WH0AAH
Guam	KH2I	AH2BY	KH2DG	WH2ALL
Johnston Is.	AH3A	AH3AC	KH3AB	WH3AAC
Midway Is.		AH4AA	KH4AD	WH4AAF
Palmyra, Jarvis Is.	AH5A			
Hawaii		AH6IY	NH6OW	WH6BXK
Kure Is.			KH7AA	
American Samoa	AH8C	AH8AD	KH8AF	WH8AAW
Wake Wilkes Peale		AH9AD	KH9AD	WH9AAH
Alaska		AL7JS	NL7NE	WL7BQY
Virgin Is.	KP2Y	KP2BN	NP2CM	WP2AFZ
Puerto Rico		KP4OW	WP4NV	WP4HWT

Subscription form

If you received this copy of Worldradio and you aren't yet a subscriber . . . this was your sample copy.

We sent it to you to acquaint you with our reporting on this great activity. Amateur Radio is exciting, challenging, stimulating, satisfying and very rewarding.
You are cordially invited to subscribe to, and be a part of Worldradio.

Yes . . I want to know even more about the wonderful world of Amateur Radio.

TO FACILITATE FASTER HANDLING OF YOUR SUBSCRIPTION, PLEASE USE THIS BLANK

(SOURCE) ☐☐☐☐ (59-60) 6

Name _____

Call _____

Address _____

City _____

State _____ **Zip** _____

☐ NEW	☐ Renewal	☐ Gift
12 issues	($1 per issue)	$12.00
24 issues	(91¢ per issue • save $2)	$22.00
36 issues	(86¢ per issue • save $5)	$31.00
Lifetime	(Be a WR super booster)	$120.00

Overseas Readers! Prices quoted are U.S. funds. Please include $3.00 extra/year for surface mail delivery outside the U.S. Subscriptions may be paid in U.S. funds drawn on U.S. banks, by International Money Order, VISA or MasterCard. Canadian Postal Money Orders (in U.S. funds) are also acceptable.

☐ Check enclosed ☐ MasterCard ☐ AmEx ☐ VISA

Card # _____ **Exp. date** _____

Signature _____

Please clip and mail to . . .

Worldradio™
1779 Tribute Road, Suite L
Sacramento, CA 95815

Thank you!

For Subscriptions (charge cards only)
TOLL FREE 1-800-365-SUBS 8 a.m. to 5 p.m. Pacific Time

Subscriptions received by the 20th of the month will begin with the issue dated two months from the month of receipt, i.e., if we receive the subscription by April 20, your first issue will be June, and will be mailed to you in early May.

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

SPECIAL EVENTS

North Dakota's 100th

The Forx ARC, Grand Forks, North Dakota will operate special event station WA0JXT on June 4, for the Northern Lights Council Boy Scout Centennial Camporall. Operation will be on SSB in the General portions of each band. Operation in the Novice voice portion of the 10M band is also anticipated.

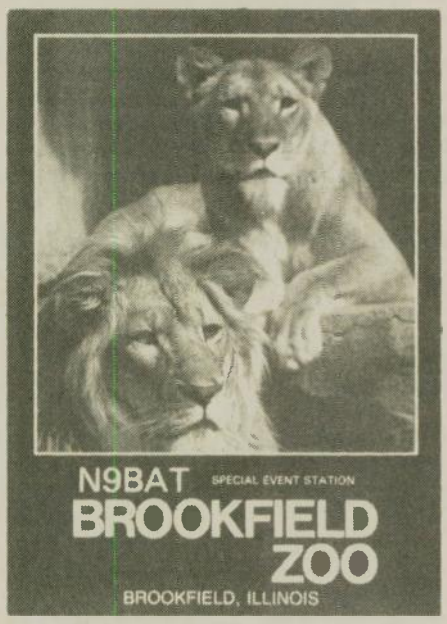
The theme of the camporall is North Dakota's Centennial. Operation is planned from 1600Z to 2400Z on June 4. For a QSL, send QSL card and an SASE to Richard Audette, WD0AQY, RR 2 Box 48, East Grand Forks, MN 56721. □

Ohio Wine Month

The Wireless Institute of Northern Ohio (WINO), an organization sponsored by the Lake County ARA, will be on the air with a special event station to commemorate Ohio Wine Month, on Saturday, June 4, and again on Sunday, June 5.

On Saturday evening we will be operating between 7 and 11 EDST (2300Z-0300Z), on 3860 and 7235 kHz. On Sunday we will be on between 11 a.m. and 3 p.m. EDST (1500Z-1900Z) on 7235 and 14235 kHz. The station will be located at a winery in Madison, Ohio, and will use the call KO8O.

A special 8½"x11" QSL certificate will be available (with legal-sized SASE) from: KO8O-WINO Weekend, 10418 Briar Hill, Kirtland, OH 44094.



This is the QSL card sent out by N9BAT last year. This year's will feature an elephant.

Brookfield Zoo

The Chicago Suburban Radio Association will operate its 5th annual special event Amateur Radio station, N9BAT, from the Brookfield Zoo in Brookfield, Illinois on Saturday, June 4, as part of the West Suburban Council BSA annual Scout-O-Rama. The Brookfield Zoo will host the Scout-O-Rama activities on its 210 acres. Over 2,500 scouts and their leaders are expected to participate.

Operation will be from 1500Z to 2300Z on the following SSB frequencies: 7.240, 14.260 and 28.350 MHz, give or take a few kHz for QRM. A 2M FM station will be operated on 146.55.

A special full-color QSL card will be made available for this event to all stations that reply with their QSL card and a #10 (business-size) SASE to CSRA, N9BAT, Special Event, P.O. Box 88, Lyons, IL 60534. — *Gary Lutgendorf, N9DKS* □

Escondido's 100th

The Escondido ARS will be operating N6WB during the week of June 19-25, in conjunction with the 100th anniversary of the city of Escondido, California. For large certificate, send QSL and large SASE to Glenn Bodeker, N6WB, 127 Walnut Hills Dr., San Marcos, CA 92069. □

Jambalaya Festival

The Ascension ARC will hold its Annual Jambalaya Festival Special Event from June 6 to June 12, 1500Z - 2359Z daily on 20-15 and 10M bands.

Special event package contains three Jambalaya recipes (different each year); special event certificate and card; club card with station, state and county worked; plus an Honorary Membership Certificate for three or more stations worked. Send $1 and QSL card with calls of stations worked to: AARC, P.O. Box 278, Sorrento, LA 70778-0278. The dollar covers postage and mailers. □

Rock Springs' 100th

The Sweetwater ARC will operate N7ERH and N7IQO from 1800Z, June 11 till 1800Z, June 12, to commemorate the centennial of the city of Rock Springs, Wyoming. Operations will be on the phone and CW bands on 3.923, 7.260, 14.300, 21.400 and 28.300.

For special commemorative certificate, send QSL card and 9"x12" SASE with two postage units to Richard A. Auble, N7IQO, 5020 Springs Dr., #34, Rock Springs, WY 82901. □

Summer vacation!

The Radio Club of Junior High School 22 N.Y.C., Inc. will operate WB2JKJ from 1100Z to 1900Z, June 27, in recognition of the first day of summer vacation for the school children of the Big Apple. Only 7.238 and 21.395 will be used.

For incredible QSL, send QSO information to "The Crew at 22" via our Callbook address. □

Arctic Circle via bike

On June 20, two intrepid radio amateurs — Dennis Blanchard, K1YPP, and Ken Campbell, KA1RED — will set out on an adventure to the Arctic Circle. This mini-DXpedition will be unique in that they will be traveling by motorcycle and will be on QRP for the entire trip.

Based on past experience, it will take approximately eight days to arrive at their destination: Inuvik (pop. 3125, 68.21°N., 133.43°W) in the North West Territory (NWT) of Canada. This is a bit difficult to judge because the last 2,100 miles of travel is on unpaved road, and the road is closed for periods to allow caribou herds to cross.

"We may stop to operate Field Day

for some period (June 25-26), which could also delay us some," says Blanchard. "For these reasons, we may not be active until July 2-3. We will try our best to be active by that weekend. On July 4th we will start the return trip, and operation will only be on those rare occasions when we are not too tired.

"It is unclear at this point, but we may also try to make it to a town called Tuktoyaktuk (pop. 770, 69.27°N., 133.02°W.) on the Arctic coast. There is a road that follows the frozen river ice to it in winter; whether there is any way to get there in summer is unclear. We are in correspondence with several hams in the area and should know soon."

The equipment will consist of a Heathkit HW-9, with Curtis keyer, and a collapsible vertical antenna for 40, 30, 20 and 15M. The vertical was chosen because there are not many trees in that area to attach an antenna to. In most cases the tallest thing around is a polar bear, and for obvious reasons, that is out of the question!

"We will try to give as many contacts as possible," adds Blanchard. "I will use 30M as more of a communications channel with the home QTH, but will look for contacts there as well. We will always use the highest frequency available (MUF). I (K1YPP) will make an effort to spend at least 15% of my time in the 15M novice band as well."

"As a rule we will operate near the QRP calling frequencies, 60 kHz in from the low end of the CW band. If too many stations are calling, we will move up to keep 60 a clear QRP channel. On the 15M Novice band we will operate around 21.140 MHz. I am investigating obtaining a VE8 call letter for the expedition; if not, we will use our calls. In either case, we should be

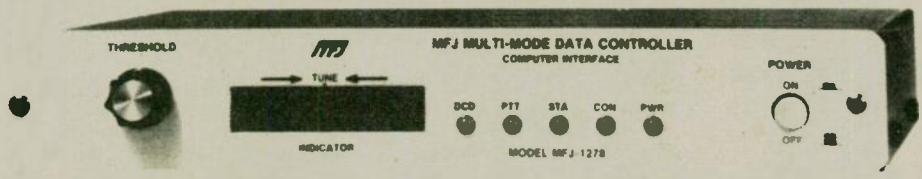
(please turn to page 14)

VE exam schedules

ATTN: Teachers — Send us an order for sample issues of *Worldradio*, one for each of your students!

Date	City	Contact	Notes
Alaska			
June 1	Anchorage	KL7HFQ (907) 243-2221	w/i
June 4	Fairbanks	AL7IF (907) 474-0842	w/i
June 4	Juneau	KL7KD (907) 789-0292	w/i
June 15	Eagle River	KL7HFQ (907) 243-2221	w/i
California			
June 4	Burbank	W6JEP (818) 848-9340	w/i OK
June 4	Hollister	WR6U (408) 637-2824	w/i OK
June 4	Riverside	(714) 780-2680	7-day p/r
June 4	San Diego	(619) 465-EXAM	p/r by 5/25
June 4	San Luis Obispo	W6ECY (805) 528-2934	w/i OK
June 4	Stockton	WB6IVX (408) 255-9000	w/i only
June 5	Chico	W6YKU (916) 342-1180	p/r pref
June 5	Pleasant Hill	WX6A (408) 255-9000	w/i only
June 11	Camarillo	N6SR (805) 484-4461	
June 11	Downey	K6OWA (213) 869-6683	
June 11	Los Altos Hills	KG6XF (408) 255-9000	w/i only
June 11	Novato	Hamilton AFB, Bldg. 549, 94947	w/i OK
June 11	Ridgecrest	WA4KZV (619) 375-7245 ND6Q (619) 446-3320	p/r pref
June 11	San Marcos	(619) 465-EXAM	p/r by 6/1
June 15	Eureka	KB6FIW (707) 442-9245	w/i OK
June 16	Fountain Valley	N6ISY (714) 775-6095	p/r; some w/i
June 16	Monterey	KX6D (408) 624-2564	w/i OK
June 18	Chula Vista	(619) 465-EXAM	p/r by 6/8
June 19	Sunnyvale	W6NLG (408) 255-9000	w/i only
June 25	Eagle Rock	WB6PSY (818) 710-1705; N6JFG (213) 258-9127	w/i
June 25	El Cajon/Escondido	(619) 465-EXAM	p/r by 6/15
June 26	Santa Cruz	KG6XY (408) 255-9000	w/i only
Colorado			
June 11	Denver	W0IJR (303) 366-9689	p/r pref
June 25	Pueblo	WB0YES (303) 948-2291	limited w/i
Delaware			
June 181	Wilmington	AWARE, 3208 Concord Pike, 19803	w/i OK
Florida			
June 3	Boca Raton	WS4G (305) 982-3885	
June 4	Sunrise	AK4Y (305) 476-8761	
June 16		KB4FO (305) 434-8211	w/i OK
June 6	Dunedin	KI4MO (813) 531-1911; AA4XI (813) 535-9509	w/i OK
June 7	New Port Richey	AA4FG (813) 849-1224	p/r pref
June 11	Miami	WN4L (305) 247-2944	some w/i
June 11	Venice	N4ET (813) 497-4014	
June 13	Ocala	NT4B (904) 237-5783	w/i
June 16	Pensacola	AA4W (904) 968-6499	w/i OK
June 18	Eau Gallie	WB9IVR (305) 724-6173	w/i OK
June 18	Melbourne	Victor Lau (407) 768-0888	w/i
June 25	Ocala	K4UBR (904) 629-6049/ N4NWN (904) 351-0489	w/i
Georgia			
June 4	Atlanta	N4ODI (404) 927-6296; WA4ZJJ (404) 461-8542	w/i
June 5	Atlanta	WB2YAD (404) 962-9582	w/i
June 11	Albany	K4XA (912) 883-7910	w/i only
June 11	Atlanta	KI4RD (404) 469-6430	w/i
June 18	Atlanta	KI4RD (404) 469-6430	w/i
June 26	Atlanta	WA4ABY (404) 875-9450	w/i
Idaho			
June 11	Boise	W7JMH (208) 343-9153	w/i OK
Illinois			
June 8	Leonore	Don Selbrede (815) 223-2848	
June 11	Oak Forest	NF9N (312) 448-9432	w/i OK
June 12	Granite City	N9MX (618) 344-8164	w/i OK
June 18	Loves Park	Gene Melton (815) 874-6867	
June 18	Morton	Denny Chestney (309) 662-1230	
June 21	Aurora	N9AKE (312) 892-1252	w/i OK
June 23	Chicago	W9WBY (312) 929-6550	
Indiana			
June 4	Indianapolis	Louise Clark (317) 241-1272	
June 4	South Bend	NI9Y (219) 255-4455	w/i OK
June 5	Muncie Hamfest	Peggy Coulter (317) 288-0481	
June 11	Hammond	Mike Kasrich (219) 962-5512	
June 11	Marion	Jerry Everhart (317) 664-5385	
June 12	Terre Haute	K9EBK (812) 466-2122	w/i OK
Iowa			
July 16	Altoona (hamfest)	NA0R (515) 967-3890	p/r by 6/16
Kansas			
June 11	Olathe	NK0B (913) 764-6347	p/r pref
June 24	Kansas City	NC0M (913) 262-0631	p/r pref
June 24	Topeka	NA0F (913) 828-3317	p/r pref
Maine			
June 4	Bangor	K1AG (207) 947-4051	
June 11	Ellsworth	AK1W (207) 667-2198	
June 12	Bath	ND1O (207) 443-2949	
June 12	Lewiston	K1MZB, 52 Pine St., So. Portland 04106	
Maryland			
June 4	College Park	NF3I (301) 963-4008	w/i
June 11	Salisbury	K3NOQ (301) 749-7444	p/r pref
June 16	Towsen	Ron Derencz (301) 765-2843	w/i
Minnesota			
June 4	St. Paul (hamfest)	K0QBE (612) 222-7253	w/i OK
Nevada			
June 18	Reno	K7HRW (702) 972-3933	30-day p/r
New Jersey			
June 4	Alpine	NZ2T (201) 348-0575	w/i OK
June 11	Cranford	N2XJ (201) 635-7686	w/i OK
June 16	Bellmawr	WA2VQG (609) 546-7710	w/i OK
North Carolina			
June 1	Raleigh	AA4MY (919) 847-8512	
Ohio			
June 11	Dayton	KA8ZWD (513) 426-1355	
Oregon			
June 4	Portland	Randy (503) 649-5066	w/i only
June 18	White City	KC7WO (503) 773-4687	30-day p/r; some w/i
Pennsylvania			
June 4	Erie	W3CG (814) 665-9124	w/i OK
June 18	Beaver County	KF3V (412) 843-6560	30-day p/r
July 9	Apollo	KR3P (412) 568-3577	30-day p/r
South Carolina			
June 18	Columbia	N4WR (803) 345-3373	w/i OK
Texas			
May 28	San Benito	WA2VJL (512) 399-0328	Novice only
June 4	Harlingen	WA2VJL (512) 399-0328	w/i
June 11	Austin	KF5NB (512) 272-8233	w/i
June 11	Midland	KT5G (915) 694-9450	w/i OK
June 11	San Antonio	NS5I (512) 681-0702	w/i
June 13	Brady	WD5H (915) 597-2561	7-day p/r
Utah			
June 18	Salt Lake City	K7HFV (801) 582-2438	
Virginia			
June 4	Virginia Beach	KA4UNC (804) 340-7697	w/i
June 16	Chesapeake	KC4YX (804) 424-4764	w/i
June 18	Manassas	W4PVA (703) 368-6050	w/i
Wisconsin			
June 19	Stevens Point	N9JW (715) 344-1182	

MFJ multi-mode data controller



MFJ *shatters* the 6 mode barrier *and* the price barrier with the MFJ-1278 and gives you . . . Packet, RTTY, ASCII, CW, WEFAX, SSTV and Contest Memory Keyer . . . 7 digital modes . . . for an affordable $249.95

Amateur radio's newest multi-mode data controller -- the MFJ-1278 -- lets you join the fun on Packet, RTTY, ASCII, CW, Weather FAX, SSTV and gives you a full featured Contest Memory Keyer mode . . . you get 7 modes . . . for an affordable $249.95.

Plus you get high performance HF/VHF/CW modems, software selectable dual radio ports, precision tuning indicator, 32K RAM, AC power supply and more

You'll find it *the most user friendly of all multi-modes.* It's menu driven for ease of use *and* command driven for speed.

A high resolution 20 LED tuning indicator lets you *tune in signals **fast** in any mode.* All you have to do is to center a single LED and *you're precisely tuned in to within 10 Hz* -- and it shows you which way to tune!

All you need to join the fun is an MFJ-1278, your rig and any computer with a serial port and terminal program.

You can use the MFJ Starter Pack to get on the air instantly. It includes computer interfacing cable, terminal software and friendly instructions . . . everything you need to get on the air fast. Order MFJ-1282 (disk)/MFJ-1283 (tape) for the C-64/128 and VIC-20 or MFJ-1284 for the IBM or compatible, $19.95 each.

Packet

Packet gives you the fastest and most reliable error-free communications of any amateur digital mode.

With MFJ's super clone of the industry standard -- the TAPR TNC-2 -- you get **genuine TAPR** software/hardware plus more -- not a "work-a-like" imitation.

Extensive tests published in *Packet Radio Magazine* ("HF Modem Performance Comparisons") prove the TAPR designed modem used in the MFJ-1278 gives better copy with proper DCD operation under all tested conditions than the other modems tested.

Hardware DCD gives you more QSOs because you get reliable carrier detection under busy, noisy or weak conditions.

A hardware HDLC gives you full duplex operation for satellite work or for use as a full duplex digipeater. And, it makes possible speeds in excess of 56K baud with a suitable external modem.

Good news for SYSOPs! New software lets the MFJ-1278 perform flawlessly as a WORLI/WA7MBL bulletin board TNC.

Baudot RTTY

You can copy all shifts and all standard speeds including 170, 425 and 800 Hz shifts and speeds from 45 to 300 baud. You can *copy not only amateur RTTY but also press, weather and other exciting traffic.*

A high performance modem lets you copy both mark and space for greatly improved copy under adverse conditions. It even tracks slightly drifting signals.

You can transmit both narrow and wide shifts. The wide shift is a standard 850 Hz shift with mark/space tones of 2125/2975 Hz. *This lets you operate MARS and standard VHF FM RTTY.*

You get both the American Western Union and the international CCITT character sets. Autostart for unattended reception and selectable "Diddle".

A receive Normal/Reverse software switch eliminates retuning and Unshift-On-Space reduces errors under poor receiving conditions.

ASCII

You can transmit and receive 7 bit ASCII using the same shifts and speeds as in the RTTY mode and using the same high performance modem. You also get Autostart and selectable "Diddle".

CW

You get a Super Morse Keyboard mode that lets you send perfect CW effortlessly from 5 to 99 WPM, including all prosigns -- it's tailor-made for traffic handlers.

A huge type ahead buffer lets you send smooth CW even if you "hunt and peck".

You can store entire QSOs in the message memories, if you wanted to! You can link and repeat any messages for automatic CQs and beaconing. Memories also work in RTTY and ASCII modes.

***A** tone Modulated CW mode turns your VHF FM rig into a CW transceiver* for a new fun mode. It's perfect for transmitting code practice over VHF FM.

An AFSK CW mode lets you ID in CW.

The CW receive mode lets you copy from 1 to 99 WPM. Even with sloppy fists you'll be surprised at the copy you'll get with its powerful built-in software.

You also get a random code generator that'll help you copy CW faster.

Weather FAX

***You'll** be fascinated as you watch WEFAX signals blossom into full fledged weather maps on your printer.* Other interesting FAX pictures can also be printed -- such as some news photographs from wire services.

Any Epson graphics compatible printer will print a wealth of interesting pictures and maps.

Automatic sync and stop lets you set it and leave it for no hassle printing.

You can save FAX pictures and WEFAX maps to disk if your terminal program lets you save ASCII files to disk.

Pictures and maps can be *printed to screen in real time or from disk* on IBM and compatibles with the MFJ-1284 Starter Pack.

You can transmit FAX pictures right off disk and have fun exchanging and collecting them.

Slow Scan TV

The MFJ-1278 introduces you to the exciting world of slow scan TV.

You'll not only enjoy receiving pictures from thousands of SSTVers all-over-the-world but you can send your own pictures to them, too.

You can print slow scan TV pictures on any Epson graphics compatible printer. If you have an IBM PC or compatible you can print to screen in near real time or from disk with the MFJ-1284 Starter Pack.

You can transmit slow scan pictures right off disk -- there's no need to set up lights and a camera for a casual contact.

You can save slow scan pictures on disk from over-the-air QSOs if your terminal program lets you save ASCII files.

The MFJ-1278 transmits and receives 8.5, 12, 24, and 36 second black and white format SSTV pictures using two levels.

Contest Memory Keyer

***Nothing** beats the quick response of a memory keyer during a heated contest.*

You'll score valuable contest points by completing QSOs so fast you'll leave your competition behind. And you can snag rare DX by slipping in so quickly you'll catch everyone by surprise.

You get iambic operation with dot-dash memories, self-completing dots and dashes and jamproof spacing.

Message memories let you store contest RST, QTH, call, rig info -- everything you used to repeat over and over. You'll save precious time and work more QSOs.

You get automatic incrementing serial numbering. In a contest it can make the difference between winning and losing.

A weight control lets you penetrate QRM with a distinctive signal or lets your transmitter send perfect sounding CW.

More Features

Turn on your MFJ-1278 and it sets itself to match your computer baud rate. Select your operating mode and the correct modem is automatically selected.

Plus . . . printing in all modes, threshold control for varying band conditions, tune-up command, lithium battery backup, RS-232 and TTL level serial ports, watch dog timer, FSK and AFSK outputs, output level control, speaker jack for both radio ports, test and calibration software, Z-80 at 4.9 MHz, 32K EPROM, and socketed ICs. FCC approved. 9x1½x9½ inches. 12 VDC or 110 VAC.

Get yours today and join the fun crowd!

FOR YOUR NEAREST DEALER
or to order call toll free
800-647-1800

One Year Unconditional Guarantee

MFJ

MFJ ENTERPRISES, INC.
Box 494, Miss. State, MS 39762
601-323-5869 **Telex:** 53-4590 MFJSTKV

MFJ . . . making quality affordable

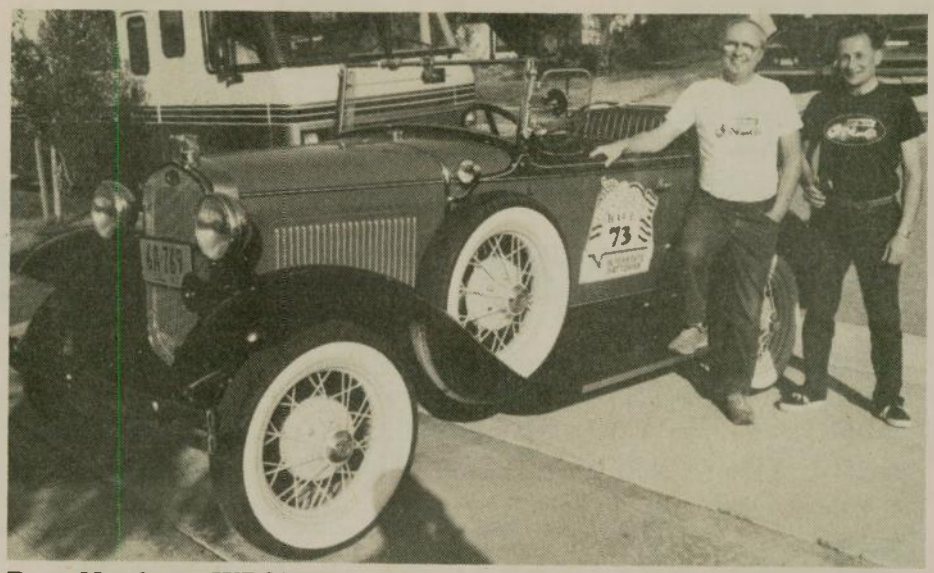
Special Events

(continued from page 11)

easy to find. There are not many VE8 stations on the air. Should we make enough contacts we will have a special QSL printed.

"For those who are interested, the motorcycles being used are XL600R and XL350R Hondas. We will set up camp where possible, and when available will stay at indoor accommodations to avoid bear problems. The motorcycle battery will provide power for the station.

"This configuration has been very successful in the past for me. Since 1973 I have been using an HW-7, with many modifications to withstand all the vibration, and it has been a very reliable piece of equipment. It was decided that the better performance of the HW-9 would be appreciated on this trip." □



Dave Northrop, WB6JUI (left), and Dick Raley, KX6B (right), are part of the race team that will race this 1930 Model A Ford Phaeton across America this summer in the Great American Race. All hams are invited along! To contact WB6JUI and KX6B, they will be mobile June 20 to July 4, beginning in Disneyland and finishing in Boston, Massachusetts.

Great American Race

The "Spirit of Redlands," a 1930 Model A Ford Phaeton, will be one of some 120 vintage automobiles to race from Disneyland to Boston in the 6th Annual Interstate Battery Great American Race this summer. All radio amateurs are invited to come along for the ride.

Dick Raley, KX6B, of San Jose, California, will operate a mobile special event station as part of the "Spirit" support team. Dave Northrop, WB6JUI, and XYL Laura, of Redlands, California — owners of the car — will be driver and navigator. The station will have daily operations beginning June 20 and ending July 4.

Operation will be 1500-2300 UTC each day, to commemorate the 80th year since the original Great Race. Frequencies are the lower 25 kHz of 40, 20 and 15M General bands and 10M Novice band. Some evening operation of 75M. Mobile packet on 145.01. For QSL, send SASE to Dick Raley, KX6B, 2610 Camloop Dr., San Jose, CA 95130.

The race across America for car "#73" and crew begins June 22 at Disneyland with overnight stops in San Louis Obispo, California (June 22); Sacramento, California (June 23); Elko, Nevada (June 24); Rock Springs, Wyoming (June 25); Denver, Colorado (June 26); Salina, Kansas (June 27); St. Louis, Missouri (June 28-29); Cincinnati, Ohio (June 30); Erie, Pennsylvania (July 1); Wilkes Barre, Pennsylvania (July 2); and at the finish in Boston, Massachusetts (July 3-4).

Amateur Radio operators are encouraged to be part of the race by contacting KX6B on HF phone bands, local 2M frequencies, and on packet 145.01. All hams and families are also invited to have an eyeball QSO of the "Spirit of Redlands" and the other vintage autos as they travel through their community during this exciting coast-to-coast race.

The "Spirit of Redlands" team is the very first entrant in this year's race, the first from the city of Redlands, and the only two-door 1930 Ford Model A Phaeton entered in the competition. The team's support vehicle will be the headquarters for the first special event station to accompany the race.

KX6B and WB6JUI look forward to hearing from you or meeting you this summer as they journey across the United States. □

Pan Am Games

Larry Olson, W9INE

The 10th Pan American Games were held in Indianapolis, Indiana from August 7 to August 23. Participating in the games were 38 member nations. During these 17 days, 33 major events were held.

Approximately 390 Amateur Radio operators participated as volunteers in the games. They served as communicators for a 12-mile cycling competition, equestrian events, a marathon, field and track events, athletics

village message center, PAX-I communications center and airborne security.

The Pan Am special event station, W87PAX, was on the air during the games. It operated 160M through 2M and contained five operating positions. It provided direct contact with participating nations and hams all over the world. It is estimated that over 30,000 contacts were made during the games. Hams who contacted this station can QSL to W9SU, P.O. Box 18495, Indianapolis, IN 46218-0495.

Nineteen hams were assigned air observer duty and provided 448 hours of volunteer service. These amateurs were licensed pilots with considerable local flying experience. They served as spotter/observers for airborne security, and as navigators on part of the numerous helicopter patrol flights. There were over 20 helicopters involved in the total operation.

Another team of hams supported and flew an ATV station aboard the helicopters. This was used in conjunction with airborne security, but flew only on special flights when the mission required it. The ATV station was re-broadcast through the local ATV repeater in Indianapolis. This gave coverage throughout Marion County at the various police agencies and PAX-I facilities. The ATV station was designed especially for the airborne missions and included a gyro-stabilized camera.

The Amateur Radio volunteers were coordinated by John Patton, WB9WPV. Clubs and cities who are considering Amateur Radio support for large events may wish to contact him for details on the Indianapolis Pan Am operation. □

Larry Olson, W9INE, beside a Bell Jet Ranger 206 used for airborne security at the 1987 Pan Am Games in Indianapolis.

Gettysburg reenacted

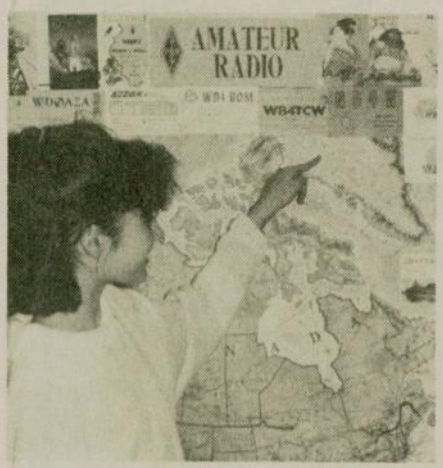
For those who were not able to "be there," the battle of Gettysburg will be reenacted on its 125th anniversary, June 22-26.

The Penn-Mar Radio Club and the Adams County Amateur Radio Society will be providing approximately 200 operators per day to staff the network of emergency and support radio network, and any volunteers are very welcome to participate in this history-making event.

Operators will be staffing portable/mobile stations, as well as the Adams County Operations Center in the Gettysburg Courthouse. Additional operators will be required to provide health and welfare traffic for the over 8,000 people expected to take part in the event.

Packet radio connected to the National Traffic System (NTS) will be utilized to keep participants in touch with their families during the event.

If you are planning to be in Pennsylvania in June, have no Field Day plans, and have a desire to be a part of history, further information on this event and where the volunteers will be needed is available from Ron Paull, N3ECL, at (717) 528-8412, or Bill Vanderhoof, WA2CRK, (717) 624-4835.
— *ARRL Letter* □



A student looks up the location of a recent contact — an immediate geography lesson. ***(KZ1Z photo)***

KZ200Z works over 1,000 QSO's

Pete Kemp, KZ1Z

Members of the Bethel Educational ARS (BEARS) made over 1,000 QSO's from January 9 to 15, in support of the "We the People" Bicentennial of the Constitution activities. The station was KZ200Z.

Contacts were made via SSB, CW, RTTY, and both HF and VHF packet. QSO's were also attempted on FSTV and slow scan TV, but without success. The use of the exotic modes, in addition to Novice frequencies, were especially appreciated by many operators.

The students really enjoyed this opportunity to contact other stations, looking up their locations, and filling out the QSL cards. They even took time to do some historical research on Connecticut. After all, we are the Constitution State! □

FCC Highlights

(continued from page 8)

coordination process itself." (*Westlink Report*, 03/04, 18/88)

•

"The dispute over who is the rightful repeater coordinator in the Kansas City area continues . . . as it does in other areas as well. . . . The controversy has now turned to who the ARRL will recognize as the coordinator in its annual Repeater Directory.

"Although listing in the ARRL Repeater Directory does not constitute League endorsement of a coordinator — nor FCC recognition, many amateurs (including repeater councils and coordinators) perceive that the ARRL's directory is considered by the FCC to be the wishes of the amateur community since no other such listing authority exists." Several repeater groups are reported to be considering withdrawing their data from the ARRL's Directory. (*W5YI Report*, 03/15/88)

•

The delay in FCC's processing of new amateur license applications has slipped from three to four weeks to: four to six weeks. (*ARRL Letter*, 03/29/88)

•

At their March 19 meeting, the ARRL Executive Committee authorized the withdrawal of a petition for amendment of Sections 97.31 and 97.515 of the Amateur Rules filed with FCC on September 9, 1987. "It was agreed that inasmuch as there are alternative means of solving problems arising from discreditation of volunteer examiners accredited by more than one VEC, more flexibility in arriving at satisfactory solutions would be afforded without a formal petition on file." (*ARRL Letter*, 03/09/88)

•

"On March 7, the FCC Commissioners approved the $1,450 fine against David G. Ackley, W4UWH, of St. Thomas, U.S. Virgin Islands for intentionally jamming another amateur station." Ackley had previously appealed the judgement levied by the FCC's Field Operations Bureau to the full Commission.

"Ackley (Technician Class) had been assessed the fine for transmitting on a frequency not authorized to holders of Technician Class operator licenses; failing to give his station call sign; and maliciously causing interference to another amateur station." (*W5YI Report*, 03/15/88)

•

A petition has been filed with the FCC by an amateur proposing two possible methods to provide direct emergency radio communications between local and state police and amateur operators. One system would be crossband where police would listen to an amateur frequency designated for the purpose, and amateurs would listen to an appropriate police frequency. The other would provide for simplex police operation on certain amateur frequencies. (*W5YI Report*, 03/15/88)

•

The recent report of a new version of FCC Forum 610 available January 1, 1988 indicates the "expiration date" (upper right corner of page 1) as December 31, 1989. However, FCC, Gettysburg, advises that 610's bearing the date June '84 and later are still acceptable. The revised 12/31/89 form ". . . differs from the previous Form 610 in that it is now useful for both of the FCC's volunteer examination programs." (**Worldradio**, 04/88).

•

"The FCC has an acting Secretary since William Tricarico resigned. He is H. Walker Feaster. Tricarico is now Assistant to the Secretary of the Nuclear Regulatory Commission." (*Roanoke Division Newsletter*, 02/88)

•

END-OF-MONTH LICENSE TOTALS

January	1988	February
43,970	Extra	44,205
98,408	Advanced	98,408
113,958	General	113,949
93,675	Technician	94,361
82,400	Novice	82,390
432,411	Totals	433,313

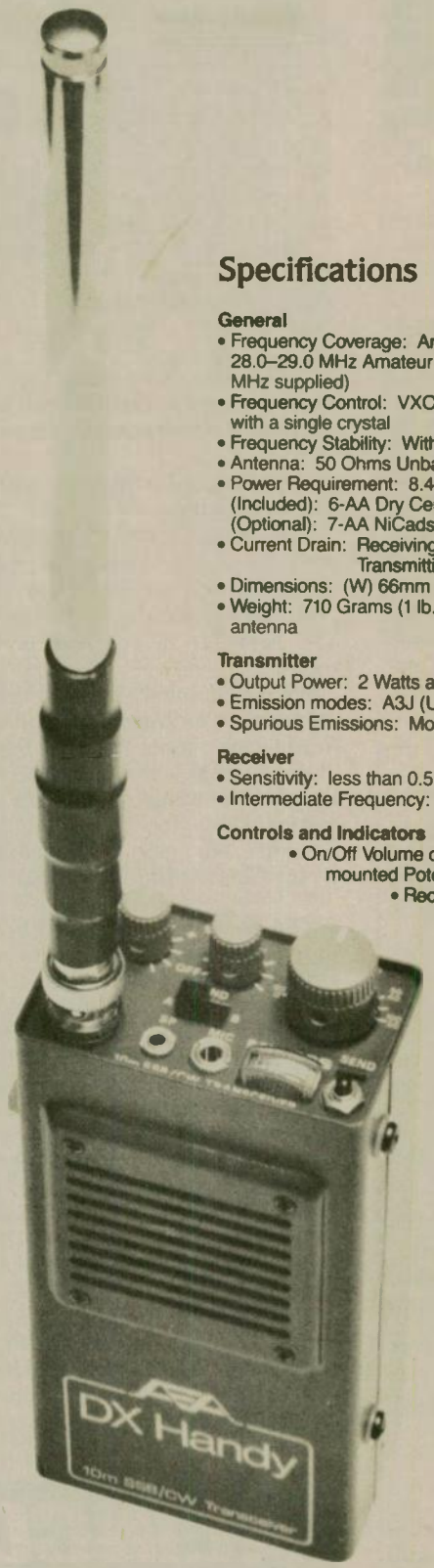
Handheld DX with the DX Handy™

The idea of handheld DX seems far-fetched, but it's actually very simple. The DX Handy is a battery powered (six penlight AA drycells included) SSB/CW transceiver with two watts output. DX Handy can also use nicad rechargeable batteries, or be powered with 9 VDC.

Two variable crystal oscillators (VXOs), each with 50 KHz range, can be selected with a top panel switch. Crystals for 28.250 to 28.300 and 28.300 to 28.350 Mhz are included, and other crystal ranges for the 10 meter band are also available at a nominal cost.

CW operation can be by either the built-in push button or with an external key or keyer. External speaker and microphone jacks are also provided, and the telescoping antenna is included. The DX Handy also has a top panel S-meter/ output power meter and an effective noise blanker circuit. DX Handy is housed in an attractive gray metal case comparing in size to popular VHF FM handhelds.

Ten meters is coming back strong. With DX Handy all amateurs, novice to extra class, can enjoy the thrill of working handheld DX.



Specifications

General
- Frequency Coverage: Any two 50 KHz segments in the 28.0–29.0 MHz Amateur Band (28.25–28.30 and 28.30–28.35 MHz supplied)
- Frequency Control: VXO provides 50 KHz of continuous tuning with a single crystal
- Frequency Stability: Within ±500 Hz from a cold start
- Antenna: 50 Ohms Unbalanced, BNC connector
- Power Requirement: 8.4–9.0 VDC
  (Included): 6-AA Dry Cells (1.5 volt/cell) = 9.0 VDC
  (Optional): 7-AA NiCads (1.2 Volt/cell) = 8.4 VDC
- Current Drain: Receiving - Approx. 70 mA
  Transmitting - Approx. 620 mA
- Dimensions: (W) 66mm × (H) 39mm × (D) 142mm
- Weight: 710 Grams (1 lb. 9 oz.) with batteries and antenna

Transmitter
- Output Power: 2 Watts at 9.0 VDC
- Emission modes: A3J (USB) and A1 (CW)
- Spurious Emissions: More than 40 dB down

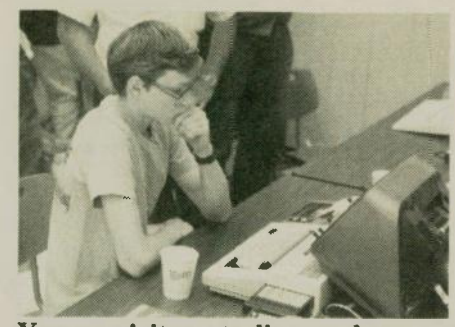
Receiver
- Sensitivity: less than 0.5 uV for 15 dB S/N
- Intermediate Frequency: 11.2735 MHz

Controls and Indicators
- On/Off Volume control Top mounted Potentiometer
- Receiver Incremental Tuning (RIT): Top mounted Potentiometer with center off detent position
- Frequency: Top mounted 50 KHz VXO
- Frequency Range: Top mounted 2-position switch
- Noise Blanker: Top mounted On/Off switch
- S/RF meter: Top mounted S/RF meter
- Built in CW key: Top mounted momentary switch
- External Speaker output: Top mounted 1/16" phone jack
- External Microphone input: Top mounted 1/8" phone jack
- Antenna Connector: Top mounted Female BNC
- Transmit Indicator: Top mounted Transmit LED
- Push-To-Talk: Side mounted momentary switch
- External Power: Bottom mounted 2.1 mm coaxial
- External key input: Bottom mounted 1/8" phone jack
- Mode Selector Switch: Bottom mounted 2-position switch
- Charge/External Power: Bottom mounted 2-position switch selecting 12 VDC external power function

AEA
Advanced Electronic Applications
P.O. Box C2160
Lynnwood, WA 98036-0918
(206) 775-7373

AEA Retail $379.95 **Amateur Net $319.95**

Specifications and prices subject to change without notice or obligation.



Young visitor studies packet station set up at the breakfast.

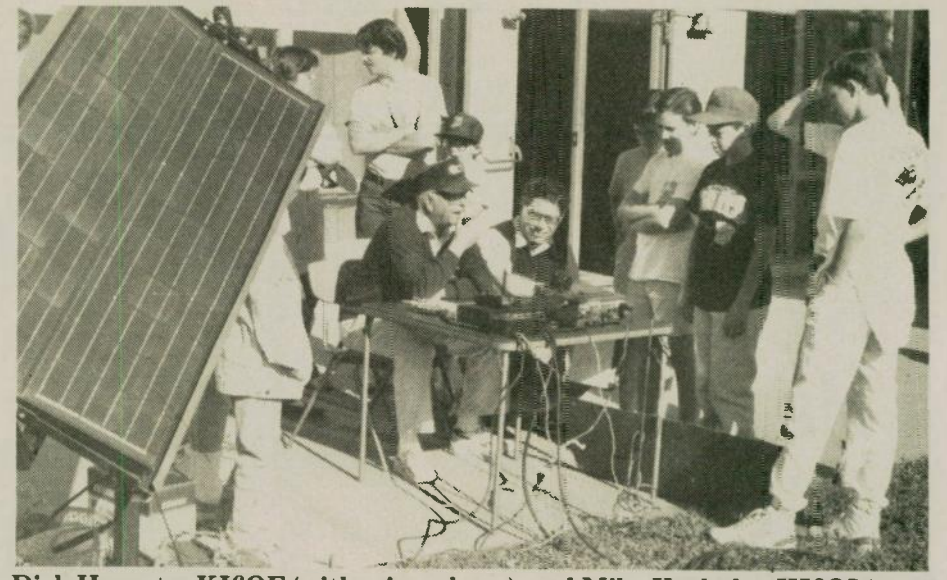
Pancakes

(continued from page 1)

Highlands High, arranged for the use of the cafeteria. Ozzie also picked up and delivered the pancake grills, and cooked pancakes.

Mike Kashuba, KI6OI, demonstrated CW and SSB operation all morning with his 100% solar-powered ICOM HF station, "sloper" dipole and Butternut vertical.

Ron Holden, KG6XX, and Bob Cloud, W6CFQ, set up and operated a VHF packet station and a packet BBS. They uploaded numerous personal greeting messages from our "customers" to NTS as a demonstration of Amateur Radio's traffic handling capability.



Dick Hagerty, KI6OF (with microphone), and Mike Kashuba, KI6OI (next to Dick), demonstrate the solar-powered HF station.

Bob Wold, K6ZLY, positioned his ATV camera to sweep the interior of the cafeteria automatically. A solid-state transmitter sent the picture on 434 MHz to a receiver across the room.

We continuously showed the ARRL videotape *The New World of Amateur Radio* and some ARCS Field Day video footage on a large-screen TV. Last, but not least, we set up an information table for "The ARCS Radio School," our club's Novice through Extra Class training school.

The breakfast succeeded because of individual and team efforts of many club members. Club Treasurer Dick Hagerty, KI6OF, handled ticket sales, was "orange juice man," and helped clean up. Sheila Brown, KB6PIN, and her daughter Melissa took charge of the kitchen, batter mixing, table wiping, coffee, juice, butter and syrup service. Norm Lucas, WB6RVR, showed up right after he got off of work at 5:30 a.m. and helped us get set up and "on the air." Bill Siver, KB6GCW, helped with ticket sales and delivery of the grills.

Besides setting up and running a packet station and BBS, Ron, KG6XX, his XYL Peggy, N6OQL, and son Eric provided signs, cooked and helped clean up. Milt Smith, WD6EHF, dispensed ARCS Radio School information and sold books and club memberships. Billy Norwood, WS6J, and XYL Jeanette cooked, took tickets and cleaned tables. Dan Wolfe, KB6WMF — one of our newest members — cooked and helped clean the grills. Club President Alan Christian WW6B, helped with setup, signs, cooking and cleanup.

Alan Christian, WW6B, pouring pancakes.

We are also planning a ham-swap in September to raise funds, and we're starting to solicit corporate grants.

The $500 we netted from this breakfast won't buy a complete station, but it's a start. The first station purchased will be installed at Highlands High, where Ozzie, KI6ZK, is preparing a secure area for it. Our goal is to purchase and install at least one station each year.

The ARCS received numerous re-

(please turn to page 51)

Students see world anew with help of Amateur Radio

Carole Perry, WB2MGP

During the week of November 15-20, Rocco Laurie Intermediate School 72 in Staten Island, New York was the host school in the New York City area to demonstrate the use of Amateur Radio in teaching geography skills. To celebrate "National Geography Awareness Week," I prepared special "demo" lessons for teachers and pupils to emphasize the importance of reinforcing geography concepts.

One lesson that had a tremendous impact on the observers went as follows:

The class was an average 6th grade Social Studies class who had never been in my Amateur Radio class before. Social Studies teachers and school administrators were present to observe the lesson. The aim was to demonstrate how Amateur Radio in a classroom can motivate and enhance the learning of geography skills.

I began by showing the various types of radios for different communications needs. I spoke with someone on a handi-talkie (a small, portable radio) and had the class guess how far away they thought he might be. To their surprise, the student was speaking to them from my office right across the hall. The next person we reached was in his car driving through Pennsylvania. He proceeded to tell the class the importance of having communications in his car as he travels across the country frequently. We were able to find his location on a map as he spoke to us.

"Local communicating is fun and convenient," I began, "but how many of you have ever spoken to a king or gotten a letter from a monarch from a faraway country?"

The room got very still as the children looked at each other in surprise. "No one?!" I reacted in an exaggerated manner.

"Well we have, right here in my Amateur Radio class." I proceeded to hand out copies of a letter sent to my radio classes from the Royal Palace at Amman Jordan. King Hussein is a famous Amateur Radio operator who congratulated my students on their work in the Amateur Radio program. The children were very impressed. I asked if anyone knew where Jordan was. Only a handful recognized it as a Middle East country.

I asked one child to locate Jordan on the world map in front of the room, and another to find it on the globe. While they were looking for the location of this new royal acquaintance, we discussed the differences between a globe and a wall map. Very few youngsters were aware of the different use each serves. (I.e., the globe shows only half of the world at one time, but is more accurate in distance, direction, size and shape.)

We spoke about the Middle East at this time and what is currently going on there. We discussed the type of government of Jordan, and the climate and geography of the country, so we would be prepared to speak intelligently to a citizen of the Middle East if we were about to contact one on the radio.

As the period drew to a close, we were not able to make a Middle East contact, but we did briefly speak with a ham operator in Panama. So the class got to see how Amateur Radio can be used to talk to people nearby, hundreds of miles away, and thousands of miles away to people in different cultures.

One of the best statements from a youngster came in response to my question, "How can we use the radio to help promote peace and good will with other countries?" The response from a 6th grade boy was "If we're talking, we're not fighting."

And that's how we ended the lesson.

Due to the success of this special week, National Geographic — *along with ARRL — has designated Laurie Intermediate School as a "demonstration" school in the New York metropolitan area, to promote national geography awareness.* □

Students figure out how to set up the dummy load at the class' base station.

If you're not subscribing to Worldradio, you're missing a lot of Amateur Radio news.

Signs and stickers

A fire has erupted and roadblocks have been set up. You receive a call from your Emergency Coordinator, asking if you can provide communications assistance.

After saying "Yes," you hurriedly transfer your portable packet gear to your car and race off to the nearest roadblock . . . only to be turned away by an officer. No amount of explanation will deter him, and you are finally forced to turn back home.

This problem *might* have been avoided had you attached a magnetic sign to your car. Several radio amateurs at the 2nd Annual Emergency Response Institute admitted that these signs often made a difference when they arrived on the scene of an emergency.

These 8″x19″ vinyl-faced signs are black and orange on a white background, and are designed so that individual call letters or group I.D. may be inserted. (Adhesive-backed letters and numbers are available at most hardware stores.)

The price is $8 per sign — $6 when ordering over 100 — plus $3 P&H (CA residents add 6% sales tax). Mail check or money order to: Sign Center, Inc., Dept. W, P.O. Box 4097, San Diego, CA 92104. IMPORTANT: Specify Part #AR-819. Signs available one to five days from receipt of order. Please include street address, as deliveries are via UPS.

Also recommended are plastic helmets and ARES/RACES logo stickers. Information on these can be obtained from Vallen Safety Supply Company, (800) 852-7256 (helmets) and California Labels, Inc. (stickers). Send a sample of the logo you want when ordering stickers. (Editor's Note: California Labels, Inc. informs us that a minimum of $500 worth of stickers must be ordered.) —*KA6TAL*

Correction

According to Joseph X. Brennan, KF6NO, of Upland, California, the CHU Canadian station mentioned on page 26 of our May issue is on 7.335 MHz, not 7.235. □

Log of a warrior

Rick Booth, KM1G

Whether or not a lot of people want to admit it, Field Day is in fact a contest. Sure, it's an emergency preparedness drill, a social happening, but the object — once the whole shebang is shebanging — is to contact as many other W stations as you can. Having dabbled in a few contests, I will herein offer a few suggestions.

KNOW THE EXCHANGE. Ours will almost certainly be 2A (Two Alpha) Connecticut — our division (2A) and our section (Connecticut). It should be posted over each station.

STAY ALERT. Socialize when you're not operating.

TRUST YOUR INSTINCTS. The call you copied is almost always right, if your subconscious tells you it is.

BE COURTEOUS. In the heat of action, it's tempting to be sharp with your operator or duper. The contest ends. Hurt feelings go on.

HOLD A FREQUENCY. When and if you get a frequency on which you can stay, stay there and CQ. Don't let somebody you work wrestle it away from you.

CHANGE BANDS OFTEN ENOUGH. Hunt fresh game. If the band is all duped out, change for a while.

KNOW THE SECTIONS. They won't send "San Joaquin Valley." They'll send "SJV."

ASK FOR HELP. Field Day is one giant classroom.

DON'T OVEREXTEND. Work an hour or so, and give it up.

BE A DUPER. Everybody can't be an operator. If you're a good CW op, we especially need you.

WRITE NEATLY. WRITE NEATLY. WRITE NEATLY. WRITE NEATLY. Think I made that clear enough? Rosetta Stone didn't pay her 1987 dues.

—*Tri City ARC, Stonington, CT* □

Better grounds for Field Day work

Scientists working on Army Grounding Analysis project have shown that grounding with the standard 6′ metal rod, or even several rods in parallel, is often unsafe and more often inadequate for good low noise communications.

They have found that a better ground can be established by stapling a 100′ length of standard 1/8″ stranded steel wire to the earth every 4 feet with 6″ pegs. A 3 lb. hammer (in lieu of the 10 lb. sledgehammer used with the ground rod) should be sufficient to drive the pegs.

Tests at all sites nationwide show the surface wire to be 32-95% more efficient than the 6′ grounding rod.

—*The ARA of the Tonawandas, NY* □

Field Day guide

Carry your valuable equipment into the woods and connect it to a noisy and erratic generator or other insufficient power source, climb trees to tie down antennas, operate in thunderstorms, work other stations in like condition and give everyone a 599.

Stations beginning set-up prior to one week before Field Day may operate for 24 hours, except that no operations shall take place between midnight and 2 a.m. local time when refreshments are being consumed, or between 6 and 7 a.m., when everybody will try to get some sleep.

—*Bull Sheet, via BCARA Tell-A-Ham, Butler, PA* □

KB1T address

Readers who are interested in obtaining the KB1T calendar reviewed by Norm Brooks, K6FO (April Worldradio, page 16), may write to: John David, KB1T, P.O. Box 1015, Amherst, NH 03031. □

No longer CVRA

Nita Morgan, N4DON

The Carolina-Virginias Repeater Association, Inc. now goes by the name of Southeastern Repeater Association, Inc. The change was made effective August 23, 1987.

Since its formation in 1971 (as the North Carolina FM Association), six more states have joined the organization: Virginia, South Carolina, Tennessee, West Virginia, Kentucky and Georgia. □

P.C. ELECTRONICS 2522 S. PAXSON LN. ARCADIA CA 91006 (818) 447-4565
TOM W6ORG MARYANN WB6YSS Compuserve 72405,1207

PC ELECTRONICS

SEE US AT DAYTON

$269*

AMATEUR TELEVISION

SPRING INTO ATV SALE

NOW YOU CAN GET INTO THIS EXCITING MODE WITH OUR ALL IN ONE BOX TC70-1 70CM ATV TRANSCEIVER AT THE 1988 SPRING SALE REDUCED PRICE FROM $299 TO ONLY $269 DELIVERED

TC70-1 FEATURES:

* Sensitive UHF GaAsfet tuneable downconverter for receiving
* Two frequency 1 watt p.e.p. transmitter. 1 crystal included
* Crystal locked 4.5 mHz broadcast standard sound subcarrier
* 10 pin VHS color camera and RCA phono jack video inputs
* PTL (push to look) T/R switching
* Transmit video monitor outputs to camera and phono jack
* Small attractive shielded cabinet - 7 x 7 x 2.5"
* Requires 13.8vdc @ 500 ma. + color camera current

Just plug in your camera or VCR composite video and audio, 70cm antenna, 12 to 14 vdc, and you are ready to transmit live action color or black and white pictures and sound to other amateurs. Sensitive downconverter tunes whole 420-450 mHz band down to channel 3. Specify 439.25, 434.0, or 426.25 mHz transmit frequency. Extra transmit crystal add $15.

*Transmitting equipment sold only to licensed radio amateurs verified in the Callbook for legal purposes. If newly licensed or upgraded, send copy of license. Receiving downconverters available to all starting at $39 (TVC-2).

WHAT ELSE DOES IT TAKE TO GET ON ATV?

Any Tech class or higher amateur can get on ATV. If you have a camera you used with a VCR or SSTV & a TV set, your cost will just be the TC70 and antenna system. If you are working the AMSAT satellites you can use the same 70cm antennas on ATV.

DX with TC70-1s and KLM 440-27 antennas line of sight and snow free is about 22 miles, 7 miles with the 440-6 normally used for portable uses like parades, races, search & rescue, damage accessment, etc. For greater DX or punching thru obstacles: 15 watt p.e.p. Mirage D15N or 50 watt p.e.p. D24N or D1010N-ATV.

The TC70-1 has full bandwidth for color, sound, like broadcast. You can show the shack, home video tapes,computer programs,repeat SSTV, weather radar, or even Space Shuttle video if you have a home satellite receiver. See the *ARRL Handbook* chapt. 20 & 7 for more info & *Repeater Directory* for local ATV repeaters.

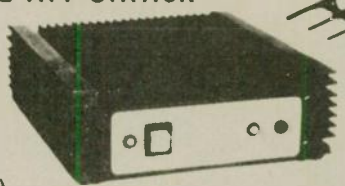
PURCHASE AN AMP *WITH* THE TC70-1 & SAVE!
50 WATT WITH D24N-ATV....$469
All prices include UPS surface shipping in cont. USA

COMPLETE ATV STATION

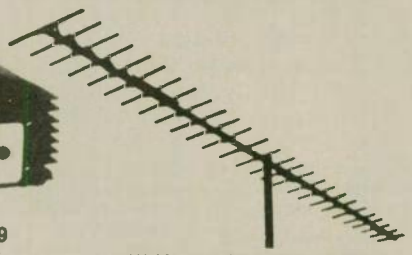
YOUR TV SET

YOUR HOME TV CAMERA

TC70-1...$269 (until June 1)
ATV Transceiver



Mirage D15N.....$129
(optional) 15 watts RF out.
Mirage D24N.....$209
(optional) 50 watts RF out.



KLM 440-27 14dbd $107
KLM 440-10X 11dbd $65
KLM 440-6X 8.9dbd $51

HAMS! CALL (818) 447-4565 NOW OR WRITE FOR YOUR SPRING SALE CATALOG OF ATV PRODUCTS

PUBLIC SERVICE

HOSARC helps Santa

Charles Salzman, WB2JQD

The members of the Hall of Science ARC WB2JSM visited the pediatric section of the Flushing Hospital in Queens, New York, on December 20, for the fifth Christmas season.

This year there were 26 children, varying in age from 1 month to 15 years old, who because of illness could not be home for the holidays. HOSARC came well prepared with gifts for all the patients and attending nurses. Eyes were popping when Santa spoke to each one individually from "his workshop up North" — the visitors' lounge.

Amateur Radio did much more than serve the public through communication. We reached the hearts and respect of all parents and families who were visiting their loved ones nearby.

Texas talks to Santa

Fred Wasielewski, WA2VJL

Children of all ages talked to Santa Claus via Amateur Radio on December 19, at a 2M station set-up in the San Benito Public Library, Texas. The "Santas" were my son, Fred KA5-UVY, and four winter Texans; the "North Pole" was my house.

After talking, the children were given candy donated by local merchants. Afterward, we went to Dolly Vinsant Hospital and did the same with shut-ins, doctors and nurses, and children in the waiting area.

A total of 110 children and 20 adults talked to Santa. Channel 4 (CBS) local TV ran a 60-second segment on the evening news (VHS available on request). They also plugged ARES and RACES, to be used on a future broadcast. □

SKYWARN in Shreveport

Robert S. Hawkins, WB5PHG

An emergency weather alert net known as "SKYWARN" has been developed in the northwest Louisiana, southwest Arkansas and northwest Texas area, with Shreveport as its hub. Amateurs with 2M capabilities and the local office of the National Weather Bureau (NWB) have joined forces to organize the AR-LA-TX system.

Bob Hawkins, WB5PHG, at Willis Knighton Medical Center

The purpose of this net is to provide the NWB with on-site tornado reports to be correlated with instrument readings, enhancing the accuracy of severe weather warnings and predictions.

NWB head meteorologist Ernie Ethridge trained each ham observer. Net control is set up in the local office of the NWB. The SKYWARN net can be activated only at the request of Ethridge and is operated by volunteer amateurs using a wide-coverage repeater owned by ARCOS, a local Amateur Radio club. The net covers a 75-mile radius.

Emergency Operation Center

The area also has a well-equipped Emergency Operation Center (EOC) which includes emergency command posts for police, fire and sheriff's departments, as well as mayor's posts for both Shreveport (Caddo Parish) and Bossier City (Bossier Parish). The purpose of the EOC communication section is to provide communication to the appropriate agencies in the event of an emergency. These services are provided by volunteer amateur operators.

The system has complete HF and 2M capabilities, as well as two-way radios for each emergency service: electric, water and gas departments, Red Cross, State Police, National Guard and Civil Air Patrol. These radios can be operated individually by each agency or from a central console by an operator under the supervision of Chuck Mazziotti, director of the Caddo-Bossier Civil Defense Agency.

When the SKYWARN net is activated, the EOC is also activated. EOC monitors all transmissions on the SKYWARN net.

Hospital services

The area Civil Defense agency has a hospital disaster system in effect. Volunteer radio amateurs installed a Ringo Ranger II ARX2-B antenna on the roof of Willis Knighton Medical Center with the coax terminating in the emergency room. PL259 and BNC connectors accommodate base, mobile and handi-talkie, a 12V amp power supply for mobile units, 115XAC power for base rigs and a 10-channel programmable scanner. In the event of a disaster or emergency, an amateur operator is immediately dispatched to all hospitals, TV stations and to the disaster site.

One channel is programmed for SKYWARN. Other channels go to the disaster rescue net, CD frequency, police frequencies and ambulance frequencies. This system has worked so well for the medical center that they have authorized an identical installation in South Park Hospital in South Shreveport.

Cost to the hospitals of these installations is for equipment only. Labor is donated by amateurs who install, maintain and operate the system for the hospitals. □

Fawcet Memorial 10K Run

Guice Johnson, WA4LHO

On a cool Saturday morning in January, 15 members of the Charlotte ARS met in the cafeteria of the Fawcet Memorial Hospital in Port Charlotte, Florida for a good breakfast and a final briefing before the start of the run. Actually it was two runs — a short run of one mile and a 10K run for the more adventurous.

Communications for the event was coordinated by Guice W. Johnson, WA4LHO. The hard work was contributed by: Jim Weir, KK4AM; Frea Begeal, N4OSK; Virginia Keller, KK4FH; Paul London, KI4XZ; Ron Milbourne, N4KPJ; Bruno Paras, N4EAR; Tony Commercio, N4QOD; Walter Hoettels, WB4ITH; Joe Keller, WD4JPF; Jeff Gunn, VE3FOQ; Pat Randall, KE4VV; Arie Cook, K4IB; Jocelyn Gunn, N4QPK; and Bob Webb, K9HBJ. □

Running an air show by remote control

Ed Mitchell, WA6AOD

From sunburn to the birth of a baby, Amateur Radio assisted Red Cross and Navy first aid teams in handling 400 medical aid calls for the U.S. Navy's Moffett Field (California) Naval Air Show, during the July 4th weekend last year. An estimated 1 million visitors had come to see aircraft displays and aerial demonstrations featuring the Navy's Blue Angels flight team.

In what is probably the largest regularly scheduled Amateur Radio public service event on the West Coast, Amateur Radio operators provided primary communications support for parking and traffic control, ramp security, surveillance, first aid, and lost and found. After three days of 11-hour shifts, the 120 radio amateurs who volunteered their skills were ready for a vacation.

The assignments

In the early dawn of Friday morning, under a cool, foggy cloud cover, the first group of Amateur Radio volunteers were matched with various Navy security officers. Long before the gates would open, these teams would head out to their assignments, to coordinate traffic and to direct the hundreds of thousands of visitors to available parking.

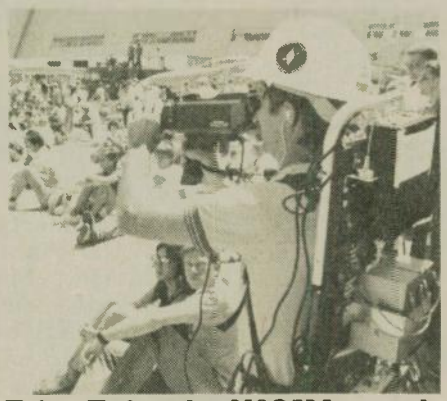
Other operators were assigned to security details, including the Navy's equivalent of a SWAT team. Some were assigned to ramp security, patrolling the aircraft tie-down areas and watching for trouble amongst the crowds of spectators.

Several hams were assigned to "shadow" key Navy personnel, including the parking chief and the security chief. The "shadows" kept the chiefs in constant communication with their Navy teams. Still other hams handled first aid and lost and found.

The command post

Five government agencies — along with Amateur Radio — coordinated their activities through the "command post." These included the California Highway Patrol (CHP), California Department of Transportation (Caltrans), Mountain View Police Department, Sunnyvale Department of Public Safety, and the U.S. Navy. At this centralized location, adjacent to the air base control tower, trailers and mobile command units were drawn into a circle. Sitting a few feet from each other, the agencies could coordinate their efforts to provide the best response for each situation.

In the midst of this complex was the Amateur Radio trailer, housing the ATV director and a bank of monitors, receivers and video switching equipment. The incoming video was edited



Eric Tofsrud, N6OIM, sends "live" crowd pictures to the command post, using his backpack portable 426 MHz video transmitter and 2M voice link.

and disseminated to monitors set up for the CHP and Caltrans dispatchers.

Outside, at a table nestled under a sun shade, sat the amateur 2M repeater net control position. In a unique configuration, two net control operators were simultaneously plugged into the same radio at all times. During heavy traffic periods, one net control operator would man the radio, while the other would discuss a problem and its solution with the appropriate agency.

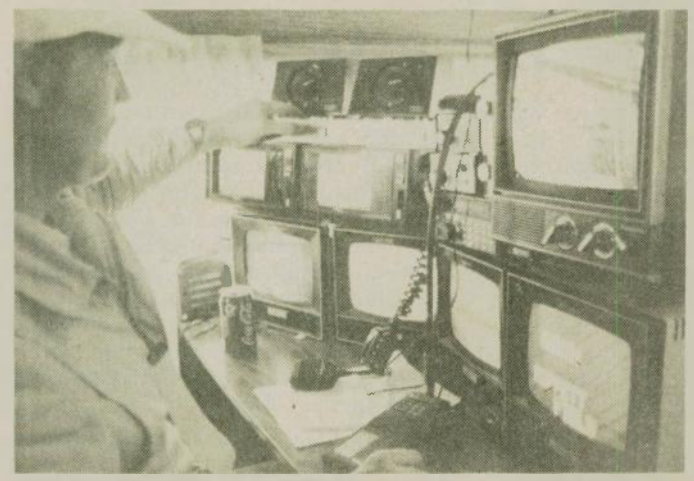
This set-up put Amateur Radio in a high-visibility, easily accessible position for coordinating the activities of the various agencies.

ATV

Amateur television (ATV) was used extensively to monitor traffic flows and the crowds of spectators. Up to five video cameras provided feeds to the ATV director, who edited the images and sent them to the CHP and Caltrans trailers, where they were also viewed by the Mountain View PD and the U.S. Navy.

Warren Terryberry, KB6HDA, organized and assembled the ATV system from the $12,000 worth of video equipment that he solicited from other hams and the Palo Alto Area Chapter of the American Red Cross.

Two backpack portable units were carried by volunteers to any location



Warren Terryberry, KB6HDA, organized the ATV surveillance effort. From the director's seat, he could select from a variety of ATV broadcast signals or remote cameras linked by cable. The edited images were then sent to television monitors at each public agency.

Andy Cromarty, N6JLJ (left), and Rick Joslin, WB5VUL (center), handle the net control positions at the Moffett Field Naval Air Show. Navy Master Chief Lind, using the radio of his "shadow" Cindy Dressler, KB6SKH, relied on Amateur Radio to organize parking for an estimated 1 million visitors over last year's 4th of July weekend.

that was best reached by foot. These television signals were transmitted back to the ATV director using the 420 MHz band. Another unit was installed in a Navy jeep and driven to various locations, as requested by the Navy, CHP or Caltrans.

One remote-controlled camera was connected via cable from the roof of the control tower building. Another was located atop the 198' tall Hangar 1 complex and transmitted its video via the new 900 MHz band. It was remotely controlled via a 440 MHz link frequency. Both units used an ingenious combination of antenna rotors to provide both azimuth and elevation pointing capabilities.

In scenes more reminiscent of Max Headroom than the typical Amateur Radio operation, the remote camera crews were dispatched to hot spots and coordinated via a 220 MHz voice repeater and a 2M remote. From time to time, the CHP, Mountain View PD or others would request shots of particular freeway interchanges, parking lots or other trouble spots. One of the portable units would be dispatched, and soon, live video was fed to the requester.

At first, the CHP and Caltrans were skeptical of ATV. The CHP stated bluntly, one day before the air show, "We don't need one of these [television monitors]." But one day later, when the roving jeep beamed back pictures of numerous cars parked along the freeway, directly under the Blue Angels flight path, and in an area that the FAA ordered off limits to spectators, the officials quickly changed their minds.

By Sunday, both CHP and Caltrans staff were "showing off" by bringing their senior management team around for tours. They all said they had never seen anything like this before at any event, anywhere.

Other operations

Packet radio was used at 221.5 MHz to link the lost and found area to the announcer's booth. Besides providing an accurate spelling of each lost child's name, the noise level inside the announcing stand made listening to the radio impossible at times. Packet provided the perfect solution.

As each message was received, the printout was handed to the announcer and read over the base PA system.

Inside Hangar 1, one of the two largest aircraft hangars in the United States, a large display of emergency service agencies attracted crowds of people. Thousands of visitors stopped to see the K6MF special event station, organized by the NASA/Ames ARC. Demonstations of packet radio, traffic handling, ARES, Morse code, HF, VHF and a continuously running video illustrated the exciting hobby of Amateur Radio. The Navy, impressed by Amateur Radio assistance in past years, installed a tri-band beam on top of the hangar, at a height of over 200 feet. Over 800 contacts were made on HF frequencies.

By remote control

The Amateur Radio operation was widely applauded by all of the public agencies involved. The use of ATV enabled them to run their own operations by "remote control." In years past, they were lucky if they had an officer who could check on a problem area, such as a busy freeway interchange or a distant parking lot. With the combined efforts of the voice and ATV operators, the command post was continuously provided with up-to-date information.

"See these shoes?" asked Master Chief Lind, in charge of all parking for the air show.

"Yes, why?" replied Ted Harris, N6IIU, the Amateur Radio coordinator for this year's event.

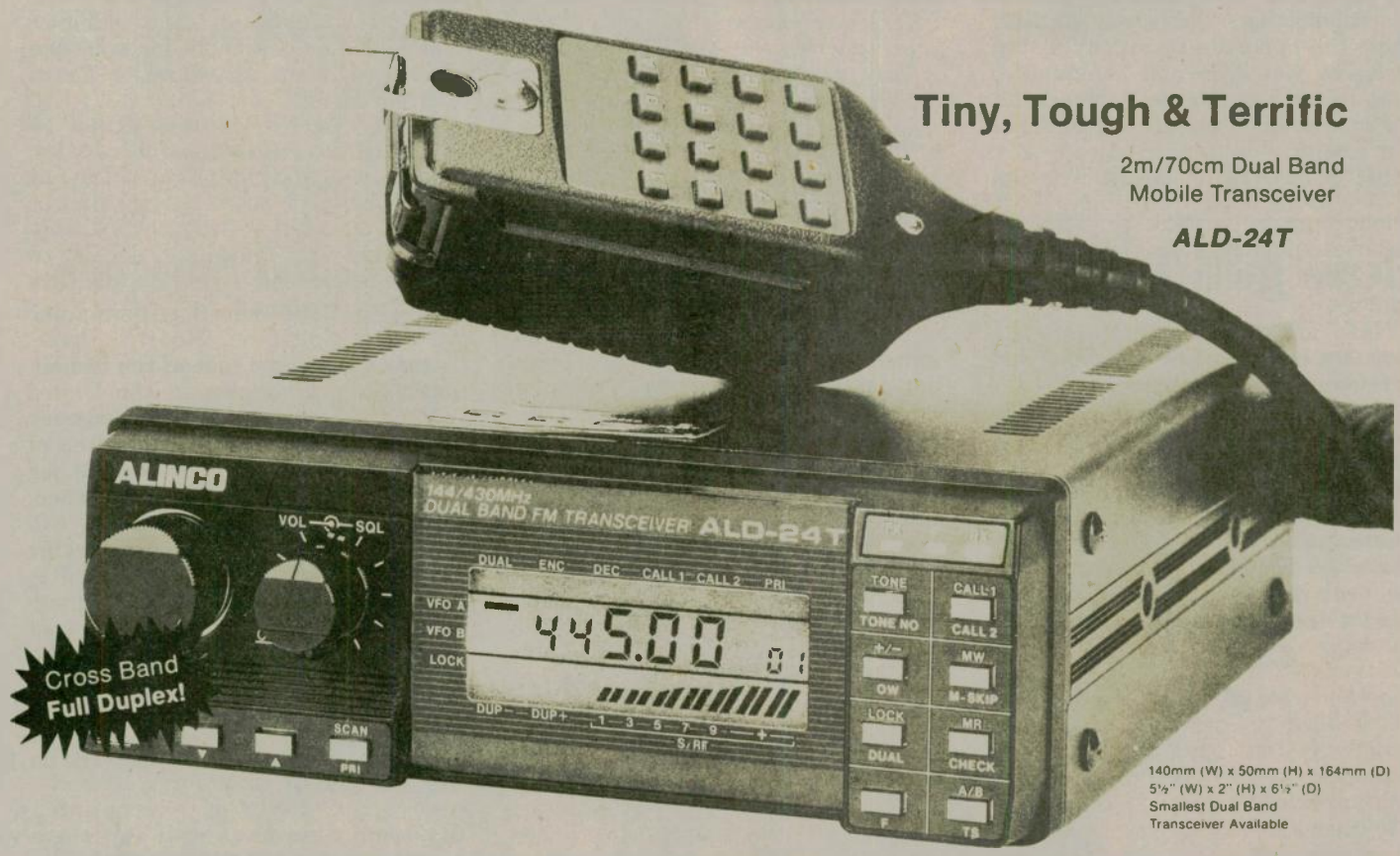
"By this time last year, my shoes would have been covered with dirt as I chased around to all the parking lots. This year, all I need to do is sit here [at the ATV monitor] and ask your people to show me any area of the base that I want to see."

(please turn to page 26)

ALINCO ELECTRONICS INC.

20705 South Western Ave., Suite 104 Torrance, CA 90501 · (213)618-8616

Dual Bander



Tiny, Tough & Terrific

2m/70cm Dual Band
Mobile Transceiver

ALD-24T

140mm (W) x 50mm (H) x 164mm (D)
5½" (W) x 2" (H) x 6½" (D)
Smallest Dual Band
Transceiver Available

With ALINCO's advanced engineering and technology, the ALD-24T 2m/70cm Dual Band Mobile Transceiver is designed to be the ultimate in compact size with an impressive array of features, allowing maximum flexibility in installation and ease of operation.

- 140-149.995 Mhz/440-450 Mhz
- CAP and MARS compatible
- 25 Watt High - 5 Watt Low Power both bands
- 21 Memory Channels
- Dual VFOs
- Large LCD
- **CTCSS Encoder/Decoder: Standard**
- 16-Key Autopatch Microphone with Up/Down Buttons
- Programmable Band Scan
- Memory Scan and Memory Lockout
- Ultra Compact & Light Weight
- Simple to Operate
- Programmable Standard and Non-Standard Repeater Offset

* Many more features, see your Dealer!
Also available:
25WATT 2m, 45 WATT 2m
and 25 WATT 450 MHZ.

*ALL ALINCO Products carry a 2-year Factory Warranty.
See your favorite dealer, listed below, for full details.*

Alinco's products are available at these fine dealers:

A-Tech Electronics-Burbank, CA.
Amateur & Advance Comm.-Wilmington, DE.
Amateur Comm. ETC.-San Antonio, TX.
AES-Milwaukee, WI.
AES-Wickliffe, OH.
AES-Orlando, FL.
AES-Clearwater, FL.
AES-Las Vegas, NV.
Austin Amateur Radio Supply-Austin, TX.
Barry Electronics-New York, NY.
Burghardt Amateur Center-Watertown, SD.
Colorado Com. Center-Denver, CO.
Delaware Amateur Supply-Delaware, DE.
Doc's Communications-Rossville, GA.
El Original Electronics-Brownsville, TX.
EEB-Vienna, VA.
EGE, INC.-Woodbridge, VA.
EGE, INC.-Salem, NH.
Erickson Communications-Chicago, IL
F&M Electronics-Greensboro, NC
Floyd Electronics-Collinsville, IL
The Ham Station-Evansville, IL.
The Ham Hut-Amarillo, TX
Hatry Radio-Hartford, CT.
Henry Radio-Los Angeles, CA.
Hirsch Sales Co.-Williamsville, NY.
HR Electronics-Muskegan, MI.
HRO-Anaheim, CA.
HRO-Atlanta, GA.
HRO-Burlingame, CA.
HRO-Oakland, CA.
HRO-Phoenix, AZ.
HRO-San Diego, CA.
HRO-Van Nuys, CA.
HSC-Sacramento, CA.
HSC-Santa Clara, CA
HSC-Sunnyvale, CA
International Radio Systems-Miami, FL.
Jun's Electronics-Culver City, CA
Kennedy Electronics-San Antonio, TX.
KJI Electronics-Cedar Grove, NJ.
Madison Electronics-Houston, TX
Maryland Radio Center-Laurel, MD.
Memphis Amateur Electronics-Memphis, TN
Michigan Radio-Mt. Clements, MI
Mission Consulting-Houston, TX
Missouri Radio Center-Kansas City, MO.
N&G Electronics-Miami, FL.
Omni Electronics-Laredo, TX
Quement Electronics-San Jose, CA
rf enterprises-Merrifield, MN
Reno Radio-Reno, NV
Rivendell Associates-Derry, NH.
Rogus Electronics-Southington, CT.
Rosen's Electronics-Williamson, WV.
Ross Distributing Co.-Preston, ID
Satellite City, Minneapolis, MN.
Sound North Electronics-Int'l Falls, MN
Tel-Com Electronic Comm.-Littleton, MA.
Texas Comm. Center-Houston, TX
Texas Towers-Plano, TX
VHF Communications-Jamestown, NY
Williams Radio Sales, Colfax, NC.

Canadian Distributor:
Texpro Sales Inc.-Burlington, Ontario
416/332-5944

Air show

(continued from page 24)

ATV and public service

ATV will play an increasingly important role in public service activities. An especially important feature of ATV is that it offers a technology that the public agencies do not have; public agencies do not have the spectrum bandwidth needed for television signals. This gives Amateur Radio the opportunity to stay a step ahead of run-of-the-mill communications technology and to demonstrate the special skills found only in Amateur Radio.

But while ATV is flashy, it is the grass roots support of the more than 100 Amateur Radio operators who brought their special training, skills and hand-held radios to work together in a disciplined environment.

A better compliment could not have come from Senior Chief Durham, head of security operations, when he said, "I wish the people on my [Navy] radio frequencies were as disciplined as yours. Could your guys come over and train us on how to do this?"

(If you're planning on being in the San Francisco Bay Area over the 4th of July weekend this year, or if you live in the area and want to volunteer your assistance, contact Ted Harris, N6IIU, at (415) 322-2143; packet 145.07 N6IIU-1 BBS.) □

How good is your mobile antenna?

VHF mobile operation through repeaters is among the most popular and frequent of Amateur Radio activities. Because of variations in terrain, extent of foliage on the trees and the generally low power of most mobile rigs, the mobile antenna needs to be carefully planned for maximum effectiveness.

Poor performance may only be the result of a poor location on the vehicle.

Let's consider a permanently mounted antenna in the center of the vehicle's roof as 0.0dB. All other locations are worse by the following amounts: mag mount, same location, -0.2dB; permanent trunk mount, -2.1dB; magnetic trunk, -2.8dB; magnetic hood corner mount, -2.4dB; magnetic trunk corner mount, -3.3dB.

In the last case, your effective radiated power is reduced by more than half!

—Albany ARA, Averill Park, NY □

OFF THE AIR

Ham summer school?

Do you know of any summer Amateur Radio schools for someone interested in an Advanced or Extra Class license?

ROBERTA FRIES, WB3KDS
7529 Old Receiver Road
Frederick, MD 21701 □

USCG and Navy nets

I received the following information from Gary Jackson, N5JHP, Paris, Texas, concerning U.S. Coast Guard and Navy nets:

Navy ARC — 7.260 MHz, M-F, 8 a.m. EST

Ex-Coast Guard Pilots — 14.260 MHz, every other Thursday, 1545 GMT

Ex-USCG Aircraft Radio Operators — 14.238 MHz, M-F, 1715 GMT

W.E. (BUD) JOHANNSEN, KA7DXU
Boulder City, Nevada □

Maritime mobile tips

In the August issue of **Worldradio** (page 17), a letter of mine was printed to discern what interest, if any, there may be in forming maritime mobile nets that would operate in the Novice frequencies.

Unfortunately, I received only three responses! Given such a low level of response, I can only assume that there isn't much interest in the matter.

Nevertheless, I very much appreciate the interest of the three who did respond and wish something could be done to service their needs — which could be very significant. The only solutions I have to offer for those with Novice tickets heading for blue water are as follows:

1) Upgrade — not as difficult as it may seem.

2) Make prior arrangements (i.e., schedules) with fellow amateurs.

3) Investigate the possibilities offered by the slow-speed (CW) nets, which usually use Novice CW frequencies. (See "Slow-Speed Nets: Learning the FUNdamentals of Handling Traffic," *QST*, February 1988.)

JOHN A. MENZ, NT6M/MM
Novato, California □

Public service attracts people to Radio

Amateur Radio activity in Mountain Home, Idaho (pop. 7,500) has increased in the past several months. Stan Massey, KE7JQ, and Dave Wallace, KA7IHO, have been instrumental in getting the local amateurs involved in public service activities. Operation has been on 146.52 due to the lack of a repeater, but communications have been excellent operating with hand-helds and some mobile vehicular sets.

Last May, communications were provided for the first annual "Run for Your Life" race conducted by local hospital officials promoting fitness for all ages from youngsters to senior citizens. In July, communications were furnished for the Agriculture Day (AG Day) parade from the center of town to the rodeo area, where the activities were conducted.

Then in September the same group participated with police, sheriff officials and ambulance services in controlling the largest parade ever held during the Air Force Appreciation Day, held annually in honor of personnel from Mountain Home Air Force Base.

Later in September, Communications were again provided under no-notice conditions for an emergency testing of medical services in the area. This was the first exercise of a magnitude capable of testing communications, the ability of medical personnel to respond to a mass injury stituation and to improve coordination between ambulance service, law enforcement and hospital security.

Interest in Amateur Radio is increasing as a result of these activities, and several spectators have become interested after viewing the static display during Air Force Appreciation Day. High frequency radio equipment and a van-mounted display were available, as well as ARRL hand-out literature. Novice classes are planned as a result of the recent publicity.

GEORGE WALBORN, W4ZEC
Mountain Home, Idaho □

Free publicity

On December 31, I was listening to WBZ radio while in my car. At that time, the station was inviting listeners to call them with a person's name and phone number anywhere in the world, that the listener would like WBZ to dial up and have an on-the-air, three-way QSO.

Not thinking much about it, I finally came home and continued to listen. At this time, the Norm Nathan talk show was on and the same format was being followed. It then dawned upon me that maybe I should try to contact my friend Yann, FD1LAW, a blind amateur in Lambersart, France with whom I have spoken on a regular basis for a year — on CW only.

I spent about one hour trying to go through the AT&T operator and then through the Paris overseas operator for directory assistance, not knowing the family's name or if they even had a phone. A phone number was finally obtained, through the use of phonetics, with the Parisian operator who stated the QTH was hundreds of miles north, out of her dialing area. But she said she would try as best she could (not bad when you consider I don't speak any French!). Finally, a number was obtained but I couldn't be certain this was the one I was looking for.

I then tried calling the WBZ talk show number which was busy. After the 19th try I got in, explained that I wanted to call Yann and wish him Happy New Year. I mentioned the fact that although we communicated many times before, I have never heard his voice. The producer took all the info and told me to hold on.

Twenty minutes later, Norm Nathan connected me. I told him I was a ham operator, gave him all names and information, and explained that though I have talked to Yann weekly, I have never heard his voice. Norm became quite excited and very curious about how this could be.

While connections were being made, he asked me the first question non-hams usually ask: How far can you talk? After I told him "All the far global places," he became even more inquisitive.

At that time, however, the connection didn't go through. At this point, Norm usually apologizes to the caller and wishes them better luck next time, moving on to the next caller. Not this time! He then told me he would try again (as witnessed by Kay, KB1SOK, listening).

While this second connection was going on, he asked me about conversations of "Iron Curtain" countries and was interested in one or two war stories I had to tell about them. At this time, the call didn't go through again. At this point, I figured the gig was up and was about to thank him when he stated he was going to try a third time (unprecedented). While this connection was being made, he asked me about my preference of CW to phone and what kinds of ham licenses

were available, and what one had to do to get one. After that explanation (again all over the air), the call was connected.

I talked to Yann, as did Norm Nathan, who mentioned he was thrilled to hear a conversation between two people who have communicated without hearing each other's voices. After a five-minute exchange, Yann sent a New Year's greeting to Norm and all WBZ listeners.

After Yann hung up, Norm thanked me for the call and wished me well. Afterward, Norm kept mentioning how great my call was and continued to mention Morse code at least three times in the two hours I continued to listen to the show.

FRANK MacKENZIE-LAMB, NG1I
Natick, Massachusetts □

Hams on Isle of Man

This communication discusses briefly my experiences as a radio amateur on the Isle of Man in 1985 and 1987, when I served as a volunteer on the archaeological excavations at Peel Castle.

In the middle of the Irish Sea, the Isle of Man has a strategic location and has had an interesting history. A 2M repeater on its highest mountain gives line-of-sight communication with parts of England, Wales, Ireland and Scotland.

Peel Castle has played an important part in the history of the island. It is on a small island guarding the entrance to the best harbor on the west side of the Isle of Man. It contains standing ruins of military, ecclesiastical and residential buildings, which frequently have been rebuilt with changing needs. Many ancient graves have been uncovered.

Recently the castle has received additional attention because, in the book *King Arthur,* Norma Lorre Goodrich has presented evidence why this was a headquarters of King Arthur, but her hypothesis requires confirmation.

For six weeks in 1985, I participated as a volunteer on the excavations to obtain material for an honors thesis in connection with my studies for a B.A. degree in British history at the University of Colorado. In 1986, at the age of 73, I received the degree — my fourth. The others, including a Ph.D., were in physics.

A chance QSO with Jack Etherington, GD5UG, led to his arranging for me to participate in this work. I received further help from Buddy Robins, who, as W2KN, had been a close neighbor when I lived in New York City and who, as GD0AVF, by a coincidence now has a second home very close to GD5UG. My landlord there was Colin Gerrard, GD4OEA. During that period, I was active on the air with the call GD0/W0JF with my antenna attached to the mast that holds his beam.

Largely because of my work on the Isle of Man, I have been elected as a Fellow of the Explorers' Club, and in April I attended the annual dinner and meeting of the club in New York City.

For three weeks in late summer of 1987, I returned to Peel Castle to participate in the end of a five-year program of excavations. My XYL and I occupied the home of GD5UG, and I operated his station under my call GD0/W0JF. At the same time, his XYL and he occupied our home in Colorado.

I made about 150 contacts, including some with old friends. One of these contacts was one with HAM Whyte, VE3BWY (ex-G6WY). When I made my first contact with him and met him in person in 1932, neither of us foresaw that one day we would have a contact from opposite sides of the Atlantic Ocean!

After the excavations ended, my friends Leslie and Nancy Moxon, G6XN, came to the Isle of Man. We had several days of pleasant hiking together. Moxon provided me my first "G" contact in 1931. In the intervening years, we have both worked on low-noise amplifiers for radar receivers and written articles on antennas. His well-known book on antennas is now having another printing.

My two visits to the Isle of Man have given me an insight into archaeology, a view of Amateur Radio in another country, and an unusual opportunity to keep in touch with some old friends.

YARDLEY BEERS, W0JF
Boulder, Colorado □

EXPRESS YOURSELF!

Yes, you can Ex-"Press" yourself right here. Your news, your views — they have a forum here.

Your reporting, your opinions, will be received by the most interested.

Don't hide your light under your amplifier. Process your words and send them to **Worldradio**, 2120 - 28th St., Sacramento, CA 95818.

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.*

Tony Cefalu, WB5SSD, of Metairie, Louisiana, is our June winner. Read on to see what kind of equipment Tony uses.

My equipment consists of Yaesu FT-107M with external VFO (FV-107), Yaesu FC-107, Yaesu SP-107P, Yaesu YO-901 and ICOM IC-740. *Amplifiers are:* Alpha 76-PA and Dentron MLA-2500. My band coverage is from 432 MHz through 1.8 MHz. *VHF* is an ICOM IC-271A and *UHF* is an ICOM IC-471A. *Packet radio:* ICOM IC-211 and Tucson TNC with an Apple II/e computer. *RTTY:* IRL FSK-500 and an Apple II/e. For *logging and contesting,* I use an IBM-AT with homebrew programs.

Antennas include: 2-element quad (10-12-15-20M), slopers (40-80-160M), and VHF and UHF antennas.

Awards include: DXCC Mixed, Phone, CW, RTTY with 313 countries on the Mixed List. Also included is the Golden Jubilee award completed within one week. Tony belongs to the Delta DX Association. □

Amateur "Hi"

William A. Frost, WD8DFP, of Miamisburg, Ohio, wins this month's AMATEUR "HI" with this entry.

A local hamfest had come and gone and had brought joy to many who attended, including my friend, Jeem Newland, WB8RXI. He had become the proud owner of a brand new ⅝-wave mag mount.

We were both very anxious to try it out and see if it was all it was touted to be. We hurriedly smacked the new antenna on the roof of his car, ran the coax through the window, and with a BNC adaptor we were on the air. Now we could easily switch antennas to the hand-held and see exactly how much better the ⅝ was over the ¼-wave.

We made a few contacts on the local repeaters and received "solid copy" reports. We were thrilled; it worked and worked good.

We then contacted a fellow club member, Jim Hall, KC8JV, and asked him to move off frequency to a simplex frequency so we could really give the ⅝ a test.

To our astonishment and dismay after several tests, at several different simplex frequencies, the ¼-wave outperformed the ⅝ hands down! How could this be? It's brand new! "That's one helluva ¼-wave," Jim kept telling us. "Wanta sell it?"

Finally, we realized that we had overlooked and forgotten the little 10W amplifier under the seat that lead to the ¼-wave mounted on the roof.

For a while, it was "one helluva ¼-wave." □

Check your license expiration date.

AWARDS

Westlink Young Ham of the Year Award

The Westlink Young Ham of the Year Award will be presented at the ARRL National Convention in Portland, Oregon, September 9-11.

Nominations will be accepted through June 30. Competition is open to any licensed amateur 18 years of age or younger, who has exhibited service to Amateur Ratio and to his/her local community.

For further information or to submit your nomination, write: Young Ham of the Year Award, c/o Sanford H. Hicks, WB6MQV, *Westlink Report*, 28221 Stanley Ct., Canyon Country, CA 91351.

—ARRL Letter □

Earn An Achievement

1988 will be the 30th year that radio amateurs have had their own program to publicize Michigan and its products. The governor will again award Achievement Certificates to hams who take an active part in telling the world of Michigan's unlimited resources, opportunities and advantages.

Certificates are awarded on the following basis:

1) A Michigan ham submits log information and names and addresses (if possible) of 15 or more contacts made to out-of-state or DX hams with information regarding Michigan.

2) An out-of-state ham, including Canada, submits log information and names and addresses (if possible) of at least five Michigan hams who relate facts to him about Michigan.

3) A foreign ham, excluding any resident of Canada, submits the call letters and name/address plus log information for at least one Michigan ham who has told him about Michigan.

4) Only QSO's made during Michigan Week, May 14-21, will be considered valid.

All applications for certificates must be postmarked by July 1, 1988 and mailed to Governor James Blanchard, Lansing, MI 48902.

State Bird: Robin; *State Fish:* Trout; *State Flower:* Apple Blossom; *State Tree:* White Pine; *State Stone:* Petoskey Stone; and/or local facts you are aware of. Spread the word to others about this award throughout Michigan Week! □

Presenting Paul Bunyan with his credentials are (*left to right*): Club President Vern Skretvedt, KA0KWM; Sheila Lapp, KB0AQF; Bemidji Chamber of Commerce Executive Vice President Tim Campbell; Club President Gary Johnson, N0FZP; Mayor Douglas Peterson; Carol Johnson, KA0AJD; and Howard Menge, KA0DFV.

Paul's an Extra

Because Paul Bunyan and Babe, the Blue Ox, are visited daily by 3,125 cars carrying tourists from all over the world, the Paul Bunyan Radio Club of Bemidji, Minnesota, thought it fitting that with the many amateurs visiting the area, he should be able to talk to them.

So on September 16, the club presented Paul with his very own license and hand-held. His call, of course, is PA0L/OX — an Extra Class license. His radio and license are now prominently displayed in the Chamber of Commerce building along with Paul's many other personal items. *—Howard Menge, KA0DFV* □

KD6PX — Ham of the Year

Jack Tunis, KD6PX, was named Ham of the Year by the Corona Norco ARC (CNARC) at its annual Christmas dinner. This was the first presentation of this award by CNARC.

In making the award, President Lee Owens, WD6DGI, noted that KD6PX has been a constant participant in the club's public service activities in Corona, California. As one example, during Corona's Bicentennial Parade, KD6PX's car was entered as a float and was festooned with a myriad of antennas and the CNARC banner.

KD6PX was originally licensed as W3IER in 1939. He spent his career with the FAA for 30 years and retired in 1970. His work covered the 11 western states, and as a result, he has had many calls, including W4KDK, W0ZXF, K6ENI, WB6UQJ and KH6HHL.

The Corona Norco ARC meets at 7 p.m., the first Monday of each month at the Corona Public Library. All local hams and those interested in Amateur Radio are welcome. — *Fred Roberts, W6TKV* □

WEIC Award

The Committee of the IRTS (Irish Radio Transmitters Society) has the pleasure of introducing the WEIC (Worked EI Counties) Award. This is the first award to be sponsored by the IRTS, and the rules governing its issue are as follows:

1) The WEIC Award, issued by IRTS, is available to licensed amateurs worldwide who have worked EI or EJ stations located in at least 20 of the 26 counties of Ireland (EI/EJ). It is available also to SWL's on a "heard" basis.

2) In accordance with IARU Region 1 rules, a claim for the WEIC Award must be accompanied by a QSO list, and by a statement from the applicant's national DX-Awards Manager that correctly filled in QSL cards are in the possession of the applicant. If this is not possible the applicant must submit all QSL's concerned to IRTS. Applicants in Ireland must submit QSL's with their claim.

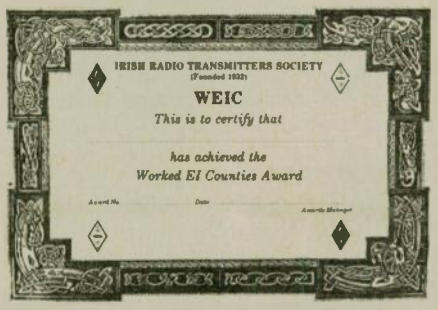
3) Contacts only on and after January 1, 1982 are valid.

4) There will be a charge of IR£ 3.00 or 10 IRC's for the award.

5) There will be no mode or band endorsements.

6) *For applicants in EI only:* All contacts must be made from the home station. Contacts made via repeaters or while operating mobile, portable or from an alternative address will not qualify.

The EI counties are Carlow, Cavan, Clare, Cork, Donegal, Dublin, Galway, Kerry, Kildare, Kilkenny, Laois, Leitrim, Limerick, Longford, Louth,



Mayo, Meath, Monaghan, Offaly, Roscommon, Sligo, Tipperary, Waterford, Westmeath, Wexford and Wicklow.

Send your application to: The WEIC Award Manager, Irish Radio Transmitters Society, P.O. Box 462, Dublin 9, IRELAND. □

Worked All 10

To qualify for the Worked All 10 Award, any Novice or Technician can mail a CW-mode QSL card from each of the 10 U.S. call areas to: Box 6834, West Palm Beach, FL 33405, along with a statement signed that no code copying device was used. The applicant will receive, by return mail, a handsome three-color 8½″×10″ framable award (numbered in sequence of issue date). A 9″×12″ manila SAE with 3 units of postage will get the award and QSL cards returned.

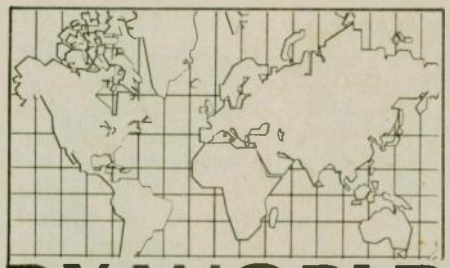
(This award is sponsored by club member Tom Schreckengost, N4FJL, who defrayed the design and printing expense.) □

1987 YL Anniversary Party results

Phone: *Gold Cup* — Darleen Magen, WD5FQX (NA YL), and Gianna Capitani, I1IEP (DX YL); *2nd Place* — Shirley Hooper, WD8MEV (NA YL), and CR6YH (DX YL); *3rd Place* — June Braunz, KM8E (NA YL), and Neomi Dor, 4X6DW.

CW: *Gold Cup* — Nancy Fontana, N2EVZ (NA YL), and Manuela Regaglia, 12KYM (DX YL); *2nd Place* — Elizabeth Anderson, VE7YL (NA YL), and Ramella Giannetti, I5UNA (DX YL); *3rd Place* — KM8E (NA YL), and M.E. Stafford, VK3KS (DX YL).

Combined SSB and CW scores: *Corcoran Award* — WD8MEV; *DX World Wide Hager Award* — Lucia Silva Santos Tome, CT1YH. No NA/CA entry. □



DX WORLD

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

Activities Calendar

28-29 May URE Ibero-America Contest (SSB)
28-29 May LABRE World Telecommunications Day
28-29 May CQ World Wide WPX Contest (CW)
04-05 Jun DARC Field Day (CW)
18-19 Jun JARL All Asian DX Contest (SSB)
25-26 Jun RSGB Summer 1.8 MHz Contest (CW)
02-03 Jul RCV Venezuelan DX Contest (SSB)

W-100-N

The following DXers have been awarded Worldradio's Worked 100 Nations Award:

329. W3HCW Carl F. McDaniel
330. W3BBL Coleman Murphy, Jr.

Worldradio's W-100-N was created several years ago and reorganized the latter part of 1977 as Series II by Charles "Sig" Signer, WA9INK, (former DX Editor), and myself with all contacts to have been made since January 1, 1978. To date we have issued a total of 330 certificates and/or plaques.

We are now considering some modifications to the award such as endorsements for additional nations worked. This would be similar to that of the DXCC program where endorsement stickers are awarded for DXCC countries over the initial 100. The Nation criteria will remain the same. More on this later.

Starting next month, we shall begin listing all the DXers who have received the W-100-N until all have been listed. If space permits, we will list them all in the first issue; otherwise it will be continued in the following issue(s).

Oman (A4)

When researching calls for this one, we found quite a selection of calls, with some active on more than one band. One of these calls, A4XJZ, has been reported on 3.795 MHz at 0230 UTC, 7.005 MHz at 0245 UTC, and 14.065 MHz around 0300 UTC. *Inside DX* reports that this station will be happy to change modes and/or bands upon request.

Also reported on the lower bands were A4XMB and A4XXB near 3.502 MHz around 2350 UTC.

On 15M, A4XKB has been active near 21.255 MHz from 1300 UTC. He has also been reported on 20M near 14.213 MHz at 0330 UTC. Other reports include the following:

A4XGY	14.150 MHz	0400 UTC
A4XZQ	14.243 MHz	2345 UTC
A4XJW	14.161 MHz	1500 UTC
A4XZK	28.527 MHz	1015 UTC

China (BY)

DX News Sheet reports that DJ0LC was to be in Wuhan for two to three months, commencing mid-March, in connection with the establishment of the first BY6 station. As of the early part of April we have seen no reports of such.

DXers have been working the BT0LS in Tibet and have been reported on both CW and SSB in the 20M band. BT0ZML has also been reported near 14.165 MHz at 1300 UTC mid-March.

According to *Inside DX*, Mike Bragassa, NS7Z, has been active from BY1QH in Beijing, and has been on 40M as promised. As Mike hopes to be at the big Dayton bash the end of April, perhaps you can receive your QSL personally — if you worked him.

Several other stations are active from the People's Republic of China. BY7KT in Guangzhou was reported on 14.002 MHz around 1300 UTC, with BY0AA in Wulumuchi, (Zone 23), on 14.025 MHz at 0130 UTC, with a good signal into Ontario.

From Lanzhou, BY9GA, has been very active. Most of the activity on this one is on CW. Look for this one between 14.017 and 14.030 MHz after 0030 UTC. The Western New York DX Association reports that the operator of BY9GA, a YL type, will change to RTTY when asked. Here is your chance to get a Zone 23 RTTY QSO!

Other calls include BY4RB near 14.029 MHz at 0130 UTC and 7.005 MHz at 1400 UTC, BY4WNG in Nanjing on 7.003 MHz at 1430 UTC, and BY1PK on 14.015 MHz at 0800 UTC.

With the sunspot activity improving we wonder how long it will be before one of the BY types will make the scene on 10M. Who will be the first BY to get a 10-10 number?

Martinique (FM)

Some might not necessarily count this one as DX, but it still counts for DXCC, and there are many newcomers who need this one. Several bands have been noted so those who want multiband contacts with this one, take a listen for the following:

FM4DN	14.190	0415
FM4DP	3.794	0115
FM5BG	28.528	1400
FM5BH	1.833	0145
FM5CW	7.006	0115
FM5ES	7.003	1015
FM5FA	14.089	0100
FM5WD	14.226	1915

There should be a little for everyone in the above: CW, SSB, RTTY, and even the top band!

St. Vincent (J87)

Sue Richardson, J87CD, is one to look for if you are looking for a YL contact from Saint Vincent. She is active on 10M and enjoys the 10-10 program and can often be found near 28.550 MHz from 1500 UTC. She frequents the various 10-10 nets and has also moved into the Novice enhancement segment near 28.316 MHz. If you work Sue, don't forget to give her your 10-10 number.

Also reported from Saint Vincent is J87BN who has been active on 20M CW between 14.028 and 14.033 MHz from 2000 UTC. We also have a report of a J88BN on RTTY near 21.082 MHz at 1700 UTC. We aren't sure if this isn't the same station with an error in the call — or two different stations.

Mid-March we had a report of J87BO on 28.019 MHz working the East Coast around 1430 UTC.

Svalbard (JW)

Checking through all the DX newsletters we receive each month we found at least a half-dozen calls reported, with all of them reported on 20M. Check the bands for the following:

JW5E	14.240	1400
JW5EDA	14.208	1700
JW5FG	14.161	1730
JW6WD	14.164	1200
JW8FG	14.047	1430
JW0B	14.020	0030

From the pages of *The Pileup* — the official newsletter of The Carolina DX Association (Editor Jim Douglass) — we find that JW8FG also visits 75M as he was reported near 3.798 MHz after 1215 UTC.

Svalbard, or the Svalbard Archipelago, consists of several islands. For IOTA purposes, it presently counts for three different island groups: EU-26 Svalbard Archipelago, all islands except EU-27 Bear Island, and EU-63 Kong Karls Land.

Jordan (JY)

King Alhussein does get on the air as we found a report for JY1 on March 22 around 0008 UTC on 14.160 MHz. That was the only report we saw for JY1, and we don't know if he worked anyone else or not.

QRZ DX reports that Alan Kaul, JY9RL, has been transferred back to Burbank with the NBC Network News. Alan's stateside call is W6RCL.

Active recently on 75M was JY9LC near 3.788 MHz from 0230 UTC. This station was also found working Europeans on 10M near 28.515 MHz around 1400 UTC.

Other calls reported from Jordan include the following:

JY4MB	14.187 MHz	1930 UTC
JY5CH	14.226 MHz	2330 UTC
JY5DK	14.187 MHz	1930 UTC
JY5DL	14.027 MHz	1430 UTC
JY5EA	21.053 MHz	1600 UTC
JY5HH	14.187 MHz	1930 UTC
JY5ZM	21.240 MHz	1200 UTC
JY9WF	21.026 MHz	1430 UTC

Incidentally, as most stations from Jordan prefer SSB, it would be your best bet to grab one of them if you hear him on CW.

Baker and Howland Islands (KH1)

The DXpedition to Baker and Howland Islands by Jim Smith and company has been a success. Reported in *QRZ DX*, they completed the operation at 0139 UTC on April 4, after 147 hours of operation. The first contact was made at 2338 UTC on March 28. A total of 27,416 contacts were made by the team, utilizing two calls: NO1Z/KH1 and VK9NL/KH1. Six operators were reported to have participated, including Jim Smith, VK9NS; Kirsti Jenkins, VK9NL, Cliff, NO1Z; Ron Kessler, N9CLS; Jean-Louise Domange, TR8JLD; and Mac McBirney, KV4AM.

The contact breakdown is as follows:

	NO1Z/KH1	VK9NL/KH1
160 CW	190	—
160 SSB	1	—
80 CW	136	193
80 SSB	407	—
40 CW	1,741	436
40 SSB	741	175
20 CW	3,365	370
20 SSB	5,681	427
15 CW	3,168	1,353
15 SSB	3,689	155
10 CW	1,428	219
10 SSB	3,145	366
6 SSB	—	30

All QSL requests will be handled by the Heard Island DX Association (Jim Smith). Be sure to include a little extra to help with the DXpedition costs. Also, if you worked Jim as T30JS, please include a separate SAE.

Mali (TZ)

Much activity from this one. *Inside DX* reports that Peter, TZ6PS, has been very active from Bamako after 2215 UTC. Look for Peter between 14.183 and 14.197 MHz.

Larry, TZ6VV, is also very active and has been reported on several bands. Try 21.287 MHz around 1545 UTC, 14.241 MHz about 2200 UTC and 7.007 MHz after 0200 UTC.

Gerald Belhague, TZ6BG, has been reported on SSB working into western Canada around 0500 UTC near 7.079 MHz, with Dennis, TZ6MG, spending

his operating time on 20M SSB. Listen for Dennis between 14.160 and 14.222 MHz after 0030 UTC.

Three other calls were found in the reports which include TZ6KL near 14.212 MHz from 0100 UTC, TZ0AA on 14.023 MHz at 0500 UTC, and a TZ6FIC working Europeans on 14.112 MHz after 1645 UTC.

DX Prediction

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

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

JUNE 1988

WEST COAST

UTC	AFRI	ASIA	OCEA	EURO	SO AM
10	(21)	19	15	18	18
12	24	20	14	21	21
14	28	21	13	23	28
16	30	17	(13)	25	33
18	31	19	(12)	25	36
20	25	24	31	23	38
22	21	28	38	15	35
24	18	31	40	13	24
2	(16)	33	40	(11)	20
4	22	34	38	19	17
6	23	32	31	19	15
8	19	23	17	16	14

CENTRAL USA

UTC	AFRI	ASIA	OCEA	EURO	SO AM
8	24	16	17	18	14
10	27	17	15	20	20
12	33	20	14	23	24
14	37	17	(13)	25	30
16	39	14	(13)	27	34
18	31	16	(12)	27	37
20	25	21	31	25	39
22	21	24	37	22	28
24	18	26	40	15	23
2	16	27	40	13	19
4	22	25	31	15	17
6	23	19	25	16	15

EAST COAST

UTC	AFRI	ASIA	OCEA	EURO	SO AM
7	23	19	21	17	15
9	25	19	16	20	19
11	31	21	14	23	24
13	35	19	(13)	25	30
15	38	15	(13)	27	34
17	39	17	(12)	27	37
19	28	19	(21)	27	39
21	23	23	34	25	37
23	19	25	38	21	26
1	17	26	40	15	21
3	18	25	32	15	18
5	22	23	26	15	16

Azerbaijan (UD6)

Long Skip reports that Serge, UD6DKZ, was worked from the Maritime provinces on 80M near 3.502 MHz at 0200 UTC. Look for Serge also on 21.017 MHz after 1300 UTC.

Other calls from this Soviet republic include the following:

UD6DBN	1.833	2130
UD6DC	3.501	0330
UD6DFF	14.005	0330
UD6DJ	14.213	1415
UD6DKW	7.004	0315
UD6DX	14.023	0430
UD6GF	21.039	1315
UD5SM	21.016	1315
UD6BJ	14.189	0400

Revilla Gigedo (XF4)

Inside DX states that XE1L has transportation available for an XF4 DXpedition and would like to activate such in May or June. Luis is looking for operators to accompany him on this DXpedition. If interested, contact Luis Chartarifsky, XE1L. The operation will include SSB, CW, RTTY and SSTV, 160 through 10M.

According to *The DX Bulletin*, an XE2HUM/XF4 was worked on 14.022 MHz at 2321 UTC on March 29. No further information on this one.

Swaziland (3D6)

If you worked a station with a 3D6 prefix, that is now history. According to the ARRL DX Bulletin, Amateur Radio calls from Swaziland will be using new call signs in the ITU series 3DA0AA through 3DA0BD, effective April 1. This change was to prevent the confusion between the 3D2 prefix used by Amateur Radio stations in Fiji and the 3D6 prefix used by those in Swaziland.

If you will check your ITU call signs (listed in the back of your ARRL Log Book), you will see that 3DA-3DM is assigned to the Kingdom of Swaziland, and 3DN-3DZ belongs to Fiji. With Swaziland using this cumbersome arrangement, it is going to raise interesting comments. One that we can think of is that of WPX purposes, as the new prefix will no longer fit. Normally, the new 3DA0 prefix should read 3D0, and if it were to be 3DA6, it still would be a 3D0.

Anyway, active calls such as 3D6BW and 3D6AN should now read 3DA0BW and 3DA0AN respectively, unless they give the whole thing up.

Uganda (5X5)

Most of the DX newsletters reported that Gerry Kambites, 5X5GK, was roughed up and jailed in Uganda. He was then ordered to leave the country minus all his possessions. This included his radio equipment, the logs and his medical belongings. According to *Inside DX*, he arrived in Kenya and was to leave for Montreal from there. This unpleasant event over a "disagreement" was in early March.

QRZ DX made reference to Canadian newspaper accounts that Gerry, his wife and four children were expelled from the country after the church was desecrated and their compound on Bukasa Island in Lake Victoria was attacked by the military. Taken away at machine gunpoint, he was detained in a cell for a week. He was released on bail after Canada protested through the British Embassy in Kampala. A week later the military took him from hs home and forced him to leave the country.

Amateur Radio from the country is anybody's guess. If my memory serves me correctly, Uganda has always been an unstable place to be. Most likely it would be safer to mount a DXpedition to Spratly Islands than Uganda. The last report of Gerry's operation was February 24 at 0012 UTC on 14.154 MHz. Maybe Gerry and Fred Laun, K3ZO (ex-LU5HFI), can exchange notes!

Maldive Islands (8Q7)

Bernie Welch, W8IMZ, reports that Bob Eslaire, DA2ER, was scheduled to operate from the Maldive Islands from April 19 to May 11, both SSB and CW. He was to receive his call upon arrival. If you worked Bob from this one, send your QSL requests via Bernie.

For 20M we have received reports for the following:

8Q7DA	14.054 MHz	2030 UTC
8Q7MT	14.205 MHz	2115 UTC
8Q7XE	14.262 MHz	1800 UTC

The last call has also been reported on 21.276 MHz at 1900 UTC and on 28.491 MHz at 1100 UTC working into Europe.

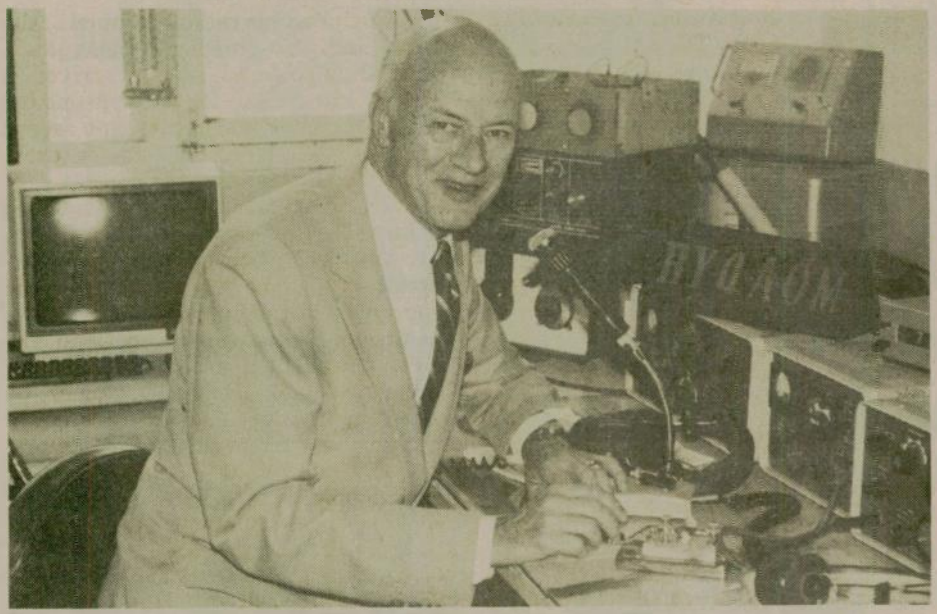
Rwanda (9X5)

9X5AA is located at the American Embassy in Kigali, acording to *Inside DX*, and should be active for the next two years. He prefers the nets on 20M such as Snooky's Net on 14.183, and the E.T. Net on 14.160 MHz. Listen for this one from 2030 UTC.

This station has also been found on 15M near 21.241 MHz around 1800 UTC, and later near 21.290 MHz around 2100 UTC.

DXCC notes

Those of you who are going to apply for the new 10M DXCC should remem-



What more could one ask for? Ken Miller, K6IR, works a pileup at BY4AOM in Shanghai, China during a business/pleasure trip in late 1987. Ken tells us that 1987 was an excellent year for him, DX-wise. He worked 268 countries on 10/15/20 SSB from his Maryland QTH. Ken was recently elected president of the National Capitol DX Association, with members ranging in age from 14 to 75 — all avid DXers.

ber not to submit your application prior to June 15. Processing will begin on July 1.

Also, be aware that in addition to the normal DXCC application forms (CD-164), you must also submit an additional form — Application for New DXCC Only (CD-253). This is really nothing more than the DXCC country list. Both forms must be submitted and are available from ARRL Headquarters — or Newington Radio Club — whatever you want to call them! Also, ARRL membership is required for all applicants in Canada, the United States and possessions, and Puerto Rico. ARRL membership is not required for foreign applicants.

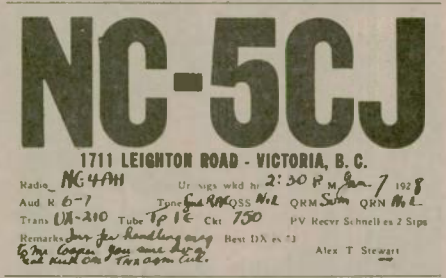
With the addition of Western Sahara to the DXCC Countries List it will be merely a reactivation of the deleted Rio de Oro (Spanish Sahara) listing, but under the new name of Western Sahara.

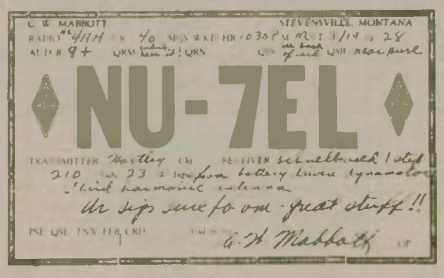
Antique QSL Department

The following QSL cards were submitted by long-time subscriber Al Miller, VE7KC, of Penticton, British Columbia. Al submitted cards for this column several years ago.

The two cards are from Frank Makepeace, VE6AH, whom Al worked recently. They both are 60 years old, dating back to 1928, when Frank was signing NC4AH in Edmonton.

Frank worked NC5CJ, owned by Alex Stewart of Victoria, back in the afternoon of January 7. No band is indicated, but according to the postmark, Alex mailed the card to confirm





the contact a couple of hours later. The card shows that NC5CJ transmitted with a UX-210 tube.

Two months later, NC4AH worked NU7EL of Stevensville, Montana, on 40M. This station was operated by C.W. Mabbott, whose rig ran 23W from a 210 tube. The power source was a battery-driven dynamotor.

Remember the dynamotors? On the back of the card the following note is included: "Say OM I believe we were QSO right exactly at the time that ur sigs were being reflected to earth in this part of the country, so that I was getting the full benefit of ur reflected wave at short distance. I noticed that when we quit, ur sigs would QSS down to R4 for a few seconds, then back up again, showing that ur reflected wave was moving away from you. So we must have had an 'optimum' as Ballantine says. — hi! FB aniway. A *real* R9 is rare — and this was real!!"

The whereabouts of Alex, NC5CJ, or NU7EL, today is unknown. Perhaps they are Silent Keys.

DXers Postal Service

Interested in obtaining mint stamps of the countries to which you want to send your QSL cards direct, and sending the DX station a mint stamp in lieu of IRC's or "green stamp"? We suggest you write to Ron Wolfgang, WP2ADC, at the DXers Postal Service, P.O. Box 8851, Trenton, NJ 08650, for information and prices. Ron also has a 24-hour answering machine at (609) 586-0850.

(please turn to page 38)

DX World

(continued from page 35)

QSL help

Dick Sisson, W5ONL, is looking for help in obtaining QSL cards for the following: ET3USE (1973), FB8WG (1987), FM7AQ (1976), FM7WF (1950), FM0A (1987), FO8AZ (1976), FO8DF (1974), FO8EG (1974), FO0KD (1987), HS0B (1987), KC6BY (1969), KM6EB/KH6 (1977), TR8RG (1979), VE1AWS/1 (1984), VP2LCT (1975), VP2LY (1972), VP8KD (1970), VR6HI (1979), 3B8AE/3B9, 6O1MT (1962), 6O1ND (1962), and 9U5BH (1962).

According to the *W6GO/K6HHD List* FO8DF goes to WB6GFJ, HS0B goes via the Bureau, VR6HI goes to ZL1AMO, and FM0A goes via P.O. Box 9, Floreal, 97251 Fort de France, MARTINIQUE.

Back issues of the *QSL Managers Directory* — edited by Gary Stilwell, KI6T, and no longer available — give the following routes: ET3USE via WA4AGT (L. Spencer, Charleston, SC), FM7AQ to K4KQB (J. Simon, Sterling, VA), FO8EG to CN8CG, VP2LY to VE3BMV, and VP8KD to K2JXY (G. Skivington, Scottsville, NY) or via G3LDA. None of the last three stateside calls are in the Callbook, so I have only listed their name and city; complete address most likely no longer valid.

Anyone have any suggestions on any of these calls?

Leroy Krenek, KG5GK, has offered his services as a QSL manager for DX stations. He is a retired Air Force officer and has been a radio amateur for 26 years. Interested DX stations can contact Leroy at 406 East Walnut, Lagrange, TX 78945-2860; (409) 968-5952.

And a QSL help for N6JM: CR7LE (1972), EL2AM (1982), VP2KBZ (1983), VK9ES (1971), and 5A1TG (1968). I should have sent a QSL to that last one when I worked him two decades ago, but I didn't copy him but a 3 by 3. The operator's name was Leo.

QSL routes

A61AB	—F2CW *(See Note 1)*
A92C	—G3XHS
CI8C	—VE3HBF
CI8CW	—VE1DH
CI8HO	—VE3EUP
CP8XA	—DL3NAZ
CY0SAB	—VE1CBK
EA0ENE	—EA2EE
ED0BAE	—EA4YW
ET3JIN	—JA1BK
EX0CR	—UA3CR *(See Note 2)*
EX0KP	—UK3KP *(See Note 2)*
EX0QCG	—UK3KP *(See Note 2)*
FJ0A	—F6AJA
FK8/	
DL4MDE	—DL1MAM
FO5BW	—W6JFM
FO0AQ	—F6EYS
FV8NDX	—F6AJA
FW/IK2CKR	—*(See Note 3)*
FY5YE	—W5JLU
GB4SPD	—GI4YWT
GB5CO	—G4OBK
HK0BKX	—W3GHK
HK0EHM	—WD9DZV
J37XD	—W2GHK *(See Note 4)*
J52US	—WA8JOC
J73XD	—WB2LCH
J87BO	—W1JP
JT0NP	—HA5NP
K9AJ/KH5	—WA2MOE
KP2AH	—WA2YMX
NM3U/KP2	—N3EHD
NO1Z/KH1	—VK9NS
OA4SS	—KB6J
ON9CDX	—ON5NT
OR0TT	—ON7TK
P40X	—KA1XN
P43ARC	—KA1XN
PJ2/PA0VDV	—PA0VDV
PJ4/K2NG	—K2NG
PJ7J	—K2KTT
PY1ZFO/0	—W9VA
SJ9WL	—SM4FTF
T5GG	—I2MQP
T20AA	—N4LJF
T22JJ	—JR2HCB
T22VU	—DJ9ZB
T30JL	—AK1E
T30JS	—VK9NS
T47DX	—CO7KR
T53RC	—I2JSB
TP0CE	—*(See Note 5)*
TW4O	—F6AJA
TW5E	—F6AJA
TW6A	—F6AJA
TZ6VV	—N0BLD
V31IEN	—WA5Y
V31KA	—KM5R
V47KLC	—W2GHK *(See Note 4)*
VI88VIC	—VK3ER
VK9LC	—JH9GRM
VK9NF	—DJ5CQ
VP2MCH	—WB2LCH
VP2MDL	—WA8FNY *(See Note 6)*
VP2MET	—W1SD
VP5DX	—KB9TK
VP8VK	—G4RFV
W0RLX/KH5	—WA2MOE
XE2GBO	—WA5LIG
XE2GDK	—N6CD
YB1AQC	—W4FRU
YB0AQL	—Yasme
YB0AQM	—Yasme
YE4SUN	—YB4FNN
YE7SUN	—YC7DF
ZD8HCF	—KL7HCF
ZK1AR	—WB6HGH
ZK2JS	—WB2JCE
ZL5BA	—VK7RM
ZL0AAC	—DL1MAM
ZY5EG	—N2AU
4K0D	—RA3YA *(See Note 2)*
4K0E	—UA1AFM *(See Note 2)*
4K0DC	—UA3AOC *(See Note 2)*
4K0DX	—VE3CDX
4K0GZ	—UW3GZ *(See Note 2)*
4U1ITU	—KU2C *(See Note 6)*
5N0WRE	—K4JZQ
5W1GX	—HB9CVX
6D2DX	—NI7Y
9M2QQ	—DL2GAC
9M2QR	—DF5UG
9X5AA	—W4FRU
HJ0NZI	—P.O. Box 1019, San Andres Island, COLOMBIA
J87CD	—P.O. Box 975, SAINT VINCENT
LS8E	—P.O. Box 20, Solano 1881, BA, ARGENTINA
SV4AFY	—P.O. Box 1232, Volos, GREECE
TU4CO	—Box 12, BP54, Abidjan 12, IVORY COAST
3V1ALI	—Braik Mollouche, P.O. Box 5114, Mahdia, TUNISIA
5B4TI	—P.O. Box 7121, Nicosia, CYPRUS
5K7U	—P.O. Box 57, Bucamaranga, COLOMBIA
6T2MG	—P.O. Box 49, Khartoum, NORTHERN SUDAN 100288
6W1AD	—P.O. Box 3204, Dakar, SENEGAL

Notes

1. Use 1988 Callbook address only.
2. All cards for Soviet QSL managers go via P.O. Box 88, Moscow, unless otherwise stated.
3. Cards for CW contacts go via IK2CKR; SSB contacts, IK2GNW.
4. Or WB2LCH.
5. Cards for CW contacts go via F6EYS; SSB contacts, F6FQK.
6. This route applies for contacts made during the 1988 ARRL SSB DX Contest.

Our news items each month come from many sources, including the following: LA5HE, W5ONL, WP2ADC, W8IMZ, K6QS, JE1JKL, KG5GK, VE7KC, W9LNQ, Kansas City DX Club (AB0X), Salt City DX Association (KB2G), Western New York DX Association (KA2VYW), The Carolina DX Association (K2SD), Western Washington DX Club (K7ZR), *Long Skip* (VE3IPR), *DX News Sheet* (G4DYO), *The Long Island DX Bulletin* (W2IYX), *The DX Bulletin* (VP2ML), *Inside DX* (N2AU) and *QRZ DX* (W5KNE).

Contributions to this column are always welcomed. If you have any DX item you would care to share, please keep us in mind. As for DXpeditions, please allow time to get the news out. Remember, this is a once-a-month publication. To let us know two weeks prior to the DXpedition is of little value. Material must reach us no later than the first few days of each month for the issue that will be in the mails the following month (e.g., June 10 for August issue). Best of DX es 73! de John N6JM. □

Iris Colvin, W6QL *(left);* Toshi Kawanishi, JA8RUZ *(second from left);* Fr. Moran 9N1MM *(third from left);* Lloyd Colvin, W6KG *(right);* and other Japanese UNICEF operators, 9N7YDY. Photo was taken while the Colvins were in Nepal last winter.

Colvins reminisce

Jakarta, Indonesia
March 30, 1988

Dear Friends,

We have been trying to stay in California each year from April until October and travel in various countries of the world from October to April. This last six months, we were in Mexico (XE2GKG), Nepal (9N5QL), Bangladesh, Bhutan, Burma, Sri Lanka (W6KG/4S7) and Indonesia (YB0AQL).

We stayed for several weeks in each of these countries, and operated Amateur Radio in each country that would permit it. We tried everything that we could think of to obtain licenses in Bangladesh (S2), Bhutan (A5) and Burma (XZ), but were unable to obtain licenses in these three countries.

We did our best to leave these countries with a favorable impression of ourselves and Amateur Radio. The best thing we can report is that all three countries did *not* come right out and refuse us licenses. They all said that maybe, at some future date, they would comply with our request. We will try to keep after them and perhaps we can return some day and operate.

Our most recent operation was from Indonesia, as YB0AQL. We were astonished to discover that Indonesia is the fifth largest country in the world, and that the capital city, Jakarta, has a population of nearly 8 million people! We stayed at the QTH of "Wan," YB0SY. He is a leading DXer and has large monoband beams for all bands. We used his antennas but our own equipment.

As YB0AQL, we made nearly 8,000 QSO's including radio amateurs in 133 countries. These figures include our participation in the CQ WW WPX Contest in March 1988.

LLOYD COLVIN, W6KG
IRIS COLVIN, W6QL □

Writing dates

What form the date should take when filling out a QSL . . . the date July 6, 1988 is used as an example.

6/7/88 is commonly used in the United States.

7/6/88 is used by the U.S. government and foreigners.

7/VI/88 of July 6, 88 cannot be misinterpreted.

88/6/7 is the correct way, but who uses it?

No suggestion is given relative to which date to use, but it is easily seen that spelling the month would prevent an error.

And always use UTC, never your own standard time.

—ARNS, Fort Wayne, IN □

The world on wire

Alan Fener, N3EHD

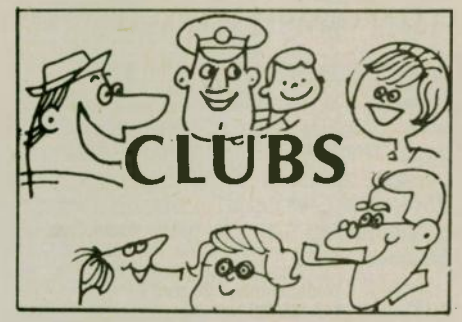
I'd like to respond to my detractors — who comprise most of the free world — when they disparage my DX contacts because "it's easier with a beam." Well, if it is a little easier with a beam, that only points up why it isn't very much harder on wire.

A standard tribander boasts around 8dB forward gain on 20 meters — big deal! One S-unit equals 6dB. If a beam hears a DX station at S-7, a dipole will also clearly hear it at almost S-6. That is not my idea of a crushingly unfair advantage in gain. The real advantage, where there is one, is what you do *not* hear with a beam.

The average tribander specifies around 25dB front-to-back ratio. Thus, when pointed at European or African DX from here in the East, a beam makes the stateside QRM behind it a full four S-units less annoying. All that quiet does sound good, but I'm not sure how much of an advantage that is right now.

QRM isn't that big a problem on CW outside the Novice bands (or so I'm told). And even on phone (where the *real* operators hang out), at this point in the sunspot cycle with reduced skip, there are fewer heard signals and less QRM to worry about. Besides, today's newer rigs already do a good job against QRM with notch filters, sharper and narrower SSB filters, and IF shift.

So come on all you beam bashers — quichergripin'!! Get your wire up around 35 or 40 feet and show those moronic metal spinners that you don't need arrogant aluminum when a little sharp operating can still get the world on wire. □



ED: Although we usually don't run articles for which we do not have call signs, we are making an exception in this case. Perhaps this story will inspire other clubs to broaden the appeal of their activities.

Tricia Marks

There are all kinds of hobby-widows—those women whose husbands spend every spare minute of their time indulging in their favorite sport or activity. Nine times out of 10, a man's hobby excludes his family and makes for strained relationships when the hobby is a time-consuming one.

Amateur Radio enthusiasts often devote long hours to their hobby, and wives and children could easily resent the radio. But members of the American Radio Fellowship are fostering a whole new concept in Amateur Radio participation.

Bob Ducotey, one of the founders of the club, said that it grew out of "a need to pull people together, not estrange them." Organized in January 1987, this one-of-a-kind radio club is based on total family participation.

Though in most cases the wives are not licensed, they do have full membership rights, and programs are aimed at appealing to everyone. The club meets one Saturday morning a month for a brunch meeting, and all-family trips are part of their planned activities.

With approximately 35 members, the Fellowship has no geographical restrictions to membership; members come from all over the greater Cleveland/Akron/Portage County (Ohio) areas.

Many of the men belong to other radio clubs as well, and their interests transcend the boundaries of each club. Amateur Radio is a hobby that has many facets. Some interest areas include: weather spotting, tornado nets, world contacts, and equipment building and repair.

Fellowship members participated in their first annual Field Day on June 27-28 at Franklin Township Park.

Bob and his wife Joan are residents of Munroe Falls. While Joan is not a licensed operator, she enjoys the Amateur Radio Fellowship and even suggested the name that was selected by the fledgling group.

Though Bob has been involved in Amateur Radio for many years, Joan said this "is the first time I've become involved and made friends with other members of a radio club; it's because of doing so many things together."

Stowites Peg and George Salcewiez are new to the hobby of Amateur Radio and new to the club. Both are licensed operators, and George said he found club members to be "very responsive to my questions and instrumental in my obtaining an amateur license."

The Amateur Radio Fellowship brings a total-family concept to the hobby. By fostering this new concept in radio clubs, the non-licensed members of the family can be included rather than excluded, and in a total rather than a token way. It is a concept that has attracted many families to the club's fold. —*Stow Sentry; via Amateur Radio Fellowship* □

YL's contribute much

Martha Barron, KA6TYO

On March 5, the Ladies Amateur Radio Association (LARA), Orange County, California, celebrated their fifth anniversary with a luncheon and fashion show for members and guests.

When LARA was formed five years ago, it was decided the meetings would be both technical and social, and that the primary goal would be to use Amateur Radio to help their community. This goal has been realized many times.

The sale of LARA's cookbook, *Watts Cooking*, brought in enough money for the ladies to put on an Easter egg hunt, barbecue and entertainment for 160 children and staff at the Orangewood Home (for battered and abused children), in Orange.

Another undertaking, for which they received an award from the California Association of Rehabilitation, was a donation of time and equipment to the St. Jude's Hospital radio room in Fullerton. The radio room is used in the rehabilitation of stroke victims.

Cash donations have been made to Guide Dogs for the Blind, Mexican Earthquake relief and the Cerritos Air Crash disaster. As individuals, members have participated in handling emergency traffic during times of disasters, and in many community events.

LARA members have varied backgrounds. They are homemakers and professional women. They range from Novice to Extra, and one member is a volunteer examiner. Always ready to help others discover the wonderful world of Amateur Radio, the club offers code tapes and one-on-one instruction to interested ladies. □

Where's the club?

Elaine Jones, N7BDZ

Ever wonder how hams passing through a town get in touch with a club such as ours? For Mike Ortega, YU5KKG, it proved to be a challenge.

Mike was sent to Utah on business a few weeks ago. Unfortunately, the trip was arranged too quickly for Mike to get a reciprocal license, but he wanted to get in touch with amateurs in the area.

Mike's first step, since he couldn't get on the air, was to look in the Salt Lake phone directory. No luck. Not even a hint that a club existed. So he made a long-distance call to ARRL Headquarters. They told him the name of our club and a contact, Bob Rollins, WB7DPA. Mike then tried to *(please turn to page 42)*

Visit Your Local RADIO CLUB

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

ALABAMA

Birmingham Amateur Radio Club (BARC). Meets at the American Red Cross Bldg., 2225 3rd Ave. North in downtown Birmingham, AL. 1st and 3rd Thursdays/monthly, 7:30 p.m.

Montgomery Amateur Radio Club (W4AP). Alabama State Trooper Dist. Office. Intersection of Coliseum Blvd. & Federal Dr. Randy Smith, N4LZK, (205) 832-4598. Meets 3rd Monday/monthly, 7:00 p.m.

ALASKA

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

ARIZONA

Arizona Amateur Radio Club. Meets 2nd Thursday/monthly, 7:30 p.m. 1510 E. Flower St., Phoenix, AZ. Net: W7IO Information Net every Thurs., 7:00 p.m. W7WGW/R 147.88/147.28 Rptr.

Old Pueblo Radio Club. Meets: 2nd Wednesday/monthly, 7:30 p.m. Location: Franklin Bldg., University of Arizona. N.E. corner of 5th St. & Park.

Tucson Repeater Assoc. P.O. Box 40371, Tucson, AZ 85717-0371. 2nd Sat./monthly, 7:30 p.m., Pima Co. Communicaitons Bldg., 2545 E. Ajo. Net Thurs. 7:30 p.m. 146.28/88 (146.22/82, 147.68/08, 147.70/10-PKT).

CALIFORNIA

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

Associated Radio Amateurs of Long Beach, W6RO. P.O. Box 7493, Long Beach, CA 90807. Meets: 1st Friday/monthly, 7:30 p.m. Signal Hill Recreation Hall, 1708 E. Hill St., Signal Hill, CA.

Citrus Belt Amateur Radio Club. 777 East Rialto Ave., San Bernardino, CA. P.O. Box 3788, Zip-92413. Meets: first Friday/monthly, 7:00 p.m.

Contra Costa Communications Club WD6EZC/R. P.O. Box 661, San Pablo, CA 94806. Meets 2nd Sunday at 9:00 a.m. Hickory Post Restaurant/Lucky Lanes. For info call Don K6DPQ, (415) 222-2449.

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

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

Golden Empire Amateur Radio Society (VEC). P.O. Box 508, Chico, CA 95927. Club call W6RHC, Repeater 146.25/85. Meets at Esplanade House, 1528 Esplanade. Room 101, 3rd Friday/monthly, 8:00 p.m.

The Hayward Radio Club, Inc. Fire Station #6, 1401 West Winton Ave., Hayward, CA. Classroom in back of station. Meets: 3rd Friday/monthly, 7:30 p.m. For info contact Mrs. Elfy Griffiths N6DOC.

Hilltop Amateur Mastertie System (HAMS). Informal mtgs. weekly/Mon. 5 p.m. at Shakey's Pizza, 12924 Washington Blvd., Mar Vista, CA. Meets 3rd Mon./monthly at Bicycle Shop Cafe, 12217 W. Wilshire Blvd., W. LA. Info, N6FD 213/823-0767.

Kern River Valley Amateur Radio Club. P.O. Box 2611, Lake Isabella, CA 93240 Meets 4th Sat./monthly at 4 p.m. (Pot Luck). Veteran's Hall, Lake Isabella WA6UYW Rptrs. 146.085/146.685 224.22/Down 1.6 WB6ODZ Rptr.-224.58 Down 1.6 Low-Level.

Lee DeForest Radio Club of Hemet. 1930 Local each Third Thursday at 625 Pico, San Jacinto, CA.

Livermore Amateur Radio Klub (LARK). St. Bartholomew's Episcopal Church. Meets: 3rd Saturday/monthly, 9:30 a.m. Net Mondays 7:00 p.m. 147.12+. For info call WD6J, (415) 829-5229.

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

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

North Shores ARC. (619-275-1495) So. Clairemont Recreation Center, 3605 Clairemont Dr., San Diego, CA. 1st Tuesday/monthly, 7:30 p.m. Club net each Monday, 7:00 p.m. 28.485 MHz.

Radio Amateur Mobile Society. Meets. 2nd Tuesday/monthly, 7:30 p.m. Carmichael Elks Bldg., Cypress and Hackberry, Carmichael, CA. Net Saturday a.m. 224.84 8:30/146.79 9:00.

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

Sacramento "Old Timers" Ham Radio Brkfst Club. Meets 2nd Wednesday/monthly, 8 a.m., Carrows Restaurant near Watt Ave. and Hwy 80 exit. For info contact Paul Wolf, W6RLP (916) 331-1830.

San Fernando Valley ARC, (W6SD). Meets 3rd Friday/monthly, 7:30 p.m. Red Cross Bldg., 14717 Sherman Way, Van Nuys, CA 91407. Exams 8 a.m. 1st Sat./monthly. Pre-registration via P.O. Box 3151, Van Nuys, CA 91407.

San Gabriel Valley ARC. Bowling Green Clubhouse, 405 S. Santa Anita Ave., Arcadia, CA 91006. Meets: 1st Tuesday/monthly, 7:30 p.m., except Dec. W6QFK, Repeater 147.165/765.

San Mateo Radio Club. Beresford Park Recreation Center, 28th Ave. and Alameda de las Pulgas, San Mateo, CA 94403. 3rd Friday/monthly, 7:30 p.m.

Santa Clara Valley Rptr. Society (SCVRS). P.O. Box 3085, Sunnyvale, CA 95087. (408) 247-2877. 146.76(–600 kHz), 224.26(–1.6 MHz), 444.60(+5 MHz). 2 meter/220 net Mon. 9 p.m. Mtgs.-3rd Fridays.

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

Sierra Foothills Amateur Radio Club. P.O. Box 3262, Auburn, CA 95604. Office of Education Bldg., 360 Nevada St., Auburn, CA. Meets: 2nd Friday/monthly, 7:30 p.m. Nets: Tues. 7:30 p.m. 28.443 MHz. Thurs. 7:30 p.m. Rptr. 145.43/223.86.

Solano County Amateur Radio Society. P.O. Box 457, Fairfield, CA 94533. Meets: 3rd Wed. 7 p.m., Vanden High School. 441.150+5 (Remote 145.69 simplex) PL 77Hz, (707) 448-1461.

Sonoma County Radio Amateurs, Inc. Meets 1st Wednesday/monthly (except Dec.) at the Emergency Operations Center (behind the County Courthouse), P.O. Box 116, Santa Rosa, CA 95402.

South Bay Amateur Radio Association. Los Cerritos Community Center, Fremont, CA. Dick Melcher, WA6MDI. Call-in 147.615/015. Meets: 3rd Wednesday/monthly, 7:30 p.m.

Southern Calif. Amateur Transmitting Society (SCATS). P.O. Box 1770, Covina, CA 91722. Meets: Cortez School, 2226 E. Rio Verde Dr., West Covina, CA 91791. 1st Monday/monthly, 7 p.m. (coffee 6:30 p.m.)

Southern California Six Meter Club. P.O. Box 448, Cypress, CA 90630. USB Net Tue., 8:00 p.m., 50.150. FM Rpt. Net Thurs., 8:00 p.m., 52.28/88. FM Smplx Net Thur., 9:00 p.m., 50.300.

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

Stockton-Delta Amateur Radio Club, Inc. U. of the Pacific, RM 122, Kensington & Mendocino. 2nd Wed/monthly, 7:30 p.m. Rptr. 147.165/765 Net Wed. 8:00 p.m.

Tehama County Amateur Radio Club. 13620 Trinity Ave., Red Bluff, CA 96080. Meets: 1st Friday, 7:00 p.m. Lincoln Street School. Net Wednesday 8:00 p.m. 147.705 rptr.

Tri-County Amateur Radio Assoc. P.O. Box 142, Pomona, CA 91769. Meets: 2nd Monday/monthly, 7:30 p.m. Pomona First Federal S&L, (basement), 399 N. Garey, Pomona, CA.

The Trinity County ARC. P.O. Box 2283, Weaverville, CA 96093. Meets 2nd Wednesday/monthly, at the CD Hall in Weaverville, 7:30 p.m. WD6FHX Rptr. 146.13/73.

Victor Valley Amateur Radio Club. P.O. Box 869, Victorville, CA 92392. Meets: Victor School Board Room, 6th & "A". 2nd Tuesday/monthly, 7:30 p.m. WA6EFW Rptr. 146.34/146.94.

West Coast Amateur Radio Club. Fountain Valley School. Talbert/Bushard. Fountain Valley, CA. Meets 3rd Thursday/monthly. 145.44-4Z.

Western Amateur Radio Assoc. Cerritos Park East, 166th St. and Carmenita Ave., Cerritos, CA. 1st Tuesday/monthly 7:00 p.m.-145.400.

Yucaipa Valley Amateur Radio Club (YVARC). Gibralter Saving's Community Room, 34880 Yucaipa Blvd., Yucaipa, CA 92399. Pres: Jack Prather W6KJP (714) 797-1276. Meets: 3rd Monday/monthly, 7:30 p.m.

CONNECTICUT

Tri-City ARC. Groton Public Library, Route 117, Groton, CT 06340. 2nd Tuesday/monthly, 7:30 p.m.

FLORIDA

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

Sarasota Amateur Radio Ass'n, Inc. Meets: 3rd Tues./monthly, 8 p.m. on the 6th floor (board rm.) of the County Admin. Bldg., corner of 301 & Ringling Blvd. Club Rptr. W4IE, freq. 146.91/31, open to all. Phone patch *Up #Down. Welcome.

South Brevard Amateur Radio Club. P.O. Box 2205, Melbourne, FL 32902. Meets 1st Tuesday/monthly, 7 p.m., Melbourne Library, 2275 S. Babcock St., Melbourne, FL.

HAWAII

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

ILLINOIS

Bolingbrook Amateur Radio Society. P.O. Box 1429, Bolingbrook, IL 60439-7429. (312) 759-4747. Call in 147.93/33. Meets: 3rd Monday/monthly, 7:30 p.m.

Chicago Suburban Radio Assoc. (CSRA). P.O. Box 88, Lyons, IL 60534. Meets 2nd Wed./monthly, 8 p.m. Community Rm. Clyde Federal Savings & Loan Assoc., 7222 W. Cermak Rd., North Riverside, IL.

Dupage Amateur Radio Club W9DUP. Mid-America Savings & Loan, 55th & Holmes (55th St. near RT 83), Clarendon Hill, IL. 4th Monday/monthly, 7:30 p.m. Club rptr. 145.250 — 600 kHz.

Elgin Amateur Radio Society. P.O. Box 1351, Elgin, IL 60120. (WB9EEA President), Meets in EOC Rm. of Elgin Municipal Bldg. 2nd Friday/monthly, 8:00 p.m.

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

North Shore Radio Club. Meets: 2nd Monday/monthly. Net 8 p.m. Tues. Karger Center, 1850 Green Bay, Highland Pk, IL. WB9FRM Rptr. 147.345 + 600 (PL 1B). Info: NSRC, P.O. Box 1066, Highland Pk., IL 60035.

Six Meter Club of Chicago K9ONA. Bank of Lyons, Lower Level, 8601 West Ogden Ave., Lyons, IL. 2nd Friday/monthly, 7:30 p.m. Club Rptrs: 146.37/.97, 448.30/444.30.

INDIANA

Fort Wayne Radio Club. James Wolf, KR9U, P.O. Box 15127, Fort Wayne, IN 46885. The Salem Church. Meets: 3rd Friday/monthly, 7:30 p.m.

Northeastern Indiana Amateur Radio Club. P.O. Box 745, Auburn, Indiana 46706. Meets: 2nd Tuesday/monthly, 7:00 p.m. at members homes. Daily traffic net at 2300Z on 147.96/36 MHz, the WB9VDK rptr.

MARYLAND

The Peninsula Radio Operators Society (PROS). Family oriented activities, training and exams held throughout the year. PROS Rptrs. 146.925 and 146.625. PROS, P.O. Box 2315, Salisbury, MD 21801.

MICHIGAN

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

MISSOURI

St. Charles Amateur Radio Club (SCARC). St. Peters Civic Center, St. Peters, MO. I-70 and Salt Lick Road. Meets: 4th Tuesday/monthly, 7:30 p.m. WB0HSI Rptr. 07/67.

Heart of America Radio Club. 211 W. Armour, Kansas City, MO. Meets: 3rd Tuesday, 7:30 p.m.

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

NEVADA

Frontier Amateur Radio Society (FARS). Meets: 1st Friday at Fly-N-Chef, 7 p.m., Scenic Airlines Terminal, McCarran Airport, Las Vegas, NV. Net Mondays 7:30 p.m. 145.39. Info: Bob Herrell, WB5PTO, 641-6682.

Las Vegas Radio Amateur Club (LVRAC). Meets: 2nd Tuesday/monthly at 7 p.m., Nevada Power Building, Wengert Rm., 6226 W. Sahara Ave. (Near Jones). Net Tuesdays 8:00 p.m. on 146.94 MHz. Info: Call Lyle at 456-9510.

NEW HAMPSHIRE

Great Bay Radio Assn., WB1CAG. P.O. Box 911, Dover NH 03820. (603) 742-0130/755-2600. 2nd Sunday/monthly, 7:00 p.m. Dover Dist. Court. Talk-in 147.57.

NEW JERSEY

Gloucester County Amateur Radio Club (GCARC). Woodbury V.F.W. 1st Wednesday/monthly, 8:00 p.m., Woodbury, NJ. Talk-in 147.18/78. For info call K2JF (609) 589-2318.

NEW YORK

Communications Club of New Rochelle, NY. Harrison Street Firehouse. Bill McCarren, K2LV, (914) 738-0768. Meets: 1st Monday/monthly, 8 p.m.

Genesee Radio Amateurs (G.R.A.M.). N.Y.S. Civil Defense Center, State St., Batavia, NY 14020. Meets: 3rd Friday/monthly, 7:30 p.m. 147.255+ W2RCX.

Hall of Science Amateur Radio Club. P.O. Box 131, Jamacia, NY 11415. HOSARC, 2nd Tuesday/monthly, Hall of Science Bldg., 47-01 111 St., Flushing Meadow Park at 7:30 p.m. The tristates' only 3-band linked rptr. system 144.300 S/223.600–/445.225–.

Radio Club of Junior High School 22 N.Y.C. 111 Columbia St., New York, NY 10002. "At The Core of The Big Apple," QSLs invited. For info contact WB2JKJ and "The Crew" learning English thru Ham Radio at (516) 674-4072, 24 hrs.

Westchester Amateur Radio Assoc. (WARA). Scarsdale Village Hall, Scarsdale, New York. Meets: 1st Wednesday/monthly, 8:00 p.m. For info call B. Dubbs, Pres. (WA2FSR). (914) 725-1191.

NORTH CAROLINA

Raleigh Amateur Radio Society, Inc. (RARS). P.O. Box 17124, Raleigh, NC 27619. Meets: 1st Wed./monthly, 7:30 p.m., First Presb. Church. Club net daily, 8 p.m. on RARS 04/64, W4DW. Annual Hamfest, 2nd Sunday in April.

NORTH DAKOTA

Forx Amateur Radio Club. United Hospital, Grand Forks, N.D. Call-in 34/94. Meets last Tuesday/monthly, 7:30 p.m.

OHIO

Amateur Radio Fellowship (ARF). N8HUN, Linda Delugach, Sec. P.O. Box 2486, Streetsboro, OH 44241. Meets: 1st Sat./monthly at Kent Wally Waffle. KA8PHO rptr. 147.675/.075.

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

Northern Ohio Amateur Radio Society (NOARS). K8KRG/WB8JBM, P.O. Box 354, Lorain, OH 44052. Meets 3rd Mondays/monthly, 8 p.m. at Gargus Hall. Info: George, W8ANM, (216) 933-2841. Ohio's largest general interest club.

OREGON

Salem Amateur Radio Club (SARC). Northwest Natural Gas Auditorium, 3123 Broadway N.E., Salem, Oregon 97303. Talk-in 146.86. Meets 4th Tuesday/monthly, 7:30 p.m.

PENNSYLVANIA

Mercer County Amateur Radio Club W3LIF. P.O. Box 996, Sharon, PA 16146. Meets: 4th Tuesday/monthly at 7:30 p.m. at Shenango Valley Medical Center, Farrell, PA. Net, Thursdays 8:45 p.m. on 147.75/15 W3LIF/R.

Warminster Amateur Radio Club. P.O. Box 113, Warminster, PA 18974. Meets: 1st Wednesday/monthly, 8:00 p.m. at St. Johns Lutheran Church, Hatboro, PA. Net Wednesdays, 8:30, 147.09/69.

VIRGINIA

Southern Peninsula Amateur Radio Klub (SPARK). Meets: 1st and 3rd Tuesdays, Salvation Army Community Bldg., Hampton, VA. Operates 148/13 147/73 Rptr., VEC Information (804) 851-5573.

WASHINGTON

Mike & Key ARC K7LED. Good Neighbor Center, 305 So. 43rd Street, Renton, WA 98055. Meets monthly on 3rd St., 10 a.m.

WYOMING

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

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

Clubs *(continued from page 40)*

call Bob. Unfortunately, Bob was out of town on business! (Back to square one . . .)

Mike's next tactic was to try the library. The girl he talked to didn't know anything about the club, but as luck would have it, her friend's husband was a ham. Between them, they scraped up information about how we met at Murray High School the first Thursday of the month and how there *might* be some classes going on.

Encouraged by this tidbit, Mike jumped in a car and headed to the school. There was no sign of a class. After wandering around the halls for a while, he managed to run into the community education director, who gave him my name. Fortunately, Mike's persistence paid off and we had a delightful weekend showing him around.

The question this raises is: How many *other* fascinating people have we lost, either by not being available, by being hard to find, or by being rude or unfriendly on 2M?

Your board of directors is looking into ways to promote our existence — listings in phone books, hotel directories, etc. Give us your comments and let us know if you've had a similar problem on a trip.

—Utah ARC, Salt Lake City, UT □

Let Worldradio know what you do in Amateur Radio; many others will be interested in your experiences.

Esther Given, W6BDE

"Life begins at 40" and the Quarter Century Wireless Association, celebrating its 40th year of existence, wants to share its fun, fellowship and "life" with all radio amateurs eligible to participate — namely, amateurs who were first licensed 25 or more years ago. Proof of this fact and current licensing are the only requirements for membership.

It is surprising how many hams had a Novice license way back when, let it drop and did not reenter the hobby again until later. One of the toughest points for QCWA to get across to the amateur community is the fact that a prospective member need not have been licensed all the time in between. QCWA is looking for the current ham who had enough interest 25 or more years ago to take a test and get that first ticket.

The second point not always understood is that QCWA membership does not require waiting for the anniversary date of the first license. It is the year that counts. Anyone first licensed in 1963 (or before), no matter what the day or month, was eligible for QCWA membership January 1, 1988.

If a photocopy of the original and other licenses cannot be obtained, it is necessary that the applicant recall previous call signs (and former names for YL's), so old Callbooks can be checked for verification. If one forgets his original call, there is no way to verify or locate it since Callbooks go by alphabetical call sign listing only. Perhaps an old friend or family member can help refresh the memory.

•

QCWA owes special thanks and recognition to George "Kel" Hickin, W4GH, whose Silent Key announcement appeared in last month's issue of **Worldradio**. Kel spent more than a decade of his retirement duplicating and mailing tapes of Amateur Radio publications to visually impaired hams.

When QCWA began looking into the possibility of availing its blind members of this service, Kel was most helpful in supplying information and necessary particulars, including the suggestion that Tom Carten, K1PZU — who recorded the other publications — would probably be glad to serve as reader for the QCWA tapes which Kel would duplicate and mail.

The spring 1987 issue of QCWA's major publication was the first one recorded. It came at a time when Kel had just suffered a debilitating stroke which left him unable to speak or write. In spite of these inabilities to communicate, Kel insisted on continuing to duplicate the hundreds of tapes, to which had just been added QCWA's service. Another stroke late in 1987 left Kel so greatly incapacitated he could no longer carry on. His recording equipment and allied materials were sent to Tom, who has taken on Kel's work in addition to his own.

QCWA salutes these dedicated volunteers: W4GH, a recent Silent Key, and K1PZU. They are two outstanding examples of the joy and gratification one receives from giving time and talents to benefit others.

•

Five QCWA directors from a field of nine candidates will be elected in 1988 to serve two-year terms. All members in good standing should receive a ballot in mid-May (one for each family member). Ballots must be returned to the tellers by July 31, 1988 to be counted. The spring issue of the *QCWA Journal* carries a series of biographies on the candidates, five of whom are incumbents running for re-election. Those selected will take office September 1, 1988.

•

Gulf Coast Chapter 131 in Florida has honored Harold Miles, W2JKB, with the QCWA Meritorious Award, recognizing his contributions to that chapter's advancement.

•

Many QCWA chapters are now setting up booths at hamfests and conventions in their area to attract eligible QCWA participants. Conventioneers are cordially invited to drop by and meet the folks in the QCWA booth where applications and information are available. □

My first key

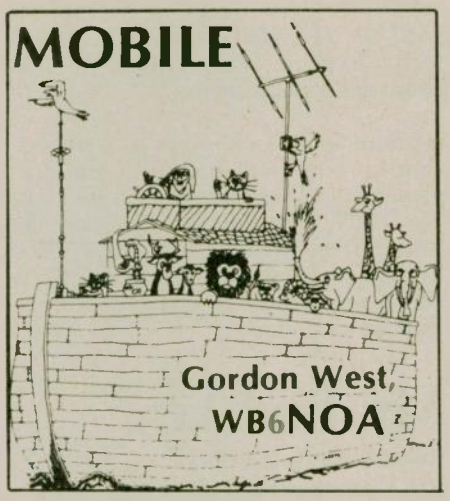
Robert East, KC9NP

His brass pounding days are over, his key lay silent on his desk.
His contest logs are now empty, but once he was one of the best.
His fist was smooth, and what music it would play upon that old key.
He sure knew how to use it, his love for it you could see.

His hand was steady and sure, his music made dots and dashes.
His symphony lasted many hours, bringing harmony through static crashes.
I'll never forget my first try, with that shiny old key —
He would look me straight in the eye saying, "Not two dits but three."

Finally, one day I composed my first song.
He said what it took I had.
He passed on that old key when he was gone . . .
'Cause that old key belonged to Dad. □

• Happy Father's Day! •



Automatic end-fed tuners

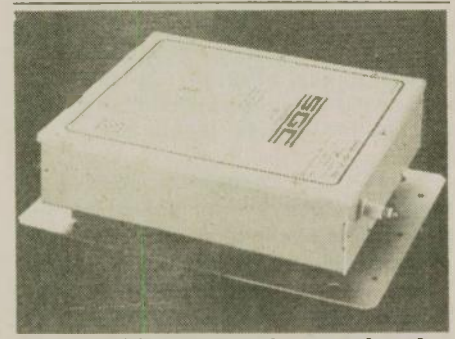
It takes a very special type of antenna tuner to automatically resonate a random-wire antenna system. "Random-wire" would include the following antenna set-ups:

- Insulated sailboat backstay
- 23′ fiberglass power boat vertical whip
- Stainless steel non-resonant mobile whip
- Inverted L antenna, tower-fed
- Hidden long wire in attic
- Portable long wire in the field

Many manual tuners may effectively tune up a long-wire using the single wire output connection. However, for best results, the manual tuner-fed "long-wire" must be placed remotely from the radio, at the antenna feedpoint. This makes it awkward to tune each time you change bands. Attempting to run a manual long-wire tuner right at the rig will put RF throughout your station, and generally leads to unpredictable results. The only things we *could* predict would be plenty of TVI and stray RF in the shack.

The automatic long-wire antenna "coupler" is common in the marine electronics service. It is mounted out of the way, directly at the antenna feedpoint. Each time a new band is selected, the automatic coupler provides a new variable L/C resonance to the antenna, and also provides a 50Ω pick-off point to your transceiver. Marine automatic tuners, which work nicely on ham frequencies too, are available from the following manufacturers:

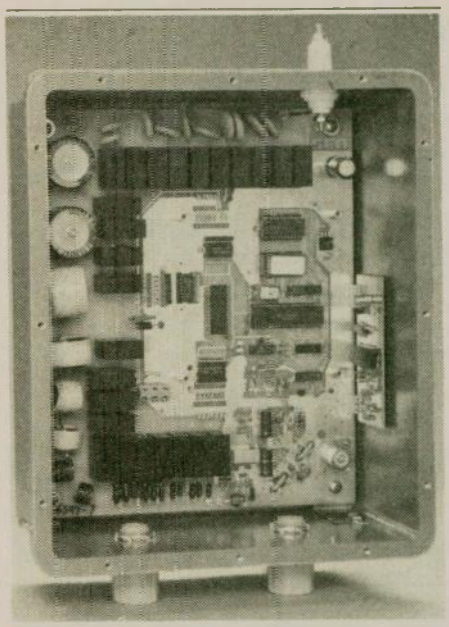
- Stephens Engineering, Mount Lake Village, Washington
- Hull, San Diego, California
- SGC, Bellevue, Washington
- ICOM America, Bellevue, Washington



SGC $700 automatic coupler for any ham or marine set

The ICOM AH-2 end-fed tuner is a good example of automatic long-wire antenna couplers. 50Ω coax cable keeps your 100W output "in the tube" until it reaches the remote-mounted tuner. This minimizes RF from escaping within your ham shack. Here are some ideas on where the tuner may go:

- Sailboat lazarette back aft
- Power boat flying bridge
- Up in your attic
- High atop your tower
- In the trunk of your vehicle



Inside the coupler; *relays* are black boxes.

The automatic antenna coupler requires a substantial ground directly to it. Examples:

- Copper foil in a marine installation
- Copper foil or aluminum rain gutter in the attic
- Metal vehicle body
- Metal grounded tower

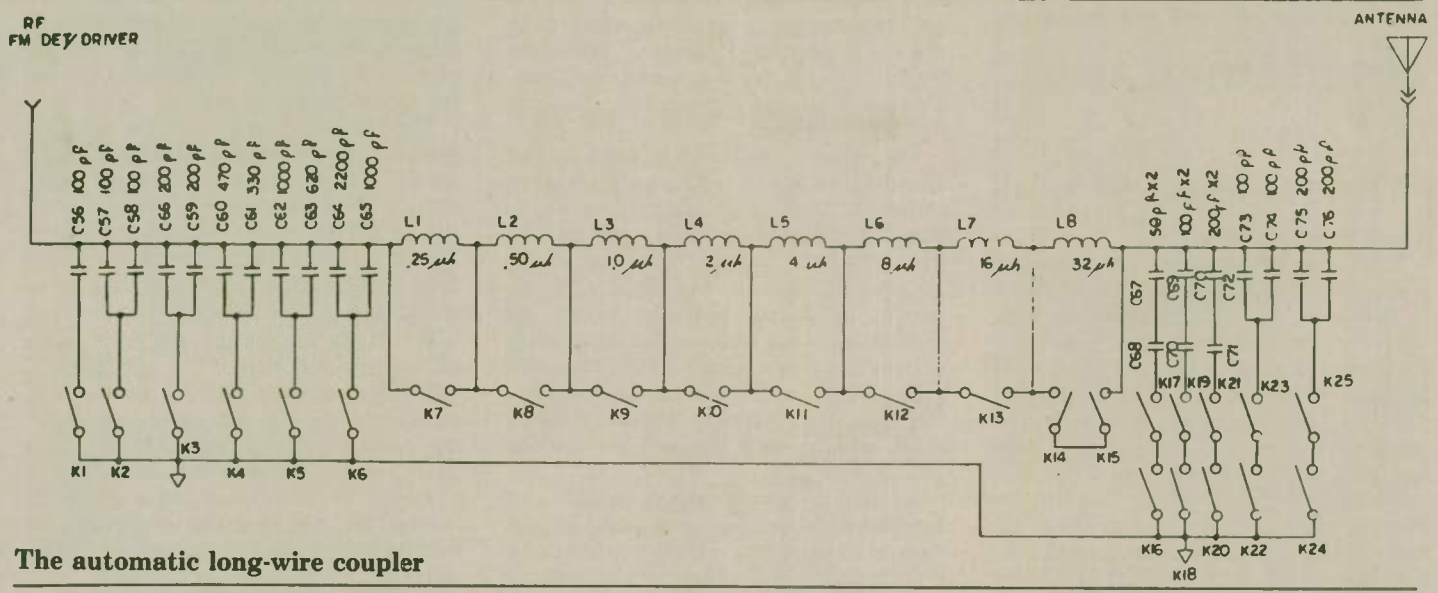
The long-wire leaving the automatic coupler antenna terminal is your main radiating wire. The antenna efficiency can vary from about 70% for .15-wavelength long to an excess of 95% for .65-wavelength long when a good ground system is used.

If the ground system is poor, the same antenna could be expected to have an antenna efficiency reduced to 50% for .15-wavelength long. As you see, the ground is just as important as the antenna long wire! Also, a good long-wire is also important for good long range.

The mobile stainless steel whip that may be ordered with the ICOM AH-2 for mobile installations is only a fair performer if all you use is the 8′ whip. However, you can dramatically increase performance by raising your radiation resistance by adding 20 feet of wire to the tip of the whip and throwing it over a convenient tree!

Some antenna couplers, such as the ICOM AH-2, the new Yaesu I see on the drawing boards, and older Hull units, require an additional start and stop command from the companion transceiver to automatically tune up. This is why the ICOM AH-2 only works with ICOM sets.

However, the Stephens Model 1612 and the SGC Model SG-230 and SG-215 require no additional tune-up wires. Just whistle a couple of times



The automatic long-wire coupler

on the ham band of your choice, and the automatic coupler snaps in to perfect resonance and 50Ω impedance to your ham set (or for that matter, any high frequency SSB transceiver).

With the Stephens and SGC units, the RF power is first passed through an array of detector devices which determine the antenna system impedance, reactance signal and the load VSWR. After passing through the detector system, the RF is then automatically routed to the tuner array.

The array consists of six capacitors in shunt on the input arm of the network, arranged in binary increments; eight inductors in the series arm, arranged in binary increments; and five more capacitors in shunt on the output arm, also arranged in binary increments.

Miniature relays are provided in conjunction with each lumped constant which allows removal or entry as desired. Thus, it is possible through the automatic manipulation of 24 relays to build a network having 64 values of input shunt capacitance, 32 values of output shunt capacitance, and up to 256 values of series inductance.

And for you non-technical folks, what all this means is that you hear a buzz of relays, and in about two seconds the automatic antenna coupler takes your 100 watts of power and impresses it out on your antenna line. Almost all power makes it onto the wire with almost no losses in the antenna coupler itself. The coupler only requires a small amount of 12 volts (approximately 900mA) to accomplish this entire project.

Prices are coming down on automatic couplers. If you have an ICOM rig, the AH-2 is about $450. Mariners may prefer the highest quality tuner available, manufactured by Stephens, for just under $1,000. Here at Radio School, we have found the SGC Model SG-230 an exceptional performer that will work with any ham or marine SSB set, and its suggested retail price is just under $700. It tunes from 1.8 MHz continuously through 30 MHz, and will handle up to 150W input and output, and typical tune-up time is less than two seconds with a long wire from 8′ to 80′ and a good ground.

The best part of automatic antenna couplers is their versatility in mobile marine, mobile home, or even your own home attic antenna installations. It allows you to experiment with different types of long-wire antenna systems without fear of zapping your rig. It keeps the RF safely channeled inside the coax up to the antenna coupler set-up, and this minimizes TVI and eliminates hot RF in the shack.

Only the reactance-feed long-wire antenna couplers can tune up a long wire—and if you haven't tried one, they work well in any mobile installation. □

•••••DON'T FORGET•••••
INCLUDE FIRST AND LAST NAMES with call signs.

Computers and Amateur Radio

Part II

Making computers work

Vern Valero, ND1Z

Now that many of us have bought home computers, how do we get them to work for us? The answer is that there are two options. One may buy programs that have already been written and tested, or write them independently. The purchase option is the quickest way to get a program to run, but costs are high ($20 to $100 per program). Typically one is unable to change the purchased program. This installment of the series will investigate what is involved in writing a program on one's own.

A distinction is made in the computer world between the electronics and circuitry and the actual programs. The electronics is known as Hardware and the collection of programs is known as Software.

Writing software is really a process of many actions. One must think things through and proceed carefully to produce a program with the desired results. In fact, the process can be decomposed into several steps that are the following: Problem Definition, Feasibility Study, Solution Definition, Design, Coding, Debugging, Testing and Maintenance.

The word "Problem" is used in the engineering sense of the word. A computer is a tool for solving problems. A flight simulator program solves the problem that exists when an inexperienced pilot is not ready to fly, but needs to learn how to react to aeronautical conditions. When writing a program, one must clearly understand the problem to be solved. Perhaps by thinking about it, one might realize that the problem isn't a problem at all.

It makes sense to consider the feasibility of writing a program to perform a desired job. Some applications do not lend themselves to a computer solution or would not work well on a particular computer. For example, a home computer that does not have a disk drive (but does have a tape cassette) would not be a good candidate for a contest logging program because the operator would need to start and stop the cassette recorder too often for the program to save the logging data. This would leave less time for making contest QSO's.

Once the problem is understood and a confident decision is made to use the computer to solve it, the solution must be cooked up. This is by far the most difficult step, but surely the most important. Many beginning programmers overlook defining the solution and jump directly to the writing process (coding), only to be disappointed later.

Defining a solution requires understanding something about the application. If one is going to write a general ledger program, it would be a good idea to understand something about accounting. Eventually, a very high level approach comes to mind. If we want to write a program to compute averages, the general solution is to add the numbers and divide by the number of values. We remember this from high school math.

The design step takes the solution statement and amplifies it to greater detail. There are a number of techniques that have been developed over the years to make this step easier. There are such things as flow charts, data dictionaries, data-flow diagrams, and many others.

The right tool to use depends upon the nature and size of the application. The larger the size of the program and number of people writing it, the more the need for these design tools. This author prefers a notation consisting of a series of numbered statements in outline form of how the program will run. Here is how the "Averages" program would appear:

```
1) 0  Initialize the running sum and
      counter to 0
2) 0  DO read a value from the keyboard
      UNTIL the character 'X' is given
      2.1 ADD number to running sum
      2.1 ADD 1 to the counter
      ENDO (end-of-loop)
3) 0  IF the counter is nonzero
      3.1 THEN divide the running sum by
      the count. Print this as the result
      average.
      3.2 ELSE Print the message: 'NO
      AVERAGE BECAUSE NO
      VALUES WERE INPUT'
```

The flow of control in a program should follow a few simple rules. It should run from top to bottom. There should be one entrance into a program and one exit from a program. All processing should conform to the following constructs, or building blocks:

I) *Procedure Construct:* Just a series of simple tasks to perform once. Most computer languages have a facility known as subroutines that allow the programmer to execute a specific procedure in different places without having to keep repeating the statements.

II) *DO Construct:* Performing a series of tasks many times in a loop. The loop may happen a specific number of times, or its continuance or ending may be contingent upon a specific condition.

III) *IF THEN ELSE Construct:* IF a certain condition holds, THEN do a certain action; ELSE do some other specific action.

IV) *CASE Construct:* Given a certain input, branch to one of possibly many different process constructs and then return to the bottom of the CASE area. A program may do eight or nine different activities, depending upon a user input value. The procedure for each activity is contained within the Case block.

Also note that our design above contains two "housekeeping" activities. One is to initialize the running sum and count to zero. This ensures that we start clean. The other is to check for errors on the part of the user. What would happen in 3.0 if the user only input "X" to signal end of inputting without actually entering any values? We would have divided by zero, which is illegal. The program would have failed with an error.

The error messages must be clearly understood by the user. Everyone makes mistakes and our program must be tolerant of this fact. Each error message must tell the user exactly what is wrong and what steps must be taken to correct the problem. There is nothing more disconcerting than mistyping an input only to have the program print "FATAL ERROR!!!". Programs that are "User-Friendly" encourage rather than discourage.

The coding phase involves implementing the design into a specific computer language. A computer language is a set of statements and rules for programming a computer. There are many languages, some of which are best suited for specific applications. Each statement of a language has a specific purpose and may be translated into one or more machine instructions. The compiler or interpreter program is a built-in service that translates from the high-level statements to low-level machine instructions. For example, the following language statement that adds one to a summation might be translated into the following machine code on an Intel 80186 processor:

LET SUM = SUM + 1 (The value in SUM has one added to it in the high level language, BASIC.)

```
0000 1010   (These are the series of binary in-
0000 0001   structions that might be gener-
0000 0000   ated by a compiler or inter-
0000 0000   preter. Remember that a com-
0000 0101   puter can only execute binary in-
0000 0000   structions. This is the machine
0000 1000   code.)
1010 0011
0000 0000
0000 0000
```

Clearly, it is much easier to program in a higher level language than in machine language!

The most popular language for home computers is the Beginners All-Purpose Symbolic Instruction Code, otherwise known as BASIC. Developed in the mid-1960's at Dartmouth College, it was designed to be quick and easy to learn. Although BASIC does not have the flexibility of some of the other languages, we will use it to demonstrate the averaging program example. Below is an implementation of the design we did above for computing averages:

```
10 REM
20 REM AVERAGES PROGRAM FEB 5,
   1987
30 REM COMPUTES THE AVERAGE OF
       A VARIABLE NUMBER OF
       VALUES
       TO USE: KEEP INPUTTING ALL
       THE NUMBERS AND THEN IN-
       PUT X
40 REM
50 REM
60 REM
70 REM
80 REM
90 REM INITIALIZE RUNNING SUM (S)
   AND COUNTER (C)
100 LET S = 0
110 LET C = 0
120 PRINT 'AVERAGES PROGRAM ****'
130 PRINT
140 PRINT 'INPUT ALL NUMBERS TO
   BE AVERAGED'
150 PRINT 'WHEN DONE INPUT X'
160 PRINT
170 REM DO READ VALUES UNTIL 'X'
180 REM
190 INPUT A$
200 IF A$ = 'X' THEN 270
210 LET S = S + VAL(A$)
220 LET C = C + 1
230 GO TO 190
240 REM
250 REM IF THE COUNTER IS NOT 0
   THEN COMPUTE AVERAGES
260 REM ELSE GIVE ERROR MESSAGE
270 IF C <> 0 THEN 330
280 PRINT 'NO AVERAGES BECAUSE
   NO VALUES WERE INPUT'
300 GO TO 100
310 REM AVERAGE IS SUM DIVIDED
   BY COUNT
320 REM
330 D = S/C
340 PRINT 'AVERAGE VALUE IS . . .',D
350 END
```

Space does not permit a detailed explanation of the BASIC language, but a few comments about the program are in order. The statements REM mean "Remark" or "Comment." They are not executable statements but are reminders to the programmer of what is going on in the program.

We input the value from the keyboard and if it is an "X", then finish inputting. If it isn't "X", we add the value to the running sum and increment the count. When the user finally types "X", we determine if any numbers were input. If not, an error message is output and the user is given another chance. Finally, after some numbers have been input, the sum is divided by the count and the result printed.

This program contains a blatant error. It was a problem that was over-

Computers

looked in the design phase and will be propagated through all the remaining phases. It is left as an exercise for the reader to determine what the problem is and to propose a solution. Good luck!

The debug phase consists of running through all the considered input cases and correcting problems as they are observed. Some computers have debugger programs that help with this task. Debuggers have the ability to stop program execution at various points and observe what is happening in the program.

The testing phase is really a self-check. All the known input cases are run in an organized manner. If a program is very large, it is a good idea to write a test plan that lists each expected input and output. Below is the output of the averaging program that is listed above:

```
AVERAGES PROGRAM**********
INPUT ALL NUMBERS TO BE AVER-
   AGED
WHEN DONE INPUT X
!3
!6
!45
!8
!33
!9
!X
AVERAGE VALUE IS . . . 17.333333333333
AVERAGES PROGRAM**********
INPUT ALL NUMBERS TO BE AVER-
   AGED
WHEN DONE INPUT X
!X
NO AVERAGES BECAUSE NO VALUES
   WERE INPUT
AVERAGES PROGRAM**********
INPUT ALL NUMBERS TO BE AVER-
   AGED
WHEN DONE INPUT X
!3
!4
!5
!X
AVERAGE VALUE IS . . . 4
```

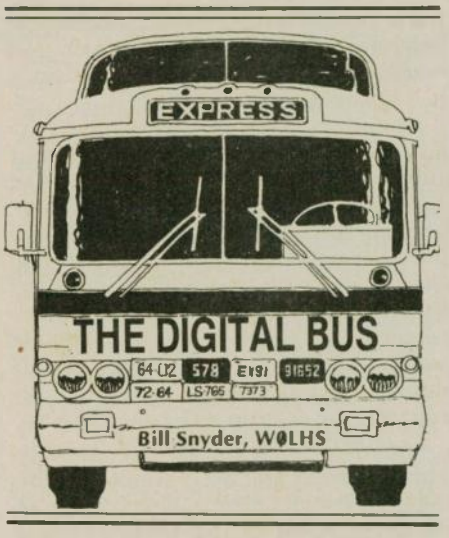
Now that the program is in everyday use, we enter the maintenance phase. Software is "Soft" and capable of being changed. One will wish to correct errors and perhaps change things slightly to suit better usage. This small change activity is known as maintenance.

Lest the reader conclude that he or she knows all there is to know about programming, be forewarned! All computer systems are different to some degree. A program that runs on an Apple II might not work properly on a Commodore 64 because BASIC itself may work differently on both systems. Furthermore, the details of how to create, test and run a program varies greatly from system to system. There is no substitute for reading the system booklets and spending a great deal of time experimenting and becoming familiar with the computer system.

This is an overview of what is involved in programming, or making computers work for us. The next part of this series will overview some of the Amateur Radio software programs that can be purchased.

(Continued in August issue) □

• *A smile is contagious* •



By the time you read this, we should have a solid path to the outside world from our North Dakota packet network. Up to this point, we have relied on an intermittent path to Winnipeg where our traffic is transferred to Skipnet, the nationwide HF forwarding network. Skipnet also has access gateways to foreign countries with which the USA has third-party traffic agreements. It's Amateur Radio traffic handling at its best.

The problem with our path to Skipnet is too much land between antennas, that's all. Our North Dakota-western Minnesota network has grown to about 70 packet stations at all levels of interest and equipment. Most of them are scattered about the prairies and lake land in such a manner that they cannot communicate directly with each other on a regular basis; they must rely on net/ROM digipeaters to hook up.

I reported last month about our new net/ROM digi that tied most of the area together. Since then, the sponsors have added a brand new 2M 100W rig to do the RF work, plus a separate voice repeater.

Both the voice repeater and the packet digi are on the same antenna and both work to perfection, thanks to Norman Bakken, KCØSD, and Randy Orud, NØCBV, the two guiding lights of the project. The antenna is up approximately 1200 feet over the local terrain. It is mounted at the 750′ level on a brand-new TV tower, so the signal really covers the countryside.

On packet we are able to reach other packet net/ROM stations well over 100 miles away with very good reliability. This has really helped to bring many voice hams into the digital world. Many of our North Dakota hams are farmers, and it is very popular to have a 2M rig in the tractor cab so ragchewing can be done while working the huge fields that make up

most North Dakota farms. So far, no one has installed a packet system in a tractor, but I wouldn't be surprised if it happened soon.

Up to now our problem has been the link to the Winnipeg BBS station of Bill Bowman, VE4UB, the SYSOP of VE4BBS, which is the Skipnet connection for our area. Too much land between antennas is the big problem. The path between Bill's board and WA0LRE, the nearest North Dakota connection, is 120 miles. At one time we had a relay point in between, but due to circumstances not under our control, the station went off the air.

Tom Kutz, the SYSOP of WA0LRE, is located in Grafton, North Dakota, where he runs both a net/ROM digi and a MBL BBS. When propagation is in, Tom can handle traffic to the outside world with no trouble at all. But when it is down — as long as 25 days — it piles up at both ends. I have had VE4UB send me traffic on floppy disks via the post office route.

The same TV network that owns the tower with the new repeaters on, also owns a tall tower right on the Canadian border. They have recently given us permission to put a net/ROM on it. That should solve our problems. With the antenna at 250 feet, it should be a solid link to Manitoba.

So, send me a messge, and let's test this system out. It should only take a few days to get an answer from me when the new station gets on line.

RTTY DX friends

For many years I have enjoyed the fine friends I have made on RTTY. The other night the phone rang and it was Yasutaka "Taka" Nagata, JA1JDD. Taka had just arrived at Los Angeles for a two-week tour of duty, calling on U.S. electronic manufacturers that use products manufactured by his employer.

This is not the first time for Taka to call and say hello. When I wrote the DX column in W6IWO's popular *RTTY Journal*, I had a picture of my mug in the headline. So when Taka called me the first time, he said quite candidly, "Bill, your picture in *RTTY Journal* show you to be very old man, but your voice sound like young man!"

Well, this time Taka and I talked RTTY DX, and I gave him the phone numbers of other hams in the United States that he might like to contact while here. It was a lot of fun to ragchew with him because we have many hours of RTTY chatting behind us. I hope, however, I still sound like a young man on the phone.

Eavesdroppings

THE ANTENNA HERE IS A TRAPPED VERTICAL MOUNTED SLIGHTLY BETTER THAN A DUMMY LOAD . . . THAT DX STATION HAS GONE QRT — POSSIBLY BECAUSE YOU BUTTED IN! . . . LIFE IS LIKE A DOG SLED TEAM, IF YOU AIN'T THE LEAD DOG THE SCENERY STAYS THE SAME . . . THE FRONT TO BACK RATIO ON MY VERTICAL IS NOT TOO GOOD . . . PLEASE, SIR, I NEED A QSL FROM YOUR GREAT AND WONDERSUL STATE FOR W.A.S. . . . YOU SOUND LIKE YOU SPENT THE FIRST FIFTY YEARS OF YOUR LIFE TRYING TO DECIDE WHAT YOU WERE GOING TO DO WHEN YOU GROW UP . . . RIG HERE IS THE BEAR MINIMUM . . . THANKS, DEAR JACK, AND I'LL START LOOKING FOR YOUR QSL TOMORROW . . . RUNNING ABOUT 5000500 WATTS AT THE MOMENT . . . I THREW OUT MY HOOK IN ANCHORAGE ABOUT THREE YEARS AGO . . . HAVE YOU TRIED ANY U.S. HAM GEAR LATELY? . . . BECAUSE YOU ARE SUCH A RARE STATION AND BECAUSE SO MANY ARE CALLING YOU, I WON'T TAKE UP ANYMORE OF YOUR VALUABLE TIME WITH IDLE CHATTER, SO WILL SAY THE VERY BEST OF 73'S AND THANKS FOR THE VERY NICE QSO AND A LOT OF GOOD DX AND LUCK TO YOU . . . OKAY ON YOUR GETTING YOUR BEHIND IN THE BUFFER . . . YOUR SIGNAL HAS BEEN DANCING THE POLAR FLUTTER ALONG WITH THE WOODPECKER . . . QSL 100% AFTER GETTING YOURS FIRST . . . I HAVEN'T SEEN YOUR SIGNALS FOR A MONSOON OR TWO . . . I ASSEMBLED THE RTTY STATION HERE AND THEN WORKED 112 COUNTRIES IN JUST TWO WEEKS . . . THE STATION HERE IS FIVE WATTS — RUNNING URP. . . . USING A ZIPPY ZEPP ANTENNA . . . I'M AFRAID TO TRY AMTOR OR PACKET BECAUSE I CAN'T THINK OF THINGS TO SAY FAST ENOUGH . . . MY POCKETBOOK IS COLD, SO MY RIG HAS TO RUN HOT . . . I AM HOOKED ON AMTOR, BUT I CAN'T FIND THE INSTRUCTION ON HOW TO UNHOOK . . . FOR ME IT'S MUCH EASIER TO TALK WITH MY MOUTH THAN MY FINGERS . . . I DON'T HAVE MUCH GOING FOR ME IN THE ANTENNA DEPARTMENT . . . I NEVER MAKE SCHEDULES ON APRIL FIRST, ESPECIALLY WITH RARE DX . . . IT REALLY IS A THRILL TO POKE A QRP SIGNAL THROUGH THE CURTAIN OF BIG GUNS . . . I'M NOT VERY ATHLETIC, BRUSHING MY TEETH IS VIGOROUS EXERCISE . . . 20 METERS USUALLY DOESN'T SET OFF MY BURGLAR ALARM LIKE IT DID TODAY . . . I DON'T KNOW MUCH RADIO THEORY — I HAD TROUBLE WITH THE NOVICE TEST . . . YES, I HAVE AMTOR, BUT I DON'T KNOW HOW TO USE IT YET . . . THE ONLY FAULT HERE IS IN AN EARTHQUAKE SLIP ZONE . . . BETTER SAY 73 AND PICK UP THE SHACK BEFORE THE CLEANING LADY GETS HERE.

Thanks to WA1UHJ, N0CIB, W0HAH, W9NT, W7VFR, JA1JDD, and all those others I watched on my 9″ screen. Send me a message via packet to W0LHS @ 58103. Bill Snyder, W0LHS, 1514 So. 12th St., Fargo, ND 58103. 73 and DIT DIT. □

Kantronics in Iceland

Kantronics, Inc., announces the appointment of Microtolvan of Reykjavik, Iceland as a new amateur dealer for the Kantronics line of Amateur Radio products. For more information, contact: Kantronics, Inc., 1202 E. 23rd St., Lawrence, KS 66044; (913) 842-7745; FAX (913) 842-2021. □

It has been a year since I started writing this column. I have enjoyed it very much. I hope you have also. There has not been any lack of things to talk about. I have received many positive reactions to the column. They are much appreciated.

New solar cycle prediction

Dr. Patrick McIntosh, Director of Solar Physics Reseach at NOAA's Space Environment Laboratory in Boulder, Colorado, is quoted in the March 21st *Amateur Satellite Report* as having given a startling prediction of unprecedented solar activity.

Quoted in the March 9th *New York Times*, he said the peak of this solar cycle could occur as early as late 1988, and could possibly be the most intense ever measured. Solar activity levels could reach maximum levels by this summer if current trends continue.

He bases his findings on early indicators of a massive buildup in three gauges. These are total number of sunspots, 10cm radio noise rate of increase and the progression of "solar crowns" (ribbon-like loops). He does caution that predicting solar activity is risky, and the currently rapidly rising levels could flatten out.

I find it hard to believe that we could see a period of two years and a few months between Solar Minimum and Solar Maximum! All solar cycle records indicate otherwise. I would like to see Dr. McIntosh elaborate on this in the Preliminary Report and Forecast of Solar Geophysical Data.

50.110 and DX

The Summer Es season is almost here. Hopefully, we will have similar or better conditions from Europe than we saw last year. There is still much discussion going on about 50.110, a DX window, and the 50.2 National Calling Frequency. The majority of those answering the SMIRK Six Shooter questionnaire favor using 50.2 as our National Calling Frequency, as much of the populated world of 6M is now doing.

Take your contest/local/national activity *up* the band and your DX activity *down* the band. That will free up a full 100 kHz of space for DX-only work. Only you, the operator on the 6M band, can cure the problem we experienced last year. If you want to make the problem go away, all of you active on 6M are going to have to change long-standing operating habits. Educate those who are not working DX to move to the non-DX part of the band. We have *plenty* of space above 50.2.

DXpeditions

Yoshi Hayashi, JA1UT, and crew will operate from 9V (Singapore) on 6M from June 3 (Friday) to the 12th (Sunday). It will be the first operation on 6M from that country.

The call sign will be 9V1ES. They will transmit on 50.125 (crystal-controlled) and receive on 50.110, CW and SSB. The beacon will transmit on 50.125. When it sends CQ, the operators are in the shack. When it is sending VVV, they are out of the shack. QSL to JA1UT.

Johannes Baardsen, LA6HL, will operate from Iceland (TF) June 16 to July 17 and the Faroe Islands (OY) July 8-11. Bob Ridpath, KY3K, will operate from the Cayman Islands (ZF) during the June VHF Contest.

Once again, I would like to encourage anyone going on an HF DXpedition to take along a Kenwood TS-680S as your HF rig. It has 10W on 6M, scans, and has a built-in preamp. You can either take along a large antenna for 6, or build the Galapagos 2-element quad which can be broken down and put in a suitcase. You should not miss out on the exciting activity that will be available on 6M.

New countries on 6M

Ahmed Zaidan, HZ1HZ, is interested in 6M. He is looking for the 6M module for his FT-726R, and for a 5-element beam. If you can help, he can be contacted via his QSL Manager, Dick Moen, N7RO. Having Saudi Arabia active on 6M could lead to many other Middle Eastern countries joining him.

Dave Sublette, KX6DS, is working on getting on 6M from Kwajalein, Marshall Islands. He would like to hear from operators who may have suggestions about 6M operation and equipment.

Wil Hoag, WA5OLT, informed me that Robert Smith, V31IJ, is sitting in Belize with a 6M rig but no antenna. He sent him some information. Hopefully, we will get him on the air with the Galapagos Quad as a starter antenna.

DX reports

Jeff Morris, 9H1EL, has his IC-560 repaired (thanks to Reg Mallory, VE1BNN) and is building a 6-element Yagi. I received a report that one of the 9HI's worked LU's on April 5!

Geoff Lord, XE1GE, reports Texas, Louisiana, Florida and Bill Tynan, W3XO (Maryland), worked on December 18. The next day, Toby Dickens, XE1FE, worked Eric Roy, TI2NA, and W5's in Louisiana. March 6 brought them LU's and CX8.

Mike Barry, ZD8MB, Ascension Island, is having a good time on 6M. He has been working EA, FM, FY, HC, J88 and PY recently. His reception of the FY7THF beacon shows a remarkable late night reliability of 64% in December, 76% in January and 56% in February.

In this area, with the solar flux hovering in the 115-130 range, we have been experiencing South American openings for the past several weeks, with strong — and sometimes lengthy — afternoon F2 to HC, HC8, and LU's mainly, sometimes with F2

backscatter to the other W5 areas around us. We have yet to have any nighttime TE as experienced in the '60s and early '70s.

We had two weak openings to KH6 also, on F2 Backscatter from the Southwest. As I write this on April 5, it is open to Argentina, and Gus's HC2FG beacon is booming in here. On the 6th, it is open to HC8, LU and East Texas on F2 backscatter.

The JA's and HL9's have seen increased activity to FK, H44, KG6, P29, VK and ZL areas. The KH6's recently worked Bob Autry, WY-5L/KH3, Johnston Island. I just received a report that Bob worked 10 JA's on March 30. On April 3 he worked VK's, KG6, P29, FK, H44GR and VS6's. KH6's have been working South America and the Pacific area. Activity around the world is on the increase as solar conditions continue to rise. If you are not on 6M now, you should be. Don't wait until it is too late.

6M moonbounce activity

On March 14, Jimmy Treybig, W6JKV, worked Dave Strawe, K7KV, in Washington, via the moon, using horizon gain. Ray Rector, WA4NJP, in Georgia, copied Jimmy, W6JKV, on SSB EME on March 15 and 16, but Jimmy did not copy Ray.

30-54 MHz monitoring

Larry Vogt, N4VA, wants to locate fellow DXers who monitor the 30-50 MHz band. His objective is to either start a monthly newsletter or to have a monthly column in one of the club publications. To receive full details, please write him at: 8103 Sherbrooke Ct., Springfield, VA 22152.

Equipment reviews

For the next several months, I plan on providing you with a short review of the present 6M rigs now available to us. This may assist those of you contemplating buying new equipment to make the proper selection for you. I am not going to cover some of the technical specs to save space. You can get a spec sheet from your local dealer, or by writing the manufacturer.

First of all, I am pleased to announce that Advanced Electronic Applications, Inc. (AEA) has informed me that they will begin selling the 6M SSB HT we know as the Mizuho MX-6S shortly. It should be available at the Dayton Hamvention. They intend to sell the radio at the same price as the 10M model.

This month, I am going to review the ICOM IC-575A, which is seeing increased use.

Transmit: Transmit frequency — 28-29.7 MHz, 50-54 MHz. All mode, including packet. 1-10W Output Power (AM-1-4W). *Power requirements* — 13.8V DC(±), or 117V AC + 10%. *Dimensions* — 9.5″W × 3.7″H × 9.4″D. *Transmitter* — All mode; FM is variable reactance frequency modulation. SSB is balanced modulation. *Operating mode* — simplex and duplex.

Receive: Receive frequency — 26-54 MHz continuous. 99 memories + P1 and P2 (scan in 5 seconds!) DDS (Direct Digital Synthesizer) to enhance packet and high speed scan. Four scanning modes. Squelch on FM and SSB. *Scan* — Program scan, Memory scan, Mode scan, Programmable channel scan with lock-out. *Tuning speeds* — 10 Hz in SSB and CW, 5 kHz in FM, 1 kHz normal operation, and can tune in 1 MHz steps. *Frequency resolution* — SSB, CW: 10 Hz. Pass band tuning, RIT (±9.99 kHz from displayed frequency with RIT readout on the display), and notch filtering, built-in speech compression and receive preamplifier (typically +10dB gain), and many other features.

Comments of the users: They love it! They think it is an outstanding two-band rig. I have not had any negative comments from the several owners of this rig that I have talked with. The ICOM IC-575H 100W model should be available in about one year's time.

License plates

Ray Burns, W4TZG, collects automobile license plates. Any license plate will do, but he particularly needs ones from Missouri, North Dakota, New Mexico, Oklahoma, Oregon, Utah and Vermont. He is willing to trade with anyone needing other plates or will reimburse for any of the above license plates. Please write him. □

Pancakes

(continued from page 18)

quests for another breakfast. We have scheduled it for Saturday, October 15. This is the Jamboree On The Air (JOTA) weekend, when Boy Scouts across North America go on the air and communicate with each other. Since Boy Scouts are high school age, it seemed to be a way to gather two birds with one net. We'll invite several Scout troops to the breakfast and JOTA operation.

(This was presented by ***Worldradio*** *to inspire and encourage other groups nationwide to do the same or something similar. Your organization is invited to send in reports of your efforts to help instruct others.)* □

10-10 INTERNATIONAL News

Chuck Imsande, W6YLJ
10-10 19636

The 10-10 Logo, or . . . those 10 black cats

To understand the makeup of the 10-10 logo, we must first look into a little of the background of 10-10.

The very first meeting of the 10-10 Net of Southern California (yes, that was the original name of the net) was held in a park in San Dimas, a small community located a short distance east of Los Angeles.

10M had been roaring during the '50s, as many of the old-timers can attest. Then came the '60s, and with it a bad case of the doldrums. Lack of good propagation, and the resulting lack of interest, caused many to abandon 10M.

A concern developed that due to lack of activity on 10M, the FCC may consider reassigning the 10M band to some other radio service. Sometime in 1961, Irv Hunter, K6PWO, started talking about forming a group to use and promote activity on a daily basis on the 10M band.

In March of 1962, word got around among the locals that a meeting would take place in San Dimas Park, near Irv's home, for the forming of a group to promote 10M. A picnic lunch was held on a Saturday that March, and a number of the local hams attended. Thus, the seed was planted.

Such topics of discussion were: What will we name this net? When shall we meet? What kind of a net shall we have? What, if any, slogan shall we use and what will be the qualifications for a certificate of membership? All of these and many other things were given due consideration by this group of 10M stalwarts, and soon things began to fall into place.

It was decided that the net would meet every day of the week except Sunday at 10 a.m. local time on 28,800 kHz. So what happened? Soon everyone was saying: "See you at 10 on 10." It was a natural, and the name quickly became the "10-10 Net."

As other items were falling into place — such as officers, net control operators and the like — one item still remained to be decided upon. The nature of the logo or emblem to adorn stationery and certificates.

The story goes that just as the discussion was centering around the "logo," a black mother cat and her nine kittens strolled across the park lawn. That did it! By unanimous consent, that black mother cat and her kittens were to be a principal part of the logo. The fit was perfect — 10 cats for 10-10.

The meters and other decorations on the tails of the mother cat and her kittens were done by the late Jim Paine, W6OI, 10-10 #109, and the art layout was by 10-10's printing advisor, Bert Ayers, W6CL, 10-10 #17762.

Today, 26 years later, the name has changed from the 10-10 Net of Southern California to the Ten-Ten International Net, Inc., but the logo is the same, and is recognized around the world as representing one of the largest and friendliest groups of Amateur Radio operators.

15 years ago

Received a letter recently from Don Williams, WA4AJQ, who sent me his 10 contacts and requested a 10-10 number of his own. Well, first, I cannot issue a 10-10 number; they are only issued by the District Manager for the number in your call sign. That was no problem. I just sent Don his list back with the name of his District Manager who happens to be Jim Beswick, W4YHF. But the interesting part of Don's letter is the following:

"Enclosed are log entries for 10M contacts with 10-10 numbers. Note that the contacts are from January 1973. Nothing like a little procrastination. Actually, I made those contacts shortly after receiving my General ticket, and never got around to applying for my own 10-10 number. However, with the sunspot cycle on the increase and after working several contacts on 10, (including Hawaii), I decided to apply for my own number."

Don winds up his letter by saying, "I have been inactive for a few years, and am looking forward to many more contacts on 10."

Well, 10-10 doesn't care when you make your 10 contacts, but I believe Don must hold the record for holding his contacts the longest before submitting them for a new number. Anyway, Don, thanks for digging out those contacts and joining in the 10-10 fun.

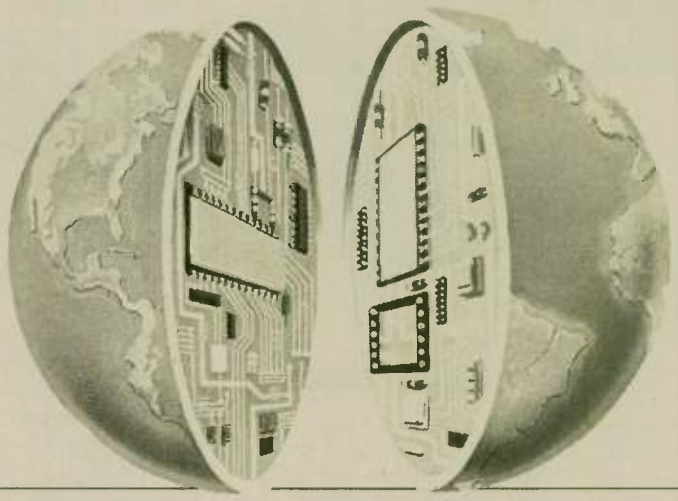
If you are interested in finding out about 10-10, and how you can become a member and receive your very own 10-10 number, send me a #10 (business-size) SASE with 25¢ postage for an information package. If you would also like the latest copy of the *10-10 International News*, the official 10-10 magazine, just send one green stamp ($1). No SASE required if you are sending a green stamp. My address is 18130 Bromley St., Tarzana, CA 91356-1701.

Best 73 es cu next month. □

The 10-10 Logo

Conscience gets a lot of credit that really belongs to cold feet.

WITH CIE, THE WORLD OF ELECTRONICS CAN BE YOUR WORLD, TOO.



Look at the world as it was 20 years ago and as it is today. Now, try to name another field that's grown faster in those 20 years than electronics. Everywhere you look, you'll find electronics in action. In industry, aerospace, business, medicine, science, government, communications—you name it. And as high technology grows, electronics will grow. Which means few other fields, if any, offer more career opportunities, more job security, more room for advancement—if you have the right skills.

SPECIALISTS NEED SPECIALIZED TRAINING.

It stands to reason that you learn anything best from a specialist, and CIE is the largest independent home study school specializing exclusively in electronics, with a record that speaks for itself. According to a recent survey, 92% of CIE graduates are employed in electronics or a closely related field. When you're investing your time and money, you deserve results like that.

INDEPENDENT STUDY BACKED BY PERSONAL ATTENTION.

We believe in independent study because it puts you in a classroom of one. So you can study where and when you want. At your pace, no somebody else's. And with over 50 years of experience, we've developed proven programs to give you the support such study demands. Programs that give you the theory you need backed with practical experience using some of the most sophisticated electronics tools available anywhere, including our Microprocessor Training Laboratory with 4K of random access memory. Of course, if you ever have a question or problem, our instructors are only a phone call away.

START WHERE YOU WANT, GO AS FAR AS YOU WANT.

CIE's broad range of entry, intermediate, and advanced level courses in a variety of career areas gives you many options. Start with the Career Course that best suits your talents and interests and go as far as you want—all the way, if you wish, to your Associate in Applied Science Degree in Electronics Engineering Technology. But wherever you start, the time to start is **now**. Simply use the coupon below to send for your FREE CIE catalog and complete package of career information. Or phone us, toll-free, at **1-800-321-2155** (in Ohio, 1-800-523-9109). Don't wait, ask for your free catalog now. After all, there's a whole world of electronics out there waiting for you.

CIE

Cleveland Institute of Electronics, Inc.
1776 East 17th Street, Cleveland, Ohio 44114

Member NHSC
Accredited Member National Home Study Council

AWR 01

CIE **Cleveland Institute of Electronics, Inc.**
1776 East 17th Street, Cleveland, Ohio 44114

YES... I want to learn from the specialists in electronics—CIE. Please send me my FREE CIE school catalog, including details about CIE's Associate Degree program, plus my FREE package of home study information.

Name (print): _____

Address: _____

City: _____ State: _____ Zip: _____

Age: _____ Area Code/Phone No.: _____ / _____

Check box for G.I. Bill bulletin on educational benefits:
☐ Veteran ☐ Active Duty

MAIL TODAY!

QRP

Rich Arland, K7YHA

Emergency communications is one of the cornerstones upon which our radio hobby is built. Our charter from the FCC specifically states that Amateur Radio operators will offer their services in times of emergency, be it man-made or natural disaster. The Colombian mud slides, the Mexico City earthquakes, the Mt. St. Helens eruption and the invasion of Grenada all proved that dedicated Amateur Radio operators have the talent, experience and equipment necessary to provide vital communications when normal means are disrupted.

We are proud of our abilities and rightly so. In addition to being proud, we must continue to be ready for the unexpected turn of events that will thrust us into the limelight as emergency communicators. Part of this readiness is to become actively involved in emergency communications at the local area level. The Amateur Radio Emergency Services (ARES) coordinator in your community can use your services. ARES sponsors activities throughout the year, and ARES volunteers form the core of emergency communications networks throughout the country.

The most publicized annual emergency communications exercise is Field Day (FD). No other contest-style event is so well suited to the QRPer as FD. Due to the small size and extreme portability of most QRP gear, it is a simple matter to take the rig out into the field, erect simple wire antennas, hook up a car battery, and go on the air for the Field Day contest. Check over the last several years worth of FD logs and you will be amazed to see some of the scores racked up by those running 5W or less.

Having done my share of Field Daying, I'd like to pass along some pointers that have worked well for me in the past. In addition, I have come across some interesting products that can make FD a little less hectic and a lot more fun. First of all, there is no magic formula for FD success. However, one rule does come out on top when planning your FD outing . . . K.I.S.S. (Keep It Simple, Stupid!).

Since FD is Edsel Murphy's playground, you should apply the K.I.S.S. principle to *EVERYTHING* associated with FD. While the bigger clubs can boast several towers with rotatable arrays, you will be well advised to stay with simple wire antennas. Beams are nice, but wire antennas work just fine in the field.

While most people think of wire antennas in terms of standard dipole configurations, there are some alternatives which can offer dual polarization and gain. Horizontal and vertical loop antennas are a good choice for the low bands (80/40M). Gain is present on 20-10M with these loops when using a transmatch. Loops also tend to be much less susceptible to noise. Off-center-fed (Windom) antennas, along with the "QRP standard" — the G5RV, are two other alternatives to the plain vanilla dipole.

Jim Thompson of The Radio Works, Box 6195, Portsmouth, VA 23703, offers a unique Windom design called the "Carolina Windom." This Windom derivative is 132′ overall, fed 49.5′ from one end via a special 200Ω Dedicated Matching Unit. Both horizontal and vertical radiation is realized through the use of a vertical coaxial radiator as part of the feed system. This results in a good all-band antenna (a transmatch is a must) with great DX potential, which will fit in the same space as the standard 80M ½-wave dipole.

The Carolina Windom can be erected as a standard "flat-top," inverted Vee, or sloper. Compared side-by-side with my G5RV antenna, the Carolina Windom is an excellent performer, especially on DX. The combination of vertical and horizontal radiation patterns yields both good local area and DX coverage.

My tests indicate that the Carolina Windom is a much better all-around antenna than the standard G5RV. Although longer than the G5RV by 30 feet, its performance compared to other dipole antennas is clearly superior. Price is about $70.

A spin-off from the G5RV was obtained from Jim Stevens, KK7C, of Antennas West, 1971 N. Oak Ln., Provo, UT 84604. Jim sells a complete emergency G5RV antenna system which includes the dipole antenna, linear impedance transformer, 160M adapter and counterpoise, 70 feet of

RG-8X coax, launching system (to get the antenna up in the trees), nylon cord, and one of the best instruction manuals I've ever read. All this fits into a plastic bucket which serves as a carrying container.

The entire system is called the QRV 160-10 Emergency Pack and will fill the bill where a fully portable, multiband antenna is needed for immediate deployment. Construction is very high quality. An antenna tuner is recommended for all-band performance. This antenna is a "must" for anyone who wants to have a complete HF antenna system ready for immediate use, be it FD or an actual emergency. Price is about $140.

A good transmatch is invaluable for emergency communications. It is always nice to have antennas cut for the appropriate bands. However, it may be necessary to use an end-fed wire, a non-resonant dipole or some other less-than-desirable antenna during an actual emergency. A transmatch solves many problems when trying to interface solid-state transceivers into less than optimal antenna systems.

MFJ Enterprises, P.O. Box 494, Mississippi State, MS 39762, has one of the best selections of tuners on the market today. The Model 941-D tuner is my favorite. It has built-in SWR/power metering, antenna switching (you don't have to lug a separate meter and antenna switch along), and a real wire-wound coil — not a toroid — as the inductor in the matching network. Its small size, many features and wide range of impedance matching make the 941-D a natural for your emergency communications kit. Price is about $100.

One final little goody that I absolutely cannot imagine life without is the Palomar Noise Bridge by Palomar Engineers, Box 455, Escondido, CA 92025. This tiny device can tell you more about how your antenna is working than any other single piece of test equipment. The bridge is placed between the antenna and the transceiver. By adjusting the controls for a "null" in the noise coming over the receiver, you can see whether your antenna is too long or short, and the actual impedance of the system.

You can also use the bridge to pretune the transmatch without ever applying RF from the transceiver. This results in no on-the-air tune-up QRM. The latter application is great because you can pre-mark the tuner controls and rapidly change bands during the heat of the action.

The small size and versatility of the Palomar Noise Bridge make it a must for your emergency communications kit. Price is about $60.

We have covered some antennas and accessories which will be useful in your emergency kit. The choice of a rig is entirely up to you. The primary requirement is that it work off of 12VDC. "Real QRPers," because of a masochistic streak, will opt for an HW-7 or 8. Nothing beats the thrill of working FD with a direct conversion receiver! (NOTE: these same QRPers also love root canals.)

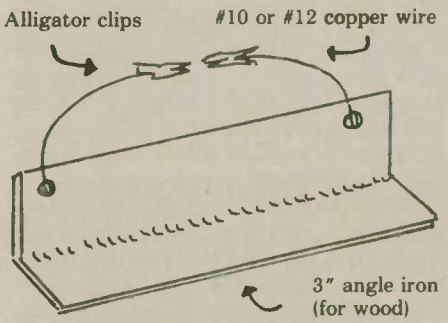
A good quality keyer *and* a straight key back-up, should also be included in your emergency kit. Don't forget two sets of headphones, logbook, scratch paper, pens (or pencils), battery-operated lamp, *GOOD* quality flashlight, clock, area maps, extra coax, connectors, antenna and hookup wire, along with a complete tool kit (including a battery-operated soldering iron and solder, DDM, frequency counter, wattmeter and GDO). If you have the room, a 110VAC inverter to power any AC items might be a useful addition. Since "current bushes" are hard to find, remember to pack the deep-cycle 12V battery.

The secret to success in FD and any emergency communications scenario is simplicity. Know your equipment, practice good operating procedures, hone your skills, and above all, *BE READY.* It is not the station that has the most equipment, or the largest showing of operators or the highest score who triumphs on Field Day. Everyone who turns out is a winner. The fact that you care enough to participate, be it single effort or club showing, strengthens Amateur Radio in general and you in particular.

That's a wrap for this month. Next time we will show you how to install the ARR pre-amp in an IC-202 and visit VHF QRP again. Till then, 73's es Gud DXing. Rich Arland, K7YHA, 9 Vine St., Shavertown, PA 18708. □

Need a third hand?

Here is a simple project that comes in very handy when you need a third hand. —*Georgia Power Employee ARS* □



Enhancing audio signals

B.L. "Pete" Hopping, KA3RFE

Amateur Radio is a hobby that everyone can enjoy, and the hearing-impaired ham is no exception. Having a hearing impairment is only a minor obstacle in a hobby which has so many various modes of communication.

All of the modes available to amateurs, with the possible exception of voice, can be used by the hearing-impaired. Some profoundly hearing-impaired hams cannot use voice modes, but there is no limitation to the other modes that could be used — including CW.

I am a profoundly hearing-impaired Amateur Radio operator who wears binaural behind-the-ear-type hearing aids. My hearing loss is about 95-100 dB in each ear. I've worn hearing aids since I was 7 years old. I'm now almost 40; so, to me, wearing hearing aids is no big deal. I've had lots of practice in adapting available technology to make hearing easier for me.

Most modern hearing aids have a "telephone" or "t" switch which magnetically couples the telephone handset speaker's output with a pickup coil inside the hearing aid. This allows hearing aid users to hear comfortably on telephones without distracting background noise and audio feedback from the hearing aid. When the switch is engaged, the hearing aid only amplifies the magnetic audio signal from the phone and nothing else.

I had been wearing standard headphones which were compatible with the telephone switches on my behind-the-ear hearing aids to hear on the radio. Unfortunately, the volume setting at which I was most comfortable was loud enough to carry sound outside the shack and was disturbing the rest of the household. This was particularly true on CW, since it seems to be a very penetrating sound. It was as if I were using the speaker on the rig instead of phones! So I began a search for an alternative.

Using an audio transducer was not a solution since I did some limited voice contacts with stations which had clean audio who were easily readable.

(A side note: Many U.S. hams seem unable to properly enunciate the English language . . . It's a wonder they're understood at all! I hear DX stations speaking better English than many American hams!)

I experimented with the cheap lightweight monaural "walkman" type headphones sold by Radio Shack (Model 20-210 A) and discovered they are ideal for use with behind-the-ear-type hearing aids. Because of their size, it is possible to place the headset's ear pad directly onto the most magnetically sensitive part of the hearing aid for use with the telephone switch. Additionally, because the pads are in direct contact with the hearing aids, the volume control can be lowered or raised without bothering everyone else around.

I found that running the radio with audio gain almost all the way open while using these phones results in only a "whisper" of sound 10 feet from the radio. And, of course, their light weight does not place much pressure on the ear or head. The audio quality of these phones is ideal for communications reception whether CW or phone.

I also discovered, to my delight, that these headphones can be used *without* the telephone switch on the hearing aids if the pads are placed on the head so that they are directly in front of the hearing aid microphone! I can tell no difference in the audio using either method. This is ideal if you want to use the radio and also need to be able to hear what's going on around you.

If the pads are placed correctly, you can hear the radio's audio signals without feedback from the hearing aid. My hearing aid's mic is positioned in the front. If I put the pads right in front of the mic pickup hole, I hear everything clearly. I tried it with two old hearing aids with mic pickups in the rear and got the same results.

It may take some trial and error before the right position can be found. It also may be necessary to turn the hearing aid volume down slightly to avoid feedback when not using the telephone switch.

Radio amateurs who wear pocket- or body-type hearing aids can modify the headset to their hearing aids. Cut one ear pad from the metal adjusting strap of the headband at the point where the strap attaches to the plastic part of the ear pad. Cut the other earpad's wire where the two wires branch out to right and left pads. This leaves one earpad connected to the wire and plug, and completely removes the headband. Then, using a rubber band, place the ear pad to the area on the hearing aid where the telephone coil is most sensitive.

I have a handi-talkie which I previously did not use outside the house because outside environmental noises made the audio unreadable. Using the miniature phones placed in front of the mic pickups on the hearing aids gives me clear, binaural audio as well as environmental sounds; by using a speaker-mic on the radio with the headphones, I can clip the radio to my belt and not have to take it off my belt to hear. Now I can go for walks safely and still hear the action on the local repeater — something I could not do before. It looks a little silly, but it works!

It's also possible that the phones could be used while mobiling, but I have not tried it as I don't have a mobile. If used mobile, *don't* use the telephone switch, as you will be unable to hear the traffic noises such as horns or sirens.

Summary

Use of the "walkman"-type phones may be useful for a ham with hearing aids for several reasons:

1) They can be placed directly over the hearing aid's most magnetically sensitive area when using the telephone switch. 2) They do not place pressure on the ear. 3) They can be used without the telephone switch being engaged if placed close to the mic pickup point on the hearing aid. 4) They can be used with HT's (and possibly mobiles) without compromising safety. 5) The audio volume can be set quite high without disturbing others. 6) They can be adapted to pocket-type hearing aids. □

Technology transforms lives

Alex Comfort, M.D., G0DBL/KA6UXR

The Cheshire Homes in Britain are large country houses, part of a project that was founded for the disabled by Group Captain Cheshire, who flew in the Hiroshima raid.

A lady member of the West Kent ARC was paying one of her periodic visits to our local Cheshire Home when she came across Mike. He was sitting in a wheelchair, blind, deaf and partly paralyzed by a progressive neuromuscular disease. Unable to communicate, his response to any contact was to push it away. He wanted to be left alone.

The lady ham spoke to him. No reply. She touched him, and he repulsed her. Used to not making contact at a first try, she took hold of his hand and tapped out slowly QSL? QSL? It took a moment for Mike to catch on. Then he replied with his finger: R R QSL. Mike had learned Morse shortly before his illness became worse.

I met him when I gave a talk to the club. He was sitting in his wheelchair, a specially modified vibrational headset on his head and a computer on his knees. To converse with him, one could type in the text on the keyboard, and he would "hear" the message in fast Morse. My talk was summarized for him in the same way.

Between his first "QSL" in the hospital and that night, amateurs had fitted him out with the special headset, boosted his Morse speed, got him licensed and on the air, fixed up the computer-transducer, and brought him from despair to full participation in life. And his disease seems to be arrested. Who says that Morse is useless?

I thought about the implications of this true story, which could be matched over and over again. Hams are famous for helping the disabled to get on the air and share their hobby. That help can be life-transforming. It was for Mike! Now he kids us that we read Morse too slowly.

But it could go a great deal further, and we could do for the disabled a great deal more than bringing them into the ham fraternity. Some of us are audio engineers. Many people with cerebral palsy have unintelligible speech and are mistaken for idiots. Give them the right filters, and you can understand them clearly.

And how about those of us who play around with robotics? The skills that go into making domestic robots could be going into making life normal for people who can't turn off the light, walk or feed themselves. A disabled person is a normal brain imprisoned by mechanical problems. Overcoming those problems by our technical ingenuity is a more fascinating project than making electronic toys. If it hit one of us, we would apply any skills we had to devising ways of overcoming it.

Most of the things disabled people need could be reduced to modular units (controlling switches, moving objects, communicating, and so on). The problem is that each disability is different, so the input to the system has to be customized. But there is virtually nobody, however severely disabled, who can't move something, even if it is only his eyes, and that movement can be transduced to control equipment.

I would like to see radio amateurs form a company to develop prosthetics and get the circuit boards made up cheaply. They would test their skills, and disabled would be given new lives near-gratis.

As to communication, the medical profession should be more aware of Morse. I still see disabled folk talking by pointing to letters on a board. The great advantage of Morse is that there are units on the market to transcribe from plain language to Morse and from Morse to plain language. It even has its own abbreviations like those in sign language, and it gives communication a speed which makes communicating worthwhile.

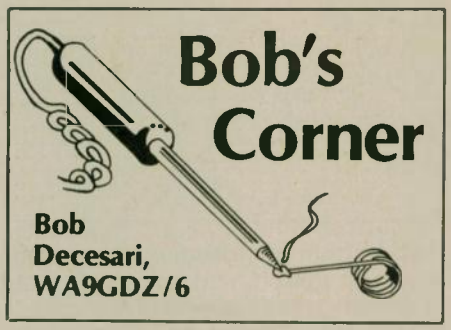
Every radio club should have its working-party on handicap — partly to back what HANDI-HAMS do to put people on the air, partly to apply electronic skills to handicaps generally. If some of us find that it takes all of our time and limits our on-the-air activities, the loss to us will be an incalculable gain to handicapped people.

There is no limit to the problems which are available for ingenious amateurs to solve. I already look at every handicapped patient and think what modern technology could do to remove his or her handicap. With a little help from my friends, not being an engineer myself, I could see that possibility realized. Anyone interested?

— *Santa Barbara ARC, CA*

EDITOR'S NOTE: Dr. Comfort, an organization does exist, solving the kinds of problems you describe. It is the Telephone Pioneers of America, sometimes referred to as the largest UNKNOWN service club in the world. The Pioneers are active and retired telephone employees who use their knowledge and skills to solve just the kind of problems related in your article. Of course, many of them are amateurs.

If you, or anyone with such a challenge, would write to T.P.A., Public Relations Dept., Rm. 2569, 22 Cortlandt St., New York, NY 10007, they will refer you to a T.P. chapter or council near you that would have the Pioneer volunteers willing and able to help. □



Simple DF loop antenna for different frequencies

Recently, I had occasion to design and build a small direction-finding loop for 49 MHz for a commercial application. It occurred to me that this antenna might be of interest to 6M (50-54 MHz) enthusiasts for DF work, and possibly for other frequencies in the HF or VHF spectrum as well.

A little research into the matter revealed ample data on the subject in both the ARRL Handbook and their antenna book. Furthermore, I had filed away a small article written by Jim Harding, K3DRJ, in a past issue of **Worldradio**, on a similar DF loop for 2M! This was all I needed to go ahead and build one of these units for evaluation. The results were as predicted, and this information should be useful for anyone wanting to build a hand-held DF loop for 2M through about 21 MHz.

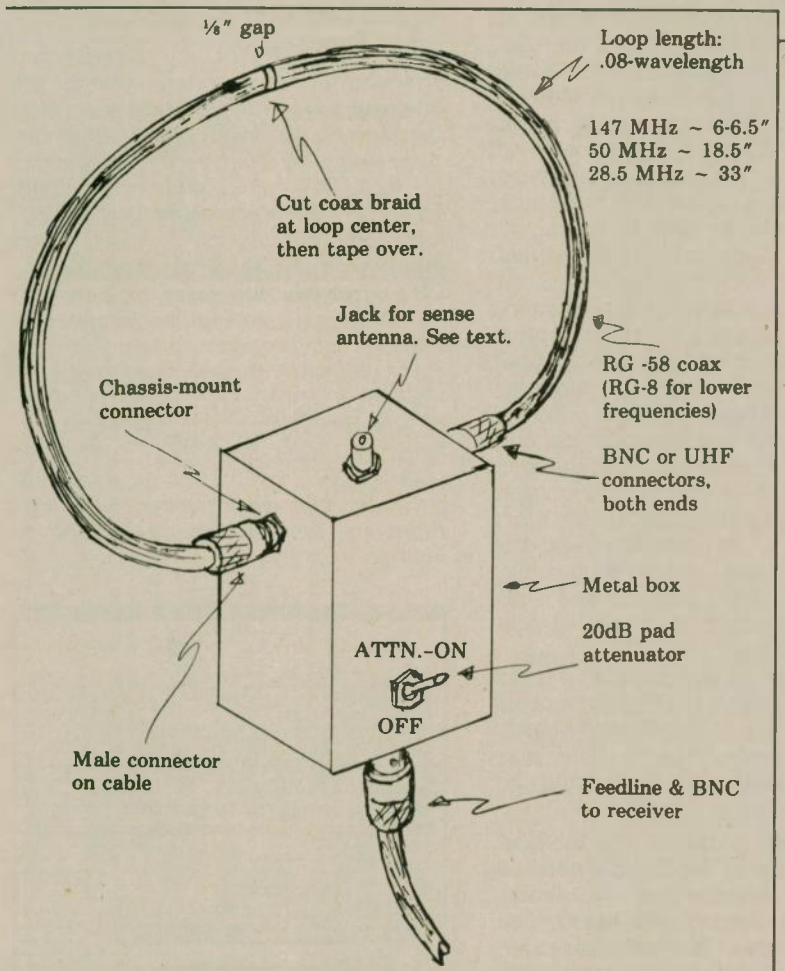


Figure 1 — **Simple hand-held DF loop antenna**

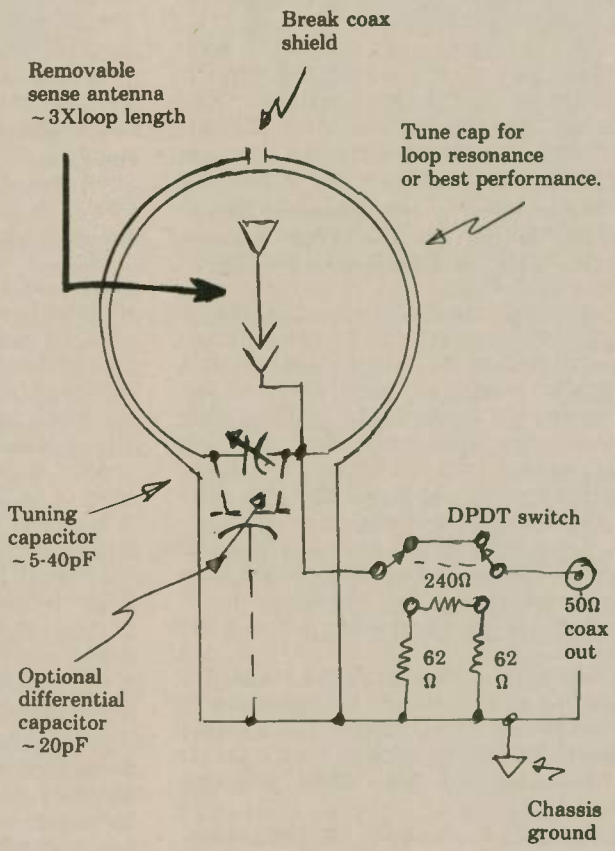
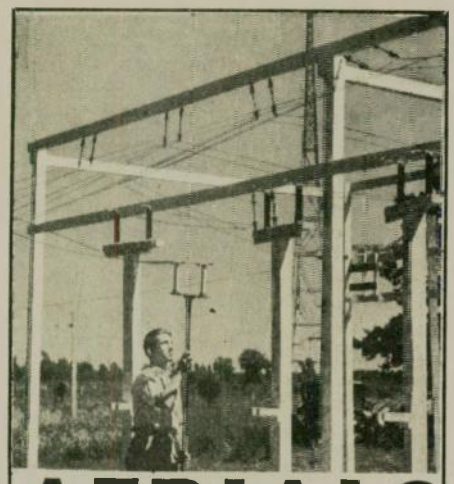


Figure 2 — **Loop DF schematic**

As stated, the best sources for information on this subject are the ARRL publications. As can be seen from the illustrations, a piece of RG-58 coax cable is used as the pickup element. What is critical is the loop length with relation to the operating frequency.

Specifically, it is recommended that the loop does not exceed .08-wavelength in length. Too long a loop is detrimental to the direction-finding performance of the antenna, and too short a loop effectively does not allow reception of the signal. The recommended .08-wavelength seems to be a good compromise of these two undesirable parameters.

(please turn to page 60)



AERIALS

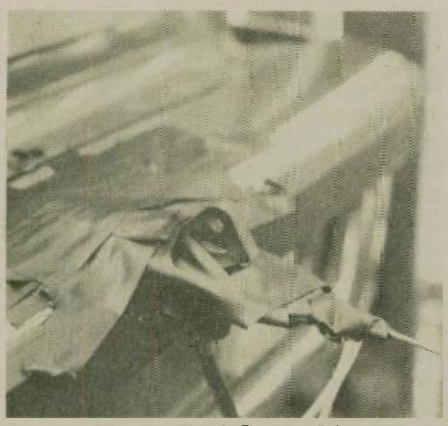
Kurt N. Sterba

We received a very pleasant letter which, in part, said—"Your Sweepstakes antenna described in the April 1988 issue must be questioned on moral, if not on electrical, grounds (no pun intended). I just hope you returned those shopping carts to the market.

"I can see your disciples, hoping to duplicate your results, ripping off shopping carts everywhere. This will indirectly raise my grocery bill and yours, as markets will pass on their losses to the consumer. But maybe you own that particular market, so my point is moot, especially if your lease expires on April 1."

We're not identifying the writer (a two-letter call) because he is obviously an ethical person, and we don't want to look like we're arguing with a good soul in public. I, Lil Paddle, will answer.

Since I've shopped at the same market for 18 years, I can assure you I had permission from the owners. Also, it helps to be a good lookin' broad.



A real Hashafisti Scratchi connection. However, it produced a 5,000-mile DX contact. A no-cost antenna . . . except, of course, the price paid for its other function.

(Kurt) April 1. A joke? Nay! May all who thought that was all tomfoolery be plagued with the curse of minus j the rest of their ham careers.

To prove that such was no April 1st hokum I shall embark on a series of atrocious aerials. Thus I recount partial adventures during the *CQ Magazine* WW Prefix contest.

The "ultimate disguise" antenna — no antenna at all!!! I ran a coax line to my *CAR*. With a big glob of tape I attached (via a Budwig connector) the feed to the rear bumper of the auto.

The rig measures, key down, 60W into a dummy load. On 15M SSB I made two contacts while the clock still read 0205Z. Then at :13 and :15, I had two contacts over 2,000 miles away. The car, with a tuner, loaded just fine . . . obviously.

The next hour, contacts at 26-27-28. Stopped and had some M&M's, then changed to 20M. Back-to-back contacts were with Venezuela and Alaska. Contacts at :38, :39, :46, :48 — I was answering CQ's. At 0504, a contact over 5,000 miles away. Switched to 40, contacted a couple of states away and then up to Canada. The car did not load well on 75.

The next morning on 10, worked Chile. Well, that challenge was done, so I pondered what would really be outrageous. The answer: one of those little short umbrellas sold by the sidewalk vendors of New York City.

Propped it in a tree in the backyard with the feedpoint about 7 feet off the ground. First contact was Ecuador, then a 5 and then Argentina. High winds almost destroyed the umbrella. Shortly after that, Mexico, Brazil and two more Argentines.

OK, you may be saying, that was a good opening on 10. Well, next was 15. Tuner setting was 0 B 3 at 0032 Paraguay and at 0033 Brazil. Lil calls the antenna the "Mary Poppins."

Now let's slug it out with the big boys on 20. Tuner at 10 C 10. More of the same.

Need a new challenge. Ringo Ranger. On 10M. Hawaii and Alaska — two contacts in two minutes. Ringo (a 2M antenna) on 15 Puerto Rico. A WB5 at :34, a VE6 at :35.

Need a new challenge. Tower guy wires through 100 feet of coax to the Budwig and a wire wrap from connector to old rusty guy wires, with *NO* tuner.

Went to a rig (also 60W) that backs down the power with SWR. Contacts on 20 at 11, on 15 at 14, and 10 at 21. Well, enough of that silliness.

After a car, a short umbrella and a 2M antenna, I felt I deserved better so I went to the 20M beam . . . and used it on 15. Yes, 20 antenna on 15 with a tuner. Contacts at :35, :36, :37, :38, :38; then another run at :42, :44, :45, :47, :48, :49, :50, :51, all answering CQ's.

No, you won't make 2,000 contacts with such antennas, but you will work people. There will also be some who won't hear you.

But I find that the absurd is becoming addictive. What next? Aluminum baseball bat? Coffee cans? Lawn furniture? Paper clips?

Budwig connector turns cheesy umbrella into an antenna.

Is there anything of real meaning to all of this? Well, it does prove that lack of space or funds need not keep one from the fun of HF contesting.

And I did get more of a kick out of each contact than I do when the amplifier is running and the antenna is on the right band.

I wonder if the ARRL museum will accept a wind-beaten 20M umbrella?□

High winds destroy umbrella. Note prong — gives directional effect.

Bob's Corner

(continued from page 58)

Note that a cut in the coax braid is placed at the loop center. This allows shielding of the signal's electric wave component but not its magnetic wave component. Without the cut, the antenna just won't work! Also of extreme importance for proper operation is the need for a metal enclosure to shield the tuning capacitor and internal wiring from the signal wavefront. If these components are not shielded, there will be severe degradation in the direction-finding operation.

The design illustrated here is the simplest version of the DF loop possible. Since it is fed directly by 50Ω unbalanced coax, there is slight skewing of the null off the perpendicular axis of the loop. I have chosen to live with it in the interest of simplicity. However, for the purist, a differential capacitor connected from each end of the loop to the chassis will correct the skewing effect. An alternate way would be to use a coaxial balun, as K3DRJ did.

Mechanically, I assembled the circuit inside a small LMB aluminum box. I used BNC chassis mount connectors on either side of the box to interface with the actual loop. The reason I did it this way is two-fold.

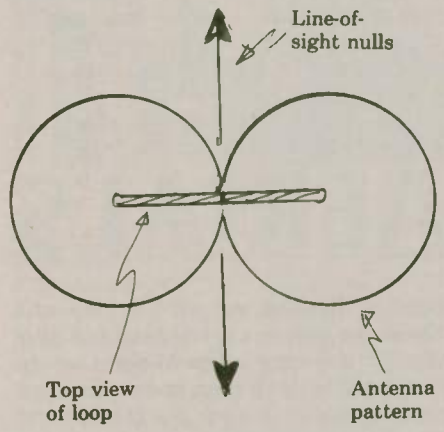


***Figure 3A* — Basic loop pattern**

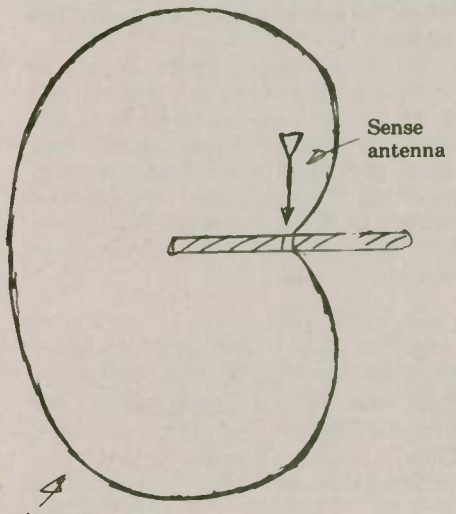


***Figure 3B* — Loop with sense antenna**

First, since it is virtually impossible to make a good solder joint to aluminum, the connector affords good mechanical contact of the coax braid to the chassis. Second, with removable connectors, I can put virtually any loop cut for different frequencies on the box that I choose, provided it is in range of the tuning capacitor for the desired frequency.

Admittedly, for HF frequencies, the RG-58 loop becomes a little wobbly, but it is still operational. Perhaps a stiffer cable would work better mechanically at the lower frequencies.

One innovation of my design is the incorporation of a 20dB attenuation

pad for DF work on stronger signals. Actually, 20dB attenuation is sometimes not enough when a very sensitive receiver is used. Ideally, the receiver should have a manual gain control for close-in DF operations. However, I have found the 20dB quite useful and would strongly recommend its inclusion into the circuit. A standard DPDT toggle is used to mount the pad resistors. The attenuator assembly should also be mounted as close as possible to the output connector in order for the attenuator to work properly.

The pattern of the antenna is illustrated in *Figure 3A*. Note that the nulls are obtained off the perpendicular axis of the antenna. A "sense" antenna may also be incorporated to change the pattern to look something like *Figure 3B*. My experience has proved that the null off the loop with the sense antenna is too broad to be of use for drawing a line-of-sight to the transmitter. However, it does function to inform which way the transmitted signal is coming from. I made my sense antenna removable so that the better null of the basic loop could be used for line-of-sight determination.

For those interested in the simple loop DF antenna but not able to build it for one reason or another, Radio Engineers will be offering the DF loop as a new product. If you are interested, please see their advertisements in this issue of **Worldradio** for address and telephone information.

Correction time

In my recent column depicting a 5/8-wave vertical using a tuna can as a base, the overall dimension of the antenna should be 47″, not 39″. Thanks to Dick Ociepka, K1WWT, for pointing this out. □

Write for Worldradio!

Crank up your typewriter. There are 996,912 stories in Amateur Radio and you are one of them.

Your pay? Well, did you see last week's *Lifestyles of the Rich and Famous?* The interview with the ham who had the wide-spaced 6-element 20M Yagi that didn't overhang the width of the yacht anchored at the Riviera?

Would you believe he made his wad writing articles for **Worldradio?**

Actually, you'll make enough to enjoy a candlelight dinner for two at your favorite Burger King. No cheese, small soda.

Send your articles to: Stop the Presses, **Worldradio**, 2120 28th St., Sacramento, CA 95818. □

Code Matters

Loraine McCarthy, N6CIO
315½ Ruby, Balboa Island, CA 92662

This month let's first discuss preparation for the Extra code exam. I am currently teaching an Extra code class through one of the community colleges in Southern California. These students, in addition to students who call me at Radio School, want to know how preparation for the Extra will differ from the Novice and General levels.

The first question is always: "Is it harder than the General?" My answer is usually that it's about the same or sometimes easier for the following reasons. When a student has decided to prepare for the Extra it is more a decision of choice. The student does not feel the same pressure in preparing for the Extra as the General because he/she does not need this license to obtain worldwide voice privileges.

In addition, the student has usually, by the time he has reached 13 wpm, developed some good study habits and practice skills. Also, the student has become more familiar with the testing situation.

Another question asked is "How long will it take to get to 20 wpm?" Of course, this depends on the individual and the amount of daily practice time. However, the average tends to be about the same as for the General — about eight weeks, with 45 minutes of careful practice each day.

Finally, students ask about difficulties they may have with character speed changes, miscellaneous letter and number errors, and plateaus they might encounter along the way. Since the General exams are usually given with a character speed of 13 wpm and the Extra at 20 wpm, I find that the easiest way for the student to make the transition is a gradual increase in character speed along with a gradual increase in speed in words per minute.

The types of errors that occur at the faster speeds represent the same basic groups as for the General, although they may vary for the individual. For instance, one student may reverse the "G" and "W" and "D" and "U" for some time. When they have mastered that, as the speed increases, they may begin to confuse the "C" and "Y," which is a slightly different type of error. The thing to remember is that each of these will work itself out with time and practice!

At all levels of practice, each of us has to remember *to write each and every letter as we hear it, and if a letter is missed, write the next letter heard and keep writing.* Repeating this phrase regularly before each practice session will help with avoiding anticipation.

Finally, students indicate that they do not think they can write that fast. For some, it does begin to get a little difficult to get all letters down around 18 wpm and higher. It sometimes depends on a person's style of writing.

The mistake often made in this situation is that the student will pause for a moment or find they're copying behind, and they will also stop listening. For example, if you hear "occ" and you're certain it's the word occupation, you may stop your hand to be ready for the next word, but you must keep listening to the code to verify it is that word. If a letter does not fit the pattern, you must be ready to write.

So if you've been thinking about giving that Extra license a try, go ahead and get started!

If you have recently passed one of your code exams, write me a note and send along a copy of your license and I'll send you a certificate from Radio School for your ham shack.

I have available 5, 13 and 20 wpm sample exam tapes as well as 5-7, 13-15 and 20-22 wpm random tapes. Speed builders are 7-10, 10-12, 13-15, 15-17 and 17-19 wpm. These are all 90-minute cassettes and are $9.95 each plus $1 for P&H. If you are ready for a theory upgrade, theory courses are $19.95 plus $3 for P&H.

You can order thse items from me: Loraine McCarthy, N6CIO, Code Instructor, 315½ Ruby, Balboa Island, CA 92662; (714) 675-4415. □

Sideswiper Net

Bob Shrader, W6BNB

The Society of Amateur Radio Operators (SARO), formed in 1937 in the San Francisco Bay Area, has recently reached back into the far distant past to come up with a "Sideswiper Net."

Old-timers may know what a sideswiper is, but for the younger members of the fraternity, it is a key that operates somewhat like a bug or an electronic keyer. On such keys — as you probably know — a push of the thumb produces a series of dots, and a push of the first finger produces a dash on a bug, or a series of dashes with an electronic keyer. But the sideswiper, or "cootie" key, makes a dash with either the thumb or first finger.

To make a dot, you just tap either side of the paddle(s) lightly. To make two dots, you tap first the left side and then the right side. To make an "S" you tap left-right-left, or you may make it by tapping right-left-right, and so on. For a "K" you can make a dash with the finger, a dot with the thumb, and the second dash with the finger; or again, you can reverse it and make a dash with thumb, dot with finger and dash with thumb.

Sounds easy, doesn't it? Well it isn't. If you don't believe me, try it.

To try to send with a cootie key, you can use one of several types of keys. One of the easiest is to use an electronic key paddle that has a center lead and two outside leads (to the right and the left contacts). By tying these two outside leads together, the center and outside leads make up a cootie key circuit. Or you can homebrew a short piece of hacksaw blade held at one place above a base board, that can be pushed against a contact to the right or against a contact to the left.

You can fashion your own paddle out of a piece of ⅛" 3-ply and glue or bolt it to the end of the hacksaw blade. You can also bolt two hand keys together, base-to-base, and fix them so the bases are at 90° from a wooden — or better yet, a heavy metal — base.

By far the simplest cootie key is made by tying the end of the vibrating end of a bug to its backstop with a rubber band so that the rod cannot move off of the backstop. Then with the thumb pushed to its stop, adjust the dot contact until it makes a solid electrical connection — and you have an excellent working sideswiper.

These keys were used 100 years ago by telegraphers, and later by the early-day radio operators. Around the '30s they began to disappear, and it is unusual to hear an old-timer pounding brass on a sidewinder any more.

Once in a while you will hear one, probably on 40 or 80M. They have a distinctive sound because it is extremely hard to make similar dots with both thumb and first finger, or similar dashes with thumb and finger.

In most cases, a computer will not copy transmissions made by cootie key because of the "swing" of the sending. It tends to separate the men from the boys as operators. You usually can't cheat by copying cootie key operators with a computer; you have to be able to read the stuff by ear.

Actually, it requires many hours of practice on THE QUICK BROWN FOX JUMPED OVER THE LAZY DOGS BACK 1234567890 . ? , BT AR AS and SK before an operator dares to put his sending on the air. However, if you are one who enjoys a challenge, you will find your match in a sideswiper.

The SARO Sideswiper Net is on 3668.5 kHz at 9 a.m. Pacific Time on Tuesday mornings if you are interested and live in the central California area. If out of the area, you might try setting up a net of your own, if you can find any people crazy enough to check in with you.

It is a little painful to transmit with these keys. It is surprising how hard it is for an old-time bug or electronic key operator to train the part of his brain that the cootie key operates from. That old thumb just won't make dashes correctly! □

Radio at ICC'88

(continued from page 1)

Kay Craigie, KC3LM, the ARRL's Eastern Pennsylvania Section Manager, will chair the program and speak on "Amateur Radio in the Delaware Valley." Tom Teel, KB3UD, will present "Packet Radio: Past, Present and Future." As 3rd Region Packet Manager for the ARRL National Traffic System, Teel is well known for his contributions to packet radio techniques. Ron Cohen, K3ZKO, and Jack Smith, K3AFK, will demonstrate "Amateur Television." Cohen and Smith are leading Philadelphia-area exponents of this operating mode.

Following the session, a tour of the Liberty Bell Amateur Radio Association's club station will be offered. Jim Metzger, KA3HWD, will guide the tour of the station, located two blocks from the hotel at the Bell of Pennsylvania building. Metzger welcomes visiting amateurs to operate the club station and to use the repeaters located at the Liberty Bell site: 145.25 (KA3HWD/R), 224.52 (K2PM/R) and 443.10 (K3QFP/R).

The general theme for ICC'88 is "Digital Technology Spanning the Universe." Some of the other scheduled technical sessions include optical technologies, intelligent networks, data communications techniques, and radio systems. The conference is cosponsored by the IEEE Communications Society and Philadelphia Section IEEE.

Attendance at the Amateur Radio session is limited to 50, and pre-registration is necessary. Information about the conference is available by writing to ICC'88, c/o ATT Network Systems, 1800 John F. Kennedy Blvd., Ste. 1300, Philadelphia, PA 19103. Information is also available by calling 1-800-ICC88PH (in the continental U.S.) or (215) 972-1308 (outside U.S.), weekdays between 8 a.m. and 4:30 p.m. Eastern time. □

California

The SATELLITE ARC will sponsor the Santa Maria Radio SwapFest on Father's Day, June 19.

An annual event, the SwapFest features a Big Santa Maria Style bar-b-que and swap-meet for ham gear. The location is Union Oil Company New Love Picnic Ground south of Santa Maria on U.S. 101. General admission 9 a.m. The bar-b-que will be served at 1 p.m.

Admission to the swapfest is free. Prices for bar-b-que tickets are: adult $6.50, children 6-12 years $3.50, children under 6 free. Prize tickets $1 each or six for $5. Swap tables will be available for a 2'×8' area.

Talk-in on 145.14 (−600) and 146.52.

For tickets and information, contact Santa Maria SwapFest, c/o Hank Korczak, W6PME, 917 Anthony Way, Lompoc, CA 93436; (805) 736-1761. □

Colorado

The NORTHERN COLORADO ARC is sponsoring the 10th Annual Superfest on June 10-11, at the Larimer County Fairgrounds McMillan Building, Loveland.

Set-up for dealers and flea marketers all day Friday. Doors open to public from 5 to 9 p.m. Friday and from 8 a.m. to 5 p.m. Saturday. Security will be provided after closing Friday.

W0INK will be the Superfest special event station, operating on HF and 2M as a talk-in station. Prizes drawn hourly; need not be present to win grand prize. VE exams Saturday. Refreshments both days.

Talk-in on 147.195(+600).

For information, contact Exhibits Chairman Bud Hayes, W0JFN, 3109 N. Douglas, Loveland, CO 80537; (303) 663-3119. □

Connecticut

The NEWINGTON AMATEUR RADIO LEAGUE will hold its 5th annual Amateur Radio and Computer Flea Market from 9 a.m. to 2 p.m. Sunday, June 5, at Newington High School (Willard Avenue, Route 173). VEC exams, tours of W1AW and ARRL HQ, dealers and tailgaters. Refreshments available. Admission $2, tables $10.

Talk-in on 146.52, and W1AW/R — 144.85/145.45 and 223.24/224.84.

For exam information, contact Tom Namnoum, KM1O, at (203) 666-1615. For other information, send an SASE to Les Andrew, KA1KRP, 23 Grove St., West Hartford, CT 06110, or call (203) 523-0453. □

Illinois

The SIX METER CLUB OF CHICAGO, INC. is sponsoring its 31st Annual Hamfest on Sunday, June 12, at Santa Fe Park, 91st and Wolf Road, Willow Springs.

Admission is $3 in advance, $4 at the gate. Large swappers' row, plenty of parking space, picnic grounds, displays in the pavilion, refreshments and AFMARS meeting. Gates open at 6 a.m. No overnight parking.

Talk-in on 146.52 or K9ONA/R 37-97.

Advance tickets available from: Mike Corbett, K9ENZ, 606 So. Fenton Ave., Romeoville, IL 60441. □

Maryland

The FREDERICK ARC will hold its 11th Annual Hamfest, June 19, at the Frederick County Fairgrounds, from 8 a.m. to 4 p.m.

Admission: $3; tailgaters $2 extra. YL's and children free. Gates open for exhibitors at 8 p.m., June 18, with overnight security provided. Exhibitor tables: first table $10 each; extra table $5 each.

Talk-in on 146.73, 147.06 and 146.52.

For additional info, write: Dave Durkovic, N3BKD, 7128 Limestone Lane, Middletown, MD 21769. □

Massachusetts

The SOUTHEASTERN MASSACHUSETTS ARA, Inc. will be sponsoring its SEMARA Hamfest on Sunday, June 12, 9 a.m. to 5 p.m., in South Dartmouth.

Admission is free; dealers $8 in advance, $10 at the door. VE exams are by "appointment only." "Nepra" packet workshop. Working HF stations and tailgate sale. Refreshments.

Talk-in on 147.000 (+.6) for hamfest and 145.490 (−.6) for backup.

For information, send SASE to Pete Kodis, N1EXA, P.O. Box 9187, North Dartmouth, MA 02747. □

Mexico

The RADIO CLUB OF COLIMA, Col., Mexico, is sponsoring the XVI Convention of the Asociacion de Radio Aficionados de la Republica Mexicana (ARARM). The convention will be held in the city of Colima, Col., Mexico on July 14-16. A cordial invitation is being made and extended to all the Radio Aficionados of the USA to the above convention, where they will be received with open arms.

For more information contact E.C. Guerra, XE1ANU, Cristobal Colon #143, Villa de Alvarez, Colima, Col. MEXICO 28950. □

Michigan

The MONROE COUNTY RADIO COMMUNICATION ASSOCIATION Swap & Shop will be held June 19, at the Monroe County Fairgrounds, Rt. M50 and Raisinville Road. Gates open 8 a.m. until 4 p.m. Tickets are $2 in advance and $3 at the gate. Table space (8') is $6. Trunk sales $2 per space.

Talk-in on 146.72.

For information, contact Larry Linder, KB8AIZ, 2001 Ida-Maybee Rd., Monroe, MI 48161; (313) 587-3663. □

Minnesota

The NORTH AREA REPEATER ASSOCIATION will sponsor the upper Midwest's largest swapfest and exposition for Amateur Radio operators on Friday (6-10 p.m.) and Saturday, June 3-4, at the Minnesota State Fairgrounds in St. Paul.

Free overnight parking of self-contained campers on Friday. Exhibits, commercial dealers, giant outdoor and indoor flea market and prizes. Amateur license exams will be given. Admission $4 in advance, $5 at Amateur Fair.

Talk-in on 25/85 and 16/76.

For more information, dealer inquiries and ticket orders, contact Amateur Fair, P.O. Box 857, Hopkins, MN 55343; (612) 566-4000.

New York

The HALL OF SCIENCE ARC Hamfest will be held on June 12, 9 a.m. to 3 p.m., at the New York Hall of Science parking lot, Flushing Meadow Park, 47-01-111 Street, Queens.

Featured will be an Amateur Radio exhibit station, tune-up clinic and films. Admission is $3 for buyers, $5 (per space) for sellers.

Talk-in on 144.300 simplex link, 223.600 repeat and 445.225 repeat.

For more information, call (at night) Steve Greenbaum, WB2KDG, (718) 898-5599, or Arnie Schiffman, WB2YXB, (718) 343-0172.

•

The SKYLINE ARC presents the 6th Annual Cortland Hamfest, to be held Saturday, June 18, from 7 a.m. to 3 p.m., at the Cortland County Fairgrounds, Cortland (midway be-

tween Syracuse and Binghamton). Indoor/outdoor flea markets, door prizes, refreshments and acres of parking.

Talk-in on 147.225 (+600) or 145.490 (−600).

For reservations, contact Skyline ARC, P.O. Box 5241, Corland, NY 13045. □

Ohio

The 21st Annual Goodyear Family Hamfest — sponsored by the GOODYEAR ARC — will be held Sunday, June 12, at Wingfoot Lake Park near Akron.

Family admission is $4 in advance and $5 at the gate. There will be a picnic and flea market from 10 a.m. till 5 p.m. The outside flea market will be $3 per vehicle. A sheltered inside dealer area will be available at $6 per table (advance reservations suggested). Prizes for the OM, XYL, children and mobile check-in.

Park facilities for the family include: picnic areas, playgrounds, cruise boat and paddle boat rides, miniature golf, tennis, fishing. Concessions available; no overnight parking allowed.

Talk-in on 146.385 (input) and 146.985 (output).

For tickets and information contact: Don W. Rogers, WA8SXJ, 161 Hawkins Ave., Akron, OH 44313; (216) 864-3665. □

Pennsylvania

The MILTON and CENTRAL SUSQUEHANNA ARC's will host the 15th Annual Central Pennsylvania Ham and Computer Fest at the Winfield Fireman's Fairgrounds from 8 a.m. to 5 p.m. EST, on June 12.

VE testing by advanced registration. XYL's YL's and children free. Good food, contests, demo BBS, packet radio and more. Donations $4 at gate, tailgating $1 for 6' table.

Talk-in on 146.97, 147.18 and 146.52.

For more info, contact Jerry Williamson, WA3SXQ, 10 Old Farm Lane, Milton, PA 17847, (717) 742-3027; or Bob Stahl, KA3PYT, 452 Fourth St., Northumberland, PA 17857; (717) 473-7050. □

Virginia

The OLE VIRGINIA HAMS ARC presents the Annual Manassas Hamfest and Computer Show at the Prince William County Fairgrounds, Manassas, 8 a.m. to 4 p.m., on Sunday, June 5.

Admission is $5; children under 12 free. Tailgating $5 per space, in addition to general admission. Ample room — over 25 acres. Special activities include YL program, ARRL booth and CW proficiency awards. Breakfast, lunch and refreshments at moderate prices. Dealers and manufacturers: indoor exhibit spaces available. Contact Joe Schlatter, K4FPT, (703) 368-8599 (evening), or Randy Moler, KA4UFF, (703) 791-3061.

Talk-in on 146.37/97 and 146.52.

For information, write: Ole Virginia Hams ARC, P.O. Box 1255, Manassas, VA 22110; or call Jack Gunsett, KI4VP, (703) 361-5255.

Washington

The APPLE CITY RADIO CLUB will sponsor a hamfest, June 4-5, at Rocky Reach Dam, 7 miles north of Wenatchee on Hwy. 97.

Admission is $5 (includes one ticket for prize drawing), $4 in advance (prior to June 1). Non-hams are $1 each; under 12 free. Banquet dinner is $7 apiece. Free camp/trailer space with power will be provided at the park after 2 p.m. Friday. Featured will be swap shop, equipment displays and VE exams.

Talk-in on 146.07/67 or 146.49.

Send reservations and pre-registration to: Bob Lathrop, K7EVL, 919 N. Woodward Dr., Wenatchee, WA 98801. □

Wyoming

The UNIVERSITY ARC will be sponsoring the Wyoming State Hamfest on Saturday, July 9, at the Holiday Inn in Laramie. Formerly the Chutes Inn, Holiday Inn is located just southeast of the intersection of I-80 and U.S. 287.

The main events are scheduled for Saturday, but there will be a wrap-up Sunday the 10th. Events include volunteer exams, swap tables, code contest, door prizes, banquet with speaker, and Saturday night entertainment and dancing.

Talk-in on 146.01/.61.

For more information or reservations, write to University ARC, P.O. Box 3625, Laramie, WY 82071. □

Meet Novices and Technicians

The Young Ladies' Radio League will be sponsoring "Meet the Novices and Technicians Day" on Saturday, June 4, from 1700 UTC to 2100 UTC. All licensed women operators throughout the world are invited to participate.

Procedure: Call "CQ YL."

Operation: Only frequencies in the HF bands that are open to Novices and Technicians may be used. ***Suggested frequencies*** — (*80M*) 3.720-3.740, (*40M*) 7.120-7.140, (*15M*) 21.120-140, (*10M*) 28.120-28.140 MHz. No crossband operation. Net contacts and repeater contacts do not count. A station may be worked once for credit. Maximum power output is 200W PEP. The mode of operation shall be CW.

Exchange: Station worked, RST, name, QTH, license class.

Scoring: 3 pts. for each YL Novice or Technician worked, 2 pts. for each YL General or Advanced Class worked, and 1 pt. for each YL Extra Class worked. Total score = total number of points.

Awards: YLRL postcards to top scoring Novice or Technician, and to top scoring General Class or higher.

Logs: All logs submitted must show for each QSO the date, time, band, station worked, RST, and the name, QTH, and license class of the station worked. Do not send carbon copies of logs. Please print or type.

Logs must indicate the name, call sign, address and license class of the oeprator, and must be signed by the operator. No logs will be returned. Logs must show the claimed score and be received by July 7, 1988. Mail logs to YLRL Vice President Carol Shrader, 4744 Thoroughgood Dr., Virginia Beach, VA 23455, USA. □

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

Digital frequency synthesizer

This 1 Hz resolution digital frequency synthesizer has an output of ½V peak-to-peak into 75Ω with almost no phase noise, from 1 Hz to in excess of 6.5 MHz. Due to digital synthesis techniques, the unit has no VCO or PLL and incurs no loop settling time.

The instrument is housed in an 8″×6″×3.25″ enclosure, complete with RF unit, microprocessor controller, seven-segment display, keyboard and 110VAC power supply. A standard 12-key program is offered with the controller. The unit accepts as many as 32 keys and there is unused EPROM and RAM space for those who wish to program their own special features.

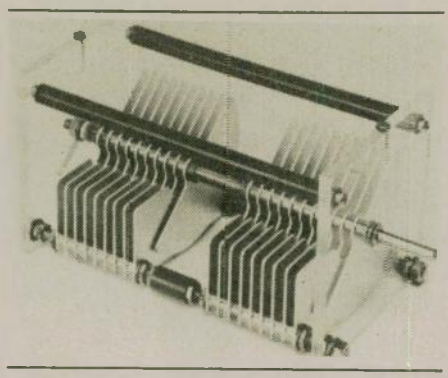
The synthesizer is priced at $429.95 per unit, FOB Anaheim. Quantity discounts are available. For more information call or write: A & A Engineering, 2521 W. La Palma, Unit K, Anaheim, CA 92801; (714) 952-2114. □

Aluminum tower

Aluma Tower Company, Inc. of Vero Beach, Florida, announces the new and improved Model T-140 crank-up tilt-over aluminum tower.

This tower is lightweight (only 56 lbs.) but extremely strong — and because of its all-aluminum construction, very durable. It has unlimited applications, including communications, weather monitoring, air sampling, lighting, surveillance and many other innovative uses.

For a complete catalog and further information, please contact Aluma Tower Company, Inc., P.O. Box 2806NR, Vero Beach, FL 32961-2806. □



Variable capacitors

Kilo-Tec announces the availability of the Nevada High-Power variable capacitors.

These high-quality variable capacitors are capable of withstanding very high RF voltage — up to 7.8kV. Heavy-duty quality construction is of brass, ultra-high-grade aluminum with gold anodizing and high voltage acrylic. The caps are suitable for high power antenna matching units, power amplifiers and transmitters.

Two values are presently offered, a 500pF and 250pF. The TC-250 will retail for approximately $29 and the TC-500 at approximately $40. To order or receive a quote, call Kilo-Tec at (805) 646-9645 or write to P.O. Box 1001, Oak View, CA 93022. □

440 MHz 100W mobile amplifiers

RF Concepts announces two new 440 MHz 100W mobile amplifiers: Model RFC 4-310 (30W in, 100W out; maximum input 35W) and Model RFC 4-110 (10W in, 100W out; maximum input 15W). Included in each amplifier is a GaAsFET receive pre-amp with 15dB gain; noise figure 1.75dB; voltage 13.8 VDC; current 25A. Size: 11½″L×6″W×3″H.

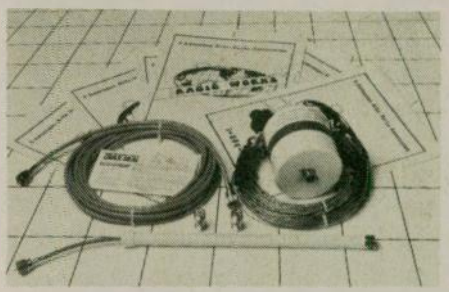
Suggested list prices are $324 (Model RFC 4-310) and $349 (Model RFC 4-110). For more information, contact your favorite dealer or contact RF Concepts, 8911-A Murray Ave., Gilroy, CA 95020. □

Carolina Windom

The Radio Works has just introduced the new Carolina Windom©. This innovative, high-performance, 80-10M antenna system is making quite a name for itself on the bands, especially on 75M. Users report a significant performance improvement over the dipoles and other conventional antennas they were previously using. If you hear one, you want one.

While not a Windom in the classic sense, its off-center feed system suggests the name. The Carolina Windom is conveniently fed with 50Ω coax and produces a low SWR across nearly all of the 75/80 band. While 75M performance is outstanding, users report exciting performance on all bands through 10M. 40-10M operation requires a transmatch.

After a year of testing in the field and at the Radio Works, the Carolina Windom is now available fully assembled, ready to use and is complete with a special dedicated matching unit, vertical radiator section, high power line isolator, #14 stranded antenna wire and glass-filled insulators.



The Carolina Windom package comes with CoaxSeal® and an illustrated manual. It is as easy to put up as a simple dipole. Price is $75, complete and ready to install.

For more information, contact Jim Thompson, W4THU, at the Radio Works, Box 6159, Portsmouth, VA 23703; (804) 484-0140. An unusual catalog offering a wide selection of wire antennas, parts, accessories is available on request. □

New Yaesu rotator products

Encomm, Inc. is very pleased to announce the introduction of Yaesu brand antenna rotator products to the United States. These fine quality products, including AZ/EL satellite tracking rotators and azimuth-only units from 250 to 2000 Kg.Cm torque ratings, are the result of the acquisition of the largest antenna rotor manufacturing facility in Japan and the incorporation of these products under the world-renown Yaesu brand.

Because of the Encomm, Inc. experience in the antenna rotator distribution field, Yaesu Musen has appointed Encomm, Inc. to be their U.S. distributor. Any present Yaesu dealer, as well as any Encomm dealer in the United States, will have these products available through their dealership.

For more information, please contact Encomm, Inc., 1506 Capital Ave., Plano, TX 75074; (214) 423-2204. □

Pass it on . . . WORLDRADIO

Technician course

The Amateur Radio Technician Class license is now more popular than ever. Thanks to Novice enhancement, the new Technician Class license is just 25 questions away. Every Novice wants it!

"The FCC acted favorably on my petition comments about a shorter Tech test," comments Gordon West, well-known instructor and writer. "It's a natural for Novices to obtain the Technician Class license to receive 2M privileges. With only 25 multiple-choice questions on the test, it's a snap in just two weeks," adds West.

The new Gordon West Technician Class theory course consists of two audio theory cassettes plus the brand new West-written Technician Class theory book. The book and tapes are housed in a white vinyl carrying case. The course also contains $50 in equipment upgrade certificates, plus colored world maps and the new colored worldwide and VHF spectrum charts.

"My new Technician Class book is the only one on the market devoted exclusively to the Technician Class license. The two audio cassettes parallel the book and also give the 'sounds' of 1200 baud packet, plus fascinating recordings of skip and tropo propagation. It's an enjoyable way to listen and read for the Technician Class license," adds West.

This course is available from Radio School dealers throughout the country for $19.95. It may also be ordered direct from Radio School, Inc., 2414 College Dr., Costa Mesa, CA 92626. Add $2 for postage. □

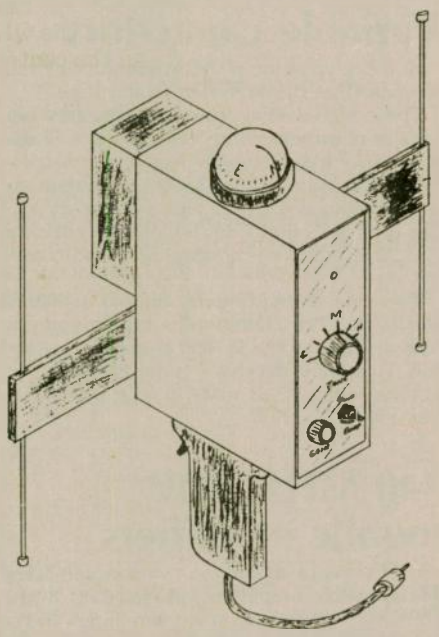
Vector-Finder

Radio Engineers, a San Diego-based engineering company, has announced a new VHF direction-finding antenna system. Called the "Vector-Finder," the device can be used with an FM receiver or transceiver to give the user a "line-of-sight" to the transmitter VHF signal.

The Vector-Finder consists of a hand-held, pistol-grip package which mounts a compass and two-phase sensing antennas. An audible tone is superimposed on the incoming signal which becomes inaudible when the package is oriented to the line-of-sight. Equipment controls include pitch and antenna sensitivity adjustment, beep or continuous tone select, and a pistol-grip mounted activation switch. Coaxial cable interconnects the unit to the receiver or transceiver.

Three different Vector-Finder models are available for different frequencies in the VHF spectrum. Type VF-142 is designed to cover the 2M and 220 MHz amateur bands. Type VFM covers the VHF marine band exclusively, and Type VF-300 is designed for industrial, commercial and military frequencies between 140 and 300 MHz.

Inquiries for additional technical or pricing information can be made directly to Radio Engineers by calling (619) 565-1319, or by writing The Radio Engineers Company, 3941 Mt. Brundage Ave., San Diego, CA 92111. □



Product Review #1

Rich Arland, K7YHA

It's that time of year again! Field Day is just around the corner, and if you are like me, you can hardly wait to take to the bush in search of exciting times and good DX. Field Day is the "original" emergency communications exercise. To be sure, fun is had by all who participate. BUT, that is not the *real* reason we take to the field once a year. Readiness is the primary reason, and if we have fun in the process, well . . . so much the better.

With the aforementioned in mind, let's take a look at a wire antenna that has a lot to offer the emergency communicator.

The "QRP Standard" G5RV antenna is a dipole variant, 102′ long, which can be fed one of two ways. Most common is the 300-450Ω twinlead feedline method, where the twinlead extends from the antenna tuner right up to the dipole feedpoint.

An alternate method is to use a linear impedance transformer (a piece of high-quality twinlead about 29.5′ long) that connects to the dipole feedpoint. The other end terminates in a coaxial connecter, and a convenient length of 50Ω coax feeds the signal into the tuner. The antenna is an "all-band" radiator when used with a tuner.

Jim Stevens, KK7C, of Antennas West, produces a very well-built version of the G4RV. I have just finished testing one of Jim's QRV 160-10 Emergency Packs, which consists of the G5RV dipole, linear impedance transformer, 160M adapter and counter poise, launching system (to get it off the ground), and plastic bucket which also serves as carrying container for the entire system. In a word, this QRV Emergency Pack is "handy."

The antenna itself is made of Teflon-like covered, kink-resistant wire that has an encapsulated feedpoint. This will withstand lots of stress and remain sealed to the elements. The Linear Impedance Transformer is about 30′ long and made of a tough poly-coated twinlead. The end is terminated in a SO-239 coaxial connecter

that is also encapsulated and weatherproofed. End insulators are glass-filled insulators that are designed to slide up and down the legs of the antenna to facilitate various installation criteria.

The coaxial feedline is a *very* high quality RG-8X, 70′ long. This is coupled to the Linear Impedance Transformer via a coaxial barrel assembly. Weatherproof boots go over these connectors to form fair weather seal. Coax-Seal™ was used on my installation to insure that moisture and dirt did not migrate down into the coaxial connectors.

The 160M adapter with counterpoise is included for low band use. This is inserted between the Linear Impedance Transformer and the coaxial feedline. This adapter shorts the Linear Impedance Transformer together and makes the G5RV appear as a vertical Marconi with a large capacity hat. The counterpoise is rolled out to a pre-set length, and on the air you go. Jim claims that this configuration works great on DX. Unfortunately, I did not have any 160M gear, so I chose not to utilize the adapter and counterpoise. Full details are contained in the outstanding user manual.

Now a word about the "Quick Launch" (QL) system that is part of the QRV Emergency Pack. The QL system consists of a golf ball-sized hunk of lead (looks like an overgrown fishing sinker) called the projectile, several hundred feet of flat braided nylon line, a split tennis ball (to cover the sinker when tossing it around houses, windows, cars, etc.), and the pail.

According to the manual, you lay out the nylon cord and layer it into the bucket. Place the bucket about 3 feet in front of where you are going to stand when tossing the projectile. The object of the game is to toss the projectile over a nearby tree limb. This will carry the high-visibility yellow nylon line over the desired limb. The heavier nylon cord is then attached to the end of the yellow line.

The G5RV center insulator is attached to a length of the heavy nylon cord. The yellow line is pulled over the limb and following it will come the heavier cord, followed by the center insulator of the antenna. This is a time-honored way of "getting it up."

Claims in the manual about being able to place the antenna in a tree up to 90′ high, using the QL system, are — in my humble opinion — *very* optimistic. After repeated attempts at tossing the projectile using the recommended (underhanded pitching motion) method, I am convinced that KK7C *must* be a fast-pitch softball pitcher!

Quite honestly, the QL system is a bit of a flop. I tried tossing the projectile over a 50′ tree in my yard. After 12 attempts, I finally retired the projectile and brought out the trusty bow and arrow. One shot, over went the #10 test fish line, followed by the highly visible nylon cord from the QL system, the heavy cord and the center insulator of the antenna.

My one success story using the QL system concerns a 22′-tall tree. I did manage (after nine attempts) to get the projectile over the very top of the tree (which is where I wanted it). My feeling about the QL system is that it is fine as long as the antenna is not to be raised to above 25 feet. Anything higher than this will require some other type of launching system.

Quality-wise, Jim put together a very nice package. The usefulness of this antenna system is quite obvious. Performance is like any other full-sized G5RV dipole I have used. You must use a tuner with the antenna to achieve good all-band performance.

Compared to my Carolina Windom, the G5RV performs adequately. Signals are about 1-2 S-Units higher on the Windom. This could be a function of size (the G5RV is 30′ shorter than the Windom) and height (the G5RV is about 7′ lower). Additionally, the Carolina Windom has a vertical radiating section which the G5RV doesn't. Tests at this QTH did not allow for the use of the 160M adapter which might have made a difference in the vertical radiation performance of the G5RV.

Overall, Jim's QRV Emergency Pack is a quality product, which — despite the QL system — can be erected and on the air in a matter of a half hour or so. The instruction manual is absolutely the finest documentation I have ever seen. The antenna system is convenient and highly portable. The plastic bucket/carrying case is watertight and stores easily in car, shack, RV, etc., ready for Field Day or an actual emergency.

Priced at about $140, the QRV Emergency Pack is a bit pricey. However, lots of time, effort and research have gone into this antenna system, so if you spend the bucks, you're gonna get a quality product. For more information about this antenna system and others, write Jim Stevens, KK7C, c/o Antennas West, 1971 North Oak Ln., Provo, UT 84604-2138. Tell Jim you saw it in **Worldradio!**

(Product Review #2 will appear next month.) □

If you are involved in any emergency communications incident, send story and photos to *Worldradio*, 2021-28th St., Sacramento, CA 95818.

Institute

(continued from page 6)

Team spirit can be instilled through inviting spouses to breakfasts and creating a "Buddy System," Smith said. He also emphasized the importance of "the art of delegating."

Slides were shown by San Jose Red Cross Disaster Director Rex Painter, showing what their agency does in emergencies and what types of conditions hams can expect when they assist Red Cross.

Dave Gutierrez, WA6PMX, Orange Section Assistant District Emergency Coordinator — along with some amateurs from his section — videotaped the ERI. The tape will serve as an information source for Southern California hams who want to start a training institute in their area next year.

(Next month we'll cover the last two topics discussed at the ERI: Communications Planning and Support, and Packet Support in the Field.) □

The "Flying Horse" sets the standards!

Continuing a great 67 year tradition, we bring you three new Callbooks for 1988. The North American Callbook, the International Callbook, and the Callbook Supplement bring you accurate up-to-date QSL information on over 950,000 amateurs throughout the world.

The 1988 North American Callbook lists the calls, names, and address information for 478,000 licensed radio amateurs in all countries of North America, from Canada to Panama including Greenland, Bermuda, and the Caribbean islands plus Hawaii and the U.S. possessions.

The 1988 International Callbook lists 481,000 amateurs in countries outside North America. Its coverage includes South America, Europe, Africa, Asia, and the Pacific area (exclusive of Hawaii and the U.S. possessions).

The 1988 Callbook Supplement is a new idea in Callbook updates, listing the activity in both the North American and International Callbooks. Published June 1, 1988, this Supplement will include thousands of new licenses, address changes, and call sign changes for the preceding 6 months.

Every active amateur needs the Callbook! The 1988 Callbooks will be published December 1, 1987. See your dealer or order now directly from the publisher.

- Over 950,000 current amateur listings in all countries of the world • Telegraph Codes
- Then & Now call changes • Silent Keys • Census of Amateur Licenses in all countries
- Standard Time Charts • International Postal Information • World-wide QSL Bureaus
- Table of Amateur Prefix Allocations • Prefixes of the World • Plus many other features.

Publication: Callbooks - December 1, 1987
Supplement - June 1, 1988

	Including shipment to U.S.A. points	Illinois residents, incl. tax & shipping	Including shipment to foreign countries
☐ Single 1988 North American Callbook	$28.00	$29.60	$30.00
☐ Single 1988 International Callbook	30.00	31.75	32.00
☐ Single 1988 Callbook Supplement	13.00	13.65	14.00
☐ SPECIAL OFFER: Order both 1988 Callbooks at the same time for shipment to one address.	55.00	58.35	60.00

Name _____ Amount enclosed _____

Address _____

_____

radio amateur callbook
Dept W
925 Sherwood Dr., Box 247,
Lake Bluff, IL 60044, USA

Tel: (312) 234-6600

VISA MasterCard

THE MART

Classified
•Buy •Trade
•Sell •Inform

Mart deadline
20th of the month.

Business firms/30¢ a word, prepaid.
Private individuals/15¢ a word, prepaid.

THE MART *Worldradio*
2120 28th St., Sacramento, CA 95818

WORLDRADIO ON CASSETTES for the blind. For information, contact TOM CARTEN, K1PZU, 1602-Y King's College, Wilkes-Barre, PA 18711.

WANTED REPLY COUPONS of all types, IRCs & others. Buy, sell, trade. JIM NOLL, P.O. Box 3410, Escondido, CA 92025.

QSLs & RUBBER STAMPS — TOP QUALITY! States, world maps, USA, key, shuttle, globe QSLs. Report form rubber stamps. More! Samples $1.00 (refundable with order). EBBERT GRAPHICS D-1, Box 70, Westerville, OH 43081.

HAVE AM CAPABILITY? Join SPAM (Society for Promotion AM). Membership is free. Write: SPAM c/o F. Dunlap, 14113 Stoneshire, Houston, TX 77060. -73 de WA5TWF (SASE please).

LEARN THE CODE — A course for family members and friends who don't know the difference between a dot or a dash. Monday through Friday, 0630-0700 California local time, 3760 KHz ±A2/A3/LSB, January through December, K6RAU. Starts first Monday of each month.

STAINLESS STEEL SCREWS, bolts, turnbuckles, U-bolts, eye bolts. Small quantities. Free catalog. ELWICK, Dept. 678-S, 230 Woods Lane, Somerdale, NJ 08083.

POST CARD QSL KIT — Converts post cards, photos to QSLs! Stamp brings circular. K-K LABELS, P.O. Box 412, Troy, NY 12181-0412.

MAJOR BRAND HAM EQUIPMENT—Butternut, Hustler, Larsen, MFJ, Mobile-Mark and much more. For information call KEY COMMUNICATIONS ETC. INC. Berwyn, IL 312/795-1314.

WANTED: Hallicrafters receivers and accessories. Any condition. JIM MARTIN, 27W060 Cypress Lane, Winfield, IL 60190.

FCC UPGRADE sample exams and study guides on Commodore 64 disks. Technician or General $12.95 each, Advanced or Extra $14.95, postpaid. DR. G. SCHILLING, AI6I, 37251 Sage Road, Hemet, CA 92343.

WHEN YOU'RE ON THE AIR — you want to sound good! When you send your QSL you want to look good! Let us help you look good! Send SASE for brochure and samples. RUSPRINT, Rt. 1, Box 363WR, Spring Hill, KS 66083.

MOVING SALE: Satellite antenna system, complete set 75 cm/2m, elevation/azimuth motors, cables, tower — $370; Cushcraft R3 — $95; V-UHF Discone — $35; lots more. KS2U, 703/356-5758.

WANTED: UNUSED TELETYPE repair parts; connectors, tubes. SELL: Teletypewriter gears, ribbons, manuals, parts, toroids. SASE for list, TYPETRONICS, Box 8873, Ft. Lauderdale, FL 33310 N4TT, 305/583-1340 after 9 p.m. EST.

LEARN CODE THE EASY W6PHA WAY! Former USAF code champ's unique, simple system allows all ages to learn quickly. No tapes, etc.! Revised booklet $5.00 ppd. Guaranteed. GLOBALMAN PRODUCTS, Box 400WR, El Toro, CA 92630.

AUTO-CALL MAGAZINE, official journal of the Foundation For Amateur Radio, a federation of over 50 clubs in the greater Washington, D.C. area. Great coverage of FCC, ARRL, VEC, Public Service and club activities in the area. A must for those even passing through the area. For sample copy write FOUNDATION FOR AMATEUR RADIO, P.O. Box 7612, Falls Church, VA 22046-1452.

PICTURE QSLs of your shack, equipment etc. from your photos-slides. B/W 250 - $25.00. Full color $89.00 - 1000. Subject to discount. Samples free. Get a better return with PICTURE CARDS, 3806 NE 24th, Amarillo, TX 79107. 806/383-8347.

MARCO: Medical Amateur Radio Council, Ltd. operates daily and Sunday nets. Medically oriented amateurs (physicians, dentists, veterinarians, nurses, physio-therapists, lab technicians, etc.) invited to join. Presently over 550 members. For information, write MARCO, Box 73's, Acme, PA 15610.

SUBSCRIBE TO THE *DXers Magazine.* Gus Browning, W4BPD, editor. Only $15.00 per year. *The DXers Magazine,* Drawer DX, Cordova, SC 29039.

CHASSIS & CABINET KITS, SASE, K3IWK, 5120 Harmony Grove Rd. Dover, PA 17315.

RTTY JOURNAL—Now in our 36th year. Read about RTTY, AMTOR, packet, MSO's, RTTY contesting, RTTY DX and much more. Year's subscription to RTTY Journal, $10.00—foreign slightly higher. Order from: RTTY JOURNAL, 9085 La Casita Ave., Fountain Valley, CA 92708.

WANTED — OLDER MODEL VIBROPLEX BUGS such as Zephyr and Lightning models, and also McElroy bugs. SMILEY WHITE, P.O. Box 5150, Fredericksburg, VA 22403.

RADIO'S FIRST TWO DECADES. The book on broadcasting history. Complete with photographs. $4.95 plus $2 shipping. COLOGNE PRESS, Box 682, Cologne, NJ 08213.

DIGITAL AUTOMATIC DISPLAYS. All radios. GRAND SYSTEMS, P.O. Box 3377, Dep't B, Blaine, WA 98230.

WANTED: YAESU 101ZD, 901 or 902, or equivalent ICOM. Good condition, with manual. No Kenwood, please. W6MEO, Box 2653, Santa Rosa, CA 95405. 707/538-4935.

Be first to know precisely when and where to work all the choice DX. Biweekly LI DX BULLETIN has: Hot DX news — time and frequency of each goodie — QSL info — propagation forecast — and more . . . Send business size SASE for free sample or $16.00 for 1-year domestic subscription to:

LONG ISLAND DX BULLETIN
PO Box 173, Huntington, NY 11743

RTTY PROGRAM FOR APPLE MACINTOSH Baudot or ASCII, all usual speeds, customizable menus, canned messages, split screen and more. Use with simple TU or Packet modem. $39.95 ppd., send SASE for free info. SUMMIT CONCEPTS, Suite 102-190, 1840 41st Ave., Capitola, CA 95010.

ATTENTION 6 METER OPERATORS: 1988 North American SSB/Beacon Activity List and 1988 North American 6-Meter Repeater Directory now available. $8.00 apiece or $15.00 for both. Postal money orders preferred. Write to: HARRY SCHOOLS KA3B, 1606 South Newkirk Street, Philadelphia, PA 19145.

TRANSMITTING TUBES WANTED FOR MUSEUM — Help preserve old amateur and commercial tubes for future and old time hams to see and admire. YE OLDE TRANSMITTING TUBE MUSEUM, K6DIA, P.O. Box 97, Crescent City, CA 95531.

EDITING A CLUB PAPER? Need one for your club? Interested in Amateur Radio public relations? Need some help? Amateur Radio News Service would like to hear from you. For info write FRAN NORRICK, WB9WPS, 4306 N. 23rd St., Waco TX 76708-1107

CODE PROFICIENCY DRILLS are transmitted from WB3IVO Brass Pounders ARC, each Saturday, Sunday, Monday and Thursday on 7060 kHz, starting 2000Z. Each Tuesday and Friday on 14060 kHz, starting 2000Z. Speeds range from 20 to 60 wpm.

3 FREE ISSUES! Sign up for a year to THE SPEC-COM JOURNAL (10 issues) and get 3 back issues (of your choice) absolutely "FREE"! SPEC-COM is the USATVS Journal and has been serving SPECIALIZED COMMUNICATION RADIO AMATEURS now for 19 years. We offer in-depth coverage of ATV, SSTV, FAX, RTTY, PACKET, satellites, TVRO, EME, LASERS microwave and personal computers. We specialize in Commodore & TRS80C color computer software for ham radio! Sample issues just $2.00 ppd. U.S.A. $20.00/Canada & Mexico $25.00 per year. Foreign surface and Air-Mail R-U-S-H delivery available at higher prices. Special Master Article Index issues add $3.00. SPEC-COM COMMUNICATIONS GROUP, P.O. Box H, Lowden, IA 52255 (MasterCard & VISA accepted).

ICOM-505 with 5-element beam, $350. Call 405/942-2761.

SELLING Kenwood TS 820S transceiver — $425.00. Yaesu amp. FL 2100B — $525.00. JOSEPH LEWALSKI, 3512 Moraga Blvd., Apt. 4102, Lafayette, CA 94549.

THE WESTLINK REPORT
THE AMATEUR RADIO NEWSLETTER

HEAR THE LATEST?
YOU WILL IF YOU READ
THE WESTLINK REPORT
$22.50/YEAR
REQUEST YOUR FREE SAMPLE
THE WESTLINK REPORT
28221-W Stanley Ct.
Canyon Country, CA 91351
(800) HAM-7303 Orders Only
In Calif. (805) 251-5558

More MART

THE DX BULLETIN provides you with comprehensive, up-to-date DX information and much more. SASE or call for samples. Box 50S, Fulton, CA 95439. 707/523-1001.

EXPERT REPAIR on all types of ham gear by WA6SRX, TIMBERLINE ELECTRONICS, P.O. Box 2064, 25440 Wrightwood Drive, Idyllwild, CA 92349, 714/659-4018.

VHF UHF SHF: Large SASE, WEST COAST VHFer, P.O. Box 685, Holbrook, AZ 86025.

ALL ABOUT CRYSTAL SETS. Theory and construction of crystal set radios. $7.95 each, ppd USA. ALLABOUT BOOKS, Dept. W, Box 14155, Fremont, CA 94539.

WANTED: EQUIPMENT AND RELATED ITEMS. The Radio Club of Junior High School 22 NYC, Inc. is a non-profit organization, granted 501(c)(3) status by the IRS, incorporated under the laws of the State of New York with the goal of using the theme of Amateur Radio to further and enhance the education of young people. Your property donation would be greatly appreciated and acknowledged with a receipt for your tax deductible contribution. Please contact WB2JKJ using the callbook or telephone 516/674-4072 24 hours, seven days a week. Thank you!

A CLASSIFIED AD PLACED IN WORLDRADIO will reach the most active, involved Amateur Radio operators. Your ad will be seen here before it will be seen in any other Amateur Radio publication. We get the news out first. Get results from

WORLDRADIO

IMB PC "CAT" PROGRAM for Yaesu FT-757GX & FT-757GX Mark II. Program HF rig from your PC. Requires optional Yaesu FIF-232C interface. Stores up to 480 freqs. SASE for info. $17.95 ppd. DICK ROUX, N1AED, 25 Greenfield Dr., Merrimack, NH 03054.

COMMODORE/AMIGA CHIPS to fix your own computer at low low prices. #6510—$9.55, #6526—$9.95, #6567—$14.75, #6581—$12.85, 82S100/PLA—$12.85, 325572—$10.95, 325302—$12.95, 8721—$12.50, 8520—$17.65, all 901 ROMS—$10.95, Amiga and many others at similar savings . . . "THE COMMODORE DIAGNOSTICIAN", a reference chart to fix your own computer. A must for those who want to save time and money. Over 5,000 sold. $6.95 plus $1.00 UPS . . . Commodore Computer Repairs. Low prices, (eg. C64—$39.95). Fast turnaround. We are the largest authorized service center in the U.S. Heavy duty power supply for C64, $27.95 plus postage. Send for catalog. VISA/MC. We ship worldwide. KASARA MICRO, Inc., 32 Murray Hill Drive, Spring Valley, NY 10977, 1-800-248-2983 (nationwide) or 914/356-3131.

ANNOUNCING A NEW HEAVY-DUTY C-64 COMMODORE replacement power supply especially for the Packet Radio Amateur. The new higher amperage output will now allow for 24 hour continuous "Packet" operation without voltage change or failure which the existing unit can succumb to. This P.S. is an exact physical replacement and will not run hot. $27.95 plus $3.00 UPS shipping. VISA/MC. KASARA MICRO, INC., 32 Murray Hill Drive, Spring Valley, NY 10977, 1-800-248-2983 (nationwide) or 914/356-3131.

"REAL RADIOS GLOW IN THE DARK" . . . Spring is here and so is our fancy for Ham Radio. If you enjoy building rigs and accessories of the type we used in the 40's and 50's, Classic Radio has many of the parts you will need. Give us a call. Paints for your Collins S-Line/KWM-2. MFJ Products available. Sale and service on American made classics. Call 24 hours — CLASSIC RADIO, 340 W. Seventh St., Eureka, CA 95501. 707/444-3911, K6VHP.

QSL CARDS — Look good with top quality printing. Choose standard designs for fully customized cards. Better cards mean more returns to you. Free brochure, samples. Stamps appreciated. CHESTER QSL's, 310 Commercial, Dept. D, Emporia, KS 66801.

PHOTOVOLTAIC PANELS. Lowest prices on Sovonics, Arco panels. From 1 watt to 50. Send $1 for price specs and data sheets. SUNLIGHT ENERGY, 2225 Mayflower, Massillon, OH 44646.

WANTED: MILITARY RADIOS and related equipment in good condition. BC375, ARC-2, TBY etc. KA1GON, 501 Mystic Valley Pkwy, Medford, MA 02155.

HAM LAB PROJECT. Want several pieces HP G-382A variable attenuator. Will consider any repairable condition. K6GOX, P.O. Box 10, O'Neals, CA 93645, (209) 868-3548 collect.

CERTIFICATE FOR PROVEN TWO-WAY RADIO CONTACTS with amateurs in all 10 USA call area. Award suitable to frame and proven achievements added on request. Send $2 (USA) or $3 (DX) to cover certificate cost. W6LS, 2814 Empire Ave., Burbank, CA 91504.

ALL ABOUT METERS. A learn-by-doing history of the development of electrical meters; build seven simple meters using common hardware. $7.95 each, ppd USA. ALLABOUT BOOKS, Dept. W, Box 14155, Fremont, CA 94539.

SOLID BRASS BELT BUCKLES. Name or call, One line - name or call — $12.00. Two lines, name and call — $14.00. Add $1.00 postage. S.SLONIM/W, 320 Rose St., Massapequa Park, NY 11762.

WANTED: VC-2000 or VC2100 descrambler in any condition. KU7Z, 1113 Mariposa, Boulder City, NV 89005. 702/294-5036.

AMATEUR RADIO REPAIR — experienced licensed, reasonable. ROBERT HALL ELECTRONICS, W6BSH, P.O. Box 8363, San Francisco, CA 94128. 408/729-8200.

CODE PRACTICE, daily except Sunday, 5 thru 44 wpm at 10:30 a.m. MST on 7090 and at 5:30 p.m. MST and 8:00 p.m. MST on 3698.

HAMS FOR CHRIST — Reach other hams with a Gospel Tract sure to please. CLYDE STANFIELD, WA6HEG, P.O.B. 2063, Upland, CA 91785.

PERSONALIZED HOURLY HF SKYWAVE PREDICTIONS from your city or town: Skycom 1.0 floppy disk for Apple Macintosh or IBM PC and compatible personal computers. Includes complete mathematical description of theory ($45.00). DX window floppy disk circular projection world radio map centered on your QTH shows sunrise-sunset gray line for any time of interest. Includes feature which displays any of 400 prefixes on world map instantly. For all Apple Macintosh machines ($60.00). Precise beam headings from your city or town to over 400 worldwide locations. High resolution printout ($5.00). SASE for more info: ATTN. DX; ENGINEERING SYSTEMS INC., P.O. Box 939, Vienna, VA 22180. Ph 703/255-6600.

70,000 VACUUM TUBES: SASE. TYGER ELECTRONICS, Box 750, Clinton, MD 20735. 301/248-7302.

HOMEBREW PROJECTS LISTS and radio magazines index information; SASE. WB2EUF, Box 708, East Hampton, NY 11937.

WRITTEN EXAMS SUPEREASY. Memory aids from psychologist/engineer cut study time 50%. Novice, Tech, Gen: $5 each. Advanced, Extra: $10 each. Money back guarantee. BAHR, 2549-F5 Temple, Palmbay, FL 32905.

GROUND RADIAL WIRE FOR VERTICALS OR SLOPERS, improves performance, new $16 bare solid copper, 1000 feet, $33. includes shipping USA: Davis, P.O. Box 230-W, Carlisle, MA 01741, 617-369-1738.

VERTICAL PHASING: Switchable phased array instructions and hybrid, 160-40M. Info: $1, SASE. DAVIS, P.O. Box 230-W, Carlisle, MA 01741.

ADVERTISER'S INDEX

WIRE for DIPOLES, SLOPERS, LOOPS: New #14, multistranded copper, non-stretch, flexible. Best available. Low cost, 275 ft. increments. Minimum 275 ft., $29.00, includes U.P.S. shipping/USA. Davis, PO Box 230-W, Carlisle, MA 01741, 617-369-1738.

ROSS'$$$$ NEW SPECIALS: Kenwood TS-140S — $799.90, TS-440SWAT — $1199.90, TW-4100A — $499.90, TM-2530A — $394.90, AEA PK-64A/WHFM — $199.90, MP-64 — $99.90, MP-20 — $79.90; ICOM IC-37A — $409.90, IC-471A/W AG-1 — $759.90, IC-471H/W AG-35 — $969.90, IC-3200A — $529.90, O4AT — $349.90, IC-290H — $496.90; Yaesu FT-270RH — $309.90, FT-726R — $769.90, FT-736R — $1499.90. All L.T.O. (limited time offer). Looking for something not listed?? Call or write. Over 8780 ham-related items in stock for immediate shipment. *Mention ad.* Prices cash, F.O.B. Preston. We close at 2:00 Saturdays & Mondays. ROSS DISTRIBUTING COMPANY, 78 South State, (P.O. Box 234) Preston, ID 83263. 208/852-0830.

SUPERFAST MORSE CODE SUPEREASY. Subliminal cassette. $10. LEARN MORSE CODE IN 1 HOUR. Amazing new supereasy technique. $10. Both $17. Money back guarantee. Free catalog: SASE. BAHR, 2549-F5 Temple, Palmbay FL 32905.

STAMP COLLECTORS! Send SASE for worldwide Ham Radio stamp price list. WB4FDT, HAMSTAMPS, P.O. Box 833, West Hartford, CT 06107.

ESTATE SALE of W5ACE. Beautiful hilltop cedar home with 8 acres timberland near Hot Springs, AR. 5 steel towers installed. Two 100 ft. towers with 10 mt & 20 mt beams. 2 rhombics. 1,000 ft. open wire antenna. Excellent DX location. Satellite & many extras. Price — $95,000.00. VERDA CUGA, P.O. Box 88, Royal, AR 71968. Tel. 501/991-3354.

ANTENNA PARTS CATALOG, low costs: Dipole/radial wire, insulators, center feeds, coax, connectors, relays, vertical phasers, plus more. $1, plus 45¢ stamp, DAVIS RF, P.O. Box 230-VW, Carlisle, MA 01741. 617-369-1738.

HAM WANT ADS: FREE ADVERTISING. Free copy, wide distribution, bi-monthly, send your ad for free subscription. Free limited time. COMMUNICATIONS EXCHANGE SHEET, P.O. Box 754, Concord, MA 01742.

QST MAGAZINE INDEX ON DISK. Use your IBM compatible AT/XT and PFS First Choice software to access over 1500 references to QST articles. 1982-1988. Search the data disk for the magazine's year, month, and page. Then refer to your QST magazine library for the articles. 5¼" diskette and instructions: $12.95 ppd. NB9H, WILLIAM MAVES, P.O. Box 635, Menomonie, WI 54751.

WANTED: ICOM R-7000 RECEIVER in A-1 condition. TOM, N7KHU, 1411 Grant Ave. S., Apt. G-204, Renton, WA 98055. 206/226-3708 evenings/weekends.

WANTED: KEYER AND MEMORY complete for Yaesu FT901DM or FT902DM, or complete not-repairable radio. N6OPI, ED DANEFF, 10315 San Juan Ave., South Gate, CA 90280.

WANTED — SX190 RCVR, Good working condition. Contact KA3KQM — THOMAS WADE, P.O. Box 551, Cheyenne, OK 73628.

FOR SALE! ICOM 47-A 440 MHz transceiver. Original owner. Have all accessories and original carton. Perfect condition. I will pay shipping. $350.00. Call anytime, DON, KC7LX, 702/826-6028.

Yesteryears

ROSS' $$$$ USED June SPECIALS: Kenwood TR-9500 — $459.90, R-599D and T-599D — $549.90, TS-700A — $309.90; Yaesu YO-901P — $379.90, YO-100 — $169.90, FP-757HD — $199.90, E.T.O. 76 — $1299.90, $1295.90, 76A/W 3 8874 — $1999.90. Looking for something not listed?? Call or write, we have over 300 used items in stock. Mention ad. Prices cash. FOB Preston. We close at 2:00 Saturdays & Mondays. ROSS DISTRIBUTING COMPANY, 78 South State, Preston, ID 83263. 208/852-0830. P.O. Box 234.

THE 10TH ANNUAL TSRAC Wheeling Hamfest/Computer Fair, Sunday, July 17, Wheeling Park, 9 AM to 4 PM. WV's Largest. Dealers welcome; 30,000 square feet under roof; 5 acres flea market. Family activities at Park. Admission $3.00 in advance — $4.00 at door. To reserve space contact: SANDI WILLIAMS, KB8AAV, 9 East High St, Flushing, OH 43977 614/968-3652; for tickets, TSRAC, Box 240, RD 1, Adena OH 43901. 614/546-3930.

WILSON MH400, UHF, 450-470 MHz, 2-channel mini-com portable radios & stand-up desk charger. Brand new in original cartons; includes GE ni-cad battery, Flexible ¼ wave antenna but less crystals. HC45/U crystals available at $33.00 pair; Selectone St-106 CTCSS modules at $39.95 & Selectone ST-207 2 tone sequential boards at $54.95. TORG'S ELECTRONICS, RR #2, Box 325, Shipshewana, IN 46565. 219/768-4406.

DE K3UKW: Don't be confused about buying used equipment! We offer assistance and products to fit your budget. Used gear is our business since 1970. Send for a used equipment list — #10 SASE required. Ask a friend about us; we buy, sell, trade & consign used ham gear. Large inventory most times. Drop a note or call: 215/271-8898, TONY MUSERO, 1609 So. Iseminger Street, Philadelphia, PA 19148.

I PAY CASH for new and used vacuum tubes. Especially needed are special purpose, vintage and transmitting types by Eimac, Western Electric, etc. RANDY NACHTRIEB, WA6GJA, 6392 Park Ave., Garden Grove, CA 92645. 714/897-9351.

I PAY CASH for vintage audio gear by Western Electric, Altec, McIntosh, Marantz, etc. RANDY NACHTRIEB, WA6GJA, 6392 Park Ave., Garden Grove, CA 92645. 714/897-9351.

QSLs. QUALITY AND FAST SERVICE FOR 29 YEARS. Include call for free decal. Samples 50¢. RAY, K7HLR, Box 331, Clearfield, UT 84015.

PICTURE QSLs of your shack, equipment etc. from your photos-slides. B/W 250 - $25.00. Full color $89.00-1000. Subject to discount. Samples free. Get a better return with PICTURE CARDS, 3806 NE 24th, Amarillo, TX 79107. 806/383-8347.

PROFESSIONAL QUALITY DTMF DECODER and Select Call System, by Vince Yakamavich, AA4MY, see Feb QST Magazine for details. Blank board #152-PCB only $17.95. Kit of parts including board, #152-KIT only $69.95. Assembled and tested board #152-ASY only $99.95. Add $2.50 per order S/H. A & A ENGINEERING, 2521 W. LaPalma, Unit K, Anaheim, CA 92801; 714/952-2114.

BEAM HEADINGS — From your QTH. $4.00. K7NO, 668 N. Bullmoose, Chandler, AZ 85224.

KWM-2, HEATH A.C. P/S, Collins M/M and DC PS: $450.00 or trade for TS 180S, TS 120S or TS 130S. WA2VJL, P.O. Box 1382, San Benito, TX 78586.

QSL SAMPLES — 25¢. SAMCARDS, 48 Monte Carlo Dr., Pittsburgh, PA 15239.

VACUUM TUBE STORAGE BOXES: White. Four sizes. SASE. TYGER ELECTRONICS, Box 750, Clinton, MD 20735. 301/248-7302.

CLASSIFIED ADS FOR JOBS WANTED OR POSITIONS OFFERED will be run free of charge in Worldradio's MART.