Worldradio
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James Chesko, KN6QZ and Mal Raff, WA2UNP, consult during Net Control training for the Amateur Radio Fire Patrol.— ***Photo by Fred Leif, WB6HPA.***

Berkeley Amateur Radio Fire Patrol

FRED LEIF, WB6HPA
MAL RAFF, WA2UNP

Wildfire is a major concern for East Bay communities, especially since the devastating conflagration of 1991. Amateur Radio played a significant role in supporting fire fighters during that October 20, 1991 fire, but Northern Alameda County (NALCO) ARES/RACES believed that Amateur Radio could do more. Fred Leif, WB6HPA and Mal Raff, WA2UNP of NALCO ARES/RACES started discussions with Chief Gary Cates of the Berkeley Fire Department and Gary Bard, the Assistant Chief, in late 1992 to explore this opportunity. The result is the Amateur Radio Fire Patrol sponsored as a RACES activity by the Berkeley Fire Department. The spirit of the patrol is borrowed from SKYWARN (amateur radio activities that can help identify and forewarn the public about potential weather derived hazards) and Volunteers In Prevention, an Amateur Radio program sponsored by the California Department of Forestry.

The problem

Wildland-urban intermix areas (unique areas where open grasslands, forests and parks meet urbanized areas) are of particular concern to fire departments. Wildland fires can gain incredible momentum and spread rapidly into adjacent urban areas causing massive destruction. The Oakland fire of 1991 was an example of such a fire: over 3100 homes in Oakland and Berkeley were destroyed and 24 people lost their lives. Although Berkeley only lost 63 homes in that fire, the hazardous fuel load conditions that resulted in the conflagration also exist along Berkeley's eastern border which adjoins the East Bay Regional Park District's Tilden Park.

Although the San Francisco Bay Area is famous for its temperate climate, there are recurring weather patterns that are especially hazardous from a fire prevention standpoint. The California Department of Forestry has developed a weather classification and prediction scheme to help local fire agencies recognize and respond to these conditions. Combining temperature, humidity, wind direction and wind speed, the hazard conditions are classified on a scale of Low, Medium, High, Extreme, Red Flag and Disaster. In discussing the conditions where a volunteer patrol might be most useful, NALCO RACES and the Berkeley Fire Department agreed that Red Flag and Disaster are the conditions where minutes count and early detection is of vital importance.

Red Flag days are defined as those when temperatures exceed 90 degrees, humidity is below 20% and winds are from the north to northeast at 25 mph or more. Locally, these hot easterly winds are called Diablo winds, named after Mt. Diablo, directly east of Berkeley (literally, devil winds). As a historical footnote, at 10:00 a.m. on 20 October 1991 the critical weather parameters were recorded as 100 degrees, 2% humidity and 40 mph winds from the east. Red Flag conditions typically occur from mid summer through late October and can even occur into December, if the rainy season is late.

The patrol

The Amateur Radio Fire Patrol is an official RACES activity. On days when Red Flag conditions are forecast the BFD will activate RACES through pagers or by telephone. The Emergency Coordinator/Radio Officer activates a phone tree to alert trained RACES members. The two patrol routes are designed as loops which take about an hour to complete and include identified parks and outlooks which will help in observing hazardous conditions. A net control, located at a fire station, collects information and relays critical reports directly to the Berkeley Dispatch Center and the on-duty Assistant Fire Chief. All fire stations in Berkeley are equipped with permanently installed amateur radio VHF/UHF antennas and 9913 coax feedlines to ensure solid access to the repeater as well as full simplex coverage in the community even with handheld radios.

The patrols utilize the NALCO 440 MHz repeater with its 2 meter remote

(Please turn to page 6)

A WELL KEPT SECRET

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A better New Year!

KEN JOHNSON, W6NKE

Every year we make New Year's resolutions. Here are my year long suggestions for every ham.

1. I will always listen on a frequency before I transmit.
2. I will not break in on a conversation unless I have something significant to contribute.
3. I will not "kerchunk" repeaters.
4. I will always adjust my CW speed to that of the receiving operator.
5. I will be tolerant and helpful to all regardless of class of license.
6. I will not use profane language on any mode, i.e.: CW, SSB, RTTY, packet, etc.
7. I will always be courteous and cooperative when working DX and contests.
8. I will always preserve the dignity of ham radio by being tolerant, courteous and helpful to all.

These are only a few of the resolutions we could make. I'm sure you can think of others to make ham radio more enjoyable. Resolve to continue them throughout 1994. **WR**

Merchant Mariners win Veterans benefits

Full veteran status has been given by the government to Merchant Marine Seamen who served during World War II. Benefits to survivors and their families include disability compensation, VA medical care, pensions, VA home loan guarantees and burial rights including interment in a National Cemetery.

To obtain application form DD 2168 and full details, send a long SASE to: Joan Haber, Combat Merchant mariners WW-II, 14 Castle Drive, Chestnut Ridge, NY 10977. Veterans Benefits too number 1-800-1000.

— Submitted by Gene Brizendine, W4ATE

SPACECOM correction

In December's column, the name of the company offering the Spectr-Com WWV-format Universal Time Piece was listed incorrectly. The correct name is JZO Research, 7140 Colorado Avenue North, Minneapolis, MN 55429. We apologize for any inconvenience this may have caused. **WR**

United Arab Emirates

Members of the Dubai Men's College of Higher Technology are operating their new club station A61AF. They have equipment for HF, VHF and satellite operations. QSL to Dubai Mens College, PO Box 15825, Dubai, UAE. Only cards dated 3 August 1993 and after are good for DXCC. **WR**

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FEATURES

COLUMNS

VE reimbursement

FCC announces 1994 maximum reimbursement fee for an amateur operator license examination

The FCC announced today that effective January 1, 1994, the maximum allowable reimbursement fee for an amateur operator license examination will be $5.75. This amount is based upon a 2.7% increase in the Department of Labor consumer Price Index between September 1992 and September 1993.

Volunteer examiners (VEs) and volunteer-examiner coordinators (VECs) may charge examinees for out-of-pocket expenses incurred in preparing, processing, administering, or coordinating examinations for amateur operator licenses. The amount of any such reimbursement fee from any one examinee for any one examination session, regardless of the number of elements administered, must not exceed the maximum allowable fee. Where the VEs and the VEC both desire reimbursement, they jointly decide upon a fair distribution of the fee.

This announcement is made pursuant to Section 97.527 of the Commission's Rules, 47 C.F.R. § 97.527. **WR**

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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.

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PUBLISHER'S MICROPHONE

We now present amateurs of true distinction. They wear silk cravats, spats, top hat and carry a cane. And that's when they are work in the garage changing the oil in their cars!

The latest to become ***Worldradio*** Superboosters (Lifetime Subscribers):

- Gerald Fox, WA2VKS, Staten Island, NY
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- John Hansen, KC6TEP, West Sacramento, CA
- Leonard Hill, (studying hard to take the test) North Bend, OR
- Orville Bailey, W7QPT, Warm Springs, OR
- Daniel Mota, AA2NC, doing good things for the country, APO Europe
- Joseph Lutz, W7LPF, who gave you contacts from CT1 and DU2, is now in HB9 land with the State Department.

A correction from last month's Publisher's Microphone. This is the correct callsign for Del Denney, KFØQZ, from Cortez, CO. Apologies.

Field Day! Field Day! There's nothing quite like it. But, we feel there is a glitch in the interpretation of the rules. First, let's look at what the ARRL sets down in black and white.

"Must use no facilities installed for permanent station use, nor any structures installed permanently for Field Day use."

But then we see (in the results that are printed in *QST)* operators going to a sports field and using ". . .six 70' poles . . . .We shot lightweight line over the crossbars with a bow and arrow. . . ."

We feel that "structures installed permanently" applies whether the Field Day crew put them up, or some other entity put them up. Permanently.

The Field Day credo says "Learn to operate in abnormal situations under less than optimum conditions." That doesn't sound to me like it includes putting up antennas: "quickly, thanks to the local cable company which had been kind enough to loan us one of their bucket trucks."

The ARRL further states about Field Day: "A premium is placed on skills and equipment developed to meet the challenges of emergency preparedness."

That sounds as if we should be using OUR equipment, not borrowing other organizations' equipment, which may not be handy during a true emergency.

Another group used "a soccer goal post" to support their antennas.

No, disasters do not occur every year within the same city block, on a sunny day in June. The use of tens of thousands of dollars worth of municipal 70-ft. towers hardly meets the criteria of "less than optimum conditions".

Is it the "Sweepstakes Contest Outdoors" or is it truly a test of emergency communications? What if there are no handy trees in the desert locale of the next emergency? What if there is no convenient ball field or cooperative cable company handy?

Surely the true purpose of Field Day would be better served if the rules reflected a total self-contained policy. Go on the air in a manner that would more reflect reality in every way. "Come as you are" — just what you can carry, is more in the Field Day tradition. Of course in a true emergency, you would use what ever was available. The point is that there may not be trees or poles available.

Now here is a totally different sort of contesting. Over the weekend of 30-31 October, I was in *CQ*'s World Wide DX Contest at the QTH of George McCarthy, W6SUN. George built his first radio in 1934, the year I was born. He has a 4-element Quad up at 85 feet. Stopping for the lavish lunches he put on and a magnificent steak dinner complete with wine, and his WWII tales of being shot down over Wake Island, I managed to work 85 countries on 20 Meters. What really helped was that J-Comm DSP filter on receive.

The reviews of that unit have been far, far too conservative. The difference is like, well, I would turn it off often, just so I could turn it back on in the manner of "stop hitting your head against the wall." The CT contest program by K1EA made operating a contest a "lean back in your chair" event rather than the furious scribbling of olde.

Worldradio Books will be publishing W6SUN's book about Quads quite shortly. It would have been sooner but a month ago United Parcel Service, in the 44 miles between his house and our office, lost his manuscript. He was in Europe for two weeks of that and was unaware of the situation.

Since then he has been going back to some of the featured amateurs in the book to have them submit photos again. Some historical ones, without negatives, are irreplaceable.

Thanks a lot, UPS!

A reader sent in a clipping from the *Wall Street Journal* relating that in the past four years the number of new student pilots has steadily declined.

Saltily, he believes that aviation take a page from the ham license and drop theory in favor of rules and regs. He believes there would be a lot more pilot licenses issued if they didn't have to learn about stuff like stall speed and all that.

— Armond, N6WR

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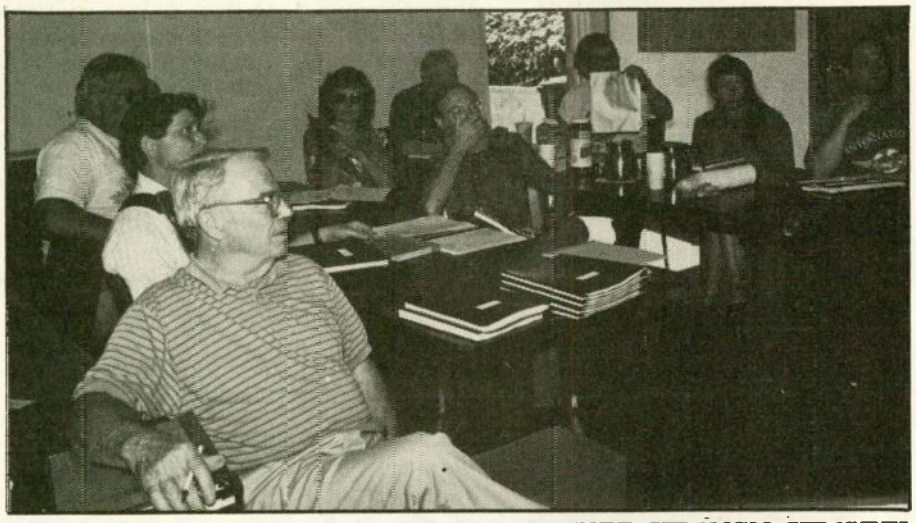


(Clockwise from left front) N6LFW, KD6HZZ, KD6NSN, KB6UVX, W6JRZ, N6EK, WA2UNP, KG6YT and AB6WF during Fire Patrol training. — ***Photo by Fred Leif, WB6HPA.***

Fire Patrols

(Continued from page 1)

base to provide seamless coverage over the patrol routes. The repeater is a low level, emergency-service-dedicated machine located atop Alta Bates Hospital. Normally, the net control utilizes a Kenwood TM-732A which was purchased by the City to support the RACES program and which is available at one of the fire stations. Of course net control can be located anywhere within good radio reach of the repeater.

Training

Creating an organized patrol for purposes of identifying and communicating fire hazards requires planning and organization. In cooperation with the Berkeley Fire Department, NALCO ARES/RACES participated in the development of field manuals, and desk reference materials that fully describe the patrol, its responsibilities, functions, and communications protocols. On September 5, 1993 a pilot patrol was activated to test the concept and identify any necessary fine tuning. Participating in this early training and 'shake down' were WA1MCO, W6JRZ, N6LFW, KD6HZZ, W6VTJ, KD6QEH (now KN6QZ), WA2UNP and WB6HPA. Additional training for 22 RACES members was conducted by the Berkeley Fire Department which focused on identification and description of fire hazards. The patrol operators are also trained in concise radio reporting protocols which minimize air time and increase communication efficiency.

Conclusion

The Berkeley Fire Department is especially supportive of the RACES program. Due to concerns about high fire hazards (accelerated by reports of a possible arsonist), BFD issued a press release which received an overwhelming response. Four local TV stations covered the pilot activity (FOX, NBC, ABC and CBS affiliates), as did four newspapers and two radio stations. We received reports that CNN picked up the story and aired it through their network. We believe that the patrol activity will be a significant asset to the community, and that the publicity helped spread the word that amateur radio contributes to public safety.

Post script

On October 26 the city activated the fire patrol in response to extreme weather conditions. The patrols were active on October 26, 27 and 28. Again on October 29 and 30 the fire patrols were called out. In all 205 hours of RACES operator time was invested in patrolling the hazardous hill zone. Luckily, no major problems had to be reported to the Berkeley Fire Department. WR

"73 OM"

The traditional expression "73" goes right back to the beginning of the land-line days. It is found in some of the earliest editions of the numerical codes, each with a different definition, but each with the same idea in mind it indicated that the end, or signature, was coming up.

The first authentic use of "73" is in the publication, "The National Telegraph Review and Operators Guide," first published in April 1857. At that time "73" meant "my love to you!" Succeeding issues of this publication continued to use this definition of the term. Curiously enough, some of the other numerals then used have the same meaning as they do now. Within a short period of time the use of "73" began to change.

In the National Telegraph Convention, the numeral was changed from the Valentine-type sentiment to a vague sign of fraternalism. Here, "73" was a greeting, friendly "word" between operators and it was so used on all wires. In 1859, the Western Union Company set up the standard "92 code". A list of numerals from one to 92 was compiled to indicate a series of prepared phrases for use by the operators on the wires. Here in the "92 code," "73" changes from a fraternal sign to a very flowery "accept my compliments," which was in keeping with the florid language of that era.

Over the years from 1859 to 1900. the many manuals of telegraphy show variations of this meaning. Dodge's Telegraph Instructor shows it merely "compliments." The Twentieth Century Manual of Railway and Commercial Telegraphy defines it two ways, one listing as "my compliments to you;" but in the glossary of abbreviations it is merely "compliments." Theodore A. Edison's Telegraph Self-Taught shows a return to "accept my compliments." A 1908 edition of the Dodge manual gives us today's Definition of "best regards with a backward look at the older meaning in another part of the work where it also lists it as "compliments."

"Best regards" has remained ever since as the "put-it-down-in-black-and-white" meaning of 73 but it has acquired overtones of much warmer meaning. Today, Amateurs use it more in the manner that James Ried had intended that it be used — "a friendly word between operators." — *Louise Moreau, W3WRE (1972 Operating Manual, ARRL) quoted in "The Modulator," Fort Myers (FL) ARC.*

ARRL election results

Results for directors and vice directors of the following ARRL divisions were tallied on November 19, 1993. In each case, the candidate receiving the greatest number of votes was declared elected. The terms of office are for two years, beginning at noon on January 1, 1994.

SOUTHEASTERN DIVISION

DIRECTOR		VICE DIRECTOR	
Frank Butler, W4RH	2807	Evelyn Gauzens, W4WYR	3094
David Shiplett, AC4MU	1837	Fenton Mitchell, WA4OSR	2436
Rudy Hubbard, WA4PUP	731		
Alan Page, KE4WO	186		

DAKOTA DIVISION

		VICE DIRECTOR	
		Hans Brakob, KØHB	726
		Rick Whiting, WØTN	585

DELTA DIVISION

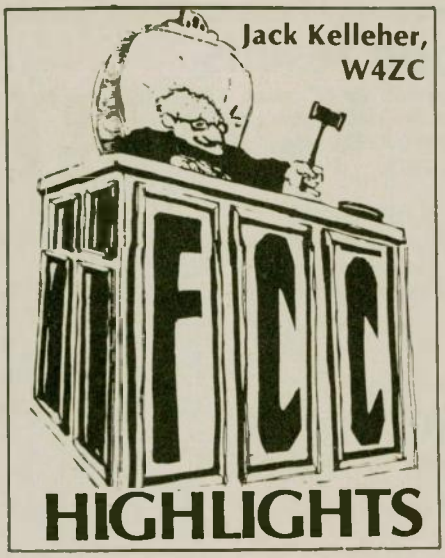
DIRECTOR	
Joel Harrison, WB5IGF	1618
Jack Hill, W4PPT	1244

MIDWEST DIVISION

DIRECTOR		VICE DIRECTOR	
Lew Gordon, K4VX	1674	Bruce Frahm, KØBJ	1813
Bill McGrannahan, KØORB	1609	Larry Staples, WØAIB	1387

PACIFIC DIVISION

DIRECTOR		VICE DIRECTOR	
Brad Wyatt, K6WR	2714	Jim Maxwell, W6CF	2372
Charles McConnell, W6DPD	1354	Jettie Hill, W6RFF	849
		Jerry Boyd, KG6LF	844



Immediate temporary operating authority proposed for newcomers

On October 23 the FCC adopted a Notice of Proposed Rulemaking (PR Docket 93-267; RM-8288) on amendment of the Amateur Service Rules to extend temporary operating authority to new amateur operators.

Section 97.9 of the Commission's Rules currently authorizes immediate temporary operating privileges to amateur operators who upgrade their class of license. The procedure, however, does not apply to those successful candidates who do not already hold a valid license.

The FCC Notice reads in part: "To better serve new amateur operators and to increase productivity in the processing of license applications, we propose to amend Section 97.9 to extend temporary operating authority to new successful candidates until receipt of the full-term license." (The FCC proposes to limit this temporary authority to 120 days because a full-term license would normally be issued within that time; it is an indication that the application was not received for processing when a license is not issued within 120 days).

The Notice continues "The temporary operating authority, however, would not be available to any prior amateur service licensee whose license was revoked, suspended, or surrendered for cancellation following notice of revocation, suspension, or monetary forfeiture proceedings. Nor would it be available to any person who is the subject of a cease and desist order that relates to amateur service operation and which is still in effect. Language to cover these restrictions is contained in the proposed rules. Neither would it authorize any station operation that may have a significant environmental effect as defined by Section 1.1307 of the Commission's Rules. 47 C.F.R. para. 1.1307. Also, the temporary authority would terminate, if the application is returned without action. In addition, the proposed rules provide that the Commission, in its discretion, may cancel the temporary operating authority without a hearing, if the need for such action arises."

"For purposes of over-the-air identification, we propose that stations that are operated by a new control operator exercising temporary operating authority shall use a temporary call sign determined by the person's initials and mailing address. The prefix for each such call sign would be WZ. This unique prefix would identify the station as a new amateur station awaiting a license. The prefix would be followed by a number corresponding to the VEC Region for the mailing address shown on the license application. The person's initials and an indicator denoting the license class would follow the VEC Region number. (For example, applicant John Doe, who passed an examination for a General Class operator license, living in Quincy, Illinois, would use the temporary call sign WZ9JZD/AG. The complete rationale for temporary call signs is set forth in the proposed changes to the Rules).

The Comment deadline is January 10, 1994. Reply Comments are due February 10, 1994.

Special call signs

Last June the FCC released a Public Notice notifying the public that the Commission was accepting applications for "Club and Military Recreation Station Call Sign Administrators." Several organizations responded; but the American Radio Relay League challenged the qualifications of other applicants, and the program has not yet been implemented.

In August President Clinton signed the Budget Reconciliation Act of 1993,

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 the first of November 1993.

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

Radio District	Group A Am. Extra	Group B Advanced	Group C Tech./Gen.	Group D Novice
0	AA0PJ	KG0JP	N0ZFP	KB0LMN
1	AA1HU	KD1SC	N1QOL	KB1BEI
2	AA2QI	KF2SM	N2XAA	KB2QPY
3	AA3GK	KE3KS	N3QVP	KB3AZG
4	AD4MR	KR4HF		KE4HJE
5	AB5QJ	KJ5SC		KC5DZT
6	AB6YI	KN6US		KE6DDA
7	AA7ZR	KI7TD		KB7ZJM
8	AA8NC	KG8EZ		KB8QHH
9	AA9JF	KF9SE	N9VKZ	KB9IVZ
North Mariana Is.	AH0V	AH0AO	KH0CF	WH0AAY
Guam	NH2X	AH2CT	KH2HN	WH2ANH
Johnston Is.	AH3D	AH3AD	KH3AG	WH3AAG
Midway Is.		AH4AA	KH4AG	WH4AAH
Hawaii		AH6NE	WH6QJ	WH6CQZ
Kure Is.			KH7AA	
American Samoa	AH8H	AH8AF	KH8BA	WH8ABB
Wake Wilkes Peale	AH9C	AH9AD	KH9AE	WH9AAI
Alaska		AL7PJ	WL7NY	WL7CHI
Virgin Is.	WP2C	KP2CC	NP2GT	WP2AHU
Puerto Rico		KP4VW		WP4MLM

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

which contains a list of fees that the FCC may assess and collect "in advance for a number of years not to exceed the term of the license held by the payor." The list includes Amateur vanity call signs, for which FCC is authorized to collect an annual fee of $7.

Rumors are rife concerning the relationship of these two actions. The front page headline in the *W5YI Report* for November 1st is "Club Call Sign Program in Jeopardy," and a front page headline in *Westlink Report* for October 28 is "Special Callsign Program Scuttled."

Our information is that the situation is being reviewed carefully by the FCC, especially in connection with the capabilities of new computer facilities at Gettysburg. Until that review is complete, your editor is going to sit back and wait.

Station location requirement dropped from FCC license forms

In an Order dated September 24, 1993, the FCC said that it will no longer require that a station location be shown on amateur license applications, nor on applications for reciprocal operating permits, effective November 15, 1993.

The Commission said that because portable and mobile equipment is now so often used by amateurs, a station's location often changes, sometimes even daily. FCC also said that deleting the station location requirement would expedite the processing of license applications. They said that since this rule amendment is not likely to be controversial and that it is a "nonsubstantive" change in licensing procedures, no notice and comment period was needed.

The amended FCC Rule "Section 97.21, Mailing Address" will read "Each application for an amateur service license and each application for a reciprocal permit for alien amateur licensee must show a mailing address in an area where the amateur service is regulated by the FCC. The mailing address must be one where the licensee can receive mail delivery by the United States Postal Service." (Tnx ARRL).

The impact of no code on upgrading

The *W5YI Report* for October 15th contains an interesting report of an investigation by the W5YI organization into the FCC's licensing records for the three years before and after "No-code" (The first codeless license was issued on March 12, 1991).

Their research revealed that an average of 1,070 Technicians upgraded to the General (and higher) Class monthly during the three years prior to "No-code." In the 29 months after March 1991, the number of Technicians upgrading to General (and higher) is an average of 1,336 monthly, an increase of 25%.

The report goes on "It thus appears that the No-code Technician Class has actually helped increase the number of telegraphy-proficient amateurs. The reason is probably that there is simply a larger pool of radio-oriented people entering ham radio". "The exposure to the hobby and to other "mainstream" operators seems to have motivated newcomers to upgrade. Actually the same thing happened when Citizen's Band radio was fashionable in the early and mid-1970's. The popularity of two-way radio communications prompted many CB operators to become licensed ham operators.

"There can be no doubt, however, that the biggest impact of "no-code" is on the Technician Class itself. The following chart shows the annual percent growth for the five years prior to no-code — and for the 29-month period, on an annual basis, after April 1991. The Technician Class was already the fastest growing class before 1991 with an average annual gain of nearly 12%. It mushroomed to 25% once the 5 wpm code test was abolished for new entry level Technician. (Ed: The following is a summary of the chart in the *W5YI Report*):

Annual growth	Before No-code Technician	After No-code Technician
Extra	7.9%	6.9%
Advanced	1.6%	2.3%
General	0.7%	2.0%
Technician	11.7%	25.3%
Novice	4.3%	1.9%
Total all classes	4.5%	8.7%

PCS gets go-ahead

The FCC has approved the creation of the Personal Communications Service (PCS), and has done so without having any impact on amateur radio. On September 23rd the Commission voted to adopt new guidelines for establishing this new form of wireless

phone, designating it as its own service.

The FCC is expected to assign PCS a semi-exclusive 120 MHz of frequencies between 1.8 and 2.2 GHz. This spectral region is now used by a variety of services, and "shoehorning in" PCS may well be a formidable task. There are no Amateur Service allocations in the segment 1.8-2.2 GHz; but there is always the possibility that Services which may be displaced from that band in favor of PCS may end up having an impact on Amateur Service allocations.

Westlink Report, in its October 14 edition, says that PCS equipment will be similar to cellular telephones and is expected to be introduced at retail prices under $300. Like cellular telephones, PCS units will use a network of receivers and transmitters in "cells," but there are expected to be many more cells with PCS, located closer together than in conventional cellular systems. Consequently, far lower user transmitter power will be needed to go from a user unit to a cell.

Promoters of PCS say the system will sound better, cost less and draw more customers than the cellular phone industry. Some analysts believe that PCS could be used by 12,000,000 people in just three years, and play an important role in emerging world communications to the most personal of levels. Others believe the system may be an also-ran and simply supplement the current cellular system by allowing formation of smaller, less powerful wireless networks, such as within a building.

More on bio hazards of EM radition

The FCC has proposed changing its guidelines for evaluating environmental effects of RF radiation to align them with the guidelines adopted in 1992 by ANSI and IEEE (see June 1993 column). The IEEE version of the 1992 Standard is the work of the IEEE Committee on Man and Radiation (COMAR), chaired by Dr. John M. Osepchuk, a research physicist for the Raytheon Company in Lexington, MA.

The lead article in the W5YI Report for October 1, "New RF Exposure Standard could impact Ham Radio," reports on contact with COMAR by W5YI, Vice Chairman of the VEC's Question Pool Committee. W5YI's primary interest is in updating amateur examination questions which deal with RF exposure to amateur operators and to the public who may be in close proximity to amateur radio stations. Specifically, what are the power, frequency and distance guidelines for the ham operator and his residential neighbors?

The responses to W5YI's inquiry included a letter from COMAR member Richard A. Tell, K5UJU, which is too long to be quoted here in its entirety, as it is in the W5YI Report. However, the following excerpt is informative:

". . .we offer for your consideration two possible questions that might be determined to be useful in the question pools used by volunteer examiners:

(1) What have most scientific studies shown that biological effects of RF fields determined at different frequencies used by most amateur radio operators are correlated with?

(a) RF field strength (V/m)
(b) RF power density (mW/cm²)
(c) Specific absorption rate (W/kg)
(d) Percentage Modulation
(Answer is c).

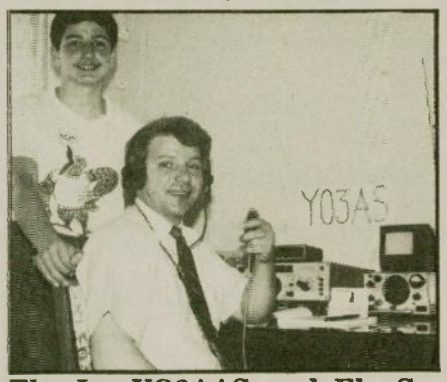
(2) To avoid excessively high human exposure to RF fields, how should amateur antennas generally be mounted?

(a) with a high current point near ground
(b) as high and away from accessible areas as possible
(c) on a non-metallic mast
(d) with the elements in a horizontal polarization
(Answer is b). . ." WR

Romanian Amateurs — a family affair

GEORGE PATAKI, WB2AQC, EX YO2BO

Robert, YO7LFV, stands with his dad Constantin, YO7BGA.



Ely Jr., YO3AAS and Ely Sr., YO3AS.

A version of an old saying claims that: "A family that plays together, stays together." The idea is that common interests among the members of a family promotes cooperation and thus will strengthen their bond.

One such family residing in Bayamón, Puerto Rico, is that of Victor, KP4NM, and his wife, Alejita, KP4TQ. All five of their children are licensed amateurs and while some of them are grown up and living away from home, there is lots of love and strong sense of togetherness.

It seems to be a two way street; love and understanding amongst members of family lead to common hobbies; and shared interests bring people closer to each other.

On a recent trip to my native Romania, I visited amateurs in 24 localities, and took more than 1,000 photographs. I saw hundreds of hams, including a dozen ham families. There were father and son, as well as husband and wife teams; and a father and two daughters,too.

In general, fathers are teaching their sons; less frequently, their daughters. Husbands are helping their wives learn the hobby as well. Tina, YO3PRI, is an exception to this rule; she is the first ham in the family and now her husband is also getting involved in the hobby. I never met a son-in-law and mother-in-law team, however!

Brasov

In the city of Brasov which is located in the Carpathian Mountains, I met a family which included three generations of hams: Dan, YO6EZ; his daughter Ines, YO6ZI, and her young son Alin, a short wave listener with YO6-5352/BU as his callsign. Alin, an enthusiastic fox hunter, recently passed the test for Amateur Radio and is waiting for his license.

In Brasov, there were Geo, YO6MZ, and his son Andrian, YO6FAP.

Bacau

In Bacau, in the eastern Romanian province of Moldova (not to be confused with the independent Republic of Moldova which was part of the Soviet Union) I visited Titi, YO8MI, and his two daughters Manuela, YO8MQ, and Anca, YO4DGO. Also located in Bacau is a very good station which is run by Sinus, YO8GF, and his son Fanel, YO8OH.

Danny, YO8ROO, and his son Sebastian, YO8SOO also live in Bacau.

Geta

In Constanta, Geta, YO4DFU, is able to keep in contact with her husband Marcel,YO4AB,via ham radio. He is a radio operator on comercial vessels. In that same town, which is located on the Black Sea, Maria, YO4CDY, wonders about the possible location of her husband, Mihai, a navy officer serving on submarines.

Cimpina and Craiova

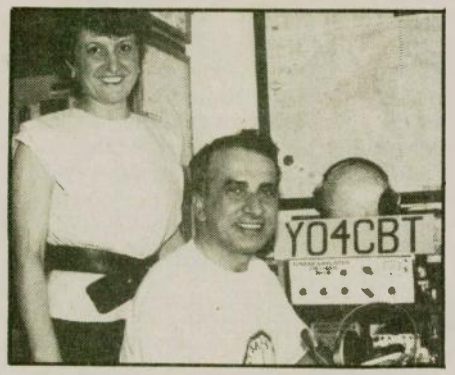
In Cimpina, the heart of the Romanian oil fields, there is an active Amateur Radio couple: Liliana, YO9FUU, and Nita, YO9WL.

In Craiova, the center of a southern province called Oltenia, I visited Constantin, YO7BGA, and his son Robert, YO7LFU.

Short wave listeners, too

Many youngsters are still short wave listeners and they are trained by their parents: in Pitesti, Gusti, YO7AQF, is the father of Silviu, YO7-6203/AG. In Brasov, Feri, YO6BSJ, one of the operators of the YO6KAF radio club, is the father of Attila, YO6-032/BU. In the city of Braila, located on the Danube river, Bebisor, YO4-005/BR is being prepared for the licensing test by his father Bebi.

In Bucharest,there was Andrei, a



YO4CDY, Maria with husband Mikai, YO4CBT.

young short wave listener whose call is YO3-2494/BU, and his father Carol, YO3RU.

Oradea

In Oradea, which is in the western part of Romania close to the Hungarian border, Vasile, YO5BBL, the chief of the local county radio club, YO5AU, is helping son Andrei, YOS-4077/BH prepare for the exams.

Agi, YO5BLW, and his daughter Kuli, YO5LN also live in Oradea.

Botosani and more

In Botosani, in the north-eastern part of Romania, Gef, YO8CHH, and his son Felix, YO8RFF; Eugen, YO8RDT, and his son Vlad, YO8-011/BT; and Monica, YO8RBR, and her husband Florin, YO8RIL.

Living in Cluj-Napoca, the center of Transylvania (remember Dracula?) are Vasile, YO5AEX, and his wife Etelca, YO5CQK.

In Pitesti I missed seeing Kay, YO7BSR, the wife of Liviu, YO7PO, who is in charge with the local county

Bebi, YO4FJG, with his SWL son.

radio club. They have a son, Cristi, an SWL who has YO7-811/AG as his call-

Grandad Dan, YO6EZ, with daughter Ines, YO6ZI and her son Alin.

call indicate the county; in this case AG stands for Arges.

I know many American amateurs and their families. I believe that in Romania, Amateur Radio is more of a family affair than in this country. What is the reason? I can only guess. Perhaps it is because Americans are more independent minded people; they do have more hobbies to choose from than the newly liberated nations of eastern Europe. Nevertheless, it was nice to see the strong ties prevailing in Romania and her Amateur Radio families.

WR

Ameritron *no tune* Solid State FET Amplifier

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ALS-600
$1299
Suggested Retail
(*Includes* AC Power Supply)

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- **Extremely quiet** -- low speed, low volume fan is so quiet you'll hardly know it's there, unlike noisy blowers used in other amps
- **Very Compact** -- 6 x 9½x12 inch amplifier takes up less desktop space than your transceiver and weighs about the same -- only 12½ pounds
- **Illuminated Cross-Needle SWR/Wattmeter** -- lets you read SWR, forward and reflected *peak* power simultaneously
- **Operate/Standby Switch** -- lets you run "barefoot", but you can instantly switch to full power if you need it
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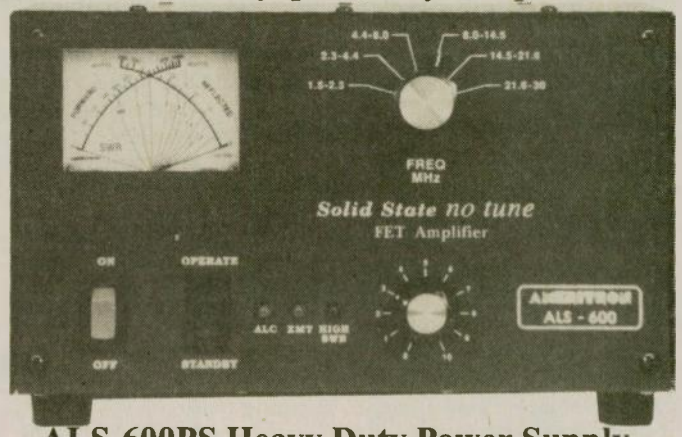
- **12 VDC output jack** -- lets you power low current accessories
- **Separate** ALS-600PS power supply (included) can be placed conveniently out of the way and plugged into your nearest 120 VAC outlet -- no special wiring needed
- **Made in USA**
- **Enjoy** 700 Watts of *no tune* solid state power. Call your favorite dealer for your best price and order your ALS-600 with power supply today



ALS-600PS Heavy Duty Power Supply

ALS-600PS power supply included with ALS-600 amplifier

- **Massive choke input filter** greatly improves voltage regulation and reduces peak AC line current
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- **Includes prewired cable** to plug into ALS-600 amplifier
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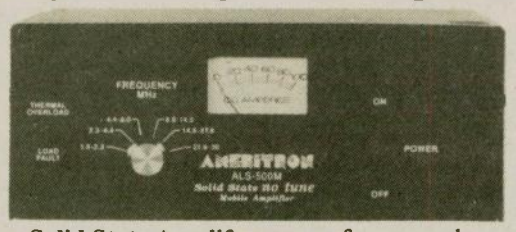
Ameritron Mobile *no tune* Solid State Amplifier

Ideal mobile amplifier -- ***uses 13.8 VDC mobile electrical system, very compact 3½x9x15 inches, extremely quiet, 600 Watts output, continuous 1.5-22 MHz coverage, instant bandswitching, no tuning, no warm up, SWR protected***

ALS-500M
$799
Suggested Retail



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- **ON/OFF Switch**-- bypasses amplifier for "barefoot" operation without having to disconnect high current power supply cables
- **Remote ON/OFF Control** -- lets you remotely control ON/OFF function for out-of-the-way mounting of amplifier
- **Exciter Drive** -- less than 100 watts input gives full output
- **Power Supply Requirements** -- requires 13.8 VDC at 80 amperes peak current for PA transistors and seperate line for 12-15 VDC at 4 amperes for control and bias circuits
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Measure feedpoint resistance, inductance, capacitance, resonant frequency of tuned circuits, transmission line velocity factor/ impedance/ loss. Test RF chokes, transformers, baluns.

Use 8 AA cells or 110 VAC with MFJ-1312B, $12.95. 4x2½x6⅛ inches.

MFJ-209, $109.95, same as MFJ-249 less frequency counter.

See *free* MFJ catalog for complete line of MFJ SWR Analyzers™.

MFJ-949E 300 W Tuner

MFJ-949E **$149.95** **World's** most popular antenna tuner covers 1.8-30 MHz, has lighted *peak*/average Cross- Needle SWR/ wattmeter, 4:1 balun for balanced lines and *full size* 300 watt dummy load.

Versatile 8 position antenna switch lets you *pre-tune* MFJ-949E into dummy load to minimize QRM.

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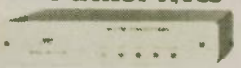
MFJ-1270B **$119.95**



MFJ-1270B *super* TAPR TNC clone has a world wide reputation as *the most reliable packet TNC in the world* -- many work 24 hours a day for years without a single failure!

Fully TAPR TNC-2 compatible, VHF *and* HF operation, *free* AC power supply, new *enchanced* mailbox expandable to 512K with auto/reverse mail forwarding, WeFAX mode lets you print weather maps, optional plug-in 2400/9600 baud modems, KISS interface, MFJ Host mode.

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Just plug pre-wired cables into your rig's mic connector and TNC.

Plug-in jumpers let you use nearly any rig with 8 pin mic connector.

MFJ-1272B, $34.95 /MFJ/TAPR TNC2 clones; **MFJ-1272BX**/PK-232; **MFJ-1272BYV**/KAM VHF/KPC3; **MFJ-1272BYH**/KAM HF Port; **MFJ-1272BZ**/PK-88, $39.95 each.

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Build this *regenerative* shortwave receiver *kit* and listen to shortwave signals from all over the world with just a 10 foot wire antenna.

Has RF stage, vernier reduction drive, smooth regeneration, five bands.

MFJ-8100W, $79.95, assembled.

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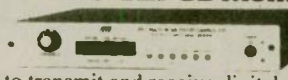

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You get *10 digital modes* . . . Packet, AMTOR, PACTOR (at no extra cost), RTTY, ASCII, Navtex, Color SSTV, 16 Gray Level FAX, CW and Memory Keyer plus an *enchanced* 32K Mailbox.

You'll have fun joining worldwide *packet* networks and exchanging *color SSTV* pictures with your buddies around the world. You'll marvel at *full color FAX* news photos as they come to life on your screen. You'll see weather changes on highy detailed *weather maps* in all 16 gray levels. You'll eavesdrop on late breaking news as it happens on *RTTY*. You'll enjoy error free HF QSOs on *PACTOR* and *AMTOR* and receiving packet mail in an *enchanced 32K mailbox*. Want to copy some *CW*? Just watch your screen.

MFJ-1289, $59.95, MultiCom™ software and cables.

MFJ halfwave vertical Antenna

6 bands: 40, 20, 15, 10, 6, 2 Meters . . . No radials or ground needed!

Operate 6 bands -- 40, 20, 15, 10, 6 and 2 Meters --with this MFJ-1796 *ground independent* halfwave vertical antenna! No radials or ground ever needed!

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

Precision ball bearing roller inductor, three digit turns counter and spinner knob give you exact inductance control for minimum SWR.

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

Ideal for home installations where space is limited -- apartments, condos, small lots. Take on trips.

All welded construction.

Remote control has *Automatic Band Selection*™, Cross-Needle SWR/ Wattmeter. No control cable needed. Use batteries or 110 VAC. Add$20 s/h.

No ground or tuner needed.

MFJ-1782, $219.95, like MFJ-1786 but remote control has only slow/fast tune buttons.

Dual Band Mobile Ant.

Mobile Antenna for 144/440 MHz

MFJ MFJ-1724B/BB **$14.95**

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

5/8 Wave Mobile Ant.

Maximum Gain™ 5/8 Wave 2 Meter *magnet mount* mobile antenna has stainless steel radiator, 12 ft coax, low SWR. UHF mobile (MFJ-1728) or BNC handie-talkie (MFJ-1728B) connector.

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Top left: Al Biegler, WA6WJZ, Pacific Division '92 Amateur of the Year receives award from Pacific Division Director Chuck McConnell, W6DPD. Right: Continuing service recognition was given to Fred Silveira, K6RAU, for his on-the-air code practice. Above: S. Marti-Volkoff, Regional Engineer of the FCC.

Concord hosts Pacificon '93

ARMOND NOBLE, N6WR

So you think your knowledge of: (choose one) digital signal processing; satellites; packet; antennas; DX; is not what it could be, but you hate to admit it to your ham friends or club members. You don't want to ask what you think would be "dumb questions."

Well, here's the answer. Just toss five dollars on the counter and you can attend forums for two days. (Three dollars if you pre-registered.)

We're talking about the ARRL Pacific Division Convention which was held in Concord, CA (27 miles east of San Francisco) on 22-24 October.

Local experts and ARRL technical staff presented seminars and you could ask all the questions you wanted during the forums and individually approach the speakers as you saw them walking around.

About 3,000 hams were informed or entertained courtesy of the hard work of the Mount Diablo Amateur Radio Club. (That's W6CX of Field Day fame.)

A good part of a convention is just chatting with old friends and making new ones. The lobby and the courtyard of the Concord Hilton Hotel were the gathering places for many. The hotel got into the act by featuring a hot dog and hamburger cookout in the courtyard so lunch could be quickly dispatched and then you could get back to the activities.

As usual, the major transceiver manufacturers were on hand to extol their particular virtues and answer all questions.

Also exhibiting were some smaller and emerging companies with acces-

Fred J. Hufft, W4PLM, mans his Startek booth.

sories. Usually the person manning the booth was the engineer/owner of the company who could explain all the nuances of their product.

Of course, there was a swap meet and a transmitter hunt. One special feature of the Pacific Division convention is that for many years Friday night has been devoted to Emergency Preparedness Forums. Among the presenters this year was Captain Al Haynes, retired United Airlines pilot (credited with saving many lives in landing a crippled airliner in Sioux City, IA. See Nov. '89 ***Worldradio***.) He had a packed audience for both his presentations.

The San Francisco Bay Area is emergency conscious, and with good reason. One of the prime movers in keeping all on their toes is Jerry Boyd, Chief of Police, Martinez, CA. He's KG6LF, and with wife Jay (Ph.D.), KN6BP, has just written "When The Big One Hits... A Survival Guide for Amateur Radio Operators," (available from ***Worldradio Books***.)

One highlight of the convention was the banquet address by S. Marti-Volkoff, Regional Engineer of the FCC. The recounting of adventures in chasing down interference was done in a highly humorous manner.

We highly commend those diligent workers from Mount Diablo ARC for a convention well done! WR

Top left going clockwise: The Martinez Police Emergency vehicle; Chris Imlay, N3AKD, ARRL Legal Counsel in Washington; Dorothy & John Obal, KA6SQN; Jerry Boyd, KG6LF, Martinez Police Chief.

— All photos by Armond Noble, N6WR.

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

When lightning strikes
and other natural atmospheric electricity

PAUL WILKINS, AB4CY

At any given moment there are about ten thousand thunderstorms in progress somewhere on the earth. Each one produces some lightning which radiates an electromagnetic pulse that travels worldwide guided by the earth's magnetic field lines. Lightning is a complicated phenomenon. Close-by strikes produce high induced voltage in electrical conductors as well as the static "crashes" heard on AM radio. In fact, FM radio was developed because it could be made static free. A direct strike can split trees, tumble chimneys, start fires and produce havoc with electrical equipment. The typical lightning bolt is about an inch in diameter, carries a peak current of several hundred thousand amps and lasts about one hundredth of a second. The rate of rise of current in a lightning strike is 8 to 15 kiloamps per microsecond. Most lightning carries a negative charge in a cloud to earth, but some lightning is positive and sometimes it travels from the ground up to a cloud or from cloud to cloud. There have been cases where a rubber insulated # 14 antenna wire has been struck and what survived was only a hollow tube of insulation.

Thunder

Thunder is the name for the sound that usually accompanies a lightning strike. The sound is the result of the rapid expansion of the air due to the sudden intense heating by the heavy current flow of the lightning. Since sound travels about 1100 feet per second, it takes about five seconds to travel a mile. Thunder can seldom be heard more that 8 to 15 miles from its source while cannon fire can be heard at much greater distances. Rolling thunder comes from slanted strikes where the sound from one part of the strike takes longer to reach you than the sound from other parts of the strike column.

The lightning rod

Benjamin Franklin was the first person to connect lightning with electricity. He invented the "lightning rod" which is a sharp pointed conductor installed vertically above a structure and connected to a low resistance path to "ground." A lightning rod doesn't prevent a lightning strike but directs it to ground through the rod rather than through the structure. The sharp point on the rod creates a high electric field gradient making it easy to ionize the surrounding air which provides the lightning a path of least resistance.

In the early days of radio, antennas were connected to what are known as "lightning-arrestors." The arrestor is simply a spark gap connected between the antenna feedline and ground. If enough voltage appeared across the gap (400 volts per thousandth of an inch) a spark would jump, shunting the current to ground away from the rig. This works better with rigs that use inductive coupling to the antenna rather than direct feed through a filter.

Lightning protection

The best solution for lightning protection is to provide a means to disconnect the antenna from the rig and ground it when it is not in use. This is a nuisance when the connector is coax but you can mount a grounded coax connector close by and use that to accept the feed line when the antenna is not in use.

Other atmospheric electricity can have serious effects on your equipment through static charge build-up. A well insulated ungrounded antenna will charge to tens of kilovolts if a dry fog is carried over the antenna by a slow breeze. The same thing can happen during a dry snowfall. If an antenna charged like this is accidently connected to a solid state rig you stand a good chance of popping the input stages. A megohm resistor of any type connected across the antenna feedline to ground will "bleed" any such charge without affecting your rigs performance.

One of my most unnerving experiences was operating an AM radio in an intense sand storm on the desert. I couldn't believe the sounds coming from the speaker. It sounded like a police siren, an ambulance wail, a jet engine on takeoff and a nuclear submarine emergency drill all at once. And, there was lightning all around but not a drop of rain. Mother Nature is full of suprises. Watch that static electricity.

—AUTO-CALL

A glow worm with tendencies coarse
Used to tell shady stories 'til hoarse.
But he kept up his vice
By the clever device
Of learning to blink them in Morse.
—CHARRO, Brownsville, TX

FCC announces new third party list

The following international arrangements have been made for amateur stations regulated by the FCC to communicate with amateur stations located in other countries.

Permissible countries: Section 97.111 of the Commission's Rules, 47 C.F.R. § 97.111, authorizes an amateur stations licensed by the FCC to exchange messages with amateur stations located in other countries, except with those in any country whose administration had given notice that it objects to such radio communications. Currently, there are no banned countries.

Types of messages: Section 97.117 of the Commission's Rules, 47 C.F.R. § 97.117, stipulates that amateur station transmissions to a different country, where permitted, shall be in plain language and shall be limited to messages of a technical nature relating to tests, and to remarks of a personal character for which, by reason of their unimportance, recourse to the public telecommunications service is not justified.

Third part communications: Section 97.115 of the Commission's Rules 47 C.F.R. § 97.115, authorizes an amateur regulated by the FCC to transmit a message from its control operator (first party) to another amateur station control operator (second party) on behalf of another person (third party). No amateur station, however, shall transmit messages for a third party to any stations within the jurisdiction of any foreign government whose administration has not made arrangements with the United States to allow amateur stations to be used for transmitting international communications on behalf of third parties.

The following countries have made the necessary arrangements with the United States to permit an amateur station regulated by the FCC to exchange messages for a third party with amateur stations in: Antigua and Barbuda, Argentina, Australia, Belize, Bolivia, Bosnia-Herzegovina, Brazil, Canada, Chile, Columbia, Federal Islamic Republic of Comoros, Costa Rica, Cuba, Dominica, Dominican Republic, Ecuador, El Salvador, The Gambia, Ghana, Grenada, Guatemala, Guyana, Haiti, Honduras, Israel, Jamaica, Jordan, Liberia, Mexico, Federated States of Micronesia, Nicaragua, Panama, Paraguay, Peru, Philippines, St. Christopher and Nevis, St. Lucia, St. Vincent and the Grenadines, Sierra Leone, Swaziland, Trinidad and Tobago, United Kingdom (special event stations with call sign prefix GB followed by a number other than 3), Uruguay and Venezuela.

The United Nations also has arrangements with the United States to permit an amateur station regulated by the FCC to exchange messages for a third party with amateur stations 4U1ITU in Geneva, Switzerland and 4U1VIC in Vienna, Austria.

No amateur station regulated by the FCC shall transmit messages for a third party to any amateur station located within the jurisdiction of any foreign government not listed above. This prohibition does not apply to a message for any third party who is eligible to be the control operator of the station.

Any questions may be directed to: Personal Radio Branch/ssd/prb, Room 5322, 202/632-4964. WR

The purifying power of plants

Potted plants may offer a low-tech solution to the high-tech problem of indoor pollution. Scientific evidence suggests that potted plants can recondition the air by absorbing toxins commonly found in offices. The Gerber Daisy, for example, can neutralize tobacco smoke, while the bamboo palm can help dispel the toxins created by ink. Researchers claim that the Peace Lily may purify the air of paint fumes, while the Boston Fern may be effective against toxins from foam insulation.

Well, perhaps this is so. At the very least, they cheer up the old hamshack, smell good, look nice and give off oxygen. Just be extra careful when you water that fern you may have placed on top of the RF amplifier, (although the resultant arcing and sparking will nicely ionize the air). — *The Sparc Gap* Shore Points Amateur Radio Club, Absecon, NJ WR

Inventors!
Share your discoveries by developing your construction projects into ***Worldradio*** feature articles!

Tracking a real fox

JERRY WARZEHA, KØFC

Fox hunting for fun is one thing, but tracking a real problem is another story altogether. This story unfolds one late July day when a jamming signal appeared on the 16/76 repeater. Rodger, NØBRG, and Gene, WØVDI, did their usual good job of investigating and found out the signal was coming from out of town, north of Rodger in Wayzata, MN.

The signal would drift frequency, jump around, and even disappear all together at times. The following evening Rodger was at his wits' end trying to figure out how to keep the repeater working with that carrier floating across the input frequency; even a 50W mobile signal would have problems using the repeater. The 16/76 repeater was not the only one having problems. The 146.775 system at Big Lake, the 146.73 system in Forest Lake, the 146.85 system in White Bear Lake, and even the Elk River 146.97 repeater were all hit at times.

Offering help

I was talking to Rodger about the problem and decided to offer my services and load up my fox hunting equipment and start hunting. Dave NØKBD, and Rodger got a reading as best they could from their QTHs and told me it seemed to be coming from the Big Lake area. Rodger told me that a new TV station was just coming on the air and that might be the cause.

I called my fox hunting partner, Greg, NVØP, who came over and along with my son Craig, KBØHAG, we took off in the direction of Big Lake. A signal check from my driveway in Maple Grove was also indicating in the Big Lake direction; however, it was just barely above the noise. We arrived in Rogers on the way to Big Lake without much of a signal there. We were using an old Yaesu rig for receiving as it has a nice large meter to look at. We also had my Yaesu 5200 dualbander in the car. We were in contact with NØKBD and NØBRG on 444.125 at that point.

As we drove, both Dave and Rodger would help us find the signal when it went off as it never seemed to come back on to the same frequency. It was jamming the 16/76 repeater so badly, Rodger turned it off; we used the Big Lake machine for a while. Later we had to use the Elk River system and even later the Collegeville machine on 147.015.

As we arrived in the town of Big Lake we had a signal of S5 and I was very unsure that this was the place. We left town to the west and found a strong signal to the north of town, S9 or so. We followed it after we found a road going in the correct direction. We found a radio tower and thought now we were getting close, but the signal was only S9 or so. We circled a few times and decided the signal was not strong enough to be jamming all the Twin City repeaters and decided it was a reflected signal. We found a spot and got a reading on the signal coming from the west again. We followed and again we got help as the signal would drop off just as we needed to get another reading. Dave or Rodger would come on the repeater we were using at the time and let us know what frequency it now was on. It seemed so funny as it came and went fast, then stayed on for much longer; we never knew what to expect.

Every back road

We followed the signal while we drove on every back road all over that part of the state. My son Craig kept track of the road we were on and how we had gotten there. We figured we would have to direct someone else to the site.

That job turned out to be a full-time one as we twisted and turned our way, always following the ever stronger signal. We reported to Dave that we had enough signal and we had added some attenuation into the receiver to keep the signal on the meter. We were getting closer, when it just dropped out and stayed out! We pulled over and waited. We tried to reach Dave or Rodger with no luck; we were out of range. I moved to the 147.015 repeater and found two guys talking; I jumped in and told them what was going on and asked if one or the other could QSY to the Elk River machine and tell Dave to QSY to this machine. They did it and Dave showed up on the .015 machine. As we waited for the signal to return, we were trying to figure out where we were; we didn't bring a map!

Finally Dave broke the silence and said the fox was on again on 146.14. We got another reading and off we went again. It was getting dark as we rolled into another town. We were surprised when my son read out loud, "St. Cloud!" The signal was even stronger and we had to add more attenuation. We were now within a dozen or so miles from the fox.

Almost there

Greg was saying, "We're going to nail this one." Craig was more in the front seat than in the back. We pulled over on the west side of town. Dave broke in and said he thought the signal would come on when the 147.015 repeater would go off. We verified that fact and took it one further, finding out that our antenna heading for maximum signal was exactly the same for both the 147.015 repeater and the fox. Greg and I looked at each other and said, "We found us a fox."

We informed the St. Cloud operators of our findings. They called the repeater technician and he made his way to the repeater site at about 9:50 p.m. He noticed very little change in output power whether the repeater was on or not! He re-tuned the grid of the final 100W amplifier. At about 10 p.m. the fox was gone!

My son went to sleep on the ride home. Greg and I checked all the repeaters in the area and found the normal chatter on each one. The fox was gone, and things were again under control on the home front.

— Twin City FM Club

Emergency operating

There are certain points that an operator should keep in mind during an emergency!

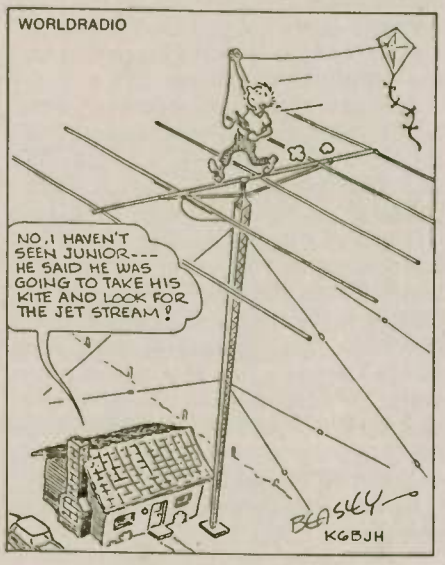
1. Keep the QRM (interference) level down. In a disaster, many of the most crucial stations will be weak in signal strength. It is most essential that all other stations remain silent unless they are called upon. If you're not sure you should transmit, don't. Our amateur bands can be quite congested. If you want to help, study the situation by listening. Don't transmit unless you are sure you can help by doing so. Don't ever break into a disaster net just to inform the control station you are there if needed.

2. Monitor established disaster frequencies. Many localities and some geographical areas have established disaster frequencies where someone is always (or nearly always) monitoring for possible calls. When you are not otherwise engaged, it is helpful simply to sit and listen on such frequencies, some of which are used for general ragchewing as well as disaster preparedness drilling. On CW, SOS is universally recognized, but has some legal aspects that should be considered where the need is not truly crucial. On voice one can say "MAYDAY" (universal phone equivalent of SOS) or, to break into a net or conversation, the word "emergency." (In many areas the word "break" on a repeater frequency will bring an immediate standby for an emergency transmission.)

3. Avoid spreading rumors! During and after a disaster situation, especially on the phone bands, you hear almost anything. Unfortunately, much misinformation is transmitted. Rumors are started by expansion, deletion, amplification or modification of words, exaggeration or interpretation. All addressed transmissions should be officially authenticated as to their source. These transmissions should be repeated word for word, if at all, and only when specifically authorized. In a disaster emergency situation, with everyone's nerves on edge, it is little short of criminal to make a statement on the air without foundation in authenticated fact.

4. If at all possible, authenticate all messages. Every message which purports to be of an official nature should be written and signed. We do the communicating the agency officials we serve supply the content of the communications.

— Central Michigan ARC Scope



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Signal intelligence experts, public safety agencies and people with inquiring minds that want to know, have asked us for a world class *handheld* scanner that can intercept just about any radio transmission. The new Bearcat 2500XLT has what you want. You can program frequencies such as police, fire, emergency, race cars, marine, military aircraft, weather, and other broadcasts into 20 banks of 20 channels each. The new rotary tuner feature enables rapid and easy selection of channels and frequencies. With the AUTO STORE feature, you can automatically program any channel. You can also scan all 400 channels at 100 channels-per-second speed because the Bearcat 2500XLT has TURBO SCAN built-in. To make this scanner even better, the BC2500XLT has AUTO SORT - an automatic frequency sorting feature for faster scanning within each bank. Order your scanner from CEI.

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New FCC Rules Mean Last Buying Opportunity for Radio Scanners

On April 19, 1993, the FCC amended Parts 2 and 15 of its rules to prohibit the manufacture and importation of scanning radios capable of intercepting the 800 MHz. cellular telephone service. Supplies of full coverage 800 MHz. scanners are in *very* short supply. If you need technical assistance or recommendations to locate a special scanner or solve a communications problem, call the Communications Electronics Inc. technical support hotline for $2.00 per minute at 1-900-555-SCAN.

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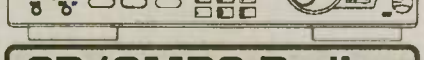

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Ruth Wondergem, N5GGO, accepts a plaque for reaching the number 1 spot on the DXCC Honor Roll from Bill Moore, KC1L. — ***Photo by John Minke, N6JM.***

In regard to the incoming bureau, Les said if your envelopes on file have too many stamps affixed the sorters will wait until the envelope is full. Also, the sorters cannot weigh each envelope for adequate postage and will mail them with the lacking postage marked postage due.

This seems strange to us as our envelopes always come from our 6th call area bureau with the proper postage. But, each bureau has its own policy. Please refer to our column (in the November issue) concerning another QSL bureau. Common mistakes, according to Les, include no call signs on the envelope, no stamps on the envelope, the wrong size envelopes, only one envelope sent — or too many envelopes sent. As for the number of cards to be sent in each of your envelopes on file, Les requested that that number be indicated beneath your call at the upper left. If no number is indicated, the sorters will just guess.

Les also commented on the Mobile County Hunters as they do not keep envelopes on file. Of course, this would apply only for the DX stations they had worked.

New Orleans International DX Convention

JOHN F.W. MINKE, III, N6JM

This was the second year of this newly created DX convention held at the Royal Sonesta Hotel in the heart of the French Quarter in New Orleans, LA.

The annual function, the weekend of August 27-29, 1993, was hosted by the Delta DX Association.

This new DX gathering is a lot of fun and it would be well worth while to bring the XYL along too.

Registration opened at 1:00 Friday afternoon. We took advantage of this time to have our QSL cards checked for our annual free submission for DXCC.

Bill Moore, KC1L, was there from the DXCC desk in Newington to check the cards.

Bill was assisted by field representatives from the Delta DX Association.

The rest of the afternoon, videos were presented covering such subjects as the two PJ9W/PJ9A contest operations from the Netherlands Antilles by the Finnish group, and the XU8CW/XU8DX by some Hungarian operators. A third unannouced video was shown covering San Andreas Island (HKØ) by some of the local DX members.

ARRL QSL Bureaus

Late in the afternoon, Les Bannon, WF5E, discussed the ARRL incoming and outgoing QSL bureaus. Les is the ARRL 5th call area manager. Les discussed how the bureau system works, most common mistakes made by users of the system, and tips on how to improve getting your cards.

If you have any complaints with the QSL bureau, please write to Les and not the sorters.

Les offered several QSLing tips, which included: never put your call sign on your envelope; use stamps from their country; use IRCs; use green stamps and hide them well; use the manager; mail direct or to their bureau; use the ARRL outgoing bureau if you are a ARRL member; don't be in a hurry; don't expect a large return; work DX contests and support your local DX cluster network.

The bureau workers are all volunteers and are not paid. Les has 21 sorters and 3 helpers, who handle some 15,000 cards per month. There are about 8000 cards in the dead file, (for those DXers who don't have envelopes on file). The efforts of the workers amount to 200 man-hours per month. It is a lot of work, Les says, but it is also

a lot of fun.

There was a comment from the floor regarding the non-acceptance of stateside to stateside cards by the 2nd QSL Bureau. This applied to DX stations using stateside managers. Again, that is a policy of another QSL bureau. We ran across that situation during the DXPO-92 at College Park last year and received an irate letter from a W2. I was supposed to explain that they were not the only bureau that adhered to that policy. So far we know of no other bureau that uses that policy.

In conclusion, Les, requested that you keep 6 x 9 sized envelopes on file, but will accept 5 x 7 sized envelopes.

The official part of the New Orleans International DX Convention commenced at 9:00 with opening remarks by John Wondergem, K5KR, the convention president, and Joel Harrison, WB5IGF, the ARRL Delta Division director.

DXCC Status

Bill Moore, KC1L, then presented us with a 10-minute slide show and a 20-minute video of the ARRL headquarters in Newington, which was prepared by the headquarters staff.

Bill then discussed the DXCC status and the backlog. Last year at this time the backlog was about 8000 applications, now there are none. They now have to wait for the mail to arrive so they can process the applications. To eliminate last year's backlog, they added a nightshift around Thanksgiving time, using local people who were not amateurs to do the conversion from paper records to computer records. Bill said that the advantage to the DXCC members of this new computer system now has a new level of accuracy, ability to know how many cards have been credited, the safety of the archives, and the tracking of received and shipped QSL cards.

DXAC —

Rick Roderick, K5UR, discussed the latest actions of the DX Advisory Committee. Rick, the Delta Division's representative to the DXAC is also Vice Director of the division. As there may have been attendees who were not familiar with the DXAC Rick briefly discussed the role of the DXAC, which is made up of 16 members, one representative of each ARRL division and one from Canada. Their purpose is to advise on DXCC actions, vote on new countries and deletions and then submit their recommendations to the Awards Committee for their final vote.

Rick also discussed the status of Eritrea. This country was deleted from the DXCC countries list in 1962 when it was annexed to Ethiopia. It was their president who stated they were not sovereign in 1991. Presently, all licenses with the E3 prefix are issued by authorities in Eritrea, while those with the 9E prefix are issued by Ethiopia.

Rick also discussed the status of Pratas Island, which is located 150 miles off of China and 250 miles from Taiwan. If it does in fact belong to Taiwan, is Taiwan still defined as a "Point 1" country? Taiwan is no longer a member of the U.N. it does have its own government.

DXpedition disqualification criteria and guidelines was also briefly discussed.

Another "hot potato" was that of QSL practices. The DXAC has been flooded with mail on this one. The committee will be analizing the comments in September.The new DXCC Yearbook has been approved, and will replace the annual listing in *QST*. This yearbook will be sent free to all active DXCC members. However, the yearbook will not replace the monthly listings.

1991 Franz Josef DXpedition —

Terry Dubson, W6MKB, flew in from California to present a slide show and discuss his participation in the U.S./Soviet DXpedition to Franz Josef Land where they operated as 4K2FJL. This was the last joint DXpedition prior to the breakup of the Soviet Union. Terry also added that he was the first American to be washed ashore on the South Sandwich Islands.

Most DXers will remember that Terry was one of the team members of the VP8SSI DXpedition to the South Sandwich Islands.

Packet Cluster —

Also from California were the O'Briens, Jay, W6GO, and Jan, K6HHD. This couple is known for their publication of the W6GO/K6HHD QSL Managers List.

Jay discussed PacketCluster and his databases and included a demonstration, such as how to use the commands.

Jan discussed their QSL data and said that presently that there are 291

packet nodes that carry the database.

AH1A DXpedition —

Mike McGirr, K9AJ, was on hand to give his presentation of the recent DXpedition to Howland Island, where the team worked the world using the call AH1A. Mike, who is involved with emergency medicine in Chicago, has operated from several DX locations. Mike said that one of the conditions of the DXpeditions was they were also required to take two members of the U.S. Fish and Wildlife staff. They were also told that it never rains on Howland Island. This just happened to be false information as it did indeed rain. When they were due to depart, the surf was too rough for them to leave. The captain of the vessel that brought them had been injured and he was washed ashore while they were there. Mike's presentation was illustrated with slides of the activity.

Low band DXing —

The convention just couldn't get enough from Rick, K5UR. He was back again; this time with his presentation of low band DXing. Why work low band DX? Rick answered this by saying that it is a real challenge, the thrill of talking around the world on difficult bands is the ultimate in achievement. Of course, we serious DXers will have to agree. Isn't that QSL card for an 80 meter contact more impressive than one made on 20 meters?

Rick stated that the best time to work low band DX is in the winter, the months of October through March. There is lots of DX there. His number one rule is to listen!

He also discussed antennas in general. Those of vertical polarization emit a low angle radiation pattern. High angle radiation patterns come from horizontal antennas. Rick said that many DXers do not use quarter-wave slopers, which are good antennas.

Rick also discussed shunt-fed towers for use in 160 meters. One important thing to remember is to have a good radial system at the base of your tower.

He stated that power was not absolutely necessary on 40 meters, however it is more important in the SSB portion of the band. Power is essential on 160 meters.

Rick discussed briefly the Beverage antenna, which ideally is one wavelength in length, six to twelve feet above the ground and must be straight. The far end is terminated with a 600 ohm resistor with the braid of the coax grounded at the point of connection. Of course, the use of this antenna is for receiving rather than transmitting. Rick says that he has eight of these antennas.

In conclusion Rick says that late night operation is the best for 40, 80 and 160 meters. You snooze — you lose!!!

Lightning Protection —

The final presentation of the convention was that of lightning protection and equipment grounding by Wes Attaway, N5WA. Wes stressed that the objective is to achieve good lightning protection and RFI grounding. There are two types of grounding; DC and RF, and may require two separate grounding systems.

The physical characteristics of a good grounding system will require three or more ground rods, a wide braid connected between your equipment and to ground everything. Poor grounding systems can cause RFI problems. There are three types of RFI: RFI from your equipment to other equipment, RFI from something else to your equipment, RFI from your equipment to your equipment.

Basic techniques of controlling RFI is to use good plugs and be properly soldered, use good cable (not audio type cable), toroids at each end of all leads, baluns and a good grounding plan.

There are three situations of lightning: a direct hit, a near hit, and ground currents. Lightning follows Ohm's Law and is a constant current source and wants to get to ground. To increase protection against direct lightning hits coaxial cable shields should be grounded and use lightning arrestors to take most of the current. You should also bend the coax to increase the impedence. EMP is the biggest problem on near hits. You should use surge protectors on your AC lines.

Ground currents can cause voltage differences between ground points. The best defense is a common point grounding of the station ground, the tower ground, the electrical service ground and the telephone ground.

ICE (Industrial Communication Engineers) has a very good lightning arrestor which will short all DC currents to ground. It is always active and reduces static.

The worse possible grounding system is where coax and cable shields only are grounded and where #12 or #14 AWG wire is used for equipment grounding.

The best system is to ground all coax shields outside your shack, with suppressors installed both inside and outside the shack. Wes also provided printed material to support his presentation.

Banquet —

Approximately 134 DXers and their wives or other guests attended the banquet. The New Orleans DXer of the Year was awarded to none other than Rick Roderick, K5UR. Rick holds 9BDXCC, 5BWAS and has confirmed some 327 current DXCC countries to his totals.

Following the banquet there was the presentation of the 1993 Palmyra and Kingman Reef DXpedition by Peter Meyer, NØAFW, and Michael Goode, N9NS. Incidently, Pete has left southern California and moved back to Minnesota. These gentleman were also available to issue QSL cards for the DXpedition. They are both very attractive QSL cards. WR

DAYTON hamvention® '94

April 29, 30 & May 1, 1994

General Chairman, Dave Grubb, KC8CF — Asst. General Chairman, Ken Allen, KB8KE

✸ Giant 3 day Flea Market ✸ Exhibits ✸ Activities for the Non-Ham

Information
General Information: (513) 276-6930
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Lodging Information: (513) 223-2612
(No Reservations by Phone)
Flea Market Information: (513) 276-6932

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Please write to **Lodging, Dayton Hamvention, Chamber Plaza, 5th & Main Streets, Dayton, OH 45402-2400** or refer to our 1993 Hamvention program for a listing of hotel/motels in the Dayton area.

Special Awards
Nominations are requested for Amateur of the Year, Special Achievement and Technical Excellence awards. Refer to the Hamvention Program for nomination form or contact Hamvention Awards Chairman, Box 964 Dayton, OH 45401-0964.

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Award Nominations: March 1
Advance Registration and Banquet
USA - April 8 Canada - April 1
Flea Market Space: February 1

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Flea Market Tickets (valid all 3 days) will be sold IN ADVANCE ONLY. No spaces sold at gate. A maximum of 3 spaces per person (non-transferable). Electricity is available in a portion of the last Flea Market row for $40 additional per space. Rental tables and chairs are not available in the Flea Market. Vendors ***MUST*** order an admission ticket when ordering Flea Market spaces. Please send a separate check for Flea Market space(s) and admission ticket(s). Spaces will be allocated by the Hamvention committee from all orders received by February 1. Please use 1st class mail *only*.

Notification of Flea Market space assignment will be mailed by March 15, 1994. Checks will not be deposited until after the selection process is complete.

License Exams
Novice thru Extra exams scheduled Saturday and Sunday only. Send FCC form 610 (Aug 1985 or later) - with requested elements shown at top of form, copy of present license and check for prevailing rates (payable to ARRL/VEC) to Exam Registration, 708 Mapleside Dr. Trotwood, OH 45426

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	How Many		
Admission (valid all 3 days)	____	@ $11.00*	$____
Grand Banquet	____	@ $22.00**	$____
Alt. Act. Luncheon (Saturday)	____	@ $8.50	$____
(Sunday)	____	@ $8.00	$____
Flea Market ‡ (Max.3 spaces)	____	$30/1 space	
	____	$60/2 adjacent	
	____	$150/3 adjacent	$____
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Covered ten:	____	$215.00 ea.	$____
		Total	$____

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Address _____
City _____ State _____ Zip+4 _____ – _____
Daytime Phone # ( ) _____ Evening Phone # ( ) _____

* $14.00 at door
** $24.00 at door, if available
‡ Admission ticket must be ordered with flea market tickets

Special Events

Christmas City

The Delaware-Lehigh ARC will operate W3OK 1400-0200Z 18019 December from the Christmas City 3.965, 7.265, 14.265, 21.365, 28.365. For a certificate, send QSL and SASE to DLARC, RR4, Greystone Building, Nazareth, PA 18064.

Space shuttle

The Webber Aerospace Ventures in Education will operate NØBIB 1500Z 27 January to 0500Z 28 January during space shuttle flight simulation from Webber Junior High School. ATV, CW and phone opeations on 10 meter Novice and lower portions of 15, 20 and 40 General subbands. For QSL card, send SASE to WAVE, 4201 Seneca, Fort Collins, CO 80526.

50th Aniversary

V73AX, commemorating the 50th Anniversary of the Battle for Kwajalein Atoll, operating from the Kwajalein Amateur Radio Club, Republic of the Marshall Islands, during 1745 UTC 31 Jan to 1920 UTC 5 Feb 1994. SSB, CW and RTTY on HF and 6 meters, conditions permitting. For QSL, send your QSL and SASE or IRC to: K.A.R.C., P.O. Box 444, APO AP 96555, USA. **WR**

Silent Key

Carl Rothermel, WA7AZO

Carl Rothermel, WA7AZO, was born on New Year's Day, 1933, in Kingfisher county, Oklahoma.

He was in his early teens when he discovered radio. He had learned that there was a blind Amateur Radio operator, a Mr. Waggoner, who lived in his community. Mr. Waggoner was an elderly gentleman who spent a great deal of his time talking on the radio with his amateur friends. Carl and one of his young pals would ride their bicycles out to the Waggoner's home to watch the fun.

When a young man, Carl moved to the state of Washington. During his thirty years there, he first worked for a cable company, and gained experience in electronics.

Later he owned and operated a small cable company of his own. Carl served his country in the US Navy, aboard the destroyer USS *Duncan Mansfield*.

After returning to his native Oklahoma, Carl worked for an oil company in Hennessey. In recent years, even while undergoing chemotherapy, Carl kept working until his doctors insisted that he stop.

Carl Rothermel had many, many friends. He loved them all. He loved his music, too. In addition to an ability to play the guitar, mandolin, fiddle, concertina and accordion well, he also loved to sing. At our Wheatstraw Radio Club meetings, he would shake hands with everyone, said "I am so glad to be with you today."

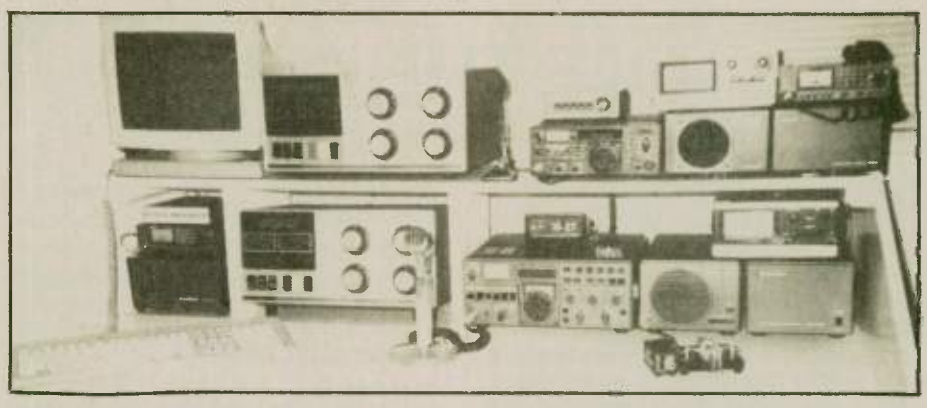
Carl became a silent key on 29 August, 1993. He is survived by his daughter and three sons. — *Submitted by Lorne M. Stewart, K5DSR on behalf of the Wheatstraw Radio Club.* **WR**

John Permen, W6BMF

STATION APPEARANCE

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

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



This neat and clean station wins this month's station appearance.

My station is composed of a TS-180S, IC-730, TM-2550 for packet, TM-2570 and two NCL-2000 amplifiers. Not seen is a 4-element Cubex quad with 12/17m added at 72 feet. The operating desk was made from *QST*'s "Hints and Kinks" for under $50.00.

I have been licensed since 1960 as K8QCL, VE6AFE, VE7EYW and W6BMF. I hold an Extra class call and have been locally active as a volunteer examiner since 1987.

After 30 plus years in Amateur Radio I got the DX bug and have QSO'ed 262 countries in 16 months. The hobby sure has gone in a multitude of directions since 1960, thankfully mostly for the better. **WR**

Amateur "Hi"

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

This month, Howard L. Maxon, WRØK, wins with this short science fiction adventure.

I joined Army MARS shortly after I received my Technician license back in the late 80s. MARS provided my only access to high frequency (HF) nets, so I rarely missed the Sunday evening MARS net.

One Sunday my sister and her family were here visiting. Shortly after we had finished with the evening meal I announced that I was going down to my radio shack and turn on the radio and get ready to check in on MARS.

My sister smiled and I was excused from the table. After I had left the room my sister said to my wife "does he really think he is talkin' to MARS on that thing?" **WR**

OFF THE AIR

Antenna tuners — Pro

I read Mr. Leibman's article on antenna tuners in ***Worldradio***, Nov. 1993 and think he did a very good job... just a couple of confusing areas. I think he knows better technically but the way he put his words together could be misleading for inexperienced readers.

The statement, ". . .it also tunes out all mismatches in the system, including transmission line to antenna mismatch, and also any non-resonance in the antenna itself. . ." should have ended at the word system. The effect of an antenna tuner is localized to the transmitter end of the transmission line. An antenna is either resonant or non-resonant. . . the antenna tuner cannot cause a non-resonant antenna (minus the transmission line) to magically be resonant. An antenna tuner cannot affect the transmission line to antenna connection conditions unless it is physically located there. A 1000+j1000 antenna is not resonant and will cause an SWR of 7:1 on the transmission line using 300 ohm line and there is nothing a ham-shack antenna tuner can do to change that fact. A 7:1 SWR on the antenna side is no big deal with near lossless transmission lines but someone who takes the above quote literally might think that it's OK to use coax and suffer the loss of most of his power in the transmission line. A 7:1 SWR in 100 ft of RG-58 on 17 meters will result in a 4.5 dB loss in the transmission line.

The statement, ". . .your antenna tuner must have a balun in order to match the line. . ." should have read: ". . .your antenna tuner must have a balanced output or a balun in order to match the line. . ." A lot of antenna tuners, including mine, have balanced outputs without a trace of a balun and are probably more efficient that the ones with baluns. Also, with a non-resonant antenna, a 4:1 balun may not work as well as a 1:1 balun because the impedance is just as likely to be very low as it is to be very high depending on whether the feed-point impedance falls on the left side or the right side of the Smith Chart. With high SWRs, you are never dealing with 300 ohms even if the characteristic impedance of the transmission line is 300 ohms.

73,
CECIL MOORE, KG7BK
Chandler, AZ

Antenna tuners — Con

Having just read Howard Liebman's "More on antenna tuners" (Nov. 1993), I feel compelled to comment. Unfortunately it reads more like a poorly disguised advertisement for MFJ antenna tuners than a technical article whose intent is to educate and inform.

Howard begins his article with a diatribe on the "nonsense" being published about antennas, then dispenses exactly that! I strongly recommend that Howard include himself as one of those "authors who should not write about antennas."

Howard states "briefly, what an antenna tuner does is cancel all reactances in the antenna and transmission line." Well, I suppose that it may appear that way to Howard, with his double Zepp antenna and unbalanced antenna tuner, but it is not the case. A transmission line that has zero reactance at all points along its length is not passing any current. Similarly, if one were to cancel all reactances in the antenna itself, radiation could not occur because there would not be any antenna current to radiate. The objective is to have zero reactance at the antenna's feedpoint and at both ends of the transmission line, and in almost all cases an antenna tuner just can not do that.

If Howard were to use a balanced tuner as an integral part of his antenna's open-wire feed system, he could tune out his feedline's input reactance and get his "100% transfer of power" into a non-resistant double Zepp; however, with his unbalanced tuner and 4:1 balun, only the reactance seen at the input of the balun is canceled. As for coaxially fed antennas, the tuner will cancel only the feedline input reactance. It's possible to have a 100:1 VSWR antenna and a 1:1 VSWR at the transmitter.

Howard then states "it also tunes

out all mis-matches in the system, including transmission line to antenna mismatch, and also any non-resonance in the antenna itself." If Howard were to put a remote VSWR sensor at the feedpoint of a dipole being fed with a coaxial transmission line that was not an exact ½ wavelength of the excitation frequency (or a multiple thereof), and the excitation frequency was not at the antenna resonance frequency, he would discover that he could tune his antenna tuner until Doomsday and never tune out the reactance at the antenna's feedpoint, nor will he ever resonate the antenna.

Knowledge is not gained by only reading, as true knowledge is gained only through experience. Wouldn't it have been nice if Howard had written an article explaining the usages, pros and cons, design options and construction techniques of antenna tuners, included some schematics and encouraged experimentation and homebrewing, rather than use misinformation to shamelessly hawk MFJ antenna tuners?

Best of 73s

CHUCK SMITH, WA7RAI
Phoenix, AZ

ZLs make European pact

New Zealand Amateur Radio licenses are now accepted by a reciprocal agreement with European conference of postal and telecommunications administration (CEPT).

Countries in this administration are: United Kingdom, Germany, Sweden, Switzerland, Turkey, Yugoslavia, Vatican, Austria, Belgium, Czechoslovakia, Cyprus, Denmark, Finland, France, Greece, Hungary, Ireland, Iceland, Italy, Liechtenstein, Luxembourg, Malta, Monaco, Norway, Netherlands, Poland, Portugal, San Marino, Albania, Bulgaria.

New Zealand radio amateurs wishing to operate in just one of these countries must make application to that country, which may or may not impose a fee. The New Zealand license must be valid for the period of the visit, and it must be endorsed by the New Zealand radio frequence service prior to departure, for recognition by that countries licensing administration. The New Zealand license and current receipt of fee payment must be carried during the duration of the visit. Should additional CEPT countries be visited no further applications are necessary and no further fees are payable.

The visitor is advised that radio regulations vary in these CEPT countries and it is prudent to seek authoritative advice on regulatory matters such as frequency allocations. New Zealand Novice licenses do not qualify for CEPT reciprocity, limited and general licenses only are acceptable.

The reciprocal licensing bureau can supply the addresses of the licensing administrations in CEPT countries.

RUSS GARLICK, ZL3AAA
Greymouth, New Zealand

Product Review

The "Butterfly" still flies, even in a tree

THOMAS TORGERSON, NØMOP

The problem

So you want to operate the higher HF bands but you don't have enough room for a full size beam, aren't sure about verticals, have a limited budget, and would like a little gain and front to back ratio — what do you do? The easiest thing to do would be to use shortened dipoles but that won't effectively cover all bands from 20M to 10M using one antenna. The dipoles have no front to back rating, little gain, and can't be easily rotated. An antenna called the Butterfly, from the Butternut Company, may be just the thing to solve your dilemma.

Operating conditions

The Butterfly was looked at in ***Worldradio*** a few years ago but many new hams know very little about this antenna. As a point of interest while I was doing 'on air' tests with it many older hams also had many questions about it. I also doubt that the past article put it through the extremely adverse operating conditions that I have done. To me, as usual, the measure of an antenna is how it gets out even during less than optimum situations and environments. For example, Butternut recommends STRONGLY that the antenna be up a minimum of 30' and in the clear of surrounding objects. Though for many that is no problem, to others it just isn't feasible. For some with power lines crossing their property and therefore just a 20' strong pole to mount it on, will it work or will it be not much more than a hunk of metal that works very unsatisfactorily? I decided to give it some harsh operating environments and see if it would get out, or act as a dummy load.

Overview of the Butterfly

The antenna is nicknamed the Butterfly because of its resemblance to one. There is a picture of it in this issue: look for the Butternut Companies advertisement. About ½ of the 'wings' are made from insulated stranded wire so the weight and windload are cut down considerably. I sometimes call it a mini-quad due to its size. The 2 elements are only 12' 6" long and only about 6' separates the two when they are on the boom. That is pretty darn small for an antenna covering 20M to 10M.

The model HF5B (Butterfly) operates as a 2 element beam on 10, 12, 15, and 20 Meters. On 17M the antenna operates as a dipole only. Maximum signal on 10, 12, and 15M is off the driven element, while the second element acts a reflector. On 12M the second element is self-resonant above the driven element and acts as a director giving maximum signal strength in an opposite direction from the 10, 12, and 15M position.

All is active

There are no high-impedance traps to isolate sections of the elements. Due to this, the entire element is active on all bands, except for the reflector which is not used during 17M operation.

To achieve maximum bandwidth the element 'diameter' is increased by terminating the element in 6' spreaders and connecting their tips to the element's center with wire.

What tunes it?

The U-shaped stubs and 3/8" tubes provide variable inductive reactance for each band, while tubular capacitors (look like long traps) give fixed capacitive reactance on each band. The values of reactance are chosen to allow simultaneous resonances of the element on five bands without need of external tuners or mechanical switching.

Compromises

According to the documentation the major compromises of this 'small' beam are a narrowed SWR bandwidth and limited power handling ability. However, I find the bandwidth twice that of most verticals. As far as power, the 1200 watt PEP input to finals should let you use at least 500 watts out to the antenna without problems - more than enough to break through that pileup.

Instructions

The instructions and documentation are 30 pages long. How the different parts are used and why is explained nicely. Basically it is done in a style one can follow, but you need to at least skim through the whole thing before construction. There are parts no longer used, or changed, they are explained in the front of the instructions so if they are not read first, will confuse you later on. To be picky, it could use a rewrite so that all pages reference each other correctly.

Initial construction

One thing that is written clearly is the initial construction of the driven and reflector element parts. I put the driven element together in the largest

room of the house and had it lying on four sets of very thick books. This gave me enough space between the ground and element to put on the parts such as coils, spacers, and tuning rods. I normally would have done this outside but during winter it is no place to work with small screws and washers. It took me about 8 hours to put the two elements together. There is a lot of measuring, and cross checking of the instructions. There are a lot of parts since you are putting five different sections on just the main driven element that is only 12' 6" long.

Fine tuning

This area can be the hardest and most frustrating part of construction. I tested just the driven element in three different positions in and outside the house and had to re-adjust every band each time. The manual tells you how to get best forward gain, or front-to-back ratio figures. There is also a table of expected SWRs for each band depending on whether you are setting up for low, center, or high positions for each band.

On air tests

I hooked up the coax to the driven element inside the house and had it about 4 feet high on the first floor of the house. After about an hour I had a low SWR on all bands, despite the surroundings. I worked coast to coast on various bands, especially 18M. Reports weren't tremendous but I was pleased I was making any contacts.

I next brought the driven element outside and leaned it against a tree in a vertical position. After retuning the bands again, the first contact near midnight was with Venezuela on 20M. SSB using 100 watts. Not bad for the first contact! Again on the other bands I had no trouble working coast to coast, this time with much better signal reports.

Well, it was time to get a little height. The easiest thing to do was put it up 13' in a tree. I just leaned it against a couple of branches working from the roof and putting the antenna on the tree that is next to the house. After adjusting the tuning for the third time, I was again ready for on-air tests. I had very good reports on the bands and used it for three days. It compared favorably with a ground mounted vertical and a 80/40M dipole, sometimes being better.

I can't wait for spring so I can put the reflector on it and put it up in the air as it should be. In the mean time I am getting all the contacts I can handle and am happy just with the one element. If it works this well now, when a rotor and reflector are added I should have a system that meets all my demands for the higher bands.

Conclusions

It is hard not to recommend a product that performed so well under such adverse conditions. Even if you use only one of the elements you don't need to tangle with ground radials or perfect surrounding environment problems. However, to get the gain and performance claimed by the maker then you do need to have it up at least 30' and both elements active.

Specifications:

Wingspan: 12' 6"
Boom Length: 6'
Power Rating: 1200 PEP (input)
Front to back: Up to 20 db
Hardware: stainless steel
Gain: 0-5 db depending on band
Weight: 19 lbs.
Price: $259.00

Manufacturer:

Butternut Electronic Co.
P.O. Box 1234
Olmito, TX. 78575 WR

OLD-TIME RADIO

The *Titanic* and radio history

TED FISHER, N3JZW

Few peacetime disasters have lodged so deeply in the public mind as the sinking of the *Titanic*. The tragic night of 14-15 April, 1912, when 1522 men, women and children lost their lives at sea, is likely never to be forgotten. The following summary presents the radio aspects of that tragedy.

In those days, the term "radio" had not yet come into use. The equivalent term was "wireless," meaning wireless telegraphy. The wireless operators assigned to ocean liners and cargo ships were not actually part of the shipping company but were employed by the company that supplied the communication equipment. The two operators on the *Titanic* were from the British Marconi Company. Marconi, the business man, was in New York at the time of the *Titanic* disaster. We shall see later, how he played a part in manipulating the news media.

Wireless operators were allowed to choose their own work hours, to a great extent because atmospheric conditions affected the reliability of communications. There were no firm rules about manning the station on a 24 hour basis. Nor were there any rigorous rules for sea captains to stop or even slow down during ice flow conditions. Captain Smith's attitude was simply to accept the danger mostly because the weather was clear and the lookouts were on duty as usual. He had at least five warnings of ice fields and icebergs throughout the day and evening via wireless.

At 11 p.m. Jack Phillips on the *Titanic* was still at his wireless set sending passenger messages to the relay station at Cape Race, Newfoundland. When the nearby *Californian* sent still another warning, it was told to shut up so that Phillips could continue with his traffic.

Around midnight Jack Phillips had finished his traffic and was being relieved by second operator Harold Bride. It was about that time that Captain Smith came in to notify Phillips that the ship has struck an iceberg and that they should prepare to send out a call for assistance. They were advised to hold off until the extent of the damage could be determined. A few minutes later the captain stuck his head in the doorway and said "send the call for assistance."

Meanwhile, on the nearby *Californian*, Cyril Evans, the only wireless operator, feeling that he had been treated badly for his good intentions, had shut down his station at 11:30 p.m. *Titanic*'s collision with the iceberg occurred at 11:40 p.m.

Aboard the *Titanic*, Phillips took the earphones from Bride and the captain handed him a slip of paper with their position. At 12:15 a.m. Phillips began tapping out "CQD" followed by "MGY," the call letters of the *Titanic*. He repeated it six times. This was the traditional distress signal in use prior to the present "SOS." He received many replies but no position reports. Then came an inadvertent and casual call from the *Carpathia* to inform Phillips that he had traffic waiting at Cape Race. Phillips shot back, "come at once. We have struck a berg. It's a CQD, old man. Position 41.46N 50.14W."

There was a brief silence. Then Harold Cottam on the *Carpathia* asked whether to tell his captain. Phillips replied, "yes quick." After another five minutes came the welcome reply. "Coming hard." The *Carpathia* was 58 miles away.

None of the ships answering the *Titanic*'s distress signals seemed as promising as the light that winked ten miles off the port bow. Fourth officer Boxhall could see clearly through his binoculars that it was a steamer. He resorted to the signal lamp and shortly thereafter to rockets at five minute intervals. There was no acknowledgement. The *Titanic* went down at 2:20 a.m.

Phillips stayed with his wireless long after the captain released him. He was not saved. Harold Bride, his assistant, managed to save himself by occupying the last raft available. The *Carpathia* arrived on the scene at approximately 4:00 a.m. and proceeded to pick up the survivors from the lifeboats and the rafts. Daylight showed field ice, immense icebergs, rafts and floating debris. Bride, though suffering from exposure was able to lend support to Cottam at the wireless over a four day period until the ship reached New York.

During this period, Bride and Cottam together sent out partial lists of survivors but refused to send out the details of the rescue that the world press was requesting. This was taken to be a form of protest for the meager pay that they were receiving. It amounted to the equivalent of thirty dollars per month. No doubt, their commitment exceeded their compensation.

Marconi, on the other hand, was negotiating with the New York *Times* for an exclusive story even before the *Carpathia* reached port. The ship docked in the late evening on Thursday 18 April. In darkness and amid the traffic and confusion at dockside Marconi led the reporter to the ship for the purpose of interviewing Bride and Cottom. What they didn't know was that Cottam had already left the ship for the Strand Hotel to meet with reporters and to sell his story. Bride apparently was interviewed by the *Times* reporter and was paid one thousand dollars, approximately three years' salary. Cottam didn't get his money immediately but was paid $750 before the month was out. It is a fact that the wireless operators were notified while still at sea that their stories were worth money. That accounts for the news blackout over a four day period.

Marconi testified later in a Senate commitee investigation that exclusivity was not what he had in mind. The government was becoming aware of the power of big business and did not want the *Times* to have a monopoly by collusion with the American Marconi Company. Marconi admitted that he did not mind obtaining the monetary amounts for his employees.

Cottam remained in the Marconi service. Bride, on the other hand, left the company and disappeared. Even the dedicated researchers of the *Titanic* Historical Society have been unable to trace his later history.

So much for the the rescue and the part played by the fledgling industry now known as radio. Needless to say there were many changes to the rules for ships, shipping lines, operators, and safety equipment as a result of the *Titanic* disaster.

References:

1. "A Night to Remember," Walter Lord, Holt,Rinehart and Winston New York-Chicago-San Francisco (1955)

2. "*Titanic* — The Death and Life of a Legend," Michael Davie, Alfred A. Knopf, New York (1987)

WR

DX WORLD

John F.W. Minke III, N6JM
P.O. Box 310 Carmichael, CA 95609-0310

W-100-N

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

Rodriguez Island (3B9)

Robert, 3B9FR, has been active on 30 meters from 0130 UTC. He is back on the air after being off for some 20 months. According to the various DX reports Robert has been very active. Look for him between 10.103 and 10.107 MHz between 0100 and 0200 UTC, and 1200 to 1300 UTC.

Robert has been reported on the other WARC bands also. Try 17 meters at 18.161 MHz around 1600 UTC, or 12 meters near 24.905 MHz, and between 24.949 and 24.952 MHz after 1300 UTC.

Swaziland (3DAØ)

Jon Rudy, who just received the call of 3DAØCA is active on 40 and 15 meters, both CW and SSB. Jon is an American with the Mennonite Central Committee and will be stationed there in Mbabane for five years. Jon wishes all QSL cards to be sent to him direct and not via his stateside address, which is the reason he did not give his U.S. call.

Peter I Island (3Y)

The Peter I Island DXpedition is still on schedule for February 1st. All equipment is ready for shipment for 16 days of operation by a team of 10 operators. They are still looking for an additional good CW operator. Interested parties should contact Ralph Fedor, KØIR, 3437 Granite View Drive, St. Cloud, MN 56301.

The DXpedition is still seeking donations. For a donation of $50 or more you will receive a copy of *Where Do We Go Next?* by Martti Laine, OH2BH. Please send your contributions to Jerry Branson, AA6BB, 93787 Dorsey Lane, Junction City, OR 97448.

Burundi (9U5)

Baldur, DJ6SI, unexpectantly appeared from Burundi signing 9U5DX. If you worked Baldur, please send your QSL requests direct within six months. Please be sure to include your s.a.e. with $3 or two IRCs. The last report of the 9U5DX operation was October 16.

Activity by Baldur and company was on both CW and SSB according to the DX reports, concentrating on the three WARC bands and the three top bands, 10, 15 and 20 meters.

Andorra (C3)

A few stations from Andorra have been on the bands lately, such as the following:

C3ØEJA	18.143 MHz	1100 UTC
C31HK	14.135 MHz	1200 UTC
C31OF	3.798 MHz	0600 UTC
C31RA	14.219 MHz	1600 UTC

If your interest is RTTY look for C31SD who has been found between 14.081 and 14.087 MHz after 1900 UTC.

The Gambia (C5)

Very active from this one has been C53HG, who has been found on several bands. Try looking for this one on 15 meters after 1800 UTC between 21.210 and 21.295 MHz, or on 20 meters between 14.190 and 14.194 MHz around 2300 UTC.

This station has also shown on 75 meters near 3.799 MHz between 2200 and 0200 UTC. Other spots reported include 18.144 MHz at 2000 UTC, 24.942 MHz at 1100 UTC, and 28.413 MHz at 1715 UTC.

During the October Worldwide DX Contest a Canadian team of operators whose calls included VE1AI, VE1RU, VE1QD and VE1AOE put in a major effort signing with C51A. Also, during that period VE1QD operated as C56GW.

The Canadians weren't the only ones active from this country. The American team consisting of AA7NO, KF7AY and N7BG operated C56V during the big contest.

Svalbard (JW)

QRZ DX reports that Paal, JW4WIA, and Morten, JW9DFA, were active from Svalbard through 18 October. Most of the activity was restricted to 20 and 40 meters, CW. QSL cards may be sent direct to their Norwegian addresses (see QSL Routes) or via the bureau.

Also active from Svalbard was JWØC near 7.024 MHz around 0330 UTC, and JWØE further down the band on 7.014 MHz at 0045 UTC.

Mount Athos (SV/A)

Depending which DX newsletter you read, Monk Apollo, SV2ASP/A, appears occasionally on the 14.243 MHz net to pass greetings to Selim, OE6EEG, but will not work anyone else, until the DXCC Desk reverses its decision on the acceptance of Balder's (DJ6SI) operation some time ago. Another source states that Apollo is presently busy with work on a new monastery. We would like to believe the latter.

San Marino (T7)

At least four stations signing from San Marino were reported during the month of October, including:

T77C	21.022 MHz	1630 UTC
T77M	21.330 MHz	1500 UTC
T77O	14.023 MHz	1345 UTC
T77T	21.282 MHz	2000 UTC

T77T was also reported working into the Texas area on 24 October where a deserving DXer worked him on 3.793 MHz around 0515 UTC.

For WARC band activity try T77C on 18.071 MHz around 1700 UTC, or 24.903 MHz at 1530 UTC.

Mellish Reef (VK9MM)

According to *DX News Sheet* the DXpedition to Mellish Reef collected some 40,000 contacts. QSL cards should be in the mail as you read this.

Cyprus (ZC4)

Three calls were reported of stations

located at the U.K. bases on Cyprus. They include the following:

ZC4AB	3.790 MHz	0100 UTC
ZC4KS	14.220 MHz	0800 UTC
ZC4ML	14.226 MHz	1445 UTC

ZC4ML also works RTTY. Look for this one near 14.087 MHz after 1600 UTC.

Tristan da Cunha (ZD9)

Roger, G3SXW, came on the air on September 29 from Tristan da Cunha signing ZD9SXW. He was running barefoot and has been reported on all nine bands. This was a CW affair only. By 11 October he had made 12,515 contacts with almost 3000 of those on 10 meters.

IOTA

Here are a few more of those IOTA islands that have been active during October and November.

EU-036 Froya Island		LA2QAA
	14.090 MHz	0815 UTC
EU-037 Aland Island		SM7DLZ
	14.262 MHz	1015 UTC
EU-047 Niedersachsen		
	State	DL2BBR
	14.266 MHz	1400 UTC
AS-042 Severnaya		
	Zemlya	LY2BMV/UAØB
	14.001 MHz	0830 UTC
NA-036 Vancouver Island		VE7DUG
	3.768 MHz	0430 UTC
NA-072 Contadora Island		HP1XVH
	14.147 MHz	2230 UTC
NA-083 Chincoteague		
	Island	K8SCH/4
	14.260 MHz	2345 UTC
NA-091 Quadra Island		VE7BPL
	14.260 MHz	2000 UTC
NA-119 Dernieres Island		K5MK/5
	14.260 MHz	1800 UTC
NA-135 Carmen Island		XE3APG
	14.260 MHz	2000 UTC
NA-152 Sarichef Island		KL7OH
	14.260 MHz	0700 UTC
OC-077 Ta'u Island		W5BOS/NH8
	14.260 MHz	0630 UTC
OC-137 Macleay Island		VK4YI
	14.222 MHz	0745 UTC
OC-141 Grotte Eylandt		VK8KTC
	21.260 MHz	1200 UTC
OC-154 Troughton Island		VK8AN/6
	14.260 MHz	1300 UTC
SA-008 Ushuania Island		LU9XPB
	28.570 MHz	1645 UTC

Ducie Island (OC-182)

Back in April Brian Young, VR6BX, had the opportunity to travel to the uninhabited Ducie Island. With a Yaesu FT-707 running off three 12-volt batteries and loaded into a Cushcraft Vertical R5 antenna, he put a brand-new one on the air for IOTA chasers.

After about 6 hours of operating as VR6BX/DI he was informed that the reference number of OC-182 had been assigned to the island due to his efforts. However, for DXCC purposes Ducie Island counts as Pitcairn Island.

During the 18 hours of operation, Brian worked IOTA chasers in the following countries: England, Ireland, Scotland, Wales, France, Italy, Russia, Poland, Germany, Norway, Switzerland, Sweden, Spain, Belgium, The Netherlands, Portugal, Denmark, Mali, Canada, United States, Mexico, Colombia, Venezuela, Brazil, Guatemala, Ecudador, Peru, Jamaica, Trinidad, Cuba, Argentina, Chile, Uruguay, Japan, Australia, New Zealand and Norfolk Island.

This was the first-ever operation from Ducie Island. Brian is also the first Pitcairner of *Bounty* descent to have operated from all four islands of the Pitcairn group. The other islands include Pitcairn, including Oeno, (OC-044) and Henderson (OC-056).

The above information comes from *The Pitcairn Miscellany* and was submitted by Jules Wenglare, W6YO.

DXCC Desk

Bill Kennamer, K5FUV, of the DXCC Desk, announces that documentation has been received and approved for the following operations beginning as follows:

4S7/OH2VZ	13 Aug 93
5R8DP	12 Mar 93
9ER1TA	19 Oct 92
9ER1TB	19 Oct 92
A35HX	25 Feb 93
E31A	02 Aug 93
E35X	31 May 93
HSØZBJ	01 Oct 93
J3/CT3FN	21 May 93
S21ZD	05 Sep 92
S21ZL	07 Mar 93
T5YOU	03 Sep 93
ZF2VA	28 Apr 93
ZK19HX	19 Jul 93
ZK2XH	26 Jul 93

Rank	DXCC Country	Prefix	% Need	1992 Rank
1	Peter I Island	3Y1	69.6	1
2	Bhutan	A5	62.6	2
3	Libya	5A	59.5	3
4	Andaman	VU4	59.4	4
5	Heard Island	VKØ	58.2	6
6	Tunisia	3V	50.4	7
7	Yemen	4W	50.4	11
8	Tromelin	FR/T	45.6	13
9	Macquarie Island	VKØ	45.0	21
10	Mount Athos	SV/A	44.5	20
11	Kermadec Islands	ZL8	43.1	23
12	Burma	XZ	42.6	24
13	Laccadive Islands	VU7	42.0	5
14	Mellish Reef	VK9M	41.1	26
15	Bouvet Island	3Y	39.2	30
16	Glorioso Island	FR/G	38.8	16
17	S.M.O.M.	IAØ	38.4	28
18	Juan de Nova	FR/J	37.7	25
19	Amsterdam Island	FT8Z	36.6	35
20	Campbell Island	ZL9	36.0	33
21	Burundi	9U	35.1	37
22	Congo	TN	34.6	19
23	Agalega Island	3B6	34.2	38
24	South Georgia Island	VP8	33.6	22
25	Iran	EP	32.5	15

1993 Most Wanted Survey

The DX Magazine has just published their annual "Most Wanted Survey" which is from a survey made of subscribers of the sister publication *The DX Bulletin*, both edited by Chod Harris, VP2ML. Survey forms were mailed to some 8000 subscribers where readers checked off each DXCC country that he or she still needs. The survey included 100 countries, for our purposes we will only list the top 25.

The survey results went on further to classify the most wanted pertaining to the geographical area of the United States, Europe and Asia. For the single mode types, the breakdown was made for SSB and CW.

If you wish to obtain a copy of the complete survey, please write to *The DX Magazine*, P.O. Box 50, Fulton, CA 95439, for details.

Azov Sea Award

There is an award sponsored by the Albatros Amateur Radio Club of Berdyansk, Ukraine for working five contacts with each Ukrainian and Russian region bordering on the Azov Sea. These regions include the following:

Khersonskaja	UB5G
Donetskaja	UB5I
Zaporoozhskaja	UB5Q
Crimea	UB5J
Rostovskaja	UA6L
Krasnodarsky	UA6A

The certificate will be endorsed for CW, SSB, or Mixed mode. It is also available for SWL and QRP. To apply for this award please include your log extract certified by two radio amateurs along with a fee of US$10.00 or 5 IRC to: Albatros, c/o Yuri V. Kazakevich, Gorkogo 13/7, 332440 Berdyansk, UKRAINE.

Please be aware that the above prefixes may change due to the call sign restructuring of the former Soviet republics. Yuri's call is UB5QRB, but we recommend that his call not be included in the address.

5 Band Worked ITU Zones

Here is an award for those DX types who have completed 5-Band DXCC or 5-Band WAZ. The RSGB sponsors an award for working the 75 ITU zones on five bands and is issued in the following classes:

Supreme	350 stations
Class 1	325 stations
Class 2	300 stations
Class 3	250 stations
Class 4	200 stations

In addition, classes 2, 3 and 4 require a minimum of 50, 40 and 30 stations on each band, respectively. All contacts since 15 November 1945 apply. If interested write: RSGB HF Awards Manager, Bill Ricalton, G4ADD, 4 South Road, Longhorsley, Morpeth, Northumberland, UNITED KINGDOM NE65 8UW. We have no information as to fees.

Young DXers

We received a note from Frank Wiebusch, KD6KVL, who wished to report a ZD7DX on 20 meters. Too bad we didn't receive the report a month earlier as we covered St. Helena Island last month. Frank is 13 years old and is only a Novice so he can't work 20 meters. Looks like a budding young DXer here. So, Frank, get busy and upgrade and join in the fun of chasing DX.

Not much is said about young DXers. How do we feel about them in our exclusive society? How many do we meet at the DX conventions? These young DXers are the ones who will have to carry the ball as we older types pass on. We need to think about this! *Editor's note: See Youth Forum in this issue for more.*

Correction

In our November column on page 36 we made reference to a Dr. Yagi, the inventor of the famous antenna, and assigned the call of J2GX. Jules Wenglare, W6YO, calls our attention to the fact that Dr. Yagi was not J2GX, which we really were aware of. The call J2GX belonged to Tarho Yagi and is no relation. Tarho now signs JH1WIX. I must have been asleep on that one. In fact, I don't believe that Dr. Yagi ever held a call.

DX Prediction — January 1994

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

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

WEST COAST

UTC	AFRI	ASIA	OCEA	EURO	SO AM
10	*(12)*	*12	*15	*(10)*	*14
12	*(11)*	12	*14	*(9)*	14
14	*(11)*	12	*14	*(9)*	28
16	*(22)*	*12	*22	*(15)*	32
18	25	*(12)*	*(17)*	*(11)*	*34
20	25	*(13)*	*(22)*	*(10)*	*35
22	22	24	27	*(10)*	*33
24	*(19)*	26	30	*(10)*	*28
2	15	21	29	9	*19
4	*14	15	19	9	*17
6	*(13)*	14	17	9	*16
8	*(12)*	*13	*(16)*	10	*15

CENTRAL USA

UTC	AFRI	ASIA	OCEA	EURO	SO AM
8	*(14)*	10	*(15)*	*10	*15
10	*(14)*	9	*14	*(9)*	*14
12	*(14)*	9	14	*(9)*	21
14	28	*13	*26	18	*30
16	32	*(12)*	22	*(16)*	*32
18	*32	*(12)*	*(18)*	*(11)*	*34
20	26	*(11)*	*(22)*	*(11)*	*35
22	22	20	27	*(10)*	*32
24	*18	*(16)*	28	10	*23
2	*17	*(12)*	19	9	*18
4	*16	*(11)*	17	9	*17
6	*(15)*	*(10)*	*(16)*	9	*15

EAST COAST

UTC	AFRI	ASIA	OCEA	EURO	SO AM
7	14	10	*(15)*	9	*15
9	*(14)*	9	*14	*9	*14
11	25	9	14	16	21
13	31	10	*27	19	*30
15	33	*(10)*	24	18	*33
17	*33	*(9)*	21	16	*34
19	*29	*(9)*	*(19)*	*(12)*	*35
21	*24	*(16)*	*(25)*	11	*32
23	*18	*(16)*	28	10	*24
1	*17	*(12)*	*(19)*	10	*19
3	*16	*(11)*	*(17)*	9	*17
5	*15	*(10)*	*(16)*	9	*16

French prefixes

The Canadian Amateur Radio Magazine and others, report that the French PTT has changed their call sign structure as follows:

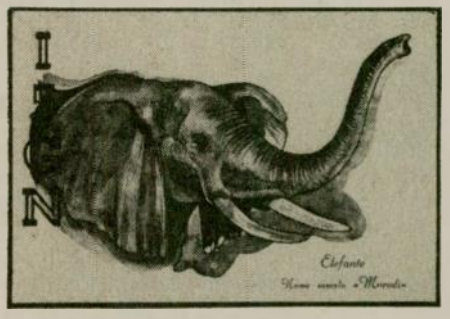
Old prefix	New prefix
FA	No Change
FB	No Change
FC1	F1
FD1	F5
FD6	F6
FE1	F5
FE2	F2
FE3	F3
FE5	F5
FE6	F6
FE8	F8
FE9	F9
F1	F5

Club stations will be assigned a letter K as the first letter in the suffix of their call.

Antique QSL Department

With the present situation in Somalia, Paul Wolf, W6RLP, submits the following QSL cards as a bit of interest. These cards date back to the 1950s.

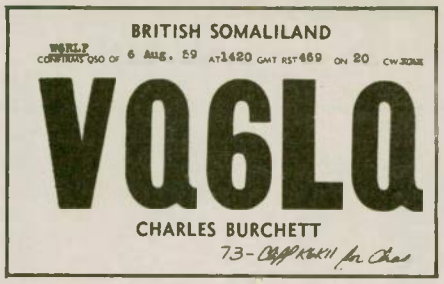
VQ6LQ was the call used by Charles Burchett, who worked Paul on 20 meters CW back on 6 August 1959. The location was British Somaliland.



The card with the elephant head is that of I5GN operated by Pat Nudson of Italian Somaliland. Paul worked this station a month or so later on 27 September on 20 meter phone. The location was Mogadiscio and I5GN was using a Ted Henry Argonaut transmitter and Collins 75A1 receiver.

Both British and Italian Somaliland ceased to exist as separate DXCC countries on 30 June 1960.

Not to be outdone by England or Italy, there was also a French Somaliland. Paul worked FL8AC back on 23



May 1958 on 20 meters CW. This station was running only 60 watts and appeared to be using homebrew equipment. French Somaliland is known now as Djibouti.

And on the subject of Somaliland,

QRZ DX makes note of the possibility of the former British Somaliland again becoming a separate DXCC country, as it claims to have become independent from Somalila 2 years ago. What next!

QSL Information

According to *The DX Bulletin* FØ5BI sends his logs to his QSL manager F6HSI but once a year. With that in mind you might as well QSL via the bureau.

We read where one W3 QSL manager refuses to answer stateside QSL cards that arrive via the bureau with the reasoning, "they cost me money and they go into the round file." This manager handles cards for several DX stations with some of them garden variety DX. Personally, we think this is rather negative attitude. Does it really cost him that much for the bureau cards? Maybe we should take up a collection and send it to this manager.

QSL Routes

3A/I1RBJ	--I1A
3A/I1YRL	--I1YRL
4F2IR	--DU3DO
4K4DV	--UA3GPA
4M1DX	--YV1EQW
4O9S	--YU7KMN
4U48UN	--W8CZN
4X0AI	--4Z4DX
5H3BMY	--HB9BMY
5N33NDP	--IK5JAN
5Z4BI	--W4FRU
6V6U	--K3IPK
7J1AOE	--K3DI
8R1K	--OH1VL (See Note 2)
9G1RF	--WA1ZFS
9H3AM	--G3VLX
9J2DH	--DL2MGB
9[illegible]	--JH3RRA
9U5DX	--DJ6SI (CW88B)
9U5DX	--DJ6JC (RTTY)
9V1ZM	--VE3MMB
9Z4PC	--VE3FOI
AH8K	--JF2PZH
BV0MM	--BV2DD
C21/KC6DX	--JA2NVY
C56V	--KD7E
C6AFT	--AA5NT
C6AHM	--N5TVL
C93BM	--I3QAI
C94BE	--CT4DX
CM7FC	--CO7JC
CN2JF	--WAØRJY
CQ0L	--N4DC
CQ8C	--CT1EGW
EA6/DL1KBQ	--DL1KBQ
EA9UK	--EA9LZ
ED2FCS	--EA2CBY
EG5NDO	--EA5CVN
EG5NOU	--EA5OL
ER1/UB5FBV	--LY1FF
ER1/RB5FF	--LY1FF
ET3BH	--SM3HLL
FK8KAB	--F6AJA
FS/JG1RXQ	--JA1VPO
FS/JL1MUT	--JH1EDB
GB93AM	--GMØMDX
GJØSLY	--WA3CGE
H44MM	--JF3PIE
HD3W	--HC3AP
HD4/HC2FU	--DL8NU
HD4/HC2HVE	--DL8NU
HG75ØERD	--HA7TM
HV5JK	--I5GJK
HZ1AB	--K8PYD
II2M	--IK2SGC
II6I	--IK6GZM
IL7/IKØSXU	-IØVWV
IMØM	--IK2QIN
ISØ/YO3RA	--YO3RA
IUØPAW	--IKØSHF
IU7PAW	--IKØSHF
J79DX	--AA5DX
K1EFI/VP9	--K1EFI
KG4HG	--KG4AN
KL7OH	--KL7GNP
NP2V	--WB4FLB
NP2V	--WB4FLB
NP4A	--W3HNK
OHØDX	--OH2BAD
OJØM	--OH1NOA
OK8BAF	--DJ5CQ
OT3T	--ON4UN
P29NB	--K3BYV
P4OC	--AA2U
P4OM	--N2MM
P49T	-(See Note 1)
PJ1B	--K2SB
PJ8X	--KE7LZ
PJ9U	--OH1VR
S21ZAL	--VK2DFL
T3ONA	--SP2NA
T92EDK	--DJØQJ
T94CR	--SM5AQD
T97T	--SM5AQD
TA2DS	--WA3HUP
TO5MM	--N3ADL
TP7CE	--F6FQK
TU4EI	--K3TW
V29FNP	--VE7FNP
V29Z	--WT3Q
V47KP	--K2DOX
V47NS	--W9NSZ
VK8AN/6	--VK4CRR
VK9LI	--K6VNX
VK9LO	--K6VNX
VK9LQ	--WB6OKK
VK9LR	--K6VNX
VK9LX	--W6XD
VK9XG	--JA3JA
VP2ERN	--WB6CJE
VP2MBK	--K8UE
VP2MEU	--K8UE
VP5/JJ1BMB	--JJ1BMB
VP5L	--K4UTE
VP5N	--N2VW
VP8GAV	--GMØLVI
VP9MZ	--WB2YQH
W5BOS/NH8	--W5BOS
WB2P/KH2	--WB2P
XE2/W7ZR	--W7ZR
XE2MOO	--KD5RQ
YPØA	--DB8VH
ZB2X	--OH2KI
ZD8M	--G3UOF
ZD8Z	--VE3HO
ZD9SXW	--G3SXW
ZF2VV	--NX1L
ZK2XX	--ON4QM
ZXØF	--PY5EG
ZK7SM	--PR7SM

3B9FR --Robert Gerard Felicite, P.O. Box 31, Rodrigues Island, via MAURITIUS

3DAØCA --Jon Rudy, P.O. Box 329, Mbabane, SWAZILAND

4K4/UAØKBZ -- Serge, P.O. Box 2, Dickson Island 663241, RUSSIA

5V7JB --James Brillhart, B.P. 8, Anie, TOGO

7P27LI --Ray Shankweiler, P.O. Box 333, Maseru 100, LESOTHO

AH9B/VO2 --OKDXA, P.O. Box 88, Wellston, OK 74881

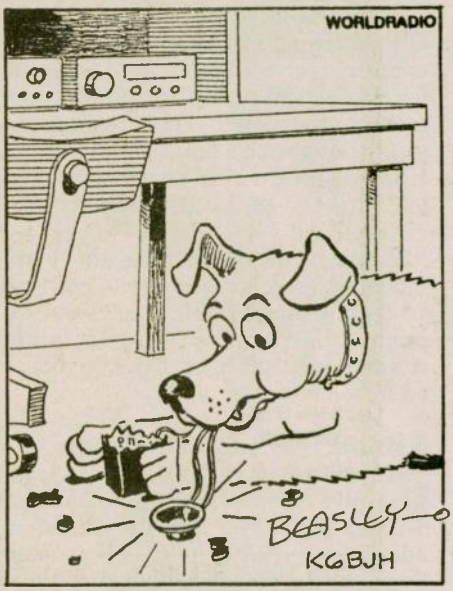
BV93TSG--CTARL, P.O. Box 39, Changhua 50099, TAIWAN

ET3YU --Dragan Stodanovic, P.O. Box 60349, Addis Ababa, ETHIOPIA

HH2PK --P.O. Box 1095, Port au Prince, HAITI

JW4WIA --P.O. Box 28, 2201 Kongsvinger, NORWAY

JW9DFA --P.O. Box 28, 2201 Kongsvinger, NORWAY



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VR6BX --P.O. Box 21, PITCAIRN ISLAND via New Zealand

VR6TA --P.O. Box 28, PITCAIRN ISLAND via New Zealand

ZK1AT --Amy Tabique, Penrhyn Island, North Cook Islands, via New Zealand

NOTES:

1. All contest QSL cards should be sent via K4PI; all others via W3BTX.

2. This route applies for the 1993 CQWW SSB contest only. For the 1991 CQWW CW test please QSL via OH2BH.

Many thanks to the following contributors: 3DAØCA, UB5QRB, AA6BB, KD6KVL, W6RLP, W6YO, KØPP, The American Radio Relay League (K5FUV), Northern Arizona DX Association (W7YS), Western Washington DX Club (WAØRJY) Salt City DX Association (KB2G), Western New York DX Association (KB2NMV), *The Low Band Monitor*, *The Long Island DX Bulletin* (W2IYX), *DX News Sheet* (G4DYO), *QRZ DX* (W5KNE), and *The DX Bulletin* (VP2ML).

Our work has taken us into the field for the better part of the month, down to Devil Canyon powerplant in the San Bernardino area. We decided to take along the camcorder to video the trains running over through Devore and over Cajon Pass. This can be dangerous! It was Amateur Radio that killed my tremendous interest in the railroad hobby in 1954 and we certainly don't want to fliplop back again with DXing taking a backseat. 73 and GL DX de John, N6JM. WR

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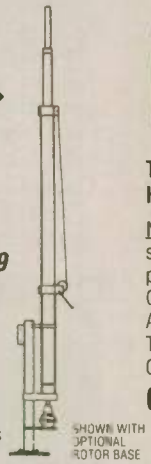

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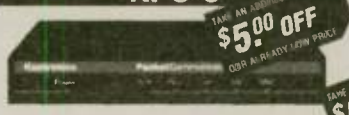

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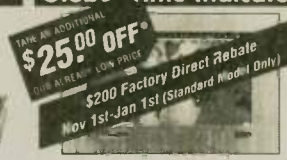

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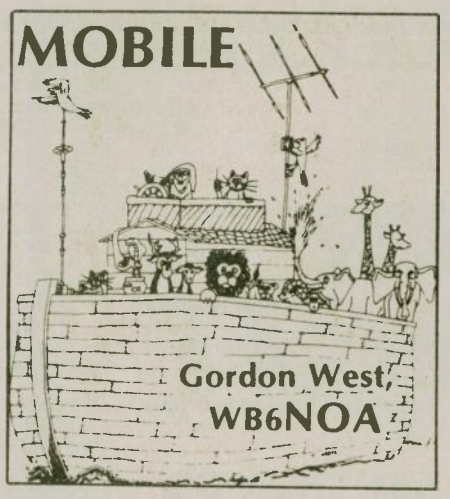


Up with feedpoints. . . down with tuners

If you operate mobile high frequency SSB on 160 meters through 6 meters, you know the importance of a proper mobile antenna installation. Since most high frequency whips are only 6 to 8 feet tall, their radiating efficiency will be many dBs down from an "ideal" (but not practical) unloaded vertical:

10	meters	8	feet
15	meters	11	feet
20	meters	16	feet
40	meters	32½	feet
75	meters	64	feet
160	meters	128	feet

The ideal placement of a loaded-vertical high frequency whip would be in the center of your roof. You can get by with the antenna slightly lower on the trunk lip. But if you try to mount that high frequency whip way down off your bumper, it usually won't load and your high frequency transceiver kicks-back the power to only 10 mismatched watts output.

So you push the magic little button called "AT Tune" on your rig, and instantly the SWR dives to zero, power flies up to 100 watts, and that poorly mounted whip is now a perfect match. Right? Wrong!

Even though your SWR now seems perfectly acceptable, your mobile high frequency signal won't be anywhere near the strength of another mobile unit running without the tuner and an HF whip up high on the vehicle, where it belongs. Your built-in automatic tuner should be used only for slight excursions off the natural resonant frequency of the whip, as opposed to trying to get a whip into resonance where the feedpoint is so whacko that only a tuner can jam the signal down the coax.

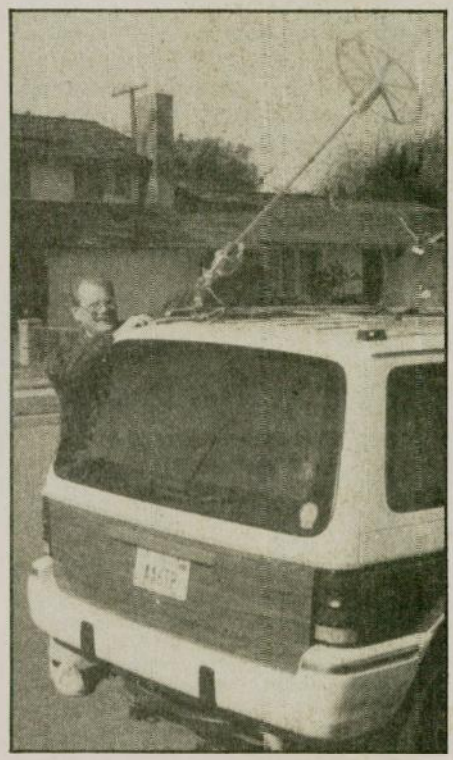
You need to locate an HF whip mounting position that puts most of the vehicle at or below the mounting base of the whip. Lip mounts from Comet and Diamond will hang onto almost any type of vehicle's roof or trunk lid metal. I have even seen kilowatt Hustlers and multi-band Outbacker antennas securely affixed to the upper portion of vehicles with the relatively lightweight Comet or Diamond mounts.

You can find these mounts displayed in clear vinyl hang-bags at your local ham store. Go for the mount that terminates to 3/8ths x 24 threads, male or female. With the male 3/8ths x 24 bolt, you could screw on an adaptor that would then give you threads to screw in your 3/8ths x 24 threaded whip. And if you're really concerned about whip leverage, choose one of those lightweight single-band fiberglass whips with a stainless steel stinger, and they won't load down your mount much at all.

MFJ's SWR analyzer is easy to use to tune your HF whip.

Don't settle on a mounting location where the natural SWR (without the tuner in line) won't bottom out somewhere within the band edges. If it won't load in-band, find out what's going wrong! It might not be as obvious as you think.

"Maybe it's not loading because my roof looks like it's metal, but it is really fiberglass," comments Lincoln Frost, a ham I met at the Virginia Beach Hamfest. "Guess that makes some sort of difference, doesn't it? "muses Frost." Boy, had me fooled!" Once we relocated the HF whip over an aluminum vertical side of his motorhome, everything worked dandy! No tuner required!



The top hat will resonate this whip to a perfect match without the use of a tuner.

The MFJ SWR analyzer is a great way to quickly check whether or not your feedpoint will develop in-band resonance. Sure beats hanging a big carrier out there on the air. Every ham radio club should have one of these devices to loan out for those HFers wanting to perfect their SSB signal on the worldwide bands by improving the location of their feedpoint.

Above all, try to keep your built-in tuner OUT OF LINE to really see that all of your power is going up the coax, into the antenna, and with the right feedpoint, out into the airwaves. WR

Note: On page 40 of the November ***Worldradio*** *there is a picture of a hand held Standard Radio identified as a C-628A. It also says it is a 440/220 handheld. It is actually a 440 MHz/1.2 GHz. Radio. — Howard S. Wayman, W9GVA*

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 St., Sacramento, CA 95818.

ALABAMA

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

ARIZONA

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

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

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

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

CALIFORNIA

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

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

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

Contra Costa Communications Club, Inc., WD6EZC/R. P.O. Box 20661, El Sobrante, CA 94803-0661. Meets 2nd Sun./monthly (except May & Dec.), 7 a.m., Baker's Square Restaurant in Richmond, CA. Info: Ed Caine, KA60FR, (707) 996-0962.

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

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

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

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

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

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

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

Lake County Amateur Radio Society, (LCARS). Meets last Thurs./monthly at either Red Cross HQ, Clearlake, or the Nice Community Clubhouse, Nice, CA, 7 p.m. Net Mon., 7 p.m. 146.775(-) for info.

Lee DeForest Amateur Radio Club. Meets 3rd Thurs./monthly, 7:30 p.m., Simpson Neighborhood Center, 305 E. Devonshire, Hemet, CA.

Livermore Amateur Radio Klub, (LARK). Meets 3rd Sat./monthly, 9:30 a.m., City Council Chamber, 3575 Pacific Ave., Livermore, CA. Net Mon. 1900 on 147.12+. For info: LARK Secretary, P.O. Box 3190, Livermore, CA 94551-3190. (510) 447-3815.

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

Marin Amateur Radio Club (MARC). W6SG. Box 151231, San Rafael, CA 94915-1231. Meets 1st Fri./8 p.m.; MARC Clubhouse Bldg. 549, HAFB, Novato, CA. (415) 883-9789 (Summer exceptions; contact Pete N6IYU, 924-1578). Sun. AM Club at Red Cross, San Rafael.

Mount Diablo Amateur Radio Club. P.O. Box 23222 Pleasant Hill, CA 94523. Meets 3rd Fri/monthly, 8 p.m., Our Savior's Lutheran Church, 1035 Carol Ln., Lafayette, CA. Net Thurs. 7:30 p.m. on 147.06(+). Info: George KI6YK, (510) 837 9316.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Stockton-Delta ARC. Meets 2nd Thurs./monthy, 7:30 p.m., Red Cross Bldg., 747 N. Pershing Ave., Stockton, CA Rptr. 147.165(+). Net Wed., 8 p.m. 146.655.

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

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

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

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

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

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

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

COLORADO

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

CONNECTICUT

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

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

DELAWARE/PENNSYLVANIA

Penn-Del Amateur Radio Club. P.O. Box 1964, Boothwyn, PA 19061. Sponsor of KA3TWG/Rptr. on 224.22 covering Delaware & Tri-state area. Info/net Thurs./wkly, 20:00 hrs. or call Hal Frantz, (302) 798-7270.

FLORIDA

Gulf Coast ARC, Inc. P.O. Box 595, New Port Richey, FL 34656. Meets 4th Mon./monthly, 7:30 p.m., 3852 Prime Place, New Port Richey. WA4GDN rptr. 146.67(-).

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

Orlando Amateur Radio Club. P.O. Box 3262, Orlando, FL 32802. Meets 1st Wed./monthly, Beardall Center, Gore St. & Orange Ave., Orlando. 146.76(-), 145.11(-), 146.82(-), 147.015(+), 443.275. CTCSS 103.5 Hz on all except 146.76.

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

Suncoast Amateur Radio Club. P.O. Box 1992, New Port Richey, FL 34656-1992. Meets 2nd Mon./monthly, 7:30 p.m., First Lutheran Church, corner of Polk & Delaware, New Port Richey, FL. Sponsor of WC2G/rptr. on 145.35, serving west Pasco County.

GEORGIA

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

HAWAII

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

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

IDAHO

Idaho Society Radio Amateurs. Boise Chapter 146.94. Meets 3rd Tues./monthly, Borah H.S., 7 p.m. Rptr. at 8000. Membership welcome.

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

ILLINOIS

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

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

Dupage Amateur Radio Club. (DARC). P.O. Box 71, Clarendon Hills, IL 60514. Meets 4th Mon./monthly, 7:30 p.m., Holy Trinity Church, SE corner of Cass & Richmond, Westmont, IL. Net Sun., 9 p.m. on 145.250. W9DUP rptrs. 145.250(-) (107.2PL), 442.550(+) (114.8PL), 224.680(-).

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

Hamfesters Radio Club, W9AA. P.O. Box 42792, Chicago, IL 60642. Meets 1st Fri./monthly, 8 p.m., Crestwood Civ. Ctr., 139th & Kostner, Crestwood, IL. Nets: Sun. (local) 0100 UTC, 28.41 MHz; Mon. 9 p.m. 146.43 S., Packet Mailbox 145.07. Info: (312) 262-7897.

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

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

The Starved Rock Radio Club, W9MKS. P.O. Box 22, Tabor St., Leonore, IL 61332. Meets 1st Mon./monthly, 7:30 p.m. Rptr. net 7 p.m. Wed./wkly., 147.72/.12.

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

Wheaton Community Radio Amateurs, (WCRA). P.O. Box QSL, Wheaton, IL 60189. Meets 7:30 p.m., 1st Fri./monthly, College of DuPage, Glen Ellyn, IL. Nets Sun. & Tue. 8 p.m., 145.39 MHz. 440 MHz net on Tues., 8:30 p.m. on 444.475 MHz.

MICHIGAN

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

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

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

MINNESOTA

Minneapolis Radio Club. P.O. Box 583281, Minneapolis, MN 55458-3281. Meets 3rd Fri./monthly, Mpls. Red Cross Bldg., 11 Dell Place, Mpls, 7:30 p.m. Making waves since 1916.

MISSISSIPPI

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

MISSOURI

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

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

NEBRASKA

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

NEVADA

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

NEW HAMPSHIRE

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

NEW JERSEY

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

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

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

NEW YORK

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

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

Hall of Science Amateur Radio Club. P.O. Box 131, Jamaica, NY 11415. HOSARC, 2nd Tue./monthly, Hall of Science Bldg., 47-01 111 St., Flushing Meadow Park, 7:30 p.m. Info: Charlie, WA2JUJ, (518) 420-0046.

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

Orleans County Amateur Radio Club, (WA2DQL). Meets at Emergency Management Office, West County House Rd., Albion, NY 14411, 2nd Mon./monthly, 7:30 p.m. 145.27 — WA2DQL.

PROS, Pioneer Radio Operators Society. Meets 1st Wed./monthly (except July/Aug.), 7 p.m., Masonic Temple, Rt. 78, Java Village, NY. Other Wed., 8 p.m. 145.1701 144.57- Repeater KC2JY.

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

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

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

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

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

NORTH CAROLINA

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

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

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

OHIO

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

Clyde Amateur Radio Society (CARS). Meets 2nd Tue./monthly, 7:30 p.m., Municipal Bldg., Clyde, OH 44811. NF8E rptr. 145.35 and 442.625 MHz. Net Sun. 9 p.m. Info: E. Remaley, KA8CAS.

Firelands Area Rptr. Assn., (FARA). Meets 4th Tue./monthly, 7 p.m., Ohio Veterans Home, Sandusky, OH. WB8LLY rptr. 146.805-/205. Net Sundays, 8 p.m. Info: Rob Harshbarger, N5XRB.

Greater Cincinnati Amateur Radio Assn., (GCARA). Meets 4th Wed./monthly, 7:45 p.m., Cincinnati Museum of Nat. History, 1720 Gilbert Ave. Amateur Radio Station W8DZ. Info: WA8STX or (613) 563-7373.

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

Northern Ohio Amateur Radio Society, (NOARS). Meets 3rd Mon./monthly, 7:30 p.m., Gargus Hall, Rt. 254, Lorain, OH. Info: rptr. K8KRG 146.70, DX alert rptr. 145.15.

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

Toledo Mobile Radio Association. P.O. Box 273, Toledo, OH 43697. Meets 2nd Wed./monthly, 7:30 p.m., Luke's Barn, Lucas County Rec. Ctr., 2901 Key St., Maumee, OH. Contact: Brian, WD8MXR, 385-5624.

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

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

OKLAHOMA

Enid Amateur Radio Club, Inc. W5HTK, WA5QYE, WA50UB. P.O. Box 261, Enid, OK 73702. Meets 4th Thurs./monthly, OK Hwy. Patrol Stn.

OREGON

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

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

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

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

Umpqua Valley Amateur Radio Club, Inc. P.O. Box 925, Roseburg, OR 97470. Meets 3rd Thurs./monthly, 7:30 p.m., Douglas County Courthouse, Rm. 311, Douglas St., Roseburg, OR. Info: W5PII/R 146.90(-) or (503) 673-1310.

PENNSYLVANIA

Butler County Amateur Radio Assn. P.O. Box 1787, Butler, PA 16001-1787. Meets 1st Tues./monthly, 7:30 p.m., Boy Scout Cntr., 830 Morton Rd., Butler, PA. Call-in W3UDX/R 147.96/36. Net 10:10 p.m. nightly.

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

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

TEXAS

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

VIRGINIA

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

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

WASHINGTON

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

WEST VIRGINIA

Jackson County Amateur Radio Club. Clark Stewart, W8TN, Pres., 104 Henrietta St. Ravenswood, WV 26164. Meets 1st Thurs./monthly, 7:30 p.m., United Nat'l Bank of Ripley. Net Mon. 9 p.m. on 146.67/.07 WD8JNU/R.

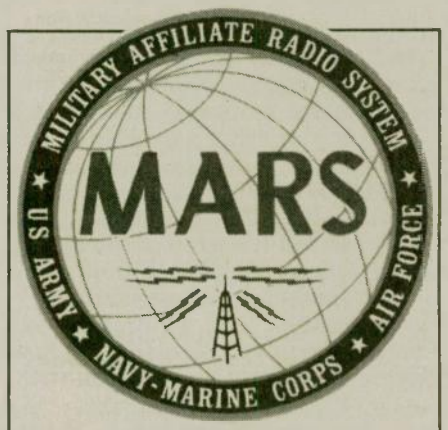
Tri-State Amateur Radio Assn. Club mtgs. 3rd Thurs./monthly, 7 p.m., monthly brkfst 1st Sat., 9:15 a.m., Green Valley Vol. F.D., 16th St. & Norwood Rd., Huntington, WV.

WYOMING

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

MEXICO

Lake Chipala Amateur Radio Group. Meets Fri./weekly, 10 a.m., St. Andrew's Episcopal Church, Chipala, Jalisco, Mexico (30 mi. so. of Guadalajara). Simplex 146.49. Info: W4AFW/XE1. Charles C. Leonard, APDO 381 Ajijic, Jalisco, Mexico.



Lorraine S. Matthew, N4ZCF
MARS call AAA9PR

Phone patches bring holiday cheer

With the coming of the new year, all of us in MARS can look back upon a busy holiday season. Soldiers in far away places can remember with warm feelings the phone patches that were run by the hundreds at the overseas MARS stations.

As an Army MARS operator who has never run a phone patch and who hears about all the phone patch activity coming in from all over the world, I asked, initially, that Jim Keele/AAR4WO send me a transcript of exactly what goes on at AAR4CSS.

AAR4CSS is the Silver Springs Amateur Radio Club Army MARS station located in Ocala, FL. Its big-foot reputation still holds in the Middle East in such places as Saudi Arabia, Somalia, Kuwait, and, with the augmentation of the new log periodic antenna, will most likely work Bosnia and Macedonia as well. Phone patches, of course, must be originated at the military person's overseas location. Phone patch operations may not be originated in the United States.

Jim's description of the phone patch operation follows.

"Net schedule 14 and 20 MHz frequencies depending on conditions, commencing at 2 P.M. EST until traffic completed at 9 P.M. EST."

"AEM6USA, this is AAR4CSS, Radio Check.'

'AAR4CSS, this is AEM6USA, read you Charlie Lima. How me? Over'

'AEM6USA, this is AAR4CSS, read you medium readable, patch quality. Over'

'AAR4CSS, this is AEM6USA. Following this station, we have the following stations on frequencies: AEM6USI, AEM6USH, AEM6USR, AEM6USQ. Call each station for radio check. Over'"

AAR4CSS calls each station to check to see if the conditions exist to make each one patch quality. Upon this verification to AEM6USA, AEM6USA assigns the rotation of those stations that have patch quality. Usually each station may make two completed calls before AAR4CSS goes on to the next station in the rotation. If there is another CONUS station on the same frequency, that station, if the readability is the same or better, may elect to take some of the stations off to another frequency to run their patches.

"When the party answers, 'This is the Army MARS station Ocala, Florida. I have a call from James in Somalia for Martha. Are you Martha? Have you ever talked on radio patch before?'

"If she replies 'No', we explain that this is by radio from Ocala to Somalia and is a one-way system. She must end her sentences with the word 'Over'. We also indicate that there is no charge for the long distance call; that Sprint or MCI is picking up the bill. If neither of these free services is available, the telephone operator usually asks if she accepts the long distance charge. (On one of these reverse charge calls, the party said that she would not pay for the long distance call from Somalia. When I advised her that the charge was only from Ocala, she said she didn't know anybody in Ocala, and hung up.)

"'AEM6USA, this is AAR4CSS. I have Martha on the line for James. Please initiate patch your end. Over'

'This is AEM6USA, initiating patch."

When the conversation, limited to five minutes, is complete, AAR4CSS indicates that the patch is terminated and requests the next set of figures for the next patch. Logs are kept of the time, frequency, party calling, party accepting the call, etc. Log entries also indicate "No answer" or reception of an answering machine on which a short message is left by the operator at AAR4CSS.

An average of 40-50 patches per day are handled from Somalia even now. If conditions are bad on one frequency, there are others from which to choose. There are frequency indicators which are used to advise the Somalia stations where to go.

With all the frequencies stored in memory, when frequencies are shifted, the station's linear amplifier shifts automatically when the ICOM 735A shifts. No tuning is required. They use an Alpha 87A amplifier and use either the rhombic (Big Foot) or the log periodic antennas.

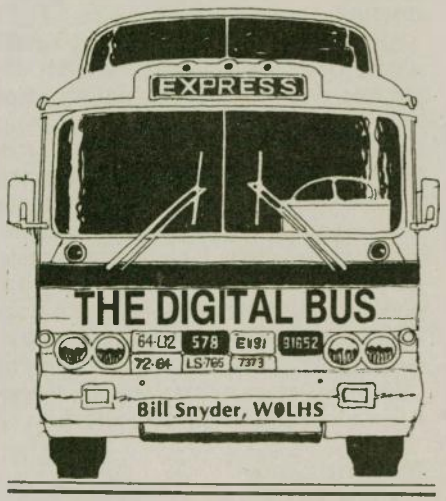
Larry Ayers/AAV4IW is one of the phone patch operators at AAR4CSS. He heard my request for information and very generously set up a phone patch between Mitch/AEM6USA in Somalia and me so that I could interview the operator in Somalia. Mitch was the chief operator in Mogadishu and has done an excellent job with the phone patch operation as well as doing the needed public relations work so that the ever-rotating troops would know that Army MARS was there to serve them. (Mitch has since rotated out of the area. A six-month rotation is in effect.)

MARSgrams

In the interview, we discussed such items as the impossibility of using two-way MARSgrams. MARSgrams can be sent out of the country but cannot be delivered effectively inside the country. This is the main reason that all MARS services have been acting under instructions not to accept message traffic going to the area. Mitch made sure that every Army mailbox received a flyer explaining the MARS services that are available to troops in Somalia. He did this at least once per month so that the box holder was kept informed whether it be someone new or the same soldier who may have had it the previous month. At the time that I talked to him in July, Mitch had handled 1000 phone patches (out of 6300 for the station) and 4000 MARSgrams from Somalia to the United States. The MARS station often became the social center as soldiers waited their turn to get either a patch or a message out to their loved ones at home.

It took two patches to accomplish the interview. The first one was terminated when the band conditions collapsed. The second one had a more dramatic ending which pointed out to me that the perils of Somalia are far from over. I had heard some popping sounds just before I opened some dialog on my end. When I had "Over"ed, Mitch broke off the patch for "an emergency". Those pops were machine guns and he understandably wanted to close down the operation. The station is inside a military compound, but the shooters outside can send bullets inside as they strafe and run. My appreciation to Larry for giving me this experience and to Jim for the detailed information about the station operation.

Next month, I will salute the VFW post whose care and generosity keep this station operating. Space prevents me from adding it here. Meanwhile, a salute to AAR4CSS and the AEM6 stations is well deserved. WR



Digital hobbies

Do you find that the computer you bought to use in your ham radio activities is taking over your life, and you are using it to do other kinds of hobby work? I suffer from that problem, and I notice the same is happening to a lot of other ham radio addicts. I see more and more of our local hams coming to the PC User's Group meetings we have here in Fargo, and they show up because they using their computers for other things as well as playing with ham radio.

For the past nine years I've been writing and editing a newsletter for our high school alumni association. It's called *Cynosure* and it's a quarterly tabloid publication containing about 22 to 24 thousand words per issue. I'm quite proud of the 12 pages because the whole project is unique in many ways.

First of all, a bit of background. My high school, named Central, was the only such institution in Fargo. It burned down in 1966 and the school board built two large schools to take its place. (No, I didn't burn it down to get out — I graduated in 1935.) So our association is unique: we don't have any classes after 1966 to worry about; we're just a bunch of old folks who are survivors of various wars and diseases.

The second unique feature about our *Cynosure* (word means focal point) is this: most of it is written by the aging readers. And those survivors from the classes in the '30s and '40s really do have reminiscences to relate to their classmates. I've published stories about climbing over the transom in the home economics department to rifle the ice box for a midnight snack, to burning a rival school's bonfire wood the night before the other school was to have its big pep rally bonfire. I sometimes think the paper should be called "True High School Confessions" although no racy stuff appears in print.

In my time we had an extremely tough, no-nonsense principal running our school. So, in today's *Cynosure* pages he has been glorified and chastised for the rigid disciplinary rules he laid on the students during his days in office. I personally think he was great man and so do the old grads who write in for publication. The kind of stuff high school kids get away with today would never go one minute in Principal Ben Tighe's well-run school.

Listing alums — and hams

In 1985, our fledgling alumni association held an all-school reunion that was a smashing success. As a result of the giant gathering we voted to keep the non-profit association alive. At this point in time we have 4,000 dues-paying members all over the world. Oh, yes, I publish a listing of the alumni who are ham radio fans. If they have a packet address, I include it too.

I thought in 1985 we could have a Last Man's club and give the last dues-paying survivor the remnants of the treasury. He or she could throw one hell of a party with the money, but the IRS says *NO* in big letters. The government requires that upon dissolution, we must dispose of our assets to another non-profit group; so we did that in our by-laws all legal-like.

So, that should give you an idea of how I got my desk top publishing start. I knew nothing of printing and publishing when I started nine years ago. At first I simply typed all the copy into my antique computer, printed it out, and then took the printout to the printer for typesetting and publication.

I graduated to sending the copy over the telephone to the typesetter by modem. That speeded it up a bit, but I still had to lay out and edit a photo copy of finished type. Let them lay it out.

It wasn't long before I discovered desk top publishing and we bought a program called Ventura Publisher. It was a fairly sophisticated program and I struggled learning how to layout the 12 page tabloid *Cynosure* in my computer. The box was short of memory and I was short of brains so two negatives made a positive; I prevailed. The paper began to look a lot better than when the print house was doing the final paste-up. And the cost of the publication came down, too.

Then, along the way, we bought Corel Draw, version 2, as an art program. We needed something to help us spice up the newsletter with clipart, etc. Corel Draw looked like it would fill the bill.

A novel training aid

Where I struggled to learn Ventura out of books, I didn't have that problem with Corel Draw because included with the version 2 package was a VHS video tape that demonstrated the basics of using the drawing program. To my way of thinking, an audio-visual instructional video can show things quicker and better than books and computer tutorials will ever do. If only Ventura had been explained on a tape, I'd have been a quicker study when I was a neophyte.

Recently, my 12 year old grandson wanted to learn to use Corel Draw in

my computer, so I let him watch the instructional tape. It worked its magic and he grasped the rudiments in only one run of the video. I wish more software developers would provide instructional video tapes to run before a student starts the tutorials. Having been in the industrial and educational movie making business for many years, I feel instructional videos would make a great sales tool for the developer, too. For a beginner, watching an expert use the program while explaining the basic moves, is much easier than reading books and then going through on-screen tutorials. The tutorials also would be easier to follow after being introduced to the program by an expert.

Upgrading

Over the years I've kept upgrading both Corel Draw and Ventura (by Xerox) as they have advanced their programs. Both of the software companies have released programs with problems that needed fixing. Corel has been good about supplying upgraded disks with fixes, but poor about telling users that the fix is available.

I have received all my Corel Draw programs and fixes on CD-ROM. Recently I had trouble with version 4; it printed strange things that weren't on the screen when I ran it in our 1200 DPI WinJet equipped Hewlett Packard Laserjet 4 printer. At the local users group meeting a fellow Corel user said there was a fix out for version 4. So I called the company and in about ten days I had a "maintenance disk."

Instead of new CD-ROMS containing the whole program like the version 4, I got a CD-ROM that "patched" all the problem parts of the basic program on my hard drive. So far, it has worked great.

I recently read in the trade papers that Corel Draw has taken over Ventura from Xerox. I've had a lot of problems with Ventura in the Window version 4.1, so I asked the technical support man at Corel Draw if they have a new update for Ventura, and he said "Yes, out today!" I ordered it right there and then. I'll report on the outcome.

When using the Windows version of Ventura to lay out a paper, I had strange problems. Sometimes a simple move would cause a "fatal error" and hang up the computer. There is nothing like moving the mouse to shrink a box and then have the computer screen tell you that you have committed a "fatal error."

Who did that?

Snyder's first law says you can have a "fatal error" only when you have not saved the last hour's work on the publication. I never know who to blame for locking up my machine. It is me, Ventura, or Bill Gates and his crew that invented "Windows?" I've called the culprit some choice names whenever it happens, believe me!

I think the air freight people must be getting rich on handling computer stuff that goes bad. I recently bought a printer for my daughter. It lasted 30 minutes before it went "dead." The dealer sent her a new one by air. I bought some SIMMs to go with it. One wouldn't fit in the socket, so more air freight and teeth gnashing.

EAVESDROPPINGS

WITH THE SINKING SOLAR FLUX MY DX ACTIVITY IS SINKING TOO . . . PACKET MESSAGE TRAFFIC IS ANYTHING BUT RELIABLE—I GOT ONLY TWO OUT OF 15 MESSAGES A GUY SENT ME, AND THEY WERE OUT OF SEQUENCE. . . JUST THINK IT IS ONLY FOUR MONTHS UNTIL WE GO BACK ON DAYLIGHT SAVINGS TIME — WHAT HAPPENS TO ALL THAT TIME WE SAVE?. . . THERE IS NOTHING WORSE THAN DROPPING YOUR VIDEO CAMERA IN THE POND WHILE YOU'RE HUNTING DUCKS, UNLESS IT'S YOUR SHOTGUN. . . I'LL HAVE TO WAIT TIL SUMMER TO CLIMB MY TOWER AND FIX THE BEAM ANTENNA BECAUSE IT'S TOO COLD THESE DAYS. . . I ALWAYS LIKED RTTY FOR DX BECAUSE I CAN'T UNDERSTAND CALL SIGNS ON SIDEBAND—IT'S EASIER TO READ THEM OFF THE SCREEN. . . THE WIND WAS STRONG AND BLOWING EVERY WAY BUT STRAIGHT UP. . . MY KIDS ARE ALL GROWN UP EXCEPT WHEN IT COMES TO SAVING MONEY. . . YOU OUGHT TO GO SEE THAT REALLY GREAT MOVIE I RECOMMENDED, EXCEPT I CAN'T REMEMBER THE NAME OF IT. . . WHAT EVER HAPPENED TO THAT WINDBAG THAT RAN THE LOCAL NET? DID HE GET A JOB ON TALK RADIO?. . . I CAN'T DECIDE IF I SHOULD GET MY XYL A NEW WASHING MACHINE OR A NEW LAWN MOWER FOR CHRISTMAS . . . SAYING 73 TO A GOOD LOOKING YL SHOULD BE UPPED TO 88S IN MY BOOK. . . I HAD TO SAY GOODBYE TO THE CHEVY CHASE SHOW AND NOW I'M TORN BETWEEN SAYING SO LONG TO EITHER THE JAY LENO TONIGHT SHOW OR ALL-STAR WRESTLING EVERY NIGHT. . .

My address for mail is 1514 South 12th St., Fargo, ND 58103, and on packet it is WØLHS@WØLHS.#SEND.ND.USA.NA. 73 de Bill Snyder, WØLHS. DIT DIT. WR

The Youth Forum

Sammy Garrett, AAØCR
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By the time you read this article, the 1993/94 contest season will be well under way. In fact, one of the largest and most popular operating events of the year is just a few weeks away. That event is the ARRL International DX Contest. Last year I had the honor of operating the phone portion this contest from K4VX/Ø — Lew and Terry (NSØZ) Gordon's superstation near Hannibal, Missouri. After a long weekend that included a lot of talking and not much sleep, I had achieved the highest high-power score in the state of Missouri and the Midwest division. I had also won the under 18 plaque for the United States. So, for all you young hams out there who are addicted to contesting, or maybe are just a little bit curious about it, here's my 1993 ARRL DX Contest phone diary.

Actually, this article is more a combination of thoughts and observations about the contest. Hopefully after reading it you will find a few tips which might help you in your own contesting efforts. And for those of you who like to complain about how contests clutter up the bands and do nothing but cause trouble, perhaps you will be able to see what makes this aspect of the hobby so much fun for me and others.

Amateurs of all ages.

I think my biggest attribute in winning the under 18 plaque in this contest is all the help and support I have received from the contest community (especially Lew Gordon, K4VX, my contest mentor.) Just as it is helpful to have an elmer who helps you get on the air, having a contest mentor can help a young contester learn the "tricks of the trade."

If you are fortunate enough to operate at a large multi-multi station, then you have an even greater number of experienced operators who will most likely be glad to help and guide you in any way they can. (Multi-multi stations are usually large stations which are equipped for operations on several bands at the same time. So this particular category is referred to as multiple operator and multiple transmitter or multi-multi.)

Another aspect which is very important is experience. This is something which can't be taught or given. However, this is where your elmers can really come in handy.

Along these same lines is the issue of patience. In my opinion, this is perhaps one of the most important skills a good operator can have. I call patience a skill because it affects nearly the entire operation. Without patience and a level head you cannot make rational decisions or plan an effective strategy. You must realize that there will always be people who want to know what the weather's like in the middle of a European run. Trying to change them will just waste valuable time. (A "run" is an extended period of contacts in a relatively short period of time.)

Speaking of time, time is your biggest enemy during a contest. If you are serious about competing, you must use your time efficiently. For example, one of my main problems during the DX Contest was my waste of time CQing. Since I enjoy running stations more than I enjoy tuning for them, I CQed more than I should have. The urge to sit on one frequency and let stations come to me is especially strong late in the contest when I am tired. By doing this I missed some valuable multipliers. (Multipliers, in this case, are separate countries which increase your score.) Knowing how to use your time during a contest is very important. Only experience and your instincts can help you decide.

One of the most important factors is saving (or losing) time is efficiency — especially in the exchange (your report to the other station). During the DX Contest I tried to make each contact as smooth as possible. I must admit, this was easier said than done. I tried to speak quickly but clearly. Pronunciation and enunciation are very important — especially during a contest when there is a lot of QRM and QRN. Remember, it's okay to slow down if you need to. It's better to take time and get the correct exchange than to make a mistake which could result in a deduction of points or even disqualification.

Another key item which increased my rate was the way I spoke. By this I mean I cut out all unnecessary words ("um's" and "ah's" in particular.) Also, as Lew Gordon, K4VX would say, "Don't repeat the other station's report; he knows what he said!" This is very true. I found that it wasted time and sometimes made me forget more important things, like finishing a log entry!

Listening carefully also helped me increase my rate of 800 contacts. Contests are typically very hectic. Good listening techniques, filters, and patience are a must. For starters, use headphones. Headphones help block out outside noise and make the incoming signals easier to understand. Also, use your noise blanker or notch filter to get rid of unwanted interference. If you have an older radio without these features, rely on more precise tuning or an attenuator, if you have one.

Sleep and the lack of it also plays a big part in the way I plan my contest strategy. Truthfully, I haven't really learned how to manage my sleeping patterns during contests, yet. I usually reach a point in the middle of the second day of the contest when I feel like I have to sleep. This is usually the slowest time during the contest, with the exception of late on Sunday. I am usually tempted to sleep around 1900 UTC (especially if I am operating alone and without other operators to keep me company) because the morning run to Europe is just about over and things are getting pretty slow, except for a few Africans and South Americans here and there.

If you feel like you can't go on, then it's probably time to sleep. If you're competing seriously, though, it might be a good idea to sleep for a few minutes or an hour several times during the weekend rather than getting all your rest during one period of several hours. Be sure to check the rules of your particular event and category to determine how much time you must take off (if any) and try to plan when it might be a good time to nap.

By now, you might be thinking that if all this work is required to be involved in contesting, then you aren't cut out for it. Not necessarily. First of all, most people who participate in these events don't set out to win or even to place in the top ten. They simply operate because they enjoy making a few contacts and having a good time. And there certainly isn't anything wrong with that attitude. In fact, if it weren't for all the casual operators, we die-hards probably wouldn't make very many contacts.

On the other hand, if you do want to be a serious contester, don't think that those of us who are fortunate enough to have access to large stations are just lucky or that no one without such a

station can be competitive. After all, it's not like K4VX is in my back yard. In fact, on a contest weekend I have to drive more than a hundred miles one way to get there and some operators come from as far as 500 miles away. So, a lot of effort is required before the contest even begins just in travel and planning. Also, I contested for a few years before I was ever invited to K4VX. Almost everyone has to start out with a hundred watt transmitter and a vertical before they can move up to 200 foot towers and 1500 watt amplifiers.

I realize that there is a lot I haven't covered in this article. Hopefully, I can be more in-depth in future editions of the Youth Forum. However, I hope that you now have a better understanding of contesting and that my experiences will save you some headaches and frustration. So now that you know what contesting's all about, why not give it a try? These events are held throughout the year and give Amateurs a great opportunity to pick up new countries, states or zones and get to know each other better. Try attending some of your local contest club meetings or write to some of the contesters in your area. (You never know, you might get an invitation to operate at an outstanding station with superb operators — it worked for me.)

Also, be sure to check the Contests column in ***Worldradio*** each month for more details about upcoming events. Good luck and I'll see YOU in the pile-ups! WR

County Hunter

Ace Jansen, N3AHA

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I can't believe it's that time again, already! It happens every time. I finish an article (late), send it to ***Worldradio*** and the next deadline slaps me in the face when I least expect it.

How does this happen? I know when the deadline is — it's the same every month. I guess it's the concept of deadlines that gets me. ***Worldradio*** intends the deadline to mean my article is in their hands; written, edited, finis! I intend or pretend the deadline means it's time to start writing. So, here I am again; writing the day it's due.

I keep telling myself I have two months to write an article — I can make a deadline. But I haven't. Why I haven't is a question I should answer.

Which brings to my topic this month, WHY? Not why I don't make deadlines. Not why you should hunt counties — done that! Nope, I want to explore why mobile operators drive around the country making radio contacts from US counties.

Why mobiles mobile?

Probably more reasons than you imagine. Mobile operators operate regularly on the County Hunter's nets (SSB Net, 14.336 MHZ and CW Net, 14.0566 MHz) making radio contacts from counties around the United States.

They selflessly drive many miles — putting wear and tear on themselves and their vehicles — to bring a rare county to a stay-at-home amateur. Is this an act of kindness and generosity? Usually, it is, but it's combined with other motives; some deeper than meet the eye.

A few years ago, after running counties all day, I reflected on why? I enjoyed being a mobile operator and discovered I liked to run counties to help others achieve their goals. But the more I thought about it, the more I realized I did it for myself; I liked being in the spotlight, in demand, like a DX station in a pileup. I liked being in control, running the pile-up a quickly as I could. This improved my operating skills as I bounced from SSB to CW and band to band, all while driving. So, was I running counties for me or for my fellow amateur? Yes!

It's interesting to note that most people who give money to charities, volunteer at community events, or even give blood, are only semi-altruistic. Typically people give because it makes them feel good. Selfish motives are a common trait for humans as we ask ourselves, "What's in it for me?" Have you ever given money to a charitable organization researching a cure to some disease that you feared catching before a cure was found? I admit I have, yet I felt good that I was helping others.

The psychology of why we do what we do is very interesting and certainly, answering why someone would drive miles endlessly through county after county deserves study.

It would be simple to state amateurs hunt counties to achieve, and amateurs provide counties to assist others to achieve. However, this is only the first layer of the onion. I believe as we peel this onion we'll find those selfish motives of "why mobiles mobile?"

Assistance and achievement are the simplest levels of explanation. The next level is recognition from others, consisting of acknowledgment, acceptance, attention, and appreciation.

The deepest level, though, is our self and although this may differ from mobile to mobile, we're all interested in ourselves first and what will give us satisfaction.

Assistance

The purpose of the Mobile Emergency and County Hunters Net is to provide assistance to mobiles when they discover highway emergencies.

Mobile stations provide assistance to fixed stations by running counties they need to finish a county award. Some mobiles travel great distances to provide a much needed county such as a last county for a state or the entire U.S. Some mobiles — when they run their county — ask for other mobiles and DX to call first. But appears they're trying to assist the weaker-signal mobile or the DX station with little propagation. Maybe they're just trying to contact a county they need for USA-CA, i.e. their own achievement.

Achievement

The Mobile Amateur Radio Awards Club (MARAC) offers several awards; for mobile achievement, i.e. for making radio contacts from multiple counties or states. I believe every county hunter dreams of making radio contact from every county. Certainly Ken, KB7QO and Gene, W1TEE achieved a tremendous accomplishment when they made radio contacts from all 3,076 counties.

Achievement can be more than just the number of counties run, it may be the number of contacts made. Actually, whatever goal the mobile sets motivates them to achieve and keep running counties.

The last county award given to the mobile by someone who worked the mobile in their last county for a state — also motivates the mobile to run counties and achieve even more last county awards. The last county honor roll, for receiving 100 or more last county awards, is a level of achievement honoring the mobile who assists others. This further drives the mobile (pun intended) to climb the ladder, running more off-interstate counties.

Recognition

Recognition is something we all need, whether it's at work, home, or hobby. "He is recognized as a leader in his field." "She graduated #1 in her class of 1,000."

I believe recognition is a motivator to the mobile operator, too. More specifically, mobile operators are motivated by acknowledgment, acceptance, attention, and appreciation.

Acknowledgment

Mobile operators are continuously acknowledged every time they change counties — by net control and the station the mobile contacts.

The number of contacts depends on how many county hunters need that county for a specific award, and in a sense, they value the county more than the mobile. But, county hunters thank the mobile for driving into the county and therefore acknowledge the mobile's value too.

Receiving votes for the Best Mobile of the quarter or year also acknowledges the mobile's value. Usually the results of those votes acknowledge how many counties the mobile ran over the time period, not necessarily the mobile with the best operating skills.

Acceptance

Being accepted as a member of a group is important to most people, whether it's a civic organization, hobby or church. If you have an unusual habit, there's solace in knowing there are other people that share your habit.

Oops! I wasn't saying county hunting or mobile operating is unusual.

Mobile operators are accepted as the "desired," the stations in demand and, as such, there's a special bond between all mobile operators. They've operating under the same conditions, they know what it's like to stop on a county line, to make multiple contacts, to use a tape recorder, etc.

The mobile operators are an elite, sought-after group and proudly say their call followed by "mobile."

Attention

As children, we learned to get attention by saying "Mommy" 5,367 times until we got an answer. Mobile operators get plenty of attention each time they enter a new county.

One way for a mobile to get lots of attention is to be in the 2nd judicial district in Alaska or Kalawao county, Hawaii. That mobile operator will be pounced on very quickly.

The more attention a mobile gets the more likely they will want to run more counties.

Some mobile operators sponsor their own awards and this certainly gives them more attention. Tim, N9DEH, who sponsored his own Big Rig award, made more "green stamp" county contacts than any other mobile, because amateurs were attentively pursuing Tim's award and consequently, Tim.

Appreciation

There are no sweeter words than a simple, "thank you!" Thanking a mobile for their efforts makes them realize they've made a significant impact to the county hunt. When you thank a mobile you're showing approval for their contributions.

The mobile will continue to run counties if others appreciate their efforts. One sure way to show appreciation is to send one of MARAC's last county awards. The last county awards are collected like counties themselves.

Although this is a means of showing appreciation from the gaining-county amateur, the last county award often motivates the mobile operators to accomplish more.

Whatever the reason, appreciation or accomplishment, last county awards offer incentive to mobile operators to continue doing what they do best.

Self

What motivates ourselves? Ask yourself. You'll probably come up with some things. Some reasons, though, are in our sub-conscious or even un-conscious minds. Let's delve a little. Mobile operators like to be in control.

Put another way (with pun intended), they want to be in the driver's seat. The mobile operator feels important, in-demand, wanted, and desired.

Andy Warhol said we'll all be famous for 10-15 minutes and mobile operators have plenty of 10-15 minute opportunities, fading in and out of favor.

I believe the more counties a mobile puts out on the net and the more recognition (acknowledgment, acceptance, attention, and appreciation) they receive from others, mobile operators become somewhat self-interested. Their desires become more important than the needs of the county hunters they're trying to assist.

Many DXers dislike DX nets because they consider net controls to be egomaniacs. Although I'm not saying mobile operators are egomaniacs, mobile operators do exhibit some self-centered characteristics.

Let's face it; people are pretty much all alike and are interested in their own satisfaction.

In rare cases, I've heard mobile operators become arrogant expecting some sort of preferential treatment because of all they've done for the net. I've also heard mobile who will not take relays. That, of course, is their choice, but it limits the number of county hunters they might otherwise assist.

If a mobile imposes a limitation on the amateur trying to contact them, they are self-serving and not considering others' needs. Listen to what mobiles say and how they act on the net, and ask yourself, "who are they running the county for?"

Summary

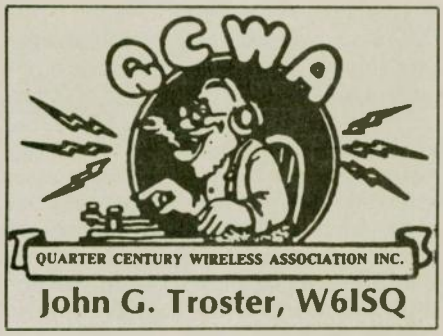
This may seem a little harsh and ruffle a few feathers. My point is not to put a damper of county hunting or mobile operating, rather to ask you to stop and think why do mobiles run counties.

Yes, we run counties to assist and to accomplish. Yes, we enjoy being recognized by our peers for our efforts. Yes, we do wonder "what's in it for me?" and have some personal, self-serving interests.

I believe a successful mobile operator is one who's aware of all of these motivating factors and maintains a careful balance between them.

In March, I'll tell you how to effectively operate as a mobile operator; running counties on the County Hunter's nets. Until then, happy hunting!

WR



John G. Troster, W6ISQ

I'll lay it out for you from the beginning. The QCWA annual Convention of 29-31 October in St. Petersburg-Clearwater, Florida was great, with well over 200 attending the final banquet. It was sponsored and hosted by Pelican Chapter #128 and Gator Chapter #32, with co-chairpersons J. Fred Strom, K9BSL and Blanche Randles, W4GXZ, earning full kudos for skillful coordination of outstanding events. They were supported by a battery of committees which organized and manned the activities, ranging from putting the QCWA station, W2MM, on the air from the hotel, to a chocolate tasting.

Board meeting

Board members gathered Wednesday night and went into solemn session all day Thursday and half of Friday. As previously described in this column, chairperson Harry Dannals, W2HD, again held an excruciatingly tight rein, allowing only a minimum of frivolity. Several items on the agenda will be of interest to ***Worldradio*** readers who aren't QCWA members, and we'll get to them in future columns. Joe Lynch, N6JL, was introduced as the new editor of the *QCWA Journal*. You may recognize his name and call from the VHF column he writes for *CQ* magazine. Joe discussed ideas and plans for expanding the format of the *Journal*.

Programs

The QCWA Forum conducted by president Dannals, covered QCWA ongoing programs such as the scholarship fund, memberships, publicity and the audio cassette program. Those not attending went out to cruise the Intercoastal waterways. After lunch Walt Maxwell, W2DU, delivered a paper on antenna systems, discussing various antennas and transmission lines. The first diagram Walt drew on the board was a real old fashioned tank circuit, loop coupled to a real zepp antenna, just like moderately old times. Fun to see it.

Bruce Kelly, W2ICE, was scheduled to give us a verbal guided tour of his AWA Museum but was ill and his film, "Treasures of the AWA Museum" was shown instead. Hope you're up and dusting off your old radios by now, Bruce. The film was followed by a slide show talk on collecting older transistor radios by Norm Smith. Norm's an antique radio collector and AWA rep in Florida. He owns about 1800 transistor radios and 200 tube type radios! I was amazed to find out there were so many of these radios and that they were collectable. Those of us at Norm's slide show forwent a wild game of Bingo in the same time slot, but we did hear quite a few triumphal shouts of "Bingo!"

Also offered in the afternoon's array of programs, was a talk about training dogs for the visually impaired, with the parading of a retired graduate of the course. Question: what breed is most used in the training program?

Then, a chocolate tasting session was presented by Corrine Bridge, YF of W2ZYQ. I whipped out my certified chocoholic certificate and dutifully stayed to the last morsel — er, moment. Corrine outlined the history of chocolate and explained how chocolate and cocoa butter are made. She also revealed how to make chocolate covered potato chips! Who "discovered" chocolate as we know it today? So go to the next convention and learn things.

On Friday evening a large contingent went to a dinner theater next door to the hotel for a buffet supper and performance of the musical "Nunsense." Others stayed in the hotel and listened to a lecture on sea shell collecting, one of the popular sports in the St. Pete area.

Saturday, my YF Marguerite, KC6NFE, and I took the tour of St. Pete conducted by Lauri Gramm, YF of program chairman Chuck, KB4ZB. We visited the Salvadore Dali Museum and left with an awed appreciation for the man and his work. We also stopped at the local historical society museum and had lunch nearby on the St. Pete pier. In the afternoon there was a home interior and gift show, lectures on satellites by AMSAT North America director of enginering Dick Jannson, WD4FAB, and an AMSAT video by AMSAT president Bill Tynan, W3XO. This was followed by Veep McCoy, W1ICP, speaking on antenna products and lots of other stuff you always wanted to know but didn't know enough to ask. Meanwhile, wine tasting in the next room.

Thanks to the new equality, I was able to attend the QCWW meeting. Not only that, but I was initiated as a life member. That's right, folks, QCWW, the women's QCWA, recorded as Chapter #120 of QCWA. Jerrie Stonier, K6INK, got my attention when she told me there were many men among the 120 members nation-wide. Sure enough, from my seat in the last row, I spotted W5KL and W4COW in the audience. All of you are invited to sign up now. Support the ladies in Chapter #120 with a $5 per year membership. You'll get the newsletter and be eligible to attend the annual meeting of the gals at QCWA conventions.

The Saturday night banquet is always the big event of a convention and ours was outstanding. Emcee Fred Strom, K9BSL, and the committee planned a program honoring a number of our members who have served QCWA for many years in outstanding efforts. Four of the QCWA founding fathers were invited to the convention to be honored with special recognition. Clarence Seid, W2KW; Bill Kennedy, W2AS; Nat Burnett, K4OL and Bob Baird, N9NN.

A special award was given to Art

Miligan W8KW, retiring Board Member of many years standing. Speaker Walt Maxwell, W2DU, was honored with his 60 year certificate and pin. Special QCWA service awards also went to Katachi Nose, KH6IJ; Carol Perry, WB2MGP; Bill Tynan, W3XO, Frank Gunther, W2ALS; and Al Kahn, K4FW. Chapter awards went to Blanche Randles, W4GXZ, and FOCer Bob Baird, W9NN.

Dr. Kenneth Perkins, astronomy professor and planetarium chief at the local university, was speaker of the evening. He sat at our table during dinner. When he found out I was from California he asked me if I knew what the acronym for the state's abbreviation, CALIF stood for. I bit; "No, what is it?" He answered, "Come And Live In Florida!" Using a ball from almost every sport, and chatting informally and very humorously all the while, he constructed a model of the solar system none of us there will soon forget. Did you realize that if a basketball represents the sun, the earth would be the size of the head of a pin?

More prizes were given out at this convention than any I've ever attended. About an hour and a half's worth! Marguerite won the first prize to be given out, a half bushel of oranges and a grapefruit. You bet we took 'em home to Calif. Toward the end, I won a prize too, but the ticket belonged to program chairman Chuck Gramm, KB4ZB, who had to depart early and handed it to me as he was leaving. Turned out to be $138 cash which Leo Meyerson, WØGFQ, donated to the drawing when he had to cancel. I spoke with Chuck later and we agreed to jointly donate $50 of the money to the QCWA Scholarship Fund, and that he would use the rest to help cover some of the personal expenses he incurred in serving the convention.

Four of the seven remaining founders honored by QCWA: (Left to right) Clarence Seid, W2KW; Bill Kennedy, W2AS; Nat Burnett, K4OL; Bob Baird, N9NN. — *Photo by W7LVN.*

Robert Carroll, K5IE, General Chairman of the Convention next October in El Paso, spoke about the great things we have to look forward to next year: an especially interesting program, tours of nearby national historical sites, a shopping spree across the Rio Grande into Juarez. Not to be missed, pardner!

Next month's special

During the convention I was able to squeeze through the autograph-seeking crowd surrounding Lew McCoy to make the ultimate request. Would he divulge for his QCWA constituents the secret recipe for his world-famous "McCoy's tears-on-cheek, Southwestern chili?" His answer: "For QCWA only, yes." So, get ready for next month's how to prepare McCoy's red hot stuff. AND, I'm going to give out the recipe for chocolate dipped potato chips. A gastronomical treat, right? Red hot chili and chocolate potato chips. Tell your friends.

Christmas and New Year's greetings to all. Hope Santa sets out that new beam and final you've been wishing for.

73 and 25, Jack, W6ISQ. WR

Search And Rescue Communications

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

Transparent.

During an emergency, communications must be transparent. It's a "gotta do" rule. This rule also applies to all other elements of the emergency response effort too — we're not being singled out.

Think about it. Let's compare it to your furnace or air conditioner. Your family is happy and you're content when the house is warmed or cooled and everything works well. You do have to change filters, clean ducts and check the system once in a while, but when it works TRANSPARENTLY it's good.

The search commander wants to throw that magic switch and have overhead staff, communications, search teams, rescue teams and all other participants respond, do their job and go home. He/she does not want problems. Problems really mess up the operation. When your furnace quits, you begin to have a bad day. It gets worse depending on what needs fixing.

About a century or so (give or take a few decades) communications was not a given. Newspaper reports of searches in the early 1920s show hordes of people going out in the morning and then coming back in the evening. There was no way to know what was happening in between the going and coming. Today we need to MANAGE the search a little bit. Resources are diverted, assignments are modified, clues are reported, problems are solved and victims are rescued.

Communications, to many emergency professionals, is simply pushing a switch, or dialing a phone number. When the governor wants to talk to his National Guard commander, a phone call is made. During our earthquake exercise some months ago, most of the "chiefs" had cell phones. As communicators, we must consider how "communications" is viewed.

Must be simple

The emergency manager just wants it to work. She/he does not care how or with what technology. The other consideration is that it must be simple — i.e. transparent. The highest compliment you can get is to be transparent to your agency. They give you messages, you deliver.

As your group prepares its communications system, remember that the agency does not want to know whether or not the repeater works, how it works, whether you're using paper cups and waxed string, or what brand of radio you use. Most damaging is for your agency folks to witness infighting, confusion and unprofessional conduct. Problems do not make you transparent!

My message is a continual one for training, preparation and being ready to respond. Your equipment must be ready to go but equally important your operators must understand how the system works so they'll be transparent. Remember that you cannot belittle what they have in use — you are there to augment their system capacity. If what they have (cell phones, public safety system, or even CB radios) works and handles the load, they simply don't need you! Develop your program and work with agencies where you can make a difference and can become transparent. You'll be of more value than to an agency that isn't sure why you exist.

Training ideas

If you can, pick up a copy of the Boy Scouts of America publication Leadership Training (1991 printing). This is a wealth of training information and is a good guide for setting up a training program.

You have to get beyond the "Boy Scout" content and apply the principles to your own group. This pamphlet takes you through establishing a training plan, determining priorities, planning, record keeping, etc. There are ideas for promoting training and recognizing those who have accomplished your program.

Pay close attention to the "work schedule for group training" and the "leadership training profile" sections. If you're just getting started, read carefully the pages that cover "methods and levels of training."

NASAR Standards

A couple of readers didn't believe me some months ago when I said SAR standards would soon be in place. Oh, ye of little faith.

Write or call the National Association for Search and Rescue and order a copy of the SAR standards for basic SAR personnel. You can reach NASAR at PO Box 3709, Fairfax, VA 22038 or by phone at (703) 352-1349. The last two issues of RESPONSE (the NASAR quarterly publication) have articles about these standards — and yes, many areas are adopting these standards.

Don't be surprised as you respond to an event, someone at the staging area asks to see your SAR Tech certification.

In a nutshell, the certification is for SAR Tech I, SAR Tech II or SAR Tech III. The latter is for basic knowledge and skills, the second includes field performance competence and Tech I is for people with advanced knowledge and field performance.

The NASAR program was modeled after the Virginia State SAR training program which is in use there now. Certification by NASAR includes a written test and several field exercises (for type II and I).

One audience for the SAR Tech III are communicators. The idea is to give you an overview of what happens so you're "transparent" to the search effort and can function effectively as a communicator during a mission.

The test will cover areas such as how SAR works and how SAR management works. You'll need to know about basic survival, clothing, personal equipment, land navigation, search tactics, lost person behavior, communications and legal aspects.

Sunrise and sunset

I found an astronomy program that generates a chart showing sunrise, sunset, moonrise and moonset for each day. These times are pretty important if you're planning an emergency operation.

You could call the local TV or weather station and ask, but you can just as easily generate your own for an entire year and put them in your resource manual. Often we get locked into eight-hour shifts when a more logical shift would be determined by light and dark.

Emergency operations don't quit at dark, they change and different equipment is needed. If you have some idea when it's going to get light (or dark) you can gauge when the activity will change. You're better prepared when you anticipate these changes.

Search planners use this information to determine when to launch search crews. Having this in your communications materials is recommended. Take a look through your local computer bulletin board. I'll bet you can find a program in the astronomy section. Generate the charts in advance and distribute them!

First aid kit

Gregory Exline, KD6YRB, sent me some good information about first aid kits. He discovered his kit was about 16 years out of date. After reading his suggestion list, and looking through my kits, I decided some improvements were in order.

He makes some good points and has some great suggestions. As with materials I send to readers (or publish in the column) I caution you they are suggestions and not the ultimate solution.

While on the topic of first aid, there have been some that claim there is no need to be trained on the basics of life support. Considering that you claim to be an emergency responder (of sorts) I would argue that you have the responsibility to know first aid. If you want people to look at you as an emergency person, there are some basics that are expected. First aid is one of them!

(You expect a fire fighter to know first aid, don't you? It would be pretty silly to have a fire fighter respond to a car wreck and then say he is the nozzle specialist or the pumper control person.)

Hey folks, get some first aid training and quit your complaining! You're not expected to be an Emergency Medical Tech but you sure can complete some basic life support classes.

Some offerings

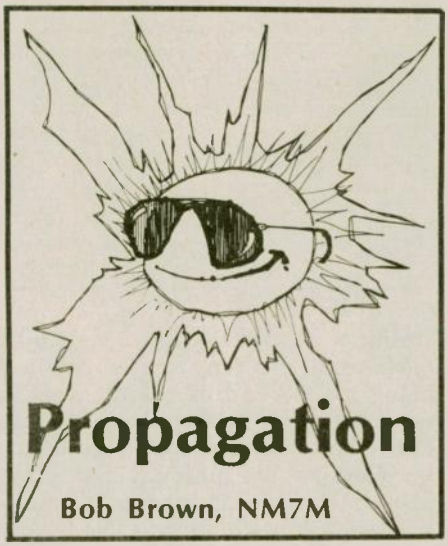
Many loyal readers know that from time-to-time I make offerings. You send stuff, you get stuff.

Several months ago I offered a large amount of material on ICS, net control

training, etc. These have just come back from the copy center and are being mailed as this column goes to print. Often I'll hold mailings because I get a better deal on copies by quantity. The first aid material mentioned above is included in the mailing along with some other materials I've collected over the past months.

If you have some neat stuff, share it! Send copies. Please let me know if it can be copied and distributed and DON'T steal stuff from other sources. Get permission! If you let me know who published something I'll be glad to call them and ask permission and then offer it as part of the next package.

I know you have some good stuff — so what are you waiting for? Send it! Until next month — Happy Holidays from Salt Lake City. WR



In our daily life there are all sorts of things we take for granted, not even talking about them very much. Here, I'm thinking about our use of optics, say with lenses, prisms or mirrors. That goes all the way from the eye glasses we wear, to the binoculars we use and the mirrors on the walls of our homes. So we accept, without comment or even recognition, the propagation of light waves by refraction and reflection, all vital to our well-being.

Most of us do the same thing when it comes to the ionosphere but it's my task to remind you of what's really going on. So today's sermon will be on focusing; here, I draw parallels where appropriate and contrasts where necessary, in dealing with how radio waves behave. So bear with me; you'll be in for a few surprises.

All the optical systems we use have some characteristic shape, surfaces which are plane, concave or convex and sometimes irregular. And where there's some curvature, you can find an axis of symmetry. Indeed, that axis is vital for us, defining the direction we look through our eyeglasses or the beam of a headlight. And if you think about it, you come to realize that we operate pretty much "on-axis", not straying more than a few degrees from the direction of symmetry lest we encounter distortions and the like.

So now we come to the ionosphere. Do we operate "on-axis" with our radio signals? Most decidedly not! The ionosphere has something of a spherical symmetry, the curvature of a given region depending on its illumination, and the local axis of symmetry is vertically upward. As you know, that axis is used only in ionospheric sounding. Our use is "off-axis", in the extreme, so let's look at that for a bit.

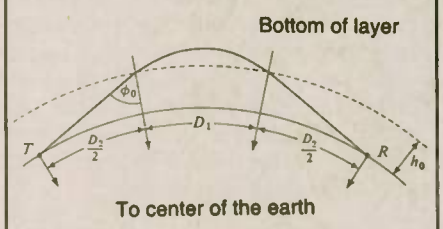
In the case of light, we have sources or objects and the idea is to use lenses or mirrors to form images by refraction or reflection. As long as we stay close to the axis of symmetry, fairly sharp images result. But working off axis results in distortions, so-called spherical aberration, and those can be understood by using the laws of refraction or reflection. But what about the ionosphere?

As we use it, there's no way the ionosphere can be considered a dielectric lens or a metallic mirror. It's almost as though we've chosen the worst of worlds to operate in — a semi-transparent dielectric mirror with near-spherical symmetry. To make matters worse, we operate primarily "off-axis" and from atop an earth which has a rough, varied surface, both geographically and electrically. No wonder HF propagation is a tough business! Given those ideas, it's a miracle it works at all!

But there is some order in all that chaos and like geometrical optics, it becomes apparent when we define a problem sufficiently and apply the laws of physics. And I did that earlier when I went through the exercise of propagation by a model ionosphere. Remember that? In essence, I re-created a classic calculation, using Snell's Law from optics, to find how the ground range of RF varied with radiation angle. That calculation was done back in the 30s and shows how a skip zone results, a region beyond a transmitter where signals are not heard.

The ionosphere I used in those calculations was one appropriate for nighttime conditions, no E- or F1-regions and the bottom of the F2-region starting a couple hundred kilometers up from the earth's surface. And I used something of a parabolic shape to represent the electron density distribution with altitude. Look at Figure 1 to refresh yourself on the geometry of the situation.

Figure 1



Segments of the total ground range for a curved Earth and curved ionosphere

With only an F2-region to worry about, you can understand that RF waves get sort of a free ride between the ground and the bottom of the F2-region. That "free ride" means that they cover distance by going in a straight-line and without undergoing any ionospheric refraction. And that happens again after the wave leaves the ionosphere, the total distance adding up to D2. In the ionosphere itself, the wave direction continually changes, being bent back toward the ground, until it exits the electron distribution; the ground distance covered as a result of refraction is D1. D1 and D2 are added to get the horizontal range.

Now while you may understand that, there are still a few questions to be examined: 1) how much of the range results from wave refraction within the ionospheric region, 2) how much range from the geometry, i.e., the wave going to and from the refraction region and 3) the sum of those distances. So let's look at the results of those calculations by looking at Figure 2. In this instance, there's more than one curve and to tell the story, we have to "put some words to the music", interpreting the results shown there.

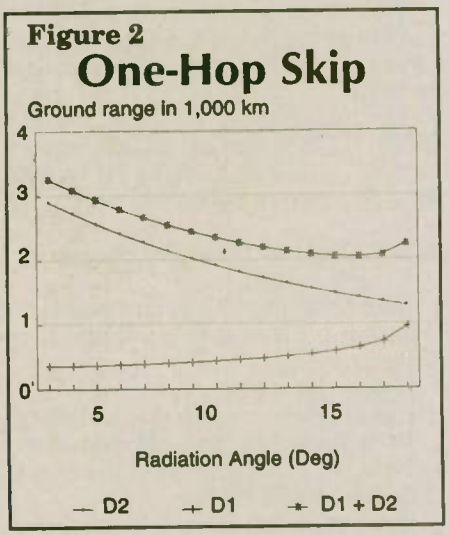
First, we see that the part of the ground range due to wave travel below

the ionosphere decreases steadily, just because of the geometry, as the radiation angle is increased. Next, we see that the part of the ground range due to refraction within the ionosphere increases slowly as the radiation angle is increased. Finally, we see when the RF penetrates deeply into the ionosphere at high radiation angles, the gain in range within the ionosphere finally exceeds the loss in range outside. Thus, the ground range increases again and there's a minimum range, the skip distance.

From those features, one can understand how the skip distance actually results although it might defy one's intuition. Putting it in simple terms, ionospheric refraction by itself would not give rise to a skip distance. It's the absence of any significant refraction at lower heights that carries that day; in a word, it's the effect of "geometry" when added to ionospheric refraction.

But now let's go on and take a different look at the results. Here, I am talking about how the focusing of signals occurs. Did you ever think about that possibility for radio waves? Maybe so; RF waves are really not very different from light waves and we all know about the sort of focusing and magnification that's possible with lens-

Figure 2



es and mirrors. And the ionosphere is concave, just like some of the mirrors we use.

But after seeing that ionospheric refraction alone is not enough to give rise to a skip distance, you might wonder if and how any ionospheric focusing occurs. As for the question of "if," that's simple; yes, focusing does occur. To see that, all you have to do is look at the upper curve in Figure 2. That curve was derived without any reference to an antenna pattern so if one invokes the mythical "isotropic radiator", one could work out the "ground illumination" by RF waves which results.

Just by looking at Figure 2, it's pretty clear that focusing does take place. If nothing else, the radiation between 5 and 6 degrees elevation is spread over 143 kilometers while that between 15 and 16 covers 10 kilometers on the ground. But that was a one-dimensional calculation and one can't simply say the RF illumination, so many watts per unit area, near the skip distance was 14.3 times greater. For that kind of statement, the azimuthal extent of the radiation must be included as well, using equal amounts of power coming from the source at the two radiation angles and then making the comparison.

It takes a bit of trigonometry to work out the details so I'll spare you that exercise and just give the result, another factor of about 1.4 or an overall increase of 20 times (13 dB). That illustrates the idea of "skip focusing", at least for those specific circumstances. A more general treatment of the question of skip focusing as well as its limitations can be found in Davies' book, "Ionospheric Radio" published in 1990 by the I.E.E. in the UK.

Two interesting aspects show up when this matter is looked at more closely. Earlier, it was pointed out that both low- and high-angle waves could reach a location beyond the skip distance. In that connection, there is the possibility of constructive and destructive interference of the two waves. The other interesting feature pointed out earlier is that at the skip distance the low- and high-angle waves coalesce to become one and the same. This may be seen by drawing a horizontal line on the distance-angle plot and noting how the two intersections finally coincide at the skip distance for that operating frequency.

Beyond that, for a given critical frequency of the F-region, the skip-distance increases with increasing RF frequency, say going from 10 MHz to 14 MHz. Thus, the skip distance involves the maximum usable frequency (MUF) for that path as any increase in the RF frequency would place the receiving site in the skip zone.

And the inverse is true as well, the receiving site for a one-hop signal moving out of the skip zone as the MUF is increased. An excellent example of that is shown on p. 213 of Davies' book, the rapid rise in amplitude of WWV signals with the increase in MUF at sunrise on a 1540 km path. And not only the MUF effect is seen but oscillations or beating in signal strength from the interference between low- and high-angle rays. Marvelous!

In conclusion, while the ideas discussed here were illustrated for the simple case of a one-hop path, they do have application to more complex situations. In that regard, I have to go back to the beginning where I made some disparaging remarks about propagation, something like "It's a miracle it works at all!" That was the "purist" in me, not the Amateur Radio operator, making that remark.

Now I have to say that being a "purist" is not all bad. In my defense, I would remind you that such a set of attitudes is needed to get to the heart of problems, seeing them in terms of the principles which are involved. Thus, if one can take a situation which seems almost chaotic and analyze it in terms of a number of basic principles operating at the same time, that's some progress in understanding what's involved.

On that basis, the "purist" in me would describe the classic Windom antenna as a "catenary-like random wire with a asymmetrical capacitive hat". And the amateur operator in me would remark that's a sure way to have one's shack awash in RF. See what I mean? Two sides of the same matter, one in terms of principles and the other practical. There's something to be said for both approaches. WR

1940 Wetherly St.
Riverside, CA 92506

QRP Organization Survey

Here are the findings of the first *Worldradio* QRP Organization Survey, a roundup of clubs, groups and societies to be published each January in the QRP column. Fourteen organizations answered the '93-'94 survey questionnaire.

Note that net times listed here are in UTC. Therefore, for radio amateurs in the Western Hemisphere a net at 0200Z Thursdays, for example, is actually taking place on Wednesday evenings.

Oklahoma QRP Group

Founded: 1988

Membership: Approximately 40, open to all radio amateurs, no membership numbers assigned

Cost to join: Free

Annual dues for current members: None

Periodicals: "Oklahoma QRP," published quarterly

Nets: Oklahoma QRP Net, Sundays at 1430Z on 7.060 MHz

Club-sponsored activities: Field Day

For information: Don Kelly, KA5UOS, 703 W. 8th St., Edmond, OK 73034

Michigan QRP Club

Founded: 1978

Membership: More than 1,200, open to all radio amateurs, membership numbers assigned

Cost to join: $7 U.S., $12 DX

Annual dues for current members: $5 U.S., $10 DX

Periodicals: "The Five Watter," published quarterly

Nets: MI-QRP Net at 0200Z Wednesdays on 3.535 MHz

Club-sponsored activities: Michigan QRP Club CW Contest, held each January

For information: Michigan QRP Club, 654 Georgia, Marysville, MI 48040

MFJ 90's Radio Club

Founded: 1993

Membership: 20, open to all radio amateurs with an interest in operation and modification of the MFJ series of QRP transceivers and accessories, membership numbers assigned

Cost to join: Free

Annual dues for current members: None. Members must contribute an item to the newsletter at least once every six months

Periodicals: "The Nineties," published 6 to 10 times annually

Nets: Not yet established

Club-sponsored activities: Four contests and weekly nets being planned

For information: Joseph Falcone, AA8HV, 3000 Town Center, Suite 2370, Southfield, MI 48075

St. Louis QRP Society

Founded: 1987

Membership: 32, open to all radio amateurs in the St. Louis metropolitan area, or to radio amateurs who have established membership prior to leaving the area. No membership numbers assigned.

Cost to join: Free. Prospective members requested to attend one of the monthly meetings.

Annual dues for current members: $12

Periodicals: "The Peanut Whistle," published monthly

Nets: None

Club-sponsored activities: Monthly meetings held the third Wednesday at the Engineering Department of St. Louis Community College at Florissant Valley. Field Day and occasional 'portable outings.

For information: Keith Arns, KCØPP, 2832 Pembroke, Saint Charles, MO 63301

NorthWest QRP Club

Founded: 1992

Membership: 250, open to all radio amateurs, membership numbers assigned.

Cost to join: $10

Annual dues for current members: None

Periodicals: "The NWQ Newsletter," published bimonthly

Nets: NWQRP Net Tuesdays at 0400Z on 10.123 MHz; and Saturday at 1530Z on 7.035 MHz.

Club-sponsored activities: NWQRP Winter Sprint 15 January 1994, and NWQRP Spring 'CW Sprint in April

For information: Bill Todd, N7MFB, NW QRP Club, 4153 49th Ave. SW, Seattle, WA 98116

Cleveland QRP Amateur Radio Club

Founded: 1993

Membership: 4, open to all radio amateurs, no membership numbers assigned

Cost to join: Free

Annual dues for current members: None

Periodicals: Planned

Nets: None

Club-sponsored activities: Gatherings to promote QRP in the Cleveland area and to assist newcomers into QRP activity.

For information: Bruce A. Wright, N8MWL, P.O. Box 14052, 410 Superior Ave., Cleveland, #OH 44114-9998 (B.B.S. 216-646-0655)

QRP Club of New England

Founded: 1991

Membership: 206, open to all radio amateurs, membership numbers assigned

Cost to join: $10

Annual dues for current members: $7

Periodicals: "72," published quarterly

Nets: QRP-NE SSB Net Tuesdays at 0200Z on 3.855 MHz

Club-sponsored activities: Colorburst Sprint (CW), Thursdays during May and September on 3.579 MHZ

For information: Jack Frake, NG1G, P.O. Box 1153, Barnard, VT 05031

Maryland Milliwatt Club

Founded: 1992

Membership: 2, currently by invitation only, membership numbers assigned

Cost to join: Not established

Annual dues for current members: Not established, however club operations rely on member donations

Periodicals: None

Nets: None

Club-sponsored activities: Ongoing project creating the Maryland Milliwatt QRP Club "QRP Reference Library."

For information: Maryland Milliwatt Club, 3052 Fairland Rd., Silver Spring, MD 20904

G-QRP Club of Great Britain

Founded: 1974

Membership: 7,600, open to all radio amateurs, membership numbers assigned

Cost to join: $12

Annual dues for current members: $12

Periodicals: "SPRAT," published quarterly

Nets: None

Club-sponsored activities: QRP tests and activities organized by A.D. Taylor, G8PG. Extensive awards program including: Worked G-QRP Club Award, QRP Countries, Two-Way QRP, QRP Master, and CW Novice Award. Trophy program including the G2NJ, Partridge, YG4DQP, Chelmsley and Suffolk trophies. Annual club-sponsored contest is "Winter Sports" from 26 December to 1 January, inclusive.

For information: G-QRP Club, Rev. George Dobbs, G3RJV, St. Aidans Vicarage, 498 2Manchester Rd., Rochdale, Lancs, OL11 3HE, England

QRP Amateur Radio Club International

Founded: 1961

Membership: More than 8,000, open to all radio amateurs, membership numbers assigned

Cost to join: $12

Annual dues for current members: $10

Periodicals: "QRP Quarterly," published quarterly

Nets: TCN on 14.060 MHz at 2300Z Sundays; SEN on 7.030 MHz at 0100Z Wednesdays (QSY to 3.535 MHz at 0130Z if 40 meter conditions are poor); GSN on 3.560 MHz at 0200Z Thursdays; GLN on 3.560 MHz at 0200Z Thursdays; NEN on 7.040 MHz at 1300Z Saturdays; WSN-80 on 3.558 MHz at 0400Z Thursdays; WSN-40 on 7.040 MHz at 1700Z Saturdays.

Club-sponsored activities: QRP ARCI Operating Awards Program includes QRP-25, WAC-QRP, WAS-QRP, DXCC-QRP, 1,000 Mile-Per-Watt and QRP-Net (QNI-25) awards. Contests include the Spring QSO Party in April, Hoot Owl Sprint-CW in May, Summer Homebrew Sprint-CW in July, Summer Daze Sprint-SSB in August, Fall QSO Party-CW in October, and Holiday Spirits Sprint-CW in December. For information: Michael Bryce, WB8VGE, 2225 Mayflower NW, Massilon, OH 44647

Northeastern Illinois QRP Society

Founded: 1991

Membership: 85, open to all radio amateurs who attend at least one society meeting. Those attending at least two meetings are awarded life membership.

Cost to join: Free

Annual dues for current members: None

Periodicals: "NEIQS Newsletter" published quarterly and distributed free to anyone sending a SASE to the society. Society membership is not required to receive the newsletter.

Nets: NEIQS Net at 0200Z Wednesdays on 3.560 MHz

Club-sponsored activities: Field Day. Society gatherings on the first Thursday of each month at Bilias Restaurant, 417 South Lincoln Way, North Aurora, Illinois.

For information: Don Kozlovsky, KE9GG, 28 W 256 Purnell Rd., West Chicago, IL 60185

NorCal (Northern California) QRP Club

Founded: 1993

Membership: 140, open to all radio amateurs, membership numbers assigned

Cost to join: $5

Annual dues for current members: $5

Periodicals: "QRP," published quarterly

Nets: None

Club-sponsored activities: Meeting at California Burger at the Santa Rita exit of I-580 north of Livermore the first Sunday of each month after the Livermore Swapmeet. Awards program includes the Worked NorCal-40 Award and Homebrew QRP WAS award. Annual club building project.

For information: Jim Cates, WA6GER, 3241 Eastwood Rd., Sacramento, CA 95821

North Texas QRP

Club Founded: 1989

Membership: 35, open to all radio amateurs, no membership numbers assigned

Cost to join: Free

Annual dues for current members: None

Periodicals: "K5FO Newsletter," published six times a year

Nets: Members check-in to the Oklahoma QRP Net Sundays at 1430Z on 7.060 MHz

Club-sponsored activities: Field Day. Club members set up a table at HamCom in Arlington, Texas each June.

For information: Chuck Adams, K5FO, 830 Waite Dr., Copper Canyon, Texas 75067

Illinois QRP Group

Founded: 1992

Membership: 22, open to all radio amateurs, membership numbers assigned

Cost to join: Free

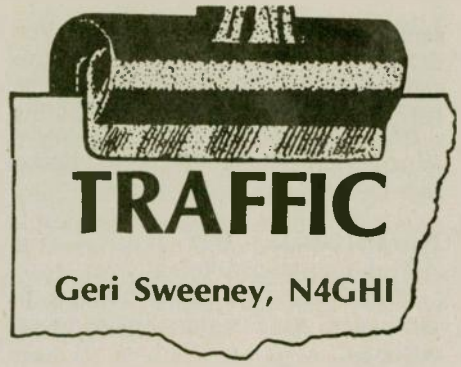
Annual dues for current members: None

Periodicals: None

Nets: None. However, members regularly check in to the NEIQS Net at 0200Z Wednesdays on 3.560 MHz

Club-sponsored activities: Quarterly breakfast held at various locations

For information: Vikki Welch, WV9K, 1307H N. Richmond Rd., McHenry, IL 60050-1461 WR



TRAFFIC

Geri Sweeney, N4GHI

Canadian traffic handlers

The last traffic column discussed a problem Canadian traffic handlers encountered as their two Amateur Radio organizations merged into one (RAC). Responding to this article, VE7MJY, Phil, wrote to voice his view. He thought that my facts were inaccurate, and that all is proceeding in order with the new organization. He felt that breaking away and forming RAC wasn't just trying to get out from under ARRL's thumb, but was necessary for the continuing health of the Canadian amateur community. I think it's good to have a discussion going and hope to hear from other Canadian traffic handlers.

And so, let the dialogue start. Phil had three points of disagreement with the article. 1) He says CRRL was formed more than 5 years ago rather than the 'about 3 years ago' mentioned. He feels that anyone who can be so inaccurate with time, may be suspected of other inconsistencies. 2) He thinks it inaccurate to say (as the article did) that 'both organizations became the RAC and all assets of CRRL were turned over to the new organization (RAC).' He wants it to read that 'assets of both CRRL and CARF were combined, in the birth of a new National organization (RAC). 3) His third point is that nothing is secret. All one need do is read 'The Canadian Amateur' to note that there will be elections next year.

I phoned an RAC official and received these facts: There are about 40,000 radio amateurs in Canada. About 8,500 belong to RAC. Dues are currently $28 per year and are expected to become $36 per year. If you want information from RAC Headquarters in Kingston, ON, you call and get a general manager. The general manager will give you the name of someone who can answer your question and you then call the person. That's because the staff, such as the Field Service Manager, have other full time jobs and don't live or work at headquarters. The 'Canadian Amateur' is the official publication and is printed nearby. Currently, most of what happens at headquarters is supervision of manuals which are sold to generate revenue for RAC. RAC actually began operations in 1993. Thus far the Board of Directors met in May and September of 1993. The Board of Directors was formed from members of the two merging organizations (CRRL and CARF). Minutes of the first meeting were published in 'Canadian Amateur', and state that the first elections will be held in 1994. Minutes of the September meeting have not yet been published as this article goes to press in early November.

Starting up a new organization must be difficult even with experienced people. Trying to run a department from home, as a part time job, must be horrendous. Evidently it was complicated enough that RAC and ARRL have reached an agreement in the past few days which permits ARRL to continue to support the NTS in Canada. Thus, any supplies can continued to be received as before. There will be problems, even with this agreement. Stationary, certificates, etc., will need to be designed with new logos; but, at least supplies will be available. This agreement gives RAC a breathing spell to work out how it will support its traffic handlers.

What conclusions can we draw? Perhaps that RAC has a short time to show it can perform. If it is to be functional, it must do more than sell things. It must support amateurs in all their activities.

International traffic via satellite

A message to Australia originates in New York. It proceeds via the New York net to the 2RN. From there it goes to the evening cycle of the EAN. Here the ARN representative collects all international traffic and takes it to the IATN (International Assistance and Traffic Net) the next morning at 1130Z on 14.303. Due to propagation, time, and language differences, most traffic, other than Caribbean traffic, is sent on via satellite. We thus pass our Australian message to AB4RB in Miami, FL. He uses Satgate (UO22). There are about 36 Satgates worldwide and cover all continents. Satgate is different from regular satellites in that a user has to be approved and given a special tracking box. Users have to follow Satgate's regulations and operating procedures. Message storage is so limited (4M memory and two uplink frequencies and a single downlink frequency), that bulletins, other than a few technical ones, are not allowed. Everyday the UO22 passes about 5 times, though each Satgate may only upload once a day. The average available time is from 2 minutes to 15 minutes. Thus, 9600B packet is used.

While it's all automatic, Jason, AB4RB, spends about 3 hours per weekend just checking his software and hardware. Each night Jason's auto timer will turn on all the Satgate equipment, including his computer. His software checks the computer's sub directory, where all the outgoing files reside, and automatically copies them to the Satgate's computer. It then compresses them and adds PacSat headers to them for uploading It now waits in the standby mode. Around 2:30 a.m., the trackbox automatically moves the antennas to find UO22 coming from the South about 2 degrees below the horizon.

"I log on (in a waiting line with others) and process any appropriate file" (generally about 7 per day). After UO22 is out of sight, the software automatically exits, unzips and processes all the downloaded file to readable messages to Jason's computer. His computer then sends them to appropriate destinations on my PBBS. The timer turns the equipment off at 4:30 a.m. Jason has been a ham since 1980, has an Extra class license, and enjoys CW on HF chasing DX. So, that message to Australia took one day to get to ARN and probably left the next morning for Australia. Telephone numbers are a must. Many of these Satgate stations are willing to call long distance but not without a telephone number. Many people don't list their phone numbers and many countries don't have a good information system. Please don't waste all these man hours sending a message without a phone number.

Towns

Another message was received on presidential town names. "There is a town in South Carolina called Clinton. There is a semi-famous road sign off of I-20 which shows the town of Clinton

as a left turn and the town of Prosperity as a right turn." The writer said, "Only in my beloved Palmetto state!"

Thinking in CW:

Does it seem to anyone else that traffic handlers are stalling more and more as they relay traffic? Sending stations often repeat words without being asked. Why? Receive stations are sending WA or WB twice before a fill word. Is this thinking time for the receive station to actually find the place where they wish to ask for a fill? Another 'thinking' phrase begins, 'need WA'. A polite 'thinking' phrase begins, 'pse need WA'. When you send, the person on the other end must concentrate on what you are saying. This time could be better used to look over and/or write on the messages being sent, rather than have to copy, 'pse I need'. (I write on each message the stations I get it from and give it to — and on which net, in case a trace message is sent). This 'thinking' time reminds me of our older computers whose chips were so slow, that they often blinked "THINKING" when asked to engage in some action.

More and more operators are now giving hints as to where, in the message, the word might be found. A message of 25 words, preamble and a signature has less than 50 words. We don't need hints like: in the addee, text, etc., to find the word. It helps if you use a good marker word. Sending WA the, when there are three the's doesn't assist much. Chose a good marker word and the other station won't have any trouble finding it. Ask in the briefest way possible, and then wait a moment for the other station to find it. You can do it — without hints.

San Joaquin Valley section

Mike Siegel, KI6PR, is both SM and STM. He says it's, "due to our geography. Rather than running Section-wide nets, the SJV Section participates in NCN I and II. Both Northern California Nets cover several ARRL sections, taking in all of northern CA, as well as northwestern Nevada. The NCN nets are strictly CW, and many of the participants also pull duties with the Pacific Area Net (PAN).

"Another slightly odd point to note is that much of the traffic that is handled does not necessarily move via NTS. While we have a fairly full compliment of 'official' structured nets within the NTS system, we also have a large number of independent nets that offer traffic handling as a sideline to the more social aspects (WestCARS, The Mercury Nets, etc). Two drawbacks to these 'alternative' nets are: 1) They make accurate traffic counts virtually impossible. 2) Newer/younger net operators do not necessarily get any training in proper traffic handling skills, even though they are in fact handling traffic on nets.

"Geography plays an important role in our traffic structure out here. For example, the San Joaquin Valley is literally ringed with mountaintop voice repeaters that allow coverage to the coast, especially the San Francisco Bay Area. This means that certain of our nets are accessible to codeless Technicians, and allows them to generate and handle traffic from Bakersfield to well north of Sacramento, as well as into the Bay Area and Reno. These systems include several independent repeaters that are linked in support of independently organized traffic efforts. Yet another consideration that we deal with out here is that of RACES. Emergency Services has chosen to adopt RACES as their own vehicle for tactical traffic handling. This includes their own traffic formatting and routing. This system, however, does not take into account health and welfare traffic, and virtually ignores Red Cross traffic requirements, regarding it 'non-essential' to the preservation of life or property. To that end, we have seen a revitalization of ARES groups all over the SJV section; and, they are starting to train with and use NTS formatting for their purposes, and to check in regularly to NTS nets as a form of drill and practice."

Mike says they have some wonderful ops. He feels that the present structured system may not be keeping up with, or even recognizing advancements in technology, and highly recommends W6ZRJ, Doc Gmellin's comments. (Doc wrote a set of opinions a few years back called 'The Gray Papers," which dealt with problems in the NTS.) Mike wishes he could see some traffic reports. He's right. You can't look to the future until you have some statistics on the past before you. I think everyone engaged in handling traffic from NTS nets, to independent nets (including MARS), should be encouraged to send a report. This is valuable information for those same people and a summary could be returned to anyone who would like a break down on how their net/system is doing. In Mike's situation, perhaps he could ask those who do get the reports to share the information directly with him.

Net tip

Did you know that the HANDI HAM NET meets every Monday on 28.380 at 10 a.m. CT?

SET

Each year ARRL encourages a SET (Simulated Emergency Test) drill to ensure that ARES, NTS, and served agencies such as Red Cross, can interface. A continuing problem is phone numbers. If you send a message to a public office which is generally closed on weekends, you may need a special phone number. If a real emergency happens Friday night, what good will it do to deliver the message Monday morning? In the recent SET, I received a message from Florida to a person with a Puerto Rican call, at a Public Health Service in Maryland. The message was received on Saturday afternoon. No phone number was given. Even though the area is a local call for me, Maryland numbers aren't included in the Northern Virginia telephone book and so it was relayed via EAN to 3RN to Maryland. Emergency messages need phone numbers. Part of a Section Emergency Coordinators and/or EC's job is to know them.

A station in New York took the light touch. His message said, "Oswego County ARES testing emergency communications for 1993 SET-long live NTS."

NTS Patches

The ARRL sponsored a contest to get a logo design to depict the NTS. A winner was chosen and the logo now appears on certificates and in manuals. WA1TBY, Jim, has been nudging ARRL to make this logo available as a patch now for several years. He was finally told that they felt they didn't wish to do it but that he could. Thus, Jim has created a colorful, cheery patch in red, white, and blue which can be ironed and/or sewed onto garments. It is a neat patch. To get yours, send $4.95 to Jim Hatherley, 46 Hobson St, Brighton, MA 02135. The price includes mailing it back to you. WR

"In January, a young DXers heart lightly turns to thoughts of contests"
—*Anon**

Contests in January and February have a distinct Japanese and western European flavor with the Japan International Low Band DX CW Contest falling the weekend of 7-9 January, and both the U.B.A. (Belgian) SSB contest and the R.E.F. (French) CW contest following on the last weekend of the month, 29-30 January. In February, the Belgian and French Contests do a flip flop with the Belgian CW and French SSB 'tests falling on the last weekend of the month, 26 and 27 February. Meanwhile, dedicated contesters should not forget the *CQ* Worldwide 160 Meter CW Contest which takes place 28-30 January, 1994. See the November issue of *CQ*, pg. 36, for complete rules. As the sunspot cycle continues to decline, contests such as the Japan International Low Band Contest and the CQ and ARRL 160 Meter contests will become more and more interesting and important.

In February, we will also have the Dutch PACC contest the weekend of 12 and 13 February, 1994. Both CW and SSB events take place the same weekend. More on that next month.

The DX contest calendar for January:

7 January, 2200 UTC — 9 January, 2200 UTC — Japan International Low Band DX CW contest (1.9, 3.5 and 7.0 MHz)

28 January, 2200 UTC — 30 January, 1600 UTC — *CQ* Worldwide 160 Meter CW contest

29 January, 1300 UTC — 30 January, 1300 UTC — U.B.A. (Belgian) SSB contest

29 January, 0600 UTC — 30 January, 1800 UTC — R.E.F. (French) CW contest**

Results of the 1993 Belgian Contest

Congratulations to EI7M, winner of the 6th European Community trophy in the SSB contest, and to DL8OBD, winner of the 6th European Community trophy for the CW event. The European Community trophy is awarded each year to the top scoring station from an EC country in the single operator, all band category. There is a trophy for CW and a trophy for SSB. The contest results were generally dominated by the east Europeans. The following were high on the various bands:

The stars and stripes were carried by only two stations, N4MM in the SSB contest and KA1DWX in the CW contest. Hopefully the US will be more competitive in 1994.

All Band	80M	40M	20M	15M	10M
UT4UZ	RB5ZM	IKØSHF	RY3E	UB5JIM	RV6AFX
UH8EA	HA4ZZ	RB5QRW	LZ5Z	UT4UZ	UM8MIG

DXers interested in the European Community Award certificate may qualify during the U.B.A. Contest by logging 144 different stations from the 12 EC member countries, with at least 2 stations from each country. The countries are Belgium, Denmark, France, Germany Greece, Ireland, Italy, Luxemburg, Netherlands, Portugal, Spain and the UK. A contact with the EC club station in Brussels, OR5EEC, may be used to replace a maximum of three missing contacts. Thanks to Galicia Jan, ON6JG, for sending us the beautiful 3-color booklet with U.B.A. contest rules and results.

From the mailbag

de Alan, N2ALE/6 — "A few weeks ago you sent me a page from an R.S.G.B. Bulletin which mentioned a slow speed CW contest. I wish someone in the U.S. would sponsor such a contest but no one seems to be interested. With the sunspot cycle declining, the best route to a reasonable score will be via CW. . . ."

Contesting from the Pacific Wake Island (KH9)

Wake Island would be a super contest QTH in the ARRL contests, the *CQ* contests, the All Asian, Japan International, VK/ZL or most any DX contest, but unfortunately, access to KH9 is extremely limited. There is no Holiday Inn, no Hilton, no Marriott, Sheraton or Days Inn, nor are any on the drawing board. Wake Island is not a public place, so unless you have connections with a contractor who does, or are on a military assignment, your chance of being KH9A, KH9 DX or your call/KH9 in this spring's contests are slim and none. However, if this doesn't discourage you, read the following which is quoted from a letter by Craig Boyer, AH9B, who operated from Wake during the 1991 *CQ* Worldwide DX Contest and again in 1993.

"Wake Island is a very restricted area that is currently administrated by the Air Force. Up until a few years ago, it was possible to get on the island with the permission of the base commander, base comm officer, and their higher ups in Honolulu. In fact, an Air Force friend of mine helped me secure permission for myself (then WE5I) and AD1S to visit the island for *CQ*WW 1991. There are no hotels and, in fact, very poor facilities on the island. We operated from an abandoned building and little support from anyone on the island. (We did get to eat in the cafeteria, however.)

"In 1992, the Army, in partnership with their missile range at Kwajalein, Marshall Islands, began to run some of their missions from Wake. These missile shots began to generate a lot of activity on Wake. Consequently, access was totally restricted to a "need to be there" basis. Because of this, I was convinced that I would never be able to return. However, six months ago, all missile research was put on hold because of budget cuts. At that time, a group of engineering students from California Polytechnic State University secured permission to visit the island and do research on RF propagation. As the owner of the Oklahoma Comm Center, I offered to provide all the necessary equipment if they would let me tag along. They agreed and we spent 9 days listening for beacons and in fact beaconing ourselves on 6 and 17 meters. We also made about 20 thousand QSOs on all bands 6 thru 160.

"The bad news is that the army is in

the process of becoming the administrator of the island. Research is starting up again in a big way. In fact, when we were there in early September, there were a large number of newly arrived personnel on site. They have refurbished five old barracks buildings for offices and quarters. We were extremely restricted in regard to travel around the island (it isn't very big anyway!) and were given a list of no-no's upon our arrival.

"The last operation from Wake before we arrived was an Air Force space-type guy from Florida. He had been stationed there for three or four months. I am afraid that he will be the only type of ham permitted on the island for some time to come. In fact, it seems to me that it is harder to get permission to visit these inhabited islands than some of the others like Baker/Howland and Kingman.

"I'm not sure what lies in store for Wake Island thru the next few years, but I have little or no hope of returning.

We also have a letter regarding Wake Island from Kenn Hill, KK4DK. Kenn writes as follows:

"Wake Island is an Air Force Base run by Detachment 1 of the 15 Air Base Wing out of Hickam, HI, so there is no commercial, or for that matter, private housing available. I was on the island for a couple of months at a time for a DOD operation so was provided housing from the government, (I am in Air Force civil service). At this time, the only way amateurs could get on the island, I believe, is if they are in support of a program that is going to that island such as research or DOD operations. You would have to check with the Hickam Air Force Base Public Affairs office to find out if there is some leeway in that. By the way, transportation out there is by military aircraft from Hickam.

"Please note that things change on a military base with every new commander, and Wake Island gets a new commander about once a year. HI."

The Marshall Islands (V7)

Ken Wells, V73C, has provided excellent information on V7. Ken is the Amateur Radio License Administrator for the Republic of the Marshall Islands and is authorized to issue V7 calls to visitors with a valid travel itinerary. All that is needed is to complete an application and include a copy of your US license and a copy of the travel itinerary. The license is valid for two years. For contest operations he can issue special prefix calls. For example, he has used such contest calls as V7A, V7RTTY, V7MHZ and V77DX. A request can be mailed to his 1993 *Callbook* address for AH9C.

Ken indicates that the Marshall Islands are served by three airlines, Continental Air Micronesia (Air Mike), Air Marshall Islands (AMI) and Air Mobility Command (AMC). However, the latter serves Kwajalein only and is only for official visitors, residents and retired or active duty military.

Air Mike is the daily island hopper service between Honolulu, Majuro, Kwajalein, Belau, Saipan, Ponapei, Truk and Guam. It travels from Honolulu to Guam with all the above stops on one day, and returns to Honolulu the next day. Air Mike can only be reached through the international division of Continental Airlines. Ken advises that the domestic reservation number has no information about the Pacific run.

AMI also provides service from Honolulu to Kwajalein and Majuro and return on a twice a week basis. They also serve Fiji and Christmas Island via Majuro.

The two principal atolls in the Marshall Islands are Majuro and Kwajalein. Majuro is the national capital and access is not complicated. However, Kwajalein is leased by the US Army and access is extremely limited. No visitor is allowed without sponsorship from a local resident and the sponsorship rules are strict. The visitor must be a relative or close family friend. In addition, the sponsor assumes all responsibilities for the visitor(s), so residents are very cautious about who they sponsor.

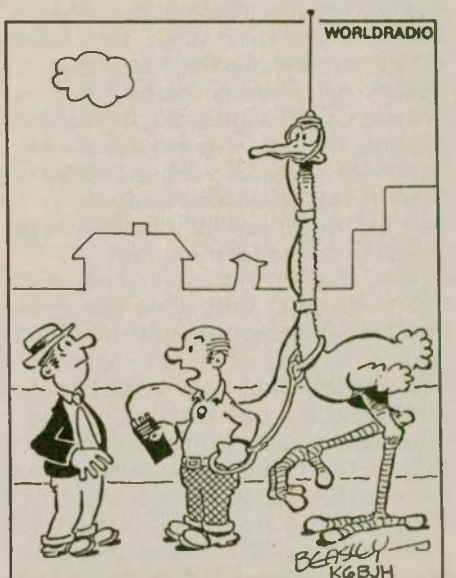
Ken advises that the best place to operate from Kwajalein is the Kwajalein Amateur Radio Club (KARC). The club station is well-equipped and works well into all parts of the world. However, club members have priority during contests. The *CQ* and ARRL contests are quite popular, but many other contests such as the VK/ZL, All Asia, WAE, etc. may go by without participation, KARC will sometimes allow outside operators to use the club station for DXpeditions and contests, but this is rare. Donation of parts or equipment to the club station would probably help.

Majuro is the largest and most populated of the islands, and has two or three active radio amateurs, but they show little interest in contesting or working DX pileups. Ken suggests the Robert Reimers Enterprises (RRE) Hotel as the nicest, but cautions that nice is relative. No Majuro Hotels fit a 5 star classification. He even suggests a specific room, No. 501, which is a single room at the end of the building next to the ocean. The RRE Hotel has a generator and is relatively immune to the island-wide power outages which are particularly prevalent on weekends. There is an RRE grocery store across the street and an RRE Ace Hardware Store just below the hotel. The address is RRE Hotel, P.O. Box 1, Majuro Atoll, Marshall Islands 96960. US postage is OK. The direct dial number from the states is 011 + 692-625-3250 or Fax to 011 + 692-3505. The rate is $2.50/minute, and don't expect anyone to hurry. The hotel is believed to be receptive to Amateur Radio operation.

In summary, Ken's letter stresses that the best facilities and equipment are on Kwajalein, but it is hard to get permission to visit and use the club station. Majuro offers easy entry and fair accommodations, but equipment is limited to what you bring. Ken believes that there would be no difficulty in bringing equipment to Majuro and probably no customs duty to pay.

* The deserving suggest that this is a verse from a poem by Hugh Cassidy, WA6AUD, the poet laureate of DX, but this is unconfirmed.

At presstime, neither ***Worldradio* nor ARRL have received results of the 1993 R.E.F. contest and rules for 1994. These dates and times are based on earlier years. WR



I SHOULD GET OUT LIKE GANGBUSTERS, BUT I GUESS I DON'T HAVE A GROUND—PLANE EFFECT!

CONSTRUCTION

Use two small phased vert-loops for great performance

GENE GARDNER, W9RWZ

Single-Loop performance was described in the June 1993 issue of ***Worldradio***. That performance can be enhanced even more by using a rather simple way to phase two similar loops at 180 degrees. This utilizes the "W8JK Phenomenon" to provide a figure-eight pattern which nulls out much of the power which was radiated straight up, or straight down, and only served to warm the clouds overhead or the earth below (as well as receiving extra nearby static).

Of course the antenna, which was essentially omni-directional before (at the elevation angles of interest), now enhances the forward and rearward directions while attenuating the side directions 10 or 15 dB below the major lobes. When the loops are spaced 1/8 wavelength (17' on 40M), an inspection of the classic antenna plots (page a-6 ARRL *Antenna Book*, 16th ed) shows a gain of 3.8 dB at 180°, but it is interesting to note that tuning one of the loops slightly (22.5 degrees) on the low side of resonance, and the other loop 22.5 degrees above resonance, can provide a cardioid pattern in one direction (135 degree separation.) Reversing the order yields a cardioid in the opposite direction.

Power would probably be reduced somewhat because of reduced "Q" (More comments about this later). Furthermore, feeding the loops "in phase" provides an omni-directional pattern with a slight gain. If you space them a half-wave apart, the in-phase provides nulls and lobes rotated 90 degrees and the same null-meter (described later) can be tuned for maximum instead of minimum.

As described in the previous article, it is essential that a remotely controlled method of fine-tuning the High-Q loops be used. This can be as crude or as sophisticated as you like, but a workable low-cost method utilizes a threaded lead-screw to move one tin-can concentrically within another larger one. Higher power will use larger cans because air-gaps of at least 3/4" will be required. The model described in this article is simply a 12-ounce coffee can moved concentrically inside another 3-pound can. Since it is receiving only one half of the available power, it would probably tolerate a 1 kW transmitter output on 40M. Sheathing from RG8-U coax can be used as flexible cables and can be soldered directly to the tin cans, with the other ends attached to the 1/2" tubing with small hose-clamps (Be sure to burnish surfaces to remove oxidation because very large rf currents circulate in Hi-Q loops.)

Two vert-loops for a small yard.

Initial testing was done on 40 meters. The first portion of the antenna was simply the 40 meter option of the 160-80-40M Hi-Q antenna in the June issue referred to above, except that the coffee can capacitor was substituted because the split-stator capacitor-motor assembly was more convenient to use on my "temporary" section (I have a small 45'-wide city lot with a very small back yard so that much of my experimenting has to be temporary).

Accordingly, the second part of this antenna is on a board placed between sawhorses in the middle of my driveway. It consists of a two-turn vertical loop 5½ feet in diameter (making both sections 6½' in diameter would be preferable) atop a plastic enclosure which houses the split-stator motor assembly (As an aside, I have taken this single assembly along camping to place on top of a travel trailer and have had very good success. It slews from the top of 40M to the bottom of 80M without leaving your operating chair, by simply tuning for minimum SWR). It is also made of ½" aluminum tubing (surplus 75-ohm cable-TV coax). The turns are spread about 18" apart with a piece of ¾" PVC and held upright with crossed nylon strings. The ends extend into the plastic enclosure through ½" holes.

As above, coax sheathing can be used to connect the stators to the tubing with hose clamps, burnishing as before. Only the stators are used and the rotor is left floating. If you prefer, you can use another set of concentric cans to substitute for the large transmitting type split-stator capacitor.

The 180-degree phase relationship is a fortunate choice because it is so much easier to facilitate a satisfactory way to verify the 180-degree relationship. Simply tuning for a deep null on a DC-microammeter at the operating chair provides the necessary indication.

The two loops are positioned "edge-to-edge" like a pair of reading-glasses except that they are separated approximately 17 feet (center to center) which is about 0.125 wavelength on 7.2 MHz. This is not critical (except for the "cardioid" case, where 0.125 is used). Anything between 0.125 and 0.25 should work well. An advantage for choosing 0.25 or more is to make it more acceptable to operate on 80M (at least 0.125 wavelength). The Qs will be much higher and performance much lower, unless you build a different model using larger loops.

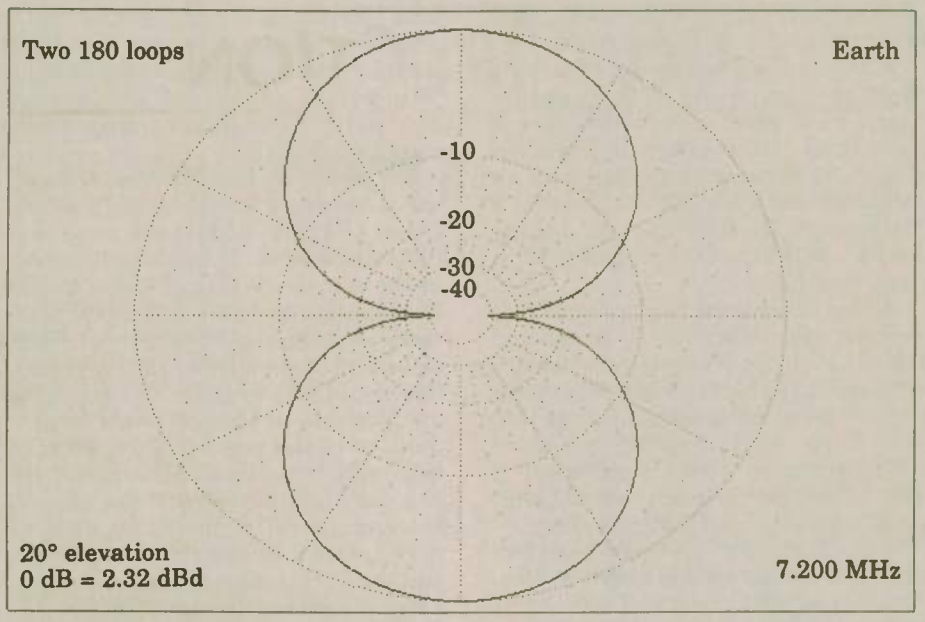
The two loops are connected together by two exactly equal lengths of about 13' each of 93 ohm coax. These lengths and coax-impedance are probably not very critical as long as their combined length provides the separation you choose, and the impedance should probably not be less than 75 ohms. These meet at the center and are "teed" to the main 50 ohm feed line from the transmitter. The 93 ohm coax is attached to the loops in the same manner as the June reference article (shield to the electrical center of the loop with center-conductor extended out about 36"). Here, however, a little more experimenting may be required

than on the single loop.

The null detector is simply a 1-turn vertical pickup-loop placed on the ground (edge toward loop array) about 25' off to one side on a center-line equidistant from each loop; i.e., on an imaginary null line which bisects a line between the two loops, and is perpendicular to it. A small signal diode (such as a silicon 1N914) is connected as a half-wave rectifier into a 1K shunted by a 0.1 uf capacitor. These are placed at the pickup loop. The DC drives a sensitive current meter, which will be at the operator position. I happen to have a 20 microamp but it is more sensitive than necessary. With 5 watts out of the transceiver, about 33K of series resistance is required. This task can be left to the individual to decide what works. Remember to desensitize your meter when you go from low, tune-up power, to high-power.

My loop was big enough that it could remain non-resonant. If you decide to try a resonant pickup-loop, be sure to heavily damp it with a resistor so that the only sharp "peaks" observed will be due to the Hi-Q transmitting loops. A germanium diode will be more sensitive and will probably tolerate 100W. My 600 watts burned it out.

The matching method to this system



is simple in its configuration and fairly easy to adjust. Initially, you should prepare to have a little patience: several things have to happen simultaneously. It appears to be workable whether the taps are oriented the opposite direction, or not. It will be a little easier if you realize what's supposed to be happening: the conditions you are hoping for, is to have the tap (battery clamp or hose clamp) find a point that looks like 93 ohms (call it 100) to match the 93 ohm coax. If you have constructed identical loops, it should be identical on both, except one may be the opposite direction (mirror image) of the other. It may be slightly reactive but the other loop will proba-

bly interact in such a way as to counteract this when it is resonated.

With the SWR meter in the 50 ohm main coax, tune one of the loops far away from resonance where it will have little if any effect on the SWR meter. Then tune the other loop for minimum SWR which indicates that it is resonant. The SWR here need not be perfect, because it is only going to be disturbed later.

At this time you should get your null detector system activated. You should have enough sensitivity to get at least ¾ scale reading. This reading will be reaching its maximum at the same time that your first loop is reading minimum SWR (remember that the other loop is still far off resonance and should have no effect on the null meter reading).

While leaving the first loop at resonance, bring the second loop into resonance at which time it will essentially cancel the power from the first loop (along the null line only) and you will see a sharp dip in the null meter to zero or near zero. At this time, if you have been lucky, the SWR will drop to near 1:1 at the same time that the null dips to near zero. This would mean that when both loops are at resonance, they each present 93 ohms (100) to their own coax. If that is true, it would still look like 93 ohms (100) at the "tee." The same would be true of the other loop, so that the two 93s (100s) would be in parallel at the "tee" and present 50 ohms to the main transmission line coax for 1:1 SWR.

It's also true that the same result could happen even if the loops didn't present 93 ohms and it performed as a matching section. The end result would be the same even though there would be some standing waves in the 93 ohm sections. This would probably be quite small and the lengths are so short that loss would be negligible. The only trial adjustments to change would be the position of the taps on the transmitting loops to find a suitable match. If you use identical loops, these should be symmetrical. Actually, my temporary model was not: the first section was the 40M portion of the June reference article which used two turns, 6.75' diameter, spaced 20", for the loop. The second portion was two turns, 5.5' diameter, spaced 18", set on wood saw horses in the driveway.

The performance on 40M I believe outstanding, even though it is located very unfavorably only 15' or 20' from garage and houses, and under large shade trees. The reports seem to be reciprocal from many of the stronger stations I have worked, which includes both east and west coasts (from the Midwest). The larger loop is only 5' above the ground, and the smaller section was less than 4' above the ground. No ground or radial system is used. It seems to be a quiet receiving antenna.

For some permanent direction of interference, it would seem practical to orient the loops to null it out, since the null occurs at all angles (hour-glass figure), rather than just at low angles as the single loops do. An avid ham with adequate space might even consider mounting the loops at the ends of a 17' (40M) rotatable boom to null out QRM, and avoid any limitations of his ability to transmit in all directions. This could be a very interesting possibility to take back night-time 40M from foreign broadcast stations! The null is very sharp at all incoming angles (not just at low angles as on the single-loop) and the lobes are very fat.

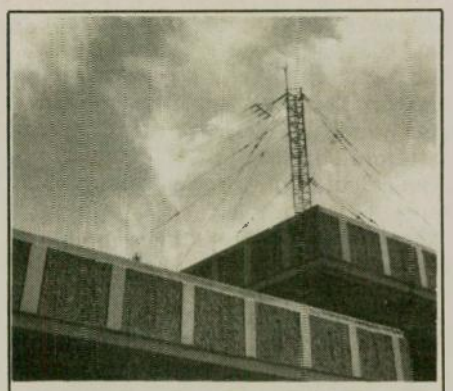
If two amateur stations each nulled out the foreign broadcast, the odds are very good that they would still have substantial power and good reception from each other. A 6' loop (2-turn) at each end of a rotatable wood 16' boom (two to six feet off the ground) isn't that large compared to some 20M beams. It would be rotated to a "standard position" for purposes of nulling them to the pickup loop before rotating to the foreign broadcast station.

To evaluate the performance of these loops on 80M, they were separated about 35' (0.14 wavelength). The performance here was modest, probably not much better than a good mobile station. This is not too surprising since the calculated radiation resistance of the smaller 5.5' two-turn loop is 0.01763 ohms. Radiation resistance changes at a 4th power rate with frequency so that the radiation resistance on 80M is only 1/8 of that on 40M. In some cases it might still be worthwhile because of interference-nulling capability and lower noise reception in general.

On the discussion about the selectable cardioid patterns, I do not have a very reliable method of evaluating this phenomenon. Remotely tuning the Hi-Q loops is easy enough for ordinary use, but rather uncertain when trying to guess at ±22.5 degrees. I was able to demonstrate its feasibility to my own satisfaction by diminishing CHU (the Canadian Frequency Standard on 7.335 kHz) from 5-9 to 5-1 in response to a "very sharp notch." This occurred when one loop was tuned below resonance while the other loop was tuned above resonance. Tuning was very sharp and good resolution is demanded of the remote tuning system! Reversing the order of the two loops showed no dips, representing the broad forward lobe of the cardioid. Unfortunately, to avoid great frustration, the method requires a steady carrier source at some distance from the forward or rear lobes, to provide for easy nulling. I tried using a grid-dip oscillator a few yards away, but it was not battery powered and although I could get a 10 dB dip, I do not believe it was useful because, when transmitting, the power out to the side on my null detector was not substantial as it would be with a true cardioid (it was when I nulled on CHU).

I suspect that close-in (near-field) sources are not reliable. I am convinced that an avid experimenter with adequate space could locate micro-power varicap-controlled oscillators some distance away from each end and have a method for setting up a cardioid. Fortunately, SSB has no troublesome carriers, and the test oscillator can be received exclusively with the sharp RTTY or CW filter.

One other novel feature, for which there is probably very little demand: even if they are still only 17' apart, one can be tuned to 40M as a conventional loop (omni-directional). Similarly, the other one can be left tuned to 80M at the same time for cross-band operation (similar to those who hang multi-band dipoles on the same feed coax). I did not have to make any tap changes and had very low SWR on both bands. WR



AERIALS

KURT N. STERBA

Too bad. Hammy publication, mainly aimed at newcomers had a gremlin foul them up. Diagram was for a one-element, full-wavelength loop. Sadly the connecting wire from the coax shield to one side of the loop was missing in the drawing. Such was two issues ago and no correction has been made in subsequent issues. Freshmen amateurs will end up going bonkers on why it doesn't work. Have no reason to embarrass usual good guy that wrote the article so we'll just call him Jose Otto.

A famous (infamous?) antenna company, one that claims 9dB gain for a 2 Meter vertical all of 10 feet tall, has embarked on what appears to be a knock-off of the great Lakeview Hamstick.

Look closely. While the price is close, the Lakeview can handle a kW and the copycat far less. Obviously the Lakeview is better built and with thicker wire. Even if you only run a barefoot transceiver you will be better off with the more rugged vertical.

By the way, it would take about six half wave elements (vertically) to give you but six dB gain. Six times thirty-eight inches comes to 228 inches or nineteen feet. So you can see why I look askance at a claim of 9dB for ten feet.

Well, I've seen it all now. A manufacturer of Yagis, in order to justify rather gargantuan gain figures for his product, offered an explanation. He says that his claims are over real ground, as you would encounter in actual operation. The other beam builders base theirs on "Free Space" figures, so his will be much higher, he says.

Yes, and that is just why all the others went to "Free Space" figures so that there wouldn't be this simian business.

At what height do we measure our "over real ground?" And, over what ground?

Hah, I will mount my tower on a barge and measure my Yagi while over the Great Salt Lake. Or, instead we could just base claims on computer modeling. We could have dueling computers. "My computer says my Yagi is one dB stronger than your computer says your antenna is. Ya, Ya, Ya."

New subject. Saw an article about phased verticals (1/4 wave apart) in which the author tied the radial from one vertical to the radial of the other vertical.

Don't *do* that.

Elvis is alive and has set up housekeeping with Amelia Earhart in Hackensack, NJ. Hey, you read it in the supermarket tabloid so it must be true, right?

It appears that hamdom has the same type of print. But, maybe I'm wrong, it could all be true. Publication aimed at beginners, oh call it *Wireless Flu,* coming to us not from Long Island nor Newington but instead from farther north, ran an advertisement for instructions for an antenna that is 9 "S" units stronger than a 10-element Yagi. I persuaded the ***Worldradio*** office to send in the requested five bucks to an address in Oklahoma.

Eventually forwarded to me were the instructions. It was from a ham licensed in 1992. Odd, hams licensed in '82, '72, '62, '52, '42 or '32 have not made the great leap forward that this youngster has.

The directions say that this antenna beat "what I heard was the best 10-element beam on the market and I was very happy with it"..."by 7 to 9 'S' units."

Watch closely, boys and girls, read slower. That claim wasn't 7 to 9 dB, it was 7 to 9 "S" Units! OK, nine "S" units is 54 dB, the gain of a good 10-element Yagi on 2M is 12dB. So we have a total of 66dB over a dipole.

Stare at the instructions as I may, I keep seeing a 4-element beam with one wavelength elements (like a quad) only they are copper circular elements. The spacing between the four elements are the same as you would see for a Yagi.

On page 2 we are told this: "The gain of this beam is so high it is not even compared to a dipole or in dB gain, but you can expect over 7 'S' units gain over a very good 10 element beam."

(Hey, for five bucks I'm going to stick with the claim on page one and the advertisement: 9 "S" units.)

Besides being a great antenna designer this amateur is also a decent chap. There is a warning printed "CAUTION: Never let anyone near the antenna or in front of it when you are transmitting. The gain can increase the power output to over 500 watts."

I wondered with such an antenna delivering 500 Watts ERP just what was the input power at 66 dB gain. Pulling out my trusty slide rule I saw that it was .000125 of a Watt. That's a smidge over 1/10,000 of a Watt. The slipstick says this is a power gain of 4,000,000 (four million). That's not small potatoes.

Who am I to cast any doubts about this all? I have no reason to question it. A fellow amateur says it's true and I believe him. Just think about it! From S/0 up to S/9! And the reference is not, like some must be using, a quivering bowl of Jello, but indeed a high quality 10-element Yagi .

My only suggestion is that instead of selling the instructions for a paltry five dollars (profit from which will be donated to his radio club) that he instead sell "HOW TO DO IT" to the universities of the world for about $500 a pop.

In order to help him along his way and add some credence to his claims, if he will take his antenna to any of the VHF Conference antenna measuring tests or the similar event at Dayton and his antenna beats a proper 10L Yagi by even 7 "S" units, I will then pay him what his airfare cost (round trip) from his home in Oklahoma. To show that I am not the Krusty Kurmudgeon of the Kilocycles, but instead am "all heart." I'll pop for the airfare if his antenna beats a real 10-element Yagi by not 7 "S" units, but by only 7 dB!

And I think we should all be grateful to *Wireless Flu* for bringing this to everyone's attention.

(Kurt has just accepted the job of Chief Scientist at Mongo Antennas in Clint, TX. Company owner A.N. O'maly named the company Mongo Antennas after seeing the movie Blazing Saddles. Kurt promises to better answer letters now since Miss Becky Viez has been assigned as his secretary. Complex questions will be answered with help from Ing. Joaquim Casa Vieja who runs the research department computer.) WR

From a fan . . .

I enjoy your magazine very much. I always wait for it and when it comes I read everything in it. I particularly enjoy the columns by Kurt N. Sterba. And, oh yes, thanks for sending me that free copy several years back. That was what started it. —73, Bill McCracken, W6IGN.

CONTESTS

1994 Classic Radio Exchange

The Classic Radio Exchange, "CX", is a celebration of the older commercial and homebrew equipment that was the pride of our ham shacks a few decades ago. The contest will take place 6-7 February, 2000 UTC to 0400 UTC. The object is to restore, operate, and enjoy older equipment with like-minded hams. A Classic Radio is at least ten years old, an advantage but not required to operate CX. you can use anything, although new gear is a distinct scoring liability and not as much fun!

Exchange: your name, RST, QTH, receiver and transmitter type (homebrew send final amp tube or transistor) and other interesting conversation. The same station may be worked with different equipment combinations on each band and each mode. CW call "CQ CX," phone call "CQ Classic Exchange." Non-participants may be worked for credit.

Frequencies: CW up 60 kHz from low band edges; phone 3.880, 7.290, 14.280, 21.380, 28.320 and/or AM frequencies; Novice/Tech 20 kHz up low band edges. 7.060 and 3.560 CW tend to be the most popular CX frequencies.

Scoring: multiply total QSOs (all bands and modes) by the following sum: (total number of different receivers and transmitters worked on each band and mode plus the total numbers of states/provinces/countries worked on each band and mode). Multiply that total by your Classic multiplier: the total years old of all receivers and transmitters used, three QSOs minimum per unit to qualify. If equipment is a transceiver, multiply age by two. If homebrew, count as 25 years old unless actual construction date or design is older.

Certificates are awarded every now and then for the highest score, exotic equipment, the best excuse, and other unusual achievements.

Reporting: Send logs, comments, anecdotes, pictures to: Jim Hanlon, W8KGI/5, P.O. Box 581, Sandia Park, NM 87047 or Marty Reynolds, AA4RM, P.O. Box 13354, Atlanta, GA 30324. Include SASE for next CX Newsletter.

Meet the Novices and Technicians Day

The YLRL will sponsor "Meet the Novices and Technicians Day."

The contest will take place Saturday 15 January from 15:00 UTC to Sunday 16 January 05:00 UTC.

Eligibility: 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. Net and repeater contacts do not count. No cross band operation. A station may be worked once for credit. Maximum power output is 200 PEP. The mode of operation shall be CW and SSB. Suggested frequencies are:

CW

80 M — 3.675 — 3.725 MHz
40 M — 7.120 — 7.150 MHz
15 M — 21.120 — 21.150 MHz
10 M — 28.150 — 28.185 MHz

SSB

10 M — 28.300 — 28.500 MHz

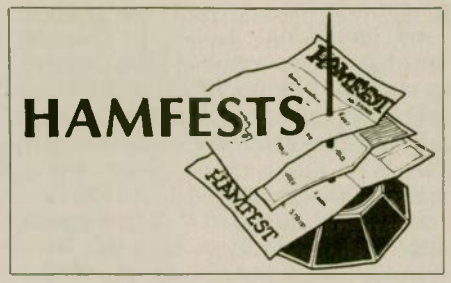
Exchange: Station worked, RST, name, QTH, license class.

Scoring: 3 points for each YL Novice or Technician worked, 2 points for each YL General or Advanced class worked, and 1 point for each YL Extra class worked. Total score = total number of points.

Awards: Top scoring Novice or Technician — YLRL postcards; top scoring General class or higher — YLRL postcards. Second and third place winners will receive certificates.

Logs: All logs submitted must show for each QSO or contact, the date, time, band, station worked. Do not send carbon copies of logs. Please print or type. Logs must indicate the name, call sign, address, operating breaks, and license class of the operator, and must be signed by the operator. No logs will be returned. Logs must show the claimed score and postmarked no later than 30 days after contest ends.

Mail logs to: Vice President YLRL, Carla Watson, WO6X, 473 Palo Verde Drive, Sunnyvale, CA 94086. WR



California

THE LIVERMORE ARK is sponsoring an Amateur Radio/Electronic/Computer Swap Meet on 2 January from 7 a.m. to 12 noon at Las Positas College. Features include refreshments, free parking and covered spaces in the event of rain. Admission is free. Sellers pay $10 space fee. Talk-in on 147.045(+) from the west and 145.350(-) from the east. Contact Noel Anklam, KC6QAK, at 510/447-3857 eves. or leave message days at 510/783-2803.

Colorado

The NORTHERN COLORADO ARC will host its first annual Winterfest Swapmeet on 22 January from 9 a.m. to 3 p.m. at the Larimer County Fairgrounds. Features include commercial exhibits, VE exams and refreshments. Admission is $3 and tabels rent for $8 each. Talk-in 144.515/145.115. Contact Musser Moore, NØUMN, 303/221-3698.

Florida

The FORT MYERS ARC is sponsoring a hamfest on 8-9 January 1994 from 9 a.m. to 5 p.m. on Saturday and from 9 a.m. to 3 p.m. on Sunday at the ARABA Shrine Temple Hall. Features include free parking, snack bar, forums, VE exams on Saturday at 1:30 p.m. and Sunday at 10:30 a.m. and no pre-registration required. Admission is $5 in advance and $6 at the door. A table for two days is $12, tailgating is $5 per day. Set-up times are 6 p.m. to 9 p.m. on Friday, and 6 a.m. to 9 a.m. on Saturday. 24 hour security inside all weekend. Talk-in on 147.345(+). For more information contact Jerry, KQ4UW, 813/472-5130.

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The SARASOTA ARA is sponsoring a hamfest and computer show on 29 January from 9 a.m. to 5 p.m. at the Sarasota County Fairgrounds, 3000 Ringling Blvd. Features include exhibits, tailgating, forums, free parking, RV spaces available, concessions and VE exams.

Admission is $5 in advance and $7 at the door. Talk-in on 146.13(+). Contact Gene Marino, W1IDH, 813/355-0675 or write Hamfest, P.O. Box 3182, Sarasota, FL 34230.

Indiana

The Michiana Valley Hamfest Association will sponsor the South Bend Hamfest on 2 January 1994 from 8 a.m. to 3 p.m. at the Century Center Convention Hall. Features include dealers, computers, flea market and prizes. Admission is $4 in advance and $5 at the door. Vendor tables range between $5 to $25. Vendor set-up time 6 a.m. Talk-in on 145.29(-), 52, 39, 09 simplex. Contact Denny, A9WNR, 219/291-0252.

Louisiana

The SOUTHEAST LOUISIANA ARC is sponsoring a hamfest on 15 January beginning at 9 a.m. at the Southeastern Louisiana University. Features include ACARC, ARRL, VHF/UHF, MARS forums, dealers, door prizes, free parking and limited number of free swap tables. Free admission. Vendor cost is $15 per table, set-up time 7:30 a.m. Talk-in on 147.00 or 146.52 simplex. Contact the SELARC, P.O. Box 1324, Hammond, LA 70404.

Maryland

The MARYLAND MOBILEERS ARC will sponsor a swapfest on 30 January from 8 a.m. to 2 p.m. at the Odenton Volunteer Fire Department Hall. Features include indoor flea market (no tailgating), VE sessions (pre register with Jerry, NU3D, 410/761-1423) and free parking. Donation is $3. Table in advance is $5. Talk-in on 146.205/.805. Contact Tom Wilkison, KA3OMU, 592 Eason Dr., Severn, MD 21144; 410/969-2639.

Minnesota

13th annual midwinter madness at National Sports Center, Blaine, 1700 105th Ave between 65 & 35W. Exposition 7:00 a.m. to 2:00 p.m. Admission $7.00 at door. Super buys on computers, software, hardware, components, peripherals, amateur radio equipment. Over 30 commercial vendors;over 250 hobby market tables selling used equipment. Info: RARC, P.O. Box 22613, Robbinsdale, MN 55422.

Missouri

The MISSOURI VALLEY ARC, GREEN-HILLS ARC and RAY-CLAY ARC willsponsor the Northwest Missouri Winter Hamfest on 15 January, 1994 from 9 a.m. to 4 p.m. at the Ramada Inn in St. Joseph at I-29 and Frederick Ave. Features include exhibitors, flea market, VE exams and free parking. Admission is $2 each or 3 for $5 in advance or $3 each or 2 for $5 at the door. Swap tables are $9 each. Talk-in on 146.85 and 444.925. Contact the Northwest Missouri Winter Hamfest, P.O. Box 182, Cameron, MO 64429.

New York

The METRO 70 CM NETWORK presents the Giant Electronic Flea Market on 16 January, 1994, from 9 a.m. to 3 p.m. at the Lincon High School. Features include unlimited free coffee, VE exams, door prizes and food. Donation is $5 and kids under 12 free. Vendor cost is $15 for the first table and $10 for each additional table. Set-up time is 7 a.m. Talk-in on 440.425, PL 156.7; 223.760, PL 67.0; 146.310; 443.350, PL 156.7. Contact Otto, WB2SLQ, at 914/969-1053.

Ohio

The TUSCO ARC will sponsor a hamfest 30 January beginning at 8 a.m. at the Ohio National Guard Armory. Admission is free. Tables are $8 each. Vendor set-up time is 6 a.m. Talk-in on 146.730. For more information contact Howard Blind, KD8KF, 6288 Echo Lake Rd. N.E., New Philadelphia, OH 44663; 216/364-5258.

Pennsylvania

The COLUMBIA AREA ARC presents its annual "Dutch Country Computer and Communications show" on 23 January from 9 a.m. to 3 p.m. at the Lancaster Host Golf Resort and Conference Center. Features include 180 vendors, all indoors and free parking. Donation is $5 at the door, children under 12 free and must be accompanied by an adult. Talk-in on 146.715 (-). Contact Dutch Country Computer and Communications Show, P.O. Box 682, East Petersburg, PA 17520-0682.

Tennessee

The TENNESSEE VALLEY AMATEUR RADIO NETWORK will hold its annual Gallatin Hamfest, 22 January, from 8 a.m. to 4 p.m. at the Volunteer State Community College. Features include "Dealer's Give A Ways," packet forum 10 a.m. to noon, VE testing (pre registration required) Admission is $5, XYLs and under 16, no charge. Tables are $10 and dealers must purchase admission with table. Talk-in on 147.90(-), tone 114.8 and 442.60(+) tone 107.2. Contact TVARN, 1120 Douglas Bend Road, Gallatin, TN 37066; 615/452-3962. WR

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

Two new products for the Kenwood TS-50S

In response to the many queries International Radio and Computer, Inc. has received, they are pleased to announce two new products for the Kenwood TS-50S. Available will be an 8-pole, SSB 2.1 kHz crystal filter, and a true RF speech processor. Release date is early December.

With these two new products installed, the TS-50S will really "come to life," with a new standard of selectivity, and with the new RF clipper processor, you will achieve the punch you need to transmit out during difficult conditions! Prices to be announced. International Radio and Computer, Inc., 3804 South U.S. 1, Fort Pierce, FL 34982; 407/489-5609 or fax 407/464-6386.

MININEC or real thing?

NEC/Wires 1.0 implements the Numerical Electromagnetics Code for antennas made of wire or tubing. NEC calculates forward gain, F/B, input impedance, losses, and radiation patterns. NEC is not a miniature version of another antenna-modeling program.

NEC has many advantages over MININEC (despite the names, the algorithms are not related). Unlike MININEC, NEC can accurately predict the performance of antennas close to ground. NEC does not exhibit the frequency-offset error characteristic of MININEC for conductors of practical diameter. NEC provides much greater accuracy for complex antennas with bent wires or multiwire junctions. Finally, NEC runs much faster than MININEC (for many models it's even faster than AO 6.0). A tapering algorithm overcomes NEC problems with telescoping elements.

NEC solves the Sommerfeld-Norton equations to accurately model wires over ground. NEC uses earth dielectric constant and conductivity to calculate wire currents (MININEC ignores ground losses by assuming perfect-conductivity earth). NEC can tell you whether it's worth the trouble to raise your 160-meter elevated-radial system from 10 to 20 feet, and it can tell you how many radials you really need. It can determine the true ground losses of your 80 meter delta loop with the wire running along the back fence. NEC can find the optimal height for the low, in-phase, 40 meter dipole array you use for close-in Sweepstakes coverage (and it will calculate true input impedance so you can easily match it). Only NEC lets you make accurate comparisons between low-frequency antenna systems by accounting for both ground and wire-conductivity losses.

NEC uses a different formulation of the electromagnetic-field equations than MININEC. NEC can accurately calculate antenna performance for difficult configurations where MININEC stumbles, and it often requires far fewer analysis segments. Large-diameter wires don't cause a frequency-offset error as in MININEC. Wires joined at an angle or with dissimilar segment lengths require neither numerical compensation nor tapered segmentation in NEC for accurate results.

NEC/Wires 1.0 can take advantage of left/right antenna symmetry over ground and two planes of symmetry in free space to greatly reduce calculation time for complex models. With 1000 segments available, you may be able to simultaneously model every antenna and conductor in your antenna farm to analyze all interactions. (NEC cannot model buried wires or conductors in contact with lossy earth). NEC/Wires 1.0 reads AO/MN antenna files so it's easy to analyze existing models. The program features automatic wire segmentation, symbolic dimensions, symbolic expressions, transcendental functions, voltage or current sources, RLC, Laplace transform, and impedance loads, and skin-effect modeling. NEC plots azimuth and elevation patterns in polar or rectangular coordinates, and you can overlay patterns for comparison. Plots have 640 x 480 resolution, 256K color, a custom typeface, .PCX output, and high-quality hardcopy on dot-matrix or laser printers.

NEC/Wires-Professional 1.0 provides 1500 segments, includes a commercial-use license, and costs $300. NEC/Wires-Amateur 1.0 handles 1000 segments and is licensed for $100 for amateur use only. Double the number of segments for symmetrical, free-space models. Add $5 overseas. Visa, MasterCard, U.S. checks, cash, and money orders are accepted. NEC/Wires 1.0 requires a 386+387 or 486DX, a hard disk, and VGA. The program is copy-protected, includes two backups, and can be installed on hard disk. NEC/Wires 1.0 is supplied on 3.5" disk. Brian Beezley, K6STI, 507½ Taylor, Vista, CA 92084; 619/945-9824.

Safe spray connector cleaner & preservative

CAIG introduces an environmentally-safe aerosol for its ProGold product. ProGold's active ingredients are formulated to clean, lubricate and protect gold, base metals and other precious metal connector surfaces without the need for carrier solvents for dilution or cleaning surfaces. The spray container provides short bursts of 100% concentrate of ProGold via a precision metered valve. ProGold is a non-abrasive/non-corrosive formula that conditions gold connectors, enhancing the conductivity characteristics to efficiently transmit electrical signals. ProGold coats the entire connector surface, providing superior protection from abrasion (insertion resistance) and wear, arcing and RFI, tarnishing and atmospheric contamination. Pretreating with ProGold will reduce intermittent connection problems, increase transmission quality and product's reliability. Ideal for use on edge connectors, batteries, interconnecting cables, plugs, sockets, switches, relays, and other metal surfaces, etc. — $24.95. CAIG LABORATORIES, INC. 16744 West Bernardo Drive San Diego, CA 92127; 619/451-1799 or fax 619/451-2799.

Antenna coupler lock unveiled

(Bellevue, WA) HF radio manufacturer, SGC, Inc., has unveiled a new product called a SmartLock to further enhance the severe service capability of the company's SG-230 Smartuner. The Smartuner is a fully automatic, microprocessor controlled, antenna coupler which covers the HF spectrum from 1.8 to 30 MHz.

In making the announcement, SGC President Pierre Goral said, "There are two antenna conditions the SmartLock is designed to control. One is where a mobile antenna is subjected to violent motion which might normally cause the antenna coupler to automatically retune. The other is to command the antenna coupler to recalculate antenna conditions at the operator's discretion."

The SG-230 normally retunes when there is a significant change in antenna conditions. But there are times when retuning is not desirable. The SmartLock control box allows current coupler settings to be locked in place until released by the operator.

The second condition which occurs is when a small change of operating frequency has occurred and the VSWR on the system is still below the 2-1 ratio which triggers retuning of the coupler. The SmartLock allows an operator to force retuning to insure optimum transmitting results even when a small frequency change has occurred.

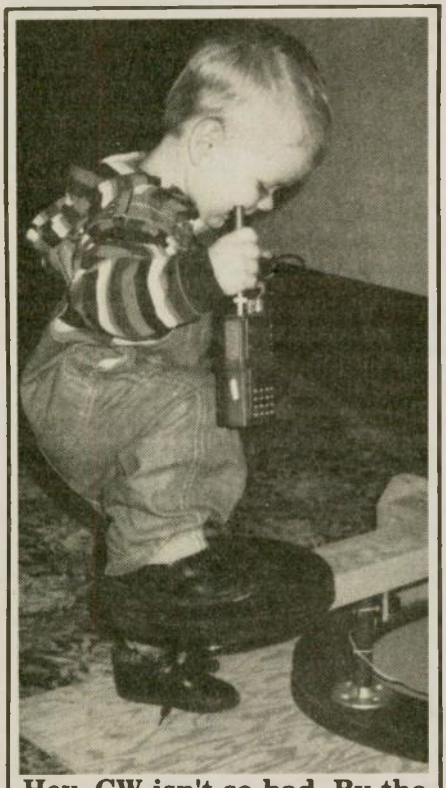
The SmartLock may be used with SG-230 Smartuners manufactured after September 1, 1993. The facility to use a SmartLock was added by SGC earlier this year at the suggestion of a commercial user.

The SmartLock control box, which attaches to the Smartuner with 9 feet of cable, costs $59.95. The SmartLock is SGC Part Number 54-63.

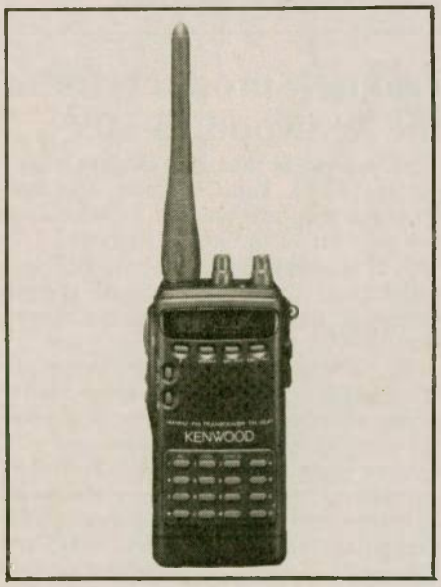
SGC has also announced that owners of earlier versions of the Smartuner, which do not have the additional control line, may upgrade to the latest version of the Smartuner for $289.00; this does not include the SmartLock.

SGC manufactures a wide range of other options for its SG-230 antenna coupler product including a 24 VDC power option, shock mountings, including the QMS (Quick Mounting System) to provide no-holes installation of HF equipment and numerous antennas for fixed, marine mobile and land mobile applications.

SGC Technical support may be reached at 800/259-7331. For additional information contact: George A. Ure, SGC 206/746-6310



Hey, CW isn't so bad. By the time I can read I'll be ready for my General! — ***Photo by Leona Wallace, WA6OHB.***



TH-22AT/42AT: single band HTs

This new series of HT has all of the things you want in a portable communications package. Like a streamlined, easy-to-program interface, one touch controls, and simplified menu functions that allow you to program the radio to suit your needs.

A new innovative microprocessor and MOS FET final amplifier circuit enables a full five watts, while conserving battery power. (The supplied battery provides three watts for the TH-22AT, and 2.5 watts for the TH-42AT! Compare this to another new HT, with a power output of only 1.5 watts!) Another breakthrough is our exclusive EEPROM memory bank, which does not require any back up battery! And, the slim line design is made possible because the battery pack is smaller — only 6 volts produces a full 5 watts of power! The wide band receiver covers 136 to 173.99 MHz. A full line of accessories will be available to enhance operating enjoyment!

See your favorite Authorized Kenwood Amateur Radio Dealer for more details.

When will AMSAT-OSCAR-13 be in range?

ROSS FORBES, WB6GFJ

Those just starting out in the world of OSCAR communications would like to know when they can hear a satellite. The following charts are produced to give you a rough idea as to when OSCAR-13 will be within range of your location. The three charts as printed are centered on the following geographic locations East = New York City; Mid = St. Louis, MO; West = Reno, NV.

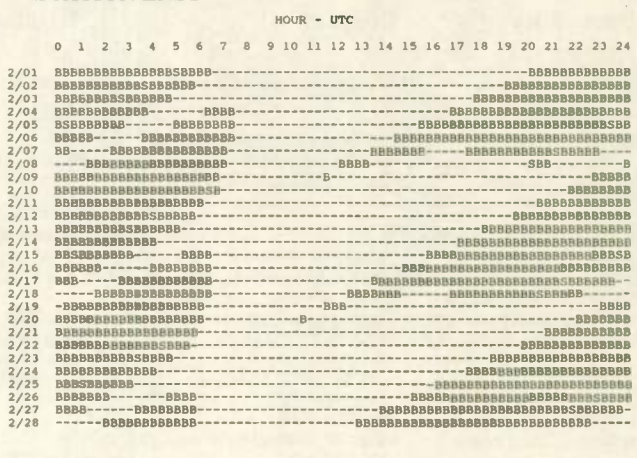
As you read the chart nearest your location, keep in mind the following details — all dates and times are given in UTC. The date is printed on the left hand column and the UTC hour along the top.

A dash mark indicates the satellite is out of range and therefore not able to be heard. The letter "B" indicates OSCAR-13 is audible at that location and signals should be heard between 145.810 and 145.880 MHz (SSB and CW). A letter "O" indicates the satellite is audible, but the only signal you will hear is the telemetry beacon on 145.810 MHz. the letter "L" indicates the satellite is audible but will hear signals between 435.650 and 436.000 MHz (SSB and CW).

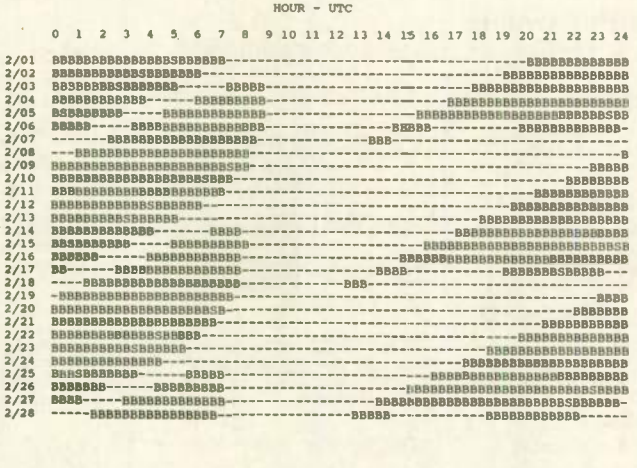
Remember, if a letter is printed on the chart, you should be able to hear OSCAR-13.

For more information about OSCAR, please send an SASE to either of the following: Project OSCAR, P.O. Box 1136, Los Altos, CA 94023-1136; AMSAT-NA, P.O. Box 27, Washington, D.C. 20044. WR

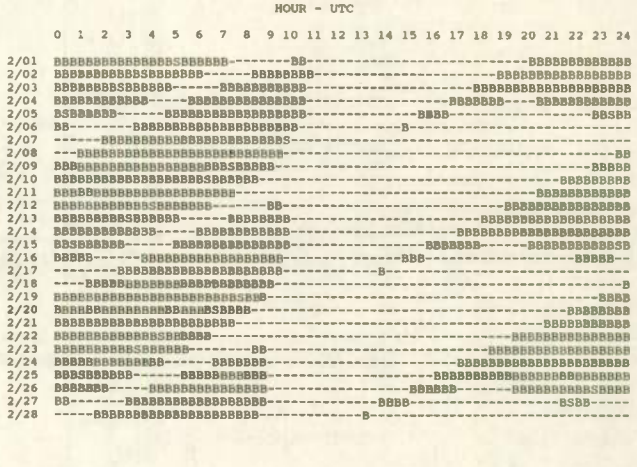
STATION EAST



STATION MID



STATION WEST



VE exam schedules

As a service to our readers, Worldradio presents a feature listing those VE exams, times and locations which are sent to us. Please remember that our deadline for publication is three months in advance. For example, if your VE group is scheduling an exam for September, please have the information to us by mid June.

Worldradio, 2120 28th St., Sacramento, CA 95818.

Please mark the envelope "VE Exams."

List the location, any information examinees should have (advance registration, etc.) and the name and telephone number of a person to contact for further information.

p/r=pre-register w/i=walk-in

Date	City	Contact	Notes
Alaska			
2/12/94	Anchorage	Jim, KL7CC 907/338-0662	p/r; w/i
Arizona			
2/94	Tucson	Micki, AA7RR 602/883-8305, call for info, testing done as requested	p/r
2/12/94	Tucson	Joe, K7OPX 602/886-7217	w/i
California			
2/1/94	Fremont	KJ6EP 510/791-6818	w/i only
2/6/94	Chico	W6YKU 916/342-1180	p/r pref.
2/6/94	Concord	Gene, WW6H 510/254-5090	w/i
2/12/94	Merced	KI6PR 209/383-2166	w/i OK
2/12/94	San Pedro	N6DYZ 310/325-2965	p/r pref.; w/i ltd.
2/12/94	Sunnyvale	408/255-9000 24-hr.	w/i only
2/12/94	Torrance	Joe, WB6MYD 310/328-0817	w/i
2/19/94	Redwood City	408/255-9000	w/i
2/24/94	Long Beach	W6LRF 714/847-6370; N6LUH 310/592-1713	w/i OK
2/26/94	Vacaville/Elmira	Barbara, KM6AC 707/429-4878	w/i only
2/27/94	Fairfield	Jerry, AA6NO 916/662-0801	w/i OK
2/27/94	Sunnyvale	408/255-9000 24-hr.	w/i only
Colorado			
2/12/94	Denver	Glenn, WØIJR 303/360-7293, 24-hr. message	w/i OK
2/19/94	Westminster	AAØBZ 303/421-2795; NØHNR 303/278-4280	p/r or w/i
Connecticut			
2/12/94	Hampton	Dick, WE1Y 203/423-6420	p/r pref.
2/23/94	Shelton	WJ1T 203/283-1044	w/i pref.
Florida			
2/19/94	Melbourne	WB9IVR 407/724-6183	w/i OK
2/20/94	Orlando	Lou, AC4GB 407/898-0429	p/r pref.
Idaho			
2/12/94	Boise	W7JMH 208/343-9153	w/i
Illinois			
2/12/94	Oak Forest	David, NF9N 708/448-9432	w/i
Indiana			
2/6/94	Terre Haute	Fred, K9EBK 812/466-2122	w/i OK
2/11/94	Logansport	Bill, WA8HSU 219/722-1338	w/i OK
Iowa			
2/26/94	Council Bluffs	Lorraine, AAØBS 712/322-1454	w/i OK
Maryland			
2/19/94	Laurel	WB3GXW 301/572-5124 after 6 p.m.	p/r pref.
Massachusetts			
2/12/94	Braintree	Phil, K1UPY 617/326-6446	
New Jersey			
2/17/94	Bellmawr	WA2VQG 609/933-1500	w/i
2/12/94	Cranford	24-hr. hotline: 201/377-4790	
New York			
2/5/94	North Tonawanda	Vern, AA2AC 716/634-5276	p/r only
2/6/94	Yonkers	AC2V 914/237-5589	w/i OK
2/16/94	Lancaster	Chuck, WD2AIK 716/937-3592	p/r only
?/29/94	Lockport	Judy, N2KJB, 716/751-9223;	p/r only
North Carolina			
2/22/94	Jacksonville	Dick, KD4YOT 910/455-8834	w/i
Ohio			
2/6/94	Cincinnati	Herb, WA8PBW 513/ 891-7556	w/i OK
2/27/92	Fremont	W4SIG 419/332-2473	
Pennsylvania			
2/3/94	Philadelphia	ND3Q 215/482-0386 or 215/879-0505	p/r pref; w/i OK
2/5/94	Erie	W3CG 814/665-9124	w/i OK
Rhode Island			
2/10/94	Providence	NN1U 401/231-9156 or 401/454-6848	w/i OK
2/26/94	Slatersville	Bob, W1YRC 401/333-2129	w/i OK
Texas			
2/8/94	Houston	Harold, ND5F 713/464-9044	p/r pref; w/i OK
2/12/94	Midland	Bill, KT5G 915/694-9450	w/i OK
2/12/94	Houston	Jim, KB5AWM 713/488-4426	w/i only
2/19/94	Austin	Jim, AB5EK, 512/327-6184	w/i
Virginia			
2/27/93	Vienna	Ron, WO2L 703/620-1727	w/i

THE MART

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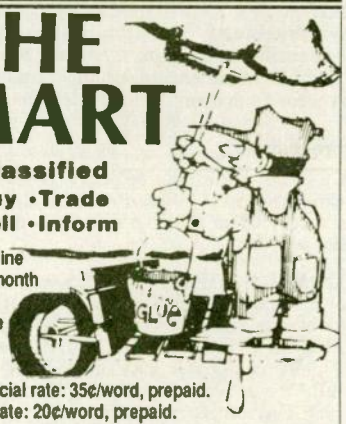

MART deadline 20th of the month two months prior to issue date.

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2120 28th St., Sacramento, CA 95818

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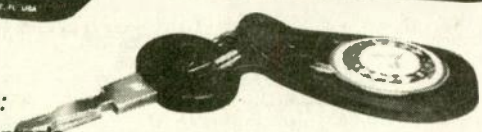

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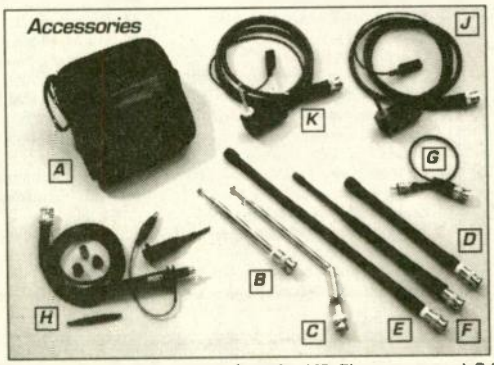

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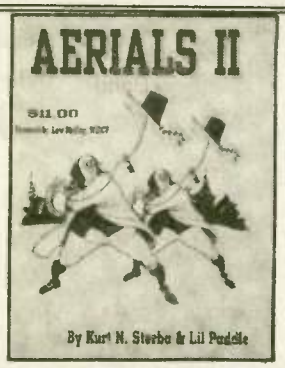

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The Pacificon 1993 convention attendees in Concord, CA spent a lot of time browsing in the exhibit hall.

Chip Margelli, K7JA, & Rusty Epps, W6OAT, catch a moment in the hallway to swap wild DX tales.

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