Worldradio

Year 22, Issue 12 June 1993 • $1.25

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Iniki and the Red Cross

GREG POOL, WH6DT

During Hurricane Iniki on Kauai, the lack of an organized Amateur Radio Emergency Service (ARES) in the Hawaiian Islands resulted in a critical shortage of communications for many disaster relief agencies. Fortunately, Amateur Radio operators still provided communications where they could.

There are many stories to be told from this disaster and each has a common current of personal sacrifice during adversity. I was able to arrive on Kauai from the Big Island of Hawaii with my mountaineering backpack full of five days supply of food and water, just two days after Iniki hit (11 September).

I spent the first week of recovery at the Kauai Emergency Operating Center (EOC), at the county building in downtown Lihue, where State Civil Defense (SCD) and Radio Amateur Civil Emergency Service (RACES) had taken on the responsibility of bringing Kauai back to normal (see *QST*, February 1993). At any given time, an extraordinary amount of emergency and priority traffic was coming in and going out of the EOC through whatever communication systems SCD or RACES had left or set up after the hurricane.

At various times we handled traffic addressed to the American Red Cross. Usually there would be a representative downstairs in the zoo of public officials, but because there was no phone line to their temporary headquarters (HQ), I once had to run some traffic myself, across the street about 200 yards through the mess that was downtown Lihue.

Red Cross HQ

Red Cross had a meager HQ on Kauai then, but Randy "the Duke"

(please turn to page 18)

1993 Boy Scout Jamboree

Over 40,000 Boy Scouts and leaders will soon be gathering for the 12th National Boy Scout Jamboree at Fort A.P. Hill near Fredericksburg, Virginia.

The once-every-four-years event will take place from 2 to 9 August. Hams will have an opportunity to talk to the special events station K2BSA/4 during that period and help introduce many thousands of scouts and visitors to the wonders of Amateur Radio. Traffic handlers can expect a flood of messages to and from scouts at the Jamboree to test the NTS to its limits. Onsite repeater frequencies: Primary operation will be on 145.17 (-600) and will be monitored 24 hours per day; secondary—147.345 (+600), general use; daily net—1900 EDST on 145.17.

There will be five HF stations in operation, plus VHF and satellite. HF operation will be primarily SSB on or near the traditional scout frequencies (see below). CW and digital (RTTY, AMTOR, packet) operators can expect to find K2BSA/4 from time to time in those subbands. The best time to contact K2BSA/4 is while the scouts are in the station, days between 1300-2100 UTC (0900-1800 EDST) and evenings between 2300-0230 UTC (1900-2230 EDST).

SSB Scout HF Frequencies

75M	3.990 MHz
40M	7.290 MHz
20M	14.290 MHz
15M	21.360 MHz
10M	28.350 MHz
10M	28.990 MHz

Arrangements can be made for scouts to have skeds to their hometown. We recommend schedules be set up in the evening between 2300 and 0230 UTC. A specific time and frequency can be scheduled on a first come, first served basis. Schedules can be prearranged for the Jamboree by contacting: Mike Brown, WB2JWD, K2BSA support coordinator, 41 Creamery Road, Richford, NY 13835; packet: WB2JWD@WA2FQA.#WNY.NY.USA.NA.

Messages are handled through the packet system, NTS nets and direct from hometown amateurs to K2BSA. All messages are welcome and encouraged but make sure the full name of the scout and his jamboree troop number (not home town number) and the town is included in the message. All messages should be in standard NTS format.

Messages leaving the jamboree site need to be handled as soon as possible. The scouts return home 9 August.

Please use the US *Callbook* K2BSA address (1325 Walnut Hill Ln., Irving, TX 75038). Enclose an SASE for US, and for foreign contacts use the bureau or enclose an IRC with your QSL card. All QSL cards are important and we want yours.

Equipment

Thanks to major equipment manufacturers who have loaned all the equipment necessary to put K2BSA on the air at the Jamboree for over 40,000 scouts and scouters and visitors. Our thanks for their show of support for scouting's role in the growth of Amateur Radio, and in providing America's youth with important knowledge and skills.

A staff of 45 licensed hams including coordinator Lary Eichel, K2NA: traffic-handling station supervisor Bob Johnson, K3RC; Radio Merit Badge instruction and licensing leader Bill Burns, WA6QYR; logistics and support team chief Mike Brown, WB2JWD; station manager Jim Bond, KA1ANT; BSA HQ liaison Ray Moyer, WD8JKV; and ARRL liaison Larry Wolfgang, WR1B. If you are interested in a flyer on K2BSA operations at the Jamboree send an SASE to Ray Moyer, S502, Boy Scouts of America, 1325 West Walnut Hill Ln., P.O. Box 152079, Irving, Texas 75015-2079. WR

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2K CLASSIC X console. 2000 W PEP output, 80 to 15 meters, 1.8 to 30 MHz.

2KD classic desk top. 2000 W PEP, 80 to 15 meters, 3.5 to 30 MHz.

3K CLASSIC Mk II console. 2000 W PEP, 80 to 15 meters, 3.5 to 30 MHz.

3K PREMIER console. 2000 W PEP, 160 to 15 meters, 1.8 to 30 MHz.

3KD PREMIER desk top. 2000 W PEP, 160 to 15 meters, 1.8 to 30 MHz.

3KD CLASSIC desk top. 1500 W PEP, 80 to 15 meters, 3.5 to 30 MHz. (10 meters available on export models).

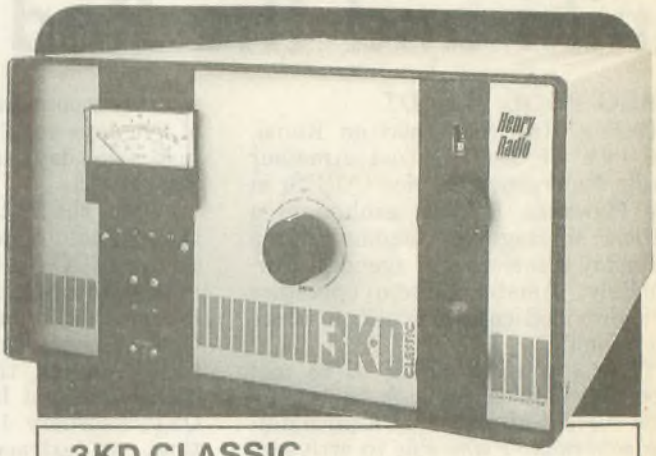
2002-A desk top. 1200 W SSB, 400 W continuous operation, 144 to 148 MHz. (100 to 300 MHz available on commercial models).

2002-A desk top. 1200 W SSB, 400W continuous operation, 220 to 225 MHz.

2006-A desk top. 1200 W SSB, 400 W continuous operation, 50 to 54 MHz. (30 to 100 MHz available on commercial models).

3002-A console. 2000 W SSB, 1000 W continuous operation, 144 to 148 MHz.

3004-A console. 2000 W SSB, 1000 W continuous operation, 430 to 450 MHz.



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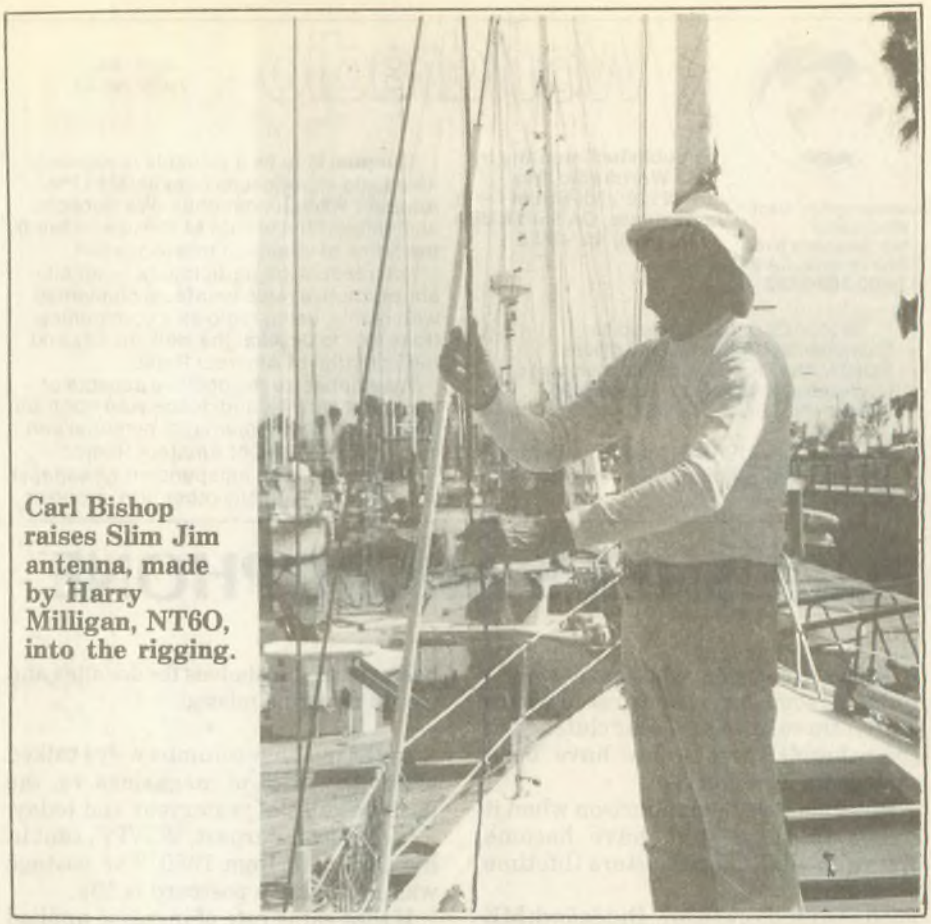
Hamming it up at the Congressional Cup

MARIJEAN PIORKOWSKI, NO6Y

More than 30 Amateur Radio operators from the Long Beach Yacht Club, California, served as communication support for the 1993 Congressional Cup, a series of matched sailboat races involving skippers and crew from around the world. Eighteen races were sailed in Long Beach between 10-14 March 1993.

All communication was passed via 2M to the Long Beach Yacht Club radio room base station manned by four operators. Three frequencies were used for timing/scoring, for race management and for on-the-water judging. A typical race day started with all of the "on-the-water" hams checking in as they left the harbor to assume various positions for the designated tasks. The race management team directed the mark and line setting boats to locations based on wind direction and speed.

Once the start/finish line and marks were set by anchors, additional support boats set and guarded perimeters to prevent interference by spectator boats on the race venue. As each of the five matched pairs of racing sailboats raced around the course, they were followed by judging boats, video and *(please turn to page 12)*



Carl Bishop raises Slim Jim antenna, made by Harry Milligan, NT6O, into the rigging.

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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

There are those who have won a Pulitzer, some have been graced with a Tony, others have an Oscar clutched in their hands, and a few have been awarded a Nobel prize.

But such pale by comparison when it comes to those who have become ***Worldradio*** Super-Boosters (lifetime subscribers):

- John DiLiddo, N1KMZ, Biddeford, ME
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- William Murphy, Sr., WA6CMJ, San Angelo, TX
- Randy Miltier, KK6TQ, San Jose, CA
- Mark Healy, KD6DHY, Mt. Shasta, CA
- Marjorie Lauerman, KC6KTW, Trinity Center, CA
- John Van Voorhees, W7ITV, Seattle, WA

•

It's always a great day when the envelope from The Bureau arrives. Among recent QSLs was a card from Gyozo Macsuga, HAØMM. On his card is printed, "The World Is My Playground." Apt thought.

Along with a card from Oscar Jiminez, HI8OMA, was a note relating that many US stations ask him about a 50 MHz contact. He reports there is no station in the Dominican Republic on 6M. He says he would get on if anyone or group would donate some equipment.

Surely there must be some old transverters and converters that have been sitting on shelves for decades and would never be missed.

•

In the past few columns we've talked about the price of magazines vs. the postage rates of yesteryear and today.

Well, Dean Parpart, W5VPF, sent in his QSL card from 1950. The postage was 1¢. Today a postcard is 19¢.

If that same rate of increase applied to radio equipment, the Johnson Viking 1 transmitter kit 100W (less tubes) which was $209 then, would be $3,971 today. The kit VFO (less tubes) was $42.75 then, which comes to $812 today.

Now for the receiver. NC-183 was (less speaker), $279. Multiply that by the 19x a postcard has gone up: $5,301. The matching speaker of that day was $16, or $304 today.

How about a Vibroplex bug for $570?

And remember, taxes took a far, far smaller percentage of a person's income back then!

•

Art Monsees, W4BK, is a smart one. Before he moved into a retirement community in St. Petersburg, Florida, he had the following written in the lease contract: Lessor authorizes lessee to install and maintain one triband and two vertical antennas on the roof and to have access to the roof whenever required to perform maintenance on these antennas."

Actually I think that spry Art's claim that he was tired of grocery shopping and housework was just an excuse to move into that retirement community so he could get his antennas up 21 stories.

•

OSCAR is a great equalizer. Giant towers are of no advantage, high power defeats the purpose.

Joe Kasser, W3/G3ZCZ, Box 3419, Silver Spring, MD 20918, has among his many software applications for sale one that says: "A simulation of the Sweepstakes contest in the form of a game, you can work the Sweepstakes contest from your keyboard."

Some years back AEA had *Doctor DX*, which simulated CW operating and was truly lifelike. Maybe now that so many more amateurs have computers it's time to re-introduce something like it again.

•

All you HF mobile ops, pay attention. We've just come out with a book by the amateur who was there when HF mobile began, and he's been with it ever since. Yes, we could only be talking about Don Johnson, W6AAQ. This is a big, thick book for only $14.95 plus the usual $2 for shipping and handling. Sixth call area add $1.16 tax, please. Send your order to ***Worldradio,*** P.O. Box 189490, Sacramento, CA 95818.

•

Maybe you have a book in you? Neither you nor I will be retiring on the income from your book, but they are fun to do and more information gets out. It will look good on your resume. We're open to your ideas.

— Armond, N6WR

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  2-Meters 130-174 MHz RX
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- 82 Memories (41 per band)
- 4 TX Power levels
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NC-42	1-hour Desk Charger
FNB-25	600 mAh Battery (2 watt)
FNB-26	1000 mAh Battery (2 watt)
FNB-27	600 mAh Battery (5 watt)
FBA-12	6 AA Cell Holder
CSC-56	Vinyl Case w/ FNB-25
CSC-58	Vinyl Case w/ FNB-26/27
E-DC-5	12 VDC Adaptor
YH-2	Headset for VOX
MH-12A2B	Speaker Mic
MH-18A2B	Lapel Speaker Mic
MH-19A2B	Mini Earpiece Mic
MH-29A2B	LCD Display Mic with Remote Functions
MMB-54	Mobile Mounting Hanger

"Look at this new FT-530! Simultaneous receive on VHF and UHF, automatic "on" timer, 82 memory channels..."

"Yaesu did it again!"

Bright minds lead to brilliant "firsts."

That's right, brilliant innovative first-time ever features which make the FT-530 our most exciting HT addition.

Exclusive break-through features, too. Like flexible in-band dual receive. Not just V/U receive. With the FT-530 you can listen to two, 2-meter signals at the same time!

Another remarkable first is the Auto On-Timer℠. Here's how it works. Choose the hour you'd like the radio to begin operating. For example, set the time for the morning, then wake up to your favorite net. What's more, the built-in 24-hour clock displays the time when the radio is off.

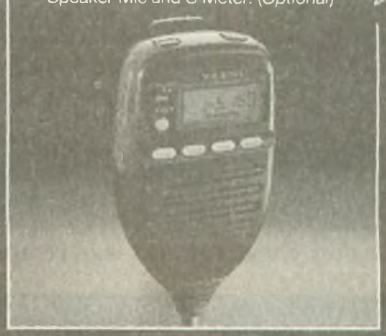
First out with 82 memory channels included, not an option; a real plus for storing all your favorite frequencies. With this HT, just open the box and QSO.

There's a lot of other terrific features too, such as built-in VOX and DTMF paging. And, since we know you'll find the FT-530 indispensable, we've included an automatic battery saver and voltage display – a powerful handful of exclusive features!

Be the first at your dealer's door to buy one, and the first to show off your new FT-530. What a bright idea!

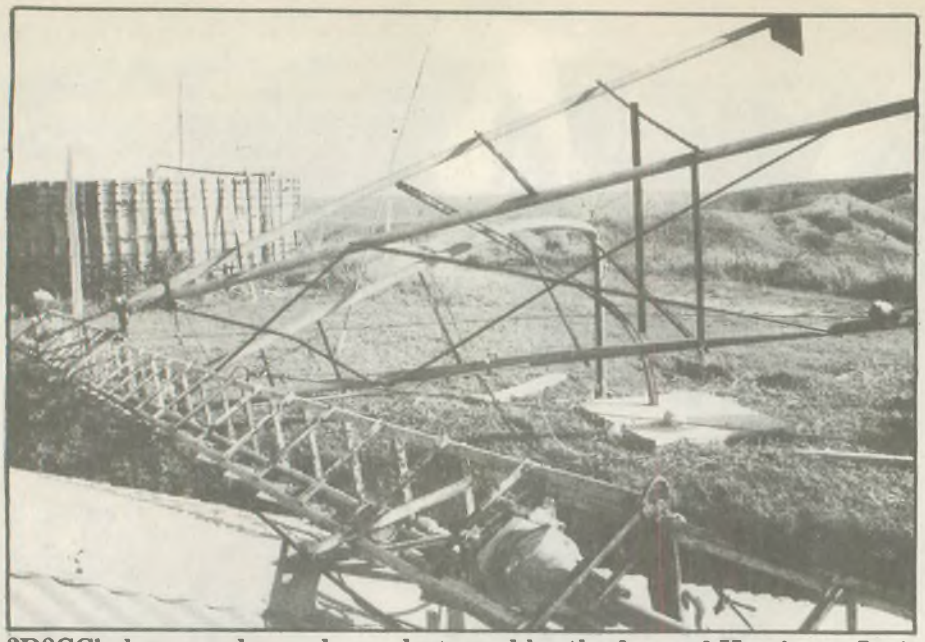
NEW

Multi-Function Digital Display Speaker Mic and S Meter. *(Optional)*



YAESU

Performance without compromise.℠



3D2CC's homemade quad was destroyed by the force of Hurricane Joni.

No rebuilding this time

RUSS WILSON, VE6VK

The devastating Hurricane Joni caused serious damage to the Fijian Islands 12 December 1992. To Fred Carter, 3D2CC, of Malolo Lai Lai Island, it was a personal disaster. The force of the wind pulled the A-frame out of the ground—the top section had already been tilted over. A piece of railway line standing upright was struck by the A-frame leg, the rail bent slowly and fortunately prevented damage to the house, as the tower struck with little force. His homemade quad was completely wrecked. Fred has made numerous repairs to the quad since about 1959, but this time it was out of the question to rebuild. Fred lives on a small pension from England and this unfortunate accident of nature was heartbreaking, to say the least.

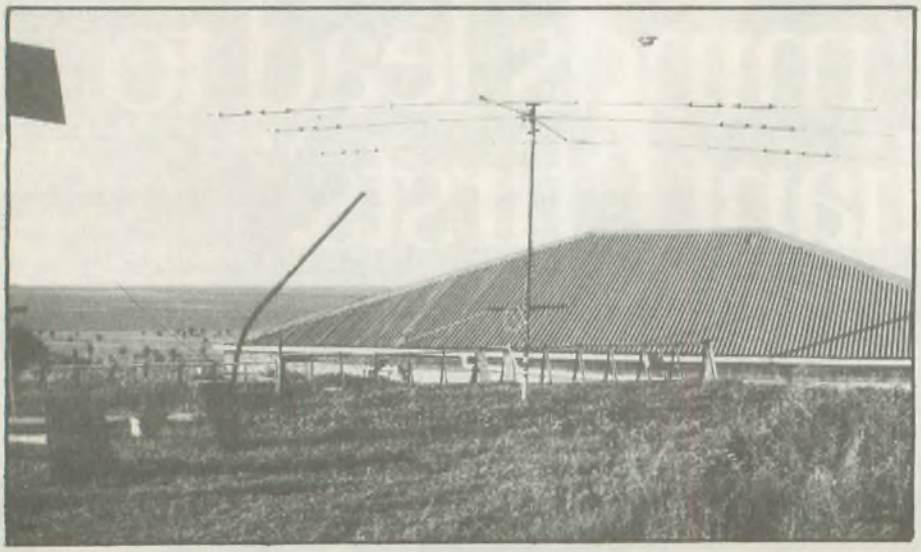
I thought that the IOTA enthusiasts might be able to do something to assist in keeping a rare island on the air, as Fred has given OC121 to many stations over the years. My idea was to purchase a tribander with donations. Not wishing to do anything without Fred's consent, the matter was discussed with Fred and 3D2PO, a pilot with Air Pacific. Fred reluctantly decided to give up the quad idea and go for a tribander. He is very fond of quads.

Ian, 3D2PO, advised me that Mike Marshall, a first officer with New Zealand Airlines, was traveling to Vancouver just before Christmas and would be returning to Fiji around 7 January. Ian contacted Mike and Mike agreed to take the antenna back to Fiji as baggage. (Little did he know how big it was!)

During a contact with Dick McKercher, W0MLY, Dick kindly offered to purchase the Cushcraft A3. The antenna was quickly shipped to Blaine, Washington, where arrangements were made with Ken, VE7BXG, to pick it up and pay the duty and GST. The antenna was transferred to Tony, VE7XQ, who offered to get it to Mike Marshall. Tony and Mike got together shortly before Mike was to depart for Fiji and the transfer was made.

Mike departed on 7 January for Honolulu on Canadian Airlines, then on Quantas to Fiji. Customs allowed Mike through with his "ski package." 3D2PO arranged for the antenna to be sent to Malolo Lai Lai via Sunflower airlines.

Needless to say, Fred was pleased with the exceptional service provided by the various people involved. VE6AKV, Fred's QSL manager, and I



The new Cushcraft A3 was temporarily mounted.

have been maintaining daily schedules with 3D2CC. Fred had been using a dipole as a temporary antenna. On 12 February Fred assembled the Cushcraft and placed it on a 12 ft. mast, rotating it with the "armstrong" method. He has an excellent signal. The tower will be eventually repaired and the final location for the beam will be at 50 feet.

Our sincere thanks go to the Cushcraft Company for their assistance and to Dick, W0MLY, for doing so much toward this worthwhile project; Ian, 3D2PO; Ken, VE7BXG; Tony, VE7XQ; and Mike Marshall whose combined efforts made everything work out without a hitch.

The following amateurs are sincerely thanked for their contributions: WF1N, W1OBP, K2VV, W3KH, W4BAA, K5MK, K6DT, N6BOI, KD7EC, W8BSW, WD8MGQ, W9DC, W9DWQ, W0GLG, W0MLY, VE3PRU, VE6AKV, VE6CA, VE6CBN, VE6CNH, VE6COD, VE6DLS, VE6GP, VE6HJH, VE6JV, VE6NAO, VE6OF, VE6PW, VE6TAD, VE6UM, VE6VK, Calgary Amateur Radio Association, VE7BXG, VE7EDZ, VE7FJE, VE7GKH, VE7XQ, ZL1CRR and G3KMA. These donations were sufficient to pay for the antenna and the small amount remaining was sent to Fred for miscellaneous expenses. WR

Hams help recover stolen rig

BRUCE NOLTE, N6TFS

In December 1992, while shopping at a grocery store in the Los Angeles area, Alan Mark, KD6OEM, found that his car had been broken into. Lost in the theft was Alan's Alinco DJ-580T dualband hand-held radio and other electronic gear.

The story shifts to the unlikely location of the Rose Bowl in Pasadena, California. Peter Fogg, KA6RJF was working as a communications specialist for the 1993 Super Bowl committee. A week prior to the big game, the committee hired a security guard to protect the office. The security guard saw Peter's amateur hand-held radio and remarked, "I have a scanner too!" The following day the guard brought in an Alinco DJ-580T radio and proudly handed it to Peter Fogg for his inspection, commenting that he had bought it for $40. Peter immediately noticed the marker label on the front of the hand-held, "KD6OEM." When asked by Peter, the security guard stated that he was not a ham.

Peter Fogg related these events to his friend, Bruce Nolte, N6TFS. Bruce agreed that this didn't look right. Using the N6YN packet *Callbook* server, N6TFS attempted to locate a name and address for KD6OEM. Discovering it to be a recent call sign and not on the CD-ROM server yet, N6TFS called the FCC in Gettysburg. Their records supplied Mr. Mark's name and P.O. Box address.

Unable to locate a telephone number, N6TFS sent a QSL card to KD6OEM with a note asking about the possible loss of a radio. Soon N6TFS received a phone call from Alan Mark. His radio had indeed been stolen. N6TFS put Mr. Mark in touch with Peter Fogg, at the Super Bowl committee, and he gave him the security guard's name and the name of the security firm employing him.

Alan Mark turned the information over to Detective Rada of the Los Angeles Police Department. Detective Rada did an investigation and was able to recover the Alinco radio from the surprised security guard. The guard admitted that he had indeed bought it for $40 from a "floating" flea market in the Los Angeles area. The radio was returned to Mr. Mark on 17 March. No charges were pressed against the security guard but he was out his $40.

This story shows the value of marking your personal radio gear and how little the general population understands Amateur Radio and call signs. Mr. Mark's call sign was in plain view on the front of his radio, even after going through the hands of at least two people, once stolen.

Wisely, KD6OEM had marked his radio. Because of the concern of KA6RJF and N6TFS, it was returned to him. WR

Proposal for amateur secondary use of 219-220 MHz

The FCC has issued a Notice of Proposed Rule Making (RM-7747) to create a new shared band for amateurs at 219-220 MHz. The Commission proposes to allocate this band to amateurs on a secondary basis for amateur auxiliary station (point-to-point) packet backbone networks and other amateur point-to-point fixed communications. The FCC proposals are in response to a petition for rule making filed by the ARRL in 1991. A detailed report on the League's petition appeared in *QST* for August 1991 (page 58).

"The proposed allocation would alleviate" the FCC says "frequency congestion that amateurs are experiencing in certain areas of the country in the 222-225 MHz band and would facilitate establishment of regional and nationwide backbone networks for amateur packet communications."

The FCC also proposes requirements to ensure that secondary use of this band by amateurs does not interfere with primary and existing secondary licensees in this and adjacent bands, and proposes measures for coordinating amateur operations with the primary user of the band, Automated Maritime Telecommunications Systems (AMTS). The FCC agreed that power limits suggested by the ARRL—25W PEP for Novices, 50W PEP for all others—are appropriate and reasonable, although the Commission does not propose Novice operating privileges at 219-220 MHz.

The deadline for comments is 15 June 1993, and for reply comments 15 July 1993.

Off the hook

The FCC has proposed to change the responsibility for the content of amateur messages relayed by high-speed networks.

On 22 March 1993 the Commission released Notice of Proposed Rule Making 93-154, proposing to establish "a compliance policy for amateur stations participating in automatic message forwarding systems, to hold the licensee of the station originating a message and the licensee of the first forwarding station primarily accountable for violative communications.

"Under this approach, licensees of stations that only retransmit messages within a high speed message forwarding system would not be held accountable for communications they forward or their stations retransmit unwittingly.

"Under the current rules each amateur licensee is fully responsible for assuring that the contents of every transmission from his or her station complies with the rules. This requirement was not a burden when licensees sent each message manually. With the availability of digital technology, however, some licensees have tied their stations together into high-volume, high-speed message forwarding systems. The stations are configured so that each message is instantly retransmitted to its destination through a series of stations.

"Because message screening is difficult with these automatic systems and because screening at each station in these systems diminishes the advantage of high speed, the Commission proposed holding accountable only the licensee of the originating station and the licensee of the first station in a high speed message forwarding system."

FCC proposes greater use of 902-928 MHz spectrum

The FCC has proposed new rules to allow greater use of the 902-938 MHz band for so-called automatic vehicle monitoring (AVM) systems. The proposed new rules would replace interim rules adopted in 1974. An FCC news release says, "The Commission proposal is to expand the service to encompass location of all objects, animate and inanimate, and to allow licensees to provide service on a private carrier basis to individuals, the federal government, and Part 90 eligibles. The Commission also proposed to rename

Amateur Radio Call Signs

Amateur Radio operators often ask the FCC what call signs have been assigned lately. This list shows the last call sign in each group to be assigned for each district, as of 1 April 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	AA0MJ	KG0ES	N0WFK	KB0LCI
1	AA1FY	KD1NZ	N1OUI	KB1ATW
2	AA2NG	KF2NZ	N2UKS	KB2QBQ
3	AA3DX	KE3HQ	N3OSA	KB3AQQ
4	AD4CK	KQ4RI		KD4ZSA
5	AB5MC	KJ5KE		KB5ZOK
6	AB6SI	KN6JQ		KD6TZG
7	AA7VC	KI7LZ		KB7TOM
8	AA8KP	KG8AA	N8XWJ	KB8OTL
9	AA9GM	KF9OM	N9SZR	KB9IML
North Mariana Is.	AH0Q	AH0AM	KH0BG	WH0AAV
Guam	NH2P	AH2CS	KH2GP	WH2ANF
Johnston Is.	AH3D	AH3AD	KH3AG	WH3AAG
Midway Is.		AH4AA	KH4AG	WH4AAH
Hawaii		AH6MK	WH6LT	WH6CQI
Kure Is.			KH7AA	
American Samoa	AH8G	AH8AF	KH8AJ	WH8ABB
Wake Wilkes Peale	AH9C	AH9AD	KH9AE	WH9AAI
Alaska		AL7OV	WL7JV	WL7CGT
Virgin Is.	NP2W	KP2CB	NP2GK	WP2AHU
Puerto Rico		KP4UZ		WP4LWH

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the AVM service as the Location and Monitoring Service (LMS) and to define LMS as the use of non-voice signalling methods from and to radio units to make known the location of such units.

"Comments are requested on this proposal and on whether LMS systems and other entities currently occupying the 902-928 MHz band will be capable of handling any increased congestion.

"In the 902-928 MHz band, the Commission proposed that wide-band and narrow-band LMS systems not be licensed on the same spectrum. The Commission proposed the wide-band LMS systems be licensed on the 904-912 and 918-926 MHz bands and the narrow-band LMS systems be licensed on the 902-904, 912-918 and 926-928 MHz bands. The Commission believes that wide-band systems are capable of operating in a shared environment, with cooperation among the various licensees, but solicits comments on the need and desirability of providing for exclusivity for some period of time."

In anticipation of release of the proposed rule, the ARRL is gathering data on present and planned use of the 902-928 MHz band by amateurs.

(Ed. note: In the US allocation table, use of the 902-928 MHz band by amateurs is secondary to Government Radiolocation, and US Footnote 275 says in part: "The band 902-928 MHz is allocated on a secondary basis to the Amateur Service subject to not causing harmful interference to the operations of government stations authorized in this band or to the Automatic Vehicle Monitoring (AVM) systems.....")

FCC proposes new guides on effects of radiation

The FCC has proposed changing its guidelines for evaluating environmental RF radiation to reflect the guidelines adopted in 1992 by the American National Standards Institute (ANSI) and the Institute of Electrical and Electronic Engineers Inc., (IEEE). The FCC said, "The new guidelines differ significantly from those they replace. For example two 'tiers' of exposure levels are now recommended, one for 'controlled' environments, and another, generally more restrictive, for 'uncontrolled' environments. Also, new restrictions are placed on currents induced in the human body by RF fields below 100 MHz.

"Another significant change is the imposition of stricter limitations on automatic exclusions for low-power devices, such as hand-held radios and telephones, based on operating power. The 1982 guidelines generally excluded such devices with powers of 7W or less. The new guidelines contain more complex and more restrictive criteria for such exclusions, with allowable power decreasing as frequency increases." (Thanks *ARRL Letter* 24 March)

(Ed. Note: The IEEE version of the Standard is available from IEEE service center, 445 Hoes Lane, P.O. Box 1331, Piscataway, NJ 08855-1331. Ask for product no. S-H-14878, C95.1 1991, safety levels. Price for IEEE members, $37.80; non-members, $54.)

ARRL response to 222 MHz proposal

Proposed VHF/UHF changes in FCC rules (PR Docket 92-289) were addressed in this column in February 1993. The ARRL filed comments with the FCC on this docket on 23 February 1993.

The League opposed repeater control operator privileges for Novices on the ground that such would extend Novice privileges beyond the intent of the license and noted that the Technician Class, also an "entry level" license, provides such privileges. The League otherwise reaffirmed its support for the proposed new rules, most of which were based on earlier ARRL recommendations, including a small weak-signal

segment on the 222 MHz band and expansion of Novice Class privileges to include access to the entire 222-225 MHz band.

License restructuring petition denied

In November 1992 we reported on a petition to the FCC by William C. Wells, WA8HSU, suggesting that the number of radio operator license classes be reduced from five to three, and that all Commission-mandated mode subbands be abolished.

On 18 February 1993 FCC Special Services Chief Robert H. McNamara wrote Wells advising him that his request for restructuring was "...repetitive and previously considered" by the Commission. "These matters were the subject of numerous major rule making proceedings which generated many thousands of comments from the amatur community, including the recent proceeding that established the codeless Technician Class operator license," McNamara said.

"The current operator license classes, requirements and privileges were developed in accordance with the expressed desires of the amateur community to provide motivation for amateur operators to advance their communications and technical skills. We do not believe that you have presented sufficient evidence to justify revisiting this matter at this time.

"Further, Section 307(c) of the Communicatins Act of 1934 ... prohibits an amateur station license from being longer than 10 years. Because of this statutory requirement, legislation would have to be enacted by the Congress before the Commission could consider your suggestion to establish a lifetime amateur station license."

A new ITU

The International Telecommunication Union (ITU) is "The World's FCC." Its broad purpose is to maintain and extend international cooperation for the improvement and rational use of telecommunication of all kinds.

ITU was established in 1865 to establish uniformity of rules and rates for telegraphy among European states. In 1885 it added international telephony to its scope, and in 1927 it was agreed that the ITU would undertake to allocate frequencies to the then-existing radio services, including maritime and broadcasting. Today, ITU establishes regulations for allocation and use of frequencies for about 30 radio services, including the Amateur Service and the Amateur Satellite Service.

Amateur services are international in scope, and so the US amateur is often affected by ITU decisions involving the amateur and amateur satellite services. The most obvious example of this is the situation in the 40M band, the usefulness of which is lessened by use of part of the band for international broadcasting in other parts of the world.

Since about 1927 the ITU has consisted of a general secretariat, an International frequency registration board (IFRB), and the radio and telegraphy/telephony consulting committees, the CCIR and the CCITT. Decision-making was by plenipotentiary conferences on overall policy matters, by world and regional administrative conferences to revise radio and telephone-telegraph regulations, and for technical matters, by plenary meetings of the CCIR and the CCITT.

In recent years it had become obvious that the structure of the ITU needed to be changed to keep abreast of technical advances and political changes, and working groups and task forces were set up to study the matter and make recommendations. Changes proposed by these committees were considered and implemented at an additional plenipotentiary conference in Geneva in December 1992 (APP-92). APP-92 made historic decisions in completely restructuring the ITU. Here are the highlights, taken from an ITU/CCIR information bulletin issued in February.

Three sectors, Radiocommunication, Telecommunication Standardization, and Telecommunicaion Development, will be supported by sector bureaus, each headed by an elected director, and by the general secretariat under an elected secretary general and deputy secretary general. The new structure and working methods will start functioning 1 March 1993 with full entry into force of the new constitution and convention on 1 July 1994.

The IFRB will be replaced by a part-time nine-member elected radio regulations (RR) board. Until the scheduled plenipotentiary conference in 1994 the functions of the new RR board will be carried out by the incumbent members of the IFRB.

The new Radiocommunications Bureau will be responsible for the continuing activities of the present IFRB and CCIR secretariats as well as radio regulation and maritime mobile services previously in the general secretariat.

World Radiocommunication Conferences (WRC) to deal with the radio regulations will normally be held once every two years. A radiocommunication assembly will normally be held in conjunction with WRCs to organize and approve the work of the radiocommunication study groups. These radiocommunication study groups will continue the CCIR work, but will have a major additional task to prepare for the regulatory as well as technical aspects of radiocommunication conferences. (Ed. note In effect, what used to be called WARCs and CCIR plenary assemblies will occur together, every two years, thus accelerating ITU reaction to perceived needs for revision of the radio regulations and the frequency allocations included therein.)

The Telecommunication Standardization Sector takes over all of the work related to standardization of networks including interconnection of radiocommunication systems in public telecommunication networks and the performance required.

The Telecommunication Development Bureau (BDT) and development conferences within the Telecommunication Development Sector, already established as a result of previous decisions, were confirmed. **WR**

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Congressional

(continued from page 3)

news media boats, all with Amateur Radio operators.

Scoring, rounding times and finish places were reported by hams to the base station, which then made race data available to news reporters. During and between races, radio operators advised the race officials about wind speed and directional changes so that course marks could be reset prior to the next race.

Long Beach Yacht Club has used Amateur Radio as the preferred mode of communication, rather than the crowded marine VHF bands, for 10 years. Of the club's 900 members, over 100 are hams. These hams will also assist in the Transpac and Cabo (San Lucas) races this year, as well as many of the club's local races. WR

Marijean Piorkowski, NO6Y, doubles as radio operator and crew on a mark rounding boat.

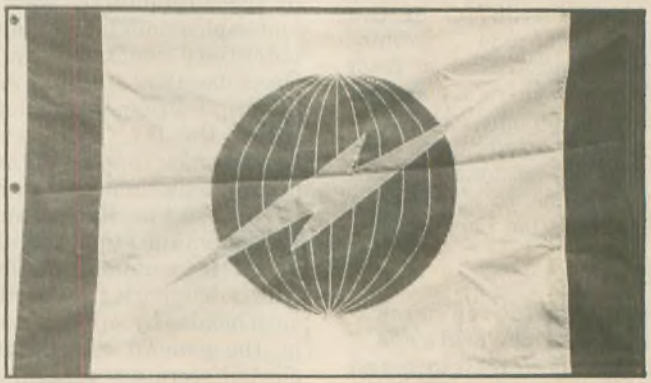
Ham Mariners' flag

There's a new flag flying above the waters of the Pacific Northwest and over several seas of the world. It identifies waterborne Amateur Radio operators in much the same way as call letter license plates identify the motoring ham ashore.

Conceived and designed by Ron Drinkwater, VE7LEA, of Victoria, BC, who holds the copyright, the flag was offered first to members of the BC Amateur Radio Boaters' Net which holds forth daily on 147.320 MHz and 3.855 MHz on the Pacific Coast from 15 June through 30 September. The idea caught on immediately and orders are still coming in from hams seeing or hearing about the flag for the first time and from people wanting gifts for families and friends.

As a result, the flag is now flying from vessels in the Mexican Baja, along Mexico's southern mainland coast, and in the Mediterranean as well as in most ports of the US and Canada's west coast. As cruising hams move farther afield in coming months, the flag is expected to become the object of considerable interest.

Measuring 10½ × 17¼ inches, the flag is made of hand-sewn white nylon. Across each end is a 2 in. blue band representing Amateur Radio from sea to sea, while in the center of the white body of the flag is a depiction of the world, in blue, with white lines of longitude. Across this emblem in gold is the traditional lightning flash running from the bottom of the hoist towards the top of the fly indicating the launching of a radio signal around the world.



Manufacturing the flag, under contract to the designer, is a small Victoria company which developed an interest in ham radio activities as the result of the assistance given by ham radio operators to the survivors of a coastal sailor who died before he could bring his sailboat back from an Alaskan cruise. Although distribution last year was handled through the BC Amatuer Radio Boaters' Net, it has now been taken over by the manufacturer. Flags can be obtained, postage and taxes paid, by sending a money order for $16 along with the Amateur Radio call sign to R. Dunn, No. 19, 48 Hockley Place, Victoria, BC, V9B 2V6. WR

More on the myth of the resonant antenna

The following discourse addresses, point by point, Art McBride's, KC6UQH, March issue response to K5YNR's article, "The Myth of the Resonant Antenna," which appeared in the December issue of Worldradio.

RON NOTT, K5YNR

Mr. McBride states that there is confusion between the terms "resonant" and "self-resonant." Since he offers no definitions of either, let's do that now.

Resonance occurs when inductive reactance and capacitive reactance are equal in value. Note that these values don't just go away, but the inductive reactance is positive and the capacitive reactance is negative, so the mathematical result is zero. Often people say they "cancel" each other and mathematically they do, but the inductance and the capacitance are still there.

Self-resonance occurs when the antenna input impedance, due to the dimensions and geometry of the antenna, has a value of pure resistance (R + j0) at its input terminals. As an example, an electrically short antenna (ex: a dipole less than a half wave long) will have an input impedance with some value of resistance and some value of capacitive reactance. Because it has reactance, it is therefore non-self-resonant. It can be resonated with an inductive reactance equal in value to the capacitive reactance in the form of a loading coil to make the antenna input resonant (pure resistance).

This is a matter of semantics and I hope that the confusion is over. According to Walt Maxwell, antennas should be described as either self-resonant or non-self-resonant.

Under point two, Mr. McBride states that the FCC charts only apply to the groundwave in the near field. This is absolutely not true.

These curves are used by the FCC and professional engineers to determine interference problems between stations hundreds and thousands of miles apart. They are used extensively in the design of directional arrays which determine far-field performance of the antenna systems. The values of field strength given are for a distance of one mile, but by applying the inverse square law and some mathematics, one can provide values for virtually any distance.

As far as point three is concerned, the article was not on impedance matching, but on whether self-resonant antennas are more efficient radiators than non-self-resonant antennas. The way you operate a 1kW transmitter into a non-self-resonant antenna is by impedance matching.

There are many sources of information on this subject, but in my opinion the best and easiest for hams is in Maxwell's book.[1] It's fortunate that broadcast engineers are not encumbered with the belief that antennas must be self-resonant, as stations up to 50kW and more regularly broadcast with non-self-resonant antennas. They utilize impedance matching to get *system resonance* and the proper load for the transmitter.

Point four is again into semantics. So, to be picky, let's state that a ⅜-wave antenna is non-self-resonant. The series capacitor establishes *system resonance*. Since the resistance would not be 50 ohms, additional components would be required to match the output impedance of the transmitter.

Point five again addresses field strength measurements. In doing a directional antenna proof of performance for the FCC, all field intensity measurements are made at ground level. The FCC does not require elevated measurements to be made, simply because the ones made at ground level are fully adequate; whatever the field is doing near the ground can be used to predict what is happening at elevated angles.

None of the previously cited references or the *ARRL Antenna Book*, 16th edition[2] contain the term "injection angle," nor do they state that the maximum field intensity of a quarter-wave groundplane antenna is 30 degrees above the horizon.

The maximum field intensity of a vertical antenna up to about ⅝-wavelength tall over a perfectly conducting ground is toward the horizon (zero degrees elevation). Various ground effects such as soil conductivity and permittivity may affect the angle in varying degrees. KC6UQH does not credit his claims with qualified references; when using such terms as "injection angle," he should refer to his source of information.

Under point six, the answer to the VEC question is not correct and should still be stricken from the Advanced Class exam. Speaking as an Extra Class VE, I believe that *every* question in *all* the FCC license exams should stand up to scrutiny by qualified references. I challenge anyone to provide such a reference to confirm the validity of this VEC question.

In the paragraph following point

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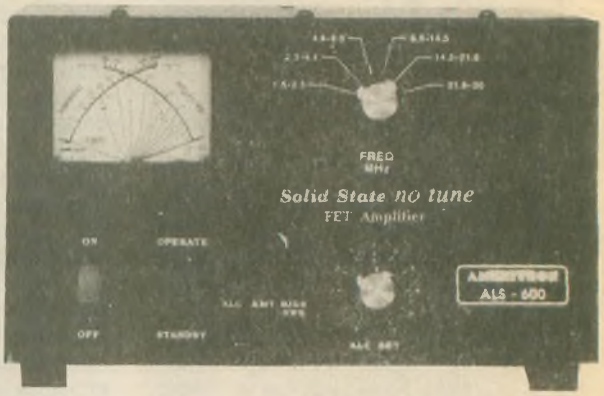

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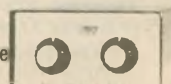

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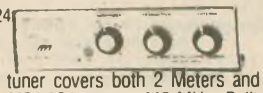

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six, Mr. McBride vaguely refers to a sphere which I assume must relate to the Poynting vector, a means by which the pattern shape from any antenna may be mathematically analyzed. The second sentence refers to demonstrating that ". . . a resonant antenna may provide a greater field intensity than a self-resonant antenna, as the self-resonant antenna is a fixed radiation pattern by definition."

I have no idea what he is saying and can find no reference to this in any antenna book. Again, he fails to define the difference between resonance and self-resonance. The very best source of information on the Poynting vector are from Kraus.[3, 4] Incidentally, Kraus has an excellent discussion on the isotropic radiator and how it is applied in the analysis of antennas.

There is nothing that we can do to "make the open end of the antenna a voltage point." It does this all by itself. The end of the antenna is an open circuit, so there is no place for the current to go. Therefore, there is automatically infinite impedance and a voltage maximum. There is nothing that we can do by juggling reactances at the input to change this.

The resistance of an antenna can be virtually any value. Several years ago, Belrose did a study of mobile HF antennas and pointed out that an 80M, inductively loaded antenna could have a radiation resistance of less than one ohm!

This is absolutely correct, however, most commercial and homebrew antennas also have a significant loss resistance from the loading coil, the vertical radiator and ground loss. Total antenna resistance is the sum of the radiation resistance *and* the loss resistance. Neither a VSWR meter nor an impedance bridge can differentiate between these two resistances. So don't assume that the lowest radiation resistance that an antenna can have is 10 ohms. It can be much, much lower.

And now for the definition of a new term: the "random wire tuner." I don't know what KC6UQH's definition is, but as pointed out in the original article, antenna tuning units should be used with any HF transceiver to allow matching into a load that is not precisely 50 ohms + j0.

Any transmitter or transceiver manufacturer who believes that all antennas present this perfect load is incompetent. That's why tuner manufacturers are selling lots of tuners and the transceiver manufacturers are now including built-in tuners in their transceivers. In the real world, HF antennas are very seldom a pure 50 ohms resistance.

As for antenna Q, Kraus[3] has the most succinct definition: "The Q of an antenna, like the Q of any resonant circuit, is proportional to the ratio of the energy stored to the energy lost (in heat or radiation) per cycle."

Nowhere does he discuss the loaded Q or the unloaded Q of an antenna. The loading of an antenna is its radiation resistance and its loss resistance. How can one unload the Q of an antenna? Again, KC6UQH provides no reference.

Continuing on, I disagree with points made in his discussion of transmission lines. I recommend he consult the Smith chart for a better understanding of how a complex impedance is transformed through a length of transmission line.

For an understanding of this, Maxwell[1] is by far the best source. Maxwell further explains skin effect and coaxial cable. If there is radiation from the outside of the coax shield, it is caused by reasons other than the products of conjugate matching. Radiation from the shield of coax cable can be prevented by installing ferrite toroids on it, such as is done in the W2DU balun.

Finally

An antenna is an electrical circuit, consisting of resistance, inductance and capacitance. By manipulating electrical dimensions and geometry, we can cause the antenna to have a pure resistance at its input terminals.

Does this gain us an advantage? The inductive reactance is still there (any length of wire or metallic tubing has it) and the capacitive reactance is still there (the permittivity of space, otherwise known as the dielectric constant, surrounds each element of the antenna). If we can make the inductive reactance and the capacitive reactance of equal value, then we have resonance. So what? The two reactances are still there, they just happen to be equal in value.

What does that buy us? Only that we don't have to cancel a value of reactance in our efforts to match to the antenna. Is this important? Not really. We know how to make low-loss coils, and capacitors are inherently low-loss devices. So why do we bother?

There is absolutely no valid technical reason. We have been snowed by CB radio witchcraft, the evils of which have permeated Amateur Radio. We should be governed by scientific principles and good engineering practice, but because of sometimes difficult mathematics, we select the mysticism of black magic; mysticism is much easier than learning complex impedance.

To conclude, we have a 2M net here in the Four Corners area, too. We talk about lots of things, but when we're done, we all know that it has just been an exchange of ideas. Without qualified and authoritative references, that's all any of them are. I invite your response to this article, but please provide qualified references with your response.

References:

[1]Maxwell, M.W.: *Reflections—Antennas and Transmission Lines* (Newington: ARRL, 1990).

[2]Hall, G., editor: *The ARRL Antenna Book* (Newington: ARRL, 1990).

[3]Kraus, J.D.: *Antennas* (New York: McGraw-Hill Book Co., 1988).

[4]Kraus, J.D.: *Electromagnetics* (New York: McGraw-Hill Book Co., 1984).

[5]Johnson, R.C. and Jasik, H.: *Antenna Engineering Handbook* (New York: McGraw-Hill Book Co., 1984).

Old China Hands Net

GLENN ROBERTS, KU7Z

When Chuck Glanville, KA0ULX, and I hooked up for our first QSO during early 1986, we soon discovered that we both served in General Chennault's 14th Air Force (Flying Tigers). Chuck was a fighter pilot and flew P-40s and P-51s in the 75th Fighter Squadron of the 23rd Fighter Group. I was a B-24 radio operator and gunner in the 373rd Bomb Squadron of the 308th Bomb Group.

During subsequent QSOs Chuck and I "re-flew" many combat missions. We decided to shop around for other fellows who were in China during WWII and almost immediately came up with four, so we started an informal net. On 2 June 1987 we chartered the China Hands Net with six members. It was a great surprise for me when I learned that member number six, John Sherman, was a B-24 bomber pilot in the 373 Bomb Squadron! We had made several bombing missions together and hadn't seen each other for 43 years. Wow, we sure burned up the airwaves for a while, recalling our experiences in China!

During February 1988 we revised our charter to include personnel who "served in the China Burma India Theater in assistance to China's war effort against Japan." Our membership grew rapidly and we currently have nearly 100 members. Quite often the name "China Hands" was being confused with some sort of current relief organization for China, so our name has recently been changed to Old China Hands. The confusion has ceased and the new name *Old* China Hands is certainly more fitting.

The Old China Hands organization actually has two real old China hands: BV2FA, Shane Tang, and BV2DA, "C.S." Feng. Shane was in the USN SACO and operated clandestine radio stations, in forwarding secret messages and intelligence reports. "C.S." was in the China Air Patrol. Old China Hands has more recently enrolled its first YL, N7NNL, Pauline Thompson, who was an Army nurse in the 112th Field Hospital in India. Another member, 75th Fighter Squadron's Don Van Cleve, is not a licensed radio operator but checks in to the nets via third party with K5HIB. Many of the Old China Hands were CW station operators in the China Burma India Theater and are still avid CW operators.

Old China Hands Net is looking for additional members. Membership is open to anyone who served in the China Burma India Theater during WWII. There are no initiation fees or dues. Members who send in postage donations receive newsletters, notices and member rosters. Monitor or check in to any of our nets, then if interested and you would like to receive more information, send a business sized SASE to Glenn A. Roberts, KU7Z, 1113 Mariposa Way, Boulder City, NV 89005-3139.

Old China Hands Net schedules: Monday and Thursday phone net 1520 UTC, 14.257 MHz; Wednesday CW net 1500 UTC, 14.052 MHz.

Note: Net schedules are still listed in the ARRL Net Directory under "China Hands."

If you are not eligible to join the Old China Hands, you are welcome to "pop in" to any of our nets to say "hello" or get a signal report from several locations in the US. Or perhaps you would like to just hear some of those old war stories. Many of the members get together for informal story-telling on Tuesdays and Thursdays at 1500 UTC on 14.250 MHz. WR

Station AI0D at Red Cross HQ in Lihue stayed on the air with the help of WH6DT; Kyoko and Ed, AI0D, Coan; Richard, VK3JFK; and Sibyl, WH6CG. (*Photos by Chris Stewart, AH6GG*)

Red Cross

(continued from page 1)

Wentworth of their East Hawaii chapter on the Big Island had already set up a Citizens Band station for communication between other shelters in Lihue and between the drivers transporting supplies within the city. When I showed up, his lantern batteries were working fine; but because we had no CB radios at the EOC, there was still no reliable link between the two buildings. Adding that to the half million other problems to solve, I passed the traffic and carried back the reply.

On Monday, 14 September, though, we got a call on 2M from an amateur just north of Lihue, offering a portable HF and VHF station to the EOC. Ed Coan, AI0D, newly arrived to Kauai (now AH6MI), had exhaused his neighbors' welfare traffic on the UN Radio Readiness Group's 20M net (14.268 MHz). I told him no thanks, because RACES was winding down its operation, since SCD was dedicating temporary phone lines (some with military satellite links) from the EOC to various fire and police stations around Kauai.

Fortuitously, I did mention to Ed that we could use something at the Red Cross. As it turned out, because of a lack of resources, SCD could not make available any of those phone lines for the disaster agencies who were slowly taking over the county of Kauai's responsibility to provide basic services (SCD would later provide several cellular phones for Red Cross, but the cells were usually full with other users). I ran over, spoke to Red Cross' Ted Harris and had no problem getting Ed at least a cot to sleep on and an outlet to plug into, when Ted finally got a generator for their new, larger HQ. Ed made plans to come down to Lihue in the next few days.

Coordination

That was the second-most important thing Ed and I did on Kauai: getting him to set up at Red Cross HQ in Lihue. We would later learn that RACES officials had no one to coordinate with in ARES and the early withdrawal of RACES created a critical communications shortage during a still-developing emergency. Of course when he finally arrived, the first thing Ed said to me was, "Greg, we need coordination." We both agreed we were much too busy to even think that straight, and outwardly lamented the lack of statewide ARES support during what should have been a routine operation after Hurricane Iwa swept through Kauai in 1982.

RACES shut down Sunday, 20 September, and I packed up my gear to walk across the street and join Ed at Saint Michael's Episcopal Church, where the American Red Cross had made their new HQ. Although Ed had already been operating for a few days, we began then to independently coordinate emergency communications for the American Red Cross. Their national disaster communications director, Mike Riley, KX1B, met with Ed and I to make sure all the disaster applications centers (DACs) could pass their emergency and priority traffic to Lihue. Later, we would ensure that the shelters and service centers could also communicate back to Lihue.

Amateurs on Kauai passed most of their emergency and priority traffic for the Red Cross on 40M. This mobile rig was operated out of a rental car by Matsu, NH6NY.

40M

We started wth Ed's Yaesu FT-101, his Cushcraft R7 vertical and two VHF radios, a Yaesu hand-held and a Kenwood mobile. Every morning since arriving, either SCD's Tom Simon,

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Matsu Uehara, NH6NY, explains his amateur/Army MARS mobile capabilities to a Red Cross co-worker near Kalaheo on Kauai.

NH6XP, or I had been gassing up a generator on top of the state building in Lihue to use what was left of the 2M statewide RACES link: the 147.04 MHz repeater, minus its microwave link to Oahu. Down south in Kalaheo, Lance, WH6EE, and Kevin, WH6GK, set up my Big Island ARC's portable repeater (146.68) which had come over early on with our Civil Defense director, Harry Kim. Later, David, WZ6V, and Jim, AH6JI, put up the 147.16 repeater to link the Princeville area up north with Lihue.

Those three repeaters effectively covered the population centers of the island, replacing the recently completed linked repeater network that Kauai amateurs had just put up before Iniki took it back down.

Earlier, when Ed tuned up for 40M, he found the unaffiliated Hawaii Emergency Net already in progress, ever since Kimo, WH6AXL, in Hilo (formerly of Kauai) first began calling for amateurs on 11 September. Normally Hawaii amateurs meet daily at 0900 and 1600 HST on 7.285 and 7.290 MHz, respectively, for informal ragchews. Beginning on 7.290, the net moved around because of white noise on Kauai and QRM from the mainland to 7.288, 7.228, and even 7.088. Along the way, James, WH6AXL, Bill, WH6DQ, and Red Cross station AIØD in Lihue traded net control duties with Harry, KH6FKG, who spent countless hours logging every check-in on his computer in Hilo.

Because of that white noise, we relied heavily on 2M, especially for third-party traffic. We made 40M our priority, though, since we wouldn't have to worry about a repeater failing. Ever since the first voice of recovery when Jerry Hill, KH6HU, came up at 2030 HST on 11 September to describe the eerie, dome-like feeling he had at 1530 HST, when the eye of the hurricane passed over his place in Hanapepe, 40 was the band that linked the rest of the state with Kauai. Before the GTE Hawaiian Tel phone banks were set up in the second week, operators on Kauai passed outgoing welfare traffic to anxious amatuers throughout Hawaii via 40, some with free long-distance phone patches. At night, the foreign broadcast stations made 40 very difficult to use and, unfortunately, the old 80M net had not been used in years, though it is still listed in many club newsletters (3.905 MHz at 2000 HST Wed.).

Big Island assistance

After we set up HF and VHF communications in Lihue, things ran smoothly. We continued to use Randy's CB stations in Lihue, and for short periods of time many amateur stations were manned by Kauai operators with time and antennas to spare. We assigned, however, a number of off-island operators to the areas that needed communications the most. These operators included Sam, VK2BVS; Jan, N6USE; Dick, KB7IO; Bruce, K7PXV; and Don, N7OGT. We even had help from the inside, from David, N6QXQ, who was an amateur working in Red Cross' Damage Assessment, but who brought along his 2M hand-held when on-site in Kalaheo.

Packet, station WH6DT-2, set up by Chris Stewart, AH6GG, at Red Cross HQ in Lihue connected through AH6CP-2 on the north shore of Oahu.

Sadly and embarrassingly, we had many problems soliciting help from amateurs on the neighbor islands. We put out a call ot Oahu amateurs for anybody self-sufficient in terms of food, water, fitness and radio gear. No organized ARES existed on Oahu and

all we received in return was criticism for keeping amateurs off Kauai. The International Amateur Radio Network sent many operators, but very few of them were trained emergency communicators; some were too old to be in a disaster situation or did not understand how to pass traffic efficiently. Our biggest problem, however, according to some amateurs in the state, was that we weren't allowing our operators to pass welfare traffic, only emergency and priority. By default, that should have explained the kind of situation the Red Cross was still dealing with on Kauai.

We finally turned to Big Island amateurs because of their current ARES call-up lists. Former SEC, Chris Stewart, AH6GG, arrived and set up a packet link from Lihue to Princeville using the packet switch AH6CP-2 on the north shore of Oahu. East Hawaii DEC, Matsu Uehara, NH6NY, came over with portable HF equipment ready to use on amateur and Army MARS frequencies. They both toured the DACs and shelters around Kauai, assessing and correcting communications problems, such as optimizing the location of the communications equipment with respect to power sources and shelter sites, recharging cellular phone batteries, and maintaining a liaison between the shelter managers and their communications personnel. Before Chris and Matsu arrived, we incorrectly assumed that Red Cross workers in the field actually knew of the numerous ways to communicate back to Lihue.

Because of the lack of operators, though, some places still had to wait for communications. one of the best feelings I had was arriving at the Kilauea shelter, where Red Cross managers Battle Smith and Barbara R. were without communication to Lihue. When I pulled out my Icom 2M hand-held and effortlessly passed their priority traffic to HQ concerning supplies, they nearly cried—they had been saving up their requests for food stuffs, medicines and other supplies for the evening drive back to Lihue and were hoping to see those items arrive the next day. I wish I could have been there when we finally stationed Bruce, K7PXV, at Kilauea. Last I heard, he was teaching Battle and Barbara code and theory in their spare time.

AH6GG-14 received packet at Princeville where Dick, KB7IO, had HF and UHF set up at the fire station near the Disaster Application Center.

Finishing the job

Mike Riley and Ted Harris brought over Red Cross satellite equipment that initially served as their only long-distance phone and FAX lines to the mainland. In time, we found we had four phone lines at HQ, which was comparitively nothing according to Mike; Red Cross HQ had 20 lines during Hurricane Andrew and 30 during Hugo, and they still had logistical problems. Mike knew the Red Cross was a long way from being done and he still needed amatuer communications to cover until commercial communications could be made available.

The most important thing we did on Kauai was help solve that problem. Motorola was trying to cut a deal to provide an 800 MHz trunked system that would cover the island via hand-held UHF radios. Problem was, either the county of Kauai or the state was having a hard time coming up with enough collateral to close the deal. I arranged a meeting between SCD's George Burnet and Tom Simon, both of whom I had worked with at EOC, and the American Red Cross' Mike Riley, who brought with him the collateral of his national organization. With that simple move, we were finally able to wind down the amateur effort on Kauai.

The hard lesson learned: train, train, train. Organize ARES in your area and check in to (or revive) your emergency nets. Practice traffic handling and relaying, especially on simplex (don't count on the repeater). Prepare yourself beforehand; get in shape. Check your equipment regularly and find new ways to improve your station. Have emergency antennas in a bag somewhere, already cut and ready to put up. Be ready to act like a phone booth, but be ready nonetheless. By all means, though, prepare to solve the immediate communications problem so that the professionals can finally step in and finish the job.

Mahalo and aloha

When we finally turned coordination duties over to Ed and Big Island NTS whiz, Rick Risely, WV6K, for the third week of recovery, Ed still hadn't gotten enough sleep and neither of us remembered what hot water was. We owed a lot to our yoemen at HQ: Russ, AH6IP; Sean, AH6KG; Randy, KH6TH; and Tom, WH6GM, all of Kauai; Richard, VK3JFK, of Brisbane; Sibyl, WH6CG, of Honolulu; and Ed's wife, Kyoko. Of the over 60 amateurs who gave what time they could in providing communications to the American Red Cross on Kauai, I say *mahalo a nui loa* (a big, long thank you). You made the spirit of *aloha* real for all of us. WR

Greg Pool, WH6DT, 27, was between jobs when Iniki hit, so he had plenty of time to give to the people of Kauai. Once a geologist at the Hawaiian Volcano Observatory, he now teaches eighth grade earth science at Waiakea Intermediate in Hilo. Greg is now an ARES emergency coordinator for the east side of the Big Island. WR

Silent Keys

J.I.G. Brown, G3EUR

Major J.I.G. "Radio" "B11" Brown, G3EUR, passed away on 11 January 1993. He was born on 7 December 1917 near Glasgow, where he built his first radio receiver at the age of 12 using pocket money from his parents.

After his schooling had finished, he worked for a company called Scott Sessions but became bored with the lack of pressure to keep his inventive mind active, so he left and went to Autotroupe. In 1939, at the age of 22, he was factory manager for Premier Radio. There he met Irene Wilkinson, whom he married in October of 1940.

Meanwhile, war had been declared and John volunteered for service in the RAF, but after all the paperwork had been completed he received call-up papers for the army and, because of his experience with radio, he was drafted into the Royal Signals and sent to Catterick.

In 1941, John was promoted to Second Lieutenant and posted from Catterick to a "closed address," an English country mansion in a secluded area of Hertfordshire named "Frythe" (station nine). It was here he was given his nicknames "Radio" or B11" Brown. Under the cover name "Interservice Research Bureau," it quickly became the center of technical development for communications weapons and special devices for SOE, "special operations executive."

John's first tasks were to design radio equipment for communications by Morse between England and occupied countries in Europe. By the winter of 1941, after many different types and new designs and demands for smaller portable radios became more urgent, the "Type A" with a range of 150-400 miles was born, also known as the "21/1" but more generally called the "A MK1." Immediately after the "A MK1" was finished, work began on higher-power, even smaller radios for use by agents and partisans in occupied territories.

In March of 1942 the "B MK11" was born and soon became the standard "workhorse" for all SOE communications in Europe with a range of about 500 miles. It was also used in the Far East. Still, work continued and the radios condensed down even smaller and, with the aid of valves from the USA, the "A MK111" was produced.

In 1943 Brigadier Nicholls, then chief signals officer, described the need for much smaller radios which were easier to conceal from the Germans, as they were confiscating all the radios that they could find. So John went back to the drawing board and put forward proposals and sketches for a rig that was called MCR1 (miniature communications receiver 1), also called the "Woolworth's communications receiver" and, by the French, "recepteur biscuit" from the biscuit tin that housed the receiver. It covered frequencies 150 kHz to 15 MHz and used a universal AC/DC 90-250V power supply.

It was in 1946 that John obtained his Amateur Radio license, and he remained active both operating and building until the time of his death. He wrote articles for many electronic-oriented publications, and he worked alongside many eminent doctors designing and building the electronics for lifesaving pieces of equipment including the defibrillator, cardiac monitors, and the heart and lung machine.

In 1954 John moved to Ockendon where, shortly after, he formed a company called Averley Electric and was managing director for 15 years, also visiting oil rigs in the North Sea and giving technical advice.

In 1981 John became ill with stomach cancer and had a life saving operation; he then retired in 1982 to pursue his hobby collecting wartime relics. It was at this time that he joined the Havering and District Amateur Radio Club and gave many talks and lectures about his life's work and his travels.

In 1985 John started to liase with the Imperial War Museum at Duxford and put on a special event radio station, GV2SOE, using the "B MK11" suitcase radios to pay tribute to all the agents and resistance fighters. The event was such a success that he started the Duxford Radio Society with the call sign GB2IWM, which is still on the air most Sundays and whose aim is to restore and display wartime radio equipment.

In mid-1992 the cancer returned and this time was not treatable. John will be deeply missed by his family and everybody who knew him. A piece of history has passed on but he will remain within the minds of so many people throughout the world.

Information submitted by David Nuttall, G4ZST

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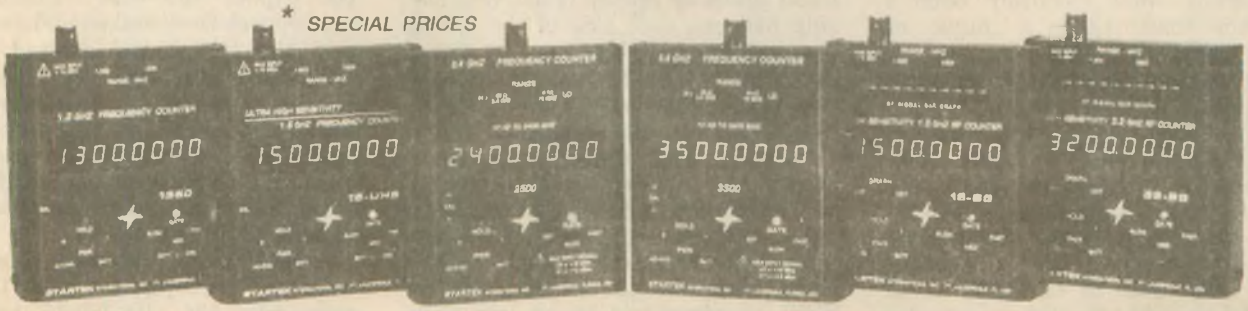

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Product Review

Rutland V/UHF Yagis

RICH ARLAND, K7YHA

I have agonized for several years about getting back in to terrestrial V/UHF DXing. After finally procuring a decent multi-mode V/UHF transceiver, it was time to give some serious thought to a set of antennas for the high bands.

At the '92 Dayton Hamvention I discovered Tom Rutland, K3IPW, owner of Rutland Arrays. After some serious dialogue regarding the K1FO antenna designs that Tom manufactures, I decided to obtain a couple for the station at K7YHA. In the process, I thought that this would make a good product review for anyone interested in some outstanding V/UHF Yagi antennas.

After some discussions, Tom sent two samples of his handicraft: an FO12-144 for 2M and an FO22-432 for 70cm. Both antennas arrived via UPS in a couple of days. The boxes were extremely compact, measuring about 3¾ × 2½ inches × about six feet in length. It was hard to visualize that two *large* high-band Yagi antennas were stuffed into those two *small* boxes.

Each antenna was assembled on successive evenings. Both took about two and a half hours to fully assemble. My family thought I had finally "gone 'round the twist." These two antennas are pretty long compared to the average four or five-element 2M beam. Assembling them inside the house sounded like a good idea at the time. Luckily I had the room available with ready access to the back yard. For those of you who don't have a spare 20 feet of living room available, it might be prudent to assemble these antennas outside.

Assembly went smoothly once I read the instructions a couple of times. Close attention to element length and measurement for installation to the boom is a must. I used a special Lufkin woven tape measure which is accurate to .5 percent. This was marked in inches and milli/centimeters, which greatly aided assembly (all of the element measurements are expressed in millimeters, *not* inches).

The only hitch in assembly came when I found that the 2M antenna did not have the necessary retainers. A quick phone call to Tom and a complete set of retainers for the 2M Yagi was mailed and received within 48 hours. Now that's customer service!

A word about the Rutland Arrays construction: These two antennas are extremely robust. The booms are drilled through to accept a black Delrin insulator on each side of the boom. These serve to insulate the elements from the boom. A retainer (which looks amazingly like an internal-tooth lockwasher) is placed on the element (after careful measurement) prior to insertion into the boom. Each element is then slid into the Delrin insulator (through the boom) until it reaches the pre-positioned retainer. Then a second retainer is placed on the opposite end of the element and pushed down to secure the element in place. Note: Extreme care must be taken when measuring the elements to pre-position the initial retainer at the proper point. Care used in this phase will result in the difference between an antenna that performs well and one that performs in an outstanding manner.

The FO12-144 2M antenna is a 12-element Yagi design that has a measured (advertised) gain of 12.6 dBd. E-plane and H-plane beamwidths are 34 and 37 degrees, respectively. Advertised bandwidth is 2.5 MHz. Front-to-back ratio is 22dB and the antenna exhibits a 50-ohm (nominal) input impedance. The antenna is fed directly with 50-ohm coax via an N-type connector attached to the boom.

The boom is a three-piece affair that utilizes two end sections telescoped into a center section, having a total length of 17 feet, four inches, with a 10 ft., 6 in. turning radius. The feed system is a T-match using a set of "T-rods" that sit below the driven element and are tuned by moving a pair of shortening bars along the length of each side of the driven element. A phasing line made of RG-142B (Teflon coax) provides proper phase relationship between each side of the driven element. Wind surface area is 1.42 sq. feet with a survivability of 120-plus mph. Maximum rated power is 2kW.

The FO22-432 antenna is a 22-element Yagi design that has a measured (advertised) gain of 15.8dBd, with a 22dB front-to-back ratio. E-plane and H-plane beamwidths are 23 and 24 degrees, respectively. Bandwidth is 30 MHz and the SWR is advertised to be less than 1.33:1 between 415 to 450 MHz! This is one wide-band antenna.

The boom is also a three-piece affair with a total length of 14 feet and an 8½ ft. turning radius. Wind surface area is .78 sq. feet and will survive winds in excess of 90 mph. Input impedance is 50 ohms (nominal) and the antenna is fed via an N-type connector. The phasing line, N-connector comes preassembled. The matching system is a T-match and is easily tuned following the directions included. Maximum rated power is 1.5kW.

Both antennas feature all stainless steel element hardware, black Delrin element insulators and booms made from 6061-T6 aluminum tubing. Elements are 3/16 in. aluminum rod for the 70cm Yagi and ¼ in. aluminum rod for the 2M Yagi. The driven element for the 2M Yagi is ½ in. aluminum tubing with ⅜ in. T-rods. Overall construction is extremely rugged. These two antennas are made to last and provide years of trouble-free service.

The antennas were initially tuned in the back yard using a 3 ft. tripod and a couple of 5 ft. lengths of mast. Following the recommended tuning dimensions provided by Rutland Arrays yielded a 1:1 SWR on 144.2 MHz for the 2M Yagi and on 432.1 for the 70cm Yagi. Not bad! Moving up in to the satellite subband portion of both 2M and 70cm yielded a slight increase in SWR, but still well below 1.3:1. Both antennas exhibited a nice broad frequency response, indicating that they could be used for terrestrial DXing (on the low end of each band) and also for satellite work.

Since my installation was to be on my flat dining room roof, a 5 ft. tripod was used. This was hinged on two sides, allowing it to be tilted to accept the antenna assembly. The antennas were stacked and assembled on the ground and the entire array, including the rotor, support masts, and guys were hauled up onto the roof (with rope) as a single assembly. The tripod was tilted over and the entire support structure (15 ft. mast, rotor, and antennas on a 5 ft. mast above the rotor, feedline, and guys) was slid into the tripod. The whole antenna assembly was then walked up to vertical and the tripod leg secured. After tightening down the tripod lugs the pre-positioned Kevlar rope guys were set and tightened using several sets of eyeballs on the ground to ensure true vertical positioning. Coax feedline and rotor cable were secured to the mast and routed to the shack.

Initial tests indicated that the antennas were playing well. I could even hear the OSCAR-13 mode B beacon when the bird was down near the horizon. After several weeks of testing, I can say with some authority that these two antennas work very well. They are relatively sharp in direc-

tivity and have netted me many 2M and 70cm contacts.

Sporadic E openings and the September VHF contest were a true test of these two antennas. Performance is in line with price and construction. The SWR hasn't changed from the figures initially obtained from tuning near ground level. There seems to be little, if any, interaction between the two antennas stacked only five feet apart. Total height above the roof for the 2M Yagi is 16 feet, while the 70cm Yagi is about 21 feet above the roof. Since the dining room is on the second floor, this adds another 20 feet of height to the array.

The bottom line on the Rutland Arrays FO12-144 and FO22-432 Yagi antennas: excellent value for the money; rugged, robust design that will last for years; excellent performance versus cost; high quality materials and construction. I would not hesitate to recommend these antennas to anyone interested in putting up an above-average terrestrial or satellite station. Tom stated that he sells a lot of the K1FO designs for moonbounce stations, so to be considered for EME you know that these antennas really perform.

For further information and current prices on these excellent V/UHF antennas and the full line of Rutland antenna products, contact Tom Rutland c/o Rutland Arrays, 1703 Warren St., New Cumberland, PA 17070; 717/774-5298. WR

Dennis J. Croteau, KA1SNH

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.

Sleek and organized, Dennis', KA1SNH, station can be modified with very little effort.

My station is built in cabinet form with Formica throughout and oak trim. The lower half is tipped slightly for easy visibility and the top of the cabinet has an indirect lighting strip. It's built for flexibility without changing the whole cabinet. Each face quarter can be removed and reworked to accommodate other equipment.

The equipment on the bottom left quarter is a YAESU FT990 with an SP-6 external speaker. The bottom right quarter has a YAESU FT890 which I take out from time to time for mobile use, and a blank insert fits over the opening. To the right of the 890 is an Autek WM1 computing SWR and power meter.

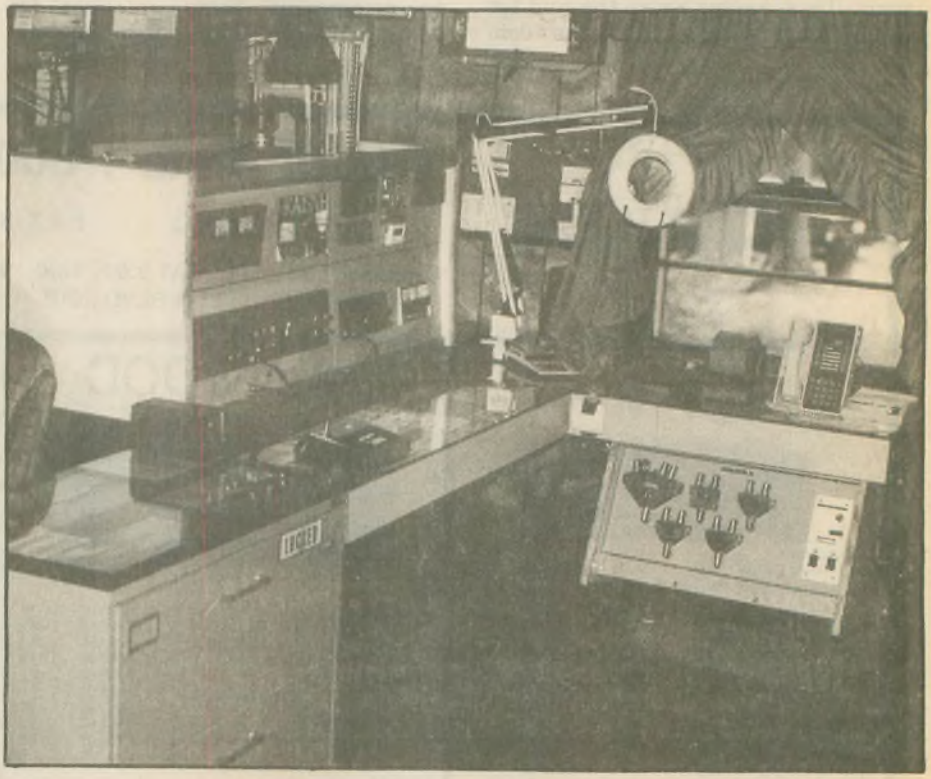
The top left quarter consists of an Astron RS-35M power supply and antenna rotator control for a Ham 3 Rotator. The top right quarter accommodates a Kenwood TM-741A tribander with 220 MHz, 2M and 440 MHz, two speakers for the tribander and the Yaesu 890, along with a world clock and outside digital thermometer.

The antenna switching array also has room for expansion or change with an easy tip-out for workable access. It also has accommodations for emergency DC power (battery) source and an amp meter.

My antenna system consists of a 10M vertical, and 10M, 15M, 80M and 160M dipoles.

I enjoy Amateur Radio along with my wife, Georgette, N1GUL, and daughter, Christine, N1LTH.

I especially like HF and VHF.



Amateur "Hi"

This month's cricket tale is from Ralph Cabanillas, Jr., W6IL, of Hollywood, California. And to think, Jiminy is a ham after all!

My mailbox is not visible from the house, so I decided to install a microswitch in parallel with the "call" button on my gate intercom; now, whenever the mailman opens the box I would get a beep on my intercom. However, I could not distinguish between a visitor buzzing me or the box being opened.

I was installing an interrupter circuit on the box switch, when the lady next door came over to see what I was doing. I explained how now, when I received a series of buzzes, I would know it was from the mailbox and not the "call" button.

All worked fine for a few months until one hot day last summer; the lady phoned me complaining that the wires of my intercom running along the top of the chain link fence were generating a very loud buzzing sound which was bothering her in her kitchen. Norm, K6BA, who was visiting me, and I went to the gate to investigate the problem. When we got to the gate, Norm, who has excellent hearing, was able to pinpoint the source to be a cricket that had settled on my wires.

I believe this may be the first time a ham has ever been accused of causing "MBI," or mailbox interference!

SPECIAL EVENTS

Amateur display at Pioneer Village

The Hastings, NE ARC will operate WØWWV 5-6 June from the Pioneer Village in Minden to commemorate the opening of an Amateur Radio display, assembled by area hams at Pioneer Village.

Operation will be on 3.980, 7.280, 14.250, 21.350 and CW in the top end of the 15M Novice band from 1500Z to 2400Z each day.

For QSL, send QSL and #10 SASE to WØWWV, P.O. Box 128, Hastings, NE 68902.

Stockton-Delta ARC anniversary

The Stockton-Delta ARC will operate W6SF on 29 May to commemorate their 60th anniversary.

Operation will be in the lower portions of the General phone subbands and the Novice subband from 1400Z to 0200Z.

For QSL, send QSL and a 9x12 SASE to SDARC, P.O. Box 690271, Stockton, CA 95269-0271.

Edison Radio Amateur Award

The Genesee County RC will operate W8ACW 5-6 June to commemorate the 40th anniversary of GCRC's Edison Radio Amateur Award for disaster communications.

Operation will be in the General portions of the 80-15M subbands and in the Novice 10M subband from 1300Z 5 June to 1900Z 6 June.

For QSL, send QSL and an SASE to Genesee County RC, P.O. Box 485, Flint, MI 48501.

Yuma Proving Ground

The Yuma ARC will operate a special event station on 19 June to commemorate the 50th anniversary of the US Army Yuma Proving Ground.

Operations will be in the 15 and 20M General and 10M Novice phone subbands from 1500Z to 2400Z.

For a certificate, send QSL and a 9x12 SASE to operator CBA or YARC, P.O. Box 7077, Yuma, AZ 85366.

National Hollerin' Contest

The Triangle East ARA will operate AC4QD on 19 June to celebrate the 25th annual National Hollerin' Contest.

Operation will be on CW 7.135, 21.405; phone 28.335, 14.260 from 0300Z to 1200Z.

For certificate, send QSL and SASE to TEARA, 209 N. Third St., Smithfield, NC 27577.

International Children's Festival

The Great Bay Radio Association will operate WB1CAG on 19 June from the International Children's Festival in Somersworth.

Operation will be in the lower 50 kHz of the General and Novice phone subbands from 1500Z to 2100Z.

For certificate, send QSL and 9x12 SASE to GBRA, P.O. Box 911, Dover, NH 03820.

Grayson County Bicentennial

The Briarpatch ARC will operate NX4B on 3 July from the county seat of Independence to commemorate the Grayson County bicentennial.

Operation will be in the General phone portions of 20 and 40M and the Novice portion of 10M phone from 1700 UTC to 2200 UTC.

For certificate, send QSL and large SASE to James Blythe, NX4B, 202 Locust St., Galax, VA 24333.

During the week of 27 June to 2 July, club members will operate their individual stations using their own calls. A special QSL may be obtained by sending a QSL and SASE to each station contacted.

One millionth passenger

The Pioneer Radio Operators *Society will* operate W2CRY from the Curriers, New York, Railway Station celebrating the one millionth passenger carried by the Arcade & Attica Steam Railroad.

Operation will be in the General SSB/CW 10, 15, 20, 40 and 75M bands with 2M "railmobile" operation on the 145.390 MHz repeater.

For special QSL, send SASE to W2CRY, 9765 S. Protection Rd., Holland, NY 14080.

OFF THE AIR

Pride in helping

I concur with WB6NOA's Mobile column (August '92), that both Henry Allen's Bug Catcher and George Shira's Ham Sticks are great antennas. In fact, when people ask, "If I were going to go only on 75M, what do you recommend?" I answer, "Henry's antenna, of course!" Or, "How about one or two bands?" I answer, "Call Lakeview."

These antennas have their place in HF mobiling. I am impressed with Don Johnson's DK3. It is big and tall, and yes, you don't have to unplug taps. Because of its size I don't think that it is practical for some situations though, for example, my Volvo or a '93 New Yorker.

I don't have fancy test jigs or platforms such as Mr. Johnson has. Yes, meters can tell you one thing, but I stop, look and listen to my customers on 14.303—they are happy, contented, and are not having to carry a tool box to fix their antennas. One trucker has over 750,000 miles on his Outbacker.

My manufacturer takes pride in the workmanship built in every Outbacker. Each one is tested in the field prior to shipment to the USA. I am proud to promote HF mobiling; if I can answer or solve a person's problem in HF mobiling, even if I steer him from my Outbacker, I have accomplished more than popping a few dollars into my pocket.

DON ARNOLD
Outbacker

Real word

I notice letters indicating that we're still fighting the good fight against "destinated" and other such words that no one can find in a dictionary.

"Destinate" is a perfectly good word that entered our langauge around 1400. "Destinated" is in the Oxford English Dictionary with a 1604 citation. There are other works which also list the term.

Its use today as the semi-official 2M signoff is certainly less than ideal. However, it existed just as certainly as did your great-grandparents and, without them, you would not be around today.

Let us think of "destinated" with the same reverential awe that we give our deceased ancestors. Perhaps the word should be buried just as deeply, but its time on earth should not be denied.

TOM CARTEN, K1PZU
Wilkes-Barre, PA

Make me think

The article, "The Myth of the Resonant Antenna, K5YNR, December, 1992, shook what little I know of antenna theory to its absolute core. So how come I didn't put up one 230-degree dipole instead of three 180s (10, 15 and 20M)?

I have heard before that a good antenna tuner (what's good??) will load a transmitter to anything. (?) Mine, an MFJ 949C, hardly has any effect whatsoever on my 10M dipole, and it was carefully cut for the center of the band—one would think that I could operate without it.

What does K5YNR mean when he refers to a calibrated field intensity meter? Would that be a "Byrd" or would it be something much more costly?

I also note in his first paragraph "what is commonly called a VSWR meter." I have read and discussed this subject a great deal and never before (not one time) have I noted an SWR meter being called or referred to as a VSWR meter—anything but common.

It's a love/hate relationship that I have with articles like this: They make me think and I hate them.

PETER NEWBERG, KK6HU
Bakersfield, CA

Olsen schematics

I have a 6M transceiver, Olsen model RA570. I would like to know where I might get a schematic for it, or the frequency of the two crystals that it uses.

If you can help me out with this, I sure would appreciate it.

JOHN McKEE
Fremont, IA

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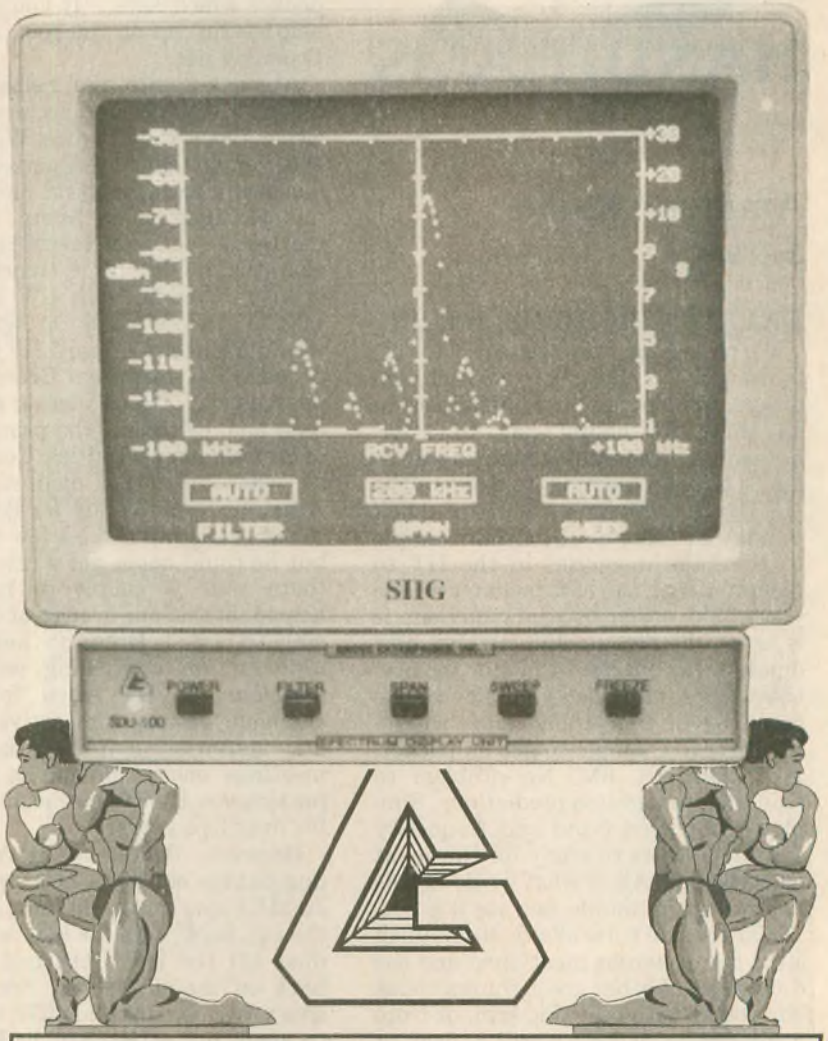

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DAVID FAIRCHILDS, N6XJP

We often forget how easy it is for us, those without physical or mental handicaps, to be a ham and participate in all that the hobby has to offer. Remember how really simple it was to get to the last meeting; to tune up the HF rig on 40M for a couple of quick Sunday afternoon QSOs; how simple to reset the memories in the HT to realign it with the new repeater or one you would rather use; how obvious it is as to where you will hang that new dipole or lay out the forms for the new tower base, or attach your key to the new DSP do-everything super whammy rig? How simple to get on packet, ATV, OSCAR, 6M. No problem to read the propagation predictions. Simple to tell what band and frequency you're on. Easy to study for that next license exam. All of what we *do* in this hobby is quite simple, and yet it is not.

What would it be like to accomplish all of the activities mentioned and the thousands of other great things about our hobby with only one arm, or from a wheelchair, or from a bed, or deaf, or blind, or a victim of Hodgkin's disease, leukemia, polio or other crippler. Go ahead, try it . . . close your eyes and reprogram your HT. Try copying code using a light flashing instead of a tone. Button your shirt with only your left hand. Tune your rig blind. Zero-beat a signal with earplugs. To imagine such things is tough enough, let alone do them.

And yet there are hundreds of hams out there doing very well conquering the radio hobby *and* a severe handicap. There are lots of folks out there who need a helping hand but will never ask for it. Is there a special ham in your club or group now? Think of how much less our club would be without him or her. When was the last time you asked if help was needed with a new antenna? Ever stuff a note with your phone number in his or her pocket which says, "If you ever need help gettin' up on the roof, call me"? Probably not.

About a month ago, helping a handicapped ham never occurred to me either. Then I met Bruce, W5PNQ . . . W5 Pennies Nickles Quarters. Bruce has been blind from birth and is now a middle aged man living with his mother in southern New Mexico. He is also the holder of a General Class license, WAS in both CW and SSB, DXCC, and a stack of QSLs that would make any diehard HF ham very proud. Five years ago Bruce's father passed away. Bruce's father was also a ham and, of course, the prime mentor in Bruce's ham activities. Consequently, when his father died, so did the Amateur Radio hobby for Bruce.

Bruce tried to make a few meetings, but he could never get a ride. At first there were a couple of folks who helped, but no one ever went out of the way to assist Bruce in keeping his radio station functioning, helping him program his HT when frequencies changed, getting him active in Field Day activities, or just getting him to meetings once a month so he could participate. He had not been on the air for over five years.

Recently, Bruce, his mother and I dug out the old Swan 350, strapped on an MFJ apartment antenna, grounded the rig, hooked up the key, burned the dust off the old tubes and got him back on the air, for the first time in five years. Oh sure, his CW was rusty to send, but remember, he learned it by sound only in the first place. He was copying 15 to 20 wpm within 90 minutes — in his head! No longer was Bruce housebound. He was back out in the world — Cuba, Paraguay, Hawaii, Russia, Ukraine, Alaska, New York — back out in the world where it didn't matter that he was sightless. He was again W5PNQ, no longer "the blind guy in Apt. 30."

What did it cost? About two hours. And you should see the smile it brought him, brighter than the final tubes of the old Swan.

How many Bruces are there in your town? Many, I'll bet. They are waiting for you or your club to do something, but they don't know how or may not want to ask. They may not even known you exist. They may not know that this incredible hobby is tailor-made for folks who get out seldom and can't always do for themselves. How about grabbing a few bucks from the club treasury and running a couple of ads in the daily to actively recruit Handi-Hams? What will it cost us to try? A couple of hours? A couple of bucks? I wish you could see the smile on W5PNQ's face.

If you're on 20M CW, listen for Bruce. But you better be quick—we hooked up a paddle last weekend and he is really getting fast. WR

Visit Your Local
RADIO CLUB

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

ALABAMA

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

ALASKA

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

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

ARIZONA

Central Arizona DX Assoc. (CADXA). Meets 1st Thurs./monthly, 7 p.m., Salt River Project Pera Club, ½ 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. 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(-), 224.080(-). PL 107.2. Nets 147.570 Wed./Sat., 7 p.m. Info (619) 697-2700.

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

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

Contra Costa Communications Club, Inc., 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, KA6OFR, (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., Northbrae Community Church, 941 The Alameda, Berkeley, CA. 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 Center, 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, Repeater 146.25/85. Meets: 3rd Fri./monthly, 8 p.m. at 1528 Esplanade, Room 110B, Chico.

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

Lee DeForest Amateur Radio Club. Meets 3rd Thurs./monthly, 7:30 p.m., San Jacinto Civic Center, 625 S. Pico Ave., San Jacinto, 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 K6IS Thurs., 8:00 p.m. 145.190. 220 Net, Tue. 8:00 p.m. 224.40(-).

Orange County Amateur Radio Club. Meets 3rd Fri./monthly, 7:30 p.m. at 907 E. Vermont, Anaheim, CA. (Between Anaheim Blvd. & State College) Call in on 146.550 simplex. Contact Ken Koehechy W6HHC at (714) 541-6249.

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

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

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

Santa Clara County Amateur Radio Assoc. (SCCARA) W6UW & W6UU. P.O. Box 6, San Jose, CA 95103-0006. (408) 249-6909. Meets: 2nd Monday/monthly, 7:30 p.m. at 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 (–600 kHz), 224.26 (–1.6 MHz), 444.60 (+5 MHz). 2 meter/220 net Mon. 9 p.m. Mtgs.-3rd Fri.

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

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

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

Sierra 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–.

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

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

Tehama County ARC. Meets 1st Fri./monthly, 7 p.m., Sept.-June, CA Div. Forestry Training Rm., Antelope Blvd., Red Bluff, CA. For info: 144.850/145.450 W6SYY/R.

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. Repeater: 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 146-940/340, info net Sun. 7 p.m. 146.940/340.

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 School Dist. Office, 4115 Jacksol Dr., San Jose, CA. W6PIY/R. Net Tue., 8:30 p.m. 147.39+, 223.96-.

Yuba-Sutter Amateur Radio Club (YSARC), P.O. Box 1169, Yuba City, CA 95991. Meets 2nd Tues./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

Middlesex Amateur Radio Society, (MARS). 5 North Rd., Cromwell, CT 06416. Meets Tues./weekly 7 p.m., Portland Methodist Church, Main St., Portland, CT. Novice classes, VE sessions monthly. Contact Jack, WA1K, (203) 347-8745. Rptr. 147.090+.

DELAWARE/PENNSYLVANIA

Penn-Del Amateur Radio Club. P.O. Box 1964, Boothwyn, PA 19061. Sponsor of KA3TWG/Rptr. on 224.220 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/.07.

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

Sarasota Amateur Radio Assn. (SARA). P.O. Box 3182, Sarasota, FL 34230. Meets 3rd Tues./monthly, 7:30 p.m., Sarasota Memorial Hosp. Auditorium.

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 7373, Hudson, FL 34676. 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. and 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, 7:00 p.m., HELCO Auditorium, 1200 Kilauea Ave., Hilo. Talk-in on 146.760(-), 146.880(-), 147.020(+) and 147.040(+).

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. at 9 p.m. on 146.76. Meets 3rd Wed./monthly 8 p.m.

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

Fox River Radio League. Old Bank Bldg., 900 No. Lake St., lower level, Northgate Shopping Ctr. & Rt. 31, Aurora, IL. Meets 2nd Tue./monthly, 7:30 p.m. VEC Xams 3rd Tue./monthly, 7:30 p.m.

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, 28.410 MHz; Mon. 9 p.m. 146.43 S.; Packet Mailbox 145.07. Info: (708) 535-3496.

Peoria Area Amateur Radio Club, (PAARC). Meets 2nd Fri./monthly, 7 p.m., 1401 N. Knoxville Ave. For 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. Cntr. 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), Hazel Crest Village Hall, 3000 W. 170th Pl. Net Wed. 146.49, 8 p.m. 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. 8:00 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 Tues./monthly, 7 p.m., Society Bank, 1478 Chelsea-Manchester Rd., Chelsea, MI 48118.

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

Michigan Amateur Radio Alliance, (MARA). O-11555 8th Ave. NW, Grand Rapids, MI 49504. Meets 1st Thurs./monthly, 7 p.m., TJ Mfg., 1739 Elizabeth, Grand Rapids, MI. STBY 145.780 + 145.410.

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

MINNESOTA

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

MISSISSIPPI

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

MISSOURI

Gateway To Ham Radio Club, N8DN. 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., 7:30 p.m. at Omaha Red Cross near 38th and Dewey Streets. Main 2M Net Sunday night 0200Z on 146.94R.

NEVADA

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

Sierra Intermountain Emergency Radio Assoc. (SIERA). P.O. Box 2348, Minden, NV 89423. (702) 265-4278. Meets: 2nd Tue./monthly, 7:30 p.m., Douglas County Lib., Minden, NV. Talk-in: 147.330.

NEW HAMPSHIRE

Great Bay Radio Assn., WB1CAG. P.O. Box 911, Dover NH 03820. (603) 332-9137/332-7343. Meets 2nd Sun./monthly, 7 p.m., Rochester Court House/City Hall. 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., 144.400 9 p.m. Wed.

Delaware Valley Radio Assoc. (DVRA). Meets monthly, alternating 2nd Tues./Wed., 8 p.m., Our Lady of Good Counsel Church, West Upper Ferry Rd. at Wilburtha Rd. in W. Trenton, NJ. W2ZQ/R 146.07/67. DVRA Ham Hotline (609) 882-2240.

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

NEW YORK

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 Center, State St., Batavia, NY 14020. Meets: 3rd Fri./monthly, 7:30 p.m. 147.285 + W2RCX.

Hall of Science Amateur Radio Club. P.O. Box 131, Jamaica, NY 11415. HOSARC, 2nd Tue./monthly, Hall of Science Bldg., 47-01 111 St., Flushing Meadow Park at 7:30 p.m. For info call Charlie, WA2JUJ, (516) 420-0046.

New York City Rpt. Assoc., P.O. Box 140819, Staten Island, NY 10314-0919. Meets 2nd Thurs./monthly 8 p.m., Eger Nursing Home. Talk-in Rptrs. 146.880/447.375. Info: (718) 998-1088.

Orleans County Amateur Radio Club (WA2DQL). Meets: Emergency Management Office, West County House Rd., Albion, NY 14411, 2nd Mon./monthly, 7:30 p.m. 145.270 – WA2DQL.

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

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

Suffolk County Radio Club (SCRC). Meets 3rd Tues./monthly, 8 p.m., Bohemia Rec. Ctr., Ruzicka Wy, 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. For info call Dan Grabel, N2FLR, Pres. (914) 723-8625.

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

NORTH CAROLINA

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

Rowan Amateur Radio Society (RARS). Meets 2nd Mon./monthly, 7:30 p.m., Rufty-Holmes Sr. Cntr., 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 Thur./monthly, 7 p.m. at Stanly Community College, Albemarle, N.C.

OHIO

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

Clyde Amateur Radio Society (C.A.R.S.) Meets 2nd Tue./monthly, 7:30 p.m., Municipal Bldg., Clyde, OH 44811. NF8E Rptr. 447.625/442.625. 444.60 (+5 MHz). Net Sun. 9 p.m.

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

Lancaster & Fairfield County A.R.C. Meets 1st Thur./monthly, 7:30 p.m., American Red Cross, 121 W. Mulberry St., Lancaster, OH 43130. Info Net every Mon., 8 p.m. K8QIK/R 147.63/03 Rptr.

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

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

Springfield Independent Radio Assoc., (SIRA). Call-in 145.45—224.26. Meets 2nd Tues./monthly, 7:30 p.m., Mercy Hosp. and 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. W8HHF 147.87/27 Rptr. Rptr. info/swap & shop, Sundays, wkly — 8:30 p.m.

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

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, WA5OUB. 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 3rd Thur./monthly, 7 p.m., Bend Senior Cntr., 1036 NE 5th, Bend, OR. Net Sun. 7:30 p.m. 147.06 + MHz. Info call: (503) 382-1739.

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

Oregon Coast Emergency Reptr., Inc. P.O. Box 254, Florence, OR 97439. Meets 3rd Sat./monthly, 9 a.m. for brkfst. Net, Wed. night, 7 p.m., 146.800. Info: 997-2323 or 997-3081.

Umpqua Valley Amateur Radio Club, Inc. 450 S.E. Leland St., Roseburg, OR 97470. Meets 3rd Thurs./monthly, 7:30 p.m., Douglas County Courthouse, Rm. 311, Douglas St., Roseburg, OR. Info: W5PII/R 146.90/30.

PENNSYLVANIA

Mercer County Amateur Radio Club W3LIF. P.O. Box 996, Sharon, PA 16146. Meets 4th Tue./monthly at 7:30 p.m., Shenango Valley Med. Center, Farrell, PA. Net, Thur. 9 p.m. on 145.350 W3LIF, Digi. 145.010.

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 147.690/147.090 Wed. 8:30 p.m. and 28.450 Sun. 9 p.m.

TENNESSEE

Nashville Amateur Radio Club. Meets 3rd Thurs./monthly at Lock 2 Metro Park, located off Pennington Bend Rd. Grilled hamburgers at 6 p.m., mtg. at 7. Info: Jim Lynn, 1621 Jackson Valley Pl., Hermitage, TN 37076.

TEXAS

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

VIRGINIA

Southern Peninsula Amateur Radio Klub (SPARK). Meets: 1st and 3rd Tue., Salvation Army Community Bldg., Hampton, VA. Rptrs: 146.13/73 & 449.55/(–5) T. VE Exam Info: (804) 898-8031, W4RTZ.

Virginia Beach ARC. Meets first 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 Thur./monthly, 7:30 p.m., United National Bank of Ripley. Net Mon. 9 p.m. on 146.67/.07 WD8JNU/R.

Tri-State Amateur Radio Assn. Club mtgs. 1st 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 Thur./monthly, 7 p.m., Sheridan College Tech. Cntr.; Saturdays, 8 a.m. at J.B.'s Info: (307) 674-6666, WA7B.

DX WORLD

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

W-100-N

The following DXers were recently issued ***Worldradio's*** Worked 100 Nations Award:

451) Eietsu Nitanai, JA7DOT, 8 April '93

452) Maria L. Evans, KT5Y, 8 April '93

Worldradio is running out of certificates. A completely new design of a certificate is in the process. Most likely the award will be a bit smaller than the certificate we have been using for 15 years. Armond is in charge of the new design.

Mauritius (3B8)

There is an article in the April 1993 issue of *National Geographic* regarding this one. There is no reference to Amateur Radio, but is interesting reading. The article, "Island of Quiet Success," begins on page 110.

As for activity from Mauritius, 3B8CF can be found on 30M around 0300 UTC on Fridays. Look for him near 10.102 MHz. However, his 30M operation has not necessarily been restricted to Fridays, so check other times and days. Try also the 1200 to 1400 UTC period. No phone operation.

This station has also been worked on 40M near 7.004 MHz after 0200 UTC. And, a single 12M contact was reported by a DXer from Minnesota who worked him on 24.902 MHz at 1530 on 19 March, CW of course.

On 20M CW 3B8FG has been very active. Look for this one between 14.008 and 14.022 MHz between 0245 and 0400 UTC and again between 1230 and 1330 UTC.

Uganda (5X)

Bruno, 5X1A, has been real busy on the scene. We stumbled across him one Sunday afternoon while he was working list style on 15M. This seems to be the only band he operates as there isn't any other activity to indicate such. Try looking for Bruno near 21.2302 MHz from 1900 UTC.

For a CW contact look for 5X1B between 21.024 and 21.029 MHz from about 1830 UTC.

Algeria (7X)

The DX Bulletin reports 7X2WAK is active from Algeria regularly on 15M near 21.255 MHz, although he has been found as low as 21.247 MHz. Look for this one between 1330 and 1530 UTC.

On 75M 7X2BK has been very active working the East Coast and Mid-west. Look for this one between 3.793 and 3.800 MHz from 2300 UTC. With the summer months coming it looks like this station has switched to 10M, as he was reported on 28.440 MHz between 1330 and 1415 UTC in early April. Other calls reported from Algeria include the following:

7X2DG	28.463 MHz	1630 UTC
7X2FK	14.033 MHz	0315 UTC
7X5DJ	3.796 MHz	2245 UTC

Mayotte (FH)

During the first couple of weeks in March FH5CB was busy handing out a new one to the deserving DXer. This station was reported often on 20M between 14.233 and 14.256 MHz after 0330 UTC. He was also worked on 10M near 28.655 MHz around 1530 UTC on 5 March.

Greece (SV)

Upon checking through the two major DX newsletters we receive, the following calls in Greece were reported during the month of March:

SV1AOZ	3.794 MHz	0500 UTC
SV2BBH	10.102 MHz	2230 UTC
SV2BET	21.251 MHz	1500 UTC
SV2BFL	28.020 MHz	1630 UTC
SV2BFM	14.028 MHz	1500 UTC
SV2BOH	10.100 MHz	2300 UTC
SV2BUF	28.015 MHz	1730 UTC
SV2UF	21.021 MHz	1445 UTC
SV8ZS	1.840 MHz	0400 UTC

That 75M contact with SV1AOZ was reported for a contact made by a DXer in Iowa on 4 March. And the 160M contact was made with a DXer in the southeast US on 21 March.

Dodecanese Islands (SV5)

SV5TH has been active from the Dodecanese Islands. Check 15M between 21.021 and 21.038 MHz between 1400 and 1700 UTC. He was also reported on 40M near 7.015 MHz at 2300 UTC on 7 March, also working into Iowa.

We also had a report of SV5TS on 21.284 MHz around 1430 UTC early in March.

Crete (SV9)

Only one report of activity from Crete was found during the month of March. On 10M SV9ANH was worked on 28.485 MHz around 1330 UTC on 14 March by a deserving DXer in Texas.

IOTA

Dick Schott, KA2PHQ, will head north on vacation for about two weeks of IOTA operating from at least eight islands. His operation will begin about 1 May and continue about every other day from the following islands:

1 May	NA-014	Campobello Island
3 May	NA-127	Brier Island
5 May	NA-126	Tusket Island
7 May	NA-081	Tancook Island
9 May	NA-010	Cape Breton Island

11 May	NA-154	Pictou Island
13 May	NA-029	Prince Edward Island
15 May	NA-038	La Madeleine Islands

Dick reports that he will check in to the Century Club Net on 7.233 and 3.903 MHz, at 0000 and 0200 UTC, respectively, and in to the HHH Net on 7.235 MHz at 0700 UTC. Also, check 14.260, 18.160, 21.360, 24.960 and 28.460 MHz. Dick will not meet on the normal 21.260 MHz IOTA frequency. We are sure you will have IOTA chasers looking for you, Dick. N6JM needs four of those islands. We only wish that you could have informed us sooner, as your operation will have begun by the time readers receive this issue of ***Worldradio***.

A few interesting islands or island groups have been on recently. Here is a sampling:

EU-037 Oland Island	SM7CRW
EU-123 Isle of Arran	GM3UA
AF-057 Nosy Be Island	5R8DJ
AS-017 Okinawa Archipelago	JR6AZ
AS-025 Iturup Island	4K5RRC
AS-047 Daito Island	JI6KVR/P
AS-075 Taipa Island	XX9TRJ
AS-103 Pescadores Island	BV4AS/7
NA-014 Campobello Island	VE1ST
NA-040 St. Lawrence Island	WL7FZ
NA-045 Cancun Island	XE3/K9EL
NA-058 Cumberland Island	W4JKC
NA-069 Pine Island	W4/GUØALD
OC-033 Loyalty Islands	FK/DJ5CQ
OC-056 Henderson Island	VR6BX/HI
OC-132 Woleai Atoll	V63MF
OC-158 Florida Islands	H44MS
OC-180 Ngulu Atoll	V63AS
SA-015 Los Monjes Archipelago	YW59M
SA-024 Cananeia Island	ZW2SP
SA-045 Bailique Island	ZV8BI

The weekend of 20 and 21 March there was a station singing ZY5TAG and stating that he was a DXpedition to Paad Look Rocks. We later learned that this was on the mainland and not an island. Save your money on this one, unless you need a ZY5 for WPX.

And during the recent WPX Contest there were several IOTA counters, including that of YW59M and ZV8BI.

Bernard, H44MS, made a brief visit to Tulagi Island in the Florida group (OC-158) the end of March until about 1600 UTC on 1 April.

The latter part of April G3ZAY was to be in California operating as NU2L/W6 from Anacapa Island (NA-144) 18 and 19 April, and from California State South (NA-066) 20 and 21 April. Both are part of the Channel Islands off the southern California coast.

The gentleman in the corner here is Berndt Lindersson, SMØHUK. He often operates from SJ9WL from Morokulien. This "country" was founded in 1914 in memory of 100 years of peace between Sweden and Norway. Morokulien has an Amateur Radio station to represent it, using the above call for Swedish amateurs and LG5LG for Norwegian amateurs. It is reported to be the only country in the world where two different country's stamps are legal for outgoing mail. Many thanks to John Tull, KDØJL, for the photo and the information.

Ed Morrison, K9HLT, requests information on the IOTA program. I'm sure there are others, so here we go.

IOTA, or Islands On The Air, was created many years ago by the world famous SWL Geoff Watts of the United Kingdom.

The object was to work the islands of the world, beginning with the basic award of 100 different islands, representing all seven continents. The seventh is Antarctica, which is not recognized by the IARU for their WAC award.

As Geoff was getting along in years it got rather difficult for one man to handle, so it was turned over to the RSGB—the Radio Society of Great Britain. The program has to be self-supporting, so the awards and the directories require a fee. The directory includes your personal serial number and is required when applying for an award. For further information North Americans may contact Dewitt Jones, W4BAA, P.O. Box 379, Glen Arbor, MI 49636. The fee for the 1993 IOTA Directory is $8, which now includes 60 pages of information on the island groups.

DXAC matters

The ARRL DX Advisory Committee has voted unanimously to recommend that Czechoslovakia be deleted and that the Czech Republic and Slovak Republic be added to the DXCC Countries List.

The recommendation will now go to the ARRL awards committee for consideration. The start dates will be announced by the awards committee pending their action. Do not submit any QSL

cards to the DXCC desk for these countries until they have been officially added and the date of acceptance has been announced.

This is somewhate like the deletion of Germany and the addition of East Germany and West Germany 20 years ago. One's overall DXCC country count goes up.

The DXAC also acted on the status of one of the DXCC rules, where the committee voted 14 to one to not change Rule 10 to allow contacts made from a club station to apply to an individual DXCC award. DXAC members saw no compelling reason to change the existing rule.

The DXAC voted to publicly announce vote results and to keep the Amateur Radio community informed of the issues under consideration.

DXCC backlog status

The DXCC desk reports that as of the end of March the backlog of unprocessed applications was 1,830. The number of QSL cards to be checked included 125,728.

Applications being sent out at the end of March were received 9 1/2 to 12 weeks earlier. Twenty applications were received prior to that time.

256 DX Group

The 256 DX Group meets daily on 14.256 MHz, except during the major DX contests. Depending upon propagation the net begins around 2300 UTC and runs until about 0330 UTC. The net is informal and DXers need not be members of the group.

The group also publishes a newsletter out of Montreal, six issues per year. The subscription rate to *The 256 Bulletin* is $12 in US funds for stateside DXers. A sample copy is available for $1 or two IRCs. Interested parties may contact Zareh Amadouny, VE2DWH, 18 Nisko, DDO, PQ H9G 2R5, Canada.

Antique QSLs

Here are a couple of oldies recently sent to us by Ray Balch, K6VX. The first card is for a QSO made by Ray with

MF2AA of Trieste Free State back on 23 July 1949. Ray calls our attention to the old Q and R method of signal reporting. The old meters were R-meters before we were enlightened and started to call them S-meters. The operator of MF2AA was Major Bob Carragher, G3BQZ.

The second QSL card is for a contact made with ET3AH in Ethiopia the same

year on 10M *phone*. And, of course that was AM and not SSB. ET3AH was using a two-element rotary beam. The receiver at that end was an old SX42 while MF2AA was using an SX28, both Hallicrafters.

"We were all running very low power in those days," says Ray. "I particularily was just running a pair of 6L6s in push-

pull with about 30W output to a dipole."

Ray says that conditions on 10M in *those days* were excellent, with no big DX pileups like we have today or operators who keep calling even after the DX station has come back to someone. Most of the contacts were very friendly and often lasted 15 to 20 minutes.

Ray was W8ZVL, residing in Detroit back in the 1940s. We signed with that call from 1947 to about 1965 when he received his California call of W6ESI. He later picked up additional calls of W6GAN and K6VX and held all three calls until about 1978 when the FCC told him to make up his mind on which call he wanted to retain. Ray now resides in the wilds of Siskiyou County in northern California.

QSL information

When using the QSL routes of various publications, including this one, it is recommended that the latest issue of the *Callbook* be used. QSL managers do move and often the forwarding address notice has expired, resulting in your QSL card coming back.

In a recent issue we printed the QSL route for FK8EJ to be KB5ZM. Evidently, FK8EJ is Slim as KB5ZM knows nothing of him. Guess who worked Slim?

Serge Glushhenko, RA4CDE, reports that the QSL bureau at P.O. Box 88, Moscow, is very much overloaded and takes over a year for the card to clear through the bureau. As a result, Serge, along with UW6HS, is operating a private QSL bureau. Serge asks a payment of one IRC or stamps of your country. However, he did not state if it were one IRC per QSL card or one IRC per packet of cards. We shall assume he means one for each QSL card. Serge can be reached at: Melnichnaja 13, Krasny Kut 413240, Russia.

Meet ZB2GR of Gibralter, taking time out for his picture.

QSL routes

3C1TR	—KE7N	A25/WD8NMV	—WD8NMV
	(see note 1)	AA4HU/D2	—AA4HU
3D2CC	—VE6AKV	C49C	—5B4NC
3D2KM	—VK4CRR	C53CB	—F1MXH
3D2QB	—SM3CER	C91J	—W8GIO
3D2TL	—HB9TL	C91S	—W8GIO
3G1I	—CE1HIK	CJ6V	—VE6JAV
3G1Y	—CE1YI	CKZ7SZ	—VE7SZ
3G3R	—CE3FIP	CQ1A	—WA1ECA
4D9AXJ	—DU9CO	CR5E	—CT1EEN
4D9RG	—DU9RG	CR9R	—HB9CRV
4J8GC	—RA4CDE	CS5A	—CT1AVO
4K1B	—UZ1PWA	CUØWPX	—KB3RG
4L3Q	—DF9LJ	CU1AC	—W2FXA
4O1V	—YU1DX	CU2T	—CU2CE
4T4ANR	—OA4ANR	CZ7Z	—VE7ZZZ
4V2B	—F6DZU	D2BG	—F6FNU
4V2PK	—HH2PK	DAØSAX	—DL1SBF
5B8ØCSA	—5B4GJ	EA7HAL	—N5OKR
5H3MT	—JA3PAU	ED3HH	—EA3CWK
5R8DJ	—DL7FT	EG1RJ	—EA1EVY
	(see note 2)	EG1RX	—EA1JP
5T5AO	—DC8TS	EH1DD	—Bureau
5X1XA	—N3JCL	EH1WWE	—EA1EPB
5X1XB	—WF5T	EI7M	—Bureau
6D2X	—KD5GY	ERØF	—DF8BK
6FØS	—AA7FM	ERØQ	—SP7LZD
7Q7ZZ	—JA1UMN	ER4OWQ	—SP7LZD
8Q7AF	—I8RIZ	FK8GJ	—F6CXJ
9A7A	—9A1HDE	FP4EK	—K1RH
9G1AA	—PA2FAS	FS/DF4VX	—DF4VX
A22EX	—N4CID	FT5YE	—F1AAS
		FW/HB9TL	—HB9TL

DX Prediction — June 1993

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

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

CENTRAL USA

UTC	AFRI	ASIA	OCEA	EURO	SO AM
8	*(20)*	17	*18	*(14)*	*15
10	*(23)*	*14	*16	*(15)*	*17
12	27	16	*15	18	21
14	31	19	*(14)*	20	26
16	33	19	*(14)*	22	*29
18	*34	*(17)*	*(14)*	22	*31
20	28	21	26	20	*33
22	23	23	31	19	*29
24	20	23	33	15	*24
2	*17	23	33	13	*21
4	*19	21	31	*16	*18
6	25	21	*27	*19	*16

WEST COAST

UTC	AFRI	ASIA	OCEA	EURO	SO AM
10	*(17)*	*21	*16	*(15)*	*20
12	*(20)*	*17	*15	*(15)*	*(18)*
14	*(23)*	*19	*14	18	24
16	*(25)*	19	*(14)*	20	28
18	27	16	*(14)*	22	31
20	28	20	26	19	*32
22	23	24	31	17	29
24	20	*26	34	14	*26
2	*(17)*	*28	34	*(12)*	*22
4	*19	*29	32	*(16)*	*19
6	25	*27	27	20	*17
8	20	*25	*18	*19	*15

EAST COAST

UTC	AFRI	ASIA	OCEA	EURO	SO AM
7	*(19)*	17	*20	14	*16
9	21	*(15)*	17	16	*17
11	26	*(17)*	16	19	20
13	30	19	*(15)*	*21	*25
15	32	17	*(14)*	*22	*29
17	33	*(14)*	*(14)*	*23	*31
19	*30	*(16)*	*(17)*	*22	*33
21	25	*(19)*	29	*20	*31
23	21	21	32	*18	*28
1	*18	22	33	*15	*23
3	*15	21	32	*13	*20
5	22	21	29	*17	*17

FW/JF1WQC	—JF1WQC	N6QHO/D2	—N6QHO	S21ZM	—SP5IUL
GB2MM	—G3NAS	N9MDW/5N6	—WA1ECA	S79FIB	—SMØFIB
GB6BT	—Bureau	N9NS/KH5K	—N9NS	SU1FJ	—9K2DZ
GDØSLY	—WA3CGE	OD5WS	—YO9FVU	SU1MN	—SU1HN
GU6YB	—G3SWH	OHØMAM	—OH2MAM	T45DD	—CO5DD
H25Z	—5B4ES	OH1EH/OHØ	—OH1EH	T46CG	—CO6CG
HC8J	—WV7Y	OH3MIG/4U	—OH3GZ	T5/K6QO	—KY7M
	(see note 2)	OK8ANZ	—NW4Y	TE4T	—SMØRBO
HH2LQ	—KM6ON	OL1A	—OK1DOK	TI4CF	—TI2CF
HSØZAA	—KM1R	OL3A	—OK1AYP	TK/F6GYU	—F6GYU
HT1T	—SMØKCR	OT3A	—ON7LR	TK6A	—F6AJA
IG8R	—I8RIZ	P29TL	—HB9TL	TM2V	—F6KRC
II5NA	—I5OYY	P4ØAA	—AA4NC	TM5C	—F6CTT
IQ2DZN	—IK2DZN	P4ØP	—NX1L	TM5G	—F1GTR
J3/W1AIM	—W1AIM	P4ØTR	—VE3MRS	TM7C	—F6CTT
J37K	—W8KKF	P4ØV	—AI6V	TM93U	—F6DZU
J42T	—SV2TSL	PJ2/OH6DO	—OH1VL	TO5M	—FM5CD
J52AG	—SMØAGD	PJ5JP	—K1BXE	TO6A	—F6HMQ
J5UAI	—NW8F	PJ9X	—OH1VL	TP3CE	—F6FQK
J68BG	—YU1NR	PRØR	—PY5JR	TU5DX	—F6ELY
J68DQ	—YU1RL	PW1Z	—PP1CZ	UA2FO	—DL1FCM
J8/K7SE	—K7SE	PW2KP	—PY2KP	UA9JDK	—RA4CDE
JU1T	—JT1KAA	PXØF	—PY2KP	UB3JWW	—W2FXA
JWØE	—RB3MM	PXØZ	—PY1NEZ	UB3JX	—W2FXA
JW9VDA	—LA9VDA	PX2A	—PY2KP		
K9EL/6Y5	—K9EL	PX4B	—PY4BA		
KC6EU	—JA2EU	PYØFM (1993)	—PY5CC		
	(see note 3)	PYØFM (1992)	—AH3C		
KD4JRE/5N3	—WB4GDL	PZ5DX	—K3BYV		
KH2GJ/KHØ	—JH1AJT	R6Y	—RA6YY		
KH2S/KP1	—W5IJU	RE3A	—UZ3AWO		
KH8/DL7UUO	—DL7UUO	SØ/KA3KJH	—KA3KJH		
KH8/HB9TL	—HB9TL	SØRASD	—EA2JG		
L3DSR	—LU1DVT	S21A	—W4FRU		
LX4A	—LX1NO	S21ZK	—SP5IUL		
NØAFW/KH5	—WA2FIJ	S21ZL	—SP5IUL		

UD6DFF	—WB2REM	VP5VEQ	—JA1ELY
UH2E/UC2LBF	—DL1GWS	VP8CMP	—GØKUC
UI8GBZ	—RA4CDE	VP9ID	—K1EFI
UI8GDE	—RA4CDE	VR6JJ	—JF2KOZ
UJ8XDA	—RA4CDE	VS6CM	—WØJLC
UN7LC	—IØWDX	VS6FQ	—JA9IFF
UN7LZ	—UL8LWF	W5IJU/KP1	—W5IJU
UR8J	—W2FXA	XB2I	—AA7FM
UR8J	—W2FXA	XE3/K9EL	—K9EL
V51/DL6OBS	—DL6OBS	XH9Z	—KF7SH
V63AS	—SM6CAS	XJ2ZP	—VE2ZP
V77DX	—AH9C	XJ4VV	—VE4VV
V85BJ	—VK2KFS	XK7SZ	—VE7SZ
VK9LM	—DJ5CQ	XL7U	—VE7UBC
VK9LS	—JA2NQC	XO1TX	—VO1TX
VP2E/NR1R	—NR1R	XQ0X	—CE3CSS
VP2EC	—N5AU	XT2BW	—WB2YQH
VP2VG	—N9BG	XU7VK	—HAØHW
VP5G	—N6ZJM	XU9M	—JH1KRC
VP5L	—K4UTE	XV3UU	—KA5EJX
			(see note 2)
		XX9TFN	—DK9FN
		XX9TRJ	—JP1TRJ
		YB1ARW	—W4LCL
		YB9MPK	—VE7UBC
		YJ0AMR	—W9GW

YS1/DL3IAW	—DL3IAW	5X1A	—Bruno, Box 3316, Kampala, UGANDA
YW59M	—YV5AJ	5X1B	— Jim Brandenburg, American Embassy Kampala, Dept. of State, Washington, DC 20521
ZA1BF	—IT9ZGY	7W93	—Selim Bouanani, 14 Ave Med, Bella 160109, ALGERIA
ZA1ZDR	—HB9BGN	C91TDM	—Box 25, Maputo, MOZAMBIQUE
ZB2JL	—N5OKR	EL2PP	—Box 2274, Monrovia, LIBERIA
ZC4DB	—GØKUC	OD5BB	—Box 1915, Jounieh, LEBANON
ZC4SF	—G4SGD	P2ØX	—Kyle Harris, Box 997, Madang, Madang Prov., PAPUA NEW GUINEA
ZD8SV	—G4ZVJ	TJ1JR	—c/o SIL, B.P. 1299, Yaounde, CAMEROON
ZD9CQ	—W4FRU	V7A	—OKDXA, Box 88, Wellston, OK 74881
ZF2DX	—W2HKM	XU3RLD	—Angelo Untac, 15 Naval HQ, Box 36, Phnom Penh, CAMBODIA
ZF2HV	—WD4NRT	ZY5TAG	—Box 5020, Londrina 86070-730, BRAZIL
ZF2UA/ZF8	—N9ALC		
ZF2UB/ZF8	—N9ALC		
ZK2NQ	—F6FNU		
ZL7AA	—ZL2AC		
ZP3AA	—ZP5YV		
ZS93AR	—ZS6AQS		
ZV8BI	—PT7BI		
ZW2SP	—PY2SP		
ZW3A	—PY3AA		
ZW5Z	—PY5EG		
ZXØF	—PY5EG		
ZXØKP	—PY2MT		
ZY5C	—PY5CA		
ZY6TAG	—PY5ADE		

Notes

1. This is not the manager, but rather the collection point for QSL requests. Please provide funds as if you were sending your request to a manager outside the country.
2. This manager requests QSL cards be sent direct only; no bureau cards.
3. Please QSL to this manager via the bureau; no direct cards.

Many thanks to the following contributers: RA4CDE, W2FXA, KA2PHQ, W4BAA, W6TUR, K6VX, KDØJL, American Radio Relay League *(please turn to page 59)*

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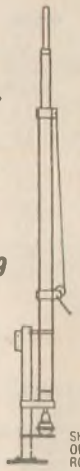

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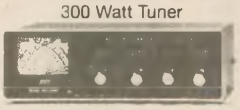

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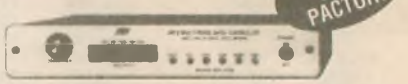

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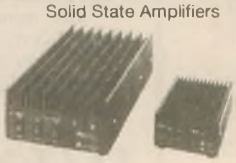

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Kenwood TS-50S goes for a test drive

Last February Kenwood Corporation's amateur/marine product manager, Paul Middleton, KD6NUH, told me he had a "little something" he wanted to show me. He said it was probably the biggest breakthrough in high frequency mobile SSB Amateur Radio technology to hit town in the last 20 years. He indicated this BIG new *little* transceiver would influence the entire industry on what could be available for a small, tight installation.

Paul then asked Kenwood's Maria Lopez, KC6ABM, president of the Kenwood club station, to unveil the new "world's smallest" HF transceiver, the new TS-50S.

Unbelievable. At first glance, you would think you were looking at a QRP monoband rig. Far from it—100W PEP output, 500 kHz to 30 MHz frequency coverage, a weight of only a little over six pounds and a measurement of seven inches wide, 2½ inches high, and only 9½ inches deep. Unbelievable!

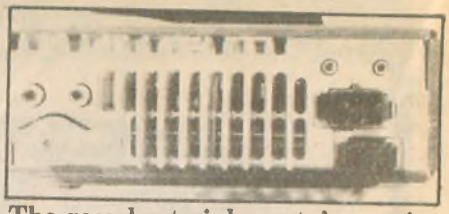
Our road test took the Kenwood TS-50S mobile in a variety of vehicles, using a gell-cell charged off of the cigarette lighter receptacle for power, and an Outbacker Perth antenna affixed to our roof gutter with my temporary field-deployable window mount. We also used 1 in. wide, silver-tinned ground strap to ensure our new rig was well-bonded to the vehicle frame.

It took us less than 20 minutes to get on the air. The gell-cell has enough capacity to act as the buffer between our transceiver and the vehicle's electrical system. The Outbacker Perth antenna was tapped to the proper band of operation, and we started out on 10M and worked down.

The TS-50 receiver was just as hot as our companion Icom and Yaesu benchmark transceivers with preamplifiers kicked in. There was good ALC action on the audio output to minimize annoying snaps and pops from local electrical interference. The big tuning knob allowed us to whiz up and down the band with ease, and the PLL kept right up to speed with the tuning knob, which means you won't miss a thing, even while spinning up the band.


Joel Levy, WQ6E, illustrates how small the TS-50 is.

Once we tuned in WD4FSY coming over on 10M skywave, we optimized the IF shift control to cut some of the QRM from the station operating just up the band, though far enough away that we couldn't cause unnecessary interference. We set the squelch control, and it allowed for a smooth transition between closed squelch and open audio during breaks in the conversation in progress. There was plenty of "AF" audio to drive the built-in speaker, or an external speaker which dramatically improves the tonal quality of the receiver.


The rear heat sink contains an internal fan for extra cool operation.

On transmit, the Bird wattmeter indicated an easy 100W peak on power output. For QRP operation, the microphone with built-in selectors may allow you to operate all the way down to 10W PEP output if you want. We stayed at 100W in an attempt to see how warm we could get the tiny insides.

After a few minutes of communications, we could feel the heat coming out of the back of the rig, but the built-in fan was so quiet we didn't even know it was running. The chassis never really did get warm, so we knew that they did a nice job of figuring out how to dissipate the heat off the two output transistors.

The LCD screen is a welcome sight for Kenwood. Traditionally, Kenwood has been using a gas discharge tube readout for LEDs, and these are not easily seen in the daylight. The new LCD panel, just as sharp and crisp as the LCD Icom displays, was easy to see, even at angles off center.

While the readout only resolves down to 100 Hz, we found it more than adequate for ham radio use. Resolving down to 10 Hz readout, for ham radio, is over-kill, and it's hard to hear any changes in recovered audio when you QSY up or down a scant .10 kilohertz. And if you do want to split hairs, the RIT control is available for extra-fine tuning.

We operated the external antenna trimmer (AT tune) circuit, and it works like it is supposed to. But the AT tune circuit on everyone's transceiver is one of the most *abused* controls there is. Why use the AT tuner, built-in or external, to drop your SWR down to an acceptable level when you could do the same thing more professionally up at the antenna system itself? Perfect your antenna, and don't use AT tune as a crutch! Running the AT tune indeed drops the SWR to an acceptable level at the tail of the radio, but you still have high SWR circulating around the inside of

your mobile or your shack from the feedline and the antenna system.

If you would resonate the antenna properly, you wouldn't have hot coax, and you wouldn't need to lose a couple of watts through the AT tune circuit. So stay off of the AT tune unless you are whizzing down the road on 75M and someone asks you to QSY up the band by at least 100 kHz. It should not be used trying to re-tune an antenna that may not be properly installed or properly tuned on the back of your buggy.

Since 10M was hot this day, I went over to 29.6 MHz FM and received great signal reports from the East Coast gang. I also tried some repeaters, and this rig even features built-in CTCSS for the 10M repeater system up to 29.62, .64, .66, and .68. It was a simple matter to memorize 10M FM split frequencies with CTCSS into any one of the 100 memory channels using the common Kenwood A/B button, along with the split button, and simply pressing M.IN twice.

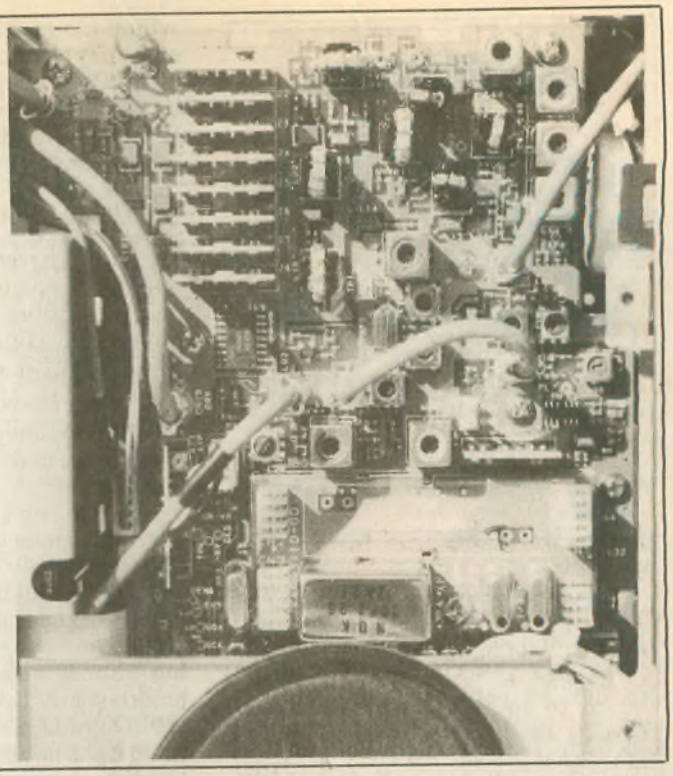
We tried the AM side of the receiver out on 15.1 MHz Voice of America and BBC frequencies, and the fidelity was great. If you desire, you can turn this into a high-quality shortwave receiver at the flip of a button.

Don Arnold, WD4FSY, was most interested in interfacing this new Kenwood TS-50 to his new HamLink, manufactured by Amateur Radio Engineering of Redmond, Washington. Don regularly wanders around his house, talking on a cordless phone, while simultaneously going over the HF bands. His main base station is his vehicle with a host of Outbacker antennas, and this allows Don to constantly check the performance of each one of his Outbacker antenna systems.

We then tried to abuse the TS-50 into premature failure or shutdown. We shorted out the output at 100W, and sure enough, the SWR protection circuitry kicked in, and power output self-protected to a safe level. The rig didn't even get warm for five minutes on a shorted load. We could also see the power output meter indicate that something was wrong because it barely wiggled until we cured the on-purpose short.

We reversed the polarity on the power plug, and it immediately popped the in-line fuses. This is just what it's supposed to do, and we were also happy to see that Kenwood has switched over to automotive-style fuses that are commonly available at most automotive stores.

We next tried to cause the audio section to fail by running full volume into an open speaker connection. Nope—couldn't blow it up. However, the audio section within the rig began to get noticeably warm.



Surface-mount technology (SMT) devices help shrink the inside of the TS-50.

We varied the input voltage, and the unit sounds pretty good until you get down around 10.8VDC. Then the transmit audio gets rough, and someone on the air will tell you to recharge your battery. On receive, low voltage begins to decrease the hot front-end sensitivity.

After five different vehicles with varying antenna systems featuring the Outbacker Perth antenna, we were convinced that Kenwood has another winner to its mobile product line. This rig was a terrific performer.

Except in rare cases, we do not recommend the automatic antenna tuner which is *not* something that goes on the inside of the rig. Rather, you have your choice of a 50-ohm unit for mobile use or a single-wire antenna tuner for mobile marine use.

Incidentally, the *emergency* mod for mobile marine distress calling is diode #5, found on the bottom circuit board. *Do not jeopardize your Amateur Radio license by transmitting out of band.* This unit is not intended as a type-accepted marine Part 80 transceiver. Buy the Kenwood TS-707 if you are looking for a marine transceiver with ham capabilities.

Congratulations to Kenwood for their new small, pint-sized, HF SSB mobile. I still haven't found anything that I really don't like about this rig. In fact, the new Kenwood TS-50 will go right along with the Icom IC-728 and Yaesu FT-890 transceivers when we illustrate to our Radio School students that going mobile with SSB can now take place in an extremely small and powerful package. WR

The "good old days" of my youth were a mixture of operating ham radio, chasing girls and studying for school. I'm certain other radio buffs had the same mix, but the percentage of each category varied somewhat. As I reminisce back in the 1930s, I laugh about some of the stories that are part of my life. Here's another old-time memory:

In 1934 one buddy of mine was a high school friend named Bob Pollock (then W9SNP). Bob was an excellent shot with a pistol. He proved his gunnery expertise at the Fargo city dump where we spent many nights shooting rats with his 22-caliber Colt pistol. We'd hunt the little varmints by shining the beam of an auto spotlight on the garbage and then plinking at shining eye reflections. We once had a 5M "special event" ham station from the garbage dump and made one local contact.

Bob became a ham shortly after he first visited my shack. When he saw my homemade ham radio outfit he said, "I've got to have one of these things!" And he did! He was that kind of guy.

Ham radio made our friendship stronger, and chasing girls made it more fun. Pollock had wheels, I didn't. Bob was the owner of a fine used Model T touring car which he had purchased for $5, the going price in the 1930s. The car was registered under his father's name, and his dad was the county juvenile judge. It was a warm Saturday in April when the "touring" Model T came out of winter storage. Bob and I worked most of the day cleaning the winter's dust out of it. Then we installed a brand-new battery (which cost more than the car). We dinged and tuned and tried and retried until the engine was running "like a sewing machine," a common simile in those days. When we finished it was ready for an evening out "among them"— girls, that is.

That night we dated two nifty high school classmates, one named Virginia and the other Doris Anne. We picked up the girls about 7 p.m. and went chugging off for an evening of fun—on practically no money because most of our funds were in the gasolene tank at 13¢ per gallon.

What do two ham radio fans do with very little money, a car half full of gas, and two lovely girls? Well, a cheap evening could be had visiting other ham radio operators, what else? So we rattled and chugged out to a neighboring hamlet and visited the shack of bricklayer Art Jensen, W9EOZ (now WØEOZ of OSCAR fame). Anybody in their right mind would never combine courting girls and hamming at the same time, but we did.

Virginia and Doris Anne were not particularly interested in listening to us while we talked the technical jargon of ham radio, but they did "oooh" and "aaaaah" when Art demonstrated the power of RF by pulling sparks off his antenna feeders. "Ain't it fun to smell the ozone?" Bob asked the girls after the demonstration. They nodded affirmatively, but I'm sure the rest of the visit bored the girls to tears. Anyway, Bob and I had a great time ragchewing with Art.

When we bid adieu to Art and emerged from his ham shack into the Minnesota spring night air, it was snowing like crazy: wet, juicy snow. We piled into the Model T for the trip back to Fargo. The girls wanted to get home; they weren't dressed for the winter weather in an open car. Keep in mind that this Model T touring car was an open-air vehicle, although it did have a rag top, it was minus side curtains. The snow blew right in and the giant flake variety stuck like plaster.

Pollock was in the front seat with Virginia, and I was snuggled up with Doris Ann in the back where most of the snow blew in. Pollock was an expert Model T driver, and he could handle the steering wheel along with the spark and gas levers (no foot feed) with one hand while working the hand-fired windshield wiper with the other. The wet snow stuck to the glass, so we couldn't see out of Virginia's side of the windshield. As we approached Fargo-Moorhead the snow got heavier and wetter. The forward visibility was down to very few feet, and the poor quality headlights on the Model T didn't do much for our ability to see. On we chugged through the two cities, right up to the corner where Virginia lived.

At the very moment we turned the corner something in the steering mechanism broke. The car became uncontrollable and we crashed headlong into the light pole holding up the street light. We were right smack in front of Virginia's house.

The impact threw Doris Anne and me onto the back seat floor. The radiator wrapped itself around the light pole, and all of the water (no antifreeze) ran out of it. The front wheels and fenders of the black touring car were also wound around the wooden pole. The car body was sticking out into the street and the snow began piling on top of its wounded carcass.

We walked the girls to their nearby homes and then surveyed the damage. Pollock only lived a few blocks from the accident scene, so we decided to remove the new battery and the tool box (full of his father's tools) which was bolted to the running board, and carry the two precious items to Bob's home for safekeeping. They were more valuable than the auto itself.

Bob carried the battery and I lugged the heavy tool box the four blocks to the Pollock residence. We left the noble Model T sitting right where it died, neatly wrapped around a sturdy light company structure with the street light shining down on it nicely. I then walked the mile and a half to my home, slipping and sliding in the wet, gooey snow that was piling deeper by the minute.

The following morning Judge Pollock got a telephone call from the Fargo Police Department. "Judge," the caller said reverently, "I think you had better remove your automobile from that light pole at Fifth Street and Ninth Avenue. It's a traffic hazard because its sticking out in the street and it's covered with snow."

When Bob reported that phone call to me he said plaintively, "You know, Bill, we should'a taken the license plates off the car, that way the cops wouldn't know who it belonged to. My old man, the judge, is a little burned."

Bob went on to become an electrical engineer for a big company in California and the Model T went to junk heaven. Its replacement was a used Model T coupe ($8) that featured a very powerful auto horn with a telegraph key hooked to it. The hooter was only used for ham radio signaling purposes. About the girls: I think that was the last time Virginia and Doris Anne ever dated a couple of ham radio characters. Too bad, they were nifty dames!

The RTTY opening days

In the April issue I told of the first days of RTTY on HF. As a result I received a letter from F. A. Bartlett, W6OWP, in Paradise, California. Here's what Bart said:

"I found your account of the opening of our bands to FSK RTTY especially interesting. Yes, I'm still active and, fortunately, still have my old logbook. Thus the enclosed QSL. My log notes that the first contact was FB copy coming from WØLHS but copy from W6OWP wasn't very good. However, a month later we had a QSO lasting over an hour and the log notes that you told me about the Hallicrafters expedition you were a part of.

"Of the list you had in your column, I recognize a number the calls but the only one I have had recent contact with is W6RZL. He is also retired and divides his time between QTHs in Wyoming and Idaho. I've been after him to get back on the air.

"RTTY in the make/break mode was okay prior to the FSK authorization. I kept an RTTY schedule with W7LU (now SK) for several years in that mode. Even now, occasionally I use an RTTY program which allows RTTY in the CW mode. It works surprisingly well when conditions are good. But the QSO has to be with someone using the same mode. By keying the space function, QSK is possible with newer transceivers, providing almost landline teletype conversational quality."

Eavesdroppings

I'M A BETTER MISSPELLER THAN I AM A SPEELER . . . I HAVE A SPELL CHECKER IN THIS COMPUTER BUT I NEVER CAN FIND IT WHEN I NEED IT . . . THE HAM FEST WAS A LOT OF FUN FOR MY WIFE, SHE STAYED HOME . . . I MISSED KINGMAN REEF ON RTTY FOR THE SECOND TIME, BOO HOO . . . I TRIED A NEW LASER PRINTER WITH

This QSL is for an RTTY contact between WØLHS and W6OWP on 21 February 21 1953, the second day that high frequency RTTY was allowed on the ham bands. That RTTY contact was held over 40 years ago.

THIRD PARTY POSTSCRIPT STUFF AND SPENT THREE HOURS ON THE LONG DISTANCE PHONE TRYING TO GET IT TO RUN AND DIDN'T . . . I THINK THE CUT WORMS ARE HAVING A RACE TO SEE WHICH ONE CAN EAT MY GARDEN FIRST . . . THERE ARE SO MANY HAMFESTS THESE DAYS I DON'T KNOW WHICH ONE TO HAUL MY JUNK HOME FROM . . . I COULD START A HAM RADIO MUSEUM WITH THE JUNK I HAVE IN THE GARAGE . . . WHY IS IT EVERY COMPUTER MAKER HAS A DIFFERENT KEYBOARD. I SEE NOW THEY HAVE ERGONOMIC KEYBOARDS THAT SPLIT INTO TWO PIECES, ONE FOR EACH FOOT . . . WHY IS IT THAT THESE NEW COMPUTER PROGRAMS DESIGNED TO SAVE YOU TIME TAKE A COUPLE DAYS TO GET RUNNING RIGHT . . . MY NEW COMPUTER HAS A FAX PROGRAM IN IT BUT I DON'T HAVE ANYONE TO FAX ANYTHING TO THESE DAYS . . . MY WIFE IS CALLING ME TO THE TABLE FOR BEANS, SHE SAYS THEY ARE "HAS BEENS" CAUSE THEY'RE LEFT OVERS . . . WE USED TO HAVE LIGHT AIRPLANES TO FLIT AROUND THE COUNTRY, NOW WE'RE DOING OUR FLITTING IN A NURSING HOME . . . I HAVEN'T BEEN ON SSB FOR SO LONG I'VE FORGOTTEN HOW TO HOLD THE MICROPHONE . . . BEST WISHES AND SPECIAL 73S TO YOURS AND YOU.

Thanks to W6OWP, W7ZGT, WØHAH, W7VFR and others for help with the column. Write me: Bill Snyder, 1514 South 12th St., Fargo, ND 58103. My packet address: WØLHS @ WØLHS.#SEND.ND.USA.NA. 73 and DIT DIT. WR

YLs on the Air

Kay Eyman, WAØWOF
Route 2, Box 366
Garnett, KS 66032

Congratulations to the winners of the YL-OM CW and SSB Contests.

SSB (13-14 February 1993):

Cup—Mady Langdon, KA6ZYF/KP4; Frank Glass, K6RQ
Second place—Ushi Falk, DF9YY; Jerry Skaife, W7ULC
Third place—Anne Novo-Gradac, AC4OQ; Fred Jujawa, KØETA

CW (27-28 February 1993):

Cup—Katerina Chiotis, SV4AFY; Jerry Skaife, W7ULC
Second place—Elizabeth Anderson, VE7YL; Frank Glass, K6RQ
Third place—Ruth Wardell, WA8YPY; Ken Graf, NA8G

YL meetings

Rex White, WAØAVW, is inviting everyone out to his home in the country for a barbeque dinner, when the YL International SSBers hold their annual meeting on 23-27 June in Des Moines, Iowa. In addition, a YL luncheon is planned for Thursday, 24 June; the business meeting and banquet will be held on Saturday, and the last event will be a farewell breakfast on Sunday. For full details, send 52¢ in stamps (not an SASE) to Rex White, WAØAVW, 3023 Fairman Avenue, Rhodes, IA 50234.

There's also a lot of talk on the nets these days about the YLRL 1993 Convention which will be held in Wichita, Kansas, on 8-11 July 1993. If you need a registration form, you can contact the convention treasurer, Karla Holmes, KQ4IQ, at 3912 SE First Place, Cape Coral, FL 33904-4857. If you won't be able to attend, be sure to listen for the special events station that will be on the air throughout the convention. The official convention call sign, KBØFUN, belongs to Thelma "Tommie" Runyan, of Wichita, and describes what this convention is all about. A special QSL has been designed, with Dorothy at the rig and the Tin Man, Scarecrow and Lion looking over her shoulder.

Special convention T-shirts are being printed with the QSL design, and those familiar Kansas characters will also be circulating at the get-acquainted social which will be held Thursday evening, 8 July, in a poolside cabana room in the Wichita East Hotel. Three tours are scheduled for Friday, and the YLRL forum and banquet will be on Saturday. The convention will close on Sunday after a farewell brunch.

The Texas Young Ladies Round-Up Net (TYLRUN), the YL Roses of Texas, and HamCom, Inc., will host a YL hospitality suite and forum at HamCom, on 4-6 June in Arlington, Texas. For more details, contact Judi Jaksa, NØIDR; Dorothy Jones, KA5DWR, or Connie Dunn, KB5LES.

The Australian Ladies Amateur Radio Association holds regular get-togethers every three years, and their fourth meeting is scheduled for 1-3 October 1993 in Castlemaine, which is situated in central Victoria, Australia. This will be an occasion to put faces to call signs and names and to renew old acquaintances, as well as to make new friends. For further information, please write to Mrs. Margaret Loft, VK3DML, 28 Lawrence Street, Castlemaine, VIC, Australia 340. You can also get info via packet from Margaret Schwerin, VK4AOE, @ VK4CXX.BNE.QLD.AUS.OC.

Jensen Montambault, KC4GPZ

One of the really nice things about writing a column and editing *YL Harmonics* for YLRL is that you get to know some great people. Last year I met Jensen Montambault, KC4GPZ, who is sixteen years old and currently an academic "second-year" student at the University of Virginia, where she is majoring in English, environmental sciences, and astrophysics.

Jensen and her dad got their Novice licenses when she was 12. A year later, they upgraded to General, and they plan to upgrade to Advanced this year. Right now they hold consecutive call signs; Jensen is KC4GPZ, and her dad, Kenneth Reitz, is KC4GQA.

Jensen has many interests. She is currently restoring an antique spinning wheel that belonged to her great-grandmother, and she especially enjoys Amateur Radio history, including oral and written histories by old-timers. Even though she is kept busy with her studies now, she has a 2M groundplane suspended from the ceiling of her dorm room, and she has plans to install a 40M station in the room, with a dipole tacked around the ceiling.

Like Jensen, I'm interested in the history of Amateur Radio, but I also enjoy reading about the experiences of those who are new to the hobby. Last summer, Jensen wrote about her first solo mobile operation for *YL Harmonics* and I'd like to share her story with you. Jensen writes:

"I'm still glowing about my 16th birthday (I can drive! I can drive!),

which involved not only my long-awaited driver's license, but also the use of my father's '85 Celica and a brand-new Icom IC2SAT hand-held. Really, it's the cutest little rig. It fits in the palm of my hand and, with the little rubber duck antenna disconnected, it fits easily in my purse. This 2M rig has brought the previously uncharted 2M band into my car and logbook. I guess for a General Class operator, I'm kind of a novice, for it was only a few weeks ago that I braved the local 2M repeater, and only a few days ago that I actually used the radio to untangle myself from a minor fiasco.

"I've only been driving for a month or so and am not overly familiar with our car and its little quirks. So you can imagine my utter bewilderment and the unpleasant sinking feeling in my chest as I was parked in front of a video rental store and the key refused to turn in the ignition. I tried the extra key, but to no avail.

"Luckily, I had the very 'handi'-talkie in the glove compartment and, gulping back panic, I tuned in the Charlottesville repeater. I'd been rather mike-shy the first time I got on the repeater, but it's really remarkable how a potential personal disaster can sweep away inhibitions. I broke into a casual ragchew as soon as I could and explained my predicament.

"The fellows on the repeater were greatly reassuring, offering suggestions, rides, phone calls, and general support. The trouble was eventually solved by following the suggestion that I jiggle the steering wheel hard (as apparently power steering locks up). What started out as a complete mess ended with me feeling great about the altruism of amateurs. Hams are great!"

Jensen Montambault, KC4GPZ

DX YLs

Bergitta Astrom, SM0FIB, recently took some time off from her job at the Swedish Embassy in Saudi Arabia and operated as S79FIB from the Seychelle Islands. If you contacted her, you can QSL via the Swedish Embassy, 3UD/Riyadh, 103 35 Stockholm, Sweden.

Melita McFall, VQ9YL, is a 26-year-old aviation electronics technician in the US Navy, currently stationed at Diego Garcia. Her first contact was with Lenny Mendel, K5OVL, on 1 February 1993. QSL Melita via the *Callbook* address for the Diego Garcia Radio Club, but don't wait too long because she'll be leaving soon.

There's a new YL operator on Signey Island. Clare came on the air on 24 February 1993 using the club call VP8SIG, and her first contact was also with Lenny Mendel, K5OVL. She's awaiting her own call, and Mike Mistofsky, GM4KLO, is her QSL manager.

Alda Zambini, ex-A22AK, is now in Guinea Bissau and hoping to get her J5 license soon.

Barbara Neiman, KE5ZI, and her husband, Pablo, N5JRE, will be on the Yaesu DX Caribe Cruise from 16 to 24 May, which will visit six islands. They will fly to Aruba to join the cruise and will be operating from the ship, sharing the rig with several other Amateur Radio operators. WR

QUARTER CENTURY WIRELESS ASSOCIATION INC.

John G. Troster, W6ISQ

Hooray for Harry

The 1993 Dayton Hamvention awards committee selected QCWA President Harry Dannals, W2HD, as Ham of the Year. Harry has been at the forefront of Amateur Radio activity for 30 years in many key positions. He served as SCM, then was vice director of the Hudson Division, followed up by the post of director, and on to being president of the ARRL. And he's currently president of QCWA, maybe his biggest challenge. Congratulations, Harry. QCWA is not only proud of your honor but proud of the luster it adds to QCWA.

Remembering that it was QCWA life member Dick Baldwin, W1RU, who was selected last year, we can't help but think it's QCWA-types who attract these awards. Must be the true reliability, maturity, wisdom, integrity and leadership of the Proud, the Many.

How I joined QCWA

I promised I'd tell you how I joined QCWA. It was in the early '60s and I was at a convention in New York, perhaps the national ARRL convention, I'm not sure. I was sauntering down an aisle in the exhibition room enjoying the exhibits and the crowd, minding not much of anything, when some nice fella sidled up to me and said, "How many years you had a license?" I said, "28." He said, "Then you are eligible to join QCWA." I said, "What's QCWA?" He said, "It's like a club." I said, "No kidding! How much?" He said, "Five bucks." I said, "Here's my fiver." He said, "Welcome to QCWA." I said, "What do I do now?" He said, "Be grateful."

And that's how I became one of the Proud, The Many, The QCWA. Now write and tell us how you joined!

K7JA, appointed QNB

Last month we welcomed Chip Margelli, K7JA/ZA1JA, QCWA life member #21319. Since then we've obtained a picture of Chip, herewith shown, courtesy of *DX Magazine*. Chip is a good looking fella, but look at that shining QCWA pin! Really catches the eye, doesn't it?

Not shown in the photo is contest op Chip's silver medal which he won in the World Radio Sports Championship in Seattle, July 1990, for second place. Some of you probably worked Chip and his operating partner, Mike Wetzel, W9RE, during their outstanding performance in this Olympic-style event.

Chip Margelli, K7JA

We're pleased to announce that Chip has accepted the position of "QCWA new breed" (QNB) advisor to this column. Chip is one of the younger QCWA members, age 42. So, his primary duty will be that of identifying QNBs who are already members and recruiting other eligible QNB fellas. He has been rigorously trained and indoctrinated in all facets of QCWA membership procedure and will be pleased to help anyone become One of Us. Ask him for an application blank. He will be sending us bulletins from time to time updating his adventures in recruiting.

Contest, errrr Party?

Ray Bilger, W3TDF, secretary and treasurer of Chapter 17, called me to ask about referring to the QCWA QSO Party as a contest. Yeah, I knew better and I should have known I'd get

tackled, but I got carried away because the event looked like a duck, CQed like a duck, scored like a duck, awarded prizes like a duck, etc. But, that's correct, Ray, it was advertised as a party. Sorry!

I made the same call about 40 years ago when I wrote Mr. F.E. Handy at the ARRL, remarking that the quarterly ORS "parties" were terrific contests. I offered to print small QSL sized cards to be given out to the top ten scorers in recognition of their participation and high score. I got back a three-page, single-spaced letter detailing how the ORS Party was not a contest and should not be considered one. It was merely a test of equipment!

Anyway, I operated in the January 1970 ORS Party, just after the ARRL announced the creation of the prestigious 5BWAS Award. In that "party" I managed to work almost all states on five bands over the weekend. After that, to get the award I needed only a few more states on each band, easily achieved in February. Thus, thanks to the ORS Party, I'm recipient #4 for 5BWAS.

I goofed good

Please make this correction in the April column about the QCWA QSO Party. I said it was nice "meeting folks I didn't know were QCWA, like W0ICZ and W9MYY." Well, W0ICZ should have been John, W0IZV, out of Denver. Everybody knows him, especially on the CW County Hunter's Net. Just want to set the record straight. Apologies, John. CU on CHN.

I have a feeling I'm really going to get drubbed for a boo-boo in the May issue. I mentioned everybody's friend, QCWA veep, Lew McCoy, as W1ICJ instead of W1ICP! Oh my, I've only known him for 30 years. Wish that were all, but it gets worse. I spelled his name "Lou." I may have to write his name and call 7,000 times for all that. We freshmen columnists do have our trials.

Actually, it could be that it was not the real me who made these mistakes. It could quite likely be this doddering, ancient computer. We were good friends for a long time, but I think it has caught sight of the new one my YF installed in the corner. I have the original Apple computer distributed by Johnny Appleseed, and what with the tiny, brilliant, white screen and the small type, and the fact that I hunt and peck, and the J and P keys are only three or four keys apart, it's so easy to miss . . . well, you get the idea.

Chapter newsletters

Chapter 63, from Secretary/Treasurer Norm Wilson, W5FLO, down central Oklahoma way: They are celebrating their 20th anniversary and are in a recruiting drive to sign up at-large members who might like to join a chapter. Note: we might be able to lend you QNB Chip for a weekend.

Chapter 11, Northern California: President James Williams, K6HIO, reports the annual meeting a success. They are trying to move the meeting place around to various locations in northern California to give all attendees a driving break from time to time.

Chapter 154: President Don Doughty, W6EEN, announced that "An interview with Don Wallace, W6AM" VHF tape will be the presentation at the next meeting. It is available to other chapters and is highly recommended for club programs. Ask Don how to get it.

In closing

In case you happened to miss QNB Chip at the Dayton Hamvention and you are eager to join QCWA right now, write QCWA Headquarters, 159 E. 16th Ave., Eugene, OR 97401-4017. General Manager Genial Jim Walsh, W7LVN, would love to hear from you. Until next time, stand up straight. You are One of Us, the Proud, the Many, the QCWA. 73 and 25 de Jack, W6ISQ. WR

10-10 INTERNATIONAL News

Chuck Imsande, W6YLJ
10-10 19636

10-10 Convention

10-10 holds a convention every odd year. The 1993 10-10 Convention will be held this year in Wichita, Kansas, in conjunction with the Kansas State ARRL Convention on Saturday, 25 September and Sunday, 26 September. There will be special activities for 10-10 members including a 10-10 forum, and a special 10-10 banquet on Saturday night.

The 10-10 board of directors will also hold their annual meeting in Wichita in conjunction with the convention on 23 September.

For detailed information and preregistration form, send a #10 SASE to Ed Redwine, K5EJR, convention chairman, #11843, at 9 Yellowstone Lane, Augusta, KS 67010. The headquarters hotel will be the Ramada Broadview, which is situated on the banks of the Arkansas River. For hotel reservations call the Ramada direct (not the Ramada 800 reservation number) at 316/262-5000. Convention registration is $6, including 10-10 registration. The 10-10 banquet is $15. There are also chapter tables available for 10-10 chapters at $8 each. Plan now to attend this every-other-year 10-10 event!

Director Don Weaver resigns

Due to a health problem, Director Don Weaver, K0JPW, #4541, has resigned his duties. Don has been a long and strong supporter of 10-10, having held a number of positions in the past. We thank Don for all his work for 10-10 and wish him well.

President Norm Lefcourt, W6IRT, #14981, has appointed Don Zielinski, K0PVI, #9902, as the replacement for Don Weaver. Don Zielinski is a well-known 10-10 member and has been around 10-10 for a long time, as can be noted from his low number. Besides being chapter head of the Colorado Bighorn Chapter, Don has a large collection of Amateur Radio equipment from years back. He maintains all of the equipment in operating order and operates the Colorado Bighorn Amateur Radio Club Museum.

New Monday NCS

The Monday Alternate Net, operating at 28.380, has a new net control station. She is Diana Kileen, KB6NAN, #42850. This net is on every Monday at 1800 UTC. Check in and say hello to Diana.

Countries Award manager

Alan Sherman, K1AS, #10781, has a new address. All correspondence regarding the 10-10 Countries Award should be sent to Alan at 44 Polly Ave., Danielson, CT 06239.

A busy first quarter

Records Manager Lee Pasewalk, WB6MGM, #213, reports that the first quarter of 1993 has produced a lot of work for our 11 area managers. A total of 716 new members joined 10-10 during this period. A total of 2,350 database changes were made in the quarter which included changes of addresses, changes of call signs, etc.

District 4 came in with the largest new members score with 124 new members. The sixth district was second with 92, and DX came in with the fewest new members at 34. In addition, 21 10-10 members became life members during the first quarter. The highest 10-10 number issued as of 31 March was #64425, issued to Gerald Verly, KC4ZHZ, of Marbleton, Georgia (Cobb County). At the rate new members are coming into 10-10, we may hit the next milestone, #65000, in the not-too-distant future.

Next 10-10 SSB QSO Party

This may be a little soon, but mark your calendar for the weekend of 7 and 8 August. This is the weekend of the next 10-10 SSB QSO Party (or contest). 10-10 QSO parties are fun and, although they run for 48 hours, it is an easy contest, as the 10M band usually goes out simetime in the evening hours and re-opens in the morning hours. This period of little or no propagation provides for a few hours of sleep! Join in and enjoy exchanging numbers and working new states, counties, countries or just give your number to someone who is seriously in the contest.

What do I get for my dues?

The question is asked a number of times, "What do I get for my 10-10 dues?" We asked treasurer Gerry Gross, WA6POZ, #21274, and here is what he said:

First, the dues for 10-10 membership is $7 per year. Not much when compared to most Amateur Radio membership costs. ARRL membership is $25 per year which includes 12 issues of *QST*. Most local radio club memberships are a minimum of $12 per year for which you receive a monthly club newspaper, four to eight pages.

Now how about 10-10? For $7 you receive four quarterly copies of the 32-page *10-10 International News*. In addition, a new member pays the same as a renewal but receives several items that are not sent when dues are renewed. This material and the extra postage to mail it cost $1.22. If a new member does *not* renew, they will receive five copies of the *News*.

Data processing, mailing services, expenses to communicate between the area and records managers, treasurer, etc., is about 90¢ per issue. An additional 14¢ goes to FAR for 10-10 scholarships, and about 75¢ for administration expenses not related to membership services. The remaining 37¢ goes for contests, awards, conventions, elections and other related items. These costs are approximate but reflect the costs of maintaining and running 10-10. And please remember, 10-10 has *no* paid employees, all services are accomplished by volunteers. Volunteers are paid only for out-of-pocket expenses.

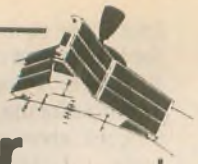
So, what do you get for your $7 dues? Well, if nothing more, the privilege of using your 10-10 number. A number that is assigned to you for life. A number, along with your call, that will be maintained in the records of 10-10 forever! Don't you think all of this is worth a mere $7 per year? If your dues have expired and you are no longer an active member, consider renewing now. If you don't remember your area manager's address, send a buck for the 10-10 Information Package noted below and receive a copy of the *new* and revised *10-10 International News* and see what has happened to 10-10 in the last couple of years. I think you will be glad you did, and next time someone asks for your 10-10 number, you will be proud to give it to them!

Information about 10-10?

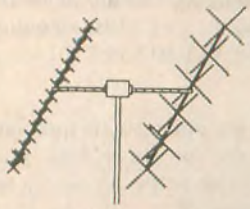
If you are not now a 10-10 member and would like to learn more about the 10-10 organization, send me a green stamp ($1) to help cover the cost of printing and postage, along with two first-class stamps and an address label for the return of the 10-10 Information Package. Please, *no* SASE, as the 10-10 Information Package requires a 9 × 12 envelope. You will receive a copy of the 24-page Information Manual along with a copy of the latest issue of the 32-page *10-10 International News*. Send to: Chuck Imsande, W6YLJ, #19636, 18130 Bromley Street, Tarzana, CA 91356-1701.

Finally

If you have let your 10-10 membership dues expire or have lost your 10-10 number, the same as above ($1 plus two stamps plus address label) will get you the Info Package along with your lost 10-10 number. 73, es see you next time. WR



Amateur Satellites



K7YHA
Rich Arland
Box 1691 • Wilkes-Barre, PA • 18703-1691

The other day I was talking about my favorite topic, amateur satellite communications, when one individiaul expressed the opinion that SATCOM was not worth the effort for only a few minutes of activity a couple of times per day. While it is true that the Low Earth Orbit (LEO) satellites are only in view for about 15 to 17 minutes on a good pass (some passes only give the satellite operator six or seven minutes access) this kind of operation is suitable to many radio amateurs. I personally find that I can plan my entire weekend around the various LEO satellite passes. This allows me to fulfill my fatherly duties to my family, get some work done around the house and play radio without any major conflicts in scheduling. In all, I quite prefer the regimented operating schedule that LEO satellites provide. "No-hassle ham radio"—what will they think of next?

Contacts via the LEO birds are very similar to contest QSOs. Rapid and concise exchanges make LEO QSOs exciting, and it's a challenge to make as many contacts as possible in the short time the satellite is in view. Not only does this type of intense, fast-paced action sharpen your operating skills, it is highly addictive! After a short while using RS-10/11 and RS-12/13 you will find a group of satellite operators who form a nucleus of users who inhabit each bird. When there are only a few satellite operators (SATOPs) on the bird and transponder loading is low, often I will call one or more of the regulars and have a nice, slow paced QSO. In short, LEO satellite operation gives the SATOP the best of both worlds: rapid contest-style QSOs coupled with easy-going ragchews.

If you remember the last column, we tried to hear the 10M beacons on one (or both) of the RS-series LEO satellites (RS-10/11 and RS-12/13). To those of you who successfully heard either of these birds' 10M beacons, congratulations! You are well on the way to becoming a real satellite operator.

By using one of the many available sat-track progams available from AMSAT-NA or R. Myers Communications (addresses listed at the end of this column), you'll find it quite easy to locate the satellite and listen to some downlink telemetry from the bird. This giant first step is needed to show you how easy SATCOM really is. If you have the proper tools at your disposal, you can really enjoy this aspect of Amateur Radio.

This month we will take the next step and try a contact through the easiest of LEO satellites, RS-12/13. Why do we want to use this particular bird? For starters, this satellite has been in mode K (15M uplink, 10M downlink) for the last year. This makes it especially easy for the average Amateur Radio operator to access this satellite transponder. Most active hams have at least an HF transmitter (or transceiver) available that will generate a 15M CW or SSB signal. Only an additional receiver for the 10M downlink is required to start enjoying LEO SATCOM via RS-12/13.

Antennas? Hmmm . . . let's see what we really need. Actually, any HF antenna will work with some degree of success. Most preferable are vertical antennas (like converted CB base station antennas or HF multi-band verticals) which offer a good omnidirectional radiation pattern. My second choice would be a simple dipole for 10 and another for 15M. Remember, you are going to have to generate a 15M signal and receive simultaneously on 10M. This will require the use of two separate antennas. For instance, using a converted CB vertical (obtained from a flea market or swap-paper ad) for the 10M downlink and a 15M dipole antenna (for the uplink) will work very well as a permanent mode K antenna system.

By adding a 2M J-pole to this antenna system, you now have the option to work mode A when you add the necessary radio equipment for the 2M uplink. Don't think that you need to spend a bundle and put up some exotic arrays to do the job. Quite the contrary. Chances are you can use antennas that you already have on hand or can build the necessary radiators at a reasonable price. This makes breaking into the SATCOM arena much more affordable, not to mention much less labor intensive.

Now that we have the antennas squared away, let's concentrate on the radio equipment. First, we need to hear the 10M downlink from RS-12/13. This takes an HF receiver of some sort. If you are going to use your main HF transceiver for the uplink on 15M, then you will need a second receiver for the 10M downlink. Most of us have a second receiver handy or at least know where we can borrow one for a short time. Hook this receiver up to your downlink antenna and tune it for 29.408 MHz. This is the 10M beacon for RS-12/13. The actual downlink passband of the RS-12/13 mode K transponder sits just above this beacon between 29.410 and 29.450.

Let's look at how we are going to access the mode K transponder uplink on 15M. First, you must make a decision as to what mode you will use: CW or SSB? Normally, CW signals appear on the bottom 20 kHz of the transponder passband (21.210 to 21.230 MHz with SSB signals appearing on the top half of the transponder passband (21.230 to 21.250 MHz). This is only a guideline—it's not cast in stone.

Since the RS-12/13 satellite incorporates a linear transponder, you will find that if you transmit USB on the uplink at 21.245 MHz the downlink will be USB at approximately 29.445 MHz (± Doppler shift). Notice that the output signal appears roughly 8.2 MHz above the input signal. This 8.2 MHz is referred to as the *translation constant* and can be used to accurately predict where your downlink signal

will appear for a given uplink frequency or vice versa (± Doppler).

For our first attempt at a QSO through RS-12/13, let's try a CW contact. After running the sat-track program on the shack computer, set up your HF transceiver on 21.215 MHz for the mode K uplink. Tune the downlink receiver for 29.408 MHz and begin listening for the beacon at the appropriate time (given by the sat-track program). Once you start receiving the downlink beacon on 29.408 MHz listen for a couple of minutes to the signal. This will give an indication of how well you should hear the downlink transponder. After you are satisfied with the beacon reception, tune above the beacon in to the passband and check for CW activity. Chances are you will hear several stations calling "CQ RS." Zero-beat your receiver on the downlink frequency of the station you want to contact. Then adjust the uplink frequency (by subtracting 8.2 MHz from the downlink frequency) to your transmit VFO. This will get you in the ballpark.

Once you have the approximate uplink frequency dialed into the transceiver, send a *brief* string of dots and move the uplink VFO around until you hear your dots coming back in the downlink receiver. Now you are close enough to the station calling "CQ RS" to attempt a contact. A quick one-by-two reply to the other station's CQ should be all that is needed to start the QSO.

After the other station acknowledges your presence, the QSO will proceed quickly with first one station, then the other, exchanging RST reports, states and operators' names. Most LEO CW contacts are very "short and sweet." The QSOs usually last less than two minutes so both stations can maximize their QSO rates during the short passes associated with LEO birds.

SSB contacts are done in much the same manner as CW contacts. Tune around the high end of the downlink transponder (29.430 to 29.450 MHz) and listen for any stations using SSB. Upper sideband is the preferred mode on both RS birds. Set your downlink frequency and then subtract 8.2 MHz to get the approximate uplink frequency. Dial this frequency into the transmitter and give a short test count while listening to the downlink and simultaneously adjusting your transmit frequency in order to bring yourself on to frequency. Give a short call to the station you want to contact and proceed with the QSO. if you are hearing yourself in the downlink (remember to use headphones to reduce feedback and enhance concentration) the other station should be able to hear you, also.

SSB contacts are somewhat easier to accomplish than CW QSOs, owing to the wider bandwidth of the SSB signals, which are less susceptible to Doppler shift. Don't misunderstand, Doppler shift is present on the SSB signals, but it seems easier (to me) to deal with this phenomenon using SSB rather than CW. Personally, I would rather ragchew in SSB than CW. For me it is easier and I am able to pass more information faster on SSB than on CW.

Russia's newest LEO satellite

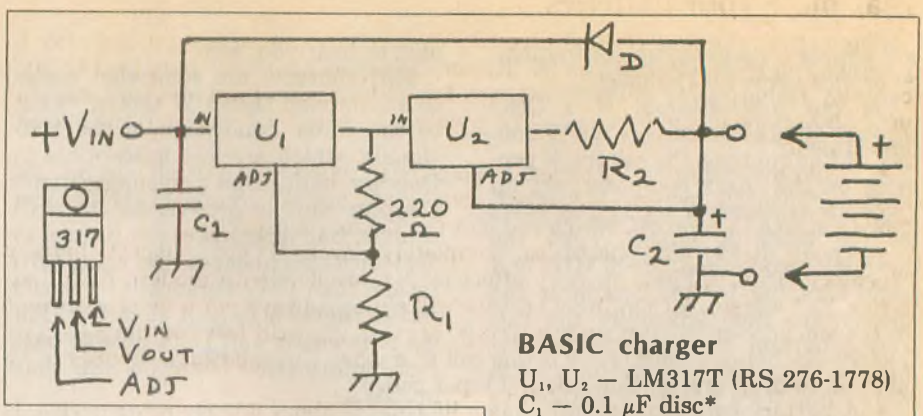
Soon there will be another Russian RS series satellite, RS-15, in orbit. As of this writing (late March 1993) the information available (from Pat Gowen, G3IOR, of AMSAT-UK) indicated that RS-15 would be launched in April 1993. The RS-15 mode A downlink is on 29.357 to 29.397 MHz with 10M beacons at 29.398 and 29.353 MHz. The mode A uplink passband sits between 145.856 and 145.897 MHz. The standard 116.5 MHz translation contact between uplink and downlink frequencies on the mode A transponder is valid for RS-15.

This newest LEO bird will have a circular orbit about 2300 km (1400 miles) high, enabling much more ground coverage per pass than its predecessors. RS-10/11 and 12/13 have circular orbits about 1000 km (600 miles) high and provide limited coverage of the earth's surface on each pass. It is not possible for a station on the East Coast to work Hawaii using mode A via RS-10/11 and 12/13, owing to the low orbit with the correspondingly restricted satellite footprint. RS-15 promises to expand the footprint and yield much better surface coverage than earlier RS series birds.

Here's hoping that you have a chance to get on RS-12/13 soon and experience the fun of an all-HF transponder. Next column we will explore a mode A contact via RS-10. If you are interested in satellite tracking software for your shack computer, try these two sources: R. Myers Communications, P.O. Box 17108, Fountain Hills, AZ 85269-7108; and/or AMSAT-NA, 850 Sligo Ave., Silver Spring, MD 20910. Be sure to tell them that you heard about it in ***Worldradio***. Don't forget to include an SASE with at least one unit of first-class postage. 73 and keep looking up! WR

Computers & BASIC STUFF

C.H. Stewart, KD5DL
P.O. Box 181
Duncan, OK 73435



BASIC charger

U_1, U_2 — LM317T (RS 276-1778)
C_1 — 0.1 μF disc*
C_2 — 25 μF 35V electrolytic*
D — 1N4001 diode
R_1, R_2 — see text

* or substitute 1μF tantalum

BASIC charger

I'm ankle deep in rechargeable batteries. I seem to have them for everything from the HT to the kitchen sink (under which we keep a portable vacuum). And the batteries come in all shapes and sizes, from the button-cell batteries in my camera's motorized winder to the big boxy things I sometimes use for heavy-duty work.

I probably could put my finger on every rechargeable cell I own right now. My trouble is that I know I have a box full of wall chargers someplace, but I can't remember where. I really don't need them anyway, not since I built a multi-capacity charger I can trust.

The idea for the charger came after I ruined an expensive pair of camera batteries by recharging them incorrectly. The batteries were old, so they were probably due for replacement anyhow. The trouble is, there are no replacements—the batteries are obsolete! New ones are not to be found, and used ones go for $80 each.

I lucked out when I carefully took one apart and discovered I could replace the cells with several cordless phone batteries. I saved some money by doing this, but it was still expensive. I decided then to build a charger I knew would protect my investment.

There's nothing secret about the care and feeding of rechargeable batteries. Most NiCd manufacturers recommend charging at a standard .1C rate (in other words, charge at 10 percent of the rated amp-hour capacity for about 14-16 hours). The rate is nice and slow, and the battery won't be damaged if you occasionally forget the time.

There's also an optimum charging voltage for charging NiCds, particularly when they're reaching their charge capacity. Few references list it, so it may differ from manufacturer to manufacturer. The *ARRL Handbook* recommends between 1.42 and 1.44V per cell.

I selected the popular LM317 voltage regulator IC to regulate both voltage and current. Designs for both modes are in the *Handbook* and other popular references. The IC, billed as a three-terminal adjustable regulator, can supply regulated output voltages from 1.2 to 37V at currents exceeding 1.5A. Only two resistors are needed to adjust the output voltage. The IC can also be configured as a precision current regulator which needs only one resistor to set the level of output current.

Armed with this information, I began to design the charger. Actually, a little pencil arithmetic would do the job, but I needed a program for this month's column. The resulting program selects resistor values needed for charging any particular battery.

Refer to the schematic: U1 is the voltage regulating IC and U2 regulates the current. U1's output voltage is dependent on the ratio of R1 to the 220-ohm resistor, and the formula is:

V(out) = 1.25* (1+R1/220) + (.00005*R1)

U2's only resistor, R2, regulates the output current by the formula:

I(out) = 1.2/R2

The capacitors just help stabilize feedback loops and the diode offers protection against current reversals (like when removing input power while the battery is still attached).

The voltage at the input must be about 4V higher than the charging voltage. The reason is that the first LM317 needs a 2V voltage differential to work properly, and the second one drops about 1.25V in this circuit. A junk 16 or 24V transformer and a bridge rectifier supply the input power.

```
10 REM: NiCd CHARGER, BY KD5DL
20 INPUT "NUMBER OF CELLS", A
30 INPUT "AMP-HOUR CAPACITY
   (mAH)", B
40 C=1.43*A
50 PRINT "INPUT VOLTAGE MUST
   BE => ";C+4;"-volts."
60 D=INT (17446.471*C)/100
70 E=INT (1200/B)/100
80 PRINT "R1= ";D;"-ohms"
90 PRINT "R2= ";E;"-ohms"
100 GOTO 20
```

Lines 20 and 30 ask information about your battery. (If you don't know how many cells are in the battery,

Maximize your batteries

Chemists at Arizona State University in Tempe report finding a new way to package single-ion electrolytes for lithium cells. Their research may lead to high capacity rechargeable lithium batteries for all kinds of useful applications. But until they come along, here are a few pointers to maximize your current battery investment:

- Avoid overcharging batteries. Each cell can only hold so much current, and anything over 100 percent is wasted, usually as heat. At around 113°F the electrolyte starts to cook off, which reduces the battery's capacity.
- Avoid discharging batteries completely (even if you suspect battery "memory effect"). First, memory effect isn't a problem with modern NiCd batteries. But worse, discharging a battery will almost always put a reverse current in the weakest cells, eventually ruining them. If you still feel you have to completely discharge a battery, do it one cell at a time. But a battery should not be allowed to drop much below about 1V per cell.
- A battery cared for properly has a lifetime of about 500 charging cycles. If you keep a rough idea of your charging schedule, you'll know about when you will need a replacement. Also, whenever you think you have a defective cell, consider replacing the whole battery. Replacing single cells won't make the battery "good as new."
- A charged battery loses "shelf life" at roughly 1 percent per day, and warmer temperatures accelerate the loss. Keep this in mind when you stash away spare batteries for emergencies. Either recharge them periodically, or keep them on "trickle charge" (0.05C to 0.1C).

divide its rated voltage by 1.25. The nearest whole number is the number of cells inside. Remember, too, that some batteries also have internal diodes.) The amp-hour rating should be printed somewhere on the battery.

Line 40 computes the voltage required to fully charge the battery and line 50 provides the minimum U1 input voltage.

Line 60 calculates the value for R1 (assuming the other resistor in the divider is 220 ohms) and line 70 determines the value for R2. Lines 80 and 90 display the results, and line 100 loops back for another calculation.

R1 will probably be an oddball value, so you may want to use a variable resistor in its place. In fact, you might consider using a multi-position rotary switch to select from banks of R1 and R2. You could then use the charger with a variety of batteries of different voltages and capacities.

Reader software

Harold Tucker, K4HXW, sent a number of IBM compatible *BASIC* programs, including a very interesting program for finding AC resistances at RF frequencies for various wire and tubing sizes. Harold said he would copy the programs for anyone who sends a disk, a self-addressed stamped mailer and $1. His address is 4200 South A1A Highway, Melbourne Beach, FL 32951.

Al LaPlace, W2WW, has an all-band Zepp antenna program written for an Apple Macintosh II. The 47-line program prints the major lobe's axis, gain in dBd, feedpoint impedance and VSWR for Zepps of all sizes and heights for all the amateur bands. Write to Al at P.O. Box 233, Centereach, NY 11720, for more information. Please include an SASE.

Art Brigman, KB2AAB, would like to hear from other Commodore C64/C128 users who have info on CW, RTTY, etc. His address is 243 Weiss St., Buffalo, NY 14206.

Do you have a short program you'd like to share? If so, we'd like to hear from you, too. WR

Perhaps you recall the Broadway musical, *Fiddler on the Roof*. There was a song in there that went something like, "Sunrise, sunset . . ., swiftly go the days." There's a lot of truth in that but I want to focus on just the sunrise/sunset aspect, looking at it from the ionospheric viewpoint. To do so, I have to pick a frequency regime. Let's start with the HF range.

If one begins from the ground up, say the D through F2-regions, then the first thing that we notice is that the lower regions, D and E, are controlled directly by solar radiation. The term "directly" means that they grow and decay in phase with the rise and set of the sun in the sky. Put another way, ionospheric processes in those regions are quite rapid and the level of ionization grows and decays in step with solar illumination.

As you know, the amount of ionization in the D-region is really insufficient to refract or reflect HF radio waves; instead, it merely contributes to their absorption. And the ionization in the E-region varies like the D-region, and the same is true of the F1-region. But the F2-region is somewhat contrary; the lifetime of electrons up there is so long that its electron density is less dependent on the position of the sun in the sky and it even continues well into darkness. Well, that's true in the summer; in the winter it's a different story.

To illustrate the point, I've worked out some critical frequencies for the E and F2-regions over Boulder, Colorado (40N, 105W), for the summer and winter solstices. Those are shown in Figure 1, a potent F-region in the winter in contrast to a more modest one in summer. The curves for the E-region are just the opposite, the critical frequencies being higher in summer than in winter.

The winter case is anomalous, you say? Well, that depends; it happens all the time so perhaps it's more difficult to understand than accept. Actually, the differences in the F-region curves are due to how the neutral atmosphere responds to heat and cold, summer and winter. In the latter, it settles closer to earth, becoming denser and making everything, including collision processes, proceed faster.

Going back to the "sunrise/sunset" notion, you can see on those curves when the sun rises and sets if you note that local midnight is at 0700 UTC and local noon at 1900 UTC. But what do you have to say about the effects of an artificial sunrise or sunset? They do happen, you known, an eclipse being just one example.

Let's go with that idea for a while since it's something we just discussed in a recent article. The moon's disk gets in front of the sun, blocking some solar UV from reaching the ionosphere as the eclipse progresses. You'd expect the electron production to decrease, as the eclipse goes toward totality, and the excess electrons to recombine with the positive ions. The net result is a drop in the ionization in the F-region and a corresponding drop in the critical frequency, perhaps as much as 20 percent at complete totality.

Going to the F-region curves in Figure 1, an artificial sunset like that would take out a narrow notch or bite about three hours wide in the critical frequency curves, centered on the time of total eclipse. The details would depend on when in the day the eclipse occurred, but you get the idea: Turning off the solar UV would lower the electron density in the layer. Since totality extends over a region about 200 km across, that could even affect propagation on any path that normally encounters the F-region there.

What about the E-region? The same sort of thing should happen, the main difference being that the drop in the E-region critical frequency would follow the variation of totality more closely in time. And as for the effect on propagation through the E-region, it would then pass signals that might have been cut off or reflected back to earth before the eclipse began.

And what about the D-region? Normally, that is so lightly ionized, even during daytime, that it only passes and absorbs signals, not refracts or reflects them. And with an eclipse, the ionization there would decrease, again rapidly because of the high rate of electron recombination. So HF signals passing through the D-region, going either downward for a surface reflection or upward again after one, would be stronger during the eclipse and drop back again to normal strength when the eclipse ended.

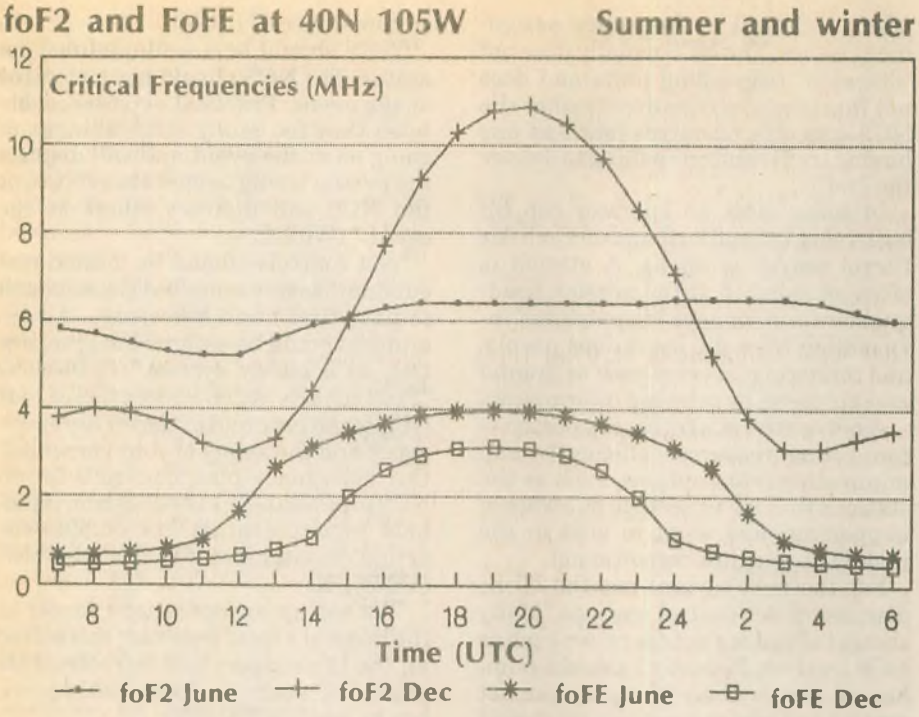
While we're this deep in the ionosphere, let's go down even further, as there are some other effects on signals below the D-region that are worth considering. We'll have to drop down in frequency too, into the LF (30-300 kHz) and VLF (3-30 kHz) range. If you have a suitable antenna and receiver, you'll find signals down there, some of natural origin generated by lightning, and others manmade, say from the OMEGA navitation system (10-14 kHz) or from Navy installations.

While this may seem like strange territory to you, one requiring antennas of huge proportions, it has its attractions as propagation is possible over long distances (5,000-20,000 km) and signals propagate with small attenuation rates, say 2-3dB per megameter (Mm = 1000 km). From our present perspective, the interesting thing about these signals is that they're reflected from the lower side of the D-layer and thus are kept within something like an earth-ionosphere waveguide. True, the lower wall of the waveguide is on the lossy side and the upper wall can change in position with the rising and setting of the sun, naturally or otherwise, but this can be put to our advantage, believe it or not.

The way all this is explored is by electronically combining two signals, one of amplitude V1 from a VLF transmitter and the other of amplitude V2 from a stabilized local oscillator on the same frequency. There will be some phase difference between the two signals—call it PHI—and if the signals are matched in amplitude, say V1 = V2, then the resultant signal obtained on combining them is:

$$V = 2*V1*\cos(PHI/2)$$

Now the VLF signals bounce back and forth in the earth-ionosphere waveguide. If some part of the waveguide becomes higher or lower, there will be a phase change in the signal reaching the receiver due to the different distance traveled. Indeed, if the bottom of the D-region is raised a small amount, the phase difference between the two signals will increase; just the opposite is true if it is lowered.



In practice, the voltage V is rectified and filtered, displayed on a chart recorder and the system run automatically for long periods of time. When examined, the records show a diurnal variation in voltage from changes in phase PHI as the sun rises and sets, the phase difference becoming smaller when the sun is above the horizon and larger when it has set. Typical values for the change in height are around 20 km, with phase changes up to 720 degrees on 20 kHz when the sun sets.

With that discussion, we see that an eclipse would show up as a brief increase in phase during the period of darkness. But eclipses are not all that common and one is not going to run a VLF recorder to just look for them. Indeed, they can be predicted years in advance with considerable accuracy, so there have to be better reasons for continuous recording of VLF signals.

How about spotting solar flares? They show up in the VLF records and this type of system is a clever, inexpensive way to run a flare patrol. All you have to do is find a VLF station to monitor, say one of those of the US Navy, set up a stable local oscillator with associated electronics and start recording.

With a flare, the burst of solar x-rays lowers the effective height of the bottom of the D-layer, introducing a shift in phase between the VLF signal and the local oscillator. The striking thing about flare x-rays is that they can increase in intensity quite rapidly and, if their intensity is great enough, they can leave a signature on the VLF record which stands out from the noise. So we have another technique for carrying out flare patrols, one that's independent of cloud cover.

That flare effect gave an enhancement to the effects already due to the solar UV incident on the sunlit hemisphere. How about an artificial sunrise in the dark hemisphere? That can happen, now due to the arrival of energetic protons from a solar flare event. Their paths out from the sun are bent by the earth's magnetic field and they can reach the dark hemisphere, even penetrating down to the D-region, and show up as an artificial sunrise in the phase records of VLF signals. How about that?

Of course, that sort of change is found mostly on records of VLF signals going across the polar cap. And unlike bursts of solar x-rays, the protons may keep coming for hours, perhaps even days, and leave an unmistakable signature on the VLF recordings.

If we're going to give a complete rundown on these matters, we can't leave out mentioning magnetic activity, can we? One finds an interesting effect due to brief bursts of x-rays from energetic electrons hitting auroral latitudes at the sudden commencements of magnetic storms. That is something near and dear to me, having been the first person to discover those x-rays during a balloon flight in Alaska back in 1960. But that's only at the start of a magnetic storm; storms go on and on for days and VLF recordings pick up the effects of electron bombardment associated with the aurora too.

Enough of a digression; we'd better get back to HF next time. Catch you later!

WR

Search And Rescue Communications

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

The focal point of any Amateur Radio response group is often the success or failure of the net control station. The NCS becomes your "flagship" station during any operation, setting the mood and affecting overall efficiency.

It is interesting to listen to comments after a net or emergency event and hear people compliment or criticize the net control. Yet there's often no discussion as to why the NCS was or was not complimented.

Let's explore some on-the-air functions, but first let's make a distinction between a net control and a dispatcher. If you listen to various operations and compare, for example, a police dispatcher and an Amateur Radio net control, the distinction should be easier to understand.

A dispatcher "sends" units on an assignment and is a resource provider. The dispatcher doesn't "control" the frequency but serves as a central contact for an agency or an operation. Phone calls are answered, specific radio calls are made to "dispatch" assistance and requests are made by field units. Dispatchers seldom control on-the-air content or restrict frequency use—these decisions usually come from a command officer or a communications officer.

On the other hand, an NCS does control the frequency and has been given that authority by the agency "controlling" the frequency. Often the NCS is charged with maintaining traffic flow, monitoring on-the-air discipline and, often, technical or frequency assignment issues. The NCS usually does not "dispatch" responding units and does not function as a resource—rather the NCS connects resources (such as one having traffic and one willing to deliver the traffic).

In some cases an operator can fill both roles, as is often found on Civil Air Patrol search missions. A station is often established at the mission headquarters and conveys "dispatching" information from the operations people, and connects resources such as ground and air crews by relaying information.

A net control is a traffic cop person—connecting resources efficiently and minimizing interruptions, such as the stations that never seem to be aware of happenings and want to visit in the middle of your fire response net.

For the next several months I'll be discussing net control stations. Many things influence a net operation such as NCS location. Recently I asked a number of people their thoughts on net control and where a net control should be located. I also received a copy of the Santa Clara Valley section (ARRL) supplement to the emergency coordinator's manual, written by Steve Wilson, KA6S, and Dave Larton, N6JQJ. Let me share some of the responses and ideas from the SCV manual.

"It's always desirable to select someone with prior experience." (SCV) Locating the NCS at the center of the action isn't always the best idea. "It (the EOC) is going to be the source and sink of a large amount of traffic. It is suggested that an alternate site for NCS might be appropriate under some circumstances." (SCV)

"NCS should be a well-qualified operator. The NCS should not be located at the event. Practical experience dictates that too many other things are going on at the event and will distract the person trying to operate as NCS, or the NCS will distract others at the event." (WØXK)

"Net controls should be located just outside disaster zones but close enough to have first-hand knowledge. All operators should be assigned in groups of two, as a buddy system." (KD6LCN) "First consideration for location of your NCS is the type and extent of the emergency and the safety of your personnel. Our emergency plan now calls for an NCS to be located near enough for hand-held communication but outside the actual disaster site if this is possible." (VE3NDX)

"We set up an operations center at the home of a local operator; this solved all the life-support and infrastructure problems such as food, bathrooms, bunks, etc." (VE3NDX)

"The distance (away from the event) is proportional to the magnitude of the disaster. For example a hurricane NCS should be located farther away than an airport disaster. This will ensure the net will survive the disaster." (KB4HAH)

"An NCS requires a very special collection of talents. This may be the variable in the amount of time an operator can remain functional, in addition to the 'load' presented. The preferred location for NCS is at home or at a club station with plenty of resources and steady power." (KA9HDZ)

"The bottom line is: What kind of

operation are you running and what will work best for the situation, the geography, the equipment and the operators on hand?" (KI6PR)

"The larger and more confusing the net, the more isolated the NCS should be from the EOC and the incident area. We have had as many as four nets and packet going at once on some big events. Eight-hour shifts seem to work best, although I worked one fire for 30 hours! That was definitely too long. . . . I was incoherent and in a fog on the way home." (NV7V)

"I think the NCS should be placed where he has access to the resources necessary to complete his mission. For example, since the purpose of the NCS (MALABAR) for the ATS-3 satellite emergency services net is to coordinate channel assignment and access, the primary NCS is tucked away in south Florida. On the other hand, the Tri-Cities Water Follies NCS included real-time assignment and coordination of fire, rescue and patrol boats. This required him to be in a position that allowed direct observation. I've observed that it's best to have several practiced plans—and then use the one that seems best for the circumstances at hand." (WA7FFM)

"There are too many handicaps dealing with temporary installations and interruptions. Therefore the NCS should always be at a home station or at least some other permanent location where the operator has a good working knowledge of the equipment and what he can do with it." (WD9FVX)

"An NCS can be open 24 hours per day provided there are people willing to stay up that late. Packet (at NCS) is nice, but I was informed by someone on the traffic net that AMTOR is faster—more accurate though slower." (Unnamed in Boston)

"We divided the county into 'communications zones,' each of which would have a coordination center. The locations were chosen with the following criteria: earthquake survivable site, co-location with other services, emergency power, central location so line-of-sight communications could be used." (KK6H)

Finally, some comments from Bruce Karr, KA4MCT: "The NCS is the key to operating a successful net. Training and practice are the essential elements to having one.

"To me an NCS serves one key purpose: ensuring the smoothing functioning of the network. It performs this function by maintaining discipline (setting the example during training), ensuring traffic is passed expeditiously, maintaining integrity of the network and watching closely for potential frequency and technical problems.

"Not all Amateur Radio operators are experienced traffic handlers and net operators. While voice will always be around it is usually less efficient and requires intensive retraining to develop the mindset of message handling rather than a free-for-all QSO."

The point I want to emphasize is that location of the NCS is important! As mentioned in past columns, planning is CRITICAL to an emergency response. Planning includes location, experience, training and the type of event. It is difficult to operate for long periods of time in a compact car or in a wet tent. Lack of planning often places your operators in less-than-ideal situations, and this won't make your NCS work at peak efficiency.

The responses I got showed a great cross section of experience. Take some notes! Experience and planning will keep your group ready to respond. Listen to these voices of experience. Working through some table-top "what if" exercises will help you plan for the next response.

In upcoming months I'll explore equipment needs, specialty NCS training and other ideas you've shared with me concerning NCS operation. Down the road we'll wander through more Incident Command functions and also focus on demobilization. Steve Wilson, Santa Clara Valley section manager, points out that winding down when it's all over is also often overlooked in response planning.

Gather up your ideas on net control and demobilization and send them either by mail or packet (*WB7ULH @ WB7ULH.SLC.UT.USA*). Let me know your thoughts! 73 from Salt Lake City. **WR**

1940 Wetherly St.
Riverside, CA 92506

With apologies to Joyce Kilmer, it is about time once again for thousands of radio amateurs to collectively chant across the countryside: "I think that I shall never see, an antenna support lovely as a tree." It's getting a wire suspended from that lovely tree that so often results in an ugly scene at Field Day sites this time each year.

With a round-house wind-up and Pony League precision, tethered crescent wrenches are tossed into the air for hours in a vain attempt to get one end of the club's 40M dipole nestled into the crotch of that perfect lofty branch.

Bow-launched arrows fly — never to be seen again. Some brave soul brings a nine-iron, golf balls and a payload of fishing line. "A chip shot over the top of *that* tree? Piece of cake." An hour later all the balls are lost, and so is any hope of getting the Delta Loop airborne with help from The Pride of the PGA.

So, when all else fails, they climb—risking life (their's), and limb (the tree's).

There must be an easier way, you say, for QRPers to get those oh-so-important skywires into their proper places. And you're right.

Here we celebrate the time-tested marriage of the slingshot and the fishing reel—a cheap and simple combination for scaling tall trees in a single bound without ever leaving terra firma. New ground? Hardly. Deft execution of the sling has been a time-honored Field Day practice since the days of Hiram Percy Maxim.

In recent years, great dissertations have been presented on fashioning "shooting rigs" that affix the fishing reel to the slingshot using bent and drilled aluminum, wood doweling, nuts and bolts, and clamps. The June 1991 edition of *QST* featured one such example: the EZY Launcher by Wade A. Calvert, WA9EZY, of Port Byron, Illinois, with step-by-step instructions on homebrewing a sling-and-reel rig easily held in one hand.

Slight variations of these designs have increasingly been called into action. They are quite impressive and certainly beat throwing wrenches, shooting arrows, and losing golf balls. If you've got the time and a few dollars to invest in the EZY Launcher, by all means take that route.

But with Field Day just a few weeks away, I've found that it's entirely possible to accomplish what fancy "shooting rigs" do without having to build *anything*. Before going any further, however, be advised that safety is of utmost importance and that practice is the key to success. The use of the apparatus described here and in other articles is as safe as you make it. Use it at your own risk.

One visit to your local sporting goods store should be about all that's required to gather the necessities:

Slingshot. I've been using the Marksman 3040 Folding Slingshot. It is lightweight and has a wrist support which can be folded for storage, making a tidy and compact package that's great for backpacking. Price: about $8.

Fishing reel. The Zebco Bullet .22 suits my antenna casting needs. It comes with 6 lb. test fishing line that's light enough to rocket through the air but hefty enough to withstand a good tug when needed. In casting mode, the line feeds from the reel with no discernible resistance—a vital requirement in this configuration. Price: about $18.

Sinkers. I use the Water Gremlin Dipsey Swivel with the designation "1/2 sz." They come four to a bag and are teardrop shaped like a miniature space capsule. They can carry monofilament fishing line great distances. With a pivoting eye hook, fishing line can easily be attached and detached. Price: about 60¢ per bag. While it's not necessary, I'd suggest spray-painting the sinkers a bright color. Mine are florescent orange, making them easier to find after touchdown.

Safety glasses. As the Marksman instructions make clear, slingshots are not toys, and handling them without extreme caution is asking for trouble. Eye protection is a must, and the few dollars invested in safety glasses will be money well spent. Strictly follow the safety rules shown on the Marksman 3040 box.

Here's how it all comes together: In simple terms, you're "casting" line from a rodless fishing reel with a slingshot. The sinker is the launch vehicle that pulls the line through the air, over the tree and back to the ground.

Here's the setup: Put on the safety glasses. Tie the sinker to the end of the fishing line. Put the reel in casting mode with the push button. You'll know you're in the right mode if the line comes out of the reel with virtually no resistance.

If you're by yourself, place the reel on the ground about seven feet in front of you. The round opening on the reel through which the line feeds should be pointing in the direction you'll be shooting. In rough terrain, be sure the low-lying area around the reel is clear of grass or bushes. You don't want anything aborting your liftoff and tangling your line into a monofilament mess.

If there's someone with you, have them don a pair of safety glasses and welcome them to mission control. They can hold the fishing reel, crouching low at a safe distance behind you—to your left or right, whichever is safest and makes most sense.

Now, whether you're working solo or in tandem, carefully pull the sinker and fishing line through the center of the "V" of the slingshot. If you're unclear on how the line threads, try this: In one hand, hold the slingshot about a foot from your chest. In your other hand, hold the sinker with your arm fully extended in front of you. Now, bending your arm, bring the sinker and line through the center of the "V" toward your chest. The line is now in place for a trajectory which isn't going to get it tangled in the slingshot.

Here's perhaps the most important pre-launch step: the safety check. Make absolutely sure the firing range is completely clear of people, wildlife, power

lines or anything else you would not want to hit, regardless of how good a marksman you think you are. All of the fundamental safety rules for using weapons and for putting up antennas apply here.

Of course, never point a slingshot at anyone, even in jest.

Assure the fishing line has a clear and open path into the air — unobstructed by anything or anyone — and that the line is feeding from the fishing reel with no resistance. Check and double-check this step. Take your time with these procedures. If any aren't as they should be, don't launch!

After you're certain the launch pad is ready and the range clear, cradle the sinker in the slingshot's sling. Draw it back, aim and fire! Practice with short shots at first to get the hang of it. Once you're comfortable with the procedures, gradually increase shooting distances.

At full power with a treetop as your target, if all is well you'll see the sinker winging into the wild blue yonder and hear the high pitched whine of the fishing line spooling from the reel. Then silence. In lunar module terms, "The Eagle has landed." Now it's time to see if you've taken "one small step for ham; one giant leap for ham-kind."

Put the slingshot aside and walk down range. It's time for recovery. Finding the sinker can be a challenge. Sometimes looking high into the tree for a glint of sunlight off the fishing line is the fastest route to the sinker.

Once you've found the sinker, remove it from the line. Now tie a heavier string or cord to the fishing line where the sinker used to be. This cord will be what holds up the antenna.

Leave the end of the fishing line and spool of cord on the ground. Walk back to the launch pad and reel in the fishing line with the heavier cord attached to it. If your aim has been good, you'll see it threading through the top of the tree. Once you've got the reeled-in cord in hand, untie it from the monofilament, reattach the sinker to the fishing line and either store the shooting gear or move on to the next tree.

Now it's antenna time. To one end of the cord, attach the end insulator of your antenna — or the center insulator, if it's an inverted V. Pulling the other end of the cord, hoist the antenna high into the air.

A final note: Never, ever leave a Field Day site littered with fishing line, cord or wire — on the ground or in the trees. Birds and other wildlife can become helplessly entangled. Creating such a hazard is environmentally irresponsible. Operating Field Day with lofty antennas is only commendable when an equally lofty regard for safety and the environment is held in account.

Catalog of the month

If you're more interested in good deals on homebrewing parts than a pretty catalog, Danny Stevig's KA7QJY Components periodic tipsheets are well worth the effort to add them to your source library.

Operating out of Logan, Utah, this company for several years has been making a name for itself in the small parts/small quantity field. The listings come on typewritten, legal-size paper with just about every available centimeter of both the back and front crammed with parts offerings. KA7QJY's Catalog No. 5—the latest in my collection—is three pages of goodies ranging from transistors, linear ICs and diodes to NPO, silver mica and variable capacitors, toroids and hard-to-find coil forms. That's only scratching the surface.

Low overhead seems to be one of the driving forces for keeping prices down. "Please use whatever's handy for an order form," is the company's request for making a parts purchase.

The catalog is free for a large SASE. The mailing address is: KA7QJY Components, Box 3893, Logan, UT 84323. The telephone/FAX number is 801/563/5173.

Correspondence to ***Worldradio's*** QRP column should be directed to Richard Fisher, KI6SN, 1940 Wetherly St., Riverside, CA 92506. **WR**

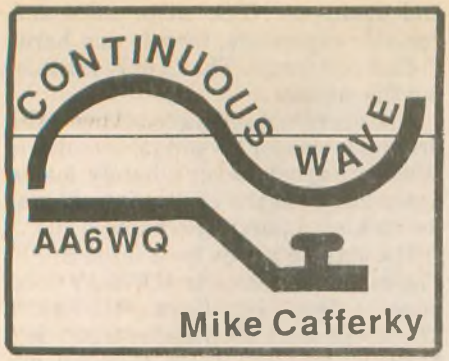
DX World

(continued from page 37)

(K8CH), *CQ Ham Radio, The DX Magazine* (VP2ML), *Long Skip* (VE3IPR), *The W6GO / K6HHD List, The Long Island DX Bulletin* (W2IYX), *QRZ DX* (W5KNE), and *The DX Bulletin* (VP2ML).

Ghana was announced on the local repeater following the recent WPX Contest. However, we never heard the initial announcement and only caught the excitement of the deserving. The station never identified, or at least I never heard him. This also seems to be the trend with many DX stations in the contests. And, with the uninformed coming back with the "last two letters," we now have a case where nobody knows anyone. Maybe we can come up with a new contest—a mystery contest. Only unknown or partial calls count. Hope you have a good month of DXing and know what you are working.

Have you noticed the new column in ***Worldradio***? Welcome to John Attaway, K4IIF, editor of "Worldwide DX Contesting." John is no newcomer to the game. Long-time DXers will remember John as a DX editor for *CQ Magazine* for many years. The staff is pleased to have this talent on board. 73 de John N6JM. **WR**



Readers' response

As promised, I want to share excerpts of some of the letters from Continuous Wave readers.

On Walter Candler (April 1992)

Bill, W8ZNH, writes from Big Rapids, Michigan: "I ran across the mention of the Candler System in *Morsum Magnificat*, winter 1988, by N0HFF . . . If I turn up anything else on the Candler System I will keep you advised." Bill goes on to say he has made it his "project/mission to try to raise consciousness of CW among the (club) and see if [he] can't get more of them on CW."

Thanks, Bill, for the notation on the William Pierpont, N0HFF, material. Readers should know about the existence of this information source. And good luck with the club, Bill.

Dave, W3ZX, purchased the Candler course in the early 30s. He writes from Boalsburg, Pennsylvania: "[Candler] stressed proper spacing in sending the code. . . . When copying well-sent code the subconscious mind recognizes multiple combinations of letters, as well as complete words. But in order for the gray matter to do this, the letters and words have to be properly separated." Dave goes on to say, "Walt had a lot to do with my enjoyment of my hobby."

I particularly appreciated your comments on proper spacing, which typically receives a very little amount of attention in most code instruction programs. There were so many readers who expressed encouragement at the Candler story that I have continued to research this man and his methods.

On the brain (April 1991)

Earl Hornbostel wrote from the Philippines, referring to an article he saw in *Scientific American* on research related to "the different characteristics of the right and left hemisphere, in so far as second languages are concerned." Earl comments that "the left hemisphere has to do with the major aspects of second or multiple language abilities. It is apparent from this article that it is a genetic heritage as to second language ability and that those who have poor second language ability are principally men. Earl goes on to suggest some reserach which could be done to further understand the relationship between code copying proficiency and the left hemisphere.

Earl has an interesting comment about the possibility that some have a more difficult time learning a second language. I agree with his suggestion regarding the possibilities in research and hope someone will find enough Amateur Radio operators to conduct such a research project.

Steve, KA0LSM, wrote from Davenport, Iowa, and told about an experience he had when he broke a bone in his right hand. "I thought I was going to be unable to use the radio for eight weeks. . . . However, when I tried left handed CW I found it was easy to master. In fact, I did it perfectly the first time I tried it. . . . I simply turned the key upside down to keep the "dit" function with the thumb, but on the left hand. Somehow my brain switched over and I was able to send CW."

Good shot, Steve! I wanted the readers of Continuous Wave to hear this story in hopes that some of them will experiment with their left and right hands. I once saw this skill demonstrated by N7HRK, Rick, who wired up two keyers in parallel (one for each hand) and would alternatively use one and then the other without breaking his rhythm. Amazing, but true.

WB5D, Bob, wrote from the University of Mississippi Medical Center Neurology Department with some comments on the left and right hemisphere. He noted a research article which reported a case of a 54-year-old Amateur Radio operator who, because he injured the left side of his head in a fall, temporarily lost much of his ability to communicate in Morse code. He went from 40 wpm down to 7 wpm in both sending and receiving code. Bob says, "It shows that, in this person at least, the left hemisphere, which is the dominant hemisphere for language in almost everyone, seemed to be dominant for copying and sending code."

Thanks for the very interesting story of the injured operator, and for a copy of the research report. The article you sent mentioned that it took the injured man approximately 90 days to regain his code proficiency back up to his pre-injury level. I'm glad for this operator that the injury was only a temporary setback. Operators who have a stroke and are left with a more permanent disability may have more of a challenge on their hands.

On mobile CW (February 1991)

Lawrence, N9HNL, wrote to say that for me to suggest operating CW on the air while driving a moving vehicle "is irresponsible in the extreme. Such an activity is dangerous and a hazard to all concerned on the open highway or city street . . ."

Driving *is* a dangerous activity. So your point about safety is well-taken. I should have made the safety issue much more prominent in my column. With due respect to your comments, I still do most of my CW operating while in the car during my 60-mile one-way commute to work. Think of all the airline pilots who have dozens of dials, meters and gauges to read while using both hands and feet *and* are talking on the radio to the control tower just as they are about to land a loaded Boeing 747 luxury liner. In my opinion, driving a car while operating mobile CW is a lot less complicated than flying. By the way, I have now driven over 60,000 Los Angeles rush hour miles while operating mobile CW.

I enjoyed reading these and many other letters, and I would enjoy hearing from you, too. If you have comments on CW related issues or on the Continuous Wave column, feel free to send them to me: Mike, AA6WQ, 14031 Champlain Ct., Fontana, CA 92336-3502. WR

CONSTRUCTION

High-Q vertical loop

160-80-40-20M loop antenna for the city dweller

GENE GARDNER, W9RWZ

It should be noted that the following is an experimental antenna and caution is required to prevent arcing as well as haphazard physical contact with the antenna.

This article describes a 160-80-40M (and a 20M described next month) antenna for city-dwellers with limited space or height available. It is a multi-turn high-Q vertical loop, 7½ feet in diameter mounted only five feet off the ground. It requires no ground or radials. The overall length of the array is 8½ feet. It can be mounted on a wood 4 × 4 in. pole set in the ground.

It consists of a total of six turns spaced 20 inches apart. The first four turns are nominally 7½ feet in diameter, with the last two additional turns separate and reduced to a diameter of 6¾ feet. The tubing is ½ in. OD aluminum (actually surplus hard-line 75-ohm coax obtained from a salvage yard at scrap-aluminum price). Ninety-two feet of tubing was used for the four turns and 41 feet for the two turns.

The three support booms are 2 in. ID × 8½ ft. PVC tubing with ½ in. slots for holding the interim turns, and ½ in. holes for the ends of the tubing. No other support is required to keep the structure nicely in place except some small ties at the slots.

Small high-Q loops are coming into much wider use today, and you will be pleasantly surprised at how well this one works. Occasionally, the signal reports are almost as good as full sized antennas. This is especially impressive on 160M because it is competing with very large antennas.

There are 3 ft. diameter loops now in use on 10 MHz which have a calculated radiation resistance of only .0167 ohms!

The calculated radiation resistance of this antenna is:

0.426 ohms at 7.3 MHz (two turns)
0.241 ohms at 4.0 MHz (four turns)
0.029 ohms at 2.0 MHz (six turns)

The formula for the radiation resistance of small loops is:

$$Rr = 31{,}200\left(\frac{nA}{\lambda^2}\right)^2$$

Where

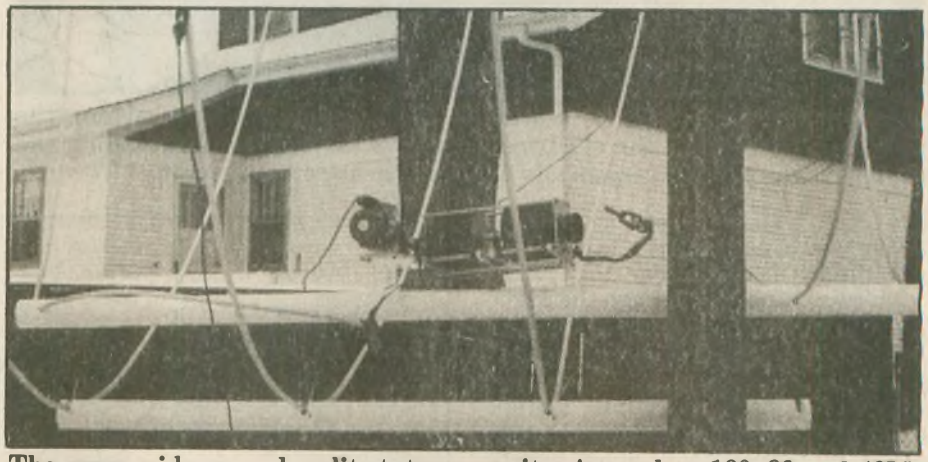
A = area of one turn (sq. M)
N = number of turns
λ = wavelength (M)

Don't be dismayed by such small radiation resistances as compared to a full sized antenna. The *ARRL Antenna Book* (16th Ed.) has a very good section on small high-Q loops that gives much credence to their performance. It may not be correct but one might intuitively rationalize the good small-loop performance this way: If a conventional 160M dipole has a 2:1 SWR bandwidth of 80 kHz at 2 MHz yielding a Q of 25, and if we assume that a line-current of 1A times the Q yields the circulating current in the resonant dipole, then effective radiated power units would be (25 squared) times the radiation resistance of 70 ohms. This would yield (625 × 70) = 43,750 (reference radiated power units).

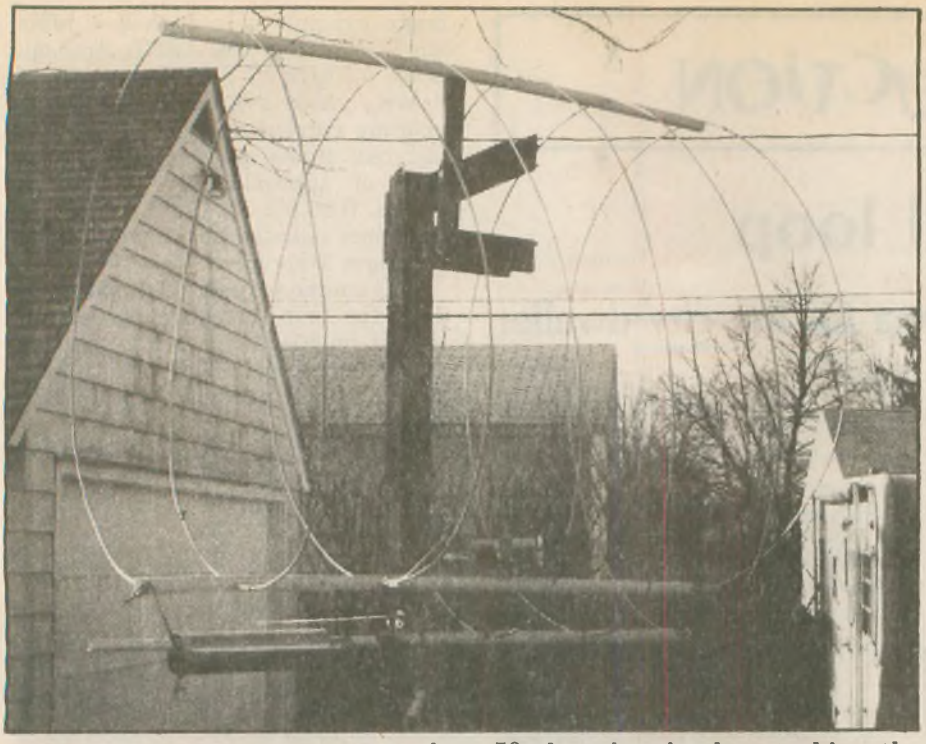
Conversely, if we take an approximate example of a high-Q 2 MHz small loop from the *ARRL Antenna Book*, a 5 kHz 2:1 SWR bandwidth at 2 MHz yields a Q of 400 and a circulating current of 400A. Then (400 squared) times the radiation resistance of approximately 0.25 ohms yields (160,000 × 0.25) = 40,000 (reference radiated power units) which compares favorably.

This antenna is utilized this way: On 40M the four turns are left disconnected; on 80M the two turns are left disconnected; on 160M the two are joined to the four for a total of six turns.

The same wide-spaced split-stator transmitting capacitor is used on all bands. It tolerates at least 700W on 40M and 80M, but only about 200W on 160M because of the very high Q caused by such low radiation resistance. The two sections are used in series (320pF/section for a net maximum of 160pF). Actually, only 100pF is needed, and a smaller minimum ca-



The same wide-spaced, split-stator capacitor is used on 160, 80 and 40M. The Q becomes very high on 160M and, accordingly the voltages are quite high; on 160M the capacitor will tolerate only about 200W before arcing.



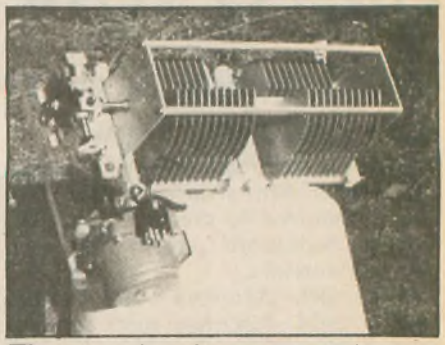
The loops are very easy to match to 50 ohms by simply attaching the shield of the coax to the electrical center of the loop and extending the center conductor experimentally to find a near-perfect match.

pacitance would permit a slightly larger loop diameter which would help significantly (see formula).

No current passes through the rotor bearings and the rotor is left floating. It will be at approximate virtual ground potential.

The two-phase reversible motor-tuning capacitor assembly is supported by one vertical ¼ in. bolt which is used as a pin to be plugged conveniently into any ¼ in. hole drilled in the PVC boom. Two flexible cables left attached to the stators makes it convenient to move the tuning assembly and quickly attach to ½ in. aluminum tubing ends with large battery clamps, or hose clamps. (*Editor's note: It is very important that these connections be well-made because of the low ohmic resistance of the loop circuit.*)

Three conductors are required for the motor, but the phasing capacitor can be located at the reversing switch at the operating position.



The capacitor has two sections in series so that no current passes through to rotor bearings, and the rotor is left floating.

To run higher power on 160M, a more herculean approach must be improvised. At 700W the voltage across the tuning capacitor probably approaches 30,000V (*caution is advised* because this one has caught fire twice during developmental experiments). It is very unlikely that anything you have, or can afford to buy, will tolerate such high voltage. Of course, this high Q is the very reason that the antenna

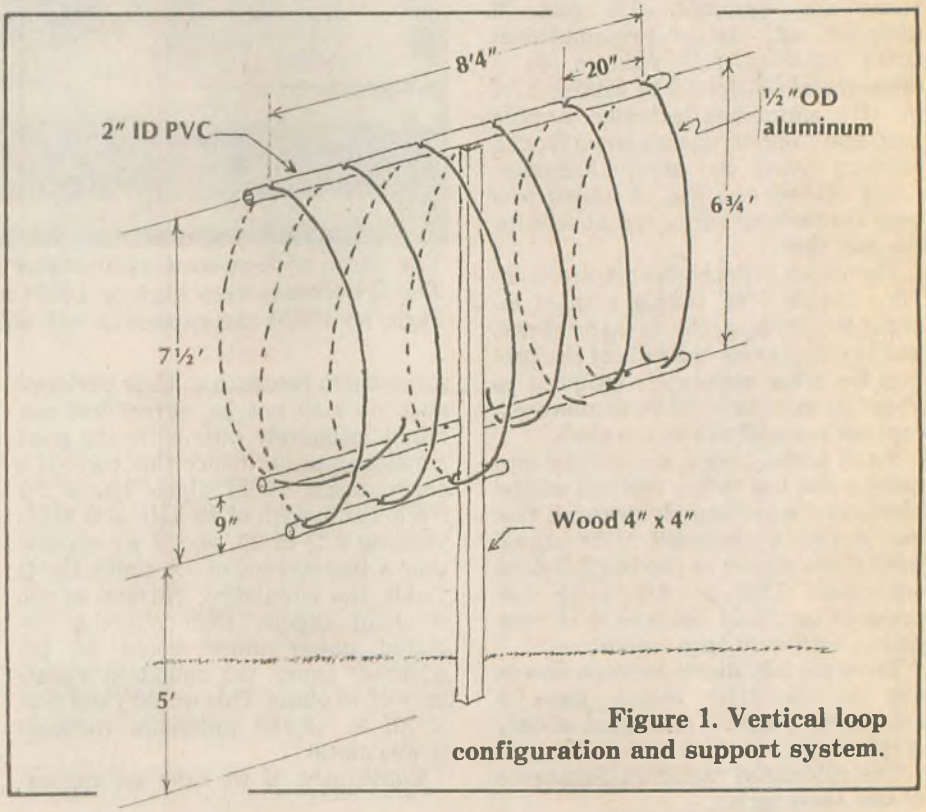


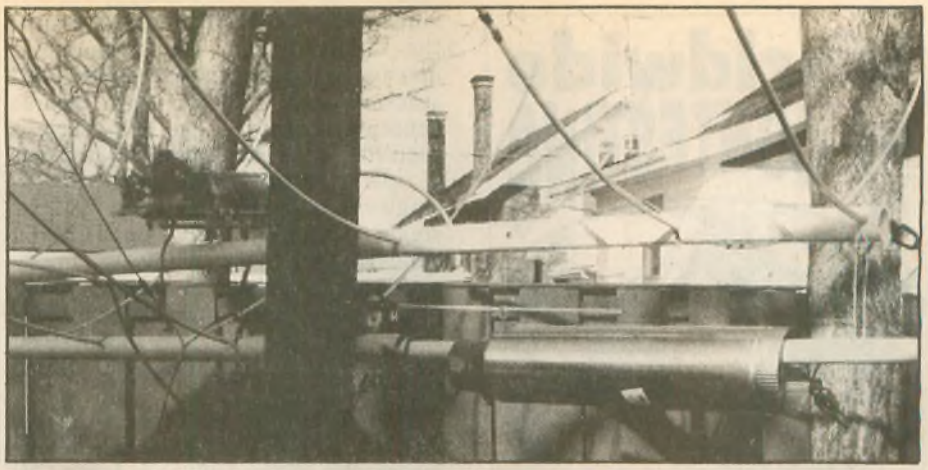
Figure 1. Vertical loop configuration and support system.

can perform so well.

For any given small loop, one should strive for the highest Q possible. Ideally, this would be limited only by the inherent radiation resistance of the antenna. Any Q below this value only indicates unwanted losses and lower radiating efficiency. Of course, this means narrow bandwidth (a 2:1 SWR width of about 8 kHz on 160M), but the remote tuning system works so well that this need not be much of a problem.

A low-cost tuning-capacitance for 700W on 160M can be constructed of two 2 ft. lengths of galvanized furnace pipe — a 4 in. diameter placed concentrically inside a 6 in. diameter. This provides a spacing of one inch and provides adequate capacitance of about 100pF. Sliding it out about five inches covers the 160M band.

Surprisingly, however, even this 1 in. air-gap will arc until corona rings of #14 copper wire are tack-soldered to the thin steel edges. A threaded ¼ in. nylon rod at least one foot long is used as a lead-screw to traverse the 6 in. pipe back and forth. A metallic lead-screw could be used with a 1 ft. insulated extension. Spacers of acrylic plastic can be used to maintain spacing. Use adhesive rather than metal screws to hold spacers in position, placing them back from the ends enough that rain is unlikely to get them wet.



A tuning capacitor for 700W on 160M can be constructed easily to provide capacitance of about 100pF. Even the 1 in. air-gap will arc, however, unless corona rings are soldered to the edges.

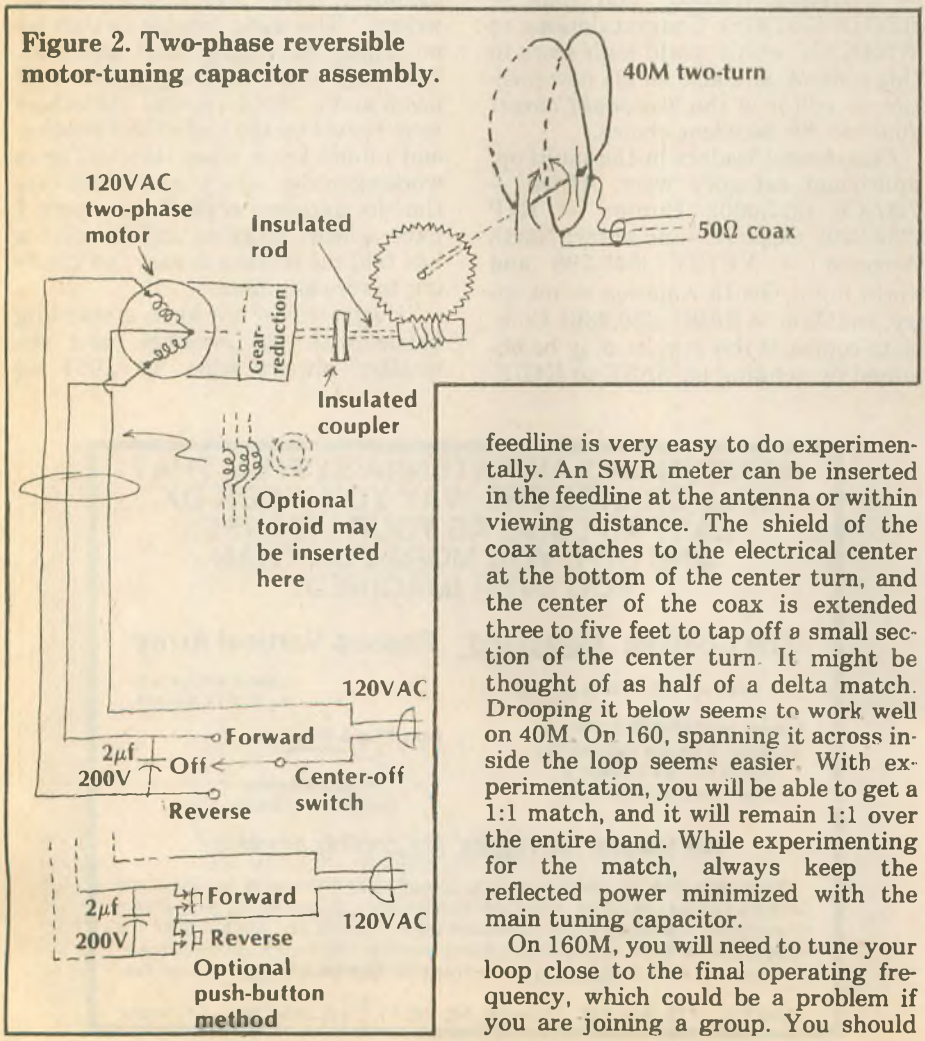
Matching the antenna to the 50-ohm feedline is very easy to do experimentally. An SWR meter can be inserted in the feedline at the antenna or within viewing distance. The shield of the coax attaches to the electrical center at the bottom of the center turn, and the center of the coax is extended three to five feet to tap off a small section of the center turn. It might be thought of as half of a delta match. Drooping it below seems to work well on 40M. On 160, spanning it across inside the loop seems easier. With experimentation, you will be able to get a 1:1 match, and it will remain 1:1 over the entire band. While experimenting for the match, always keep the reflected power minimized with the main tuning capacitor.

On 160M, you will need to tune your loop close to the final operating frequency, which could be a problem if you are joining a group. You should have an SWR meter which is sensitive enough to use at 5 or 10W. Ascertain the actual carrier frequency of your equipment in the tune position (some may have an offset). If you have this 5 or 10W carrier exactly on the group frequency, they probably will not hear you because it is so far down on their steep-skirted filter selectivity.

From the operating chair, simply

(please turn to page 75)

Figure 2. Two-phase reversible motor-tuning capacitor assembly.



Worldwide DX CONTESTING

John Attaway K4IIF/ZF2JI

P.O. Box 205 • Winter Haven, FL 33882

DX contests

12, 13 June — Worldwide South America CW Contest (WWSA)
19, 20 June — 34th All Asian CW DX Contest

WWSA

We have not received the WWSA rules for 1993 or the 1992 results. However, the contest is always a purely CW event held the second full weekend in June with amateurs working each other worldwide. The exchange is signal report plus QSO number, i.e., 599 001. The latest results in our file showed a very poor participation by North American contesters. There were 106 entries from Europe and 30 from Asia, but only three from North America. For full information write to the WWSA contest committee, Box 2673, 20001 Rio de Janeiro, R.J., Brazil.

All Asian CW DX Contest

This is one of the major national contests of the year and enjoys worldwide participation. The CW weekend begins at 0000 UTC the third Saturday in June and ends 24 hours later at 2400 UTC on Sunday. The phone weekend of the All Asian Contest takes place in September. All bands below 30 MHz are used, *except* the WARC bands. The exchange is unusual in that it is gender-based. OM stations send RST plus two figures denoting operator's age. YL stations send RST plus the number 00. Classes of operation are single-op, 1.9 MHz; single-op, 3.5 MHz; single-op, 7 MHz; single-op, 14 MHz; single-op, 21 MHz; single-op, 28 MHz; single-op, multiband; and multi-op, multiband. Complete rules and official summary sheets and log sheets may be obtained from JARL or by sending an SASE to K4IIF.

Thanks to Jay S. Oka, JA1TRC/KH2J, of JARL, we have the following results of the 1992 All Asian CW Contest. The high scoring North American stations in the single-op, single-band categories were: 160M, WØZV; 80M, AD6C; 40M, VE2AEJ; 20M, N9KAU; 15M, WA6FGV; and 10M, K7SS.

Continental leaders in the single op, multiband category, with scores shown in parentheses, were: Africa — 5U7M (244,188); Europe — OG4YR (133,300); Oceania — AH6JF (306,423); North America — WN4KKN/7 (404,408); South America — LU1EWL (16,660); and Asia — RZ9UA (301,078). Congratulations to WN4KKN for his world high score in this contest, and also on his new position as editor of the *National Contest Journal*. An excellent choice.

Continental leaders in the multi-op, multiband category were: Africa — 7Q7XX (217,000); Europe — R4P (234,920); Oceania — no entry; North America — VE7SV (545,296 and world high); South America — no entry; and Asia — RA9C (220,936). Complete copies of the results may be obtained by sending an SASE to K4IIF.

Contesting from overseas

When we wrote the overseas contesting feature in the *National Contest Journal* we concentrated heavily on contestpeditions from the Caribbean. However, with summer ahead of us, let's look at a place to the far north where harsh weather dictates that setting up a station is only feasible for a few months of the year. It's summertime or never.

Faroe Islands

Martin Haasen, OY7ML, has confirmed OY for thousands of DXers over the past 20-plus years. Regarding the possibilities of contest operation by visitors, Martin advises that the Danish FCC is no longer involved in Faroe Island licensing. Effective 1 January 1993 it is necessary to write directly to the local authority, Radioefterlitid Radioamatøvar, Tinghusvegur 64, Box 1288, FR-110 Torshavn, Faroe Islands. However, if you have a valid Danish license you can still operate as, for example, OY/OZ4IIF under the CEPT agreement.

It is possible for visitors to operate from the FRA clubhouse, but it must be cleared well in advance as club members have first choice. Martin writes, "The main trouble is that we no longer have any good antennas. The only ones working are a 15M beam and a 160M vertical. All others were ruined by the bad winter weather and I don't know when they will be in working order again, as no one has time for antenna work. For my part, I have a heart problem and the doctor has told me to take it easy; no climbing towers anymore.

"Every winter we have a standing battle with the weather, and the weather always wins. In 1987 we

bought a heavy-duty Telrex monobander for 20M. They told us our troubles were over, but that was a mistake and we get no help or cooperation from the company. We do have a good solid tower which meets NATO standards.

"I don't believe there will be any repair work this coming summer as OY9JD, who has been doing all the work, is building a new house and has no more time for Amateur Radio."

This sounds like a wonderful opportunity for someone to be an Amateur Radio ambassador to OY-land and get the station on the air for one of the contests. If a contester is interested, Martin recommends the Hotel Fǿroyar, which is on the hillside about 200 meters above Tórshavn, and would be a good location to set up a portable station if the club station is unavailable. However, Martin cautions, "Don't come in the winter—it is terrific, it is tiresome, believe me."

Canary Islands

From the far north we return to a more hospitable clime, the beautiful Canary Islands, EA8-land, where Buddy Roberts, W2KN, advises us that the Hotel Arona Grand in Las Cristianos is a possible QTH. Each room has a large balcony facing the Atlantic. Rod Clews, G3CDK, has been staying there and could provide additional information. The hotel phone number is 75-06-78.

To obtain a temporary license to operate, write to the Ministerio de Transportes y Comunicationes, Direccion General de Correos, Subdirecction General de Telecomunicacion, Seccion de Contratacion y Autorizaciones, Plaza de Cibeles, Madrid, Spain. State your request for a temporary license, the proposed dates of operation, description of rig to be used, address for operation, and enclose a photocopy of your license and passport with a postal money order for 3,920 pesatas payable to Jefe de los Servicios de Telecomunicaciones de Madrid, and indicate your call sign on it. Include a self-addressed envelope for air mail return.

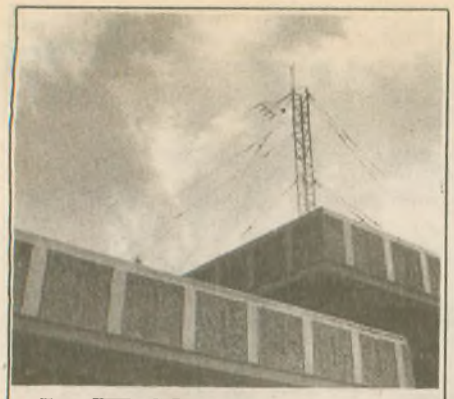
Anguilla

Terry, N6CW, recently operated VP2ECW and recommends the View Fort Country Inns as an excellent QTH. The location consists of three different homes on the island's highest hill. Accommodations range from a modern, new home operated as a bed and breakfast, to a single bedroom sharing the rest of the house, and any combination in between. Prices were very reasonable. If interested, contact Bertranne Gumbs, P.O. Box 42, Anguilla, British West Indies, or phone 1-809-497-5450.

Hillar, N6HR, operates from the club station in Tórshavn, Faroe Islands (*Photo from Martin, OY7ML*).

Silent Keys

It should be noted that in the final days of 1992 we lost two of the giants of our hobby, Walter Geyrhalter, DL3RK, and Al Slater, G3FXB. We were privileged to know them both. After corresponding with Walter for over 20 years, we met him in Munich in 1982 when we presented his 5-Band WAZ plaque. We met Al at Visalia five years ago when we announced his election to the Contest Hall of Fame and awarded his plaque. It is hard to imagine German contests and DX awards without Walter, and worldwide DX contesting without Al. 73, John, K4IIF/ZF2JI WR



AERIALS

KURT N. STERBA

I was looking through a past issue of my favorite radio magazine, the one we all know and love as (we'll call here) *Radioworldly*.

Alas, in reading for the first time a column by the boat boy, I saw there was some flawed data. I think he spent too much topside and the sun got to him.

It was claimed that with a 3:1 SWR there was a "25 percent power loss."

Noooo. There is indeed a BIG difference between "reflected" power and "lost" power. The amount of power actually *lost* depends on the frequency, the type of feedline used and the length of the feedline. One can indeed have quite high reflected power and have but a *tiny sliver* of that reflected power actually and truly "lost."

I thought about trotting out the figures (again) on what the actual losses would be depending on various factors, but I've done that recently and those charts are in the books, (for those who care to look) so let's move on to other matters.

One of Lil's chumettes in VK-land sent her an advertisement from their hammy mag. A US company (let's call them), Wireless Woiks, made a claim there that I've never seen them make in a US publication. Maybe they figure the lager-laden Aussies won't catch on.

Anyway, their antenna (we'll call it), the Georgia Window, "offers as much as 10dB of gain." This is, I point out, a wire "133 feet long" and a one-wire feedline dangling down.

I can only assume that the "10dB of gain" applied to the 10M band where the 133 feet would be almost 4-WL long. Let us not let the data in the *ARRL Antenna Book*, stating that a 4-WL wire has but 3dB gain (over a 1/2-WL dipole), dampen our expectations.

I further quote from the advertisement, "Optimum operation results when mounted 99 metres above the ground." Whipping out my $3.98 calculator purchased from the drugstore, I see that 99 meters is 325 feet!

Jumpin' Jehosephat! At 325 feet "above the ground" you would have a formidable signal if the vertical element was a birdcage and the radials were a dumpster.

Which gives me an idea — I think I'll go into the antenna business. Apex Antennas — there, that's a catchy name. And since I just read an article in which it was claimed that a shortened dipole "puts out a potent signal" I'll just make mine a lengthened dipole and call it "The Potentate." My antennas will be measured in dBclf (chain link fence).

Then I just read in a USA magazine, the one that is published near the Big Apple, an advertisement for an antenna that is "10dB better than the quad."

Why is this guy wasting his time selling antennas? He could be putting on seminars at the temples of high learning worldwide. Certainly all the scientists would eagerly pay $1,000 a lecture and grovel at his feet. This is heavy stuff indeed.

Background for beginners. A quad antenna has about 7dB gain over a dipole. Thus, this antenna (10dB+) has 17dB gain over a dipole. To give you an idea of the magnitude of this breakthrough, up until now, men who had dedicated their entire lives to the study of electromagnetics could only squeeze out maybe 2.5dB more by doubling the boom length of a Yagi.

I'll bet the miserable wretches at Cal Tech and MIT are burning the midnight oil whizzing their computer tapes back and forth, trying to figure out how they got left in the dust on this one.

And yet, this antenna is one-third lighter than those despised multibanders. I'm sure the antenna engineers at the BBC, VOA, NHK, etc., are hoping their bosses don't see that issue of the hammag. Like, those engineers have been taking up areas the size of Rhode Island to emit a paltry 20dB or so.

But on to other topics. Look very carefully at the advertisement of Texas Towers. He's trying to sell that aluminum tubing to hams who will build a Yagi. But look closely. You can get three 6 ft. sections ($5 shipping charge plus UPS) for next to peanuts.

One-inch tubing, 70¢ a foot, for example. Get three sections that slide into each other and you have a 20M vertical (16.7 feet) for but a small cost.

A quarter-wave vertical, a quarter-wave up off the ground, with four radials, will do well for you. But make sure that all four radials are exactly, and I mean *exactly*, the same length.

And here's the secret for success. Pretend (for a moment) that one set of radials is a dipole running north and south. Grid dip or with the SWR analyzer, make that "dipole" resonant at a particular frequency.

Then, on the other "dipole" (the radials running east and west), resonate them at the same frequency. Then join them all together as the radials. The frequency selected is, of course, the same as the vertical element.

The greater the diameter of the vertical elements, the broader the frequency response of the antenna, which means greater excursions up and down the band with lower SWR at various points than if the vertical were skinnier.

How do you support a vertical up in the air? Check with Antennas West about their fiberglass masts.

The guardian angel who writes this column now has the book Aerials II *available. Only $11, plus $2 shipping and handling. A tax of 86¢ is asked from California amateurs. (That money will go to repair the holes in the ionosphere caused by those amplifiers.) Send your*

Build and write!
Tinkering hams love to share their construction achievements with ***Worldradio*** readers.

orders to ***Worldradio****, PO Box 189490, Sacramento, CA 95818. Visa,MC,AmEx.*

A letter to Kurt

The age-old problem of gain claims is before us again (was it ever not?), and I somehow feel compelled to put in my 29-cents-worth.

Hypothesis: Many manufacturers tend to become technically berserk in making gain claims for their latest skywire creations because of a belief that, among the great unwashed of the amateur fraternity, larger numbers will sell more antennas. Their belief may be well founded. How can their desire for great commercial success be tempered with technical accuracy? Simple. Let us show them the way to really big numbers with good technical accuracy.

Most manufacturers now give gain figures in dBi, rather than dBd. Yes, they claim gain over that theoretically fundamental but unrealizable isotrope, rather than a dipole. Why? Because that way, the gain of anything looks better. That is, the gain is expressed as a bigger number. Not much bigger, assuredly, but bigger, nonetheless. Okay, let's go for a reference which has a negative gain (i.e., loss) relative to an isotropic radiator; then the gain of the unit being tested will look better still. So, I propose that manufacturers might consider specifying gain in dBib, which is, of course, gain relative to the radiation of an incandescent bulb.

For those who may be less experienced in the field of electromagnetic radiation, let me assure you that there are tens of thousands living today who have applied the incandescent bulb (which, of course, radiates greatly in the visible portion of the electromagnetic spectrum as well as on the frequency of excitation) as a solution to the problem of adjusting transmitting equipment while causing minimal interference to other stations. Not much interference, anyhow.

There comes to mind a visit to my friend Dave in Maryland one afternoon many years ago. He lit up a brace of 100W Mazdas with his DX-100 on 20M, said "hello, test" followed by his call sign, and got an immediate 5 x 3 report from a KP4. He concluded the contact using a "real" antenna, and his S-report went to 20 over 9. So, presuming that each S-unit is worth something like 3 to 6dB (depending somewhat upon whose article you read, and probably even more on whether your receiver is working), Dave's antenna had an effective gain somewhere between 38 and 56dBib!

Now, those are big numbers. We must surely consider it likely, however, that some manufacturers might not be satisfied with rating their new duo-stack triple-trapped quad extended bazooka cage at, let's say, 52dBib. They'd like to have still higher numbers. For them , I offer a still worse reference radiator, which would even provide a much more stable match for the transmitter. With its use, gain would be measured in dBte, or decibels over a toaster element. Radiation from such a device is really poor, probably -10dBib, particularly if you leave it in its neat chrome-plated housing.

Furthermore, with the use of such a device, technicians might even smooth their early-morning efforts with a bit of breakfast prepared right there in the test equipment! What a concept! Worse yet? We might discuss gain in dBcr, or decibels over a carbon resistor. I'd guess that the properly shielded carbon resistor might offer gain about 20dB worse than that of the alternative reference incandescent bulb. Awful, eh? Wow, this way, that new antenna will have 72dB gain! 72dBcr, that is. Almost certainly, though, we'd soon be seeing someone try to go all the way in selecting a rotten reference, specifying gain in dBbs, which is, not as you might guess, referenced to the gain of a brass slug.

One advantage to this sort of "gain race" ("loss race"??) is that the state of the art in phantom antennas (generally, and rather coarsely, referred to as "dummy loads") might be greatly advanced, as antenna suppliers come to realize that they can claim the *largest* gain numbers for their antennas *if* their references are more close to totally non-radiating.

Thus we give new meaning to the term,"gain of reference source." At least, I hope we do.

P.S.: Kurt, you've said now and then that the number of ground radials under a vertical will make more difference than will the length of those wires. But it ain't necessarily so. Go back to Brown, Lewis and Epstein ("Ground Systems as a Factor in Antenna Efficiency," Proc. IRE, June, 1937) and look at the charts, not the text. This is the reference usually used by those who support the position you have taken. However, all of Doc Brown's conclusions given in the paper do not appear to be supported by the data. Really, if you've got plenty of real estate, the data show that, while the extent of improvement varies with antenna height, you can expect better radiation efficiency with less total wire length in fewer longer radials rather than more total wire length in lots of short radials.

For example, with antenna heights from about 25 to 80 degrees, 15 radials 148 degrees long will provide an efficiency which is several percent greater than that from the use of 113 radials 49 degrees long. In fact, the radiation efficiency improvement achieved by extending 15 radials from 49 to 148 degrees appears to be roughly twice as great as the improvements gained by going from 15 radials 49 degrees long all the way to 113 radials of the same length. On the other hand, if the use of 113 wires is constant, starting from a length of 49 degrees, going to 99 degrees length provides a greater efficiency increase than does going from 99 to 148 degrees, as long as the antenna height is more than about 25 degrees. Check it out. 73,

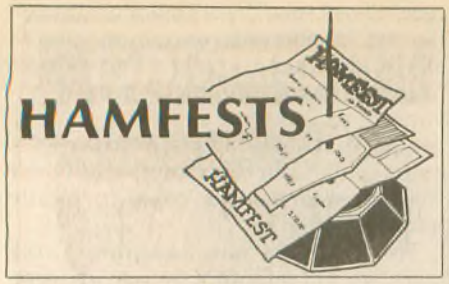
— John McAulay, WA6PQL

Kurt replies

John, thanks for a brilliant letter. You are truly incandescent!

Radials: What, me argue with a book? Perish the very thought. But, there has to be a 25 percent improvement to reach the level of possibly hearing the difference. I've had good success with adding to the usual 1/4-WL radials (of whatever number) one radial, 3/4-WL. Can't explain it, nor quantify it, but it seemed that everything fell in to place better.

Again, you have truly added to the scientific literature. WR



Connecticut

THE RADIO SOCIETY OF NORWICH is holding an annual Ham Raio Auction on 5 June from 10 a.m. until sold out at the Waterford Senior Citizen Center in Waterford. Features include *wheelchair accessibility* and available food. Admission is free. Set-up time is 9 a.m. Talk-in on 146.07/.67. Contact Bob Darge, KA1BB at 203/739-8016.

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THE NEWINGTON ARL will hold its annual amateur radio and computer hamfest on 6 June from 9 a.m. to 2 p.m. at Newington High School. Features include tailgating (weather permitting), refreshments and guided tours of ARRL HQ and W1AW. Admission is $3. Tables $10 in advance and $15 at the door. Talk-in on 144.85/145.45, 223.24/224.84, 443.05/448.05, 146.52. Contact Jim Carney, KA1TAF, c/o NARL, 34 Meadow St., Newington, CT 06111; 203/673-0884.

Florida

REGION TWO USAF MARS is having their annual conference 18-20 June in Satellite Beach. For more information, conact Guice W. Johnson, AFA2SB/AFF2C, 150 Crescent Dr., Punta Gorda, FL 33950-5113; 813/639-2530.

Illinois

THE EGYPTIAN RADIO CLUB will hold its annual Egyptianfest on 13 June from 6 a.m. to 1 p.m. at the club grounds on Chouteau Place Road in Granite City. Features include refreshments, prizes, Saturday night camping and VE exams. Admission is $2 each or three for $5. Talk-in on 146.76. Contact Larry Walton, NZØP, 524 Heather, St. Ann, MO 63042; 314/524-3254, or Bill Dusenbery, N9OQK, 1260 St. Louis Rd., Collinsville, IL 62234; 618/345-7587.

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THE SIX METER CLUB OF CHICAGO will hold their 36th annual hamfest on 13 June from 6 a.m. at Santa Fe Park in Willow Springs. Features include prizes, picnic grounds, refreshments, displays and free parking. Admission is $4 in advance and $5 at the gate. Talk-in on 146.52 or 146.37/97. Contact Mike Corbett, K9ENZ, 606 S. Fenton Ave., Romeoville, IL 60441.

Kansas

THE CENTRAL KANSAS ARC will hold its annual hamfest on 6 June from 8 a.m. to 3 p.m. at Kenwood Hall in Salina. VE exams will be held on 5 June at 1 p.m. Admission is $4 at the door. Talk-in on 147.03/63. Contact Larry White, KBØBH, 336 Sunset Dr., Salina, KS 67401; 913/827-3737.

Kentucky

THE NORTHERN KENTUCKY ARC will hold Ham-O-Rama '93 on 13 June from 8 a.m. at the Erlanger Kentucky Lions Park. Features include prizes, ARRL packet and antenna forums, outside flea market, food and refreshments. Admission is $4 in advance and $5 at the door with children under 13 admitted free. Flea market spaces are $2 each. Indoor vendor space is $15 per table. Vendor set-up time is 6 a.m. Talk-in on 147.255+ or 147.375+. Contact KC4FET, c/o NKARC, P.O. Box 1062, Covington, KY 41012; 606/341-1213.

Maine

THE PINE STATE ARC will hold a hamfest on 12 June from 8 a.m. to 1 p.m. at Hermon Elementary School in Bangor. Features include food, free parking, flea market, dealers, technical demonstrations, CW contest, prizes and VE exams. Three campgrounds and many hotels within five miles of the hamfest. Admission is $2. Talk-in on 146.34/94. Contact Roger W. Dole, KA1TKS, RR #2 Box 730, Bangor, ME 04401; 207/848-3846.

Maryland

THE FREDERICK ARC will hold its annual hamfest on 20 June from 8 a.m. to 4 p.m. at the Walkersville Firemen's Carnival Grounds. Features include radios, electronics, computers, outdoor flea market, indoor commercial areas and food. Admission is $5, non-ham wives and children admitted free. Tailgaters $5 for each 10 ft. space. Indoor tables $10. Talk-in on 147.06+, 146.52 and 448.425-. Contact Frederick Hamfest, P.O. Box 1260, Frederick, MD 21702; 301/694-8612.

Michigan

THE CHELSEA ARC will hold the 16th annual Chelsea Swap 'N Shop on 6 June from 8 a.m. at the Chelsea Fairgrounds. Features include food, parking, handicap parking and flea market. Admission is $3. Tables are $10, tailgate spaces are $3. Vendor set-up time is 6 a.m. Talk-in on 146.980. Send SASE to Gary Widmayer, N8AYY, P.O. Box 325, Manchester, MI 48158; 313/428-9398.

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THE MIDLAND ARC is holding its 19th annual hamfest on 19 June from 8 a.m. to 1 p.m. at the Midland Community Center in Midland. Features include amateur electronice and equipment, door prizes, food and VE exams. Admission is $4. Tables are $10. Talk-in on 147.00+. Send SASE to MARC Hamfest, P.O. Box 1049, Midland, MI 48640; 517/832-3053 evenings and weekends.

Nebraska

THE FALLS CITY ARC and HIAWATHA ARC is sponsoring the Falls City Hamfest on 19 June from 9 a.m. to 3 p.m. at the Falls City Middle School in Falls City. Features include air-conditioning, food and drink, prizes and VE exams at 1 p.m. Talk-in on 147.78/.18. Contact Fred Weaver, KEØTA, P.O. Box 463, Falls City, NE 68355.

New Hampshire

THE CONTOOCOOK VALEY RADIO CLUB is holding a flea market on 6 June from 8 a.m. to 3 p.m. in Davisville. Features include radio and computer electronics tailgate flea market and refreshments. Admission is $1. Flea market space $6. Talk-in on 146.895. Contact John C. Moore, Contoocook Valley RC, P.O. Box 88, Henniker, NH 03242; 603/746-4817.

New Jersey

THE BERGEN ARA is holding its annual spring hamfest on 5 June from 8 a.m. to 2 p.m. at Fairleigh Dickinson University in Teaneck. Admission is $2, XYL and harmonics admitted free. Sellers $10 per parking space. Space with power $20. Talk-in on 146.190/790, 145.620 simplex. Contact Jim Joyce, K2ZO, at 201/664-6725 before 10 p.m.

New York

THE HALL OF SCIENCE ARC is holding a hamfest on 6 June from 9 a.m. at the New York Hall of Science parking lot in Queens. Features include free parking, door prizes, food and refreshments. Admission is $5. Sellers $10 per space. Vendor set-up time is 7:30 a.m. Talk-in on 444.200 and 146.52 simplex. Contact Charles Becker, WA2JUJ, at 516/694-3955, or Arnie Schiffman, WB2YXB, at 718/343-0172 or write to Hall of Science ARC, P.O. Box 131, Jamaica, NY 11415.

THE LANCASTER ARC is sponsoring a hamfest on 13 June at the Darien Center Fire Co. in Darien. Admission is $4 in advance or $5 at the gate. Talk-in on 147.135(+.600), 146.550 simplex, 443.850(+5). Contact Nick, WA2CJJ, 5645 Genesee St., Lancaster, NY 14086; 716/681-6410.

North Carolina

THE FORSYTH ARC is sponsoring the Winston-Salem Hamfest and Computer Fair on 12 June from 9 a.m. to 5 p.m. at the Lawrence Joel Veterans' Coliseum Annex in Winston-Salem. Features include indoor air-conditioned dealer exhibits, flea market, free parking, seminars, child care and VE exams. Admission is $6 in advance and $7 at the door. Tailgating is $3. Talk-in on 146.04/64. Send SASE to B.J. Honeycutt, Winston-Salem Hamfest, P.O. Box 11361, Winston-Salem, NC 27116; 919/723-7388 24 hrs.

Ohio

THE GOODYEAR ARC is holding their 26th annual hamfest and family picnic on 13 June from 8 a.m. to 4 p.m. at Wingfoot Lake Park near Akron. Features include picnic and flea market. Family admission is $4 in advance and $5 at the gate. Outside flea market $3 per space. Inside dealer space $6 per table. Contact William F. Dunn, W8IFM, 4730 Nottingham Lane, Stow, OH 44224; 216/673-8502.

Pennsylvania

THE BREEZESHOOTERS OF WESTERN PENNSYLVANIA will hold its 39th annual computer and hamfest on 6 June from 8 a.m. to 4 p.m. at the Butler Farm Show Grounds in Butler. Features include free outdoor flea market space, free parking and handicap parking, overnight camping with hookups available and refreshments. Admission is $1 at the door. Tables are $10 each. Talk-in on 147.96/.36. Contact Rey Whanger, W3BIS, Box 8 RD 2, Cheswick, PA 15024; 412/828-9383.

THE TAMAQUA XMTG SOCIETY AND ANTHRACITE REPEATER ASSOC. will hold a hamfest on 6 June from 8 a.m. at the New England Valley Fire Company in Tamaqua. Features include ham and parts auction, free parking, homing pigeon demonstration, food and VE exams at 9 a.m. Admission is $4 per call, tailgaters $1 additional. Indoor tables $3. Vendor setup time is 7 a.m. Talk-in on 146.670, 147.105, 146.520. Contact A.R. Breiner, K3NYX, 127 Market St., Tamaqua, PA 18252; 717/668-3098.

SVARC and MILTON ARC are sponsoring a hamfest on 13 June from 8 a.m. to 4 p.m. at the Winfield Fireman's Grounds 60 miles north of Harrisburg on US Route 15. Refreshments will be available, and there will be free parking. Admission is $4, outside tables and tailgate spaces are$1 per 6 feet. Talk-in on 145.18/17 and 146.82/22. Contact SVARD, Inc. Box 73, Hummels Wharf, PA 17831; 717/473-7050. Packet: WY3M @ NR3U.PA.

Vermont

THE NORTHERN VERMONT MID-SUMMER HAMFEST COMMITTEE is holding a hamfest on 5 June from 8 a.m. to 3 p.m. at the South Burlington Middle School in South Burlington. Features include indoor and outdoor flea markets, forums, demos, dealers, info tables and VE exams at 2 p.m.. Admission is $4. Talk-in on 145.47(-600) or 146.85(±600). Contact Joe Tymecki, N1DMP, at 802/893-6458,

Wisconsin

THE CENTRAL WISCONSIN RA is holding its 16th annual swapfest on 13 June from 8 a.m. to 1:30 p.m. at the University Center on the University of Wisconsin-Stevens Point campus in Stevens Point. Features include food, free parking, handicap accesibility, seminars and VE exams. For more information, contact Art Wysocki, N9BCA, CWRA Swapfest Chairman, 3356 April Lane, Stevens Point, WI 54481; 715/344-2984.

CONTESTS

Rover rule changes

The ARRL has changed the rules for Rover entries starting with the 1993 ARRL June VHF QSO Party, 12-14 June. The new definition for the Rover category is as follows:

Rover: One or two operators of a single station that moves among two or more grid squares during the course of the contest, and making contest contacts, using the same equipment and antennas at each site, will be considered a rover. Rovers sign "rover" on phone and /R on CW after their call sign. The intent of the Rover category prohibits fixed station scores to be included with Rover operations; stations may however, enter the Rover category with a separate log for Rover activities. All Rovers are encouraged to adopt operating practices that allow as many stations as possible to contact them.

This new change will be in effect in all ARRL VHF contests that include a Rover category.

WHAT DO YOU WANNA BET I FORGOT TO SCREW THAT BOTTOM STEP ALL THE WAY IN?

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

ARE *HamLink*

Amateur Radio Engineering, Inc., has just introduced *HamLink*. It is an interface that goes between the telephone line and the computer port of your transceiver or receiver. *HamLink* can control the frequency of a radio, mode, band, scan memories, and operate in split-mode. *HamLink* is even able to share a telephone line with your family answering set without a problem.

With *HamLink* you can control your transceiver from a Touch Tone phone anywhere in the world. You can monitor the DX frequencies and work all of the rare ones from your office. If you live in a condo and can't have an HF station, you can put *HamLink* at a friend's home or a club station and use it by telephone.

HamLink even has a synthesized voice to announce frequency and mode. You always know where you are operating. With *HamLink* you can command your radio to go to a specific frequency or you can tune your radio in 10 Hz, 100 Hz, 1 kHz, or 5 kHz steps.

HamLink is priced at $269 and is available from your favorite Amateur Radio dealer. *HamLink* comes with a one-year limited warranty. It is housed in an 8 × 5 × 2 in. metal case. For more information, contact Amateur Radio Engineering, Inc., P.O. Box 169, Redmond, WA 98073; 206/882-2837 or Evelyn Garrison at Evelyn Garrison & Associates, 21704 SE 35th St., Issaquah, WA 98027; 206/557-9611.

G & P roof mount

G & P Engineering announces the availability of a new style of antenna mounting system, the N-Pam unit. The N-Pam unit will mount on the roof without drilling holes into the roof!

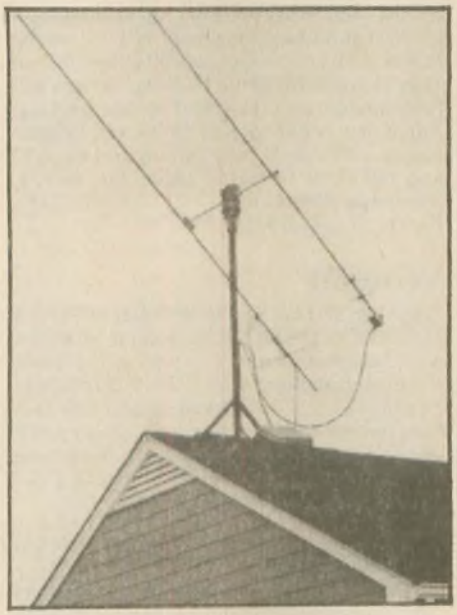
The N-Pam systems will mount on any roof at any pitch from flat to a 12/12 pitch. It will allow usage on roofs with 16 in. OC, 24 in. OC, stick built or truss systems.

Basic systems include single or dual tray units with a 2 in. mast that is three feet in height. Ideal for a tri-bander/VHF-UHF system!

Options include a 5 ft. or a 7 ft. mast. The 7 ft. mast will allow for the use of the largest OSCAR antenna system or stacked Yagis. The size of antennas that can be mounted on the unit depends on two factors: 1) antenna square footage wind load; 2) 100-year wind speed chart.

All mounts are made of steel and are primed and painted with a durable and hard epoxy paint. The color is black, to blend with most roof shingle colors.

Send for your brochure on this new amateur antenna mounting system: G & P Engineering, 4943 Finch Court, Stephens City, VA 22655; 703/869-4530; FAX 703/869-5116. All N-Pam units are made in the USA by certified welders.



Ramsey kit catalog

Ramsey Electronics announces their expanded-format, 1993 catalog, containing 20 pages of kits and wired equipment for Amateur Radio, two-way radio, scanner buffs, schools, test labs and electronic hobbyists. Exciting new products include radio direction finder, digital voice recorder, capacitance-inductance meter, SCA music adapter, stepper motor driver, foxhunt transmitter and many more.

The DF-1 radio direction finder employs new concepts in making direction finding easy. Digital filters and synchronous detection are used to make zeroing in on unknown transmitters easy. The direction finder can be used with virtually any radio receiver and only requires connection to the radio's speaker jack. Usable from 100 kHz to over 1 GHz, the DF-1 is limited only by the receiver connected. Additionally, the DF-1 may be used with HT units, even when transmitting. Circuitry inside the direction finder will sense when the user transmits and electronically switch antenna connections for transmission.

Ramsey Electronics has supplied kits to the Amateur Radio and educational market since 1976 and ships worldwide as well as having dealers throughout the US and Canada. New instruction manuals are designed to educate and provoke additional ideas and experimentation with the kits after assembly.

To receive a free copy of this catalog, contact: Ramsey Electronics, Inc., 793 Canning Parkway, Victor, NY 14564; 716/ 924-4560; FAX 716/924-4555.

When will AMSAT-OSCAR-13 be in range?

ROSS FORBES, WB6GFJ

Those just starting out in the world of OSCAR communications would like to know when they can hear a satellite. The following charts are produced to give you a rough idea as to when OSCAR-13 will be within range of your location. The three charts as printed are centered on the following geographic locations: East = New York City; Mid = St. Louis, MO; West = Reno, NV.

As you read the chart nearest your location, keep in mind the following details — all dates and times are given in UTC. The date is printed on the left hand column and the UTC hour along the top.

A dash mark indicates the satellite is out of range and therefore not able to be heard. The letter "B" indicates OSCAR-13 is audible at that location and signals should be heard between 145.810 and 145.880 MHz (SSB and CW). A letter "O" indicates the satellite is audible, but the only signal you will hear is the telemetry beacon on 145.810 MHz. The letter "L" indicates the satellite is audible but you will hear signals between 435.650 and 436.000 MHz (SSB and CW).

Remember, if a letter is printed on the chart, you should be able to hear OSCAR-13.

For more information about OSCAR, please send a SASE to either of the following: Project OSCAR, P.O. Box 1136, Los Altos, CA 94023-1136; AMSAT-NA, P.O. Box 27, Washington, D.C. 20044. □

Station East

HOUR - UTC

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     0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
7/01 BB--------------------BBBBBBBBBBBBBLLLLLLBBBBBBBBBBBBB-----BBBBBBBBBBLL
7/02 LL----------------BBBBBBBBBBBBLLLLLBBBBBBBBBBBB-----BBBBBBBBBLLLLLL
7/03 L----------------BBBBBBBBBBBBLLLLLBBBBBBBBBBB------BBBBBBBBBLLLLBBBB
7/04 B----------BBBBBBBBB--LLLLLLBBBBBBBB-------BBBBBBBBBLLLLBBBBBB-
7/05 ----------BBBB-----------------------BBBBBBBBBLLLLLLBBBBBBB--
7/06 ------------------------------------BBBBBBBBBLLLLBBBBBBBBB---
7/07 ----------------------------------BBBBBBBBBLLLLBBBBBBBBB-----
7/08 --------------------------------BBBBBBBBBLLLLBBBBBBBBB--------
7/09 ------------------------------BBBBBBBBBLLLLBBBBBBBBB----------
7/10 ----------------------------BBBBBBBBBLLLLBBBBBBBBB----------BBBBBB-
7/11 --------------------------BBBBBBBBBLLLLBBBBBBBBB-----BBBBBBBBB-
7/12 ------------------------BBBBBBBBBLLLLBBBBBBBBB------BBBBBBBBLLL--
7/13 ----------------------BBBBBBBBBLLLLBBBBBBBBB-----BBBBBBBBLLLLB--
7/14 --------------BBBBBBBBBLLLLBBBBBBBBB------BBBBBBBBLLLLBBB---
7/15 ----------BBBBBBBBB----LLLLBBBBBBBBB-------BBBBBBBBLLLLBBBBB---
7/16 --------BBBBB-----------------------BBBBBBBBLLLLBBBBBBBB----
7/17 ----------------------------------BBBBBBBBLLLLBBBBBBBBB-----
7/18 --------------------------------BBBBBBBBLLLLBBBBBBBBB-------
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7/26 ---------BBBBBBBB-----LLLLBBBBBBBBB------BBBBBBBLLLLBBBBB------
7/27 ------BBBB-----------------------BBBBBBBBLLLLBBBBBBB-------
7/28 ----------------------------BBBBBBBBLLLLBBBBBBBB---------
7/29 --------------------------BBBBBBBBLLLLBBBBBBBB-----------
7/30 ------------------------BBBBBBBBLLLLBBBBBBBB-------------
7/31 ----------------------BBBBBBBBLLLLBBBBBBBB---------------
     20 21 22 23 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20
```

Station Mid

HOUR - UTC

```
     0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
7/01 BBLLLL----------------BBBBBBBBBBBBLLLLLLBBBBBBBBBBB------BBBBBBBBBLL
7/02 LLLLBB--------------BBBBBBBBBBBBLLLLLBBBBBBBBBBB------BBBBBBBBBLLLL
7/03 LBBB----------BBBBB-------------BBBBBBBB-------BBBBBBBBBLLLLBBBB
7/04 BBBB----------BB-----------------------BBBBBBBBBLLLLBBBBBB
7/05 BBB-----------------------------------BBBBBBBBBLLLLLLBBBBBBBB
7/06 BB--------------------------------BBBBBBBBBLLLLBBBBBBBBB-
7/07 ------------------------------BBBBBBBBBLLLLBBBBBBBBB-----
7/08 ----------------------------BBBBBBBBBLLLLLLBBBBBBBBB-------
7/09 --------------------------BBBBBBBBBLLLLBBBBBBBBB------BBBB
7/10 BBBB----------------------BBBBBBBBBLLLLBBBBBBBBB------BBBBBB
7/11 BBBL----------------BBBBBBBBBLLLLBBBBBBBBB-----BBBBBBBBBL
7/12 LLL----------------BBBBBBBBBLLLLBBBBBBBBB-----BBBBBBBBLLLLL
7/13 LLB----------BBBBBBBBBLLLLBBBBBBBBB------BBBBBBBBLLLLBBB
7/14 BB----------BBBBB----------BBBBBBB--------BBBBBBBBBLLLLBBBBB
7/15 BB----------BB----------------------BBBBBBBBLLLLBBBBBBBB
7/16 B----------------------------------BBBBBBBBBLLLLBBBBBBBBB--
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Station Mid

HOUR - UTC

```
     0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
7/17 ------------------------------------BBBBBBBBBBBLLLLBBBBBBBBB----
7/18 ----------------------------------BBBBBBBBBLLLLLBBBBBBBBB------
7/19 --------------------------------BBBBBBBBBLLLLBBBBBBBBB---------
7/20 ------------------------------BBBBBBBBBLLLLBBBBBBBBB-------BBBBB
7/21 B----------------------BBBBBBBBBLLLLBBBBBBBBB------BBBBBBBBB
7/22 B----------------------BBBBBBBBBLLLLBBBBBBBBB------BBBBBBBBLLL
7/23 L------------------BBBBBBBBBLLLLBBBBBBBBB-----BBBBBBBBLLLLB-
7/24 ----------------BBBBBBBBBLLLLBBBBBBBBB-----BBBBBBBBLLLLBBB-
7/25 ----------BBBBB----------BBBBBBBB--------BBBBBBBBLLLLBBBB--
7/26 ----------BB----------------------BBBBBBBBLLLLBBBBBBB---
7/27 ------------------------------BBBBBBBBLLLLBBBBBBBB----
7/28 ----------------------------BBBBBBBBLLLLBBBBBBBB------
7/29 --------------------------BBBBBBBBLLLLBBBBBBBB--------
7/30 ------------------------BBBBBBBBLLLLBBBBBBBB----------
7/31 ----------------------BBBBBBBBLLLLBBBBBBBB-------BBBB---
```

Station West

HOUR - UTC

```
     0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
7/01 BBLLLLLBBBB----------BBBBBBBBB--LLLLLLBBBBBBBBB-------BBBBBBBBBLL
7/02 LLLLBBBBBB----------BBBB----------------------BBBBBBBBBLLLLLL
7/03 LBBBBBBB----------------------------------BBBBBBBBBLLLLBBBB
7/04 BBBBBBB----------------------------------BBBBBBBBBLLLLBBBBBB
7/05 BBBBBB----------------------------------BBBBBBBBBLLLLLBBBBBBB
7/06 BBB----------------------------------BBBBBBBBBLLLLBBBBBBBBBB
7/07 B----------------------------------BBBBBBBBBLLLLBBBBBBBBB----
7/08 ----BBBBB----------------------BBBBBBBBBLLLLBBBBBBBBB------B
7/09 BBBBBBBB----------------BBBBBBBBBLLLLBBBBBBBBB------BBBBB
7/10 BBBBBBLLL----------BBBBBBBBBLLLLBBBBBBBBB-----BBBBBBBB
7/11 BBBLLLLB----------BBBBBBBBBLLLLBBBBBBBBB-----BBBBBBBBBL
7/12 LLLLLBBB----------BBBBBBBBB----LLLLBBBBBBBBB-------BBBBBBBBLLLLL
7/13 LLBBBB----------BBBB----------------------BBBBBBBBLLLLBBB
7/14 BBBBBBB----------------------------------BBBBBBBBBLLLLBBBBBB
7/15 BBBBB----------------------------BBBBBBBBBLLLLBBBBBBBB
7/16 BBBB----------------------------BBBBBBBBBLLLLBBBBBBBBBB
7/17 B----------------------------BBBBBBBBBLLLLBBBBBBBBB---
7/18 ----------------------------BBBBBBBBBLLLLLBBBBBBBBB-------
7/19 --BBBB----------------------BBBBBBBBBLLLLBBBBBBBBB------BBB
7/20 BBBBBBB----------BBBBBBBBBLLLLBBBBBBBBB------BBBBBB
7/21 BBBLL----------BBBBBBBBBLLLLBBBBBBBBB-----BBBBBBBBB
7/22 BLLLL----------BBBBBBBBBLLLLBBBBBBBBB------BBBBBBBBLLL
7/23 LLLBBB----------BBBBBBBB----LLLLLBBBBBBBB-------BBBBBBBBLLLBB
7/24 BBBBB----------BBBB----------------------BBBBBBBBLLLLBBBB
7/25 BBBB----------------------------BBBBBBBBBLLLLLBBBBBBB
7/26 BBB----------------------------BBBBBBBBBLLLLBBBBBBBBB
7/27 B----------------------------BBBBBBBBBLLLLBBBBBBBBB--
7/28 ----------------------------BBBBBBBBBLLLLLBBBBBBBBB-----
7/29 ----------------------BBBBBBBBBLLLLBBBBBBBBB-------B
7/30 BBB----------BBBBBBBBBLLLLBBBBBBBBB------BBBBBB
7/31 BBBB----------BBBBBBBBBLLLLLBBBBBBBBB-----BBBBBBBBB
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VE exam schedules

As a service to our readers, Worldradio presents a feature listing those VE exams, times and locations which are sent to us. Please remember that our deadline for publication is three months in advance. For example, if your VE group is scheduling an exam for September, please have the information to us by mid June.

Worldradio, 2120 28th St., Sacramento, CA 95818.

Please mark the envelope "VE Exams."

List the location, any information examinees should have (advance registration, etc.) and the name and telephone number of a person to contact for further information.

p/r=pre-register w/i=walk-in

Date	City	Contact	Notes
Arizona			
July 3	Tucson	Joe, K7OPX 602/886-7217	w/i
Arkansas			
July 17	Mountain Home	Gerald, WM5W 501/430-5123	p/r
July 10	West Memphis	Gene, AB5BL 501/739-4029	w/i OK
California			
July 10	Adelanto	Arnie, NF6I 619/241-4732	w/i OK
July 18	Berkeley	Gary, N6YBD 510/530-0544	w/i only
July 3	Cupertino	408/243-8349	w/i OK
July 18	Eureka	707/826-0767	w/i OK
July 31	Fairfield	Jerry, AA6NO 916/662-0801	w/i only
July 6	Fremont	KJ6EP 510/791-6818	w/i only
July 11	Hanford	Carleton 209/924-4221	w/i only
July 3	Ontario	Harry, KM6LO 818/810-0442	w/i OK
July 10	Redding	Kenna, KR6M 916/243-6339	
July 17	Redwood City	408/255-9000	w/i OK
July 17	Stockton	Ed, N6XMA 209/952-5996	w/i only
July 10	Sunnyvale	408/255-9000 24-hr.	w/i only
July 17	The Sea Ranch	Frank, W6MN 707/884-4336	w/i only
July 31	Vacaville	Irene, KK6XB 707/446-8376	w/i only
Colorado			
July 10	Denver	Glenn, W0IJR 303/360-7293, 24-hr. message	w/i OK
July 17	Pueblo	719/948-2291	w/i OK
July 17	Westminster	AA0BZ 303/421-2795; N0HNR 303/278-4280	p/r or w/i
Connecticut			
July 25	Milford	NB1M 203/933-5125; WA1YQE 203/874-1014	w/i
July 28	Shelton	WJ1T 203/283-1044	w/i pref.
Florida			
July 5	Dunedin	Marv, WC2G 813/938-7810	p/r or w/i
July 17	Melbourne	WB9IVR 407/724-6183	w/i OK
July 27	New Port Richey	Marv, WC2G 813/938-7810	p/r or w/i
July 10	South Miami	Ross, AC4KZ 305/233-7462	w/i OK
Georgia			
July 10	Augusta	Jim, N4JA 404/790-7802	w/i
Idaho			
July 10	Boise	W7JMH 208/343-9153	w/i
Illinois			
July 31	Alsip	Ron, K9FYG 708/597-2491	p/r; w/i
July 20	Aurora	N9AKE 708/892-1252	w/i pref.
July 10	Belleville	John, KN9G 618/235-2475	p/r only
July 17	Bloomington	Ken, NX9M 309/662-3910	w/i OK
July 17	Godfrey	KF9F 618/466-2306	p/r
July 17	Loves Park	Paul, WB9HGZ 815/987-6754	p/r; w/i
July 10	Oak Forest	David, NF9N 708/448-9432	w/i
July 11	Paris	WO8X 217/463-2213	p/r; w/i
Indiana			
July 10	Hammond	Gerard, KE9I 219/845-8513	w/i
July 21	Indianapolis	Jack, AA9BO 317/251-6000	p/r only
July 9	Logansport	Bill, WA8HSU 219/722-1338	w/i OK
July 13	New Carlisle	219/654-3007; or KK9T 219/654-8084	p/r
Iowa			
July 24	Mt. Pleasant	Dave, KA0FBL 319/986-6677	w/i OK
Kansas			
July 1	Great Bend	WA0PSF 316/792-5363 days, 316/792-4249 eves	w/i OK
Kentucky			
July 17	Louisville	Otis, AA4HJ 502/969-7332	w/i only
July 10	Middlesboro	Andrew, WB8WEZ 606/248-0046	w/i OK
Maine			
June 25	Alfred	John, N1KMZ 207/985-4825	
July 7	Brunswick	Steve, WZ1J 207/725-5155	
Maryland			
July 21	Glen Burnie	Jerry, NU3D 410/761-1423	p/r pref.; w/i ltd.
July 17	Laurel	WB3GXW 301/572-5124 after 6 p.m.	p/r pref.
Massachusetts			
July 5	Cambridge	Bob, N1KDA 617/593-1955	
Michigan			
July 10	Dearborn	Stan, K8SB 313/676-6248	
Minnesota			
July 17	St. Paul	K0QBE 612/222-7253	p/r pref.
Missouri			
July 3	Antonia	Jim, WA0FQK 314/942-2268	no w/i
July 10	Des Peres	Gregg, KA0VWX 314/567-8777 24 hrs.	p/r only
July 22	Seneca	Les, AA0GY 417/781-4331 days or 417/776-8420 evenings	w/i OK
July 17	St. Louis	N0IS 314/892-4434	w/i OK
July 18	Washington	NF0Q 314/946-0948	p/r pref.; w/i OK
Nevada			
July 17	Minden	W7QO 702/265-3430	w/i
July 10	Reno	WS2Z 702/851-1176	w/i
New Jersey			
July 15	Bellmawr	WA2VQG 609/546-7710	w/i
July 10	Cranford	24-hr. hotline: 201/377-4790	
July 14	Fort Monmouth	MARS 908/532-5354	w/i
July 17	Pennington	AA2F 609/737-1723	p/r pref.; w/i OK
New York			
July 14	Albany	Bud, WF2B 518/283-2337	w/i OK
July 13	Hicksville	Bob, W2ILP 516/953-7895	w/i only
July 4	Yonkers	AC2V 914/237-5589	w/i OK
North Carolina			
July 24	Asheville	Norman, N4NH 704/253-1192	w/i OK
July 5	New Bern	Andy, W4UJD 919/726-5924	w/i
July 17	Rutherford County	A.B. Brackett, KO4BJ 704/245-6334	
July 10	Salisbury	Isabelle, AB4UX 704/284-2414	w/i OK
Ohio			
July 3	Cincinnati	Herb, WA8PBW 513/891-7556	w/i OK
July 15	Youngstown	James, N8IRL 216/534-1394	w/i limited
Oklahoma			
July 16	Pawhuska	KY5J 918/337-4335, or WT5Z 918/287-3665	w/i OK
Oregon			
July 14	Roseburg	AA7GC 503/672-7564	w/i OK
Pennsylvania			
July 3	Erie	W3CG 814/665-9124	w/i
July 31	Indiana	NY3T 412/479-8117	p/r
July 8	Levittown	K3TX 215/946-1040 or 736-3333	p/r pref., w/i OK
July 17	Meadville	K3TLP 814/724-1413	w/i
July 2	Nazareth	Robin, WA3T 215/820-9110	w/i
July 1	Philadelphia	ND3Q 215/482-0386 or 215/879-0505	p/r pref.; w/i OK
Rhode Island			
July 8	Providence	NN1U 401/231-9156 or 401/454-6848	w/i OK
South Carolina			
July 17	Charleston	Pat, AC4IH 803/553-3871	w/i
July 10	Greenville	John, ND4N 803/288-0136	w/i OK
July 17	Sumter	Dan, WB5SGH 803/775-9106	w/i
Tennessee			
July 23	Carter County	Joe, K4BKI 615/543-4022	w/i

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July 24	Henry County	Mackie, AA4YF 901/247-5489	w/i OK
July 11	Jasper	Charles, KD4XX 615/942-5116	p/r pref.
July 17	Knoxville	Ray, N4BAQ 615/688-7771	p/r pref.
July 12	McMinn County	Evan, WA4PNI 615/263-9300	w/i OK
July 1	Morristown	Roy, KF4CB 615/586-3491	w/i OK
Texas			
July 10	Midland	KT5G 915/694-9450	w/i OK
July 31	San Antonio	K5JWK 512/657-1549	w/i
July 17	Tomball	Paul 713/351-8930	
Virginia			
July 10	Chesapeake	KC4YX 804/424-4764	p/r pref.; w/i OK
July 30	Stafford	David, K9MX 703/659-6241; Jim, N4LZJ 703/786-8012	w/i
Washington			
July 24	Bremerton	Dave, AA7IA 206/698-9205	w/i
July 27	Stanwood	Don, KO7I 206/652-0248	w/i
Wisconsin			
July 10	Oak Creek	Norman, KB9QL 414/764-5998	w/i OK

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ADVERTISERS INDEX

High-Q loop

(continued from page 63)

tune the loop remote tuning for minimum SWR and this should be very close to 1:1. This is fairly important so that your antenna system will look like a nearly pure 50 ohms resistive. You can now temporarily switch to a dummy load to tune your linear power amplifier before switching it back to the antenna.

Much of this discussion has been devoted to the novelty of getting on 160M with such small space requirements. It would seem that there could be quite a surge in activity on 160M in large cities with fairly dense populations. Groundwave coverage should be able to bring dozens of active stations within range during daylight hours. Incidentally, these vertical loops exhibit very little directivity at the typically higher angles of radiation that are utilized. However, on groundwave a broadside null might be noticed.

Of course, compared to 160M, 80M is much more efficient and 40M is better still, the loop providing outstanding performance on those bands. Such a high-Q antenna also acts as a very good "filter" for any frequencies except those near resonance. You will probably be less likely to create interference on transmit, and it is a "quieter" receiving antenna with respect to noise.

With the 11-year sunspot cycle diminishing the higher frequency activity, there is a growing interest in 160M, at least during the winter months. Now the city dweller with congested space can compete quite well on the band and very well on 80 through 40M.

Look to next month's Construction for W9RWZ's addition of a separate 20M loop to this backyard array. WR

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Packhorse mobile

Russ Wilson, VE6VK, operates "packhorse" mobile from the wilderness of British Columbia, 75 miles northwest of Kamloops. Access to the area is by helicopter or packhorse only. The packhorse, named Shadow, made quite a fuss until the wrangler showed her the antenna and the microphone. She then became very quiet.

Equipment used included a 12V battery in a pannier; Hustler whip side-mounted on an aluminum pipe, with coax down through the pipe; and an Icom 740 rig. Russ worked one VK and several US stations, all on 20M. He operated some CW which, he says, was a little more difficult.

The location shown is Skitchine. In the background is Dagger Lake and an extinct volcano called Poison Butte. There are 16 lakes in the surrounding area, and the view from Poison Butte is magnificent. No prior amateur operation has taken place here. —*Information submitted by Bud McKoen, VE6AKV.*

Russ Wilson, VE6VK, operates "packhorse" mobile from the wilderness of British Columbia.

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