Worldradio

Year 25, Issue 7

January 1996 • $1.50

FEATURED IN THIS ISSUE

Boulder, CO — BARC Jrs. share magic of Amateur Radio

Olmito, TX — Apples to apples or apples to oranges?

St. Charles, MO — Single Point of Contact (Part 2)

Verona, NJ — 10 Meters for ten bucks

COLUMNS

•Aerials •Amateur "Hi" •Amateur Radio Callsigns •Amateur Satellites •Awards •Construction •Contest Corner •County Hunter •Digital Bus •DX Prediction •DX World •FCC Highlights •FM & Repeaters •Hamfests •MARS •New Products •NEWSFRONT •Off the Air •Old-time Radio •Product Review •Propagation •Publisher's Microphone •QCWA •QRP •Search & Rescue •Special Events •Station Appearance •Traffic •VE Exams •Visit Your Local Radio Club •Visit Your Local Radio Store •Youth Forum

ADDRESS & TELEPHONE (SUBSCRIPTIONS ONLY):

520 Calvados Ave. • Sacramento, CA 95815 • 800/366-9192

Knowledge is power!!!

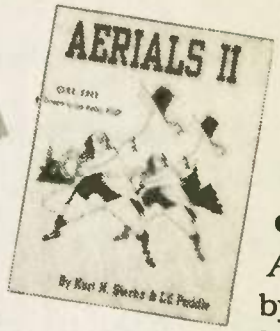
Serious stuff . . . It's going to happen to you — be prepared!

When the Big One Hits . . . A Survival Guide for Amateur Radio Operators

by Jerry Boyd, KG6LF & Jay Boyd, KN6BP

$7.50

Teaching a preparedness class? Special bulk rates for 5 or more — $4.50 each!



Real antenna facts, plus chuckles & chortles.

Aerials II

by Kurt N. Sterba & Lil Paddle

$11.00

Be a big signal when you're Mobile!!

40 + 5 Years of HF Mobileering

by Don Johnson, W6AAQ

$14.95

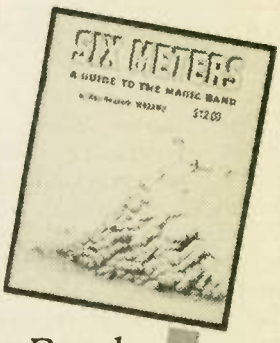
Looking at Amateur Radio's light side — cartoons from the whimsical pen of Bob Beasley. Great gift idea, too!

the best of BEASLEY

Bob Beasley, K6BJH

$8.00

When it's open, it's *real* EXCITEMENT!



Six Meters, A Guide to the Magic Band

by Ken Neubeck, WB2AMU

$12.00

Order your books now!

Shipping & handling costs are $2 for the first book + $1 for each additional book shipped to the same address. California residents please add 7.75% sales tax based on book prices. Credit card orders accepted by FAX or phone.

American Express • Visa • MasterCard

Telephone **916/457-3655** • FAX **916/457-7339**

WORLDRADIO BOOKS • P.O. Box 189490

Sacramento, CA 95818

Candid interviews with the people who make Amateur Radio the engaging hobby that it is.

Inside Amateur Radio, by Lenore Jensen, W6NAZ

$9.00

Worldradio
Year 25, Issue 7
January 1996 • $1.50

Listening to Bebe Greenlee, KDØGE, are: Top row, left to right: Jan McDaniel, Mike Balbach, NØZTQ, Dave Wheeler, NØQXS, Brent Harness, and Blair Harness, KBØROM. Front row: Devon Bartley, Kendra Bartley, Nora McDaniel, Nathan Wheeler, and with his back to the camera, Scott Balbach.

BARC Jrs. share magic of Amateur Radio

Steve Mehls, KBØMAT

Would your club like to help youngsters get involved with Amateur Radio? The following story is an example of one club which has. Read on!

BARC, Jr., the youth group sponsored by the Boulder (Colorado) Amateur Radio Club, BARC, is a wonderful group of young people and Elmers. The club members enjoy a comradeship not easily put into words. Once a week they get together to improve their radio skills and have a good time. Until this past fall though, many of the BARC, Jrs.' parents and siblings had only a slight inkling of the magic of the club. They knew their children went to the VanWinkle home every week and learned Morse code or antenna theory. Sometimes the juniors brought home stories about the sparks from one of NVØM, Rip Van Winkle's big capacitors or other "really cool" things in the demo. At the September Elmer's meeting a suggestion was made that the club hold a family night so the youthful members and Elmers could share more about the club with their parents, brothers and sisters. When the idea was presented to the group, the response was a resounding "YES!"

Of course then the work really began as Ellie VanWinkle, NØQCX, and the Elmers organized the event. We wanted, above all else, for the families to share the fun and understand the commitment the BARC, Jrs. make when they set out on the path to that first license or their upgrades.

Al Severson's General class demonstration.

The Elmers decided to take the families through a "typical" BARC, Jr. session and end the evening with a panel of the children talking about other club-sponsored activities, such as Field Day, kit building or the dozens of other things they get involved in through the club.

The appointed evening approached and my nerves got a bit tense. Would the families show up? Would they enjoy themselves? Could we really communicate the magic of BARC, Jr.?

The families began to arrive on Friday evening, 6 October, a few opening remarks were shared, the Elmers all introduced themselves, and we were underway. The first stop was code class. Bebe Greenlee, KDØGE, a marvelously patient teacher, tried to increase everyone's code ability by a few characters. A bewildered look on many parents' faces at the beginning of Bebe's class changed to amazement by the end of her class. The sense of wonder continued with Rip's demonstration. Like "Mr. Wizard" of years ago, Rip held the audience spellbound as he showed them the basic characteristics of inductive and capacitive circuits. Then it was Al Severson's, WB2PRZ, turn. Al, one of BARC, Jr.'s most talented and popular Elmers, took the group through an abbreviated General class, showing the different methods he used to try to get across concepts such as why a Yagi radiates the way it does.

Then, it was the kids' turn. As a panel, the BARC, Jrs. discussed everything from their first experiences at kit building to peddling the bike at Field Day to power the 2-meter rig. The evening concluded with Brian Krager, NØTMP, explaining the Dayton Hamvention and the request from Carole Perry, WB2MGP, that BARC, Jr. send a team to the 1996 Dayton Youth in Amateur Radio Forum. Afterwards, many parents and siblings expressed a new appreciation and respect for the wonderful youngsters who are BARC, Jr. WR

The amplifier every amateur has always wanted

...the 3K-ULTRA

We are satisfied that this is the finest HF linear amplifier we have ever offered. The 3K Ultra represents a vision and a resolve taken years ago to provide amateurs with the finest amplifier that we could possibly build. It is every amateur's dream.

★ General coverage all frequencies 1.8 to 24 MHz (Export models to 30 MHz). Ask about our 8K Ultra.
★ Remote control
★ All modes. . .SSB, CW, AM, FM, Amtor
★ Full legal power
★ Unique, high reliability design
★ **Export, commercial and military (including MARS) communicators note that our higher power 8K ULTRA is also available for prompt delivery.**

It is rugged, reliable, remotely tuned and offers full power and efficiency on all bands between 1.8 and 24 MHz. Frequencies above 24 MHz are available on export models. The amplifier offers 6 memory channels for automatic tuning on your choice of frequencies. A small, light-weight, remote control cabinet sits at the operating position, while the amplifier itself can be across the room, in a closet, or in the next room. We manufacture many other HF, VHF, and UHF amplifiers, all still available as before. All domestic and foreign inquiries are invited. Write for full specifications on the 3K Ultra or for our complete amplifier information packet. Don't wait any longer to own the amplifier you have always wanted.

HENRY RADIO

2050 South Bundy Drive, Los Angeles, California, USA 90025
Phone (800) 877-7979 or (310) 820-1234 • FAX 310-826-7790

Henry Amps	Icom	Bird	Duracom	Vectronics	Coax
Landwehr	Alinco	Cushcraft	M2	Nye	Connectors
Tohtsu	Standard	HyGain	Diamond	Motorola	Books
Kenwood	Eimac	Hustler	Comet	Maxon	Plus
Yaesu	Astron	Maxrad	MFJ	Tekk	Much More

Worldradio NEWSFRONT —

Some information has been supplied to *Worldradio* Newsfront courtesy of *Newsline*.

Update on UXØZZ

Bob Josuweit, WA3PZO

The November, 1995, issue of *Worldradio* carried a story of the efforts being made by the Mid-Atlantic Amateur Radio Club to seek medical treatment for Ukrainian amateur Nick Bortnik, UXØZZ.

Mike Pilotti, N3IRZ, Nick's friend and QSL manager, along with numerous other club members continue in their attempts to obtain a visa for Nick to come to the US for medical treatment. A pledge of free medical treatment by a local hospital has been obtained, and funds donated for Nick's transportation gathered. The United States Embassy in Kiev has repeatedly denied a visa to Nick for travel to this country, however, apparently fearing that Nick would remain in the US and seek work here. The fact that his wife, infant son and mother would remain in the Ukraine seems to have no bearing on their decisions. "We thought the problem would be obtaining the donation of medical care, not obtaining a visa," stated N3IRZ.

Each trip to Kiev costs Nick $50, nearly four times his monthly invalid's pension, and the long trip is exhausting. Recently his mother traveled to Kiev to plead his case, but to no avail.

Pilotti and other members of the Mid-Atlantic ARC are continuing to work to try to have a visa issued. They have enlisted the help of Rep. Jon D. Fox (R., Montgomery), who wrote to the embassy in Kiev to support the request. Fox later telephoned the U.S. consul general and asked for a review of the visa denial. The congressman stated that he considers this a legitimate and humanitarian request. Anyone who would like to contribute to their efforts should write to: Mid-Atlantic Radio Club, P.O. Box 352, Villanova, PA. Attn: Nick. WR

CW speeds to remain

The General class code test speed will remain at 13 words per minute. The FCC has denied three requests to lower the Morse code requirement for that class of operator license.

The requests, in the form of letters, came from three Technician-Plus class licensees. All three petitioned that the 13 word per minute Morse code requirement for the General Class license be lowered to 5 words per minute. Two of them also asked that the Technician-Plus operator license class be eliminated and that all holders of Technician-Plus licenses be grandfathered to General class operator privileges.

In an Order released 19 October, the FCC says that the current amateur service license structure and examination requirements were developed in accordance with the expressed desires of the amateur service community, through numerous rule making proceedings that generated many thousands of comments. The FCC says that the amateur community indicated on each occasion that it strongly desires to preserve communications by telegraphy. And after considering the views expressed in those proceedings, the Commission adopted the rules that are codified in Part 97.

Based on this history, the FCC concludes that the petitioners have not presented sufficient evidence to justify revisiting these matters at this time.

VE test fees set by FCC

The FCC has set the maximum fee allowable for an amateur operator li-

(please turn to page 26)

FCC to proceed with closures

The FCC says that it will go forward with a field office restructuring plan that will close down most regional monitoring centers to save money. The plan, submitted to the Commissioners by FCC Chairman Reed Hundt last August automates the FCC's network of airwave monitoring stations while at the same time reducing the number of field offices and field personnel in the Compliance and Information Bureau. Under the now approved scheme, nine separate currently staffed high frequency monitoring stations, and three additional monitoring sites within FCC field offices will be shut down. The FCC says that technological advances permit the replacement of these monitoring stations with a national automated monitoring network by the summer of 1996.

The plan also establishes what the FCC calls a new national Call Center. The Call Center will, for the first time, enable the public anywhere in the United States to call one toll-free number to reach the FCC, to get information or to report complaints.

The FCC says that, under the arrangement, authorized staffing in the Compliance and Information Bureau will decrease by about one-third by the beginning of Fiscal Year 1997. The plan also requires an investment of 5 to 7 million dollars in equipment and personnel in fiscal years 1996 and 1997. That may sound like a lot of money until you realize that the Commission estimates that this one time purchase will save more than 8 million dollars annually thereafter.

What will this mean in regard to catching and punishing rules violators? The Commission says that even with the changes that its field enforcement activities will be maintained at "current" levels.

Worldradio

January 1996
Vol. 25, No. 7

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

Subscription Dept.
Worldradio
520 Calvados Ave. ,
Sacramento, CA 95815
1-800-366-9192

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

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

Our goal is to be a valuable resource of ideas and experiences beneficial to the Amateur Radio community. We publicize and support the efforts of those who bring the flame of vitality to this avocation. You readers are participants — an alliance of active radio amateurs concerned with reality, using radio as a communications tool to develop the skill, quality and full potential of Amateur Radio.

We emphasize the positive aspects of this great activity, and desire your contributions dealing with dramatic, personal and humanitarian uses of Amateur Radio. ***Worldradio*** is an independent magazine not affiliated with any other firm, group or organization. Its pages are open to all.

Subscription rates: $15* per year; $28* for two years; $41* for three years; $150* for life; *$10 extra per year for surface mail delivery outside the U.S. Please remit international postal money order. IRCs will be accepted.

STAFF

Publisher ..... Armond Noble, N6WR
Editor ..... Lou Ann Keogh, KB6HP
Associate Editor ..... Norm Brooks, K6FO
Associate Editor ..... Wendy G. Green
Associate Editor ..... Kaye Schwartz
Advertising Director ..... Helen Noble
Advertising Manager ..... Rosalie Hernandez
Graphics Director/Advertising ..... Dianne Dunning
Circulation Manager ..... Marcia McZeek
Administrative Assistant ..... Elizabeth Habian

PUBLISHER'S MICROPHONE

Listed below are some brilliant people.

Some might say that, armed with the actuarial tables and the projected rates of inflation fed into their computer, they realized that a Lifetime Subscription is a good deal.

Let's take a look at that. It was nearly 25 years ago that I became a Life Member of the ARRL. The cost then was $125 and (thankfully) you could pay it off over a year or two. Over the past 25 years, my cost for an issue of *QST* (not even counting all the other services) has been about forty cents an issue. (I hope to eventually get it down to twenty cents an issue, hi.)

QST pegs their Lifetime rate at 20 times the one year membership fee at the time of signing up. Twenty years from now everything will cost triple what it does now.

Worldradio pegs its Lifetime rate at 10 times the one year subscription fee. But remember that it is the ARRL that fights all the battles nationally and internationally for Amateur Radio, and that's where some of their membership fees go.

However, we know that it isn't just pages of printouts that convince our readers to become Super-Boosters. It is because they truly feel they are part of ***Worldradio***. And they are right.

•Bruce Lemken, WG2Y, Emerson, NJ

•Daniel Milligan, KA3KHR, Bromall, PA

•Helmut Seike, AA8GQ, Toledo, OH

•Joseph Green, WBØMMZ, Maxwell, IA

•Dwight Harris, Sr., NØMQC, Fairfield, IA

•David Steeb, Sr., KE9XS, La Grange, IL

•Wayne, KØOHB, & Jeanine, NØXKL, Ashwell, St Louis, MO

•William Scarlett, AB5PJ, Crossett, AR

•Dennis Russell, NØBTJ, Peyton, CO

•Lauren McGavran, KQ5D, Los Alamos, NM

•Phil Wheeler, W6TUH, Torrance, CA

•Martha Arterberry, (awaiting call), Palm Springs, CA

•Eric Margeson, KA6OSN, San Leandro, CA

•Steven Onines, AC6FR, Cotati, CA

•Robert Thompson, KI6B, Petaluma, CA

•Carolyn Petlowany, K8TFR, Carmichael, CA

•Gerald Marsh, AA7UF, Olympia, WA

•Gerald Vice, V73CA, APO, at the Marshall Islands, an important name in U.S. history.

•

The following letter addressed to me (which had to be shortened for space reasons only) is from Jud Whatley, W4NZJ, and concerns the writings of "Sterba" and "Paddle."

"I have been an Amateur for many years and have experimented with many, many antennas plus reading and studying about them. Since I still work, I don't have the time required to really do more experimenting and analyzing antenna articles and books. I leave that to "Kurt" and "Lil." Do I know everything about antennas? No! Will I ever know everything about antennas? No! It's very easy to get mentally lazy and accept at face value misrepresentations about antennas because there are SO many! After awhile it's easy to start believing some of the trash that's being printed now!

"I want you to know that I TOTALLY support these articles and I do NOT think for a second that they are unfairly criticizing some of these manufacturers and writers. Sometimes, the truth hurts and sometimes a 'bit dog barks.' I know as a publisher it's a sensitive matter considering the revenue being generated by some of these manufacturers only to have something that true printed and explained as it should be! Many publishers and authors just would not tolerate it but I respect your magazine and HEARTILY recommend it to newcomers in Amateur Radio because I'd rather they learn the truth rather than re-learn it at a later date.

"I recently read an article (a technical review) by a well-known ham and technical writer. The review was so 'middle-of-the-road' and evidently written in such a way as not to aggravate an advertiser in that magazine that the review was absolutely worthless! It said nothing! I immediately lost respect for the writer and the magazine.

"While I'm not for totally lambasting the authors and manufacturers, I think 'Kurt and Lil's' remarks are very considerate under the circumstances. I strongly feel their remarks are as 'professional' as one can expect considering the 'unprofessional' garbage now being printed.

"So, please keep a 'stiff upper lip' and keep up the good work!"

•

Frank Spivey, W9NDT, (W5GBE-1936) Converse, TX, in speaking of the "high educational value" of NM7M's propagation column said, "I would like to see Bob Brown's work collected into a book, much like *Aerials I* and *II* of Kurt's work." We're working on a book of Bob's now — *The Little Pistol's Guide to HF Propagation.—Armond, N6WR*

ADMS-1B COMPUTER PROGRAMMABLE

Ultra Compact Handhelds FT-10/40R

ARTS
Tracks range of 2 identically programmed HTs.

TOP NOTCH™
Multi-function knob controls programming and volume.

PTT THUMB SWITCH
Ergonomically designed, conveniently located, insures maximum comfort.

ALPHANUMERIC DISPLAY
Allows 4-character labeling of each memory channel.

SUPER LOUD AUDIO
State of art miniaturization gives greatest RX volume and clarity.

RUBBER GASKETS
Protects against corrosion from dust, mist or spray.

12 V DC JACK
Use optional E-DC-5B power adapter in your car for 5 W PWR O/P.

"This HT is the first amateur radio with built-in Digital Coded Squelch (DCS) for RX and TX."

"For a radio this small and rugged, the audio is genuinely LOUD!"

"I used ADMS-1B to program my FT-10 when we went camping, and the new ARTS system to keep track of my kids on the trails!"

"Yaesu did it again!"

Military spec commercial grade HTs loaded with new features and a choice of keypad, too.

FTT-10/A16
16-Key, CTCSS Enc, DCS Enc/Dec, 3C Channels

FTT-10/A06
6-Key, CTCSS Enc, DCS Enc/Dec, 30 Channels

FTT-10/A16D (Top) 16-Key, CTCSS Enc/Dec, DCS Enc/Dec, 9C channels
FTT-10/A16S (Bottom) 16-Key, CTCSS Enc/Dec, DCS Enc/Dec, Digital Voice Recorder, 9C channels

Features

- Frequency Coverage
  FT-10R
  2m: RX: 140-174 MHz
  TX: 144-148 MHz
  FT-40R
  70cm: RX: 420-470 MHz
  TX: 430-450 MHz
- Choice of 4 Keypads:
  Standard – FTT-10/A16, FTT-10/A06.
  Optional – FTT-10/A16S, FTT-10/A16D
- Auto Range Transpond System™ (ARTS™)
- MIL-STD 810
- High Audio Output
- 12 V DC Direct Input
- Alphanumeric Display
- RX/TX Battery Savers
- Digital Coded Squelch (DCS)
- Digital Voice Recording System (DVRS) w/FTT-10/A16S
- True FM for better voice clarity
- High Speed Scanning System
- 2.5 and 5 W available
- Full line of accessories

The FT-10/40R is a totally new HT concept Built to tough military spec commercial radio standards inside and out. the FT-10/40R is feature-packed, and ready to roll out in two standard versions. And, when you're ready for more features, or additional memory channels, there are two keypad upgrade options! Since all of the electronics are in the keypad, nothing could be easier.

The first true user-customized HT on the market is available with either 6, or 16-key keypad each with 30 memory channels. Two optional 16-key keypads have more features and more memory channels. The FT-10/40R is powerful, too, with a choice of 2.5 or 5 Watt batteries.

The FT-10/40R is the first ever, amateur HT to be rated MIL-STD 810 and it contains a new high-efficiency speaker which provides super-loud audio! No small surprise—after all it is Yaesu!

Exclusive features add real value to the FT-10/40R. Like Dual Watch—displays two frequencies simultaneously. No other single band HT has this. Auto Range Transpond System™ (ARTS™)—visually and audibly alerts you when a companion HT is out of simplex range. Top Notch™—an exclusive that controls radio functions from its neatly placed knob, and minimizes complex key sequences. Digital Coded Squelch (DCS)—for convenient semi-private operation. Digital Voice Recording System (DVRS)—records received messages, and messages for playback. Omni-Glow™ Display—a radio essential!

The FT-10/40R offers flexibility, exciting features, commercial-quality toughness, and performance in one small package. Exactly what you've come to expect from Yaesu! Better get one now, before the dealer sells out!

FT-5 R
Dual Band! PC Programmable, Spectrum Scope™, Alphanumeric, Scrolling Menu, Battery Voltage Display, 2 or 5 W. World's smallest dual band HT!

FT-11/41R
Slim, trim and powerful! PC Programmable, Alphanumeric, Compact Battery Design, Up/Down Thumb Control, RX/TX Battery Savers, 2 or 5 W Available.

*Performance without compromise.*SM

Single Point of Contact (SPOC)

Part 2 of a 3-part series

Bill Pasternak, WA6ITF

"Today represents a giant leap forward for Amateur Radio."

Those were the words of FCC Wireless Telecommunications Deputy Chief Ralph Haller, N4RH, after those attending the 7 October 1995, "National Repeater Coordinators Conference" voted to name the American Radio Relay League as its "Single Point of Contact" from the coordination community to the FCC.

Obviously, Ralph Haller is happy. His bureau will soon have only one entity to deal with in matters involving FM and repeaters. The ARRL is happy because it will not find itself in the position of having to be a micro-manager of FM and repeater interests. It can leave local coordination to the long established coordinators and coordination councils, and involve itself in only the matters that these entities cannot.

The ARRL: a conduit

ARRL President Ron Stafford, KB6ZV, was one of the leadoff speakers. He emphasized on several occasions that in no way would the League become involved in the actual coordination process, now or in the future.

"I do not think that there is anybody on the ARRL Board or any of its officers who want to get involved in repeater coordination. Again let me repeat, we do not want to get involved in coordinating repeaters. That's twice in a row.

"I'll make it three times in a row — we do not want to get involved in coordinating repeaters. I hope that message is clear . . . . That has been our position all along, as far as I know, at least for the foreseeable future it will be our position unless circumstances change," says KB6ZV.

President Stafford also went to great lengths to make it clear that the extent of the ARRL's involvement in the SPOC program will be limited to providing a conduit between the local coordinators and the FCC based on the "white paper" Memorandum of Understanding between the coordination community and the ARRL, and nothing more.

"Whether the League is involved as the SPOC or IPOC (initial point of contact), I do not envision the League being involved in day-to-day coordination.

"You people will develop what the SPOC or IPOC is and does. It's going to be an organization to interface between you and the FCC. If it is something that we (the ARRL) can do and do it right, then we will do it. If we can't we will obviously beg off on it.

"But we are not going to be getting involved in your (coordination) business. I cannot emphasize that enough," was another comment of President Stafford's.

Coordination and enforcement are one in the same

In reviewing both the audio and videotapes of the gathering, it becomes evident early on that the coordinators feel no discussion regarding repeater coordination can occur without the subject of FCC regulatory enforcement being broached as well. As we said last month, the FCC's Haller wanted to keep the meeting dedicated entirely to

Christopher D. Imlay, N3AKD

matters of coordination. But to the coordination community, advising hams where it's best to put a repeater, and enforcing of the FCC rules regarding repeater operation, appear to be one and the same.

Once he realized that the group was intent on finding out what the FCC would or would not do for the coordination community, Haller quickly took the point position. On the question of determining what repeaters should be on the air, N4RH noted that it might be possible to revive repeater licensing and special call signs.

As ARRL Midwest Director Lew Gordon, K4VX, commented to his constituency, such an idea might work if (1) these call signs are only issued to coordinated repeaters and (2) a repeater license is issued for one year at a time. Director Gordon says that by using this supposition, a repeater owner licensee who failed to comply with his local coordination process would not have his license to operate a repeater renewed.

It was T-MARC's (The Mid-Atlantic Repeater Council) Gary Hendrickson, W3DTN, who put it best when he said (paraphrased): "...no coordination, no license to put a repeater on the air."

Coordinators can still be sued

Another question that came up was one of some sort of protection of local coordinators by the FCC against frivolous litigation. Remember the widely reported "nuisance suits" such as those faced by coordinators in Texas and California in the late 1980s? The fear of nuisance suits is constantly on the minds of repeater coordinators but Haller says that it was really beyond the scope of the FCC to afford such relief.

"...a congressional change to the Communications Act (would be needed) if we were going to, in some way, provide you with immunity from local court actions. I do not think that the Commission on its own has either the will or the authority to do that. The Amateur Auxiliary has some protection by what is afforded under the Communications act, and not by the FCC rules," says Deputy Bureau Chief Haller.

Alternative Dispute Resolution

If a coordinator cannot be protected from civil harassment, what can be done to minimize his or her liability? One idea is for the SPOC to become involved in what ARRL General Counsel Christopher D. Imlay, N3AKD, calls Alternative Dispute Resolution or simply ADR.

"One of the reasons that the American Radio Relay League formed its Repeater Coordination Committee on an ad-hoc basis," says Counsel Imlay, "was the perception of increases in disputes, principally between and among repeater owners, but also between and among repeater owners and coordinators.

"In a lot of those cases — and I am thinking not only of those in Florida but also Keller Peak in California — the coordinator which was the potential source of resolution of a problem became either a non factor or a perceived opponent.

"One of the things that an umbrella organization could provide is a forum for Alternative Dispute Resolution. And, if you look at it that way — as one of the functions of an umbrella organization — then one of the things you might recognize is the need for certain expertise as well as independence from the source and locality of the problem. That almost dictates that the umbrella organization be made up of coordination groups if it's going to serve the function while being respected as an independent voluntary source of ADR.

"I think that if there is anything needed in the way of an umbrella organization right now, it is a forum for Alternative Dispute Resolution."

If the SPOC decides to include ADR as one of its functions, how will it work? This is only a guess on my part, but let's set up a hypothetical situation in Southern California. (Where else do all the repeater related problems come from?)

In our "story" repeater B suddenly appears on the same channel pair that repeater A has been occupying as a

Ralph Haller, N4RH

solo show for over a decade. Repeater B is well outside what we in broadcasting call the "A Contour" or "primary listening/viewing" area and based on sound engineering principals has been given a sanction to operate by the local frequency coordinator.

Nonetheless, the owner of repeater A, backed by a noisy user support group complains to the coordinator that "... we sometimes have users from repeater B coming through our system." And repeater A files a complaint back to the coordinator demanding that repeater B be moved or ordered off the air.

So the coordinator sends off a note advising repeater B of a problem with repeater A to which B responds that it too is having problems with users of A getting into its receiver as well and it wants the interference to cease.

Then repeater B makes a strange demand of its own. It tells the coordinator that since repeater A has been on the air for ten years that its been on long enough. That it's time for the old to make way for the new and if the coordinator refuses to remove repeater A, the matter will be taken to court with both the coordinator and repeater A being made defendants! (Well, I told you it would be something that would only happen in LaLa land!)

When repeater A hears the threat made by repeater B, it too adds one of its own. Either repeater B be ordered off by the coordinator, or it will file a suit naming both.

In short order, each system gains support from various aspects of the area ham community. The community is polarized with those in the primary service area of repeater A standing firm against those of repeater B and vice-versa — possibly being spurred on by a lawyer with no background in communications law and whose only interest is the "pot of gold" that he sees at the end of the long, drawn out and ever so costly "legal rainbow."

Caught in the middle is the coordinator, usually a person or panel asked to serve by members of an entire geographic area, and politically indebted to all. The coordinator's hands are tied. He is damned no matter what he decides and knows that the only person who will get anything out of this is the lawyer. So he asks the SPOC to move in with ADR.

A committee, made up of coordinators well removed geographically and politically is empaneled to hear the issues. They invite both sides to a meeting in a venue removed from the problem. If both sides agree, they hold the gathering, hear the evidence and then retire to make a decision. In our hypothetical case the decision is for both repeaters to install CTCSS tone access within 30 days with each repeater using a different tone. They report their findings and go home.

A few weeks go by and repeater A has installed its CTCSS access and no longer even knows that repeater B exists. But the newbies at repeater B have made up their minds that repeater A has to go. That they are going to take the channel one way or another and they make good on their promise to file suit.

Let's bypass all the legal processes that come and skip right to the preliminary hearing. Repeater B says it's being interfered with by repeater A and demands an injunction to have it removed from the air. Repeater A counters with a detailed report of the ADR meeting and what it has done to comply. Guess what the judge is going to do? Most likely he will throw the case out of court, reprimand repeater B for bringing such foolishness into his courtroom and punish repeater B by ordering it to pay the court costs and attorney fees for repeater A!

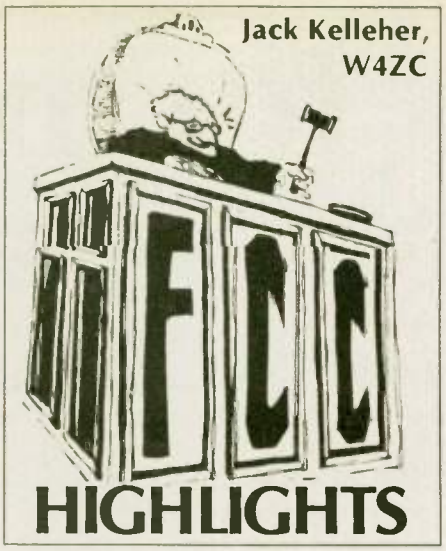
No, ADR will not be foolproof — not as long as some of those involved in the process are themselves foolish — but after the first few cases, word will get around that courts have no tolerance for those trying to bend "the legal system" — and the incidence of ham radio litigation will drastically drop.

What if repeater B is "smart enough" to refuse an ADR hearing? Tell that to the judge, and see what she says. Any truly reputable lawyer will tell you that such a refusal will only speed up a win for repeater A.

Then everyone is happy

If this were a utopian world, everyone would be smiling from ear to ear. The ham community from coast to coast would be saying "yeah SPOC!" "Welcome."

But not everyone is happy with the outcome of the St. Charles meeting. In fact, a few are crying foul. That part of the story in Part 3 next month. WR



An FCC Forum was conducted by John Johnston, W3BE, (Special Assistant for Personal Radio Services, Private Wireless Division of the FCC's Wireless Telecommunications Bureau) during the QCWA Annual Convention at Manchester, New Hampshire. As expected, the major topic was the recent FCC Memorandum Opinion and Order on a Vanity Call sign System.

John's presentation of the Commission's findings was unique in its clarity, as is his custom. Here is his presentation, including typical questions and answers concerning the new rules.

The Vanity Call sign System is for primary and club stations only. RACES and military recreation stations are not eligible.

Starting gates will implement the system in stages. A public notice will announce the opening of each gate.

Gate 1. A primary station licensee of any class operator may request the call sign previously shown on the license, or on the primary, secondary, repeater, auxiliary link, control, or space station license of a now-deceased close relative.

A club station licensee trustee of any class operator may request the call sign previously shown on the club station license.

Gate 1(A). A license trustee of a club station may request in memoriam the call sign previously shown on the station license of a deceased person who was a member of the club. The club must have held a club station license grant on March 24, 1995. The requestor must possess a letter from a close relative of the deceased confirming the deceased person's association with the club and show consent of the relative to the application.

Gate 2. An Amateur Extra Class operator may request a Group A, B, C, or D call sign for his or her primary station.

An amateur Extra Class operator may request, including request in memoriam, a Group A, B, C, or D call sign for the club station for which he or she is license trustee.

Gate 3. An Advanced Class operator may request a Group B, C, or D call sign for his or her primary station.

An Advanced Class operator may request, including request in memoriam, a Group B, C, or D call sign for the club station for which he or she is license trustee.

Gate 4. A General, Technician Plus, or Technician Class operator may request a Group C, or D call sign for his or her primary station.

A General, Technician Plus, or Technician Class operator may request, including request in memoriam, a Group C, or D call sign for the club station for which he or she is the license trustee.

A Novice Class operator may request a Group D call sign for his or her primary station.

A call sign is assignable two years following license expiration, surrender, revocation, set aside, cancellation, void ab initio, or death of the grantee. The exceptions are:

- Former holder - The two year requirement does not apply to an otherwise eligible primary station if the call sign was previously assigned to the primary, secondary, repeater, control, auxiliary link, or space station of the requestor.
- Close relative of former holder now deceased - Upon the death of the holder, a call sign is assignable immediately to an otherwise eligible primary station of a close relative (the holder's spouse, child, grandchild, stepchild, parent, grandparent, stepparent, brother, sister, stepbrother, stepsister, aunt, uncle, niece, nephew, or in-law).
- Request in memoriam - Upon the death of the holder, the call sign is assignable immediately to an otherwise eligible club station. The requestor must possess a written statement from a close relative, as listed above, of the deceased showing consent of the relative to the request.

Call sign group eligibility is determined by the requestor's class of operator license:

Amateur Radio Call Signs

Amateur Radio operators often ask the FCC what call signs have been assigned lately. This list shows the last call sign in each group to be assigned for each district, as of the first of November 1995.
For more information about the call 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
Ø	AAØZS	KGØZQ		KBØUJJ
1	AA1OV	KE1DJ	N1WBH	KB1BUW
2	AA2ZG	KG2ER		KB2WEE
3	AA3MX	KE3VD	N3WHT	KB3BLQ
4	AE4NK	KT4FO		KF4EKP
5	AC5FN	KK5UL		KC5RMU
6	AC6QH	KQ6BK		KE6ZIM
7	AB7NA	KJ7SG		KC7NPR
8	AA8UW	KG8UF		KC8BKJ
9	AA9QL	KG9EO		KB9LWZ
N. Mariana Is.	KHØU	AHØAW	KHØEN	WHØABD
Guam	WH2Q	AH2DA	KH2OV	WH2ANN
Hawaii		AH6OH		WH6CYO
Amer. Samoa	AH8O	AH8AH	KH8CK	WH8ABE
Alaska		AL7QG		WL7CPJ
Virgin Is.	WP2U	KP2CH	NP2IL	WP2AIA
Puerto Rico		KP4ZZ		WP4NEA

Subscription form

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

We sent it to you to acquaint you with our reporting on this great activity. Amateur Radio is exciting, challenging, stimulating, satisfying and very rewarding.

You are cordially invitied to subscribe to, and be a part of ***Worldradio.***

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

To facilitate faster handling of your subscription, please use this blank.

Name _____ **Call** _____

Address _____

City _____

State _____ **ZIP** _____

❑ **NEW** ❑ **RENEWAL** ❑ **GIFT**

			Non-U.S. ZIP
12 issues	($1.25 per issue)	$15.00	$25.00
24 issues	($1.17 per issue · save $2)	$28.00	$48.00
36 issues	($1.14 per issue · save $4)	$41.00	$71.00
Lifetime	(Be a WR super booster)	$150.00	$250.00

Subscriptions may be paid in U.S. funds drawn on U.S. banks, by International Money Order, VISA, AmEx or MasterCard. Canadian Postal Money Orders (in U.S. funds) are also acceptable.

❑ **Check enclosed** ❑ **MasterCard** ❑ **AmEx** ❑ **VISA**

Card# _____ Exp. date _____

Signature _____

Please clip and mail to ... **Worldradio™**

520 Calvados Ave. · Sacramento, CA 95815

For charge card subscriptions only, call **TOLL FREE: (800) 366-9192**
weekdays 8 a.m. to 5 p.m. Pacific time.

Thank you!

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

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

• Amateur Extra - Group A, B, C, or D.
• Advanced - Group B, C, or D.
• General - Group C or D.
• Technician Plus Class - Group C or D.
• Technician Class - Group C and D.
• Novice Class - Group D.

The only exception is:

• Former holder - The operator class requirement does not apply to an otherwise eligible primary station if the call sign was previously assigned to the primary, secondary, repeater, control, auxiliary link, or space station of the requestor.

Requestor's mailing address determines eligibility for call sign format and prefix:

• One of the contiguous 48 states - Regions 1-10.
• Alaska - Regions 1-11
• American Samoa - Regions 1-10 or a prefix in Region 13 having the numeral 8.
• Commonwealth of Northern Mariana Islands — Regions 1-10 or a prefix in Region 13 having the numeral Ø.
• Guam - Regions 1-10 or a prefix in Region 13 having the numeral 2.
• Hawaii — Regions 1-10 or a prefix in Region 13 having the numeral 6 or 7.
• Puerto Rico - Regions 1-10 or a prefix in Region 12 having numeral 3 or 4.
• Virgin Islands — Regions 1-10 or a prefix in Region 12 having the numeral 2.

The exceptions are:

• Former Holder - The mailing address requirement does not apply to an otherwise eligible primary station if the call sign was previously assigned to the primary, secondary, repeater, control, auxiliary link, or space station of the requestor.

• Close relative of a former holder now deceased - The mailing address requirement does not apply to an otherwise eligible primary station of a close relative, as listed above.

• Request in memoriam - The mailing address eligibility requirement does not apply in the case of an otherwise eligible club station for a vanity call sign requested in memoriam. The requestor must possess a written statement from a close relative, as listed above, of the deceased showing consent of the relative to the request.

Typical questions, and answers.

Question: How soon is a call sign available?

Answer: A call sign is assignable two years following license expiration, surrender, revocation, set aside, cancellation, void ab initio, or death of the grantee.

Question: Exception for former holder?

Answer: YES. A call is assignable immediately to an otherwise eligible primary station if the call sign was previously assigned to the primary, secondary, repeater, control, auxiliary link, or space station of the requestor.

Question: Exception for close relative of former holder now deceased?

Answer: YES. Upon the death of the holder, a call sign is assignable immediately to an otherwise eligible primary station of a close relative (the holder's spouse, child, grandchild, stepchild, parent, grandparent, stepparent, brother, sister, stepbrother, stepsister, aunt, uncle, niece, nephew, or in-law).

Question: Exception for club station request in memoriam?

Answer: YES. Upon the death of the holder, the call sign is assignable immediately to an otherwise eligible club station. The requestor must possess a written statement from a close relative, as listed above, of the deceased showing consent of the relative to the request.

Question: What determines the call sign group? Answer: Call sign group is determined by the requestor's class of operator license. See Fact Sheet PR-5000 #206 Sequential Call Sign System for explanation of call sign group.

Question: Exception for former Holder?

Answer: YES. The operator class requirement does not apply to an otherwise eligible primary station if the call sign was previously assigned to the primary, secondary, repeater, control, auxiliary link, or space station of the requestor.

Question: Exception for close relative of former holder now deceased?

Answer: NO.

Question: Exception for club station request in memoriam?

Answer: NO.

Question: What determines call sign region (or area) in prefix?

Answer: Requestors mailing address determines eligibility for call sign format and prefix. See Fact Sheet PR-5000 #206 Sequential Call Sign System for explanations of call sign and prefix.

Question: Exception for former holder?

Answer: YES. The mailing address requirement does not apply to an otherwise eligible primary station if the call sign was previously assigned to the primary, secondary, repeater, control, auxiliary link, or space station of the requestor.

Question: Exception for close relative of former holder now deceased.

Answer: YES. The mailing address requirement does not apply to an otherwise eligible primary station of a close relative, as listed above.

Question: Exception for club station Request in memoriam?

Answer: YES. The mailing address eligibility requirement does not apply in the case of an otherwise eligible club station for a vanity call sign requested in memoriam. The requestor must possess a written statement from a close relative, as listed above, of the deceased showing consent of the relative to the request.

Note: In the foregoing we have highlighted use of the phrase "otherwise eligible." In other words, read the text carefully. For example, a one-by-two or a two-by-one call would be available only to Extra class licensees unless an exception can be justified. **WR**

LAW OF AVERAGES: If you have one foot in a bucket of ice water, and the other in a bucket of boiling water, on the average you're quite comfortable. —*The Microvolt*

Ten Meters for ten bucks

A low-cost vertical dipole antenna for 28 MHz

Robert J. Smith, N2EPR

The 10 Meter amateur band offers a wealth of opportunities for the radio experimenter. It exhibits characteristics of both the HF and VHF bands so that equipment, especially antennas, built and tested for ten Meters can be scaled up or down for other bands. The band is not crowded, so interference is not a big problem. At periods of low sunspot activity (such as right now), equipment, both new and used, is available at bargain prices. But as a frugal experimenter, what I like best of all is the fact that when a 10 Meter antenna turns out to be, as someone once put it, "a dummy load on a stick," you haven't wasted so much copper that they name a boulevard after you in Santiago, Chile.

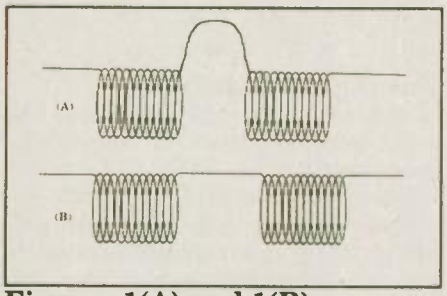
The antenna described here is a shortened vertical dipole, loaded and fed at the center. The loading coil also acts as an impedance-matching network. Each of the two radiating elements of the dipole is constructed of three pieces of wire, in effect "fattening" the elements. This increases the capacitance of the antenna, which has the effect of lowering the Q of the antenna, increasing its bandwidth.

Being a vertical dipole, it is less ground-sensitive than a quarter-wave vertical would be and can be used without radials or a counterpoise.

Since it's shorter than a full-size dipole (16 ft.) would be, it can be assembled on a single length of widely available 10-foot-long PVC pipe. Also, its size makes it unobtrusive (even more so if you spray it with a coat of paint that matches its surroundings). I have found its performance to be more than adequate. (Okay, so you're a person who insists on numbers: I can confidently say that it has at least 3dBn gain — that's decibels referenced to having no antenna at all!) You can feed it directly from 52-ohm coax and maintain an SWR of less than 2:1 across the entire 10 Meter band, allowing you to operate anywhere on the band without a transmatch. And, last but not least, building it should set you back less than ten dollars.

Construction

The antenna is assembled on a 10-foot piece of 1" nominal PVC plumbing pipe or electrical conduit (1 5/16" outside diameter). To make the coil, close-wind 11 feet of bare #12 solid wire using one end of the PVC pipe as a coil form. Unwind the center two or three turns of the coil so as to separate the coil into two sections. See Figure 1(A). Then form the wire connecting the two sections into a "U" shape, as shown in Figure 1(B). You should now have two sections of coil with the "U" connecting them. These two sections should be about 2½ to 3 inches apart; unwind a bit more of each of the center turns, if necessary, to get this separation. Straighten about 3½ inches of wire at the outside end of each of these sections, forming two pigtails. Then, very carefully, stretch each coil section so that the windings are about ¼" to ⅜" apart. At this point, your coil, not including the length of the pigtails, should be approximately 12 inches long, each section should have about 12 turns on it, and it should look like Figure 1(B). None of these dimensions is very critical.



Figures 1(A) and 1(B).

Next, cut six pieces of #12 solid wire, each about 45 inches long. This wire can be insulated or bare, but if it is insulated, strip about 5 inches of insulation from one end of each piece.

Assemble the lower dipole element. Using electrical tape to hold them in place, lay three of the pieces of wire along the pipe, spaced equidistantly around it, with the stripped end of each piece toward the top of the antenna and the other end about 36" from the bottom of the pipe, as in Figure 2(A). Then, from the top end, slide a hose clamp, followed by your coil, onto the pipe. Slip the hose clamp over the bare ends of the 3 pieces of wire and the coil's lower pigtail. Try to get the four pieces of wire spaced evenly around the pipe's circumference, and tighten the clamp just enough so that it firmly grips and connects these four conductors. Do not over-tighten either of the two clamps used during installation. Slip the second hose clamp over the pipe and the top pigtail of the coil. Refer to Figure 2(B). Repeat the process by taping the three remaining pieces of wire to the pipe to form the top of the dipole. Their stripped ends should face down toward the top of the coil, just far enough away so that the coil must be stretched a bit for its pigtail to overlap them. The wires' top ends should extend about 20 inches beyond the top of the PVC pipe mast. Use the second hose clamp to bond these three conductors to the coil's top pigtail. Put a PVC pipe cap over the top end of the pipe and, after the mast is up, tape some plastic window screen over the bottom opening to keep bugs and other little critters from taking up residence in the antenna mast. Bend the top pieces of wire slightly so that they pass neatly past the cap, and tape them to it. After checking that everything is in place correctly, for added strength, put a plastic cable tie

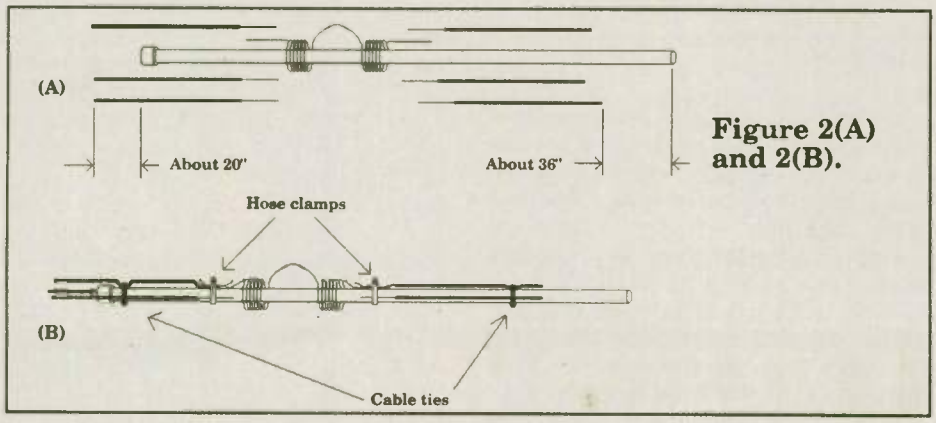


Figure 2(A) and 2(B).

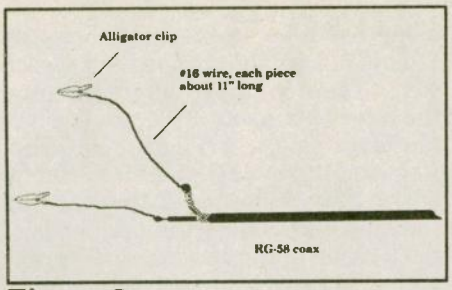


Figure 3.

over the tape and the wires at the top and bottom of the pipe. The antenna itself is now finished and should look like Figure 2(B).

The last step in the construction of the antenna is to prepare the end of a piece of coaxial cable to connect to the tuning coil. I use small-diameter coax,

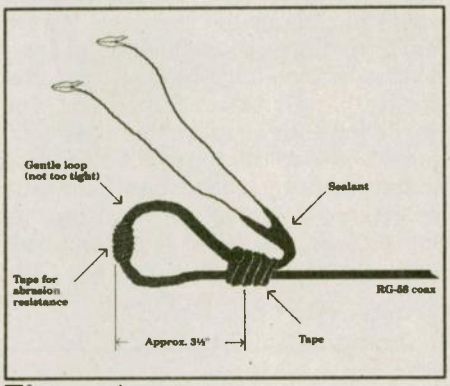


Figure 4.

such as RG58 or RG8X, since we need a horizontal run supported by the mast, and want light weight and flexibility. For the total length of feed line that I need, about 60 feet, I have not found it necessary to go to lower-loss coaxial cable of the RG8 type.

Refer to Figure 3. Remove about 2" of the outer insulation from the end of the coax, separate the strands of the exposed shield and twist them together to one side. Solder a piece of stranded hookup wire (#16 will do), about 11" long to the shield. Strip about ¾" of the inner insulator and solder a similar piece of hookup wire to the inner conductor. You should insulate these connections either by wrapping them with tape or, better yet, by using waterproof silicone sealant. Then cover with coaxial sealant. But, before you cover the connections, it's a good idea to mark the wires so that you know which one is connected to the coax shield (or use differently colored wires). At the other end of each piece of wire, temporarily attach a small alligator clip. We'll be using the clips to find the best matching places on the coil, before making permanent, soldered connections.

Bend about the last ten inches of the coax back on itself to form a gentle loop and tape it in place. Then wrap a couple of layers of tape around the coax at the end of the loop for abrasion resistance where it will butt up against the mast. See Figure 4. Now tape this loop firmly to the antenna mast between the two sections of coil. If necessary, temporarily loosen one of the hose clamps and gently stretch the coil's "U" section, pushing the coil sections apart, so that the coax loop fits between them without touching either of them. Then, for added strength, put a cable tie over the tape holding the coax loop to the mast. See Figure 5. Now the only job remaining is to tune it up.

Tuning the antenna

To tune the antenna, we have to find two places on the coil to connect the alligator clips that will give us an adequate SWR over the entire band. "Adequate" depends on your circumstances. If you have a transmatch on your rig, you only have to get the SWR into a range that your transmatch can tune. On the other hand, if you're not using a tuner, you'll probably need an SWR of 2:1 or better. My philosophy is that if I can get an SWR of 1.4:1 or better at the frequency of interest, and no greater than 2:1 for the rest of the band, then the antenna is adequately tuned.

I like to make a preliminary tuning

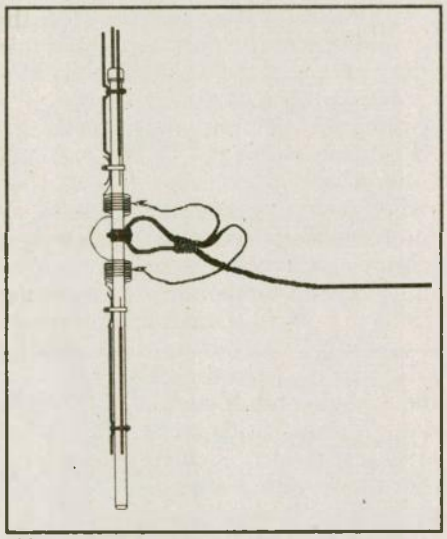


Figure 5.

while connected as close to the antenna as practical. This is to get the antenna itself tuned. I then do a final tuning of the antenna while making the measurements at the transmitter end of my feed line. This checks on the tuning of the entire antenna system, including the run of feed line, and it is this tuning of the system as a whole that determines performance. However, if you find it inconvenient to test at the antenna, then just work from the transmitter end of your feed line.

Attach the alligator clip from the shield side of the coax to approximately the center turn of the bottom coil section. Attach the clip from the other wire to approximately the center turn of the top section. Either erect the antenna or lean it against a non-metallic support. Support the coax leading away from the antenna so that it leaves the mast at approximately a ninety-degree angle for several feet (ideally, at least a quarter of a wavelength, or about 8 feet). This will minimize the pickup of antenna currents by the feed line's shield. Refer to Figure 5.

Attach your rig and SWR meter to the feed line and check the SWR. If it meets your particular needs, based on our discussion above, all well and good. Else, move the alligator clips on the coil to find a better match. The flowchart in Figure 6 shows a systematic way to do this.

Should you experience difficulty in obtaining a satisfactory SWR, or if you wish to tune the antenna outside the 10 Meter band, the antenna parameters can be changed in several ways. (1) You can spread the free ends of the top three wires or add a fourth wire to each dipole element to lower the resonant frequency and broaden the tuning range. (2) If you loosen the hose clamps and compress or stretch the coil, you will lower or raise its frequency, respectively. This will also change the antenna impedance. (3) You can try longer wires to lower the center frequency, or trim about a half an inch at a time off the existing ones to raise it. (4) You can wind a new, longer or shorter coil, but ordinarily this should not be necessary.

Once you are satisfied with the SWR at the antenna, repeat the procedure while measuring at the rig end of the feed line. Then, mark the two points on the antenna coil where the alligator clips are attached, remove the clips from the wires, and permanently solder the wires to the coil at the two marked points.

I feel that a word of warning is required here. When soldering near the PVC, avoid heating it. PVC, if heated sufficiently, emits toxic fumes that in small concentrations are carcinogenic, while in greater concentrations can kill you quickly. So, in soldering the feed wires to the coil: (1) Do it outdoors, (2) Do not use an open flame, (3) Use the minimum amount of heat required for a good connection, (4) Use a heat sink. Actually, I found it to be rather easy. I used a 100 watt soldering gun. For a heat sink and to keep the coil wires

away from the PVC while I soldered, I used two small pieces of aluminum kitchen foil, wadded up and stuffed between the coil wire and the PVC pipe, one on each side of and about ½ inch away from the place on the wire where I was soldering.

After soldering the wires and making a final check that the SWR has not changed, apply coaxial sealant or silicone sealant over the soldered connections and the main job is finished. You've already put a pipe cap at the top of the mast, so now put another one or some plastic window screen at the bottom to keep the bugs out.

The weight of the feed line may cause the mast to "bow" somewhat. I tied a piece of light nylon twine to the top of the mast on the side opposite the feed line and used it as a guy to straighten the mast. And, *please*, as in all antenna installations, use some form of lightning protection equipment on the system where the feed line enters your home!

It would be a good idea to provide a simple choke balun in the feed line. Just wind at least three turns of the coax into a flat coil (as you would coil a rope), about a foot in diameter, and secure it in several places with tape. While for maximum effectiveness, this should be at the antenna, where antenna current is at a maximum, I wanted to add the minimum amount of weight to the mast, so I placed mine at the next best place, ½-wavelength from the antenna, at my nearest feed line support.

The ends of any dipole are at a high voltage, so keep them away from metal objects to prevent arcing and also keep children and pets away because of the shock hazard. I originally used the prototype of this antenna indoors and it worked well in the attic. You can make a shorter version of this antenna for indoor use by adding more turns to the coil. However, if you should use one indoors, remember that the bad effects of exposure to electromagnetic radiation seem to be real so always keep in mind where the nearest person or animal will be when placing and using any indoor antenna.

I have found that during rain the whole antenna curve shifts down in frequency about 400 kHz. However the antenna, as built, is broad enough in tuning range to remain within the 2:1 SWR points for virtually the entire 10 Meter band. Speaking of the weather, when fastening the coil ends to the dipole element wires with the hose clamps, you might consider using an anti-oxidant compound on the connections to prevent them from deteriorating in the weather as time goes by. Well, anyway, good luck and hope to hear you on ten Meters!

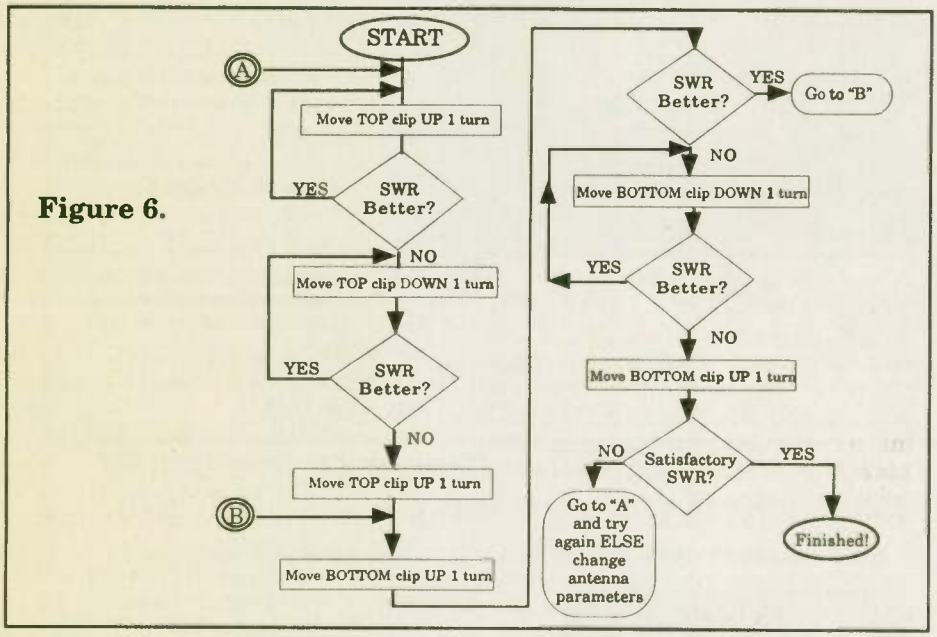


Figure 6.

List of materials

- 10 feet of 1" (nominal size) PVC Pipe
- PVC Pipe Cap, 1", (Optional)
- #12 Wire, Bare, 11 feet
- #12 Wire, Insulated or Bare, 45" long, (6) pieces required
- #16 Wire, Stranded, about 24"
- Screw-type Hose Clamps, Stainless Steel, 1¾", (2) required
- Outdoor Plastic Cable Ties, at least 6" Long, (such as Radio Shack #278-1652), (3) required
- Small Alligator Clips, (2) required
- Black Plastic Electrician's Tape
- Coaxial Sealant, (such as Radio Shack #278-1645)

WR

MFJ TUNERS

MFJ's world famous 3 KW Antenna Tuner

If you won't settle for less . . . here is the finest 3 KW tuner money can buy!

The MFJ-989C is not for everyone.

However, if you make the investment, you'll get the finest 3 KW antenna tuner money can buy.

Here's why . . .

Massive Transmitting Capacitors

You get two *massive* 250 pf transmitting variable capacitors with detailed logging scales. They can handle *amps* of RF current and withstand 6000 RF volts because the plates are smoothed and polished and have extra wide spacing.

Precision Roller Inductor

A precision roller inductor, 3 digit turns counter and spinner knob gives you *exact* inductance control for absolute minimum SWR.

Ball bearings on steel shafts give you a velvet smooth vernier feel and long term durability.

You won't have arcing problems with this rolier inductor. Firm springs put high pressure on a plated contact wheel for excellent electrical contact.

Wide, low inductance straps are used for high currents and a new core minimizes RF loss.

$349.95 MFJ-989C

Cross-Needle Meter

You get a lighted *peak* and average reading Cross-Needle SWR/Wattmeter with 200 and 2000 watt ranges. Its new directional coupler gives you accurate readings from 1.8 to 30 MHz.

Super Heavy Duty Balun

You get a super heavy duty current balun for balanced lines. It has two giant 2½ inch powder iron toroid cores and is wound with *Teflon®* wire connected to high voltage ceramic feedthru insulators. It lets you operate high power into balanced feedlines without core saturation or voltage breakdown.

Ceramic Antenna Switch

A two wafer 6 position *ceramic* antenna switch with extra large contacts gives you trouble free switching.

Plus much, much more

You also get a 300 watt dummy load, full one year *unconditional* guarantee, flip stand, all aluminum cabinet, tough baked on paint, locking compound on all nuts and bolts. 3 KW PEP. 10¾x4½x15 in.

Don't settle for less, get yours today!

More hams use MFJ tuners than all other tuners in the world! Why settle for an imitation when you can have the real thing?

MFJ's deluxe 300 Watt Tuner

MFJ-949E **$139.95**

More hams use the MFJ-949E than any other antenna tuner in the world!

Why? Because you get proven reliability, the ability to match just about anything and a one year *unconditional* guarantee.

You get a lighted *peak* and average reading Cross-Needle SWR/wattmeter, antenna switch, 4:1 balun for balanced lines, 1.8-30 MHz coverage and a *full size* dummy load that easily handles 300 watts of abusive tune-up power.

New 8 position antenna switch lets you pre-tune into dummy load to minimize QRM.

The inductor switch is designed for high RF voltages and currents--it's not a *plastic* switch made for small signals and wired with *tiny* gauge wire.

Each MFJ-949E cabinet is chemically treated and has a new tough scratch-proof *vinyl* cladding -- not paint that can scratch or chip off. You won't find a tougher, longer lasting finish anywhere.

MFJ's versatile 1.5 KW Tuner

MFJ-962C **$249.95**

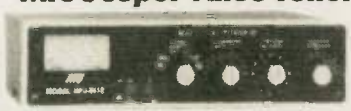
Use your barefoot rig now and have the capacity to add a 1.5 KW PEP amplifier later! Lighted Cross-Needle SWR/Wattmeter. 6 position antenna switch, *Teflon®* wound balun, ceramic feedthru insulators for balanced lines. 1.8-30 MHz. 10¾x4½x14⅞ in.

MFJ's portable/QRP Tuner

Tunes coax, balanced lines, random wire 1.8-30 MHz. Cross-Needle Meter. SWR, 30/*300 or 6 watt QRP* ranges. 6x6½x2½ in.

MFJ-971 **$89.95**

MFJ's super value Tuner



MFJ-941E **$109.95**

The new MFJ-941E gives you a 300 watt PEP tuner with *lighted* Cross-Needle Meter. Covers 1.8-30 MHz.

Antenna switch selects 2 coax lines (direct or thru tuner), random wire, balanced line or external dummy load. 4:1 balun. 1000 volt capacitors.

2 Knob Differential-T™ Tuner

MFJ-986 **$299.95**

The MFJ-986 Differential-T™ 2 knob tuner uses a differential capacitor to make tuning foolproof and easier than ever. It ends constant re-tuning with broadband coverage and gives you minimum SWR at only one best setting. 3 KW PEP. 1.8-30 MHz.

Roller inductor makes tuning smooth and easy. Turns counter lets you quickly re-tune to frequency.

Lighted Cross-Needle Meter reads SWR/forward /reflected/*peak*/average power in 2 ranges. Current balun reduces feedline radiation and forces equal currents into unbalanced antennas.

MFJ's mobile Tuner

MFJ-945D **$99.95**

Don't leave home without this mobile tuner! Let the MFJ-945D extend your antenna bandwidth so you don't have to stop, go outside and adjust your mobile whip.

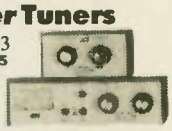
Small 8x2x6 inches uses little room. Lighted Cross-Needle SWR/Wattmeter with lamp switch. 1.8-30 MHz. 300 watts PEP. **Mobile mount,** MFJ-20, $4.95.

MFJ's 6 Meter Tuners

The MFJ-906 has lighted cross-needle SWR/Wattmeter, bypass switch. Handles 100W FM, 200W SSB. For coax fed antennas. MFJ- 903, same as MFJ-906, less SWR/Wattmeter, bypass switch.

MFJ-903 **$49.95**

MFJ-906 **$79.95**



MFJ's smallest Versa Tuner

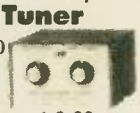
The MFJ-901B is our smallest --5x2x6 inches --(and most affordable) 200 watt PEP tuner -- when both your space and your budget is limited. Great for matching solid state rigs to linear amps.

MFJ-901B **$69.95**

MFJ's random wire Tuner

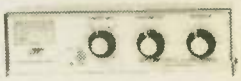
Operate all bands anywhere with any transceiver with the MFJ-16010. It lets you turn a random wire into a transmitting antenna. 1.8-30 MHz. 200 watts PEP. Ultra small 2x3x4 inches.

MFJ-16010 **$39.95**



MFJ's VHF or UHF Tuners

MFJ-921 or MFJ-924 **$69.95**



MFJ-921 covers 2 Meters/220 MHz. **MFJ-924** covers 440 MHz. SWR/Wattmeter. 8x2½x3 in. Simple 2-knob tuning for mobile or base.

MFJ's artificial RF Ground

Creates artificial RF ground. Elimi- nates or reduces RF hot spots, RF feedback, TVI/RFI, weak signals caused by poor RF grounding. Also electrically places a far away RF ground directly at your rig by tuning out reactance of connecting wire.

MFJ-931 **$79.95**

Nearest Dealer/Orders: 800-647-1800
24 Hour FAX: (601) 323-6551
Technical Help: 800-647-TECH (8324)

Free MFJ Catalog
Write or call toll-free . . . 800-647-1800

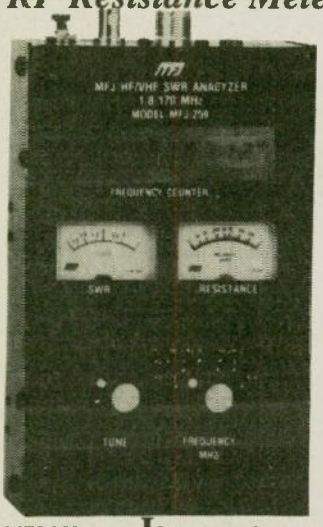
MFJ ENTERPRISES, INC.
P. O. Box 494, Miss. State, MS 39762
(601) 323-5869; 8-4:30 CST, Mon-Fri.76206.1763©compuserve.com; Add s/h

Prices and specifications subject to change . © *1995 MFJ Enterprises, Inc.*

MFJ . . . making quality affordable

MFJ *HF/VHF* SWR Analyzer™ with RF Resistance Meter

Read your antenna SWR from 1.8-170 MHz . . . 10-digit LCD frequency counter . . . RF Resistance Meter™ . . . smooth reduction-drive tuning . . . simple-to-use . . .



MFJ-259 **$239.95** If you work with antennas, MFJ's revolutionary new *SWR Analyzer*™ is the best investment you'll ever make! Now you can diagnose a wide range of antenna problems instantly with one easy-to-use instrument.

What the MFJ-259 Does

The MFJ-259 gives you a complete picture of your antenna's performance anywhere between 1.8 and 170 MHz -- you can even check SWR outside the ham bands without violating FCC rules. Set the bandswitch and tune the dial--just like your transceiver. SWR is displayed instantly!

RF Resistance Meter™

Does 2:1 SWR mean 25 ohms or 100 ohms? *The new MFJ-259 tells you at a glance!*

Now you can measure RF resistance up to 500 ohms at minimum SWR -- instantly -- on MFJ's *exclusive* side-by-side RF Resistance and SWR Meters!

Take the guesswork out of building matching networks and baluns for your antennas.

Watch the effects of spacing on radiation resistance as you adjust your antenna.

Here's What You Can Do . . .

Find your antenna's true resonant frequency from the shack.

Tune the antennas on your tower and watch SWR change instantly as you make each adjustment. You'll know exactly what to do by simply watching the display.

Tune critical HF mobile antennas in seconds -- without subjecting your transceiver to high SWR.

Measure your antenna's 2:1 SWR bandwidth on a single band, or analyze multiband performance over the entire spectrum from1.8 to 170 MHz!

Measure inductance, capacitance, resonant frequency of tuned circuits, transmission line velocity factor/impedance/loss.Test RF chokes, transformers, baluns.

Adjust your tuner for a perfect 1:1 match without creating QRM.

And this is only the beginning! The MFJ-259 is really *four* test instruments in one: an accurate RF signal generator, a high resolution 170 MHz frequency counter, *RF Resistance Meter*™ and an *SWR Analyzer*™.

Free Manual

MFJ comprehensive 18 page instruction manual is packed with useful applications -- all explained in simple language you can understand! For free manual write or call MFJ.

Take It Anywhere

The MFJ-259 is fully portable, powered internally by 8 AA batteries or 110 VAC with MFJ-1312B, $12.95. It's in a rugged all metal cabinet that's a compact 4x2½x6¾ inches. Take it to remote sites, up towers, on DX-peditions -- anywhere your antennas are located.

For rough service, pick up a convenient **MFJ-29B**, $24.95, padded carrying pouch to keep your MFJ-259 close at hand and looking like new.

How Good is the MFJ-259?

MFJ SWR Analyzers™ work so good, many antenna manufacturers use them in their lab and on the production line -- saving thousands of dollars in instrumentation costs! Professional installers and technicians use them worldwide.

Get More by Paying Less

With the MFJ-259, you get full 1.8 to 170 MHz coverage, simple operation, instantaneous readings, a high accuracy frequency counter and MFJ's exclusive *RF Resistance Meter*™-- all for a low $239.95.

1.8-170 MHz *SWR Analyzers*™

MFJ-249 **$219.95** **MFJ-249** *HF/VHF SWR Analyzer*™ has all the features of MFJ-259 but less RF resistance meter. Includes 1.8-170 MHz *continuous* coverage, 10-digit LCD frequency counter and smooth vernier tuning.

MFJ-209 **$109.95** **MFJ-209** *HF/VHF SWR Analyzer*™ is same as MFJ-259 without LCD frequency counter and RF resistance meter. Has jack for external frequency counter. MFJ-249/MFJ-209 are 4x2½x6¾ inches and uses 8 AA cells or 110 VAC with MFJ-1312B, $12.95.

Carrying Pouch with Window

MFJ-29B **$24.95** **Tote** your MFJ-259/249/209 *SWR Analyzer*™ anywhere with this custom Carrying Pouch. **Made** with a special foam-filled fabric, it cushions blows, deflects scrapes, and protects knobs, meters and displays from harm.

Clear protective frequency display window and cutouts for knobs let you use it without taking it out of pouch. Fully-adjustable webbed fabric carrying strap has snap hooks on both ends. Wear around waist or over shoulder.

Keep your analyzer safe and looking new! **MFJ-29**, $19.95, no window or cutouts.

Dip Meter Adapter

MFJ-66 **$19.95** **Plug** a dip meter coupling coil into your *MFJ SWR Analyzer*™ and turn it into a sensitive and accurate bandswitched dip meter.

With a dip meter you'll save time and take the guesswork out of winding coils, measuring inductance and capacitance, measuring velocity factor and electrical lengths of coax. Determine resonant frequency of tuned circuits and measure Q of coils. Set of two coils cover 1.8-170 MHz depending on your *MFJ SWR Analyzer*™.

Free MFJ Catalog

Write or call . . . 800-647-1800

10-160M *SWR Analyzer*™

MFJ-207 **$79.95** **If** you're an HF man, this compact MFJ-207 *HF SWR Analyzer*™ will help you build 10-160 Meters antennas that'll make working DX almost routine.

Just plug in your coax to find the SWR of any HF antenna on any ham band 10-160 Meters. Has jack for external frequency counter. 7½x2½x2¼ inches.

2 Meter *SWR Analyzer*™

MFJ-208 **$79.95** **MFJ-208** 2 Meter *VHF SWR Analyzer*™ finds the SWR of any antenna from 138-156 MHz. Jack for external frequency counter. 7½x2½x2¼ inches.

For Commercial VHF Radio

Same as MFJ-208 but for commercial VHF. **MFJ-217**, $79.95, covers 30-50 MHz and **MFJ-218**, $79.95, covers 150-170 MHz.

440 MHz *SWR Analyzer*™

MFJ-219 **$99.95** Read SWR of any antenna 420 to 450 MHz -- just plug coax of your antenna into SO-239 connector, set frequency and read SWR. Uses microwave integrated circuits and microstrip technology. Jack for external frequency counter. 7½x2½x2¼ in.

MFJ-219N, $99.95, sames as MFJ-219 but with "N" connector.

MFJ-219/218/217/208/207/203 uses 9 volt battery or 110 VAC with MFJ-1312B, $12.95.

Bandswitch Dip Meter™

MFJ-203 **$99.95** The MFJ-203 is a sensitive *Bandswitched Dip Meter*™ that covers all ham bands from 160-10 Meters. There are no plug-in tuning coils to keep up with or break.

Has detachable coupling coil, dual FET oscillator, op-amp meter amplifier and jack for external frequency counter. 7½x2½x2¼ in.

MFJ Antenna Bridge

MFJ-204B **$79.95** **Great** for determining feedpoint resistance of antennas and for designing impedance matching networks. Measure RF resistance up to 500 ohm. Covers all ham bands 160-10 Meters. Built-in resistance bridge, null meter, tunable oscillator-driver, frequency counter jack. 7½x2½x2¼ inches. Use 9 volt battery or 110 VAC with MFJ-1312, $12.95.

Nearest Dealer/Orders: 800-647-1800
Technical Help: 800-647-TECH(8324)

• 1 year **unconditional** guarantee •30 day money back guarantee (less s/h) on orders from MFJ • **FREE** catalog

MFJ ENTERPRISES, INC.
Box 494, Miss. State, MS 39762
(601) 323-5869; 8-4:30 CST, Mon.-Fri.
FAX: (601) 323-6551; Add s/h

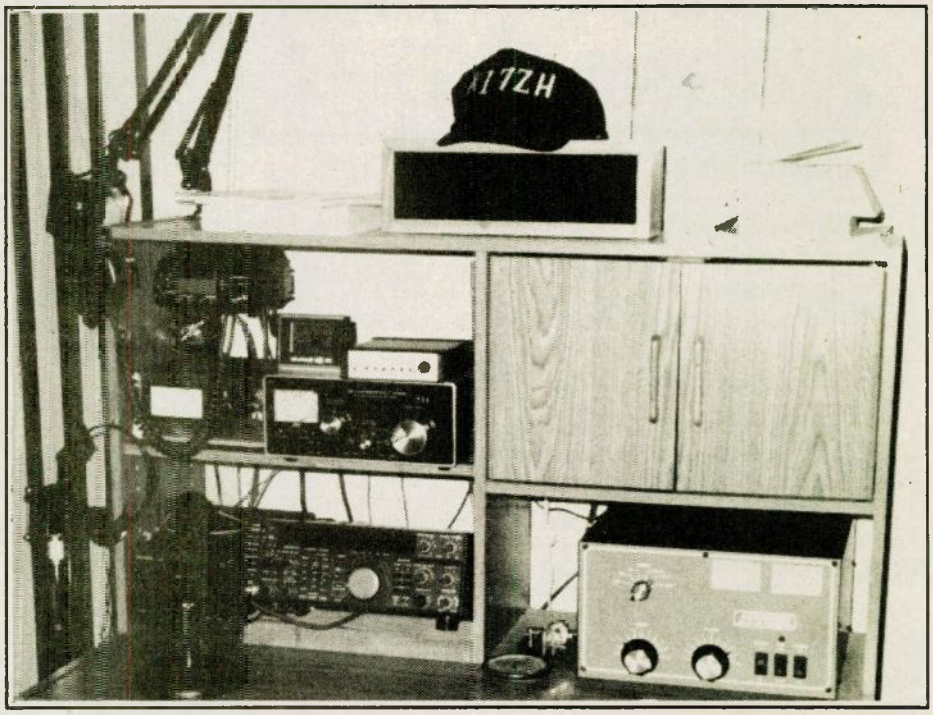
MFJ . . . making quality affordable

Prices and specifications subject to change © *1995 MFJ Enterprises, Inc.*

STATION APPEARANCE

William Cormaci, KI7ZH

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



Worldradio's *station appearance winner for January, 1996, is William Cormaci, KI7ZH, of Las Vegas, Nevada, who writes the following:*

I started in Amateur Radio in 1993, and received my no-code Technician ticket in March of that year. I quickly tired of FM and kept studying and received my Extra in September, 1994.

I put the station together, making changes along the way, and the final result is the station pictured here.

On top shelf, left to right:

- Kenwood TM-241A 2 Meter radio
- Rotor controller
- MFJ World clock
- Timewave DSP-9, and
- MFJ-986 tuner

On the bottom shelf, left to right:

- Kenwood SP-31 speaker
- Kenwood TS-850SAT transceiver
- Bencher paddles
- Ameritron AL-811H amplifier

Behind the closed doors is a Astron 35 amp power supply. The antennas are a Cushcraft AR-270 for 2 Meters, and a 2 element, 5 band Lightning Bolt Quad for HF, up 50 feet.

I love to ragchew and hunt for DX. WR

First rule of negative anticipation: You will save yourself a lot of needless worry if you don't burn your bridges until you come to them. —*The Microvolt*

SPECIAL EVENTS

Space Shuttle Challenger

Challenger Junior High School ARC, KI6YG, will sponsor a special event station on 28 January 1996, to commemorate the 10th anniversary of the Space Shuttle Challenger tragedy. Operation will be on or near 14.250, 21.350 and 28.350. We will also monitor 146.55 for local simplex contacts. For a special commemorative QSL card, send QSL and SASE to Challenger JHS ARC, 10810 Parkdale Ave., San Diego, CA 92126 or Frank Forrester, KI6YG, by *Callbook*™ address.

"Boy with the Boot"

The Sandusky Radio Experimental League will operate W8LBZ, 20 January from 1500-2400Z to celebrate the 100th anniversary of the "Boy with the Boot" statue, Sandusky's official symbol. Operation will be in the General portion of the 40, 20, 15 Meter bands and 146.655(-) and 444.375(+) repeaters. For certificate send SASE to W8LBZ/S.R.E.L., 2909 W. Perkins Ave., Sandusky, OH 44870. WR

DAYTON hamvention® '96

✣ May 17, 18, 19, 1996 ✣

General Chairman, Ken Allen, KB8KE

Asst. General Chairman, Dick Miller, N8CBU

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

When and Where •• •• NEW DATE THIS YEAR •• ••
May 17, 18 and 19, 1996; Dayton, Ohio at Hara Arena

Communications

FAXMail: (information sent to you via FAX): Set your Fax to manual send/receive, then call (513) 276-6934

BBS via America Online: Keyword "Ham", then "Conference", then "conventions", then "Hamvention"

PHONE: (513) 276-6930. For fast response, please obtain the committee Voice Mail box numbers via FAXMail or BBS.

FAX (incoming): (513) 274-8369

MAIL: Hamvention, Box 964, Dayton, Ohio 45401-0964

E-MAIL: Hamvention@aol.com or n8emo@ix.netcom.com

WWW: http://users.aol.com/hamradclub/dayton.htm

Special Services

Lodging information and special award nomination forms were in our 1995 Program. A limited number of Handicap parking permits are available. License Exam by appointment only. For Form 610, call 1-800-418-3676
Call, FAX, Mail, or BBS for more information.

Bus service

Bus service will be provided between Hamvention, Air Force Museum, Salem Mall and Forest Park Mall parking areas. Many hotels/motels will have bus service for a nominal charge.

Returned Checks

A $25 service charge will be assessed on all returned checks.

Deadlines

In order to have time to return tickets to you, we must have advanced registration orders postmarked not later than May 3 (USA) or April 26 (Canada). Tickets will not be mailed before January 15th,1996. Ticket requests that are received **AFTER** the deadline will be processed and **HELD** for pick-up at the Hamvention Office in the Silver Arena. Tickets can be picked up beginning Thursday, May 16 at 8:00 a.m.

Flea Market

Flea Market Tickets (valid all 3 days) will be sold IN ADVANCE ONLY. No spaces sold at gate. A maximum of 3 spaces per person (non-transferable). Electricity is available in a portion of the last Flea Market row for $50 additional. Rental tables and chairs are not available in the Flea Market. Vendors ***MUST*** order an admission ticket for each person when ordering Flea Market spaces. Please send a separate check for Flea Market space(s) and admission ticket(s). Spaces will be allocated by the Hamvention committee from orders mailed by February 5. Please use 1st class mail *only*.

Notification of Flea Market space assignment will be mailed on or about **March 25, 1996**. Please indicate in the box below if you would like to attend regardless of Flea Market space assignment.

HAMVENTION Is sponsored by the Dayton Amateur Radio Association Inc.

Advance Registration

Enclose check or money order for amount indicated in U.S. dollars and type or print your name and address clearly.

Make checks payable to:
Dayton HAMVENTION Mail to -
Dayton Hamvention Box 1446, Dayton, OH 45401-1446

Flea Market tickets *Please check one and enclose two checks.*
❑ Send admission tickets **only** if flea market space(s) assigned.
❑ Send admission tickets **regardless** of flea market space assignment.

		How Many	
Admission (valid all 3 days)	_____	@ $12.00*	$_____
Grand Banquet	_____	@ $23.00**	$_____
Alternate Activities			
Saturday Luncheon	_____	@ $9.00	$_____
Sunday Luncheon	_____	@ $9.00	$_____
		Total	$_____
Flea Market ‡ (Max.3 spaces)	_____	$45/1 space	
	_____	$100/2 adjacent	
	_____	$200/3 adjacent	$_____
Electricity add	_____	$50.00	$_____
Covered tent	_____	$290.00 ea.	$_____
		Total	$_____

Name _____ Call _____

Address _____

City _____ State _____ Zip+4 _____ – _____

Daytime Phone # ( ) _____ Evening Phone # ( ) _____

* $15.00 at door
** $25.00 at door, if available
‡ *Admission ticket must be ordered with flea market spaces*

PRODUCT REVIEW

CodeBoy Keyer Kit

John D. Carlini, KA2FWX

The CodeBoy electronic keyer is brought to you by the Radio Adventures Corporation, a small company known for producing the model-R1 W1AW receiver. For those who remember the days of Heathkit, you'll be delighted to learn that RadioAdventures has been trying to capture the nostalgia of kit building by introducing small kits into the market place.

Although my dealings with Radio Adventures have been somewhat limited, I must admit that I was impressed by the timeliness of their response to my order. After I dropped my check in the mail, it took less than a week before I found a small package waiting in my mailbox.

I had ordered the complete A1K kit, which included parts, circuit board, small aluminum case and a battery. The entire kit was less than $40, making it a great project for those of us on a limited budget, or perhaps a gift for the ham who has just about everything.

The kit came with a seven page instruction guide and several pages of layout and parts placement diagrams. All in all, I would rate documentation as first rate, complete and fairly easy to follow. As a bonus, I received a catalog of products and a couple of keyer chip specification sheets. It seemed like there was more paper in my little box than hardware.

Assembly was fairly straightforward, taking a couple of hours at a relaxed, methodical pace. In fact, I spent more time preparing for the assembly than in the actual construction. A wise kit-builder learns to double-check parts placement before committing himself with a dab of solder. It also pays to pre-check each part with test gear, if available.

All the parts in the kit were top-notch. No surplus or flea market components were found. My kit came with the exact number of components and hardware, with most of the parts separated in a couple of small plastic bags. The keyer IC was packaged separately.

During the assembly, most of the components, including input and output ports, are laid out on a small 2¾ by 1½ inch circuit board. Only one part, the 50KΩ variable resistor (used for speed control) is mounted on the case. This minimized the potential for having to lay out hard wires and prevent the proverbial 'bad-wire' day.

The assembly instructions make recommendations on which group of parts should go in before others. I found the placement order to be logical, with installation of hard-to-reach items before the bigger components. The circuit board is labeled for each part, and between the board, instructions, and all the diagrams, it is hard to mount an item in the wrong spot. Besides, there are few parts to this kit, most of the circuitry is in the special keyer chip.

However, soldering the components in is a another story. Since the board is small, most of the solder points are close together. It would be easy for a novice builder to inadvertently create a solder bridge or overheat the board. The instructions recommend using a soldering iron with a small tip around the range of 20 watts. I found my 30 watt iron worked well. Of course, it helps to use good quality rosin core solder, and remember to clean the tip frequently.

Because the solder joints are close, I would not recommend this kit for the first-time kit builder. Furthermore, I also concur with the instructions' recommendation of using a magnifying glass for identifying the small parts. I didn't have one, and spent a portion of my time squinting at capacitors under my desk lamp.

Throughout the construction, there were only two areas which appeared to be somewhat ambiguous. The first was the placement of the jumper pins. The jumpers must be oriented with their longest axis parallel to the longest side of the circuit board. This is not apparent from any of the diagrams. I'm sure that if I had to think about this then there must be others who will be equally confused.

The second ambiguous area is mounting the circuit board onto the case. This involves using three spacers for three of the four mounting holes. The fourth hole is uniquely mounted using a 4-40 nut in place of a spacer. The confusion is in identifying the placement of this fourth mount. The mounting diagram shows an exploded view of this assembly, however, an arrow misleads the reader to the wrong placement location. Perhaps I'm picking nits, but these ambiguities can be potential traps for the novice kit builder.

During the assembly, I encountered only one minor construction problem. I had a difficult time mounting the circuit board on to the case. My difficulty was due to a slight offset between the

mounting holes and the edge of the case. The holes were too close to the back of the case and mounting spacers would not seat properly. However, this minor annoyance was solved with the use of an inexpensive steel file. I simply widened the holes along one axis far enough for the spacers to clear the wall

Despite the minor hardware problems, the quality of the kit was superb. When complete, the keyer appearance is attractive. Using a fine silk-screen script lettering on a rugged aluminum case, it is reminiscent of an earlier era. In fact, my XYL commented that it looked like it was from the fifties.

Regardless of the comments about appearance from the peanut gallery, the keyer performance was as advertised. Mine worked from the moment I attached a key. Its small size and trivial power consumption makes it a great traveling companion for my 20 Meter QRP rig. The CodeBoy is only 3 x 2¼ x 1¼ inches, weighs a mere 3½ ounces, and is powered by a wafer battery which is rated to last over 200 hours with the key down.

The CodeBoy will work with paddle, bug or straight key. A mini stereo plug is provided in the rear of the case for an iambic paddle. Two RCA audio jacks are also in the rear. One provides additional input for a straight key or bug, and the other provides output to the transmitter.

The output keying transistor supports positive, low-voltage keying, with a built-in diode protection. If you connect the keyer to rig with negative keying or reverse leads on a positive keying rig (or code practice oscillator), the diode will continuously key the rig. The kit documentation states that an accessory interface is available for those who operate cathode and grid-blocked keyed rigs.

Autospace and iambic mode (A or B) can be selected through internal jumpers. Space and weight compensation can be fine-tuned via a couple of internal variable trimmer resistors. The current board location of these trimmers is rather awkward for adjustment. However, the designers are aware of this and remark they will improve the trimmer location in the future.

Overall, I would give this kit a high grade, perhaps an A. It's one of those kits you'll have fun building on a cold, rainy day and proudly display in your ham shack when completed.

The CodeBoy Electronic Keyer is available for $37.95, plus shipping, from Radio Adventures Corporation, P.O. Box 339, Seneca, PA 16346.

73s, KA2FWX WR

SILENT KEYS

Frank C. Jones, W6AJF — a radio pioneer

Radio pioneer Frank Churchill Jones, W6AJF, became a silent key on 5 November, 1995, at the age of 92. He and his wife Edith lived in the California wine country town of Sonoma. He was a highly regarded consulting engineer and longtime Amateur Radio operator.

Among his many accomplishments, Mr. Jones designed and built the radiotelephone communications system for the Oakland Bay Bridge in the 1930s. In the 1920s, it is believed that he was the first radio amateur to receive a message from across the United States.

His many Amateur Radio friends said that W6AJF was known worldwide for his research, innovative work and key developments in radio and related fields. Mr. Jones was born on a farm in Seville, Ohio, and brought up in Spokane, Washington, and Berkeley, California where he graduated from high school in 1921. He graduated from the University of California, Berkeley, in 1925 with a degree in electrical and mechanical engineering, and went to work for the Pacific Telephone Company. That same year he married Edith Lilian Jones.

Frank Jones did graduate work in electrical engineering at UC Berkeley in 1928. He also wrote many articles for radio magazines under his own name and various pen names. After designing speakers and transformers for Motorola, he became a full-time consultant in 1931.

He embarked on a long and distinguished career in communications development for government and private industry. Much of his work was for the military and included the sonar system for the Navy after a cathode ray tube was obtained from the British.

Just before the beginning of WWII, radio communication between air fields in the United States was poor. The Army Air Corps sought out Frank Jones to solve the problem. Frank rounded up a group of hams and their own mostly home-built equipment, got them the rank of staff sergeant in the Air Corps, and linked the fields by Amateur Radio—on military frequencies. He was a civilian consultant to the 4th Air Force at that time.

Prior to the war's end, W6AJF was awarded the Exceptional Civilian Service Award from the Secretary of War in San Francisco.

After the war, it was learned that both the Japanese and Germans incorporated details from Frank's writings in their aircraft and other equipment.

In addition to his wife of 70 years, he is survived by a son, two daughters, seven grandchildren and six great-grandchildren. 73, Frank.—*submitted by Bob Townsend, K6OHE* WR

OFF THE AIR

CW requirements

In response to the Publisher's Microphone in the November, 1995 issue, I couldn't agree more with your comments on the CW requirement for amateur licensing.

I've used the same argument myself many times. CW surely isn't "difficult." In code classes I've taught over the years, my students have achieved almost (with two exceptions I can remember out of hundreds of students) a 100% "pass" rate on the Extra Class CW element after eight classes, and most all started without knowing a "dit" from a "dah." And there *should* be a certain degree of difficulty associated with any special privilege, lest the accomplishment become diminished.

There isn't a license worth having that doesn't require examinations. Your statement regarding major corporations requiring college degrees as minimum conditions of hire hits the nail right on the head. I meet so many "managers" in business who are functionally illiterate, it's unbelievable. I've learned to write letters and memos with fewer than four sentences, to avoid having my correspondence tossed in the trash without being read. I'm sure you realize that articles accompanied by photographs are more widely read, regardless of their content. We've become a society of people who look at pictures.

If CW ever becomes so obsolete a mode that nobody uses it (and I don't envision this happening for a very long time), we should replace the code requirement with something truly difficult, like asking prospective amateur licensees to build a functional transceiver of their own design on the spot, in front of a board of examiners, from junk boxes of surplus components. Anyone who can't get it built and operating within two hours would fail and wait one year before reapplying for a license. This is the way amateur exams were in many eastern bloc countries up until very recently, and the hams who earned licenses deserved them. How many American hams would pass?

But as I sit here listening to the music of 40M CW in the background at 7:00 a.m. deciphering huge pileups of great operators around the world calling a rare bit of DX, it is apparent that CW is an enormously popular mode. Aha! There's the pileup on SU2MT. Sounds like maybe a thousand or so CW ops calling the Egyptian. And that's just in one small spot on the dial. CW will be around for a long, long time, and should remain a requirement for licensing. 73,

Steve Katz, WB2WIK
Chatsworth, CA

Likes Worldradio

As a reader of ***Worldradio*** the highlight of the magazine [for me] is Kurt Sterba and Lil Paddle.

Articles are technically correct. I am always appalled at some preconceived ideas of some ham operators regarding SWR, and dB gain.

Some marketing managers of major antennas stretch the truth with "specsmanship," others tend to use "flowery" words to describe their products. I enjoy the magazine!

Art Voiles, KGØLA
Fort Dodge, IA

Japanese yen

In response to the article "Japan tries to control yen," under your NEWSFRONT section on page 18 of the November issue, hams should be glad the yen went down and gave them a good excuse to buy American. Why would we want to worry about the yen when we have excellent gear like TenTec and other U.S. made equipment in the U.S.A? I wish the yen would fall to rock bottom and eyery ham in the U.S. would buy U.S. made gear. The deficit might even be helped a bit.

Worldradio is a great publication but that article tuned me off and I bet lots of others too.

John Embry, W4RTE
Slidell, LA

For travelers

I'd like to make a strong suggestion — use 146.520 simplex!

Many of us would enjoy a QSO while on the road if we could find someone. However, while driving it is quite difficult to find the local repeater and difficult to dial it up on the VFO. So I would like to see the radio community monitor our national simplex frequency. Especially on the road but also on our base scanners.

When I see a ham plate, I like to put out a call. Rarely do I get a response. If we are going in the same direction, we could have a dandy QSO, even QSY if necessary. If going opposite, it still would be a satisfying contact.

Come on amateurs, let's give it a shot.

Geo. Schouweiler, NØRCL
Alexandria, MN

Smart Dual-Bander

144MHz/440MHz Dual-Band Operation

Ultra compact, lightweight in design, this smart FM dual-bander offers a superb combination of operating ease and powerful performance for handheld communications. As well as providing single-band operation, the TH-79A(D) features extensive dual-band functions, including full-duplex operation and the ability to receive two frequencies simultaneously, even on the same band. And for especially demanding applications, a high-power version — the TH-79A(D)H — is also available.

Dot-Matrix LCD & Menu System

In addition to frequency data, the easy-to-read dot-matrix LCD, a Kenwood exclusive, offers access to a menu system with full alphanumeric display of functions and settings. You can also scroll through a summary of your current operational status.

82 Non-Volatile Memory Channels with ID

The memory channels are all capable of storing transmit and receive frequencies independently—thus allowing split-frequency operations — and an alphanumeric ID can be used to identify each one.

Guide Function

There's no need to carry a manual with you: the dot-matrix LCD provides access to a handy guide function that displays simple to understand operating instructions at the touch of a button.

Wide-Range Flexible Antenna

A high-performance flexible antenna ensures excellent reception over the TH-79A(D)s extended RX range — including Air Band, weather channel and other service frequencies.

DTMF Keypad with DTMF Memory

The built-in DTMF keypad enables direct frequency entry and direct recall of memory channels. Up to ten 15-digit DTMF codes with alphanumeric ID can be stored for telephone autopatch use.

Wireless Clone Function

If you're operating two or more transceivers, the ultimate time-saver is the TH-79A(D)s cloning function. Essential data is transferred rapidly, without needing a cable.

Other Features

- Efficient FET power module
- Automatic Band Change
- Full band scan, programmable band scan, memory scan with memory channel lock-out
- TO & CO scan stop modes
- DTSS with page and answer-back function
- Power-on call sign display
- Built-in CTCSS tone encoder/decoder
- Tone alert system with elapsed time indicator
- Cross-band repeater function
- Auto repeater offset (VHF)
- Can use as a remote controller for TM-733A/742A/642A/942A
- Lock functions
- 3-position output power control (High, Low, Economy Low)
- Auto power-off and battery save function
- Modifiable for MARS/CAP*

*Permits required for MARS and CAP use. Specifications guaranteed for Amateur Bands only. Kenwood follows a policy of continuous advancement in development. For this reason, specifications may be changed without notice.

TH-79A (Deluxe)

FM DUAL BANDER

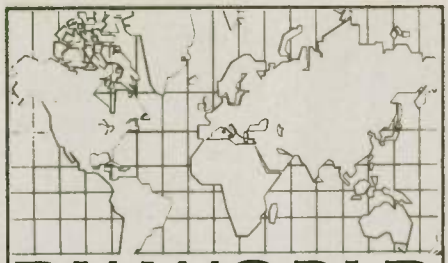
ISO 9002 Meets ISO Manufacturing Quality Standards

KENWOOD

KENWOOD COMMUNICATIONS CORPORATION
AMATEUR RADIO PRODUCTS GROUP
P.O. Box 22745, 2201 E. Dominguez St., Long Beach, California 90801-5745
Customer support/Brochures (310) 639-5300
Repair Locations/Parts (800) KENWOOD Bulletin Board Service (BBS) (310) 781-8284
INTERNET http://www.kenwood.net

KENWOOD ELECTRONICS CANADA INC.
6070 Kestrel Road, Mississauga, Ontario, Canada L5T 1S8

95ARD-1305



DX WORLD

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

W-100-N

There were no applications received for *Worldradio's Worked 100 Nations Award* during the month of October.

Libya (5A)

The two Polish operators, SP6RT and SP6AZT, arrived in Benghazi but had to cancel their operation as 5AØA due to the political situation there. They have since returned to Poland.

That 5A1A operation not too long ago netted some 35,527 contacts on SSB and CW. The operation apparently lacked written permission. However, the Libyan government has promised the necessary documentation. Further reports state that the required documentation would soon be mailed to the DXCC Desk at Newington. The present operation of 5A1A is now by Libyan nationals. A good time to look for this one is between 14.199 and 14.205 MHz usually after 1500 UTC and as late as 1930 UTC. 5A1A has also been found higher in the bands such as on 14.227 and 14.245 MHz.

There was a single report of 5A1A on 17 Meters at 1600 UTC on 18.156 MHz as reported in *Inside DX*.

Sierra Leone (9L1)

Very active from Sierra Leone is Paul, 9L1PG. He prefers one of those net frequencies at 14.226 MHz from 2200 UTC. Paul also moves down lower in the band between 14.181 and 14.218 MHz at various times after 1400 UTC.

9L1PG has also been on 15 Meters near 21.310 MHz, plus or minus a few kilohertz, usually between 1700 and 2000 UTC.

Scarborough Reef (BS7)

The DXAC will decide the Scarborough Reef situation in January. According to *Inside DX* if the decision is in favor several attempts will be made in February if time permits. This is the time of year when the seas are at their calmest point and mounting such a DXpedition to that area is much easier.

Morocco (CN)

The following activity from Morocco, was reported on 40 Meters:

CN2NI	7.006 MHz	2145 UTC
CN2SM	7.005 MHz	2230 UTC
CN8TM	7.090 MHz	0600 UTC

The latter report was that of SSB contacts with Europeans. Then on the WARC bands (30 and 17 Meters):

CN2NI	10.102 MHz	1315 UTC
CN8LL	18.147 MHz	1200 UTC
CN8TM	18.132 MHz	1415 UTC

On 20 Meters there has been much more activity from Morocco, including CW, SSB and RTTY.

CN2CI	14.022 MHz	2015 UTC
CN2SM	14.225 MHz	1745 UTC
CN8GT	14.190 MHz	2300 UTC
CN8LI	14.082 MHz	1900 UTC
CN8MC	14.213 MHz	2030 UTC
CN8NK	14.195 MHz	2045 UTC
CN8ST	14.179 MHz	1200 UTC
CN8TM	14.225 MHz	0730 UTC

Fifteen Meters also brings in some activity from this one. CN8NK has been there often between 21.224 and 21.244 MHz from 1500 UTC. Also reported was CN8NL on 21.304 MHz at 1530 UTC and CN8TM on 21.250 MHz at 1330 UTC.

Seychelle Islands (S79)

There has been a little activity recently from the Seychelles, all on 20 Meters. S79MAD has been on 14.189 and 14.257 MHz usually after 1700 UTC, and also has been reported on CW near 14.004 MHz at 1800 UTC.

The only other call reported was that of S79KMB on 14.226 MHz at 1815 UTC on 29 September.

Egypt (SU)

According to *DX News Sheet*, Mohamed, SU2MT, prefers Friday nights for his 160 Meter activity. He reports that there is still no permission for 30 and 6 Meter operation there.

Mohamed has also been busy on the other bands, such as 75 Meters between 3.796 and 3.810 MHz from 04ØØ UTC; 40 Meters CW near 7.001 MHz from 2300 UTC, and 20 Meters on 14.240 MHz at 1930 UTC. Another call reported active is SU3AM who was active early October between 14.219 and 14.233 MHz, between 0900 and 1500 UTC. All were European contacts.

A third call reported was SU1ER on 14.066 MHz at 1700 on 5 October working into Europe.

Dodecanese Islands (SV5)

A few reports of activity from this one were found in the various DX newsletters and included the following:

SV5BYR	10.102 MHz	2130 UTC
SV5TS	14.272 MHz	1245 UTC
SV5TS	21.274 MHz	1630 UTC

Belau (T8)

The prefix of T8 has been assigned to Belau. The former prefix was KC6 and formerly was known as the Western Caroline Islands. Those of you working towards *Worldradio's Worked 100 Nations* List can add this one to your list. There probably will be some KC6 calls still floating around. Don't get confused with KC6 by three suffix. That's California.

Chad (TT)

TT8NU has been active almost every day on 17 Meters CW between 18.070 and 18.073 MHz after 1800 UTC. He also likes 20 Meters CW. His QSL manager is F6FNU who is providing fast turn-around with the QSL requests. Be sure to include at least two green stamps to this manager.

According to *Inside DX* Paul, TT8BP, is a daily checkin to a list operation on 14.247 MHz around 2200 UTC. He was to have moved to new quarters in October and plans for 40 and 80 Meter activity during the DX season. Paul also has been reported operating free style on 20 Meters after 1700 UTC. Try listening between 14.168 and 14.211 MHz as there is no particular pattern of his choice of frequencies.

DX News Sheet reports a third station, TT8AB, reported on 40 Meters around 0700 UTC on 7.005 MHz. The date on this one was 3 October.

Heard Island (VKØ)

The DXpedition to Heard Island has been postponed to early 1996. According to *The DX Bulletin* the chartered vessel was found unsuitable for

the trip to Heard Island. As of the first part of November the team included ON6TT, KK6EK, HB9AHL, KØIR, JH4RHF, N6EK, PA3DUU and RA3DUU.

The DXpedition still needs finacial assistance. All donations should be sent to Heard Island DXpedition, P.O. Box 563, Waite Park, MN 56387. So far, the entire financial expenses and problems have been borne by the team members. No contribution checks have yet been cashed.

Andaman Islands (VU7)

VU7GW has been reported working SSB on 15 and 20 Meters around mid-October.

Myanmar (XZ)

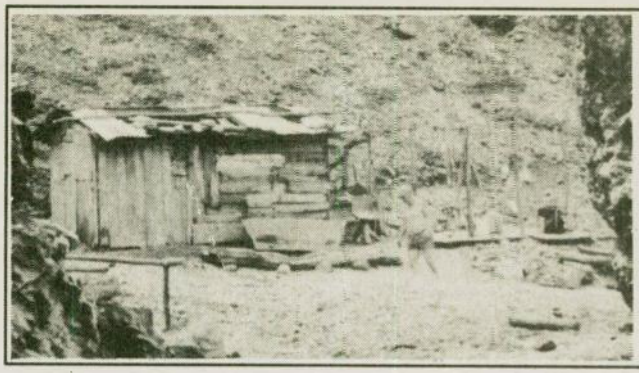
The DX newsletters report that Martti Laine, OH2BH, along with Olli, OHØXX, and Kan, JA1BK, were on the air from Myanmar (Burma). Signing with XZ1X, they made about 1000 contacts from the government facilities in Yangon.

The first contact was with Japan on 20 Meters SSB at 1300 UTC September 28 and ran through to 0910 UTC September 29, reported to be on 40 Meters at the time. According to Martti this was another demonstration operation to convince government officials the importance of Amateur Radio.The past XYØRR (Romeo again!) operation was also discussed with the only licensing authority of Myanmar, which covers both civil and military. They reported that there was no record of a XYØRR license and Romeo's entry stamp at Yangon Airport was recognized to be false.

The Director of JARL, JA1UT, had made some earlier inquiries and found the facts to be the same. Now, the question is how will the DXCC Desk handle their mistake, if the XYØRR operation is bogus. Several DXers have credit for XYØRR. The 1991 XYØRR DXpedition included four Russian operators: Romeo (3W3RR), Gena (UA9MA), Roman (4K2OT), and Harry (RA3AUU). There was much financial support given on this one and if they weren't there, the DX community was surely taken to the cleaners. It is interesting to note the credits on the XYØRR QSL card included thanks to a Mr. X from the Myanmar government.

Several of us also have confirmation for XZ9A during the early 1980s and that is no good either.

But, back to the present, there are reports that Yoshi, JA1UT, and others had been active in the *CQ* Worldwide SSB Contest signing with XZ1HT. In addition, there have been reports of XZ1A on several bands.



Pedro Allina, signing with HK2JJH/2 from Isla Agual (SQA-082), activating another new island for IOTA chasers. ***—photo courtesy of HK3JJ).***

IOTA

Our selection of IOTA islands found on the bands during the month of October include the following:

EU-020	Gotland	SI1GM
EU-052	Ionian Islands	SV8CS
EU-057	Rügen Island	DL4KUM
EU-132	Wolin Island	SP5PB/1
EU-163	St. Nicola Island	YT9N
AF-069	Moroccan Coast group	EG9A
AS-017	Okinawa Archipelago	7J6CDH
AS-018	Sakhalin Island	UAØEX
AS-025	Kuril Islands	UAØFAA
AS-078	Hokkaido Island	JA8DGO
AS-103	Penghu Island	BV9AAC
AS-124	Sirat Al Khwar Island	A61AH
NA-047	Baffin Island	VE8TA
NA-092	Matagorda Island	AB5EA
OC-066	Rangiroa Atoll	FOØSUC
OC-131	Manihi Island	FOØSUC/P
OC-208	Banggai Island	YE8I

Jim Smith, VK9NS, reminds us in his DX column in *Radio and Communications* of the coming DXpedition to Deal Island (OC-195). Scheduled to begin on 31 January for a week of operation, the DXpedition team will include operators whose calls are VK3DO, W6KCB, VK3OO, SP5DDJ, VK3UX, VK5CJC, VK3XV, VK3DXI, VK3TS and VA3PI. As of this writing the call has not been assigned.

From the Argentine Islands (AN-006) VP8CRE is active from Faraday Base, which is also good for the Worked Antarctic Bases Award (WABA) and counts as G-04. Also good for WABA is CE9/G0NKZ operating from Patriot Hills (MN-01).

Signing with HK3JJH/2 from Isla Agula (SA-082) Pedro Allina made a total of 390 contacts in 30 DXCC countries during an 8-hour period in August.

DXCC Processing Status

The DXCC Desk reports that the number of unprocessed applications at the end of September was 991 (70,803 QSL cards). During the month 1,254 applications (82,230 QSL cards) were received for endorsements and new awards.

Applications being sent out at the end of the month were received less than a week earlier. A few received prior to that time were waiting for paper records to be converted, or were being audited, and so had not yet been

QSL Routes

These QSL routes come from several sources and cannot be guaranteed. Please report any errors.

3A/K1VWL	—K1VWL	9A95K	—9A2EU	ED0VPV	—EA5OL	IY0GM	—I0CUT	S79KMB	—KN2N	V7X	—KH6HH
3D2AA	—7L2RPY	9G5AR	—N7BG	ED1ONS	—EA1MC	IY4W	—I4ALU	S79MAD	—GW4WVO	VA2MCZ	—VE2QK
3D2HI	—JA1KJW	9G5MF	—KC7V	ED5MUC	—EA5VM	IZ6ARI	—IK6PTH	S92P	—F6KEQ	VE2TJA	—WB2K
3D2HK	—JR1LVB	9G5RF	—GM3YTS	ED5NDO	—EA5LA	J28JJ	—F6HGO	SI1GM	—SM1BIQ	VE8TA	—VE2BQB
3D2ID	—JE1XXG	9G5SX	—G3SXW	EI7M	—EI6HB	J28JY	—F6BFH	SI7GM	—SM7WT	VE9EB	—AD4QU
3D2KZ	—JA8VE	9G5VT	—K5VT	ER5AA	—I8YGZ	J28ML	—F5LBM	SP100PLK	—SP9KZ	VK4ALF/9	—AA6BB
3D2MU	—7M1QAP	9H3RJ	—HB9T	ES60I	—ES4RZ	J3J	—K9AJ	SU3AM	—DL5ZBV	VK9CJ	—DJ9HX
3D2RW/R	—ZL1AMO	9H3TT	—G0NJZ	ES60R	—ES7FQ	J3X	—K9AJ	SV9/OH1JJS	—OH1JJS	VK9NFN	—DK9FN
3D2SH	—JA1JQY	9H3UK	—W4DVJ	ET3KV	—DL1VU	J3Y	—K9AJ	SV9/OH6LI	—OH6LI	VK9XA	—JA2NVY
3DA0CA	—W4DR	9H3UT	—DL9GDB	EU3ET	—W3HCW	J48CRI	—SV8BSA	SV9VR	—SV1VR	VK9XI	—DJ9HX
3E2G	—HP2TCM	9H3VG	—G4PDQ	EU3FT	—W3HCW	J48KEF	—SV8AQY	T30JA	—JA3JA	VK9XRS	—ND3A
3V5A	—YT1AD	9H3VH	—G4PDQ	EV0VPV	—EA5OL	J48Y	—SV1BKN	T53LB	—5Z4YQ	VP2EO	—WC0W
	(See Note 3)	9J2HN	—JH8BKL	EX8QA	—RW6HS	J52AK	—IV3TIQ	T92M	—AI0Y	VP5S	—K4UTE
3V8BB	—DL2OBF	9J2SZ	—KB4EKY	FK/AA6LF	—AA6BB	JT1Z	—K6VNX	T93M	—K2PF	VP5T	—N2VW
	(See Note 5)	9K0A	—F6FNU	FP8NR	—YU1NR	JU1HC	—JA2DDN	TA2FE	—KK3S		(See Note 1)
3V8MM	—YT1AD	9L1PG	—NW8F	FR5HR	—F5RRH	JW0K	—DL5EBE	TF4/SM6CAS	—SM6CAS	VP5WW	—KB4QKP
	(See Note 3)	9M2JJ	—SM0OEK	FS5PL/P	—FG5BG	KC6YK	—NH6YK	TF4WW	—SM6CAS	VP8CQS	—SP2GOW
3W5GM	—DF5GF	9N1SXW	—G3SXW	G0/K9PPY	—K9PPY	KG4CM	—N4BTR	TI4CF	—TI2CF	VP8CSA	—DL1SDN
3Z2AYC	—SP2AYC	9R1A	—PA3DMH	G0/KA5TQF	—KA5TQF	KH0AM	—JE1CKA	TI9JJP	—TI2JJP	VU7GW	—DL4MF
4K8F	—UA9AB	9U/F5FHI	—F5FHI	G0/WT2O	—WT2O	KH0BA	—JE1CKA	TJ1GG	—I2EOW	X58COL	—XE1BEF
4S7/HB9AMO	—HB9AMO	9Y4/J73UE	—N4SPQ	GB5SI	—Bureau	KH2GR/KH0	—JF6BCC	TJ1PD	—N5DRV	X5BYZ	—YU7KMN
4S7FEG	—JH4FEB	A61AH	—KA5TQF	GD4UOL	—G4UOL	KH6/WR6R	—N2AU	TK2C	—DF7RX	XL7DX	—VO1DX
4U0ITU	—OK1DWX	A92EF	—WA6ZEF	GS4TMS	—GM4UYE	KH8AL/HK0	—JH1NBN	TM1OTA	—Bureau	XU1FL	—I8KUT
	(See Note 4)	AA4VK/CY9	—	GT3FLH	—G4UOL	KK6WW/KH0	—JA6EGL	TM5ITU	—F6IMS	XX9AS	—KU9C
4X4NJ	—WA4WTG		WA4DAN	H44XF	—G3TXF	KP4VP	—KD8IW	TM5SM	—F5SM	XZ1A	—JA1BK
5H3MZ	—5Z4YQ	AP2N	—AP2MMN	HB0/HB9AON	—DJ2YE	LU/LA6LHA	—LA6LHA	TO5M	—KG9S	XZ1X	—JA1BK
5N35ALE	—DJ0KN	AY9VCI	—LU1VZ	HB9OK	—HB9FAQ	LX0SAR	—DL5VU	TT8BP	—IK5JAN	YB0ASI	—WA4FVT
5N35T	—F2YT	C4MA	—5B4KH	HC1OT	—WV7Y	NP3/AA3BG	—N2YXA	TU4EY	—KG5DE	YC0SAT	—YB0MCA
5R8DS	—PA3BXC	C4MI	—5B4KH	HG100R	—HA1KSA	OD5/N4ISV	—N4JR	TX8F	—DL8FCU	YE8I	—YB8NA
5R8EU	—JF1MGI	C56WW	—G0UCT	HL0Y/2	—Bureau	OD5CN/NX1S	—D1A0K	TY5A	—GM4AGL	YE8SUN	—YB8UMX
5V7BC	—F5KPG	C6AHU	—WJ8C	HL5KY	—W3HNK	OH0YLS	—OH3MYL	TY5AR	—N7BG	YE8TI	—YB8UMX
5X4F	—KB4EKY	C6AHU	—WJ8C	I3THJ/IL3	—IK3ABY	OX/JA1OEM	—JA1OEM	TY5MF	—KC7V	YI1FC	—YI1AFC
5Z4BZ	—F5IBZ	CE0Z	—K0IYF	IC8CQF/P	—IC8SDL	OY/OZ5IPA	—OZ5AAH	TY5RF	—GM3YTS	YS1RRD	—DJ9ZB
6D2X	—K5TSQ	CE9/G0NKZ	—G0SZO	IC8JAH/P	—IC8SDL	OZ4CHR	—OZ1LUR	TY5SXW	—G3SXW	YT9N	—YU7FIJ
7L3TDU/6	—JH6RTO	CN2NI	—F5NII	IG9A	—IV3TAN	P29VJC	—KC6WYX	TY5VT	—K5VT	ZA1BJ	—HB9BGN
7Q7CW	—DK7PE	CN8LL	—F1MGR	IG9R	—IV3TAN	P29VR	—W7LFA	UK8OO	—W3HNK	ZA1Z	—HB9BGN
7X2BK	—I0WDX	CN8MC	—WB2AQC	IG9T	—IV3TAN	P40W	—N2MM	UL7TAK	—UN6T	ZC4DX	—G0MRF
8P9HR	—K4BAI	CN8TM	—JR2ITB	IG9W	—IV3TAN	P43QPO	—Bureau	UN7QF/7	—N8LYM	ZC6B	—K9JJR
8P9HT	—K4BAI	CO1OTA	—CT1ESO	II0P	—I0CUL	P49I	—K4[PI	UR95HA	—HA5LN	ZD7WRG	—WA2JUN
8P9HU	—K3KG	CO6AP	—W3HCW	II7GM	—IK7RWD	PA6QPO	—Bureau	US4LAD	—DL3MIB	ZD8CUE	—G0CUE
8P9II	—DL7DF	CQ2C	—CT1EEB	IL3/I3THJ	—IK3ABY	PI50HGV	—PA0LJM	V26A	—WB3DNA	ZF2DX	—K1KNQ
8P9Z	—K4BAI	CQ9M	—G3PFS	IM0/IS0UPR	—IS0UPR	PI50TUE	—PI4TUE	V26B	—WB3DNA	ZF2SF/8	—JH6RTO
8Q7CW	—DK7PE	CT3BX	—HB9CRV	IM0MR	—IK0SMF	PJ9T	—AB4JI	V26DX	—N3ADL	ZF2TY/8	—JA6BSM
	(See Note 2)	CY3IARU	—VE3OFI	IR0MR	—IK0SMF	R1FJZ	—DF7RX	V26E	—AB2E	ZG2FX	—G3RFX
8Q7VJ	—G4ZVJ	E21EJC	—HS1GOS	IR0PXD	—IK0PXD	R3/W0YR	—AA9DX	V26R	—KA2AEV	ZK1SSN	—SM5BOQ
8Q7WD	—G4RWD	EA6/IK2SFZ	—Bureau	IR1I	—IK1RGL	RK9WK	—UA9KM	V26T	—K3MQH	ZK1UDS	—WB6UDS
9A6V	—9A1BST	EA8BMB/P	—EA8BWW	IR3TJK	—IN3TJK	RU0B/A	—UA0OBA	V26U	—WA2UDT	ZK1VAW	—N6VAW
				IR5MEQ	—IK5MEQ	RU0B/P	—UA0OBA	V31DX	—AA6BB	ZL7CW	—WB8YJF
				IR5R	—I5JHW	RU6LC/0	—EA6LU	V31MX	—K0BCN	ZL7PYD	—K8PYD
				IR6LMB	—IK6LMB	RW0GW/0	—RW0GW	V47BW	—VE3BW	ZS6YA	—KK3S
				IR6LMC	—IK6LMC	S0RASD	—EA2JG	V47KP	—K2SB	ZS94F	—KK3S
				IU8E	—IK8OZZ	S59L	—WA6FIT	V47NS	—W9NSZ	ZS95RWR	—KK3S
								V63KZ	—JA0VSH	ZS9F	—KK3S
								V63YT	—JE1SCJ	ZV0TI	—PT2GTI
								V73C	—N4GAK	ZW8DX	—PS8DX
										ZX2A	—PT2BW

Notes:

1. This route applies for contacts only made during the period 24 to 31 October. Do not send for confirmation of other dates.
2. This route applies for 25 September to 2 October, 1995 only.
3. This route applies for 26 October to 3 November, 1995 only.
4. *CQ* Worldwide SSB Contest only.
5. *CQ* Worldwide CW Contest only.

completed. The DXCC staff continues to operate at less than full strength.

DXCC

The DXCC Desk has received documentation and has approved the following operations:

3A/I1YRL	9G1YR	LX/DL4FCH
3A/IK1SLP	9M8BC	P29VDI
3A/IK4WMG	9M8HN	S79NEO
3D2CT	9N1WT	SV5/PA3GIO
3D2CU	9X/ON4WW	SV8/G3SWH
3W5FM	9X/SM7KOJ	T5RM
4H1TR	A71A/IV3TNN	TA/UA3AB
4J0/IK2BHX	C9/W6RJ	TG9/F5UKV
4K1HX	XR0Z	TI9JJP
4S7FEG	CN2AW	TN7OT
4S7ZAG	CN2SR	TR8SF
5H1CK	CN5I	TT8AB
5H3CK	CY9/WA4DAN	TT8NU
5N3/SP5XAR	CY9/AA4VK	TU2/KM4P
5R8EH	CY9/KW2P	V2/G4DIY
5R8EI	CY9/W5IJU	VK9CJ
5R8EJ	CY9/K4TVE	VK9XI
5T0AS	D68QM	VP2MFM
5T6E	DU9/KG8QH	XT/TU5BA
5X4A	EA8/PA3GIO	XU6WV
5X4B	ED8USA	XT2CH
5X5THW	EY8/K4YT	Z38/DL1SCQ
6Y5/JR7QKH	H44/DJ9RB	Z38/DL2SCQ
9A9JH	LX/DL3FCP	ZL8/G4MFW

Miscellaneous

During the big pileups for XR0Y on Easter Island, Jeffrey Pawlen, WA6KBL, worked them on 17 Meters CW receiving an RST of 519. Before you snicker too loud let it be known that the DXer was running only 100 milliwatts!

THAT'S THE WRONG KINDA KEY, MAC

The *Low Band Monitor* notes of the recent operation at XR0Z and XR0Y, especially that of 160 Meters. Some 567 contacts were made by XR0Z with 151 of them with Europeans. North America amounted to 339 contacts. At XR0Y they made 700 contacts on the Top Band.

One of the highlights of the XR0Y 160 Meter operation was the completion of WAC by VK6HD, who worked them for his 158th DXCC country on that band.

QSL addresses

5A1A	—P.O. Box 80462, Tripoli, LIBYA
7P8SR	—P.O. Box 333, Maseru 100, LESOTHO
8R1AK/P	—P.O. Box 10868, Georgetown, GUYANA
9J50UN	—Brian Otter, P.O. Box 30222, Lusaka, ZAMBIA
A45ZN	—Tony Selmes, P.O. Box 918, Muscat, OMAN
A71DX	—P.O. Box 6372, Doha, QATAR

C91/ ZS6WPX	—P.O. Box 2845, Middleburg, 1050 Mpumalanga, SOUTH AFRICA (Direct only)
FOØSUC	—Radio Club du Pilat, P.O. Box 6, F-42520 Maclas, FRANCE
HS3OM	—P.O. Box 37, Ubon 34000, THAILAND
J28JI	—P.O. Box 1891, DJIBOUTI
OD5NH	—P.O. Box 80887, Beirut, LEBANON
OD5PI	—P.O. Box 230, Ahle Bekaa, LEBANON
OS4CLM	—P.O. Box 110, B-8300 Knokke, BELGIUM
YI1ZN/ YI1GHF/ YI9BSF	—P.O. Box 55072, Bagdad, IRAQ

Antique QSL Department

This month's old QSL cards were submitted some time ago by Joe McConaghy, K3JGJ. They are the last of the one's he sent us in 1990. The call shown on the cards is W3KFQ which had belonged to Clarence Fry of Downingtown, Pennsylvania.

Don Dahl used the call NY4DD while assigned to duty at Guantanamo Bay, Cuba. On 4 March 1949 Don worked Clarence on both phone and CW on 10 Meters. The card was printed in green. Don Dahl is now living in Alabama with the call of W3MK.

The second card is for a more recent

DX Prediction — January 1996

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

CENTRAL USA

UTC	AFRI	ASIA	OCEA	EURO	SO AM
8	*(12)*	8	*(13)*	*8	*12
10	*(12)*	8	*12	*(8)*	*12
12	*(11)*	8	12	*(8)*	18
14	24	11	*22	*(15)*	*25
16	27	*(10)*	19	*(13)*	*27
18	27	*(10)*	*(15)*	*(10)*	*29
20	22	*(9)*	*(19)*	*(9)*	*29
22	19	*(17)*	23	*(8)*	*27
24	*15	*(14)*	23	8	*19
2	*14	*(10)*	16	8	*15
4	*13	*(9)*	*(14)*	8	*14
6	*(13)*	*(9)*	*(13)*	8	*13

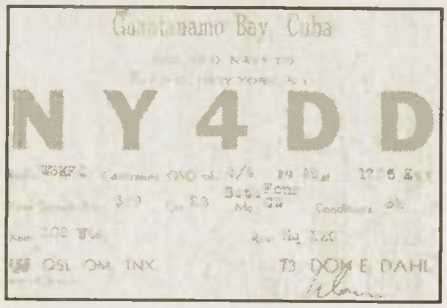
WEST COAST

UTC	AFRI	ASIA	OCEA	EURO	SO AM
10	*(10)*	10	*13	*(8)*	*12
12	*(9)*	10	12	*(8)*	*(12)*
14	*(9)*	10	12	*(8)*	23
16	*(18)*	10	*18	*(12)*	27
18	21	*(10)*	*(15)*	*(9)*	29
20	21	*(11)*	*(18)*	*(9)*	29
22	*(18)*	20	23	*(8)*	28
24	*(16)*	22	26	*(8)*	*24
2	13	18	24	8	*16
4	11	13	16	8	*14
6	*(11)*	*(12)*	*(14)*	8	*13
8	*(10)*	*11	*(13)*	8	*13

EAST COAST

UTC	AFRI	ASIA	OCEA	EURO	SO AM
7	*(12)*	8	*(13)*	8	*13
9	*(12)*	8	*12	*8	*12
11	21	8	12	13	18
13	26	9	*22	16	*25
15	28	*(8)*	20	15	*27
17	*28	*(8)*	*(17)*	14	*29
19	*25	*(8)*	*(16)*	*(10)*	*29
21	*20	*(13)*	*(21)*	9	*27
23	*15	*(13)*	*(23)*	9	*20
1	*14	*(10)*	*(16)*	8	*16
3	*13	*(9)*	*(14)*	8	*14
5	*12	*(9)*	*(13)*	8	*13

contact with OQ5PS at Stanleyville in the Belgian Congo. This was a CW contact on 27 March 1960 at 0530 UTC on 14.0 MHz. The operator was using a Heathkit DX-40.



Many thanks to the following contributors: K3JGJ, KK3S, KD6RDO, KØBCN, Western Washington DX Club (WAØRJY), Western New York DX Association (KB2NMV), Salt City DX Association (KB2G), Northern California DX Club (NI6T), The American Radio Relay League (K5FUV), 425 DX News (I1JQJ, IK1IYU), *The Ohio/Penn DX Bulletin* (KB8NW), *CQ Ham Radio, Radio and Communications* (VK9NS), *Long Skip* (VA3JS), *The Low Band Monitor* (KØCS), *Island News* (W5IJU), *DX News Sheet* (G4BUE), *QRZ DX* (N4AA), *Inside DX* (N2AU), and *The DX Bulletin* (VP2ML).

I was reading through the latest issue of *Spark Gap Times*, the official newsletter of the Old Old Timers Club, and came across the obituary of "BB" Wentzel, W2HX. "BB" is the last of my Elmers. I was bitten by the Amateur Radio bug back in 1954 when I was in the U.S. Army as a radio operator at the Fort Dix MARS station. He was one of several Amateurs in the program who influenced me to become a Radio Amateur, which also led to a career change when I returned to college after the army. With the passing of "BB" all my Elmers are gone. If I had never come across "BB" and the others, I wouldn't have joined the ranks of Amateur Radio, become a DXer and a DX Editor. 73 de John, N6JM. **WR**

NEWSFRONT
(continued from p. 3)

cense exam at $6.07, effective 1 January, 1996. The amount is determined by using the Consumer Price Index between September, 1994 and September, 1995.

Volunteer examineers and their coordinators may charge the test takers for out-of-pocket expenses which they incur in the preparation and administration of amateur licenses. The amount of the reimbursement fee from any one examinee at any given examination session (no matter the number of elements administered) may not exceed this maximum allowable amount.

Wireless bureau chief in new assignment

Regina Keeney, the FCC's chief of the Wireless Telecommunications Bureau has been named to a new post, that of chief of the Common Carrier Bureau.

The Wireless Telecommunication Bureau, which oversees Amateur Radio, has served as chief of the WTB since it was created in December of 1994.

Ms. Keeney, daughter of John Markey, W2AAW, and Marge Markey, N4NXZ, has described herself as having grown up in an enthusiastic ham family.

In announcing Ms. Keeney's move to Common Carrier, the FCC said that during her time at the WTB she had overseen the Commission's auctions of electromagnetic spectrum and "worked to develop fair rules of competition in the wireless communications market."

The FCC also claimed that in the past year the WTB had cut the existing backlog of applications by more than half, and now guarantees processing of applications, both major and minor, to within a matter of days.

Ms. Keeney's successor at the Wireless Telecommunications Bureau has not yet been announced.

Calgary

The Calgary Amateur Radio Association has a group of hams that are compiling a list for packet and digital related information. If you would like additional information on this service contact VE6HMT at VE6YYC or howard@hmt.cuug.ab.ca via the internet.

Special HRO Holiday Discounts Off Our Already Low Prices!

HAM RADIO OUTLET®

WORLDWIDE DISTRIBUTION

CAREER OPPORTUNITY!
HRO is accepting resumes for Mgmt./sales for future expansion.
Fax resume to HRO HQ
1-510-837-1892

Watch for HRO Home Page on Internet World Wide Web
HTTP://WWW.HAMRADIO.COM

Phone Hours:
9:30 AM to 5:30 PM
Store Walk-In Hours:
10:00 AM - 5:30 PM • Closed Sundays

CALL TOLL FREE:

West	1-800-854-6046
Mountain	1-800-444-9476
Southeast	1-800-444-7927
Mid-Atlantic	1-800-444-4799
Northeast	1-800-644-4476
New England	1-800-444-0047

Toll free, incl. Hawaii, Alaska, Canada; call routed to nearest store; ***all HRO 800-lines can assist you, if the first line you call is busy, you may call another.***

E-Mail/Call/Write for your HRO Catalog!

ANAHEIM, CA 92801
933 N. Euclid St.
(714) 533-7373
(800) 854-6046
Janet, WA7WMB, Mgr.
Near Disneyland

New Location

BURBANK, CA 91506
2492 W. Victory Blvd.
(818) 842-1786
(800) 854-6046
Jon, KB6ZBI, Mgr.
Victory Blvd. at Buena Vista
1 mi. west I-5

OAKLAND, CA 94606
2210 Livingston St.
(510) 534-5757
(800) 854-6046
Mach, K6KAP, Mgr.
I-880 at 23rd Ave. ramp

SAN DIEGO, CA 92123
5375 Kearny Villa Rd.
(619) 560-4900
(800) 854-6046
Tom, KM6K, Mgr.
Hwy. 163 &
Claremont Mesa

SUNNYVALE, CA 94086
510 Lawrence Expwy. #102
(408) 736-9496
(800) 854-6046
Ken, K1ZKM, Mgr.
KDM@HAMRADIO.COM
Lawrence Expwy.
So. from Hwy. 101

NEW CASTLE, DE 19720
1509 N. Dupont Hwy.
(302) 322-7092
(800) 644-4476
Bob, WN3K, Mgr.
RT.13 1/4 mi., So. I-295

PORTLAND, OR 97223
11705 S.W. Pacific Hwy.
(503) 598-0555
(800) 854-6046
Earl, KE7OA, Mgr.
Tigard-99W exit
from Hwy. 5 & 217

DENVER, CO 80231
8400 E. Iliff Ave., #9
(303) 745-7373
(800) 444-9476
Joe, KDØGA, Mgr.

PHOENIX, AZ 85015
1702 W. Camelback Rd.
(602) 242-3515
(800) 444-9476
Gary, WB7SLY, Mgr.
East of Highway 17

ATLANTA, GA 30340
6071 Buford Highway
(770) 263-0700
(800) 444-7927
John, KB4NUC, Mgr.
Doraville, 1 mi. no. of I-285

WOODBRIDGE, VA 22191
Washington D.C. area
14803 Build America Dr.
(703) 643-1063
(800) 444-4799
Rick, AAØQB, Mgr.
Exit 161, I-95, So. to US 1

SALEM, NH 03079
Boston, MA area
224 N. Broadway
(603) 898-3750
(800) 444-0047
Chuck, KM4NZ, Mgr.
CLW@HAMRADIO.COM
Exit 1, I-93,
28 mi. No. of Boston

AZ, CA, CO, GA, VA residents add sales tax
Prices, specifications, descriptions, subject to change without notice.

US TOWER CORPORATION

MA-40
40' Tubular Tower
REG. $809 ***SALE $679***

$50 HRO Coupon

MA-550
55' Tubular Tower
Handles 10 sq. ft. at 50 mph
Pleases neighbors with tubular streamlined look
REG. $1369 ***SALE $1069.95***

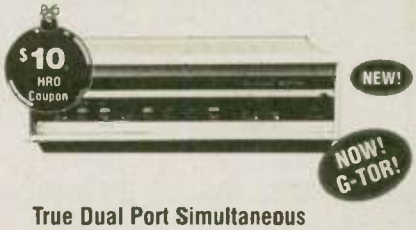
TX-455 *SALE $1499.95*
55' Freestanding Crank-Up
Handles 18 sq. ft. at 50 mph
No guying required
Extra-strength construction
Can add raising and motor drive accessories

Shown with Optional Rotor Base

Towers Rated to EIA Specifications
Other Models at Great Prices!

KANTRONICS

KAM PLUS



$10 HRO Coupon

NEW!

NOW! G-TOR!

True Dual Port Simultaneous HF/VHF Operation

NEW KAM Plus features 128K RAM, EPROM space for 1 MB, on-board clock, expanded personal mailbox and Pactor! And G-TOR! Operating modes include CW/RTTY/ASCII AMTOR/PACKET/PACTOR/WEFAX Terminal programs available for PC, Commodore and Macintosh computers.

CALL FOR OUR SPECIAL PRICE!

MFJ

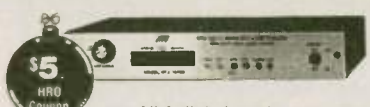
MFJ-949 E

300 Watt Tuner

$5 HRO Coupon

Built-in dummy load
New peak and Average Lighted 2-color Cross-Needle SWR/Wattmeter
Built-in antenna switch, balun • Covers 1.8-30 MHz
All MFJ Packets Stocked!

MFJ-1278 B



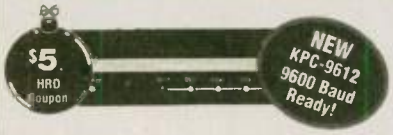
$5 HRO Coupon

All 9 digital modes
Easy Mail™ Personal Mailbox
20 LED Precision Tuning Indicator
Includes free power supply
One Year Unconditional Guarantee

Call now for all MFJ products...
Wattmeters, dummy loads, coax switches, keyers, clocks, speaker and mics, software, books and more!

KANTRONICS

KPC-3/KPC-9612



$5 HRO Coupon

NEW KPC-9612 9600 Baud Ready!

A high-performance, low power TNC, for new and experienced users. Features dual level command set with 23 and 130 commands, respectively. Battery backed 32K RAM expandable to 512K. PBBS includes two-way forwarding, message header editing, remote sysop access and KA-NODE.
Call For Special Low Price!

rfconcepts

VHF/UHF

Solid State Amplifiers

$5 HRO Coupon

Contemporary design, quality and a 1 year warranty on parts and labor. 1 year on the RF Final transistors. Most amplifiers have GaAsFET receive pre-amps and high SWR shutdown protection

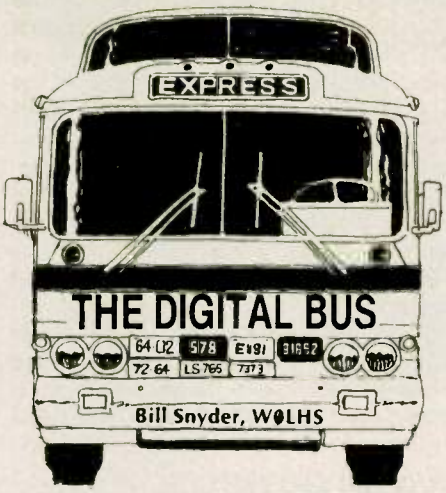
GEOCHRON

Global Time Indicator

$25 HRO Coupon

Factory Direct Rebate
$100. Nov 1 - Dec 31

• Detailed illuminated map shows time, time zone, sun position and day of the week at a glance for any place in the world. Continuously moving - areas of day and night change as you watch. • Mounts easily on wall. • Size: 34 1/2" x 22 1/2".
Reg $1295. ***SALE $999.95***



In a recent issue of ***Worldradio***, I had a subhead which read "More War Stories." Well, it attracted the following story from Buddy Hincke, WA6LFJ, of North Bend, Oregon.

"I had been a radio operator in the USAF in Japan for a couple of years and it was time to go home. When I went to Japan, they flew me over. On the return trip, I was sent home on a troop ship. When you go aboard a troop transport, they line you up on the deck and assign you various clean-up duties including KP and latrine duty as well as your bunk space which could be 2, 3 or 4 stories below the main deck — a very pleasant place to be with bunks stacked 3 and 4 high and the ventilation not too good. Well, as they were handing out the assignments, the officer in charge asked if anyone could copy International Morse code. I put up my hand and was told to 'fall out.'

"After the other men had been dismissed, the officer in charge took me up about 3 or 4 decks to the aft end of the ship and showed me a room about 5' by 14' which contained a table, a Hallicrafters receiver and a typewriter. He told me that my shipboard duty would be to copy the American Press station twice a day. About 10 a.m. and 3 p.m. My copy would then be mimeographed and sent throughout the ship as the daily newspaper. Wow — what a nice assignment. I had the freedom to run most of the ship, and I ended up sleeping in my quarters instead of down in the hold. I even got to go through the chow line when I wished instead of waiting with hundreds of GIs.

"In 1950, at the start of the Korean war, I again flew to Japan, on to Korea and then back to Japan when my Korean assignment was over. When I once more was ordered back to the States on board a troop transport, they again lined us up on the deck for assignments. This time I did not wait for them to call out the work details but held up my hand and asked if they needed a person to copy code on the return trip. They said yes, pulled me out of the group, and my second trip home was like the first. It sure was an asset to know Morse code during these two trips."

The worst ocean voyage . . . was the trip home from Japan in 1945

In Bill Snyder's lifetime, I have made 27 ocean voyages on various kinds of ships, little and big; however, never on a cruise vessel. Most of mine were made on Navy ships, mostly American and occasionally Australian. I did make one trip on a Dutch ship with Javanese crew. It was what I think was a so-called "coolie boat" that once plied the China seas before the great war. I believe this because on the fantail of the vessel it had a kitchen with huge steam-heated tubs that someone told me were for cooking rice to feed the passengers. The name of the ship was the *Anhuey* (I'm not sure of the spelling, but that is the way it was pronounced).

On that ship, I moved with the 58th Signal Battalion and I Corps Headquarters from Australia to Goodenough Island, a tiny chunk of land which lies off the coast of New Guinea. The trip was during World War II, and because I like to eat well, the commanding officer appointed me to be the mess officer for the trip. The U.S. Army Quartermaster base in Australia issued us 30 days of regular rations and 30 days of emergency rations for the short trip. Instead of using the kettles, we set up our regular army field kitchen equipment, and my kitchen crew did a great job of feeding our troops. No, we didn't steam rice for them.

Whenever I made a trip on a merchant vessel, I would usually seek out "Sparks," the common name that all radio operators in the merchant marine are known by, and usually he would invite me to his radio cabin where I would get a little code practice by listening to him work. On one trip in 1948, while coming home from Capetown, South Africa, I spent a lot of time in the radio shack because I thought it might be fun to actually

be a radio operator on a freighter like the *Morgantown Victory*, the vessel in which I was sailing. According to Sparks, the pay was good, there was no duty while in port, and at that time there were two unions covering the jobs at sea. The unions did a lot of the job placement work.

I held 2nd Telegraph and 1st Phone radio operator licenses, but at that time a person had to serve six months at sea as a junior operator before he could qualify to be the sole operator on any ship. There was a place on the back of the 2nd Telegraph ticket for the ship's master to endorse that the holder had put in such service. I didn't have any service endorsement on mine, but Sparks said it was easy to get a job on a cruise ship where they required operators around the clock.

So, just for the fun of it, I contacted one of the unions on our arrival in New York. That started a series of phone calls that lasted for at least two years. I got call after call while back in North Dakota and later in California offering me jobs on ships that could get me the required endorsement. I didn't take any of the jobs, but some times I wonder what would have happened if a young Bill Snyder had bought the necessary uniforms and hired out on one of the cruise ships. I'll bet it would have been fun.

The worst ocean voyage in my seagoing career was the trip home from Japan in 1945. It was on the Navy transport *General Mann*. We had 5,000 army troops aboard and we came home at a record slow speed of about 8 knots. One of the engines on the *General Mann* was out of kilter and so we came across the Pacific on one screw — 28 days in all! And to top that off, they routed us the long way home to keep us out of any storms on the great circle path that went up near Alaska. In case of emergency, the Navy had a Liberty ship following us, and that helped slow the trip a bit more.

I used to look at the ocean waves; I swore they were passing the *General Mann*. Remember that we were on our way home from World War II and I'd been overseas for three years. I smuggled a few bottles of Japanese "Suntory" whiskey aboard, but it didn't last for the entire voyage, so I had nothing to declare when we reached the customs port of Seattle and Tacoma.

My best ocean trip was from New Guinea to Townsville in Australian Queensland. I was the only passenger on a US Liberty ship that normally hauled troops packed deep down in its sweaty hold. For me, the first mate rigged up an on-deck bunk with a canvas cover to protect me from the rain that fell quite often in that area. I slept out in the cool breeze and avoided the hot hold. On that ship I spent some time with Sparks, but radio silence was on in those waters, so it was pretty dull. We spent most of our time just shooting the breeze — no traffic to copy.

My last sea voyage was from Duluth, Minnesota to Rotterdam, Holland on a British ship, *La Chacra*. It was a genuine bulk carrier designed to run through the St. Lawrence Seaway carrying cargo such as grain. I was making a film about exporting wheat to Europe, and I wanted to get pictures of the Seaway journey and the ocean crossing. On my trip, the ship was loaded completely with hard red spring wheat from North Dakota. The ship's beam was about three feet less than the width of the locks in the Seaway, so it made it easy for me, lugging my motion-picture camera and tripod, to jump off and on the *La Chacra* when the ship was being lowered in one of the locks. I did just that to get pictures of the vessel going through the locks around Niagara Falls.

I had visions of getting dramatic pictures of the *La Chacra* crashing though the waves of the North Atlantic, but we caught a nice high pressure cell and had almost calm seas all across the ocean to Rotterdam. It was a great trip and I got great pictures, except for the storm I had envisioned. Traveling on a freighter is a great way to catch up on your reading. That 14-day trip on the *La Chacra* was one of the best I have ever taken. If you ever get a chance to go on a freighter, do it.

You'll notice that when the vessel gets out to sea, it seems like it is deserted. You will probably only find one officer on watch up on the bridge, and a few deck hands chipping and painting. The rest of the crew will be either sleeping or on watch somewhere in the ship. The food will be good and you'll wind up doing your own laundry, but it is a relaxing way to travel.

EAVESDROPPINGS

SOMEBODY STARTED A RUMOR THAT THE NEXT SUN SPOT CYCLE HAS BEGUN, BUT I DON'T THINK IT IS SO, WE NEED MORE LOUSY DX DAYS BEFORE IT COMES BACK AGAIN. . . . I NOW HAVE A 90 FOOT TOWER WITH A 160 METER ANTENNA ON IT AND I'VE SNAGGED SOUTH AFRICA AND EUROPE ON THAT BAND.

If you wish to write me, my address is Bill Snyder, WØLHS, 1514 12th Street S, Fargo, ND 58103-4134. My packet address is again WØLHS @ WØLHS.#SEND.ND.USA.NOAM. 73, and as we usually end a CW contact, it's DIT DIT. **WR**

FM & REPEATERS REPEATERS REPEATERS REPEATERS

BILL PASTERNAK, WA6ITF
28197 Robin Ave. • Saugus, CA • 91350
(GEnie) B. Pasternak; (Internet)b.pasternak@genie.geis.com
(AOL)BILLWA6ITF; 24-hr voice/fax 805/296-7180

What a way to start the year. Just think of it. Hams in Southern California now have a choice of at least nine organizations (as this is written in November 1995) vying for the job of 2 Meter coordinator in Southern California. Admittedly, very few of them are anything more than one or two people who have been denied a coordination taking the initiative to self-assign a frequency pair, even if it means declaring "war" on an existing machine. And yes, it's all perfectly legal in the eyes of the FCC. Heck, they even made it possible. The story goes like this.

Back in the mid 1980s two groups were fighting over who could coordinate the 220 MHz band in Southern California. There was a long established coordinator, and a newcomer who demanded the same authority. Eventually, the issue was brought to the FCC for a decision, and then FCC Special Services Division Chief Raymond A. Kowalski ruled that both could. In fact any number of repeater coordinators could coordinate the same geographic area; assign the same sets of frequencies to various applicants, and need never communicate with any of the others acting as coordinators for the same band. Ray's decision was dubbed the "Kowalski Letter" and it's been the bane of frequency coordination efforts for almost a decade.

What happened in SoCal?

As most of you will remember, the blitz of instant two Meter coordinators began late last July following the ouster of Sidney Radus, N6OMS, as the chairman of the long established Two Meter Area Spectrum Management Association. A few weeks later, Carl Cockrell, AB6FC, was elected to replace Radus. But now it appears as if the very same people who removed N6OMS from office by their refusal to back him in the recall — the region's 2 Meter repeater owner-operators — are now rallying around several former TASMA leaders to spearhead one of the many new 2 Meter councils. That is, a repeater coordination body whose membership is limited to only those who own and operate repeaters.

The other organizations can best be described as localized coordinators. In other words, these are "Coordination Councils" set up to service the perceived needs of one of the nation's most spread out and populous regions.

Like those backing the old guard, most of these coordination councils are also limiting their membership to those who already have working repeaters on the air.

Unless a miracle takes place it now appears possible that there could be a regional inter-council repeater coordination struggle in southern California for political supremacy over the two Meter band. Such a conflict could see each council sanctioning new repeaters onto a band that is already bursting at the seams with machines. That would undo all that has been accomplished in the spirit of cooperation for over two decades. In such an event the big losers would be the average ham with his hand-held radio, trying like Steven Spielberg's "ET," to simply call home.

ATV vs. FM

Codeless Technician amateurs may not have intended to start a dispute, but they seem to be involved, anyway. The controversy started last spring when the Mid America Coordination Council (MACC) decided to phase out coordination of fast scan amateur television operations on the 440 MHz band. The reason given was to permit more spectrum to be made available for increased use by FM voice and other narrowband interests. FM users say they need the space so they can set up more voice repeaters to accommodate the flood of codeless Technicians joining Amateur Radio every month. In most parts of the United States, the 2 Meter band is already saturated. In many areas, UHF frequencies are getting busy as well.

But ATV operators, including those who have operated on the 430 MHz band since before the first FM voice signal showed up are saying ". . . not so fast." They say they won't move higher in frequency and that neither the FM community nor their repeater councils have the right to tell them to leave. Supporters of ATV point to FCC rules part 97.305, subpart C. That section authorizes fast scan amateur television and other wideband modes on the 70 centimeter band and above.

ATV operators say that, with or without the blessings of the Coordination council or any other FM repeater frequency coordinator, their personal home stations and their repeaters will be staying on the air, right where they are. And noting that the FCC's Part 97 Amateur Service Rules are definitely "on their side," more and more ATV operators indicate they are even willing to take the issue to court if they must, so that they can keep their slice of the 70 centimeter spectrum.

The clash between ATV and FM seems to be hottest right now in the territories that fall under the umbrella of the Mid America Coordination Council. After MACC voted last April to stop coordination of Amateur Television repeaters in the 70 centimeter band many ATVers complained. So at a meeting held in St. Louis on October 6, just prior to the national repeater coordinators conference, MACC voted once again.

The results were the same. A nonbinding recommendation that MACC members no longer coordinate fast scan ATV repeaters onto the 70 centimeter band. With this second vote against ATV, this trend could spread to other parts of the country as the ham radio airwaves continue to fill up.

FCC data on Internet

The Federal Communications Commission is now offering the complete amateur service database on the Internet, via the FCC's file transfer protocol (FTP) site. This new service marks the beginning of electronic granting of licenses at the FCC's Wireless Telecommunications Bureau. As soon as the data for a new license appears in the database, the license is effective and all privileges of that license may be exercised by the licensee.

Licensees will no longer need to wait to receive a license document in the mail. They may use the database as proof of licensing and go on the air immediately.

The FCC's Consumer Staff in Gettysburg, Pennsylvania, can answer questions at 800/322-1117 or 717/337-1212. The database will be updated every Monday by noon (Eastern time). Information may be retrieved using the following procedure:

ACCESS:ANONYMOUS FTP.FCC.GOV
DIRECTORY: PUB/XFS ALPHATEST/AMATEUR
DOCUMENTATION: README.TXT

Repeater owner KA2USE, S.K.

N2ZKX says that it is with deepest regret that he informs everyone of the death of Joe Leasure, KA2USE, of Middletown, New York. Joe was the owner and operator of the 146.730 repeater.

Joe was known and respected by everyone with whom he came in contact. He was always there if anyone needed help and could converse on almost any subject.

ELT info needed

Chuck, K3GPJ, says, via packet radio, that he is looking for information on available aircraft band receivers to monitor for ELTs (Emergency Locator Transmitters). He hopes to interface this with a mountaintop repeater and would like to hear comments from anyone who has done this.

He specifically needs information on the receiver used, how it was interfaced, and what problems have been encountered in the operation of this monitor. You can contact him at 509/248-5007 or by "snail mail" to his *Callbook™* address.

The Guest Spotlight

Thoughts on "High-Performance" 10 GHz FM

By W. Keith Hibbert, KE2DI
(Via Packet)

"As I was looking through the new Down East Microwave catalog I received the other day, I realized that the 'narrow-band' transverter for 10 GHz costs less than an ARR 10 GHz wide-band transceiver! It got the wheels turning here, and without much thought, I came to realize that there is a lot of potential here for the low-budget 10 GHz enthusiast.

"If this makes sense, one of the things that would keep a beginner from buying a transverter is the thought that 'You gotta have an SSB or Multi-mode RIG!,' but this isn't really so. While the use of SSB is desirable for the 'BIG DX,' the improvement between wide-band and narrow-band FM would make it worth the investment by itself!

"Let's look at the 'improvement': Just based on bandwidth alone, going from a 200 kHz bandwidth to a 15 kHz bandwidth should provide about a 12 dB improvement. Then, going from a 12-15 dB noise figure on the RX to a 3-5 dB noise figure will give you another 9-10 dB improvement. Combined, this will be a station improvement of around 21 dB, or better. Now go price a 21 dB PA for 10 GHz, and ask yourself which route you would rather pursue?

"Evan, WB2ELB, and I used a pair of the ARR TR1ØGAs last year on a 55 km overland path, FNØ2 to FNØ3. The signals were threshold-level, and only peaked about 6 dB out of the noise at best. If we had been running the DEM transverters with a 70 cm HT for the 'exciter,' we should have seen a 20 dB (+/-) improvement on each end. It might have made an FNØ3 - FNØ1 QSO possible. (I can wish, can't I. . .?) Our cross-lake QSOs with VE3OIK in the September weekend of the 10 GHz contest were 20-30 dB quieting already, but this would have opened a whole new ball game, with inland sites now being usable.

"Of course, if one went with the transverter and an HT, upgrading to SSB/CW would be just a matter of getting the multi-mode rig, and interfacing it into the system, so you wouldn't be looking at a totally new rig, just an upgrade. Another thought that I had was setting up the transverter for both narrowband and wide-band.

The N1BWT transverter that is in the catalog uses a 'high-side' injection, and converts 432 MHz to 10.368 MHz. The wide-band FM is in the 10.250 to 10.300 MHz range, so, if the tuning is wide enough on the transverter, to generate a 10.280 MHz signal, you would have to inject a 520 MHz wideband FM signal to transmit, and to receive the 10.250 MHz Gunnplexer (or similar), you would use a wideband RX on 550 MHz. This would then allow one to work both duplex wideband, and 'semi-duplex' (simplex), narrowband FM.

"Considering the points value of 10 GHz contacts, I don't think that there is any 'serious' contester that would turn up his/her nose at switching the mode switch over to 'Funny Modulation' to help out both scores. If anyone would, well . . . ." WR

Search And Rescue Communications

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

As I began this month's column, I moved the computer mouse and knocked over my can of pop, spilling the contents all over the computer table, down the wall, and onto the carpet. I hate it when this happens! Hang on a minute while I clean this up.

Let's talk about service for a few paragraphs because service is a primary Amateur Radio product and it's often critical to the successful outcome of an emergency event. Quality of service is difficult to measure — unless — you use the "customer" yardstick and determine a level of service expectation up front.

An excellent book, *How to Win Customers and Keep Them for Life* by Michael LeBoeur, contains some things to ponder: 1) A typical business hears from only four percent of its dissatisfied customers, the other 96 percent just go away quietly and 91 percent will never come back. 2) Why do customers quit? Three percent move away, five percent develop other friendships, nine percent leave for competitive reasons, 14 percent are dissatisfied with the product and 68 percent quit because of indifference toward the customer by the owner, manager, or some employee. 3) A typical dissatisfied customer will tell eight to ten people about his/her problem. One in five will tell *twenty* others and it takes twelve positive service incidents to make up for *one* negative incident.

Resolve complaints

The book says that seven out of ten complaining customers will do business with you again if you resolve the complaint and a satisfied customer will tell five others about a resolved problem. Finally, the average business spends six times more to attract new business than to retain current customers. Does any of the above relate either to members in your organization or to your "external" agency customers?

Let me offer a couple of indicators you should be using to measure your customer satisfaction. Are you always holding "recruiting drives" to attract new members? Are you attracting more new members than retained members? Are some of your "missions" going away (is someone else doing what you once did)? Do you have a high percentage of members attending training sessions? Do you have regularly scheduled training events (at least monthly for large organizations)? If you surveyed your group's members, would they give positive responses for training, leadership and activity levels? Do you hold critiques after events and missions? Would group members and agency customers feel comfortable giving you feedback *and* would group leadership act on any recommendations?

While the above questions are only a few I might offer for consideration, there are *two* primary issues: What is your member retention rate and are you attracting new agency customers? If you have, for example, a retention rate per year of 30 percent (meaning seven out of ten members leave the group each year), you have a serious *internal* problem. If agencies that once called you to assist during emergency events don't call you any more, you have a serious *external* problem.

What are you promising?

The first issue should be your primary focus. If you lose most of your members in a year and have to continually hold recruiting drives, there are two things going on. First, your program is either promising recruits things you cannot deliver or your program is promising things you could deliver, but don't. In a nutshell, you lure members into the group with war stories, promises of training, experiences, and never deliver, or make fulfillment of the promises contingent upon criteria a member might never achieve. ("You need six radios, a blue four-wheel-drive truck, a portable crank-up tower, and to attend 30 out of 31 training sessions. Sorry we forgot to tell you this when you joined. The rest of us are "grandfathered" because we couldn't do what we ask either!")

The second issue is that agencies no longer call you during emergency events which means that members are joining based on past war stories and your "image," but will not get the chance to participate. Several things have happened. Your group has failed to meet agency expectations. (We wanted an HF link from north to south, not a packet link from east to west. We needed five qualified people for two days, not two people with a disabled car and a radio with dead batteries.) Your group is no longer the "leader" in your specialty — you have basked in your glory so long that one or more other groups is doing what you once did, and doing it better with state-of-the-art training and equipment. Or, finally, you have made it so difficult to activate your group that agencies simply gave up and settled for less service from another, easier-to-activate, group, or decided to undertake "what-you-used-to-do" themselves.

Are there solutions? You bet, but here's the catch, there are no canned solutions you can magically implement. Some years ago the *Wall Street Journal* published an article called

"The Best Consultants I Would Ever Find." (I've misplaced the exact article, but if you want more details on it, drop me a line and I'll find it.) In summary, the author discovered that his employees saved his company — simply because they knew what was wrong and knew how to fix the problems. The indicators were there (i.e. a failing business) and a lot of high-priced outside consultants couldn't find out what was wrong. Yet given the chance, the company's employees were able to provide the answers — the right answers! My message to you? Talk to your own members and seriously consider what they have to offer. Listen to comments, complaints, ridicule, insights, suggestions, examples, and ideas from within — after all, if your members are not happy they'll not provide high levels of service and they'll not hang around your organization.

Eroded expertise

My final discussion point is that high member turnover erodes your base of expertise until you have new people trying to teach new people. Some of the best schoolteachers I ever had were those who had walked the walk and then talked the talk. You knew they were teaching from experience and not only from a book of theory. A large part of your organizational success comes from experienced members passing along the wisdom and expertise in order to retain quality. This does *not* mean you are rooted in the past, but use members who have experience and remain current as to procedures, research, and equipment.

One of the lures to new members is your group's collective expertise and the promise of joining that circle of experts. This happens through training classes, exercises, social interaction, and participation in actual events. If new members quickly discover everyone is new and there are few resources to gain knowledge, they'll go elsewhere and you get a low retention rate. Use your experienced members, keep them active and involved! Break the cycle — spend more on your current members and customers and less on finding new members. My idea of an ideal group is a membership cap — you state you can train, equip, and put to adequate use only 75 members. With a quality program, you should have 75 members and a waiting list of others wanting to join. Your group is then perceived as something of value and membership is worth working toward and maintaining.

Remember, the leader's role is not to do everything and micro-manage everyone in the group. The leader is there to remove obstacles and let members grow and gain experience. Members who are involved are those who are teaching, building, participating, and active. When leaders hide behind committees, break promises, drive out experienced members, or fail to let people grow, the organization dwindles. Before you (the leader) decide on some great whiz-bang project, be sure you are doing the basics well. Unless you have a basic structure in place, you have nothing — and the whiz-bang project won't fix your group's problems, it will probably just make you look worse to members and agencies.

Those junker radios

Have you seen a crystal-controlled radio on the Internet, at a garage sale, or at a swap meet? Don't let another one pass you by! Egad, you say, these radios have no value. They have no bells and whistles. They don't have a programmable offset. They are (yuck) old. What value could these vintage radios possibly be?

In the past year or two I've added to my shack two Clegg FM-76 220 MHz radios, an Icom IC-22s (VHF), a Kenwood TR-8300 (UHF), and a couple of others I cannot remember. Some of them had sub-audible tone encoders, some had broken microphone wires, all needed cleaning, and most needed a couple of crystals. Why, you ask, would someone advocate using "old" radios in a public service column? They work great for monitoring *one* frequency. While the new rigs are busy scanning, beeping, and making noise, the vintage rigs sit silently as sentinels for the ARES repeater, the CAP repeater, or the calling repeater. One sits on my desk at work listening to theARES frequency.

When you spend $20 for crystals, make a copper pipe J-pole, and build a power supply out of all that junk in the basement, you can have a valuable asset for way under $100. In some cases, the $20 cost of crystals and a little soldering repair on the microphone cord was the *only* investment! Many of these radios put out 10-15 watts, sound good on the air, take up little space in the shack, and work just fine for this one specific purpose. Be creative! Look at something for what it may do for your level of preparedness. Preparedness is not an issue of money, but how well you use the resources you have!

Until next month, best wishes from Salt Lake City! WR

The Youth Forum

Sammy Garrett, AAØCR
#8 Willow Ct., Florissant, MO 63031

ARRL Foundation Scholarships

Want to avoid selling that spare kidney to pay for college? Okay, maybe this statement was a bit sarcastic but as we all know, the cost of higher education rises with each semester. Given economic woes and the uncertain state of federal student aid, scholarships and grants are becoming more important than ever. So if you'd like to hang on to that kidney, you may want to consider the scholarships offered by the American Radio Relay League (ARRL) Foundation. The ARRL Foundation is a division of the league which promotes educational activities and the advancement of the amateur service. Each year, the foundation administers several generous scholarship funds.

In 1996, the foundation will administer over 20 different scholarships. Although some award amounts remain undetermined at press time, current figures range from $500-$5,000. Some scholarships will contain multiple awards, provided needed funds are available. Each program has specific eligibility requirements such as license class, field of study, state or ARRL division of residence, etc. However, virtually any amateur will probably be able to find an award for which he or she qualifies. In fact, an amateur license isn't even required for some awards; the Ph.D. scholarship may be applied for by the children of deceased radio amateurs. ARRL membership is not necessarily required to apply for these awards. Applicants do not necessarily have to be graduating high school seniors or even college students, but must intend to further their education.

Listing the specific requirements for each scholarship would take several pages. So I chose a few which will hopefully give you an overview of some of the foundation's awards.

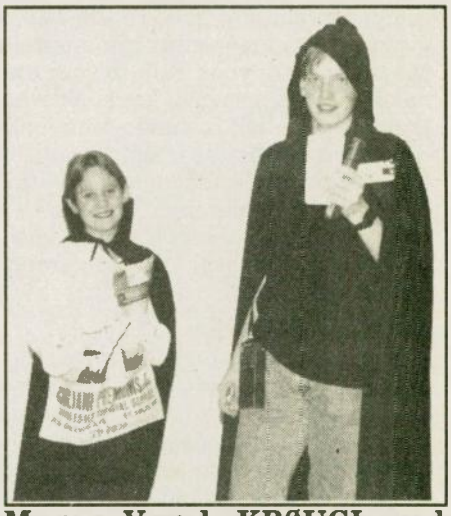
The "ARRL Scholarship Honoring Senator Barry Goldwater, K7UGA" carries the largest monetary award offered by the foundation. This $5,000 scholarship is awarded to an amateur possessing at least a Novice class license. Preference is given to students seeking at least a four-year degree attending a regionally accredited institution. (This includes virtually all four-year colleges and most trade schools and technical colleges.) And that's it! If you meet those requirements, you might just find yourself receiving a very nice graduation present courtesy of the ARRL Foundation.

"The Charles Clarke Cordle Memorial Scholarship" includes a $1,000 award. There is no minimum license requirement. Preference will be given to applicants residing in Georgia and Alabama planning to attend school in that region. Applicants with a minimum 2.5 grade-point average are preferred.

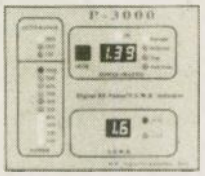
"The New England FEMARA Scholarships" consist of several $600 awards. The number of scholarships awarded is determined by the fund's income during the previous year. Applicants must hold at least a Technician class amateur license. Preference will be given to residents of six New England states.

Again, the above-mentioned programs are by no means a complete list of all ARRL Foundation scholarships! However, the scholarships described will hopefully give you a better idea of the Foundation's scholarship programs. Keep in mind that there are over 20 awards, totaling several thousand dollars. Any licensed amateur almost certainly qualifies to apply for several of these scholarships.

The application deadline for all of the ARRL Foundation scholarships is 1 February 1996. Applications and high school or college transcripts must be received by this date. The foundation stresses that students should only ap-



Megan Vogel, KBØUCL and Sean Nash, KBØOXJ, at the Halloween Hamfest.



ply for those scholarships for which they are eligible. Applications are available from the following address: ARRL Foundation, 225 Main Street, Newington, CT, 06111.

DARA Scholarships

The Dayton Amateur Radio Association, sponsor of the Dayton Hamvention, is now accepting applications for its scholarship programs. Students graduating from high school in 1996 are eligible to apply for eight $2,000 scholarships. Winners will be announced around 1 June 1996. For more information and applications, send an SASE to: DARA Scholarships, 45 Cinnamon Court, Springboro, OH 45066.

FAR Scholarships

At press time, no definite information is available regarding scholarships administered by the Foundation for Amateur Radio. FAR might be thought of as a "clearing house" for amateur radio scholarships. The foundation administers not only its own award programs, but those of several local radio clubs and even national organizations, such as 10-10 International, YLRL, and QCWA. According to FAR, award amounts and program details will be made public after 1 December 1995. FAR plans to mail initial application packages around 1 February 1996. Application materials must reach FAR by 1 June 1996. ***Worldradio*** will carry updated information when it becomes available. In the meantime, interested students may request information directly from the foundation at the following address: FAR Scholarships, 6903 Rhode Island Ave., College Park, MD, 20740. As always, it would be a good idea to include an SASE.

Scholarship notes

As you may have noticed, some of the information regarding Amateur Radio scholarships is tentative. This is due largely to the fact that organizations providing scholarship opportunities are not prepared to release public information at press time. As this column goes to press, only the ARRL foundation and DARA have released definite information. Many other organizations (including some of those mentioned above) will not be able to release award amounts and criteria until after the first of the year. An upcoming edition of "The Youth Forum" will carry up-to-date information about as many scholarship programs as possible. ***Worldradio*** may also publish news briefs, as they become available.

Sam Garrett, AAØCR (left) and Angie Fischer, KBØHXY.

Back to back — again

Five years ago when Angie Fischer, KBØHXY, and I became amateurs we didn't count on meeting too many others our own ages. But that's exactly what happened when we met in 1991. I was 12 and Angie was 11. Being among only a few young amateurs in our hometown of St. Louis, we quickly became friends.

Later that year, I was honored as the 1991 Westlink Report Young Ham of the Year Award recipient (now the *Newsline* Young Ham of the Year Award). Angie followed suit in 1992 — marking the only occasion two recipients have lived in the same city or even the same state.

Shortly thereafter, we entered separate high schools and saw each other infrequently. However, we kept in touch, always having Amateur Radio as a common link. As high school studies and activities increased, we both had less time to devote to the amateur service, but we continued to be involved whenever possible.

Time flies when you're having fun, as they say. I am now 18 and a senior in high school. Angie is a sixteen-year-old junior. Although we are both extremely busy with high school activities and college preparations, we have renewed our friendship and continue to be involved in the hobby. According to Angie, "Amateur Radio has always been a big part of our friendship, but it's become more than that. Even though we met through Amateur Radio, most of the time we talk about school or typical teenage life. . .I think we're both surprised that a hobby has made us such good friends." Like they say, ham radio really is the greatest hobby in the world . . . .

Thanks for reading! Don't forget to send your story ideas and comments to the address above. See you on the bands! 73, AAØCR. **WR**

QUARTER CENTURY WIRELESS ASSOCIATION INC.

John G. Troster, W6ISQ

Late flash:

QCWA has the world's first on-line Amateur Radio Museum! Check it out on the QCWA Internet home page address: http//www.efn.org/~ qcwa.

Merrrrrreeeey Christmas!

Sure I mean it. This is the January issue but I am writing it before Christmas. So, I hope you have sent your e-mail to Sassy Claws begging for that new rig and antenna you desperately need and must have.

While I'm at it, Haaaaappy New Year too. May 1996 be rewarding and interesting for one and all, and bring you all that stuff you didn't get for Christmas.

Manchester Convention

The Big Report on the QCWA front is the Annual Convention held October 13 and 14 in Manchester, NH, hosted by five New England chapters: Yankee, Pine Tree, Twin State, Nutmeg, and Pioneer. They did a grand job. Special thanks goes to QCWA Director and Convention Chairperson, Gladys Chase, W1VPF, who with her outstanding committee, provided a most enjoyable well-planned, two and a half day program for the entire attendance of 205!

The Directors met on Thursday, the day before the Convention opened officially. Most of us were calm and reasonable, probably because Milt Chaffee, W1EFW, had his cane at the ready and threatened to veto any untoward behavior. Then, too, our resident attorney, Director Ed Yoder, W3YMB, reminded us of our national bond to the legal system and the consequences of breaching same. Not even many long speeches, but we did have our annual earth-shattering go-around about whether the yearly on-the-air QCWA QSO bash we have in February and March should be called the QCWA Party or the QCWA Contest. We'll call it a Party . . . ahhhh . . . even though it is a contest . . . kind of.

In sum, it was a good Board session covering proposals we hope will keep QCWA functioning smoothly and give increased service to the membership. Details to be released "officially" in the Board Meeting report in the *Journal*.

Board members, and all QCWA members, can justly be proud of our Scholarship program which continues to build under Leland (tench-hut) Smith, W5KL. Contributions to which may be made at any time, in any amount, to Leland.

An Unexpected Plus. We want to note here that a live TV debate with the current Republican presidential candidates, all of 'em, was going on at our hotel Thursday night. It was carried on national TV and the candidates circulated through the lobby greeting QCWAers in their best p.c. manner.

Moose Crash! "Covered Bridges of New England" a lecture scheduled to be given by Jack Harrigan, W1PSG, we're sorry to report, had to be cancelled. The day before the convention, Jack's car collided with a moose on the highway. The collision totaled his car and the stitches on his face totaled over 100. Heartfelt condolences, Jack, and we'll hope to hear your lecture at another convention.

YFs, guests, hams too, were offered an all-day bus tour to see the beautiful fall color of southern New Hampshire. Noon stop at a New Hampshire Farmhouse Inn featured turkey dinner with all the trimmin's.

Friday night, guess what? Leo Meyerson, WØGFQ, flew in from Omaha, to play piano for his annual, traditional sing-along. And to talk to all his friends, too, of course. The Holiday Inn lobby filled with familiar song as Leo directed the QCWA Chorus in all-time favorites. Thanks Leo. See you in Palm Springs in March.

Lew McCoy, W1ICP presents the QCWA Hall of Fame Award to John Johnston, W3BE, October 1995.

At the Friday morning Convention Forum, President Lew delivered his "State-of-the-QCWA" message and answered questions. Then we adjourned for further Board business (read: coffee, juice, Danish and arm wrestling). In the afternoon Lew held forth with one of his usual informative talks, expounding on lightning forces before striking into dipoles and tuners. An interesting talk entitled "Herbs—Culinary, Decorative and Medicinal" by Margaret Hagen was also offered that afternoon.

Saturday's program led off with Chuck Walbridge, K1IGD, speaking on "Introduction to Packet Radio." Good basic info, telling how to get on packet and then what to do when you get there. Peter Gerimia followed with a thought-provoking presentation on UFOs.

In the afternoon, John Johnston, W3BE, conducted the "FCC Forum." Educational and detailed about how the FCC works with amateurs for the best solution to problems. (See QCWA column in November, 1995 ***Worldradio***). Next was Dave Sumner, K1ZZ, executive veep of ARRL and publisher of *QST*, who chaired the "ARRL Forum," well presented and well received

as usual. Dick Baldwin, W1RU, president of IARU with "The ITU and You," an impressive outline of the function of the IARU in educating amateurs and ITU representatives from many countries of the world, to develop a better understanding of Amateur Radio affairs worldwide. In the ITU it is "one country, one vote," so it is essential that voting countries have a clear picture of Amateur Radio needs. These were three excellent presentations on different important facets of Amateur Radio, and well worth having repeated at conventions around the country.

After the talks, the QCWW — note that's WW — held their annual meeting with President Ann Amholt, K9RXK, presiding. Also on Saturday, a second all-day bus tour took those who were willing to miss the meetings, around the New Hampshire shore of the Atlantic Ocean, through Rye and Portsmouth with stops for a seafood lunch and boutique shopping.

QCWA Board and Officers. Back row (left to right): Gary Harrison, WAØRWS; Ed Yoder, W3YMB; Robert Brown, W1WPY; Gladys Chase, W1VPF; John Edel, K8LBZ; Jack Troster, W6ISQ; Croft Taylor, VE3CT; John Huntoon, W1RW.
Front row (left to right): Leland Smith, W5KL; John Swafford, W4HU, Lew McCoy, W1ICP; John Kelleher, W4ZC; Wes Randolph, W4COW. ***—photo by James Walsh, W7LVN***

Annual Banquet

Milt Chaffee, W1EFW, was Master of Ceremonies for the gala Banquet. Gladys Chase, W1VPF, warmly welcomed everyone, and Leland Smith gave the convocation. Pres McCoy presented the QCWA Presidential Award in absentia to Phil Rand, W1DBM. Phil was the pioneer in the quest to eliminate TVI caused by Amateur Radio.

Also honored with the Presidential Award (in absentia), was Fr.Tom Carten, K1PZU, who for many years has transcribed ***Worldradio*** and *The QCWA Journal* on tape for sight impaired amateurs. Mac also awarded John Johnston, W3BE, of the FCC, the QCWA Hall of Fame Award. All well deserved.

Good Guy Award. Lew has initiated a new QCWA tradition, the Good Guy Award for members who have done something out of the ordinary for Amateur Radio and QCWA. First recipients of this new GG Award are: Gene Williamson, K7DBV, who established the QCWA home page on Internet for us (see front cover of the Fall *QCWA Journal*); Ralph Haslinger, W2CVP, one of QCWA Founders and strong contributor and supporter of the QCWA Scholarship Fund; and Arch Doty, K8CFU, who is a retired Director of QCWA and who produced our QCWA brochure (distinguished also for being from Yonkers, NY). And for the Specially Deserved, the Good Gal Award for Jan Hayter, who runs the QCWA Head Office in Eugene, Oregon with the sometimes assistance of "BJ" Walsh, W7LVN.

Our speaker of the evening was Edward Cohen, introduced by his brother Al Cohen, W1FXQ. Architect Edward Cohen spoke on the reconstruction of the Statue of Liberty. Fascinating and unusual information. And of course, prizes, prizes, prizes.

Sunday morning breakfast featured a New England seafood buffet, and a dazzling choice of half-dozen different desserts. I personally ate a piece of chocolate cake before my orange juice. Next time apple pie, please. I love these Old New England customs which my great grandfather told me about!

Thanks to Harold Chase and his helpers, W2MM, the QCWA station, was on the air and available for members to operate during the convention. Many, many, thanks to Gladys and her committee. Your well-organized, well-functioning effort turned out a fine get-together and was appreciated by all.

Internet Special Note for all twentieth-century types. To "hit" the above-mentioned QCWA Internet home page, the one Gene Williamson developed for us, try: http://www.efn.org/~qcwa. Check it out.

Ottawa, Canada 1996

The Manchester meeting had something of interest for everybody, as it always is at QCWA conventions. This tradition will carry on at our next Convention in Ottawa, Canada. Director, Croft Taylor, VE3CT, and the Canadian committee, promise it will be one of the best, with outstanding accommodations, lectures, activities, and get-togethers for members, YFs, and guests. Hope the above description of the great time we all had at this year's convention will encourage all to join the festivities in '96. Watch the *Journal* for the official announcement and make your plans early. No passports needed for Canada and your U.S. amateur license is good there too.

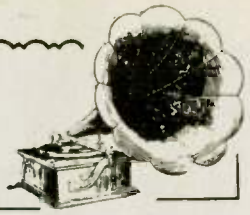
QCWA Party

QCWA Activities Manager, Fred Strom, K9SVL, wants everybody to mark their calendar now. The Annual QSO Contest.... ahhh....Party will be: 10-11 February 1996, for CW; and 9-10 March for Phone. Rules will be printed in the *Journal*, and it's important to pay close attention to them! Betcha I can make more QSOs than you!

Remember you're a member of an elite group. Work on it. Dismissed. 73+25, Jack, W6ISQ.

(Portions of this column will be reprinted in the Winter issue of the *QCWA Journal*). WR

OLD-TIME RADIO



My 1920 power supply

Russ Rennaker, W9CRC

When I first got on the air in 1920 we did not have electricity on the farm yet. So everything I did had to be done with batteries. And of course the batteries had to be recharged. My father had a gasoline engine we used to pump water for the livestock. That gave me an idea. I rigged up a belt from the gasoline engine to a Ford generator I bought from an auto accessory store, and every time we pumped water the batteries on my wireless set got charged. Seeing that the stock tank was kept full was one of my chores and it was some time before my Dad got around to wondering why the stock tank overflowed so much of the time. Finally I rigged a float in the tank that shut off the engine when the tank got full. The livestock got plenty of water that summer and my battery kept charged.

Going from a spark transmitter to a tube transmitter posed some problems for me in the 1920s. The first tube transmitter I built used a "201a" receiving tube. The 201a took 45 volts of "B" battery for the plate, but I discovered if I ran it on 90 volts I got about twice the power out of it — that was about two watts, but neither the tubes nor the batteries lasted very long! I ran it that way for some time but the cost of the "B" batteries was getting prohibitive. Then RCA announced a "power tube" for their big power loudspeaker. This was the famous "210" tube. The specifications called for 300 volts on the plate. The idea of seven 45 volt "B" batteries at the rate I was using them up was out of the question.

I still had the DC generator belted to the gasoline engine I used to charge my 6 volt storage battery and that gave me an idea. I would build a 300 volt rechargeable battery!

I ordered 200 laboratory test tubes from a scientific catalog and, using strips of copper for the plates, I made a 300 volt battery. But how to charge it was a problem. I ended up with a series of small, double-pole, double-throw switches which would parallel sections of the battery for charging and put them all in series when using them. The system worked fine but when I went to two 210 tubes in push-pull in the famous "Colpitts" circuit of the day I went overboard and added 200 more volts, making it a 500 volt battery.

That battery took up all the floor space under my operating table and, I am sorry to say, cost my mother a new rug as a result of the acid spills. I operated for about a year before we finally got electricity on the farm. During that time, when everyone else was fighting "AC hum" on their carrier, I had an AC free, pure DC tone, envied by all. WR

Amateur "Hi"

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

The big, steel tree: Will it ever grow?

Stan Kaplan, WB9RQR

Howard, a Milwaukee ham, was very pleased with his new tower. He had a weekly sked with a friend in South America, and finally it was possible for him to turn a beam and point it directly at his contact. Just a few weeks after the installation, it was clear that the tower and beam made a remarkable difference when compared to the tree-mounted inverted vee he had been using.

All went well for over a year. Then, in late August, he noticed some difficulty when making his South American sked. The signal was not nearly as strong as it had been, and it was hard to copy his friend. Immediately after the sked was over, Howard began some detective work. He knew something was wrong as soon as he checked the SWR. It was unacceptably high, and it had been nearly flat when he first completed the new installation.

Frantically, he removed and burnished all connections in the shack, then replaced them. No change in SWR. Next, he did a thorough visual inspection of the coax leading to the tower, all the way to the beam. Finally, he climbed the tower, removed the coax where it attached to the beam, burnished the connections, and replaced them. But when he fired up the rig, the SWR still told of an unhealthy condition. What could it be?

Then, the light bulb in his head began to glow. It was the summer of 1988, and Milwaukee was experiencing a record drought. The grass was brown and scorched, and the parched ground was as hard as stone. Could the electrical ground of the tower be inadequate due to the drought? Easy enough to test, thought Howard.

He went out in the backyard, connected the hose, and began drenching the tower base and soil with water. Just about that time, his next door neighbor, Jim, stepped out of his back door. Jim, a stockbroker, knew Howard was a ham, but Jim had no personal knowledge of radio. He watched Howard for some minutes, with marked curiosity. Then he walked over to Howard, a little nervously, and said hello. Howard smiled and returned the greeting. Jim was silent, shifting his weight from one leg to the other. Finally, he could contain himself no longer, and blurted out "Howard, I really don't think that tower will grow no matter how much you water it!"

Later, after he had recovered from paroxysms of laughter, Howard explained to Jim why he was watering the tower. Furthermore, it worked; the SWR went down to its original level. Thereafter, Howard was careful to give the tower base a good soaking a day or so before his sked. And if Jim was around, he could be seen silently shaking his head whenever he spotted Howard watering his big, steel tree. WR

Visit Your Local RADIO CLUB

ALASKA

South Central Radio Club. 8023 E. 11th Ct., Anchorage, AK. Meets 2nd Fri./monthly, 7 p.m., UAA Business Ed. Bldg., Rm. 220. KL7CC, (907) 338-0662 for info. Club rptr: KL7CC/R 146.97(-) PL 103.5 Hz. 2/96

ARIZONA

Arizona Repeater Association. P.O. Box 35758, Phoenix, AZ 85069-5758. Operates 20 VHF & UHF rptrs. in AZ. Meets 4th Thurs./monthly, 7:30 p.m., 1515 E. Osborne, Phoenix. Info: (602) 631-4879. 9/96

Cochise Amateur Radio Assn., (CARA). Meets 1st Mon./monthly, 7:30 p.m. at club facility on Moson Rd., Sierra Vista, AZ. WA7KYT/R 146.76(-) rptr. 5/96

Tucson Repeater Assoc., P.O. Box 40371, Tucson, AZ 85717-0371. Meets 2nd Sat./monthly, 7:15 p.m., Dept. of Emergency Mgmt., 130 W. Congress. Net Thurs. 7:30 p.m. 146.82(-), 146.88(-), 147.08(+), 448.550(-) & 145.15 Packet. 3/96

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(-). 5/96

Amateur Radio Club of Anderson, (ARCA). Meets 2nd Thurs./monthly, 7:30 p.m. Amer. Legion Post #746, 1709 Bruce Dr., Anderson, CA. Net every Tue., 7:30 p.m. on 146.64. 4/96

Downey Amateur Radio Club Inc., W6TOI. Meets 1st Thurs./monthly, 7:30 p.m., So. Middle Sch. cafetorium, 12500 S. Birchdale, Downey, CA. (Summer exception: contact Doug, N6WZI, (310) 929-1441). VHF net W6GNS rptr. 146.175(+) Thurs., 7:30 p.m. 5/96

East Bay Amateur Radio Club, Inc. Meets 2nd Fri./monthly, 7:30 p.m., Albany Sr. Cntr., 846 Masonic Ave., Albany, CA. Info: S. Primbsch, (510) 741-8227. 145.110 MHz. 6/96

Fresno Amateur Radio Club. Meets 2nd Fri./monthly, 7:30 p.m., Emie Pyle School, 4140 N. Augusta, Fresno, CA. 146.94(-) 223.94(-). 11/96

Fullerton Radio Club, Inc., W6ULI. P.O. Box 545, Fullerton, CA 92632. Meets: 3rd Wed./monthly, 7:30 p.m., Sr. Citizens Ctr., 340 W. Commonwealth, Fullerton. Net ea. Tue., 8 p.m. 147.975(-). Info: Bob Hastings, K6PHE (714) 990-9203. 6/96

Golden Empire Amateur Radio Society, (VEC). P.O. Box 508, Chico, CA 95927. Club call W6RHC, rptr. 146.85(-). Meets: 3rd Fri./monthly, 8 p.m. at 1528 Esplanade, Rm. 110B, Chico. 9/96

Golden Triangle ARC, (GTARC). Meets 4th Mon./monthly, 7:30 p.m., Sharp Health Care Activities Rm., 25500 Med. Ctr. Dr., Murrieta, CA 92562. 6/96

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) 846-6513. 12/96

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. 8/96

Motorcycling Amateur Radio Club. Meets 2nd Sat./monthly, 8 a.m., Denny's Restaurant, 22611 Oakcrest Cr., Yorba Linda, CA at Weir Canyon, off the 91 Fwy. Info: Ray Davis, KD6FHN, (714) 551-2010 or (714) 551-1036. 2/96

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(+) 100Hz PL. Info: (510) 932-6125. 6/96

North Shores ARC. Meets 1st Tues./monthly, 7:30 p.m., So. Clairemont Rec. Cntr., 3605 Clairemont Dr., San Diego, CA. Info: (619) 224-1294. 9/96

Palos Verdes ARC. Meets 3rd Wed./monthly, 7:30 p.m., Community Rm., "Shops at Palos Verdes," 550 Deep Valley Dr., Rolling Hills Estates, CA. Info. Herb Clarkson, KM6DD, (310) 377-6342. Rptr. 145.38(-) PL 100. 11/96

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. 9/96

Sacramento Amateur Radio Club. Meets 2nd Wed./monthly, 7 p.m. Sac. Blood Ctr., 32nd St. & Stockton Blvd., Sacramento, CA. Info net at noon on rptr. W6AK/R 146.91(-). Steve Cates, KC6TEV, (916) 391-7341 or Les Ballinger, WA6EQQ, (916) 393-4775. 10/96

Sacramento "Old Timers" Amateur Radio Society and Sacramento Valley Chapter #169 QCWA (Quarter Century Wireless Assn.). Meets 2nd Wed./monthly, 8 a.m., Lyon's Restaurant, 1000 Howe Ave. For info contact Paul Wolf, W6RLP (916) 331-1830. 10/96

San Gabriel Valley Radio Club, Inc. P.O. Box 88, Monrovia, CA 91017-0088. Meets 1st Tue./monthly, 7:00 p.m., Arcadia County Park, 405 So. Santa Anita Ave., Arcadia, CA. 147.765(-) PL 131.8. Info: (818) 285-9280. 12/96

Santa Clara County Amateur Radio Assoc., (SCCARA) W6UW & W6UU. P.O. Box 6, San Jose, CA 95103-0006. (408) 249-6909. Meets 2nd Mon./monthly, 7:30 p.m., United Way, 1922 The Alameda, San Jose. Net all other Mon., 7:30 p.m. W6UU/R 146.385(+), 442.425(+) PL 107.2. 3/96

Shasta Cascade Amateur Radio Society, (SCARS). 2124 Airstrip Rd., Redding, CA 96003. 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. 7/96

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(-). 3/96

Simi Settlers Amateur Radio Club (SSARC). P.O. Box 3035, Simi Valley, CA 93093. Meets 2nd Thurs./monthly (except Dec.), 7:30 p.m., Seventh Day Adventist Church Hospitality Rm., 1636 Sinaloa St., Simi Valley. Contact Ron, KD6VLM, (805) 584-6737, 147.930(-) (PL 127.3). 11/96

Siskiyou County Amateur Radio Assoc. Meets 1st Sat./monthly, 10 a.m., rotates between Bob's Ranch House in Etna, CA and The Tree House in Mt. Shasta. For info: Al, WA6IHK, (916) 467-3255. 10/96

So. Sierra ARS. Meets 2nd Thurs./monthly, 7 p.m., Veteran's Mem. Hall, 125 East F St., Tehachapi, CA. Contact: C. Parsons, KD6KMN, (805) 822-5995. 147.06/224.42. 12/96

South Bay ARC. P.O. Box 536, Torrance, CA 90508. Meets 3rd Thurs./monthly, 7:30 p.m., Torrance Memorial Hosp., 3330 Lomita Blvd., Torrance, CA. Talk-in on WB6MYD rpt. 244.38(-). Info: (310) 328-0817. 7/96

Southern California Six Meter Club. P.O. Box 10441, Fullerton, CA 92635. USB Net Tue., 8 p.m., 50.150. FM Rpt. Net Thurs., 8 p.m., 52.86/52.36 tx. FM Smplx, call freq. 50.300. Net Sun., 10 a.m. 50.40. 3/96

Stanislaus Amateur Radio Assoc., Inc. (SARA). P. O. Box 4601, Modesto, CA 95352. Meets 3rd Tues./monthly, 7:30 p.m., Stanislaus Co. Admin. Bldg. 145.39(-) (PL 136.5), 224.14, 440.225 (PL 136.5). 2/96

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. 11/96

Trinity Country ARC. P.O. Box 2283, Weaverville, CA 96093. Meets 2nd Wed./monthly, CD Hall in Weaverville, 7:30 p.m., Rptrs: WA6BXN 146.73(-) PL 85.4, W6HOR 146.925(-) PL 85.4. 10/96

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.), 7:00 p.m. Monitors 145.52 Simplex 10 a.m.—5 p.m. 6/96

Vaca Valley Radio Club. Meets 2nd Wed./monthly, 7 p.m., Vaca Fire Dist. Stn., Vine St. in Vacaville, CA. Rptr. WD6BUS 145.47(-) PL 127.3. Dan Bissell (707) 446-7411. 5/96

Victor Valley Amateur Radio Club. P.O. Box 869, Victorville, CA 92392. Meets 2nd Tues./monthly, 7:00 p.m., Victor Valley Museum, 11873 Apple Valley Rd., Apple Valley, CA. Talk-in 146.94(-), PL 91.5. Net Sun. 7 p.m. 146.94(-). 12/96

West Coast Amateur Radio Club, (WCARC). P.O. Box 2617, Costa Mesa, CA 92628. Meets 3rd Thurs./monthly, 7 p.m., Fountain Valley Sch. Dist. office, 17210 Oak St., Fountain Valley. 145.440(-) PL 136.5. For info: Joe, KA6LPZ, (714) 963-4426. 9/96

Westside Amateur Radio Club. P.O. Box 11092, Marina del Rey, CA 90295. Meets 3rd Thurs./monthly, 7:30 p.m., Red Cross Bldg., 1450 11th St., Santa Monica, CA. Net every Tues., 8 p.m., 146.67(-). Voice mail: (310) 917-1100. 5/96

West Valley Amateur Radio Assoc. P.O. Box 6544, San Jose, CA 95150-6544. Meets: 3rd Wed./monthly, 7:30 p.m. (except Dec.) Cambrian Sch. Dist. Office, 4115 Jacksol Dr., San Jose, CA. W6PIY/R. Net Tue., 8:30 p.m. 147.39(+), 223.96(-). 10/96

Willits Amateur Radio Society, (WARS). P.O. Box 73, Willits, CA 95490. Meets 4th Mon./monthly, 7 p.m., Brooktrails Fire Dept. (northwest of Willits). Talk-in: 145.13(-), PL 103.5. 7/96

Yolo Amateur Radio Society. Meets 1st Tues./monthly, 7:30 p.m., Training Rm. of the Davis PD, 226 F St., Davis, CA. Contact Dave Nishikawa, KC6YFG, (916) 756-6375/Talk-in 144.430. 10/96

Yuba-Sutter Amateur Radio Club, (YSARC). P.O. Box 1169, Yuba City, CA 95991. Meets 2nd Tue./monthly, 7:30 p.m., Yuba City Police Bldg., 1545 Poole Blvd., Yuba City. 12/96

FLORIDA

Gulf Coast ARC. P.O. Box 595, New Port Richey, FL 34656. Meets 4th Mon./monthly, 7:30 p.m., 3852 Prime Place, New Port Richey. WA4GDN rptrs. 146.67(-) & 145.33(-), serving all of Pasco County. 8/96

Indian River ARC, Inc., (IRARC). 597 Capri Rd., Cocoa Beach, FL 32931-3011. Meets 1st Thurs./monthly, 7:30 p.m., Community Church of the Nazarene, 400 Crockett Blvd., Merritt Island, FL. 3/96

Port St. Lucie ARA. Meets 1st Fri./monthly, 7:30 p.m., St. Andrews Church, Prima Vista Blvd., Port St. Lucie, FL. Contact: Roy Cox, KE4QJG, (407) 340-4319. Call in 146.955(-). 9/96

Saint Petersburg Amateur Radio Club. Meets 1st Fri./monthly, 7:30 p.m., Red Cross Bldg., 818 Fourth St. North, St. Petersburg, FL. Nightly nets 6:30 p.m., 147.06(+), 224.66(-). Rptrs. 147.06(+), 224.66(-), 444.475(+). Info: R. Russell, N4ZMQ, (813) 896-2518. 1/96

South Brevard Amateur Radio Club. P.O. Box 2205, Melbourne, FL 32902. Meets 1st Tue./monthly, 7 p.m., Public Library, 540 Fee Ave., Melbourne, FL. 6/96

Vero Beach ARC, W4OT. P.O. Box 2082, Vero Beach, FL 32961. Meets 2nd Thurs./monthly, 8 p.m., Emerg. Mgmt., Indian River County Adm. Bldg., 1840 25th St. Net Mon., 7:30 p.m. 146.64. 12/96

GEORGIA

Dalton Amateur Radio Club, Inc., (DARC). Meets 4th Mon./monthly, 7:30 p.m., Magistrate Court Bldg., corner of Waugh St. & Thornton Ave., Dalton, GA. Info: Harold Jones, N4OTC, 706/673-2291. 3/96

HAWAII

Emergency Amateur Radio Club, (EARC). P.O. Box 30315, Honolulu, HI 96820-0315. Meets 4th Thurs./monthly, 7 p.m., Lincoln Elem. Sch., 615 Auwaiolimu, Honolulu. Nets: nightly 7:30 p.m., 146.88 & 146.80. Rptrs: 146.76(-), 146.80(-), 146.88, 146.98(-), 146.94(-). Info: (808) 595-6245. 7/96

ILLINOIS

Chicago FM Club Inc., (CFMC). P.O. Box 1532, Evanston, IL 60204. 146.76(-) (PL 107.2)/224.10/224.18/443.75 (PL 114.8). Ham help line: (312) 262-6773. Info net Tues., 9 p.m. on 146.76(-). Meets 3rd Wed./monthly, 8 p.m. 6/96

CHI-NET Amateur Radio Club. North & Northwest Chicagoland & Suburbs. Specializing in PACKET Radio and 220 Phone to further the fulfillment of Amateur Radio. Meets last Thurs./even mos. Info: (708) 307-8198 or Packet on 144.99 MHz or Voice on 224.24 MHz. 11/96

Dupage Amateur Radio Club. (DARC). P.O. Box 71, Clarendon Hills, IL 60514. Meets 4th Mon./monthly, 7:30 p.m., Holy Trinity Church, SE corner of Cass & Richmond, Westmont, IL. Net Sun., 9 p.m. on 145.25. W9DUP repeaters 145.25(-) (107.2PL), 442.55(+) (114.8PL), 224.68(-). 11/96

Fox River Radio League. P.O. Box 673, Batavia, IL 60510-0673. Meets 2nd Tue./monthly, 7:30 p.m., Old Bank Bldg., 900 No. Lake St., lower level, Northgate Shopping Ctr. & Rt. 31, Aurora, IL. 6/96

Hamfesters Radio Club, W9AA. P.O. Box 42792, Evergreen Park, IL 60805. 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 145.650 MHz. Info: (312) 974-3291. 1/96

Peoria Area Amateur Radio Club, (PAARC). Meets 2nd Fri./monthly, 7 p.m., 1401 N. Knoxville Ave. Info: (309) 685-6698. Rptrs: 146.85(-) & 147.075(+). 5/96

The Starved Rock Radio Club, W9MKS. P.O. Box 198, Tabor St., Leonore, IL 61332. Meets 1st Mon./monthly, 7:30 p.m. Rptr. net 7 p.m. Wed./wkly., 147.12(+). 11/96

Wheaton Community Radio Amateurs, (WCRA). P.O. Box QSL, Wheaton, IL 60189. Meets 7:30 p.m., 1st Fri./monthly, College of DuPage, Glen Ellyn, IL. Nets Sun. & Tue. 8 p.m., 145.39(+) MHz. 440 MHz net on Tues., 8:30 p.m. on 444.475(+) MHz. RTTY Net Sun. 9:30 p.m. 145.31(-). 6/96

York Radio Club. Meets 3rd Fri./monthly, 8 p.m., Elmhurst College (Science Bldg.) Elmhurst, IL. Net Mon., 8 p.m. W9PCS/147.42 simplex. Rptr. 442.875(+). 4/96

IOWA

Sooland Amateur Radio Assoc., (SARA). Meets 3rd Tues./monthly, 7:30 p.m., American Red Cross Bldg., 1512 Pierce St., Sioux City, IA. Contact: Glenn Holder, KØTFT. (712) 239-1749. Call-in 146.97(-). 11/96

MAINE

Androscoggin Amateur Radio Club. Meets 1st Wed./monthly, 7:00 p.m., Auburn Police Station, 1 Minot Ave., Auburn, ME. 11/96

MASSACHUSETTS

Quannapowitt Radio Assoc., Inc. 6 Savin St., Burlington, MA 01803. Meets 4th Fr./monthly, 8:00 p.m., (May & Nov. meets 3rd Fr.), at Lynnfield-Wakefield Methodist Church, Wakefield. Info: Jim Chamberlain, N1AKG, (617) 944-5098. 1/96

Wellesley Amateur Radio Soc., & Babson Wireless Club. Meets 1st & 3rd Thurs./monthly, 7:30 p.m., Gerber Hall, Babson College Forest St., Wellesley, MA (Sept.-June) Talk-in 147.03(+). Info: J. Driscoll, NV1T, (617)444-2686. 12/96

MICHIGAN

Adrian Amateur Radio Club, W8TQE. Box 26, Adrian, MI 49221. Meets 1st Fri./monthly, 8 p.m., Blue Flame Rm., Citizens Gas., N. Winter St. ARES net Sun., 9 p.m. 145.37(-). Info: Tom Parsons, N8QEW, (517) 263-5568. 2/96

Chelsea Amateur Radio Club, Inc. Meets 4th Tue./monthly, 7 p.m., Society Bank, 1478 Chelsea-Manchester Rd., Chelsea, MI 48118. 12/95

Edison Radio Amateurs Assoc. Meets 2nd Fri./monthly (Sept.-June), 7 p.m., Edison Western Wayne Div. HQ, 8001 Haggerty, Belleville, MI (So. of Ecorse Rd.). Net each Thurs., 8 p.m. on 145.33(-) and 442.80(+) rptrs. 2/96

Eastern Michigan Amateur Radio Club, (EMARC). Meets 1st Tue./monthly, 8:30 p.m., Woodland Developmental Cntr., Kimball Township (Range @ Smiths Creek Rd.). Contact Frank Forsyth, N8XTO, (810) 987-3540. Talk-in: 147.30(+). 9/96

Genesee County Radio Club, Inc. Meets 3rd Tues./monthly, 7:30 p.m., Genesse Area Skill Center, Torrey Rd., Flint, MI. (810) 634-6077. 2/96

Hazel Park Amateur Radio Club. Hoover Elementary School-Hazel Park, P.O. Box 368, Hazel Park, MI 48030. Meets 2nd Wed./monthly, 7:30 p.m. Sept. thru May. 146.64(-) Call-in. W8JXU Club Call. Net Sun., 9 p.m., 146.64(-). 1/96

Hiawatha Amateur Radio Club (HARA) Meets 1st Thurs./monthly, 7:30 p.m., at Trinity Lutheran Church in Ishpeming, MI (even no. mos.) and at Jacobetti Veterans Facility in Marquette, MI (odd no. mos.). Sun. net 7:30 p.m. on 146.76. Info: Richard, N8GBA, (906) 249-3837. 1/96

MISSISSIPPI

Jackson Amateur Radio Club, Inc. Meets 3rd Thurs./monthly, 7 p.m., Am. Red Cross Bldg., Riverside Dr., Jackson, MS 39202. 10/96

MISSOURI

PHD Amateur Radio Assn., Inc. P.O. Box 28954, Kansas City, MO 64188. Meets last Tue./monthly, 7 p.m., Gladstone Comm. Bldg. (816) 781-7313, Volunteer Examiner Coordinator. 2/96

NEVADA

Frontier Amateur Radio Society, (FARS). Meets: 3rd Sat./monthly, bkfst. 8 a.m. & mtg. 8:30 a.m., Rae's restaurant, 2531 Wigwam at Pecos. Club info: Jim Frye, NW7O, (702) 256-5396 or Leona Wallace, WA6OHB, (702) 247-6450. 7/96

Wide Area Data Group, Inc. P.O. Box 3132, Sparks, NV 89432. Meets 1st Sat./monthly, 9 a.m., Penny's Kountry Kitchen, 337 E. Plumb Ln., Reno. Info: (702) 356-8200. Call in on 147.30(+) MHz. 5/96

Sierra Intermountain Emergency Radio Assoc., (SIERA). Meets 2nd Tues./monthly, 7:30 p.m., Douglas County Lib., Minden. Contact: George Uebele, WW7E, (702) 265-4278, 147.330. 11/96

NEW HAMPSHIRE

Great Bay Radio Assn., WB1CAG. P.O. Box 911, Dover, NH 03820. (603) 755-2600/335-6643. Meets 2nd Sun./monthly, 7 p.m., Rochester Fire Dept. Training Rm. Talk-in: 147.57. 11/96

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.: 146.70(-), 224.84(-), 444.15(+). 10/96

Bergen Amateur Radio Assoc., (BARA). P.O. Box 304, Hackensack, NJ 07601. Meets 1st Sun./monthly, New Milford Elks Lodge, Patrolman Ray Woods Dr., New Milford, NJ 07646. Nets: 28.350 Mon. 9 p.m., 144.40 9 p.m. Wed. 5/96

Cape May County Amateur Radio Club. Meets 3rd Thurs./monthly, 7:30 p.m., Human Resource Bldg., Rts. #9 & #47 in Rio Grande, NJ. Talk-in on 146.61(-). Weekly net, 8 p.m. every Thurs. except 3rd. 3/96

South Jersey Radio Assoc., (SJRA). Pennsauken Sr. Hi Sch. at Hylton Rd. & Remmington Ave., Pennsauken, NJ 08109. Meets Jan.-Oct., 4th Wed./monthly, 7:30 p.m. (Nov.-Dec. 3rd Wed.). Talk-in: 145.29(-) rptr. Club call K2AA. 8/96

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(-) rptr. W2PVL. 10/96

Genesee Radio Amateurs, (GRAM). N.Y.S. Civil Defense Ctr., State St., Batavia, NY 14020. Meets 3rd Fri./monthly, 7:30 p.m. 147.285(+) W2RCX. 12/96

Hall of Science Amateur Radio Club. P.O. Box 131, Jamaica, NY 11415. HOSARC, 2nd Tue./monthly, Hall of Science Bldg., 47-01 111 St., Flushing Meadow Park, 7:30 p.m. Info: Charlie, WA2JUJ, (516) 420-0046. 2/96

Orleans County Amateur Radio Club, (WA2DQL). Meets at Emergency Management Office, West County House Rd., Albion, NY 14411, 2nd Mon./monthly, 7:30 p.m. 145.27(-) — WA2DQL. 12/95

PROS, Pioneer Radio Operators Society. Meets 1st Wed./monthly (except July/Aug.), 7 p.m., Sardinia Town Hall, Savage Rd., Sardinia, NY. Net 9 a.m. Thurs. 3853 kHz. 3/96

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! 9/96

Suffolk County Radio Club, (SCRC). Meets 3rd Tues./monthly, 8 p.m., Bohemia Rec. Ctr., Ruzicka Way, Bohemia, NY. Talk-in: 145.21(-) rpt. Morten Eriksen, KA2UIU, (516) 929-6911. 4/96

Westchester Emergency Comm. Assoc., (WECA). Meets 2nd Mon./monthly, 7:30 p.m., Westchester County Ctr., White Plains, NY. Contact WB2VUK (914) 631-7424 or WECA INFO LINE (914) 741-6606 for details. Talk-in WB2ZII/R 147.06(+) PL 114.8/2A. 10/96

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) 963-1021. 146.865(-), 440.15(+). 10/96

NORTH CAROLINA

Cabarrus Amateur Radio Society, (CARS). Meets 3rd Mon./monthly, 7 p.m., Forest Hills United Methodist Church in Concord, NC. Net on Mon., 9 p.m., 146.65(-). 3/96

Stanly County Amateur Radio Club. P.O. Box 188, Stanfield, N.C. 28163. Meets 4th Thurs./monthly, 7 p.m. at Stanly Community College, Albemarle, NC. 5/96

OHIO

Ashtabula County ARC. Ken Stenback, AI8S (964-7316). County Justice Ctr, Jefferson, OH. Meets 3rd Tue./monthly, 7:30 p.m. County rptr., 146.715(-). 9/96

Clyde Amateur Radio Society (CARS). Meets 2nd Tue./monthly, 7:30 p.m., Municipal Bldg., Clyde, OH 43410. NF8E rptr. 146.85(-) and 442.625(+) MHz. Net Sun. 9 p.m. Info: E. Remaley, KA8CAS. 3/96

Firelands Area Rptr. Assn., (FARA). Meets 4th Tue./monthly, 7 p.m., Erie County Admin. Bldg., Sandusky, OH. WB8LLY rptr. 146.805(-). Net Sundays, 8 p.m. Info: FARA, P.O. Box 442, Huron, OH 44839. 11/96

Greater Cincinnati Amateur Radio Assn., (GCARA). Meets 4th Wed./monthly, 7:45 p.m., Cincinnati Museum of Nat. History, 1720 Gilbert Ave. Amateur Radio Station W8DZ. Info: WA8STX or (513) 563-7373. 11/96

Lancaster & Fairfield County ARC. Meets 1st Thurs./monthly, 7:30 p.m., American Red Cross, 121 W. Mulberry St., Lancaster, OH 43130. Info net Mondays, 8 p.m., K8QIK/R 147.03(+) rptr. BBS 145.53. 8/96

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. 10/96

Toledo Mobile Radio Association. P.O. Box 273, Toledo, OH 43697. Meets 2nd Wed./monthly, 7:30 p.m., Luke's Barn, Lucas County Rec. Ctr., 2901 Key St., Maumee, OH. Contact: Brenda, KB8IUP, 866-5928. 11/96

Van Wert Amateur Radio Club, Inc. P.O. Box 602, 1220 E. Ridge Rd., Van Wert, OH 45891. Meets 1st & 3rd Sat./monthly, 8 p.m. Call-in: 146.85(-). 2/96

OREGON

Central Oregon Radio Amateurs, (CORA). P.O. Box 723, Bend, OR 97709. Meets last Thurs./monthly, 7 p.m., Bend Sr. Ctr., 1036 NE 5th, Bend, OR. Net Sun. 7:30 p.m. 147.06(+) MHz. Info: (503) 385-1156. 6/96

Keno Amateur Radio Club. P.O. Box 653, Keno, OR 97627. Meets 3rd Thurs./monthly, 7 p.m., Keno Fire Stn. Rptr. 147.32(+) W7UFM. Info: Tom Hamilton, WD6EAW, (503) 883-2736. 11/96

Oregon Coast Emergency Rptr., Inc. P.O. Box 254, Florence, OR 97439. Meets 3rd Sat./monthly, 9 a.m. for brkfst. Net, Wed. 7 p.m., 146.80(-). Info: 997-2323 or 997-3081. 1/96

Umpqua Valley Amateur Radio Club, Inc. P.O. Box 925, Roseburg, OR 97470. Meets 3rd Thurs./monthly, 7:30 p.m., Douglas County Courthouse, Rm. 310, Roseburg, OR. Info: W5PII/R 146.90(-) or (503) 673-1310. 6/96

Valley Radio Club of Eugene. Meets 1st Fr./monthly, 7:00 p.m., Lane County Red Cross chapter house, 150 E. 18th Ave., Euguene, OR. Info: (541) 484-0502. 12/96

PENNSYLVANIA

Butler County Amateur Radio Assn. P.O. Box 1787, Butler, PA 16001-1787. Meets 1st Tues./monthly, 7:30 p.m., Boy Scout Cntr., 830 Morton Rd., Butler, PA. Call-in W3UDX/R 147.36(+). Net 10:10 p.m. nightly. 10/96

Fort Venango Mike & Key Club. Meets 2nd Tues./monthly, 7:30 p.m., Vo-Tech, Oil City, PA. 145.230, 145.190, 147.120, 444.125. 2/96

Mercer County Amateur Radio Club, W3LIF. P.O. Box 996, Sharon, PA 16146. Meets 4th Tue./monthly, 7:30 p.m., Shenango Valley Med. Ctr, Farrell, PA. Net, Thurs. 9 p.m. on 145.35(-) W3LIF, Digi. 145.01. 3/96

Mid-Atlantic ARC. Box 352, Villanova, PA 19085. Meets 3rd Thurs./monthly, 8:00 p.m., Radnor Mem. Libraray, Wayne, PA. Call Bob Haase, W3SA, (610) 293-1919. 147.06(+) WB3JOE pt.bbs. 1/96

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 147.69(-), 147.09(+), Wed. 8:30 p.m. and 28.450 Sun. 9 p.m. 4/96

RHODE ISLAND

South Coast Wireless Society. P.O. Box 1516, Westerly, RI 02891. Meets 4th Tue./monthly, 7:00 p.m., Pawcatuck Neighborhood Center. Info: Dean, N1SXL, (401) 539-0775. 6/96

TEXAS

Brazos Valley Amateur Radio Club, (B-VARC). P.O. Box 1630, Missouri City, TX 77459. Meets 2nd Thurs./monthly, 7:30 p.m., Sugar Land Community Ctr., 226 Matlage Way., 3 blks SW of Imperial Sugar Co. at HWY US-90A & Brooks St. (HWY 58) in Sugar Land, TX. Talk-in: 145.47(-), 442.5(+) rptrs. 7/96

Brownsville ARC (CHARRO). Meets 2nd Tue./monthly, 7:00 p.m., Confederate Air Force Hangar, Brownsville Airport in TX. Talk-in on 147.040(+). 12/96

VIRGINIA

Southern Peninsula Amateur Radio Klub, (SPARK). Meets 1st & 3rd Tue., Salvation Army Community Bldg., Hampton, VA. Repeaters 146.73(-), 449.55(-). VE Exam Info: (804) 898-8031, W4RTZ. 2/96

Virginia Beach ARC. Meets 1st Thurs./monthly (except July), 7:30 p.m., St. Andrews United Methodist Church, Tucson & Princess Anne Rds., Virginia Beach, VA 23462. 2/96

WASHINGTON

The Inland Northwest Hamfest Assoc. (Club). Meets 2nd Tues./monthly, 7 p.m., St. Ann Parish Hall, E. 2120 First Ave., Spokane, WA. Info: KJ7BB, (509) 534-8443. 2/96

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. 5/96

WEST VIRGINIA

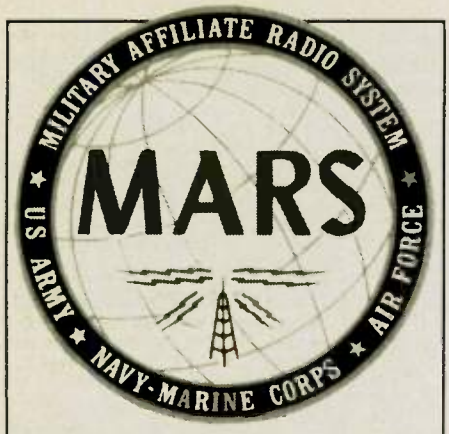
Jackson County Amateur Radio Club. Meets 1st Thurs./monthly, 7:30 p.m., United Nat'l Bank of Ripley. Net Mon. 9 p.m. on 146.67(-) WD8JNU/R. For info: D. Tenant, N8ZYB, Rt. 1, Box 317, Cottageville, WV 25239. 6/96

Tri-State Amateur Radio Assn. Meets 3rd Tues./monthly, 7 p.m., The American Red Cross, 111 Veteran's Memorial Blvd., Huntington, WV. 5/96

WYOMING

Sheridan Radio Amateur League, 146.82. P.O. Box 7042, Sheridan, WY 82801. Meets 4th Thurs./monthly, 7 p.m., location varies; Saturdays, 8 a.m. at J.B.'s. Info: (307) 674-6666, WA7B. 7/96

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



Lorraine S. Matthew, N4ZCF
MARS call AAA9PR

1996 — the new year dawns with Army MARS looking back at challenges successfully met and new challenges to be met.

1995's major challenge, as Chief Army MARS, Robert Sutton noted in January, 1995, was the renewal and expansion of Army MARS' primary mission of providing emergency support to the Department of Defense and all other agencies that request our support. A major part of this mission expansion is the assignment to provide Essential Elements of Information (EEI) reports. These early information reports are considered vital to the welfare of the country and all of its citizens. It is these reports which are sent to the Directorate of Military Support (DOMS) that allow the planners of emergency relief to perform their functions. It is up to MARS members everywhere to monitor the unusual events that occur in the local areas as well as in other areas of the country. EEI reports may be sent from any location about any location.

Initially, Army MARS members were asked to do the nationwide monitoring and to report significant incidents that were of interest to disaster support agencies.

With 1996, all the MARS services are participating in this mission. MARS members formulate the only nationwide network with the capability to do and to report such monitored events. Anything out of the ordinary is reportable. Anything not reported could make the difference between successful meeting of the needs of those concerned and failure to help in time of need.

Let's carry this mission forward into 1996. This is one area of expansion in which each MARS member can make a difference. Indeed, as the new interoperability with the other service MARS organizations develops, every MARS member will be in a position to make this difference. Already, DOMS has requested that all of the service MARS programs adopt the Army MARS EEI format and join in the flow of information. This joint operations concept was agreed upon by all three service MARS Chiefs at their conference in October, 1995. EEI reporting is here to stay, and it is the responsibility of all of us to make it a most successful program. Non-MARS members can also participate by seeing to it that MARS members are given information with which to work.

The Joint Chief's Conference held at Fort Huachuca in October, 1995, addressed many issues that will change the face of all the MARS programs. Interoperability and cooperation for all operations in all three service MARS programs and activities were the key emphases in all issues discussed. Many agreements were reached which will change the face of MARS operations for many years to come.

Agenda topics from that conference have been or will be formalized into Chief's Messages and Directives for implementation. More than twenty major topics have been covered of which the following six are typical:

1. Expansion of Internet e-mail capabilities: Interoperable use of e-mail will serve two major purposes — message traffic handling and staff coordination. These two purposes have been successfully served in Army MARS for some time. Now Air Force MARS and Navy-Marine Corps MARS will interact with Army MARS using the same highly efficient modes and guidelines.

2. Intra-state traffic interoperability: It was determined that existing HF TEXN (Traffic Exchange Net) rules and procedures would remain in place. The major change includes the opening of VHF/UHF digital traffic networks to all service MARS members. Some restrictions and guidelines must be developed to prevent chaos and to ensure smooth movement of messages throughout the system.

3. Sharing technical advancements: Joint service interoperability is partly dependent on the knowledge and standardization of techniques and technological advancements used by each of the three services. A joint service technical team will be set up to promote and to unify the efforts in advancing technology throughout the MARS programs. It is a waste of valuable assets for such advancements to be developed by each individual MARS service. In this case sharing the wealth of knowledge and assets will prove far more valuable than would individual efforts.

4. Digital system standardization: It is recognized that the three services have adopted a variety of digital hardware/software configurations. For true interoperability, a basic list of protocols for such operations was drawn. These protocols will be studied by a select joint service committee in order to determine if there is a single system and accompanying software that will meet the selected requirements.

5. Standardization of message formats: Each of the three service MARS programs uses the basic DOD 16-line message format. Each service, however, has its variations on the theme. The message format will be standardized. This will allow messages to pass smoothly and quickly through the message traffic system no matter what routes are used.

6. Joint service MARS exercises: This is a new area of operation for all of the MARS services. There have been some state level interservice operations — some real and others in the exercise mode. None have been held on a national or regional basis. This will be a new area of cooperation and a most valuable one for the people of this nation and the federal agencies who serve them. Instead of 5,000 operators forming a network, 10,000 members can be addressed as a network. No other group has the numbers or the geographic potential that MARS represents.

Many other areas of mutual interest were determined and much interoperability will be developed within those areas. Management concepts and ideas, frequencies, property management, service messages, phone patch interoperability and many other concerns were addressed.

Army MARS and all the MARS services will find 1996 a year in which growth in program and in service will depend upon mutual cooperation and interoperability.

1996 will open with challenges. Like 1995, Army MARS will meet the challenges through the teamwork concept flowing from Chief Army MARS, his office team, his Special Staff team and the team of all the members of Army MARS.

1996 — Army MARS will continue to move forward — proud, professional and ready. WR

County Hunter

Ace Jansen, N3AHA
42857 Hollywood Park Place • Ashburn, VA 22011
e-mail or internet: sjansen@aol.com

Annual Southeast Mini

As I write this, lots of county hunters are speaking (SSB) and paddling (CW) while steering their way to the annual southeast mini-convention in Murfreesboro, Tennessee, hosted by Bill, KM4W. This is the most attended MARAC (Mobile Amateur Radio Awards Club) mini-convention and often gets more attendees than the National MARAC convention. Lots of fun is in store for those attending.

BB3 follow-up

Can you believe Don Johnson, W6AAQ, author of *40 + 5 Years of HF Mobileering*, sent me a Big DK3 antenna coil three months ago and I still haven't hooked it up? Everyone swears by these antennas, but mine sits in the corner of my office. I'm still using my dummy load on a stick, as Don calls it. In the meantime, I continue to get internet e-mail from BB3 fans.

I received a lengthy note from Steve Zettel, KJ7CH. Steve strongly recommends the BB3 "screwdriver-type" antennas sold by Tom Wilson, out of Irrigon, OR. Steve points out that Tom uses quality materials to make his antennas; copper is used throughout to minimize resistance losses and avoid galvanic or dissimilar metal corrosion. He believes the current price of $265 is still a good value. Steve reports he has no problems making contacts from the NW U.S. to Central and South America on 75 Meters at night using a barefoot Kenwood TS-50. Steve does have two recommendations to BB3 users and builders; 1) Instead of using the recommended 96" Radio Shack fiberglass whip, he uses the Francis line of fiberglass whip antennas (sold as CB antennas), and 2) the Autek Research RF Analyzer is a wonderful instrument for hundreds of applications. He used his to mark the location of the BB3 loading coil for various bands.

Fourth-time-around award

There's an old disco song, "Second time around" that I hear when I think of county hunters contacting all U.S. counties more than once. The fourth-time-around award is to recognize county hunters who have contacted all the counties four times. Yep, it's hard to believe, but it's been done by 39 of the county hunters. Thirty-nine amateurs have contacted all 3,076 counties four times. That's 479,856 contacts (excluding county line possibilities). Any way you slice it, these county hunters have been burning the ether.

Here are the latest to accomplish the task.

32. NG9L 7/13/94
33. N9HRX 7/25/94
34. WA9QNI 8/27/94
35. W1WLW 10/13/94
36. WA4NBC 10/15/94
37. N2BL 11/1/94
38. W5UJO 7/3/95
39. NV6L 9/5/95

Fifth time around award

But wait, it gets better. Twenty-two of those 39 have also continued to contact all 3,076 counties for a fifth time. Now, we're talking 338,360 contacts by 22 amateurs; 15,380 contacts each. Here are the latest to achieve the fifth time around award.

15. WA6VJP 9/14/94
16. WØAYL 11/9/94
17. NV4Z 12/23/94
18. KG5J 4/22/95
19. AK8A 6/20/95
20. WA3TUC 7/30/95
21. KZ2P 9/1/95
22. N9HRX 9/7/95

Both these awards are offered by the B&B Shop, run by Bill Nash, WØOWY. Bill also offers the nth time around award for those who continue past the fifth time. If you're interested in learning more about some of these county hunters, I wrote a story about Ed, WA6VJP, in the September, 1992, issue of ***Worldradio*** and a story about Paul, WA3TUC, in the May, 1993, issue. I hope to write a story soon about Ed, NT9V and Katie, N9HRX — a husband/wife team who have worked all counties five times each. In the September, 1994, issue I mentioned Ed, NT9V, had worked all counties four times in 2 years and 8 months an average of all 3,076 counties every 8 months. Unreal!

American county name origin

Last time, in November, I told you about the county name origin book, *The American Counties*, by Joseph Nathan Kane. I offered to do some research for you if you were unable to find the book in your local library. I received the following internet e-mail from Jim Muller, VK1FF/WB2FFY:

"Hello Ace. Just got my Nov, 95, issue of ***Worldradio*** and thoroughly enjoyed your "County Hunter" item this month. I found all the facts and stats very interesting and look forward to seeing you feature a different county each month as a part of your regular column. The local library here (in Canberra, Australia) didn't have a copy of the book. I wonder if you could give me a short blurb on Chenango County, New York, where I grew up. By the way, I've been county hunting since arriving in Canberra a couple of years ago on a tour with the U.S. Embassy. I've worked over 550 (all CW) and about half are confirmed. It's a bit challenging, but I'm enjoying it. Keep up the good work and maybe I'll see you around the bands. 73, Jim"

Well, first, isn't Internet e-mail great??? Second, it's sure nice to know ***Worldradio*** and this column are read in faraway places, basically, the other side of the world. Third, it's great to hear from county hunters located in DX locations (truly not an easy feat!). And fourth, I feel like Casey Kassem from the Weekly Top 40 (radio music show), "Jim, here's your long distance dedication!"

Chenango County, New York, was established March 15, 1798, just 10 years after New York became the 11th state, July 26, 1788. The county name is an Onondaga Indian tribe word for "large bull-thistle." The county is 908 square miles and the county seat is Norwich. Anyone wanting additional information on Chenango county can review the book, *Oxcarts along the Chenango.*

Speaking of Indian-named counties, Duane Traver, WV2B, of Lisle, NY, offers a county hunter award for contacting him in several NY counties. He calls it the Native New York award and you must contact him in ten NY counties, the names of which are derived from native American words or names. And you must also make at least one contact with WV2B while in the boundaries of one of the nine NY Indian reservations. Duane counts 20 of the 62 NY counties as counties derived from native American words or names. If

you're interested, listen for Duane on the county hunters nets. Duane also offers an award for contacting anyone in the 418 U.S. counties with names derived from native American subjects.

Last time I also made some comment about not knowing how Deaf Smith County, Texas, was named for Eratus Smith. In other words, where did the Deaf part come from? A quick Internet note from David Glass, N5VRZ, informed me he's not sure how he became deaf, but knew Smith was hard of hearing . . .and accomplished all that he did in spite of his impairment. David pointed out a painting, which is famous to students of Texas history, that depicts the surrender of Santa Ana at the famous Treaty Oak. All the big names from the battle of San Jacinto are depicted, intently observing and listening to the terms being laid out to Santa Ana by General Sam Houston. Deaf Smith, who was apparently wounded in some minor way, is seated at Sam Houston's feet with his back to the Oak; he is the only one not watching. He looks away so as to point his ear to the speaker, and his left hand is cupped around his ear to hear better. Interesting story David . . . thanks!

Any of you other readers have an interesting story about your county's name and origin?

The Big Rig award

For years, Tim , N9DEH, offered an award for contacting him from multiple counties. He called it the Big Rig Award because he drove an 18-wheeler across country. Now, Tim is retired from over-the-road trucking, but Bill Nash, WØOWY continues to offer the award. However, now you can contact any 18-wheeling mobile op, of whom there are several on the county hunter's net. Listen for the following truck driving mobile ops; KC1NA, KK7V, WB4FFV, and others identifying themselves as "good for the Big Rig award."

New Year's Resolution

Here's your New Year's resolution for 1996. Say it out loud. "When I operate mobile and give out counties, I will announce my call and county often, every 1-2 minutes or after every few contacts." Until March, see you on the County Hunter Nets, 14.336 and 14.0566. Happy 1996 and Happy Hunting. 73, Ace, N3 aha! WR

Coax care update

John Hansen, WAØPTV

Many, if not most VHF/UHF/Satellite operators are using Belden 9913 or equivalent coax for feedline. It is significantly cheaper than hardline, but has lower losses than RG-8, RG-213, etc. I've used it for years and find that it is a good quality product. However, it is extraordinarily easy to have it completely destroyed by water. If you cut a piece of this stuff open you will find that there is a considerable space filled with air inside.

Given that air is a low-loss dielectric (remember the low losses associated with open wire feeders), this is not surprising. As the air in the 9913 heats up, it expands blowing air out of any openings in the line or connectors. As it cools, the air contracts pulling air from the atmosphere back inside.

Now the problem comes if the coax and connectors are not airtight, and there is moisture present in the outside air, it will be sucked in along with the air. Since this is associated with cooling, the coax most often goes bad with the advent of cold, wet weather, just when it's hardest to replace. You may also find it deteriorates slowly over time so you don't notice what's going on until it drops out altogether.

It is not adequate to simply make sure that the connectors are firmly sealed on the coax. When I first put up an antenna for satellite use, I was amazed one day when I disconnected the feedline at the transceiver and water streamed out forming a puddle on my operating desk. No wonder signals were down! I knew that I had gone to great lengths to make sure the connector was well sealed to the line, so what happened?

We, it turned out this sucking action had actually pulled water through the female coax connector on the KLM antenna and into the feedline. The moral of this story is to seal the back of the connector that you are plugging the 9913 into as well as the connector on the feedline itself.

To do this kind of sealing, you can use standard Coax Seal. That stuff works fine, but seems awfully expensive. I go down to the local electrical supply house and buy some stuff called "Duct Seal." It is a grey puddle like substance that does a very good job sealing coax connectors, and costs about $2.50 per pound. It is much stiffer however than your usual coax seal, and you have to knead it in your hands to get it pliable enough to put on the connectors. This is especially hard to do in cold weather. Placing it in the microwave for about a minute and a half and it will make it easy to use. —*Squelch Tale,* Chicago FM Club

If you want to get something out of an organization, put service into it.
—*Marge, N6JTJ*

Future traffic:

Some special event stations that we can expect to hear soon:

New Year's Eve: First Night stations
January: South Florida Fair

Tradition:

Does anyone know how the tradition of using a straight key on December 31 came into being? While a keyer makes traffic handling similar to playing a musical instrument, a straight key is an inexpensive backup. By December 31, traffic has relaxed and it's fun to plug in the straight key and have a go at it.

Traveling traffic:

Recently we became a fully retired family. It was a toss-up between a cruising sailboat and/or an RV. We found an RV (we're still looking for a sailboat), and took a 2 week trip to Eastern Canada in September and a 3 week trip to California in October. It seems logical that there should be lots of travelers who would like to send a message to someone. Having just subscribed to an RV magazine, I realize that there is an entire flock of people (Snow Birds), who migrate South each winter. East-West migrations are apparent from the local traffic the rest of the year. The question then is how do we pair the traveler with the Amateur Radio traffic operator?

My first thought was that all a traffic handler might have to do would be to put a sign up advertising their ability to send traffic. I made my sign out of three 8½" x 11" cardboard pieces stating, "We can send a FREE message via Amateur Radio." When we arrived at our site, I placed the sign in the front window, propped on the dash. Overall the biggest problem was time. When we arrived somewhere, it was either dark, or, we went off to do something (see a sight, visit, ride our bikes).

On the Canadian trip, we were so engaged in watching for tidal bores and tide changes, that it didn't occur to me until we reached home that I hadn't handled any traffic except the messages that I originated. No one knocked on our RV door. At most campsites, we didn't speak with and/or even see other campers. Thus, when we reached a Tennessee campsite early one afternoon on our way to California, I asked the folks next door if they would like to send a message. They agreed and sent a message to their son in La Center, WA. Hearing nothing from a Tennessee net, I tried anArkansas CW net. What a splendid group they are. W5RIT took the message on the Ozark Net (3592 at 7 p.m. local), asked about our camping, and invited us back to the net. This being my first 'traveling' third party message, I gave the folks a stamped, addressed post card to send to me when they learned if their message was delivered. It was in my mail when I arrived home. It read, "Wanted to let you know that the kids got the message you sent. Thank you. This was a new experience you shared with us. What a great thing for you to do. Hope your trip to San Diego was safe and enjoyable. We dipped into the Gulf of Mexico, in Texas, and then went home. Thanks again."

While three weeks seemed to be a great amount of time when we left, we soon started feeling rushed for time. We had places we wanted to see coming and going and family to visit while there. Thus, by the next night, and mostly thereafter, we didn't stop until dark. Therefore, my next attempt to check into a net was in Southern California. Several nights in a row, I listened for Section level nets listed in the 'Net Directory.' Hearing nothing, I tried the 6RN. They were there and took my traffic. My friend Rob, AB6RY, 6RN manager, was there and asked me to call land line. As always, we had a great chat. (Have you noticed that two traffic handlers can talk for hours?) He said that Southern California had had a few problems and they were hoping to get their one CW net going again.

Coincidentally, during the next few days, I found two newspaper articles about how active Amateur Radio is in Southern California. The first, from *The Daily Breeze*, in Torrance, stated, "South Bay believed to have largest concentration of ham operators in the world." With the article was a picture of a young man of 16, holding his handheld and saying, "I do a lot of backpacking and I carry a radio in case something happens."

The next day in Indio, I found in *The Desert Sun* an article (and picture) about Scouts 'hamming' it up at a jamboree. Southern California's geography (tall mountains) does make 2 Meters a natural. The Net Directory lists 9 NTS VHF nets for San Diego and nothing for Los Angeles. Aside from these 9 VHF nets, there appears to be very little NTS traffic activity in Southern California (as appearing in the 'Net Directory'). And yet, North Hollywood (LA area), is home to K6UYK, Ted Sharp. What a coincidence! When I arrived home a message was waiting from Ted (dated when I was in California), saying he would be here in the Washington, DC area. So, we know traffic is moving in Southern California. I'm just not sure how.

Driving east, we were losing time and again stopping after dark. I didn't even get a chance to check into the friendly Arkansas net. I did note that Knoxville, TN is in EST, which explains why anyone in Knoxville might want to check into the Eastern Area Nets, rather than the Central Area Nets, with the rest of TN. This same phenomenon happens with the Panhandle of Florida. It's in Central time, while the rest of Florida is in Eastern. That explains why Florida utilizes both a 4RN and 5RN rep.

Mulling over my experiences with

traveling 5 weeks, I conclude that the amateur traveler must make an attempt to send traffic for fellow travelers. It isn't easy. Until travelers understand (the word gets around) your intentions, they may be a bit suspicious. Unless you can spend a lot of time around your parked RV, you will miss most folks. A sign in your window is a start. A better way would be to ask the RV Park manager to place a small box (forms and very simple instructions) on the registration desk. You could check the box just before a selected net, and/or the next morning before you leave.

Another way to tackle it would be for traffic handlers to check with any RV Parks in their local calling area and visit them to explain how they could send messages. In this case, someone (probably the traveler) would have to make a local call to the traffic handler to give them the traffic. While I can't think of any RV Parks in my area (Washington, DC Metropolitan Area), there must be some.

Hopefully, by the next column, I will have found them, and will be able to let you know how this approach works. Also, we're hoping to join the Snow Birds in January and visit Florida. So, I'll have another chance to refine and perfect the traveling approach.

Why bother? We keep hearing we need more traffic. Thousands of families are on the move traveling. If each sent just one message, we would have a meaningful body of traffic to keep us engaged.

What's happening?

Cliff, N2AKZ, editor of the Suffolk County Radio Club (NY) newsletter praises John, KA2VZX, as being the backbone of their VHF system. John also works SSB nets and packet. He enables other operators to see the joy in joining a traffic net and the fellowship of traffic handlers.

CW slow speed traffic nets:

These slow speed traffic training nets are known to be alive and well. Note the first two are in the Novice portion of the 80 Meter band. This is an excellent way to practice code while learning some self discipline and developing expertise in Amateur Radio.

MSN (MD)	7:30 p.m.	3717
CSN (NC/SC)	6:00 p.m.	3715
PTTN (PA)	6:30 p.m.	3610

Let me know of any slow traffic nets in your area for inclusion here. If you would like information on how to become a traffic handler, SP N4GHI @ WA3TAI, or, Geri Sweeney, 4728 Neptune Dr., Alexandria, VA 22309. WR

Helpful hints for learning CW

Floyd Soo, KF8AT

I have heard and used a couple of different tricks to try and associate the sound and rhythm of the characters. This is just a few that have been talked about . . . in the recent past.

Here are some for you to try:

The letter Q is --.- or "dah-dah-di-dah," which sounds like the phrase "pay day today!"

The letter V is ...- or "di-di-di-dah," which sounds like the the most well known part of Beethoven's Fifth.

The letter G is --. or "dah-dah-dit," which sounds like the phrase "Dog-gone it."

The question mark is ..--.. or "di-di-dah-dah-di-dit," which sounds like "ditty dum-dum ditty."

I want to hear more from all of you CW experts! —*EXPRESS*, Utica Shelby E.C.A.

AMATEUR SATELLITES

TERRY DOUDS WB8CKI
344 E. Fifth Ave.
Lancaster, OH 43130
e-mail: wb8cki@amsat.org

Hello everyone — Happy 1996! I hope everyone had a wonderful holiday season, and that Santa brought along all the Satellite toys a budding satop could want! I hope that for many of you, this will be the year that you will be able to become active on one of the many Amateur Satellites orbiting daily — you will find that it is great fun.

Before I get into general operating information concerning RS-15, a few announcements are in order. First, the European Space Agency experienced a bit of a problem concerning the Ariane 5 initial flight hardware. The initial flight, 501, precedes the second flight, 502, which is the one that will take our newest and largest satellite ever, Phase 3D, into orbit. Unfortunately, because of this problem, our launch will be pushed back a bit. There was an earlier problem that moved us from April until May of this year, but now the launch date will be in September! Stay tuned for more updated information as it becomes available.

Gary Rogers, WA4YMZ, left a note on AMSAT-BB to remind you of an important piece of information. If you send QSL cards to others that you work on the birds, PLEASE put your grid locator info on your card! Some of you may not even know about grid squares, so we'll take a moment here to go over them and how they are used.

The concept of grid squares is an easy one. Starting at the equator and the Greenwich Meridian, the earth is divided up into 2° x 2° squares. Each square is assigned a 2-letter/2-number combination that denotes generally where someone is located around the world. An example of this would be my grid square, which is EM89tk. The 'tk' at the end of the phrase is an additional locator which narrows my actual location down to almost a pinpoint within EM89. There is software available to help you determine your exact grid square, or there are a number of ways to find out where you are. First, ask any serious VHF operator in your area — I guarantee they will know! Another way is to look in the Maidenhead grid locator map booklet, available from the ARRL. A third way is to get a hold of a copy of the Buckmaster CD-ROM Callsign Database — it can tell you your grid square (or anyone else's that you might like to know) based on your Zip Code. It is extremely helpful in situations where people forget to put this information on their QSLs! Since that was the purpose of this discussion initially, you won't forget to do it anymore, will you? This information is crucial to those working towards VUCC. What is VUCC? It is the VHF/UHF Century Club, a sort of 'DXCC' for VHF/UHF/SHF operators. By working people in certain numbers of grid squares (differing amounts depending on the frequency involved), and obtaining their QSLs, you can get certificates and endorsements. So help out your fellow satops and put your grid square on your card — even if you only write it in by hand. The ham you worked on the other end will thank you for it!

While we are discussing QSLs, remember this: when you work someone on a satellite, please mark your card 'via RS-10 Mode A' or 'via AO-13 Mode B.' Just insert the satellite used and the mode. Originally the rules did not call for showing the uplink and downlink frequencies in the appropriate boxes — they needed to know the bird and mode used. Why take chances? Write in those frequencies. Once you do it a few times, it will become second nature to you to do it when you fill out your cards.

This month's satellite operating feature is on RS-15, the most recent of the Mode A satellites to go up. It is an interesting bird in that it has a very high orbit in comparison to the other LEO satellites. As an example, RS-10/11 and RS-12/13 are in fairly circular orbits at an altitude of approximately 600 miles, while RS-15 has a slightly more elliptical orbit, and moves between 1,200 and 1,400 miles above the Earth. This means that the bird not only has a much larger footprint than the other LEOs, but also longer pass times! A larger footprint means longer distance communication is possible, and the pass times tend to be in the 25-minute range vs. the 15-minute range for the

other birds. One drawback of this, however, is a reduced signal level on reception. If the satellite is twice as high, the resultant signal level is ¼ the level at the receive site. Add to this that the power levels on RS-15 are approximately 1/10th the power levels on RS-10, and you will see that this bird is not quite as easy to utilize as the others. You will need a better receive station than is necessary for RS-10 and RS-12.

The satellite has an uplink in the 2 Meter band from 145.858 to 145.898 MHz, and a downlink from 29.354 to 29.394 MHz. Beacons are at 29.3525 and 29.3987 MHz. It is a non-inverting transponder, meaning that you should utilize upper sideband (USB) on voice for both the uplink and downlink.

Many regular operators on this satellite recommend using a 10 Meter preamp on receive. Many are available; often mentioned are units from TenTec and Hamtronics, but others are available as well. This is often needed because the output of the satellite is a 4 watt signal, split up in 4 kHz segments across the 40 kHz bandwidth of the transponder. This means that there is only .4 watts per output subchannel. The beacons have an output power of 1.2 watts.

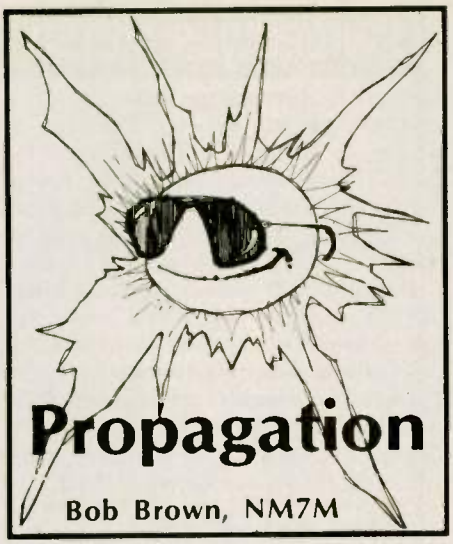
Because of its higher altitude, you will need an uplink system capable of producing about 100 watts EIRP to get into the transponder. Higher power levels do not make the downlink any louder — there is automatic gain control (AGC) in each 4 kHz segment, so you will be clipped! If your downlink is not strong enough, consider improving your receive system. What should you use for an uplink antenna? Most anything really — beam, helix, vertical, J-pole, or turnstile. Regular operators have stated that they do see a marked improvement through the use of circularly polarized antennas (crossed Yagi/Helix/eggbeater) for the uplink, and turnstiles seem popular for the downlink (since 10 Meter crossed Yagis tend to get pretty big!).

If you have been working up the satellite ladder, and Mode A birds are your thing, then give RS-15 a shot. You may have better luck on CW with this one due to the lighter signal power levels, but you will still have a great time, and the DX potential is incredible. One thing to watch out for is eclipse periods. If you follow the satellite news reports on the Internet, or get the AMSAT bulletins off packet/the Internet/or other methods, you will be aware of when we enter the various eclipse seasons. Since RS-15 is so small, it has limited battery capacities, and when it starts getting 'shorted' on its solar power, it tends to not work quite so well! If you should notice any reception problems while using the bird, try to find out if this has been the case recently — it will come as no surprise.

I'm about out of room for this month. Thanks to those of you who have written or e-mailed recently. Remember, if you have questions or comments, send them to either address at the top of the column. I hope to see you soon on the birds! **WR**

IARU satellite advisor appointed

The IARU Administrative Council has reappointed Hans van de Groenendaal ZS5AKV as the IARU Satellite Adviser. The Council also expanded his terms of reference to include the appointment of any assistants as may be required. This means that the IARU Satellite Adviser will appoint the IARU AMSAT Frequency Coordinator in consultation with the International AMSAT Groups.



Propagation

Bob Brown, NM7M

From the simple to the complex. That's the way any analysis goes, that for the ionosphere being no exception. Earlier, I talked about ionospheric gradients and way back in the beginning of this column, I took you from "flat earth country" to the more realistic model with a curved earth beneath the ionosphere. At this late date, I want to bring those two ideas together but in an interesting way and talk about ducting. So hang on; here goes!

The discussion of ionospheric gradients got us into chordal hops and off-great-circle (OGC) propagation. The idea of gradients is simple enough, just that the ionosphere is not all that constant, changing with location at any given time (UTC). I've already shown ionospheric maps for the critical frequency foF2 a number of times and they illustrate what I'm talking about.

The two gradients that stand out in all discussions are those around sunrise, where foF2 changes rapidly as one goes across the terminator, and the other one is in the equatorial anomaly, where two high values of foF2 straddle the geomagnetic equator with a deep minimum in between. The equatorial anomaly is the favorite of mine, contributing to long-path propagation. The sunrise gradient can give off-great-circle (OGC) propagation but the beam-widths of most of our antennas are just not narrow enough to show the results of OGC propagation that frequently.

Now most elementary discussions of ionospheric propagation begin by using the idea of a horizontally stratified ionosphere above a flat earth. Rather than get into details about the electron density profile above the earth, the usual procedure is to replace it with a horizontal mirror. Rays can then be spoken of as being reflected rather than refracted by all those electrons in the ionosphere.

and ionospheric ducting. The two cases both require ionospheric gradients over a curved earth but the curvature of the solid, staid earth is pretty much the key to it all. Very curious!

Let's start with chordal hops. There, I took my ray-tracing program and introduced a typical equatorial ionosphere; high foF2 values separated by a valley, and shot some 28 MHz rays into it. It didn't take too long to find a low-angle combination of rays to give illustration of a chordal hop about 7,500 km in length on one hand, and then a single hop at the more typical length, 3,500 km on the other. Those two ray paths are shown in Figure 1.

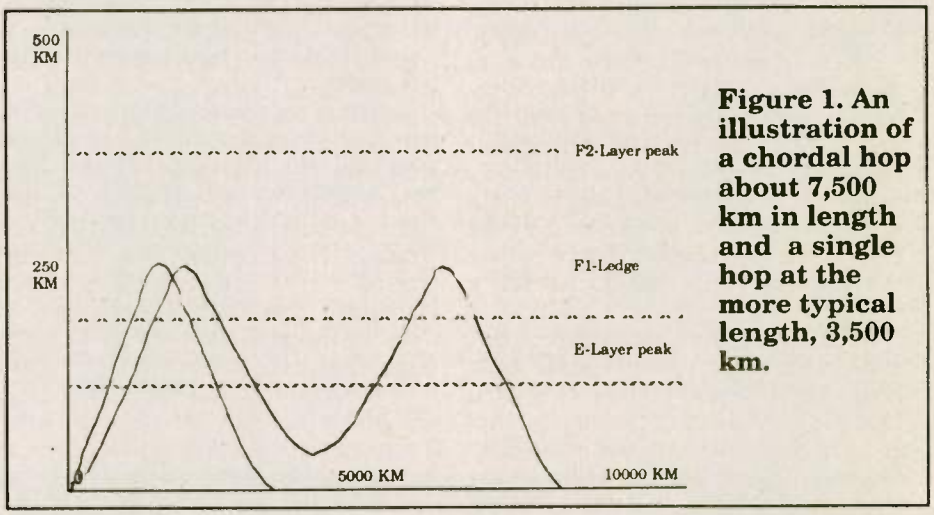


Figure 1. An illustration of a chordal hop about 7,500 km in length and a single hop at the more typical length, 3,500 km.

That simple approach can be taken one step further by curving both the earth and the ionosphere, even the mirror. With that, the geometry appears a bit more complicated but it's still an easy matter for one to estimate the length for a hop at a given radiation angle from the antenna and height of the "ionospheric mirror."

Mirrors are all well and good for qualitative discussions but when you get down to real "nuts and bolts," tracing rays through a model for the ionosphere is the way to go. Mathematically, it's complicated but the results can be put in a graphical form and one can speak to their interpretation. So that's what I want to do now, showing you a few ray traces for chordal hops

Before we talk about what those traces show, let me say that I do all the calculations for a spherical geometry but, for convenience, I show the results in a rectangular format. So in reality, those dashed lines for the ionospheric regions and the bottom of the figure for the earth's surface are all really curved as far as the calculation is concerned. Maybe you can bend them in your mind's eye as you look at the results. In any event, the discussion that follows is decidedly not for "flat earth country." Okay, now to business.

While the two traces are for slightly different radiation angles and look rather similar on ascent toward the F2-peak, their descent shows a difference. If you look carefully, you'll see that the

ray trace for the chordal hop descends more slowly toward the ground. Then, around 4,000 km distance, it starts climbing toward the F2 region and only then does it complete the path, reaching ground level again.

The slower descent after the first peak is because the ionosphere I put in the ray tracing program went through a minimum electron density around 4,000 km and then increased again, reaching the original level again at 8,000 km from the start. Thus, after the first peak, the ray was being refracted (bent) a bit more slowly toward ground. Indeed, the descent was slowed enough that the ray missed hitting the *curved* earth and then went on, going toward the F2 region again.

I hate to say it but that's about all there is to chordal hops, the down-going ray being less refracted after the first peak to the point that it misses the curved earth and goes on its way again, as the earth falls away beneath it, to be refracted a second time by the F-region. Beyond saying that, what are the requirements beside having a curved earth?

Well, for one thing, the signals have to be in the upper part of the HF spectrum, 14 MHz and higher. That's the case as chordal hops involve rays that go from near the top of the ionosphere to almost the bottom. Lower frequency rays just don't rise that far, being refracted more rapidly and thus confined to the lower reaches of the ionosphere. Beyond that, chordal hops require a low-angle ray to get into the weaker ionosphere farther down the path.

Of course, the minimum altitude of the ray in the middle of the chordal hop depends on the degree to which the ionosphere is weakened between the two peaks. Thus, a greater reduction in electron density between the two peaks would give a higher "minimum" for the ray trace while if the density is not reduced enough, the ray may hit the earth, at least for that radiation angle, and not give a chordal hop.

In any event, the peaks high in the F-region are really where the refraction is taking place but there is no refraction to speak of at the shallow minimum, far below the E-region. The "close encounter" is when the ray is moving parallel to the earth's surface and the ray simply misses the earth for lack of sufficient downward refraction earlier, when it was at higher altitudes.

Before we move to the matter of ducting, I should make a few general remarks about refraction and the distribution of ionospheric electrons. So, to start with the obvious, you well know the electron density increases with altitude and goes through a maximum at the peak of the F-region. That doesn't mean, however, that the electron density increases at a uniform rate with increasing altitude. Far from it!

From the ground, an ionosonde finds heights where the electron density "levels off," say ledges, before increasing again with increasing altitude. The E-region "peak" is one, the F1-region ledge is another and the F2-region peak is the highest one. At those ledges or peaks, the electron density remains constant over a narrow range of altitude. In short, the rate of change of electron density with height briefly goes to ZERO at those places. Remember that!

Okay, so much for the refracting region. Now for the refraction of rays themselves. Generally, when sent up into the ionosphere, RF is always *bent away* from regions of higher electron density. Thus, whether ascending or descending, a ray is bent away from the vertical direction by the ionospheric electrons. But the rate of bending of a ray is not constant as the ray advances through the ionosphere. Instead, the rate depends on how rapidly the local electron density changes, both horizontally and vertically, and is ZERO where the electron density is constant or the greatest where the electron density changes fastest.

Now that was the ray bending away from the vertical direction by refraction. But the vertical direction is "local," constantly changing as the RF travels over the curved earth. Using a long-path situation to make my case, the stars seen directly over Nairobi, Kenya, are not exactly the same as those seen directly over Cairo, Egypt, at the same time. Those local vertical directions differ! Agree?

Without any ionospheric refraction, the curvature of the earth below the ray makes it appear that the RF path is bending upward as it advances! That probably sounds weird to you but to satisfy yourself on that point, just think of a high-frequency ray going off horizontally above the ionosphere, say straight from left to right, and see how it appears to rise above the curved earth at various points on the earth directly below the path. See what I mean? Sure!

Now you know the secret of ray tracing — the path of RF in a curved ionosphere is due to two competing factors, the ionospheric electrons always refracting RF to bend the ray path back downward while the curved earth, figuratively speaking, seems to bend the rays upward, away from the earth. Saying it all in terms of angles, the

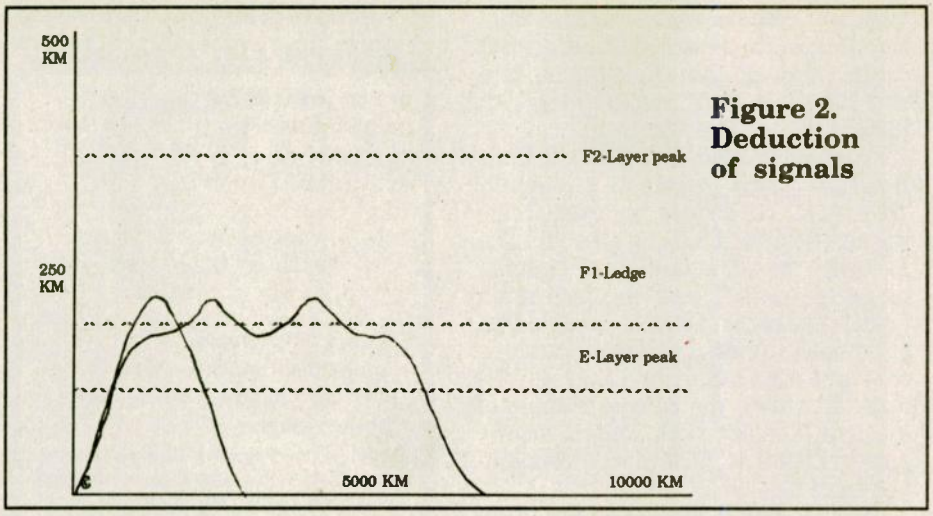


Figure 2. Deduction of signals

ionosphere serves to increase the local zenith angle along a ray's path while the curved earth would decrease the local zenith angle and the result is the sum of the two competing effects. It is important to remember that the ionospheric term may be quite variable, even zero, while the effect due to the curved earth varies slowly, being larger at low altitudes and always in the same direction.

Oh yes, I forgot to mention one important thing: RF on the lower bands is easier to refract, by a factor that varies inversely as the square of the frequency. That's a BIG EFFECT when one compares signals on 28 MHz and 14 MHz and the RF doesn't penetrate the ionosphere as much on 14 MHz, as shown in the ducting of signals in Figure 2.

The ray traces in that figure are for rays only 2 degrees apart in radiation angle, the higher angle path ending about 3,000 km from the transmitter while the ducted path ends at 7,000 km distance. Apart from the lower frequency, the principal difference between Figure 1 and Figure 2 is that the F1 critical frequency is lower by a factor of two. For the ducted path, the critical frequency at the F1 ledge is not quite high enough to return the 14 MHz RF back toward the earth. It continues upward, next crossing the F1 ledge at a shallow angle and then going up toward its peak altitude well below the F2 peak.

Comparing the rate of first downward refraction on the two paths, it's clear the ducted path is less refracted and on approaching the F1 ledge again (where the electron density is essentially constant), the ionospheric bending becomes so small that the upward "curvature bending" takes over and the ray rises again toward the F2 peak. After the ray goes through a second refraction and peaks on the path, it's now beyond the electron density minimum at 4,000 km. The rising electron density refracts the ray downward faster than the upward curvature bending so it finally impacts the earth at 7,000 km distance.

The above examples illustrate individual cases for both chordal hops and ionospheric ducting. The two cases differ in that the ray path in a chordal hop extends over hundreds of kilometers of altitude, from below the D-region up into the F-region while the ray path for ducting is limited to tens of kilometers. Experience with the ray tracing program shows the conditions for entry into the two modes are not very different, several degrees of radiation angle for chordal hops at 14 MHz and above and about the same for ducting at frequencies below 14 MHz. But at launch angles above those for chordal hops or ducting, the usual F-hop structure is found until the ray finally penetrates the F-region and is lost.

Beyond the basic ideas, ionospheric refraction and "curvature bending" of rays as well as the frequency dependence, there's not much else one can say — after that, it becomes a case-by-case analysis. However, it should be noted that the type of ionospheric conditions, say gradients and critical frequencies, that are encountered do have some regularity to them, certainly in time, and with limits in their magnitude. To see what I mean, all one has to do is look at ionospheric maps for the typical range in sunspot numbers in a solar cycle, say 10 to 150, and see what the maps show for gradients.

As for the reality of such exotic modes of HF propagation, I have to say that I now put them on a higher level of importance than before.

Earlier, they were just words in technical articles but now with the use of my ray tracing program, they have come alive at my fingertips. But I can't say at this point that I've found any foolproof ways of detecting them on the bands but I have come to conclude they win "by default" in many circumstances.

For example, I have listened to enough BOOMING long-path signals on 20 Meters to conclude that they reached me without the benefit (?) of some of the ground reflections that go with conventional analysis in terms of hops. And those long-path signals were not just on an occasional basis; they were there every day. So I have to say that chordal hops and ducting across the geomagnetic equator is more than just a "sometime thing."

I'm the first to admit that I really have no first-hand experience DXing on 40 and 80 Meters. I've heard enough tales from reliable sources about long-path on the lower bands to think that these ideas apply there too. Given the lower frequencies, however, ducting would seem to be the more likely mode and it probably occurs with just the typical changes of the ionosphere, by day and season, not any sort of rare or freak circumstances.

Now the hard one — DXing on the 160 Meter band. Again, ducting probably wins by default and for a frequency in the 1.8-2.0 MHz range, it would have to be taking place down around the E-region. I dare not say more than that as magneto-ionic theory comes in when the electron gyro-frequency is comparable to that of the RF. That's a whole new formalism and I'm not prepared on that subject at this moment. But the next time you hear some real DX on 160 Meters, now you've something new to think about, more than just a long string of hops. **WR**

Results: '95-'96 QRP Survey

Eighteen QRP organizations with a combined membership of more than 18,700 completed this year's ***Worldradio*** QRP Organization Survey questionnaire, providing yet another indicator that interest in low power operation is at a fever pitch.

Support for regional clubs and international organizations is rock solid, with new groups sprouting in several fertile areas.

It's all part of a growth spurt that really took off in 1993 — the QRP club equivalent of The Big Bang.

Debuting in the '95-'96 survey are the newly-formed New Jersey QRP Club, Calgary QRP Club and Arizona SCQRPION QRP Club, along with the QRP-L Internet Mail Group. These four groups alone have a combined membership of more than 730.

Only two of the 15 organizations listed last January — the Wyoming Valley QRP Commandos and the GW QRP Club — are not making a return to the '95-'96 listing.

The 300-strong North Texas QRP Club, which appeared in the '93-'94 survey, but was absent in '94-'95, is back for '95-'96.

This is the third year the ***Worldradio*** QRP Organization survey has been conducted. Questionnaires for the '95-'96 survey were distributed last fall.

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

New Jersey QRP Club

Founded: 1995

Membership: 8, open to all radio amateurs, membership numbers assigned.

Cost to join: None

Annual dues for current members: None

Periodicals: None

Nets: None

Club-sponsored activities: None

For information: Vince Passione, WA2ECP, 1 Courtney Way, Red Bank, NJ 07701; E-mail: vincep@dj.com

Arizona SCQRPION QRP Club

Founded: 1995

Membership: 15, open to all radio amateurs.

Cost to join: None

Annual dues for current members: None

Periodicals: *The SCQRPION*, published bi-monthly; mailed to members and distributed at meetings.

Nets: SCQRPION Roundup at 1600Z Saturdays on 10.106 MHz

Club-sponsored activities: Weekend QSO Test in October; SCQRPION Sting in November; bi-monthly club meetings on the second Saturday.

For information: D.S. Little, AF5U, 10125 E. Becker Ln., Scottsdale, AZ 85260.

Calgary QRP Club

Founded: 1995

Membership: 10, open to all radio amateurs, especially those with an interest in building and troubleshooting QRP equipment; no membership numbers assigned.

Cost to join: None

Annual dues for current members: $5

Periodicals: None

Nets: None

Club-sponsored activities: None

For information: Calgary QRP Club, c/o Don Cole, VE6EY, 923 Whitehill Way N.E., Calgary AB, T1Y 3G1, Canada.

North Texas QRP Club

Founded: 1986

Membership: 300, open to all radio amateurs, no membership numbers assigned.

Cost to join: None

Annual dues for current members: None

Periodicals: None

Nets: None

Club-sponsored activities: Dallas/Fort Worth area QRPers get together on the first Saturday of each month for "show and tell" and lunch. Members also participate in contests including QRP Afield and Field Day.

For information: Chuck Adams, K5FO, P.O. Box 181150, Dallas, TX 75218-8150. (Include a self-addressed, stamped, No. 10 envelope.)

QRP-L Internet Mail Group

Founded: 1993

Membership: 700, open to all radio amateurs interested in discussing all aspects of QRP activities, including — but not limited to — contests, operating, building, experimentation, club activities, the Dayton Hamvention, etc. No membership numbers assigned.

To join the QRP-L Internet Mail Group send e-mail to: LISTSERV@lehigh.edu and in the body of the message write: subscribe QRP-L (Your name) (Your call).

Cost to join: None

Annual dues for current members: None

Periodicals: None

Nets: None

Club-sponsored activities: Regularly scheduled CW "Fox Hunts," and QRP propagation studies.

For information: Chuck Adams,

K5FO; E-mail: adams@sgi.com

Michigan QRP Club

Founded: 1978

Membership: More than 1,500, open to all radio amateurs, membership numbers assigned

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

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

Periodicals: *The Five-Watter*, published quarterly

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

Club-sponsored activities: Michigan QRP Club CW Contest, 13-14 January 1996; MI-QRP Labor Day Sprint, 2 September 1996.

For information: Michigan QRP Club, 654 Georgia, Marysville, MI 48040-1243

MFJ 90's Radio Club

Founded: 1993

Membership: 150, open to all radio amateurs with an interest in operation and modification of the MFJ series of QRP transceivers and accessories. No membership numbers assigned.

Cost to join: $5

Annual dues for current members: $5

Periodicals: *MFJ Nineties*, published quarterly

Nets: Members meet Sunday afternoons on recognized QRP frequencies.

Club-sponsored activities: None

For information: David Luscombe, AB5JE, MFJ 90's QRP Club, P.O. Box 393, Lake Dallas, TX 75065

St. Louis QRP Society

Founded: 1987

Membership: 44, open to all radio amateurs in the St. Louis metropolitan area. No membership numbers assigned.

Cost to join: None

Annual dues for current members: $12

Periodicals: *The Peanut Whistle*, published monthly, with an expanded anniversary bonus issue each November.

Nets: Club members meet on 145.33 MHz FM the first Thursday of each month at 0200Z.

Club-sponsored activities: Field Day and occasional portable outings are scheduled each year. There is an annual tailgate swap/sale and open house in place of a regular meeting in July. Also, the club sponsors an annual Builders Contest in January, and in November the club meeting is in the form of a club anniversary dinner. Each year a trophy is awarded to the club's outstanding member of the year by the previous year's winner.

For information: Keith Arns, KCØPP, 2832 Pembroke Ln., Saint Charles, MO 63301-0344.

NorthWest QRP Club

Founded: 1992

Membership: 380, open to all radio amateurs, membership numbers assigned.

Cost to join: $10 ($12 Canada, $15 DX)

Annual dues for current members: $10 ($12 Canada, $15 DX)

Periodicals: *The NWQ Newsletter*, published bimonthly

Nets: NWQRP Net meets Tuesdays at 0300Z on 10.123 MHz; and Saturday at 1530Z on 3.561 MHz.

Club-sponsored activities: NWQRP Winter Sprint, 11 February 1996; and NWQRP Spring Sprint, May 1996; Norwester Award for contacting 10 or more members.

For information: Bill Todd, N7MFB, NW QRP Club, P.O. Box 354, Bay Center, WA 98527; BBS: 360/875-5744.

Cleveland QRP Amateur Radio Club

Founded: 1993

Membership: 11, restricted to radio amateurs in the Cleveland metropolitan area, no membership numbers assigned.

Cost to join: None

Annual dues for current members: None

Periodicals: None

Nets: None

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

For information: Bruce A. Wright, KG8SJ, P.O. Box 24090, Lyndhurst, OH 44124.

QRP Club of New England

Founded: 1991

Membership: 400, open to all radio amateurs, membership numbers assigned.

Cost to join: $10

Annual dues for current members: $7

Periodicals: 72, published quarterly

Nets: Members meet on CW on the Great Lakes Net Thursdays at 0200Z on 3.560 MHz.

Club-sponsored activities: QRP Afield Contest in September; 79er Sprint (CW) from 0200Z-0300Z Fridays during February and March on 3.579 MHz; Field Day in June; and a club outing to W1AW in Newington, CT annually in January or February.

For information: Bill McNally, AE1D, 7 Blueberry Rd., Windham, NH 03087. (Include an SASE.)

Maryland Milliwatt Club

Founded: 1992

Membership: 25, currently by invitation only, membership numbers assigned.

Cost to join: None

Annual dues for current members: None

Periodicals: None

Nets: None

Club-sponsored activities: Promotion of QRP in the 3rd call district. The club sponsors QRP discussions regularly at the Maryland Radio Center in Laurel, MD; sponsors QRP "show and tell" sessions; administrates a QRP reference library.

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

G-QRP Club of Great Britain

Founded: 1974

Membership: 5,000, open to all radio amateurs, membership numbers assigned.

Cost to join: $12

Annual dues for current members: $12

Periodicals: *SPRAT*, published quarterly

Nets: None

Club-sponsored activities: QRP tests and activities organized by A.D. Taylor, G8PG. Extensive awards program including: Worked G-QRP Club Award, QRP Countries, Two-Way QRP, QRP Master, and CW Novice Award. Trophy program including the G2NJ, Partridge, G4DQP, Chelmsley and Suffolk trophies. Annual club-sponsored contest is "Winter Sports" from 26 December to 1 January, inclusive.

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

QRP Amateur Radio Club International

Founded: 1961

Membership: More than 8,600, open to all radio amateurs, member-

ship numbers assigned.

Cost to join: $12

Annual dues for current members: $10

Periodicals: *QRP Quarterly*, published quarterly

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

Club-sponsored activities: QRP ARCI Operating Awards Program includes QRP-25, WAC-QRP, WAS-QRP, DXCC-QRP, 1,000 Mile-Per-Watt and QRP-Net (QNI-25) awards. Contests include the Spring QSO Party in April, Hoot Owl Sprint-CW in May, Summer Homebrew Sprint-CW in July, Summer Daze Sprint-SSB in August, Fall QSO Party-CW in October, Holiday Spirits Sprint-CW in December, and Novice-Tech Roundup in January-February.

For information: Michael Bryce, WB8VGE, 2225 Mayflower NW, Massillon, OH 44647.

NorCal (Northern California) QRP Club

Founded: 1993

Membership: 1,400, open to all radio amateurs, membership numbers assigned.

Cost to join: None

Annual dues for current members: To receive the club publication there is an annual fee of $10 for U.S. stations, $15 for Canadian stations, and $20 for DX.

Periodicals: *QRPp*, published quarterly

Nets: None

Club-sponsored activities: The club sponsors the QRP To The Field contest in April and holds monthly meetings in Pleasanton, CA. It has also developed and distributed hundreds of transceiver and keyer kits for the QRP homebrewer and has an ongoing project development program.

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

Colorado QRP Club

Founded: 1994

Membership: 188, open to all radio amateurs, membership numbers assigned.

Cost to join: $10

Annual dues for current members: $10

Periodicals: *The Low Down*, published bi-monthly

Nets: CQC Net meets Tuesdays at 0300Z on the 147.225 FM repeater (145.16 in Colorado Springs), covering Cheyenne, WY to Pueblo, CO.

Club-sponsored activities: Colorado QRP Club Winter QSO Party in February; Summer QSO Party in August; and sponsors the Colorado QRP Counties award.

For information: CQC, c/o Mark Meyer, WUØL, 14153 W. First Dr., Golden, CO, 80401; or by e-mail: CQC@aol.com

QRP Society of Central Pennsylvania

Founded: 1993

Membership: 16, open to all radio amateurs, membership numbers to be assigned.

Cost to join: None

Annual dues for current members: $5

Periodicals: *QRP Gazette*, published six times per year

Nets: None.

Club-sponsored activities: The club has a special interest in QRP homebrewing.

For information: Robert B. Wicks, W3HAH, 20 Brenely Ln., Mt. Holly Springs, PA 17065-1401.

QRP Club of British Columbia

Founded: 1990

Membership: 30, open to all radio amateurs, no membership numbers assigned.

Cost to join: $5

Annual dues for current members: $5

Periodicals: None, however a report of club meetings is posted on the QRP-L Internet Mail Group (LISTSERV@lehigh.com) and on Packet BBS (QRP@USA). Printouts are mailed to all members along with minutes of the business meeting and other material of interest to members.

Nets: Club members meet nightly on 3.729 MHz at 0400Z immediately following the British Columbia Public Service Net.

Club-sponsored activities: The club is primarily interested in promoting homebrewing of QRP SSB equipment. Quarterly luncheon meetings are alternated between the U.S. mainland and Vancouver Island, BC. The club is now affiliated with the Northern California QRP Club.

For information: Derry Spittle, VE7QK, 1241 Mount Crown Rd., North Vancouver, BC, V7R 1R9, Canada. WR

Parents should learn to laugh at themselves a little . . . after all, their kids do. —*Florida Skip*

CONSTRUCTION

Simple parabolic curves

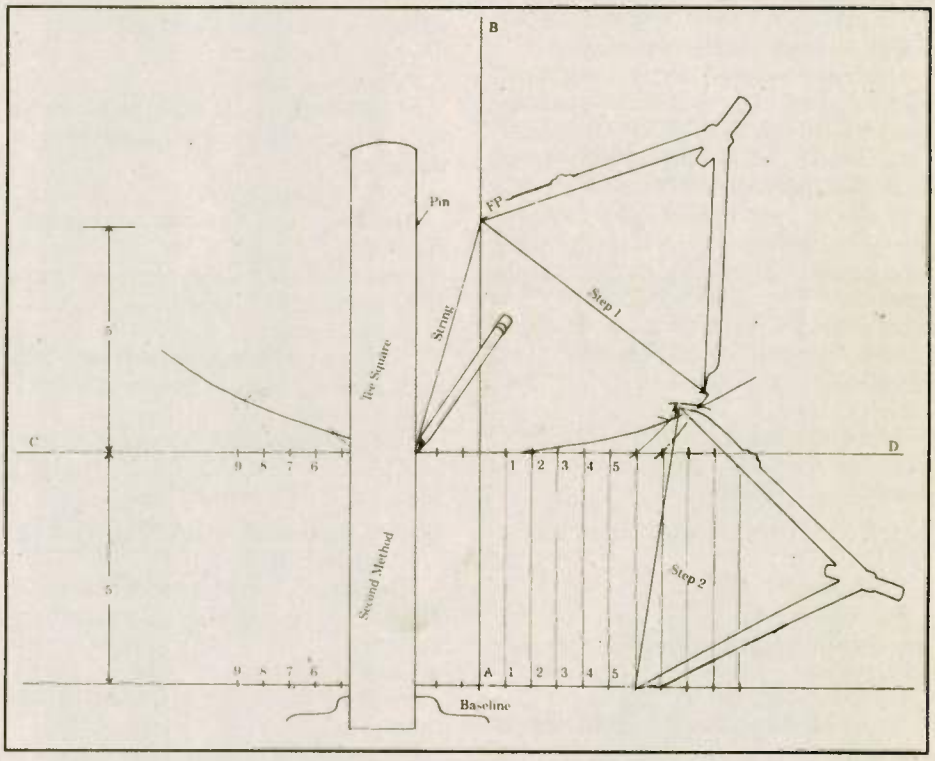
John H. Dinkleman, KC7AW

All the construction articles I have seen on how to lay out parabolic curves required complex formulas. I feel many who had hopes of building a high-gain antenna of this type have shied away because of concerns that their mathematical skills might be somewhat lacking.

Before retirement, I was a shop supervisor involved in the manufacture of parabolic TVRO (Television Receive Only) antenna systems, and I adopted a simpler method in developing the parabolic curve that can be applied to antennas regardless of size, from a few inches to many feet. This method requires no math or formulas, and a minimal number of simple tools are needed.

We used this method to lay out 6-, 8-, and 10-foot parabolic antennas and have received favorable reports on their efficiency. I will leave it up to the experts with the proper test equipment, however, to determine performance characteristics and measurements. This is intended only to show how easy it is to construct the parabolic curve, and I will leave the construction of the antenna to others based on their needs, experience and tools.

For the purpose of this article, let's assume a parabolic curve of a width of 12 inches and a focal length (the distance from the curve to the antenna) of five inches. This size will be used so you can experiment at a desk or on a drafting board, and after you become familiar with the process, you can apply it to any size antenna you require. Obviously, the longer the focal length, the larger the antenna size.



All that is required for this project are a piece of plywood or poster board about 2 feet square or larger, a carpenter's or tee square, a pair of dividers or compass, and a pencil.

1. Draw a line 1 inch above, and parallel to, the bottom edge of the plywood piece and call this the "base line."

2. Draw a perpendicular line at the center of the base line to the top of the plywood. Call this line A-B.

3. Draw a line 5 inches (the focal length) above and parallel to the base line. Call this line C-D.

4. On the line A-B, place a dot 5 inches above line C-D. This is the focal point.

5. Divide the base line and line C-D in ½-inch spaces, and use the square to make sure the spaces are exactly parallel to line A-B.

The next step might sound difficult, but follow the steps and you will see the parabolic curve develop.

6. Place one point of your dividers on the focal point and the other point on one of the half-inch division points on line C-D and draw an arc several inches above line C-D.

7. Without changing the distance of the compass, place one point on the same division point on the base line and strike an arc intersecting the previous arc drawn.

Where the two arcs intersect is one point of the parabolic curve. Repeat this operation for every point of the half-inch divisions and then connect the intersecting points — you will see the parabolic curve appear.

If you have used plywood simply cut it out and it can then serve as a form on which ribs for the dish or reflector are shaped. To use tubing for the ribs, make a notch in the wood to hold one end of the tubing securely while you bend and

hammer it to conform to the curve. After you do several, you will feel the right pressure to bend the tubing.

A second simple method of constructing the parabolic curve requires nothing more than a wooden tee square, two pins, string and a pencil.

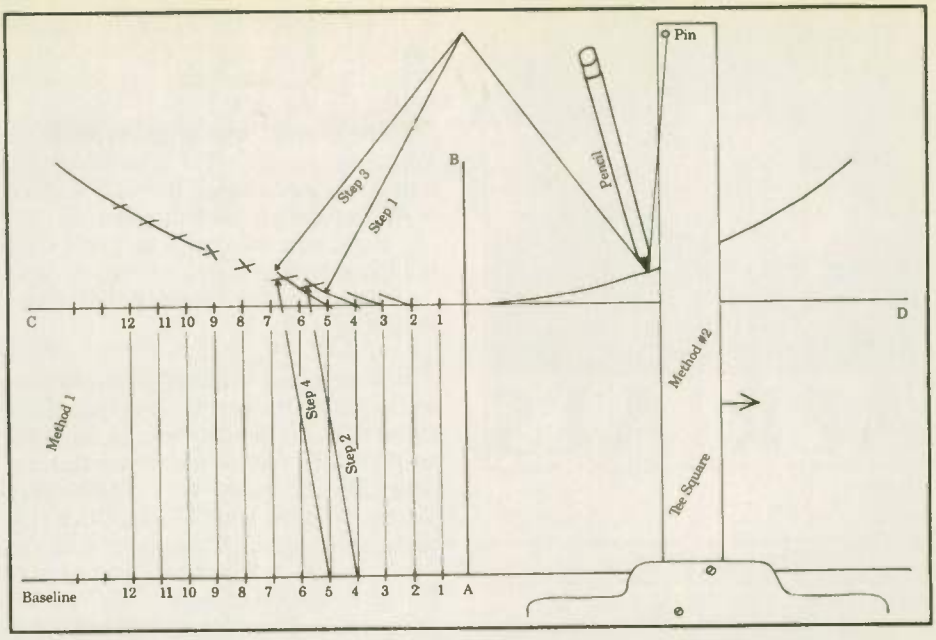
1. Place a pin on the focal point and tie a string to the pin.

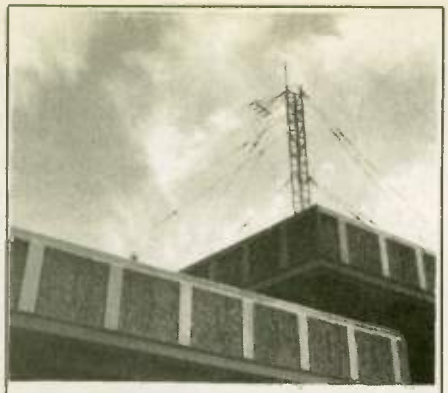
2. Place a pin on the tee square adjacent to the focal point pin.

3. Place the pencil on line C-D. Place the string around the pencil and tie it to the pin on the tee square.

4. Slowly slide the tee square along the base keeping the string tight with the pencil and keeping the pencil against the tee square while drawing the line making the parabolic curve.

As you can see, parabolic curves can be made using simple mechanical means, with no need for mathematical calculations. WR





AERIALS

Kurt N. Sterba

From a FAX received on 20 October 1995, at ***Worldradio*** and edited for length.

To:WorldRadio
Attn: Armond Noble
From: W6KKT
Subj:"Kurt N. Sterba"

Mr.Noble,

Is it possible, this "Man of Men", this self imposed protector of we ignorant Radio Amateurs, this self endorsed "Icon" of all electronic experts, this "Fellow, Institute of Electrical and Electronic Engineers", who has never used a poison pen to distort the fact, malign others to salve a distorted ego, never made a error, never pontificated his ability to "walk on water", and never used the shield of anonymity to hide behind the skirts of a greedy and ignorant publisher. Could it be, this "Saint ofAmateur Radio" is the one and only, . . . *(Deletion ours to spare named party, a W6, from crank calls.)*? If so, I want to thank him for the article he wrote in the November WorldRadio, about the inaccuracy of my home built test equipment, and the incompetent nature of the "volunteer conductors" (Radio Amateurs) conducting the Amateur Radio mobile "Shootout". Which, was done solely to promote hf mobile and have "Hams" get together for fun, games, discourse and perhaps to learn a little bit more about mobile antennas. He, is truly remarkable. He, negatively, wrote about the event without being there. He also wrote how his peers "laughed" and "cried" at the accuracy of the test equipment and measuring technique, with no knowledge of it's circuitry or calibration. He descanted negatively as to the qualification of the Hams conducting the tests with no knowledge as to their background!

He,.....truly,....must be,..... "He Who Walks On Water"!

Please cancel my subscription to WorldRadio. With "He Who Walks On Water" as "roll model" for your writing staff you don't need subscribers?

I'm sure, you will want to print this. Feel free to do so.

(End of exact worded fax from W6KKT.)

* * * * * * * * * *

Noble replies: W6KKT was told that on the phone the real KNS said that the guess as to his identity was as accurate as W6KKT's measuring. A written reply to W6KKT said, "We would be very pleased to print your TECHNICAL rebuttal. You may wish to elaborate on the 1 volt change on the voltmeter being reported as a 1 dB change, and the 0 dB reference level for the tested antennas to be 50-60 dB above. Your TECHNICAL answer will be printed." No answer has yet been received.

* * * * * * * * * *

Lil Paddle chimes in: One may, of course, paint a horse with black and white stripes and say it's a zebra. Such an act would be termed art. It could not be called science.

Kurt replies: I said at the end of my column regarding the "shootout" that if I had misconstrued the parameters of the test that I would print the corrected version and eat crow. No one involved in the two different events reported on in either *QST* or ***Worldradio*** has questioned my remarks from an engineering standpoint.

I have nothing at all against (as referenced above) hams getting together for fun, games, discourse and perhaps learning a little more about mobile antennas. Well, three out of four ain't bad.

Now we'll get to learning. First, just about all know that doubling the power raises three dB. Well, one must raise the voltage by six times to gain three dB.

Second, dBs do not float. They are all in ratio to something else.

One antenna was rated as 62.3 dB. That was with 50 watts forward power into the antenna. The question is, if the same antenna was fed with 5 watts forward power would the instrument indicating the field strength then read 52.3 (-10 dB)? If not, the term "dB" can NOT be used. To continue the illustration, if the same antenna was then fed with 0.5 (1/2) watt would the "dB" reading be 42.3 dB (-10 dB for a total of -20 dB)?

If not, then the term "learning" can NOT be used.

Minus 30 dB/power input 0.05 watt; minus 40 dB/power, 0.005 watts; minus 50 dB/0.0005 W; minus 60 dB) 0.00005 W. And, 62.3 dB/0.000029 W.

I regret that some people take umbrage at my remarks but the fact of the matter is that we cannot distort the technical terms that have come to have a certain meaning for everyone else the world over. Well, the silly season is upon us again. Out of another garage has come a new antenna with, of course, the immodest claims of "the best beam in the world." All that from only two elements. Naturally, the advertisements were not placed with *QST* or ***Worldradio***, but were instead elsewhere.

This new antenna seems to have a resemblance to the ZL Special which has a resemblance to the 8JK. The reason given for the claim that it outdoes antennas with twice the boom length is the method of feeding both elements and the close coupling.

Alas, Kurt must again explain. For the sake of this discussion we'll compare a two element Yagi-Uda to a phased vertical system with two elements. This antenna is common inAM broadcasting. It is a directional antenna so utilized as to permit two stations to operate on the same transmitting frequency. The directional pattern selected is such as to "protect" the other station by diminishing the signal that would normally go into the other station's coverage area. And, by attenuating the signal in one direction that power may then be sent in another direction increasing the signal over what just one vertical would radiate in the favored direction.

Broadcasting is a business. Stations charge for commercials on the basis of people and area reached. Stations like

to project all the signal they can. Many brilliant engineers over several decades have been working on the two-tower setup. By varying the distance between towers, the connecting feedline length between the two towers and where the system is fed, a great variety in patterns can be obtained.

You could direct equal signals north and south and diminish east and west. The reverse could easily be accomplished. Quite common is the pattern being (for example) reduced west and maximum east. This results in a cardioid pattern similar to that of the cardioid microphone.

Degreed (and highly experienced) engineers have tried every possible manner of hooking up and feeding two elements. If one company could promise BC stations a whiff of a stronger signal over their competitors, they would get all the business.

The reason why they don't promise the moon (like in the hammy field) is that such behavior isn't very professional and would also be found out rather quickly. For, you see, in the broadcast field there are people who make good livings measuring the millivolts. To conform to FCC rules, on a periodic basis, the radiation contours of stations are measured and sent in.

In the professional field you never see anyone with eyeballs spinning like pinwheels proclaiming their new antenna just leaps way ahead of all others. That behavior seemed reserved for a radio service in which sophisticated test gear is not easily at hand.

Regarding gain, again I say, when the promises come out, ask them to display the pattern. "HOW" you should ask, "is more power being taken from the unwanted direction and being sent in the desired direction?" Crusty old-timers have been sending in the page with the advertisement on it along with their pithy comments about this new wonderful antenna.

The charts are in the grown-ups' antenna books for all to see.

Why is this monkey business continuing to cascade upon the poor amateur? They do deserve better.

And fittingly so, as Lil pointed out to me, in the advertisement they have written "imperical" when they meant "empirical."

•

There was an article in *23 Skidoo* of such magnitude that I would be truly remiss in not bringing it to your attention.

All of us should bow in gratitude toward the hills of New Hampshire. Surely coins will be struck in the honor not only of the author but the giant amongst men who published the article.

I see that not only listed as Publisher but again in another listing as Senior Technical Editor is Uncle Nguyen.

This is the magazine, you may remember from earlier discourses, that was carrying ads for a 30-dB gain, 160 Meter antenna you could put in your attic.

However, forgiveness for past transgressions comes easily in but tiny payment for running an article about a short dipole which we are told "is a superior radiator, equaled by none."

Including I'm sure the Rhombics at Fort XXXXX that Lil mentions from time to time.

The key to this is the "rotating field pattern." This is such a breakthrough! Thinking that I, in my golden years, might be being left behind, I quickly looked in the 892-page book by Kraus, *Antennas*. It has formulas that run across the whole page but not one word about rotating field pattern. Well, next it was the even thicker book by Jasik, *Antenna Engineering Handbook*. Not a single word about rotating field pattern, which is what always causes the "right angle of radiation."

Surely this must be in *Field and Waves in Communication Electronics* by Simon Ramo. No! Oddly, in 847 pages of *Electromagnetics*, also by Kraus, there is no mention of those rotating field patterns. Certainly the highly regarded Balanis would mention them in *Antenna Theory—Analysis and Design* but there was nary a word. How about *The ARRL Antenna Book*? No!

It may well be that the only place we'll learn about rotating field patterns is from the pages of *23 Skidoo*. What monstrous sum of money will it take for the author to allow even a snippet of information about this to be printed in the *NAB Handbook*? He will certainly be the keynote speaker at their banquet at the next annual meeting in Las Vegas. What I'm sure we all want to know is the speed of rotation of those rotating field patterns.

Doubters? There may be a few. But it must be true, it was in *23 Skidoo*. While it resembles the cage antenna of the 1920s, "it proves equal to the Yagi in every way." Can you even imagine how it gets a good front-to-back ratio like a Yagi without director or reflector elements?

The author needs a good agent. What he was paid by *23 Skidoo* isn't even pocket change compared to the lecture fees at the universities in Berlin, Vienna, Paris, London, Tokyo and more.

This antenna with 16 wires on each side of the center feed, flaring out to a 2.25-ft diameter circle at the end of a five-foot run has a gain of 6-dB across the entire 10 Meter band. It was stated that if scaled up, it would have a 6-dB gain on the 20 Meter band.

Some might ask about the pattern. Where is the power being taken from and where is it being sent to? A 6-dB increase, after all, represents a power gain of four times.

The author did the research, the Senior Technical Editor approved. It is not for me to question it.

The winner of the drawing for the MFJ tuner was Dr. Les Kratz, KX6Q, of Shingletown, California. The total number of QSL card entries was 489.

(The Algonquian tribe had a pithy proverb—"Man who walk on water speak straight arrow.") **WR**

The Twilight Zone?

When is a zone not a zone? The ITU zones are different from the *CQ* zones! By the way, a new country has been added to *CQ* Zone number 33. It is African Italy, with calls of IH9, and IG9. TO5 (also known as FP8) is *CQ* zone 5.

From <W5XD@delphi.com, comes information on a *free* contest logging program for Windows® Software, Windows 95® Software and OS/2 Software. He advises it is the most recent version of the same program he has been advertising in NCJ (*The National Contest Journal*®) for three years. It is available from the Compuserve® Hamnet Forum as "Writelog" or anonymous ftp@maspar.maspar.com

I read with interest that the ARRL will now suggest that contest entrants provide time on the air with their submissions. ARRL will publish the submitted times together with results. What a great idea. Who knows, we may even be able to judge relative levels of performance (the QRP folks say they've followed this same procedure for umpteen years!) Perhaps in the future some absolute genius may come up with a weighted index that will include antennas, location, power, etc. and use it as a handicapping system to adjust scores.

If you enjoy low power contesting you have to love January! All times are in UTC except as noted. WARC bands excluded. Please submit logs within 30 days.

Late December 'tests

•STRAIGHT KEY NIGHT

31 December 7 p.m. EST-1 January 7 p.m. EST

80-20 Meters, 60 to 80 kHz from bottom of band. Use SKN in place of RST when sending report. Following SKN report, send a list of those worked and your vote for best fist heard (not necessarily worked). Also vote for most interesting QSO. *QST*

January 'tests

•SARTG NEW YR RTTY 'TEST

1 January 08:00-1 January 11:00

(RST+number+name+"Happy New Year" in your local language.)

Scandinavian Amateur Radio Teleprinter group. Q1x/band, only 80 and 40 Meters 2 way RTTY. Score - Pts (1 per Q) x multipliers (Each Scandinavian prefix(0-9)+ ea DXCC country). Record msg recvd in log! Single op// Multi op. SM4CMG

•YL INT'L QSO PARTY CW

19 January 00:01-21 January 23:59

(Name, RST, country, state or province, partners call, ISSB# if available—nonmembers welcome.)

Q 1x/band; all bands except WARC. Score - Pts(3 for 2 way member contacts in same continent; 6 for 2 way member contacts in diff continents; 1 for nonmember Qs) x mults — only member stns count as mults — (One for each — Work both DX/stateside partners; each YL/OM team member; state; province; DX country; VK call district; ZL district.) Added 2 mults if you operate less than 250 W throughout the party. Single op; DX/stateside partners; YL/OM team. Certs + ZL award for stateside member w/ most ZL Qs. N4KNF.

•AGCW-DL QRP CW 'TEST

6 January 15:00-7 January 15:00

(RST+number+VLP/ QRP/ MP/ QRO)

Q 1x/band, 80-10. QRO stns not to work other QRO stns. Only 15 hr max. Rest period of at least 9 hrs in one or two periods. Score - Pts (1 pt own country; 2 pts diff country) x mults (DXCC country). VLP <1W out; QRP <5W out; MP <25W out; QRO >25 W out. DJ7ST.

•MI QRP CLUB CW 'TEST

6 January 12:00-7 January 24:00

(RST+state or prov/DXCC country +MI QRP# or pwr output for nonmember)

Q 1x/band, 160-10M. Categories: A < 250 mW; B 250 mW- 1 W; C 1W - 5W; D > 5W. Score - Pts (5/member; 1/nonmember) x mults (states +prov.+DXCC **per band).** Multiply total by 1.25 if using homebrew Rx or Tx in combo w/commercial gear or by 1.5 for homebrew Tcvr or Tx/Rx combo. N8CQA.

•ARRL RTTY 'TEST

Packet/RTTY/AMTOR/ASCII

13 January 18:00-14 January 24:00

(RST+state/province or # for DX)

Q 1x/band, 80-10M. North America and S. America.

Recommended Fqs.: RTTY DX - 3.590 & 7.040; Others - 3.605-3.645, 7.080-7.100, 14.070-14.095, 21.070-21.100, 28.070-28.150. EU/AF: 3.580-3.620, 7.035-7.045, 14.080-14.099, 21.080-21.120, 28.050-28.150. Novice/Tech: 28.100-28.150; simplex packet — 28.102.3, 28.104.3.

24 hr max. 2 rest periods for combined 6 hours in two single blocks (CK RULES!). Single op multiband: class 1 - < 150 W out; class 2 - >150 W out// Multi op single xmtr-10 min rule. Score - Pts (1/QSO) x multipliers (Total state/prov/DXCC country, not per band). Certs. ARRL.

•JA INT'L DX 'TEST CW

13 January 22:00-15 January 22:00

(RST+CQ zone or Pref. 01-50 for JAs)

Q1x/band 160-10M. 10 min. rule. Work only JAs. DX to DX & JA to JA QSOs do not count. Single op multiband/single op QRP multiband// multi op, multiband. Score - Pts(1 per Q for 40,20,15; 2 for 10 and 80M; 4 for 160M) x mults (prefectures per band). 10 minute rule. Separate log/ band. SASE for results. *59 Magazine*, JA Int'l DX Contest, PO Box 59, Kamata, Tokyo 144, Japan

•NA QSO PARTY CW

13 January 18:00-14 January 06:00

(name + state/VE call area/NA country)

Q 1x/band, 160 -10M. Fqs- 1.815, 35 kHz up 80-10M. Non NA countries do not count as mults but do count for QSO credit. Score - Pts (Qs) x mults per band. Single op//multi op 2 trans. Pre-registered teams. 150 W max out. Single ops max 10 hrs. Off times at least 30 mins and noted in log.*NCJ/ QST*

•HA DX CW 'TEST

20 January 00:00-21 January 24:00

(RST+# or county/member # for HA stns)

Q1x/band, 80-10M. Q HA and other stns. Single op single band; Single op multiband// Multi op single band; multi op multiband. Score - pts (6 for HA stns; 3 for non HA stations on other continents) x mults (HA counties + club member #s per band). HA counties are BA, BE, BP ,BN, BO, CS, FE, GY, HA, HE, KO, NO, PE, SA, SO SZ, TO, VA, VE, ZA. HA DX Club, PO Box 79, H-7031 Paks, Hungary.

•HUNTING LIONS IN THE AIR 'TEST

20 January 09:00-22 January 21:00 - (RS(T) + #. Lions also send/L, also Lion, Lionesss and Leo Club members send club name, district and club QTH.)

Q1x/band, 80-10M. Op max 24 of 36 hrs, off times at least 3 hrs.and note in log. Score - Pts (1 pt for same country, 2 pts stn in diff country but same con-

tinent, 3 pts other cont.) Bonus pts -10 for ea QSO w/ea Lion/Lioness/Leo Club in diff countries (5 pts if same country). QSO with /LM or Melvin station for 5 pts if you're USA and 10 pts if foreign. Also 5 pts for W7YU/MJM. Ck w/ local Lions Club for where to send results.

•NA QSO PARTY SSB

20 January 18:00 - 21 January 06:00 (name + state/VE call area/NA country)

SEE NA QSO PARTY CW ABOVE

Fqs - 1.865, 3.850, 7.225, 14.250, 21.300, 28.450.

•ARRL JAN VHF SWEEPS

20 January 19:00-22 January 04:00 (Send - grid locator square)

50 MHz and up. Q1x/band not 1x per grid square! Score 1 pt for 50 or 144 QSO; 2 pts for 222 or 432; 4 for 902 or 1296; 8 for 2.3 GHz or higher. Single op single band//single op QRP portable - 10 W or less output //single op multiband//Rover// multi op//limited multi op (not more than 4 bands)//Club competition. CK *QST* for FM details and misc. rules. SASE w/2 oz postage to *QST* for forms. Numerous certificates. *QST*.

•CQ WW 160 CW TEST

26 January 22:00-28 January 16:00 (RST+48 state/13 prov/country) Score - Pts (2 for own country; 5 for diff country in same continent, 10 for different continent) x mults (states + provs+DXCC countries). Provinces are VO1, VO2, VE1-NS, VE1/VY2-PEI, VE2, VE3, VE4, VE5, VE6, VE7, VE8-NWT and VY1-YKN. *CQ*.

•ARRL NOVICE ROUNDUP

27 January 00:00-4 February 24:00 (Rpt+section or DXCC country) - all authorized modes.

Q 1x per voice mode and 1x per digital mode regardless of band. 30 hr max over the 9 days. Non op breaks of at least 15 minutes. Indicate on/off times in log. Higher operator classes Q only with N, and T stns. Novices sign/N, Techs sign / T. All Novice/Tech frequencies.

No repeater Qs. Code proficiency bonus available. Single op//multi op, single transmitter - All ops must be Novice or Tech and listed on summary sheet. Score Pts (QSO pts+ code proficiency speed in wpm) x mults (sections + VE8/VY1 + DXCC). Certs to all Novice/Tech entrants. Awards. ARRL.

•QRP ARCI NOVICE/TECH ROUND-UP(CW)

27 January 00:00 - 4 February 24:00 (RST/sec/name)sign /N /T.

Q 1x/band, 30 hrs max. Score: 1 pt per/N /T; 2 pts Nov or Tech to other class ops; all others 1 pt. Total mults (not mults per band) x pwr mult (3 < 1 watt; 2 1-5 watts; 1 >5 watts) Certificates to **all** Nov/Tech entrants + section winners. SASE for sample. N6GA.

•REF FRENCH CW TEST

27 January 06:00 -28 January 18:00 (RST+#)

Q 1x/band, 80 -10M. Work F stns; overseas territories and DA1/DA2. Score - Pts (1 for own cont.; 3 for other cont.) x mults (French Depts, DA, DA2, F6REF/00, each DOM-TOM **per band**). F6ETI.

•UBA SSB TEST (BELGIUM)

27 January 13:00 - 28 January 13:00 (RS+# or prov for ON Stns)

Provinces are-AN, BT, HT, LB, LG, LU, NR, OV, and WV.

Q 1x/band 80-10M. Single op 1band/multiband; multi 1 xmtr all band.; QRP 5 w = class B. Score - Pts (ON=10; other EU Community members=3; Others =1) x (Total # Belgian provinces + all ON prefixes+EU Community members). Re ck this - EU Community Members = CT/ CU/ DL/ EA/ EA6/ EI / F /G /GD /GGI /GJ /GM /GU /GW /I/IS/ LX /OZ / PA/ SV/ SV5/ SV9/ SY/ TK/ ZB2. ON4JG.

YLRL meet the Novices & Technicians

15:00 UTC, 13 January to 05:00 UTC 14 January

Eligibility: All women operators throughout the world are invited to participate.

Procedure: Call "CQ YL"

Suggested frequencies: CW: 80 Meters, 3.675-3.725; 40 Meters, 7.120-7.150; 15 Meters, 21.120-21.150;10 Meters, 28.150-28.185. SSB: 10 Meters, 28.300-28.500.

Operation: Only the frequencies in the HF bands open to Novice and Technician licensees may be used. Net and repeater contacts are not permitted. No cross band operation is permitted. A station may be worked only once for credit. Maximum power output is 200 watts PEP. The only permitted operating modes are CW and SSB.

Exchange: Calls; RS(T)s; names; QTHs; and license classes.

Scoring: 3 points for each YL Novice or Technician Class licensee worked; 2 points for each YL General or Advanced Class licensee worked. One point for each Extra Class licensee worked. Total score equals the total of all points scored as described.

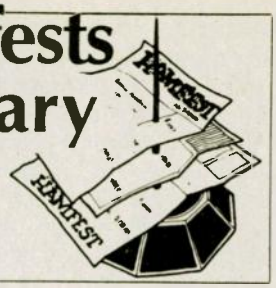
Awards: YLRL postcards to top scoring Novice or Technician. YLRL postcards to top scoring general or higher. Certificates to second and third place winners determined by total scores regardless of license class.

Logs: Submitted logs must show for each QSO: Date, time, band, and station worked. Your log must also show your name, call, address, licenses class, and operating breaks. You must sign your log, and it must show your claimed score. Please print or type your log. Photocopies are OK, but no carbon copies.

No logs will be returned. All logs must be postmarked NLT 30 days after contest ends. Please send all logs to Carol Hugentober, K8DHK, 4441 Andreas Ave., Cincinnati, OH 45211.

WR

hamfests January



Arizona

The AMATEUR RADIO COUNCIL of Arizona (sponsor) and the THUNDERBIRD ARC (host) will hold WestFesT, the West Valley Hamfest on 13 January, from 6 a.m. to 4 p.m. at the Glendale Community College north parking lot, 6000 W. Olive (Dunlap and 59th Ave.), rain or shine. Free admission, parking $2, tailgaters $5. For information, contact Morgan, N7DLW at 602/938-4356 or Mark, N7KKQ, 602/843-0960. Talk-in on 146.76(-) 162.2 PL.

California

The LIVERMOREARK is sponsoring an Amateur Radio/Electronics/Computer Swap Meet on 7 January, from 7 a.m. to 12 noon at Las Positas College in Livermore. Features include refreshments, free parking and covered spaces in the event of rain. Admission is free. Sellers pay $10 space fee. Talk-in on 147.045(+) PL 94.8, from the west and 145.35(-) PL 100Hz from the east. Contact Noel Anklam, KC6QZK, at 510/447-3857 eves. or leave message days at 510/783-2803.

Colorado

The NORTHERN COLORADO ARC will hold its Winter Superfest swapmeet on 13 January, from 9 a.m. to 3 p.m. at the Larimer County Fairgrounds, 700 S. Railroad in Loveland. Features include commercial exhibits, VE session and refreshments. Admission is $3 and tables are $8 each (contact Jeanene Gage, NØYHY 970/351-7327). For general information, contact Michael Robinson, AAØUB, 970/282-1167. Talk-in on 145.115(-).

Florida

The 1996 Sarasota Hamfest and Computer Show will be held on 13 January, 9 a.m. to 5 p.m. and 14 January 9 a.m. to 3 p.m. at Robarts Sports Arena, Sarasota Fairgrounds, 3000 Ringling Blvd., in Sarasota. Features include forums, door prizes, FCC exams, refreshment counter, and more. Plenty of free parking. RV parking with full hook-up behind arena; $20 a night. Admission is $5 in advance or $7 at the door. Tables are $20 and $25. Tailgating is $10 per space, which includes one admission ticket. For further information, contact Sam Everts, KE4BXF at 941/927-8999. Talk-in on 146.91(-) and 444.925(+) each day at 8 a.m.

Louisiana

The SOUTHEAST LOUISIANA ARC will hold a hamfest on 20 January, at 8 a.m. in the University Center at Southeastern Louisiana University. Free parking and admission; VE sponsored exams; forums and meetings. Table cost will be $15 (limit six). For information, contact Tyrone Burns, N5XES, c/o SELARC, P.O. Box 442, Springfield, LA 70462; 504/294-5839. No flea market or crafts allowed unless Amateur Radio or computer related. Talk-in on 147.00(-).

Maryland

The MARYLAND MOBILEERS ARC will hold a post holiday swapfest and flea market (indoor, no tailgating) on 28 January, from 8 a.m. to 2 p.m. at the Odenton Volunteer Fire Department Hall, 1425 Annapolis Rd. (Route 175) - 9 miles east of I-95. Indoor flea market (no tailgating) and refreshments. Admission is $3; tables $7 (table and one operator). Free parking and free VE testing (preregister with Jerry Gavin, NU3D, at 410/761-1423). For information, contact Tom Wilkison, KA3OMU, 592 Eason Dr., Severn, MD 21144; 410/969-2639 (evenings). Talk-in on 146.805(-).

Missouri

The 6th Annual NORTHWEST MISSOURI winter hamfest sponsored by MVARC, Green-Hills ARC and Ray-Clay ARC will be held 20 January from 9 a.m. to 4 p.m. at the Ramada Inn in St. Joseph. Special rates are available for hamfest participants. FCC exams, major exhibitors and flea market all indoors, plus free parking. Preregistration: $2 each or 3 for $5; at the door $3 or 2 for $5. Preregistration requests received after 10 January will be held at the door. Swap tables $8 each first two tables ($20 for tables 3 and up). Commercial exhibitors welcome, write for details: Northwest Missouri Winter Hamfest, c/o Gaylen Pearson, WBØW, 1210 Midyett Rd., St. Joseph, MO 64506. Talk-in on 146.85(-) or 444.925(+).

•

The ST. LOUIS REPEATER, INC., will hold their Winterfest '96 on 27 January, 8 a.m. to 2 p.m. at the St. Charles Exposition Hall, I-70 and 5th Street in St. Charles. Features include commercial dealers, flea market, 300 tables, refreshments, free parking, handicapped accessible, VE session. Admission is $3 at the door, no advance sales. For commercial and flea market, call 314/567-8777, Fax 314/353-7373 or write St. Louis Repeater, Inc., P.O. Box 50202, St. Louis, MO 63105. Talk-in on 146.94(-) and 447.100.

New York

The METRO 70CM NETWORK presents a giant electronic flea market to be held on 21 January, from 9 a.m. to 3 p.m. (rain or shine) at Lincoln High School in Yonkers. Free parking, no tailgating; indoor flea market only! Unlimited free coffee; VE exams, food. Donation is $6, kids under 12 free. Sellers $19 first table, $15 each additional. Bring your own table $14 for a 6' space. Table setup 7 a.m. No paid reservations for space will be held past 9 a.m. For registration, call Otto Supliski, WB2SLQ, 914/969-1053. Talk-in on 443.350(+) PL 156.7, 146.91(-), 223.76(-) PL 67.0.

Ohio

The TUSCO ARC hamfest will be held on 14 January from 8 a.m. (6 a.m. setup) at the Ohio National Guard Armory, 2800 North Wooster Ave., Dover. Admission is $2 at the door; tables $8 each. Food available on site. For information and reservations, contact Howard Blind, KD8KF, 6288 Echo Lake Rd., N.E., New Philadelphia, OH 44663; 216/364-5258. Talk-in on 146.73(-), W8ZX repeater.

Pennsylvania

The HARRISBURG RAC will hold a hamfest on 13 January, 8 a.m. to noon at the Oberlin FC Social Hall, Exit #1 I-283, follow PA #441 north one mile to site. Admission is $2, tables $8, tailgating $1 weather permitting. Food will be available. For information, call 717/232-6087 and for table reservations write Tom Hall, WU3X, Box 418, Halifax, PA 17032. Talk-in on 146.76(-) and 146.52(S).

Tennessee

The TENNESSEE VALLEY AR NETWORK will hold a hamfest on 27 January (setup 26 Jan, 4 p.m. to 9 p.m. or 5 a.m. to 8 a.m on 27 Jan) from 8 a.m. to 4 p.m. at the Gallatin Civic Center in Gallatin. Admission is $5 (16 years and older). Tables are $10 which includes 1 admission. VE testing is by preregistration only. Send completed 610, copy of license or certificate of completion to Ronnie Gilley, 512 Hillside Dr., Gallatin, TN 37066. SASE for registration confirmation. Food available on site. Free parking near door. Limited tailgating space. For information and table reservations, contact Bill Ferrell, N4SSB, 1032 Hidden Woods Trail, Gallatin, TN 37066 or call 615/452-7246. Talk-in on 145.13(-), 444.450(+) PL 107.2. WR

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

Color Slow Scan

Harlan Technologies presents color Slow Scan TV for the Sound Blaster sound card. The new version, v1.2, is an upgrade which adds Martin 1 and Martin 2 to the list of modes. Other improvements include speeding up the display of pictures, new drivers for both video and sound, color snooper which shows the color levels in a picture line by line, adds your call sign to pictures that you send, and allows voice and .PCX pictures to be stored in separate directories.

Color Slow Scan will send and receive Robot 8, 12, 24, 36 second black and white, Robot 36 and 72 second color (displaying in color), Scotty 1 and Scotty 2 (displaying in color), and now in Martin 1 and Martin 2 (also color).

Hookup of the Sound Blaster compatible card to your radio equipment is very easy. The sound from the receiver is connected to the microphone input of the sound card and, for transmit, one channel of the stereo output from the card is connected to the microphone input of the transmitter.

The send mode is accomplished by reading the pixels on the screen and creating a voice file (.VOC), which can then be transmitted. Appropriate sync is added for the mode being used.

A larger display area, plus a zoom to full screen feature was added.

Color Slow Scan will auto track ±150 Hz for the best color pictures! After the picture has displayed, the amount of frequency difference detected is displayed.

Pictures can be saved in .PCX format so they can be re-displayed and used in paint brush programs. A slide show feature will continually show .PCX files saved.

Requirements for color Slow Scan are a PC computer (286 or better) with DOS 3.3 or higher and 640K memory, hard drive, VGA display capable of 640 x 480 — 256 colors, and a Sound Blaster compatible card such as Sound Blaster, SB PRO, SB16, Thunder, PAS16, Fusion, and many others.

Color Slow Scan can be ordered from Harlan Technologies, 5931 Alma Dr., Rockford Illinois 61108; 815/398-2683, Fax 815/398-2688 for $99.95 plus $5 shipping (overseas shipping $10). Illinois residents add $6.25 tax.

Ham shack signs

Old West Graphics of Ft. Collins, Colorado, announces the release of their latest catalogue for hams, clubs and electronic product companies.

Anyone involved in radio and electronic activities, whether as a hobby or as a business involved in tradeshows, hamfests or conventions, will want to have one of these catalogs as a handy reference.

The latest product listings include a 4" x 8" hamshack callSIGN for $5 (a portable stand-up showcard with your call sign professionally mounted), banners for individuals and clubs from $23.25 and up, club logo decals, computer-cut lettering for your specialized message, vanity license plates, novelty ham radio street signs, magnetic signs, t-shirts, sweatshirts, and polo shirts with your club logo or call sign. Contact Old West Graphics at 749 S. Lemay, Suite A3-355, Ft. Collins, CO 80524-3251 or call us at 800/579-0959.

RITTY 1.0 DSP Radio teletype system

RITTY 1.0 combines a high-performance FSK modem with a terminal program to enable you to transmit and receive radioteletype signals on your PC. *RITTY* uses advanced digital signal processing algorithms but does not require DSP hardware. *RITTY* uses your sound card for analog input/output and optimized assembly language for speed so it can run right in your PC.

Although *RITTY* eliminates the need for specialized demodulator hardware, its primary attraction is high performance. *RITTY* can recover weak RTTY signals ordinary terminal units can't copy. It uses a number of techniques to accomplish this. To begin with, *RITTY* does not use an input limiter. This avoids the limiter capture effect and lets *RITTY* detect signals buried in noise and QRM. Next, *RITTY* does not use a wideband discriminator. Instead, it filters the mark and space signals with optimal FIR matched filters. The filter widths track baud rate and the channel frequencies are continuously adjustable. The matched filters are optimal for the detection of tones in the presence of Gaussian noise.

RITTY applies automatic threshold correction to the demodulated mark-minus-space signal prior to detection. This prevents selective fading or IF-filter ripple from disturbing channel balance. *RITTY's* ATC is so effective that you can notch out QRM in one channel with your receiver's notch filter and maintain perfect copy using the remaining channel. The ATC algorithm peeks into the future to provide a corrected threshold for the first character following a pure-mark idle. *RITTY's* ATC is really effective in fighting HF propagation anomalies.

RITTY implements a numerical flywheel. The flywheel locks to the timing of incoming characters and eliminates the asynchronous-protocol dependency on noisy start pulses. The numerical flywheel essentially allows you to receive continuous asynchronous bitstreams synchronously. The flywheel can maintain synchronization on weak signals in noise and can track strong signals through deep fades. By greatly reducing synchronization errors and timing jitter, the numerical flywheel lets *RITTY* take full advantage of the processing gain of its matched filters.

RITTY provides colorful, high-resolution graphical displays. A signal-strength bar graph assists in setting input level. A true FFT spectral tuning indicator shows immediate and averaged spectra with a resolution of 6 Hz. This tuning indicator is easier to use than an oscilloscope and provides more information. You can easily determine the frequency shift of any signal. Finally, *RITTY* provides a synchronized graph of the demodulated mark-minus-space signal. It shows the ATC-corrected waveform and sample points for the start pulse, data bits, and stop pulse.

RITTY generates waveform-continuous, 16-bit, sine-wave AFSK. It's cleaner and more accurate than the FSK found in most transceivers. The AFSK shift automatically tracks changes you make in

receive shift (you'll answer someone transmitting 200-Hz shift with 200-Hz shift). *RITTY* does not generate FSK or PTT signals. Just two audio cables connect it to your transceiver.

RITTY provides a simple, intuitive interface with pop-up menus and a special, high-readability typeface. You can select baud rates from 45 to 100 baud, quickly adjust mark and space frequencies, set transmit and receive audio levels, and vary the number of transmit stop bits. You can select one of two Baudot punctuation sets and modify any punctuation mark. There are several data features to enhance weak-signal recovery. You can simultaneously print the alternate LTRS/FIGS case. Often this will give you the crucial, missing part of an incomplete call sign. You can unshift on space and you can ignore isolated LFs. You can transmit redundant control codes when the path is poor or you're trying to break a pileup. Eight general-purpose memories are provided, each over 2,000 characters long, for CQs, brag tapes, early reply buffers, etc. *RITTY* even provides precise frequency/timing correction for your particular sound card.

RITTY 1.0 is $100. Add $5 overseas. Visa, MasterCard, Discover, U.S. checks, cash, and money orders are accepted. *RITTY* requires a 386/40 or better, math co-processor, and VGA. It requires a Sound Blaster 16 sound card (it will not work with 8-bit cards or other brands).

For more information, contact Brian Beezley, K6STI, 3532 Linda Vista, San Marcos, CA 92069; 619/599-4962.

CUB pocket sized frequency counter

Optoelectronics, Inc., announces the latest in their line of hand-held frequency counters. The new *CUB* pocket sized frequency counter at 7.5 oz., 3.7" x 2.75" x 1.2", improves on the model 3300 MiniCounter, one of the most popular, low-cost frequency counters in the test-and-measurement arena. The *CUB* frequency counter is ideal for communications, surveillance, and recreational applications. Take a look at some of the features that have been added to the *CUB* over the 3300 MiniCounter:

- *Digital Filter* reduces false counts
- *Auto Capture* acts like an intelligent auto hold button
- *10*-hour battery life
- *8* selectable gate times
- *High-speed* .0001-second gate
- *9*-digit LCD display

While these are some of the features that make the CUB the choice for all test equipment applications, the *CUB* also incorporates all of the other standard features of the 3300 MiniCounter. An LCD

display for best visibility and longer battery life, unlike the outdated LED counters that aren't visible in sunlight and drain the batteries. 1 MHz to 250 MHz direct count capability for high resolution. Selectable gate times. Maximized sensitivity for picking up radio transmissions. Direct and Pre-scaled ranges. 10 MHz timebase. Frequency range 1MHz to 2.8 GHz.

With the new CAPTURE mode, gone are the days of writing down the frequency with a pen and paper before it disappears. The CAPTURE mode allows for the frequency to remain displayed as long as you desire, with no chance of being overridden by surrounding RF.

The *CUB* is designed for use ranging from traditional lab settings to any other situation requiring frequency measurement. The *CUB* is designed to fit into any situation, from the novice to the most experienced service technician. The *CUB* is simple to operate with all switches at a finger's touch, yet it has the sophistication and accuracy that experienced service and field technicians demand. For test and measurement applications, the Optoelectronics P30 Counter/Oscilloscope probe may be used to directly connect to circuitry test points. Available accessories include a variety of antennas and filters. The *CUB* is priced is $149. To order your new *CUB* call us at 800/327-5912. For additional information or questions call us at 305/771-2050, or fax 305/771-2052 or write Optoelectronics, Inc., 5821 NE 14th Ave., Ft. Lauderdale, FL 33334.

1996 ARRL Handbook

Building on last year's top-to-bottom rewrite, the brand new *1996 ARRL Handbook* is packed with new projects and updated information. For the first time in *Handbook* history, the 1996 edition includes SOFTWARE. Whether you're an Amateur Radio beginner, an experienced operator, electronic technician, engineering student or engineer, you'll find each chapter of the *1996 ARRL Handbook* a stand-alone "minibook" that will cover your favorite topics and provide invaluable reference material, fascinating facts and some great new do-it-yourself projects.

Features included are:

- *Station Accessories*—12V distribution boxes for station (and mobile) accessories. An audio break-out box feeds several accessories from a single source. Use the RF Sniffer to track down sources of RF. A simple two-channel analog-to-digital converter project lets your computer make measurements and compute SWR. An audio display for meters is handy for both vision impaired and sighted hams. Several hams tell how to transport HTs conveniently. And keyers for all! An updated UncleAl's keyer reads code too, two more based on the Curtis 8044ABM IC, and a CW send and receive system for IBM compatible computers.
- *Antennas*—More antennas for new hams. Examples: A simple wire loop for 28 MHz and a copper 2 Meter J-pole. Also, selected antenna Hints and Kinks.
- *Transceivers*—Check out the new multiband QRP transceiver from Wayne Burdick, N6KR, and the NorCal QRP club: Operate 160 through 10 Meters with plug-in band modules. Try a VLF transceiver (no license required!) or a QRP transmitter built from a single IC.
- *Filters*—A new DSP filter from Dave

Hershberger, W9GR, offers 18 different modes, including DTMF and CTCSS tone decoding.

•*Satellites*—Learn about plans for the new Phase 3D bird. Build a "Junk Box" satellite receiver or a Mode-S receive converter.

•*Amplifiers*—'96 is the year for 2 Meter amplifiers: A new "brick" amplifier can boost an HT to 25 or 50 W (builder's choice), and a 3CX1200Z7 provides 1.2 kW. For high-power buffs, there is a 3200-V, 2-A supply.

•*Modulation Sources*—G-TOR, CLOVER and PACTOR II, are on the cutting edge of amateur HF digital communication.

This year's *ARRL Handbook* includes a 3.5-inch, 1.44-MB IBM compatible diskette with a variety of stand-alone applications and programs used with projects in the book.

•*TISFIND,* a *Windows*™ application from the ARRL's Technical Information Service, provides you with the names and addresses of nearly 900 Amateur Radio vendors and organizations.

COILS, from Brian Beezley, K6STI, calculates the important characteristics of solenoidal coils.

ACTFIL is for designing active audio filters described in the Filters chapter.

The disk features the software side of several projects in the book: An SSTV interface from Ben Vester, K3BC; a PC interface for sending CW from Ralph Taggart, WB8DQT; and a PC voltmeter from Paul Danzer, N1II.

Other software is useful for helping to find true North; for designing shortened, inductively loaded dipoles; and for designing Pi and Pi-L matching networks.

The ARRL, Inc., is the membership association of Amateur Radio operators in the U.S. Copies of the book are available from Amateur Radio dealers or ARRL Publication Sales, 225 Main St., Newington, CT 06111-1494; 860/594-0200 or Fax 860/594-0303. ARRL order #1735, retail price $38 plus $6 for shipping and handling.

Circular polarized Yagi UHF antenna

M² introduces the 436CP42 U/G, a new circular polarized antenna with coverage from 430 to 440 MHz. As part of the ultimate satellite package, its 18' 10" boom is the perfect crossboom partner for M²'s 2 Meter, high-performance circular, the 2MCP22. The CP42 is also ideal for terrestrial applications like ATV, repeater operation, and long-haul tropo DX. Construction is classic M², with CNC machined feed components, O-ring sealed connectors, and plenty of stainless steel assembly hardware. Wind survival rating is 100 mph.

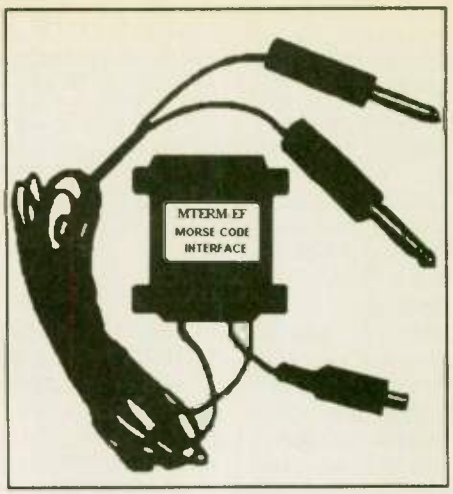
Unique driven element modules are the heart of the CP42. Connections inside the machined blocks are embedded in a space-age silicone gel that seals out moisture and improves power handling. The parasitic 3/16" 6061-T6 rod elements are centered in the boom to minimize interaction and ellipticity. Insulators are UV stabilized and locked in place with stainless retainers. The central boom section is 1½" dia., tapering, front and rear, through 1¼" sections to 1" tips.

The 436CP42 U/G sells for a suggested retail price of $269. For complete specifications and a catalog of M² products, contact M² Antenna Systems, Inc., 7560 N. Del Mar Ave., Fresno, CA 93711. Phone 209/432-8873, Fax 209/432-3059.

MTERM-EF Morse Code Computer Interface

Dynamic Electronics Inc. is pleased to announce a new Morse Code Computer Interface that allows sending and receiving the International Morse Code with an IBM compatible computer. The interface electronics is contained in a DB-25 housing which can be connected to any COM port. An adapter can be used for 9-pin COM ports. A ¼" plug is included for the phone jack and a ¼" stereo plug is included for the key jack of a transceiver. A stereo-mono adapter (not included) can be used for ¼" mono key jacks.

A sharp 900 hertz audio filter with a noise subtracter is included to allow reception under adverse noise and interference conditions. An RCA type phono jack is available for connecting the processed CW to the high impedance input of an audio amplifier. On receive, the speed is automatically tracked. The code is converted to ASCII characters and displayed on the screen. The station can be left unattended and messages can be saved to a disk file when a call sign match is received. A call alert feature will allow the computer to sound an alarm when a call sign match is received.



Transmit features include a type-ahead keyboard buffer, and the options of sending from any of the 8 pre-programmed messages, or from a disk file. The transmit speed can be varied from 5 to 100 wpm. A message can automatically be sent at a future time without the operator being present.

Software is supplied on both 5.25" and 3.5" diskettes. The cost is only $79.95 plus $3 shipping. Payment can be made by check, VISA, or MasterCard. For more information, contact Dynamic Electronics, Inc., P.O. Box 896, Hartselle, AL 35640; 205/773-2758, fax 205/773-7295. **WR**

Call signs for Austrians

The Republic of Austria will celebrate its millennium — its 1,000 year anniversary — in 1996, by authorizing special call sign prefixes for radio amateurs.

At the request of the Austrian Amateur Radio Society, OVSV, the Austrian communication authorities will permit Austrian amateurs to use the prefix OEM for the entire year, OVSV President Dr. Ronald Eisenwagner, OE3REB, said. Use of the prefixes will be voluntary. As an example, OE1XA may be changed to OEM1XA. OVSV will sponsor two on the air (and shortwave listener) operating awareds in conjunction with the special prefixes. Details on these awards will be announced elsewhere. —*ARRL Bulletin 066*

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 April, please have the information to us by the first of January.

p/r pref. = pre-register preferred but w/i OK
p/r = pre-register only — no w/i

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 (area code) of a person to contact for further information.

w/i pref. = w/i preferred to p/r
w/i = walk-in only

Date	City	Contact	Notes
Arizona			
2/10/96	Prescott	John, KM6BF 520/636-1228 or Dave, W9KRQ 520/772-8539	w/i
2/10/96	Tucson	Joe, K7OPX 520/886-7217	
California			
2/04/96	Chico	Jackie, W6YKU 916/342-1180	p/r pref.
2/04/96	Concord	Gene, WW6H 510/254-5090	w/i only
2/24/96	Culver City	Scott, K6PYP 310/459-0337 or Dave N3BKV 818/559-2572	p/r pref.
2/24/96	Fairfield	Dick, AB6EY 916/791-0268	w/i pref.
2/07/96	Lake Isabella	Tom, KN6TS 619/379-2947 or KD6YNX 619/379-5236	p/r pref.
2/24/96	Pomona	Don, WA6HC 909/949-0059	p/r
2/17/96	Sacramento	Lyle, AA6DJ 916/483-3293 or Phil, N6ZVA 916/338-3223	w/i
2/07/96	Sacramento	Jim, AB6OP 916/334-4887 or Larry, KD6OLN 916/361-2476	p/r pref.
2/03/96	S.L. Obispo	Charlie, KD6RCQ 805/528-1022	
2/10/96	San Pedro	Elvin, N6DYZ 310/325-2965	p/r pref.
2/14/96	Santa Ana	Cindy, KC6OPI 714/971-3448	p/r pref.
2/17/96	Stockton	Mark, W6DKI 209/465-7496	w/i
2/10/96	Torrance	Joe, WB6MYD 310/328-0817	p/r only
Florida			
2/17/96	Melbourne	Bill, WB9IVR 407/724-6183	p/r pref.
Georgia			
2/17/96	Marietta	Joanne, AC4JQ 770/955-3171	w/i
2/05/96	Marietta	Delaine, KM4FV 770/993-9758	w/i
Idaho			
2/10/96	Boise	Lem, W7JMH 208/343-9153	p/r pref.
Illinois			
2/17/96	Loves Park	Dennis, W9SS 815/877-6768	p/r pref.
2/10/96	Oak Forest	David, NF9N 708/448-0580	p/r pref.
2/22/96	Villa Park	Lyle, WB7EED 708/325-5694	w/i pref.
Iowa			
2/24/96	Council Bluffs	Lorraine, AAØBS 712/322-1454	p/r pref.
Massachusetts			
2/23/96	Holyoke	Dave, N1MHP 413/592-4978	w/i
2/17/96	Melrose	Scott, WB1F 617/665-7654	p/r pref.
Missouri			
2/03/96	Kimberling	Jim, NQØG 417/739-2888	p/r pref.
New Jersey			
2/10/96	Cranford	24 hour hot-line 201/377-4790	w/i pref.
2/15/96	Bellmawr	Bill, NT2N 609/933-1500	w/i pref.
New York			
2/17/96	Long Island	Les, AA2FJ 516/364-0030 or 516/922-0947	p/r pref.
2/04/96	Yonkers	Emily, AC2V 914/237-5589	p/r pref.
Ohio			
2/03/96	Cincinnati	Herb, WA8PBW 513/891-7556	p/r pref.
Pennsylvania			
2/17/96	Mercer	Dennis, WM3H 412/347-5960	w/i
Texas			
2/17/96	Austin	Jim, AB5EK 512/327-6184	w/i pref.
2/13/96	Houston	Harold, ND5F 713/464-9044	p/r pref.
Virginia			
2/24/96	Gloucester	Art, AA4AT 804/484-2857	p/r pref.
2/17/96	Portsmouth	Harry, N4THN 804/642-3517	p/r pref.
Washington			
2/10/96	Port Angeles	Athan, N1PYO or Nancy, N1RAG 360/928-9588	p/r pref.

Please remember that our deadline for publication is as follows: If your VE group is scheduling an exam for March, please have the information to us by the first of December; for the April issue / 1January; May issue/1 February; June issue/1 March; July issue/1 April; August issue/1 May; September issue/1 June; October issue/1 July; November issue/1 August; December issue/1 September; January issue 1 October; February issue/1 November.

THE MART

Classified
• Buy • Trade
• Sell • Inform

MART deadline 15th of the month two months prior to issue date. Please include an address on all ads so prospective clients can contact you by mail, if they prefer.

Commercial rate: 35¢/word, prepaid.
Private rate: 20¢/word, prepaid.

THE MART *Worldradio*
2120 28th St., Sacramento, CA 95818

***WORLDRADIO* ON CASSETTES** for the blind. For information, contact TOM CARTEN, K1PZU, 1602-Y King's College, Wilkes-Barre, PA, 18711. F296

CERTIFICATE FOR PROVEN TWO-WAY RADIO CONTACTS with amateurs in all 10 USA call areas. Award suitable to frame and proven achievements added on request. Send SASE to W6LS, 45527 3rd St. East, Lancaster, CA 93535-1802 to get data sheet. F296

CODE PROFICIENCY DRILLS are transmitted from WB3IVO Brass Pounders ARC each Saturday, Sunday, Monday and Thursday on 7040 kHz, starting 2000Z, each Tuesday and Friday on 14060 kHz, starting at 2000Z. Speeds range 20-60 wpm. F296

EDITING A CLUB PAPER? Need one for your club? Interested in Amateur Radio public relations? Need some help? Amateur Radio News Service would like to hear from you. For info write PAM MYERS, N8IAK, 510 W. Harrison, Alliance, OH 44601. F296

AUTO-CALL MAGAZINE, official journal of the Foundation For Amateur Radio, a federation of over 80 clubs in the greater Baltimore/Washington DC area. Great coverage of FCC, ARRL, VEC, Public Service and club activities in the area. A must for those even passing through the area. For a sample copy write FOUNDATION FOR AMATEUR RADIO, P.O. Box 7612, Falls Church, VA 22046-7612. F296

WANTED REPLY COUPONS of all types, IRCs & others. Buy, sell, trade. JIM NOLL, P.O. Box 3410, Escondido, CA 92033. 295-296

HAMS — DO YOU NEED COMPUTER PRINTER ribbons? Lowest prices. Color or black. State your needs. Free information. HARCLY, P.O. Box 830, Coquille, OR 97423. 595-496

PACKET RADIO. Join TAPR, connect with the largest packet/digital group in the U.S. Creators of the TNC-2 standard. Benefits: newsletter, software, discount on kits/publications. $15/year US, $18 Can/Mex, $25 elsewhere. Visa/MC. When joining, mention *Worldradio*, receive TAPR's new book, "Packet Radio: What? Why? How?" ($9 value) Free! 817/383-0000, Mail: 8987-309 E. Tanque Verde Rd. #337, Tucson, AZ 85749-9399. F296

FREE HAM GOSPEL TRACTS. SASE, N3FTT, 5133 Gramercy, Clifton Heights, PA 19018. 894-1096

WANTED: ELECTRON TUBES, ICs, semiconductors. ASTRAL, P.O. Box 707WM, Linden NJ 07036. Call 800/666-8467. 196-197

PERSONALIZED HOURLY HF SKYWAVE PREDICTIONS from your city or town: SKYCOM v1.5 floppy disk for Apple Macintosh or IBM PC and compatible personal computers. Includes complete mathematical description of theory ($30). DX window v2.0 floppy disk circular projection world radio map centered on your QTH shows sunrise-sunset gray line for any time of interest. Includes feature which displays any of 400 prefixes on world map instantly. For all Apple Macintosh machines ($50). Satellite Predictions MACSAT 3.1, $50; P/H $5 N. America; $10 International. SASE for more info: ATTN: DX; ENGINEERING SYSTEMS INC., P.O. Box 939, Vienna, VA 22183. F296

ELECTRON TUBES Transmitting, receiving, military obsolete...all types. Large inventory. Fast delivery. DAILY ELECTRONICS, 10914 N.E. 39th St., Ste. B-6, Vancouver, WA 98682; 360/896-8856, 800/346-6667, fax 360/896-5476. 295-296

AMATEUR RADIO REPAIR— Prompt service. HALL ELECTRONICS, 1660 McKee Rd., Ste. A, San Jose, CA 95116; 408/729-8200. 196-397

SPECIAL: 100 QSL cards $7.50, we pay postage. Stamp for sample. ARTIST, P.O. Box 111534, Nashville, TN 37222. 1295-196

2 KW ANTENNA TUNER KIT $149, HV variable capacitors, roller inductors, counter dials, plus more! Catalog $1. KILO-TEC, P.O. Box 10, Oak View, CA 93022. 795-296

WANTED FOR MUSEUM: Apple-1 and other pre-1980 micro-computers, also early micro-computer journals, newsletters and advertising literature. KK4WW, P.O. Box 341, Floyd, VA 24091, 703/231-6478 or 703/763-2321. 196-197

AMATEUR RADIO REPAIR: FCC licensed, 19 years experience, lab quality NBS traceable test equipment, reasonable rates. G.B. COMMUNICATIONS, INC., 963 Birch Bay Lynden Rd., Lynden, WA 98264. 206/354-5884. 695-196

BROWNIE'S QSLs since 1939. Catalog and samples $1.00. 3035 Lehigh St. (rear), Allentown, PA 18103. 895-196

LIGHTNING PROTECTION. Dissipate charge build-up on towers and antennas before the storm hits with the NI4P Dissipater. Less than $25 for two dissipaters. Call 502/830-6206 or write NI4P, 3236 Walter Rd., Robards, KY 42452. 1095-196

HAM RADIO REPAIR! Most HF radios repaired $116.00 plus parts. Hand held radios $72.00 plus parts. WARRC, JIM RUPP, Box 697, Grayland, WA 98547, 360/267-4011, AB7DR. 295-696

CHAVERIM-WESTERN USA AND MEXICO CHAPTER. Jewish amateurs and friends interested in our chapter or the Chaverim, contact KA6BJO, 2242 #N, Laguna Hills, CA 92653. 595-596

HAM LICENSE PLATE KEY TAGS. Call sign engraved. All states available. $4 each, includes S&H. GENIAC TECHNOLOGIES, INC. 8105 NW 33rd Street, Miami, FL 33122. Attn: Ham Tags. Phone 305/599-7384. 795-296

MORSE CODE COMPUTER INTERFACES for IBM compatibles $49.95. CW filters $39.95 plus $3 shipping. Free IBM Shareware and ham catalog. DYNAMIC ELECTRONICS, Box 896, Hartselle, AL 35640, 205/773-2758, Fax 205/773-7295. 795-396

AMATEUR RADIO REPAIR. Two technicians — combined shop experience of over 60 years. We repair real radios that "glow in the dark," as well as the latest SMD construction. BORSCH ELECTRONICS, 9935 SW Johnson St., Tigard, OR 97223; 503/684-5201. 1095-0396

UNUSUAL OPPORTUNITY. Miniquad (from Miniproducts) for sale. 20, 15, 10 and 6 Meters. Hambands $350. Wanted: 18-TD Hygain Tape Dipole and Kenwood DM 81 Dip Grid Meter. ALBERT KEEN, KI6UY, 6051 Lindley Ave., Tarzana, CA 91356; 818/342-9467; Fax 818/996-3802 1195-296

1996 CALLBOOKS AND CD-ROMs from KC3NE. Best price, fastest service. Flying Horse, North American/International, $27 each, $51 set postpaid USA. Callbook-on-CD-ROM (both Callbooks on 1 disk), $36 postpaid USA. DX: Write or e-mail. Check/m.o. (no credit cards) to: Mike Klein, Box 306, Cheltenham, PA 19012; 215/854-5514 or mklein@omni.voicenet.com 195

RADIO CLUB BANNERS, magnetic signs, club decals, and more! Free catalog. OLD WEST GRAPHICS, 749 S. Lemay, A3-355, Dept. W, Ft. Collins, CO 80524-3251. 1295-396

NO MORE DOG-EARED equipment manuals. RhinoHide covers, $3 prepaid, specify size. (Info $1). ANTENNAS WEST, P.O. Box 50062, Provo, UT 84605. 1195-396

FOREIGN AIRMAIL POSTAGE for successful QSLing! Monthly bargains. Low cost European airmail envelopes! BILL PLUM, 12 Glenn Rd., Flemington, NJ 08822; Fax 908/782-2612. 1195-596

DIGITAL JOURNAL published 12x per year features everything for the digital communicator. Rigs, operations, computers, software, news and reviews. $25 U.S., $42 DX-Air. Mail orders (with payment — U.S. funds only) to IDRA, Dept. W, P.O. Box 2550, Goldenrod, FL 32733-2550. Fax 407/671-0194. Visa/MC accepted. F1096

MARTIN AND BUNNELL-MARTIN FLASH KEYS WANTED by collector. Also still looking for older Vibroplex bugs (New York or Georgia nameplate) and Melehan Valiant keys. RANDY COLE, KN6W, 4540 Fairway St., Dallas, TX 75219; 214/871-8995. 1195-296

R-390A SALES AND SERVICE. Info SASE MILTRONIX, P.O. Box 80041, Toledo, OH 43608. R-390 power input cables $25; antenna connectors $12.50; external AGC mod $20; prepaid. Mon-Fri 9 a.m. to 6 p.m. EST; 419/255-6220. 1295-696

The MART (cont.)

ISLAND HUNTERS read the Island News. The only newsletter devoted entirely to island hunting. Sample #10 SASE to VANCE LEPIERRE, W5IJU, P.O. Box 701, Fernandina Beach, FL 32035. 1295-696

PLAQUES AND ENGRAVING FOR AMATEUR RADIO OPERATORS. Attractive wall plaques to detail your operating accomplishments. Any custom engraving. Great product list. SASE for brochure: KN3A-CAMELLIA TROPHY SHOP, 590-B Schillinger Rd., South, Box 96, Mobile, AL 36695. 1295-296

QSLs — ELEGANT, AFFORDABLE. Samples $1 (refunded with order). ELEMENTAL DESIGNS, Dept. W5124, 1639 Fordham, Mountain View, CA 94040. 1295-396

QRP TRANSMITTERS — 3 and 5 watt kits and assembled models for 80M, 40M, 30M, or 20M. Fun to build! Two stamps for "Milliwatter/MX" info. TECHSONIC, 32F Plymouth Park, Conshohocken, PA 19428. 1295-196

CHASSIS & CABINET KITS. SASE. K3IWK, 5120 Harmony Grove Rd., Dover, PA 17315. 1295-1296

QSL CARDS. Many styles, top quality. Order risk free. Plastic cardholders, T-shirts, personalized caps, mugs, shirts. Other ham shack accessories. free call, free samples. RUSPRINT, 12730 State Line Rd., Leawood, KS 66209; 800/962-5783. 1295-396

QSL SAMPLES —50¢ SAMCARDS, 48 Monte Carlo Dr., Pittsburgh, PA 15239. 1295-1296

PEAK CONVERTER! Transforms averaging wattmeters to read PEP with flip of switch. Peak hold adjustment to 10 seconds. $19.99 ppd. kit. HI-RES, 8232 Woodview, Clarkston, MI 48348; 810/391-6660. 1-496

RADIO REPAIR. Ham, marine, commercial. FCC licensed, insured. Greg Hoffman, N8RXB, MARINERS' CENTRE, INC., 2017 Lakeshore Dr., Muskegon, MI 49441; 616/759-8786. 1-696

Happy New Year!

THAT PHOTO AD YOU WANTED SHOWING THE AUTO WITH ITS WHEEL ON YOUR HANDHELD-- WOULD YOU GO FOR A BICYCLE WHEEL?

WANTED: HAM EQUIPMENT AND RELATED ITEMS. Donate your excess gear — new, old, in any condition — to the Radio Club of Junior High School 22, the Nation's only full-time, non-profit organization working to get ham radio into schools around the country as a teaching tool, using our EDUCOM (Education Thru Communication) program. Send your radio to school. Your donated material will be picked up ANYWHERE or shipping arranged and this means a tax deduction to the full extent of the law for you as we are an IRS 501(c)(3) charity in our 16th year of service. It is always easier to donate and usually more financially rewarding but most important, your gift will mean a whole new world of educational opportunity for children nationwide. Radios you can write off kids you can't; make 1996 the year to help a child and yourself. Write, phone or fax the WB2JKJ "22 Crew" today: The RC of JHS 22, P.O. Box 1052, New York, NY 10002. Call 24 hours 516/674-4072 or fax 516/674-9600. Join us on the WB2JKJ classroom net, 7.238 MHz 1200-1330 UTC daily and 21.395 MHz from 1400-2000 UTC. Meet us at the upcoming Charlotte Hamfest. 1295

PICTURE QSL CARDS of your shack, etc., from your photo or black and white artwork. 500–$28.00, 1000–$44.50. Also non-picture cards. Customized cards, send specifications for estimate. Send two stamps for illustrated literature. Generous sample kit–$2.00, half pound of samples–$3.00. RAUM'S, 8617 Orchard Rd., Coopersburg, PA 18036. Phone or fax 215/679-7238. 1-496

FOR SALE. Engraving equipment. Herteese engraving machine and all other equipment such as cutter, extra plastic, etc. Please write for complete list. Adrian Fallert, WB8GEW, 27 Verlynn Ave., Hamilton, OH 45013. F-296

COMPLETE YAESU radio 757GX, matching speakers, 400 watt amp. Write for all the other goodies. Adrian Fallert, WB8GEW, 27 Verlynn Ave., Hamilton, OH 45013. F-296

COMMODORE 64 HAM PROGRAMS — 8 disk sides — over 200 ham programs $16.95. 32¢ stamp gets software catalog. HOMESPUN SOFTWARE, Box 1064-W, Estero, FL 33928. 196

1996 CALLBOOKS. "Flying Horse." North American $26.95; International $26.95. Both $51.95. Radio Amateur Callbook 1996 CD-ROM $36.95. QRZ! Ham Radio CD-ROM (Vol. 6) $15.95. ARRL Handbooks: 1996: $33.95; 1995: $21.95. Add $3 shipping/order. CA residents: add 7%. Check/m.o. to D. Heise, AA6EE, CALLBOOK DISTRIBUTOR, 16832 Whirlwind/W1, Ramona, CA 92065; 619/789-3674. 196

ICOM IC-730 $500. Kenwood TS-830S $600. Yaesu FT101E $375. K1BW, 84 Stebbins St., Chicopee, MA 01020; 413/538-7861. 196

QSL CARDS. Standard and custom. Your ideas or ours. Excellent quality. Foil stamping available. Many designs and type styles. Catalog and samples $1.00 refundable. WILKINS, Dept. D, Box 787, Atascadero, CA 93423. 1295-496

RF SWITCH, MFJ-1704, switches 4 antennas. $35 incl. shipping. George, W4UKA, 635 S.E. 19th St., Ocala, FL 34471; 904/732-3364. 196

COMMERCIAL LEGAL RADIOS. For less than $400 you can have an American made mobile or handheld VHF radio, legal on search and rescue, volunteer police, fire, medical, etc. Also available for new CAP splinter channels. Free spec sheet. 800/755-7169, ask for Gar or Sue. AXM ENTERPRISES, 11791 Loara St., Ste. B, Garden Grove, CA 92640. 1195-296

ADVERTISERS' INDEX

Apples to apples or apples to oranges?

Donald R. Newcomb, WØDN

It can be depressing to read some ham magazines any more! Among some of the crazier things that hams are asked to believe (and probably do believe) is that a 3-element triband beam can deliver 8 dB forward gain. That may be seriously doubted, for the ARRL *Antenna Book* tells us that we may expect only a fraction over 7 dB from three elements with proper element spacing for a 3-element monobander.

A tribander, of course, has to use compromise element spacing for the sake of operation on several bands. A typical tribander, moreover, will use less than full-size elements on two of its three bands and will have to deal with trap and loading losses, in which case even 7dB gain might be wishful thinking for any particular band. So how much does a fraction of a dB matter? Not much, admittedly, unless some other kind of dB-absorber is at work in your installation! In any case, there's probably no valid reason to reject one brand of tribander claiming 7.9 dB of gain in favor of one claiming 8.3 dB of gain and selling for $50 more because both sets of specs are bound to be off on the high side!

The point of all this is that a little common sense, if applied in time, can spare you a good deal of confusion and perhaps save you some money. When it's claimed that a particular antenna has so much gain over something else you have to ask yourself just what is being compared to what else.

In the case of two tribanders, for example, the real comparison is between a 3-element monobander on a particular band and either (or both) tribanders on the same band. Why? Because a 3-element monoband beam will always show more gain than a 3-element tribander on at least one band. Its characteristics have been accurately measured countless times, and the maximum always turns out to be 7 dB, give or take a fraction of a dB. If you know that much you'll be able to ignore the advertising hype and concentrate on other aspects of the design that may be of far greater interest in your particular situation.

So too with other antenna types. What you want to avoid is comparing apples and oranges. New hams will frequently ask why, if verticals are such good DX antennas, do most DXers prefer beams? There's no real answer because the question assumes a number of things that may not be true in all cases. For example, what height above ground are we talking about? It's not terribly important for verticals, but it can make all the difference in the world for a beam! At a height of 70 ft. (0.50λ) a 40-meter beam will have a take-off angle of about 30° above the horizon, although there will be considerable radiation both above and below this angle.

If you're fortunate enough to have a tall sturdy tower to support a 40-meter beam you should be able to work more than your share of DX. But as the height above ground diminishes the wave angle increases so that a 180' tower might be required for a acceptably low wave angle on 80 Meters. Even a miniature beam for that band would be huge, and there's always the problem of turning such a thing, so any kind of beam for 80 Meters is something of a rarity.

". . . not all manufacturers will admit that their products are constrained by the same physical laws . . . ."

In the frequency range from 10 to 30 MHz where much shorter towers will permit lower take-off angles, a beam antenna is an obvious choice. Below about 10 MHz or so, it is usually easier (and much less expensive!) to erect a tall vertical than a tall tower, so verticals are often preferred for these bands for their superior low-angle characteristics. Most verticals are of the multiband type these days, so it's possible to put out a respectable low angle signal on all bands with a single relatively inexpensive antenna.

But here too, hams must often try to compare apples to oranges in order to estimate probable results. There are many verticals on the market, and all of them depend, to a greater or lesser extent, on an adequate ground system for their performance. Although not all manufacturers will admit that their products are constrained by the same physical laws that affect similar products, so what, again, is our standard of comparison?

All verticals, ultimately, are descendants of the lowly half-wave dipole (probably the most popular antenna ever) as is the multiband beam, but over the years as the various types have evolved and been adopted by hamdom, the quarter-wave vertical monopole has been studied as thoroughly as the basic dipole itself and has become the standard against which particular verticals are usually judged. "Monopole" because it's physically half a dipole oriented vertically and fed against ground. It would, of course, be possible to use the XYZ Corporation's latest ultrasquat megaband radial-free creation as a new reference standard, but they would probably not welcome having its characteristics broadcast to the world in these pages or any other. So we'll stick with the old quarter-wave monopole whose venerable characteristics are already well known (if not always grasped) by hams from Newington to Ulan Bator and back again.

As in the case of the multiband beam, the same factors that limit its performance relative to a monoband standard will invariably limit the performance of a multiband vertical on at least *some* bands, and, the sacrifices that might be required for multiband operation may be more than one cares to make.

A further problem is that multiband verticals are necessarily much shorter than a full physical quarter wave at the lowest operating frequency and can show very low values of radiation resistance. Without an extensive (low-loss) ground system efficiency will be quite low at best, so we should probably specify a minimal ground system beneath our reference antenna.

Most hams, of course, won't take the time or make the effort to interpret the existing data, and it's not always easy to do so. If that's your situation, screw up your courage and knock on the door of the nearest "big gun" and ask for thoughts about this or that store-bought antenna. You could do far worse than follow the advice of the old Packard Motor Company to prospective customers and "ask the man who owns one." Ask to see his log for the last DX contest too! Any antenna that performs well under "combat conditions" must be a good one! **WR**

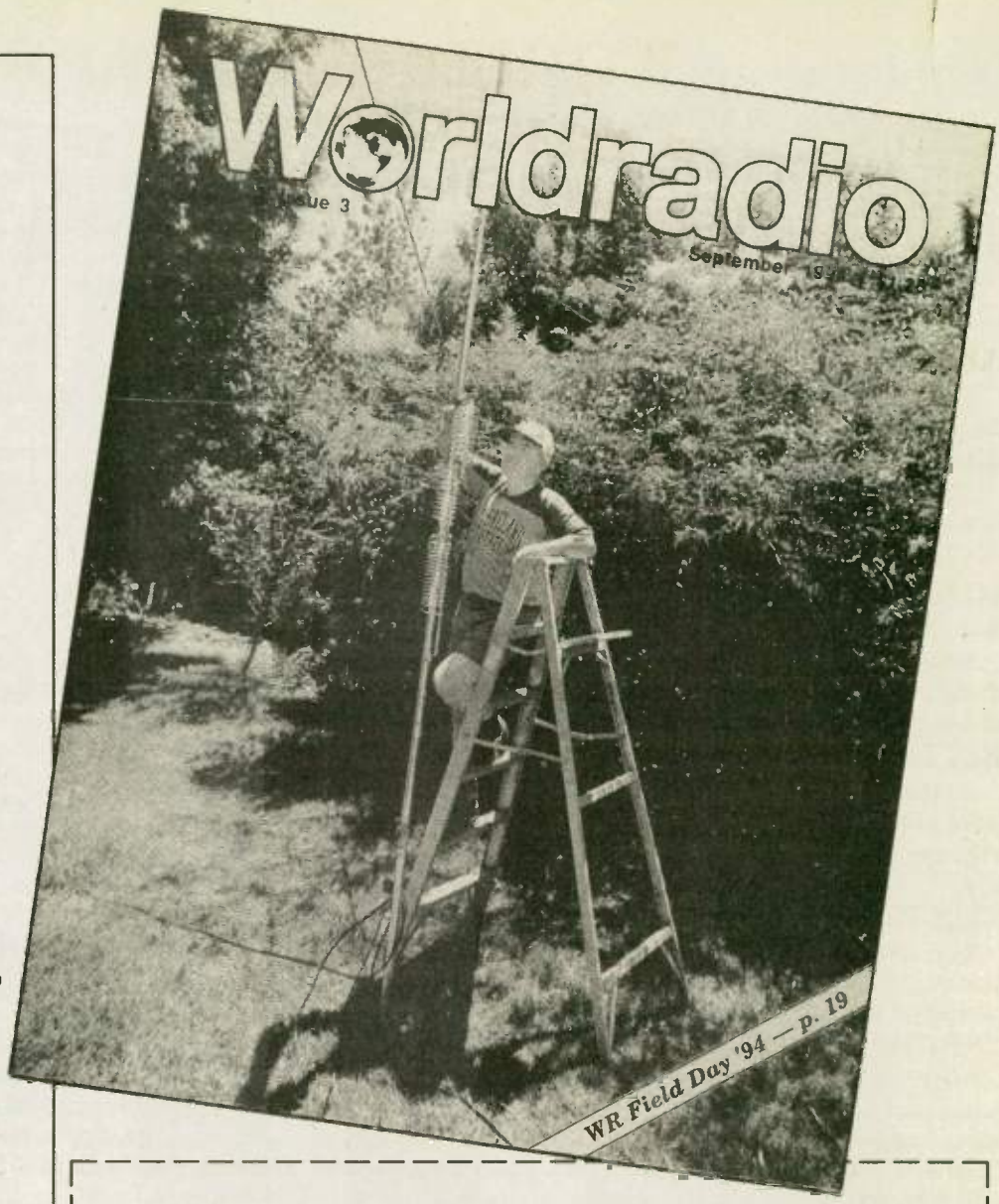
Today!!

Subscribe

NOW

(please)

You'll receive the latest NEWS and great columns. ***Worldradio*** is the monthly NEWS magazine of Amateur Radio. And, you are invited to send in articles and photos.



❑ **1 Year $15** ❑ **2 Years $28** ❑ **3 Years $41**

Outside USA: ❑ 1 Year $25 ❑ 2 Years $48 ❑ 3 Years $71

Payment: ❑ Check ❑ American Express ❑ VISA ❑ MC

Name_____ Call _____

Address_____

City/State ZIP_____

Signature_____

Bank credit card number ❑❑❑❑❑❑❑❑❑❑❑❑❑❑❑❑ Expiration Date ❑❑

Interests are: ❑ DX ❑ Contests ❑ Construction ❑ Antennas
❑ Repeaters ❑ Satellite ❑ TV ❑ Other_____

Send to: Worldradio • 2120 28th street, Sacramento, CA 95818 or Call: 1-800-366-9192

WORLDRADIO BOOKS

AERIALS II, *by Kurt N. Sterba & Lil Paddle*

A compilation of antenna columns which appeared in ***Worldradio*** from 1985-93. 88 pp. $11.00 + $2.00 s/h ($4.00 for non-US ZIP air delivery.) CA residents add $.85 tax.

40+5 YEARS of HF MOBILEERING, *by Don Johnson, W6AAQ*

This long-awaited and eagerly anticipated revision of Don's "40 Years of HF Mobileering" is now ready for shipping. A compendium of invaluable information on mobile antennas. 104 pp. $14.95 + $2.00 s/h ($4.00 for non-US ZIP air delivery.) CA residents add $1.16 tax.

WHEN THE BIG ONE HITS...*A Survival Guide for Amateur Radio Operators,* *by Jerry Boyd, KG6LF & Jay Boyd, KN6BP*

Tells Amateur Radio operators what to do to prepare for survival, safety of families and loved ones, and perform disaster communications duties efficiently in the face of disaster. 56 pp. $7.50 + $2.00 s/h. ($4.00 for non-US ZIP air delivery.) CA residents add $.58 tax.

SIX METERS, *A Guide to the Magic Band, by Ken Neubeck, WB2AMU*

A labor of love by the author, the book provides comprehensive information on Six Meter equipment and modes. A little history of the Golden Age of Six Meters is provided along with some explanations for the causes of various forms of propagation. 80 pp. $12.00 + $2.00 shipping and handling. ($4.00 for non-US ZIP air delivery.) CA residents add $.93 tax.

THE BEST OF BEASLEY, *by Robert Beasley, K6BJH*

"Oh, to see ourselves as others see us...." A wacky view of Amateur Radio through the eyes of a very clever cartoonist. Great gift for a fellow amateur. 112 pp. $8.00 + $2.00 shipping and handling. ($4.00 for non-US ZIP air delivery.) CA residents add $.62 tax.

INSIDE AMATEUR RADIO, *by Lenore Jensen, W6NAZ*

Interviews with the people who make Amateur Radio the engaging hobby that it is. A collection of short stories and anecdotes detailing courageous rescues, hilarious situations and heart-warming tales, as told by the hams who made them happen, through the "pen" of someone who truly knew what it was about inside Amateur Radio. A must for every ham shack coffee table. 93 pp. $9.00 + $2.00 shipping and handling. ($4.00 for non-US ZIP air delivery.) CA residents add $.70 tax.

••••••••••••••••••*Send your order to*••••••••••••••••••

WORLDRADIO BOOKS • P.O. Box 189490 • Sacramento, CA 95818

Send me the following books:

QTY	TITLE	PRICE	TOTAL
____	AERIALS II	$11.00	_____
____	40+5 YEARS OF HF MOBILEERING	$14.95	_____
____	BIG ONE...	$ 7.50	_____
____	SIX METERS...	$12.00	_____
____	BEST OF BEASLEY	$ 8.00	_____
____	INSIDE AMATEUR RADIO	$ 9.00	_____

SUBTOTAL _____

CA residents add 7.75% sales tax _____

S&H charges: $2.00 for the first book to an address, and $1.00/book for additional books _____

TOTAL PRICE _____

❒ Check or money order enclosed for $_____

❒ Charge my credit card:

❒ VISA ❒ MasterCard ❒ American Express

_____

Account Number Expiration Date

_____

Signature

_____

Name & call (please print)

_____

Address

_____

City/State/Zip

Participating in JOTA '95

Don Village, K6PBQ

On 22 October 1995, I opened my home station to Jamboree-on-the-air. This is the second year I have done so. I have found that there was a

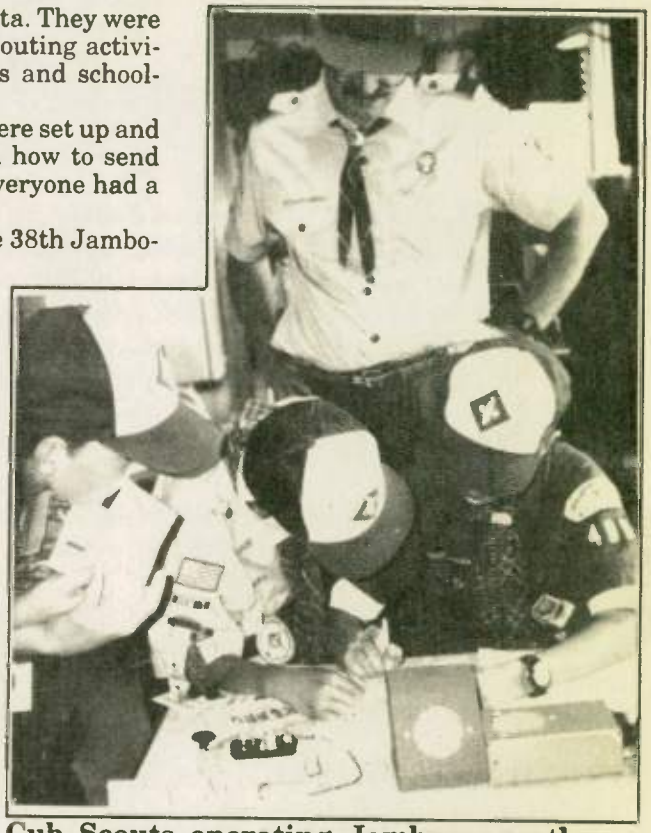
larger response to an invitation to my home than there had been to the club station at the Red Cross.

This year, four dens of Cub Scouts and Webelos, for a total of 15 scouts, plus scout leaders and parents attended. Our local scouts were able to talk to other scouting groups in Minnesota and South Dakota. They were able to discuss their scouting activities, summer vacations and schoolwork.

Practice oscillators were set up and the scouts were shown how to send their names in code. Everyone had a great time.

This year marked the 38th Jamboree-on-the-air, which is traditionally held the third full weekend in October every year. It is sponsored by the World Scout Bureau under the direction of the World Organization of the Scouting Movement.

Operating Jamboree-on-the-air is great fun. All you need to do is locate a local scouting group (look for a listing in your local telephone directory's white pages under Boy Scouts of America), and you will be all set for JOTA '96. WR



Cub Scouts operating Jamboree-on-the air, at the home of K6PBQ.

Worldradio

(USPS 947000)
P.O. Box 189490
Sacramento, CA 95818-9490

POSTMASTER: Send this page (NOT A COPY — THAT'S WASTEFUL!) with changes of address to above. (Please include mailing label intact. Please do not obliterate ANY information on the mailing label.)

Second-class
postage paid
Sacramento, California
and additional
mailing offices

********************3-DIGIT 954
WRL 31 0000391 199609 WB2CHD
DX BULLETIN
EDITOR CHOD HARRIS
PO BOX 50
FULTON CA 95439-0050