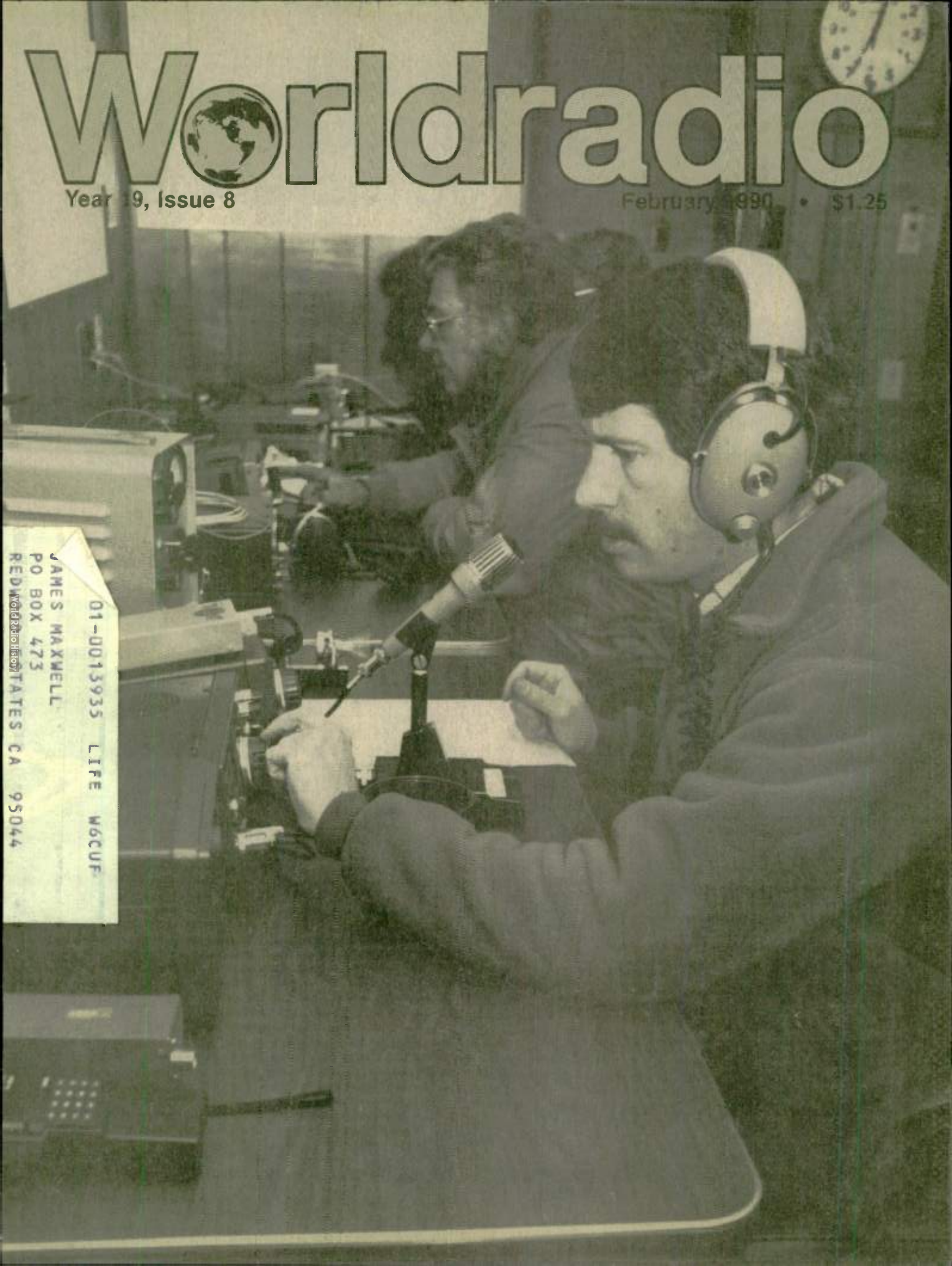
Worldradio

Year 19, Issue 8 February 1990 • $1.25



63 years and still serving the amateur's needs..now two more fine new amplifiers

the 3KD Classic

the 2KD Standard

Now you have a choice of four high quality HF desk models providing the performance and reliability you have come to expect from a Henry Amplifier

3KD CLASSIC. . .new to the Henry line

1500 W PEP nominal output SSB and CW. 1000 Watts ICAS, RTTY, and FM, covering the 3.5 to 30.0* MHz frequency range. Nominal gain: 15 to 20 times input drive. Tube complement consists of one remarkable new Eimac 3CX-1200D7 ceramic triode. It uses a Pi-L plate circuit with a silver plated tank coil for maximum efficiency and attenuation of unwanted harmonics.

2KD STANDARD. . .new to the Henry line

Smaller than the 2KD Classic and with a slightly lower power output, but still the same rugged construction, the same superior components, the same dependability. The 2KD Standard is a 1200 W PEP nominal output SSB, CW, 750 W RTTY FM RF linear covering the 3.5 to 30.0* range. It uses a Pi-L plate circuit with a silver plated tank coil for maximum attenuation of unwanted harmonics. Its tube complement consists of one Eimac 3-500Z glass envelope triode in a grounded grid circuit.

3KD PREMIER

The same superb specs as the Classic, BUT with the addition of 160 meter operation and QSK break in keying. Both the Premier and the Classic desk models are no nonsense. . .no compromise amplifiers that will please the most discerning amateur for many years to come.

2KD CLASSIC

A proven desk top workhorse providing full legal power. Uses two Eimac 3-500Z glass envelope triodes plus a full complement of top quality components. And, as with all Henry amplifiers is backed by an enduring history of the most reliable equipment available for the amateur market.

*10 meters available on export models only

For additional information on these and the rest of the fine line of Henry amplifiers please call or write for our new information packet.

The Henry line of amplifiers also offers four very heavy duty HF floor consoles in addition to several UHF and VHF models. In all, we now offer 15 different amplifiers. . .more than any other manufacturer that we know of. One of them has to be just right for you.

In addition to our broad line of amateur and commercial FCC type accepted amplifiers we offer special RF power generators for industrial and scientific users. Call or write Ted Shannon for full information.

HENRY RADIO 63 YEARS OF SERVICE

Henry Radio

2050 S. BUNDY DR. • LOS ANGELES, CA 90025 • (213) 820-1234

Toll free order number: (800) 877-7979 TELEX: 67-3625(Henradio) FAX (213) 826-7790

Transmitter hunt

NORM BROOKS, K6FO

I have been a licensed radio Amateur for 54 years, this month. One activity I had *never* participated in was a hidden transmitter hunt.

An opportunity to change this presented itself at the ARRL Pacific Division Convention in San Jose, on Sunday morning, Oct. 8, 1989. They scheduled a Hidden Transmitter Hunt!

I was told where the hunters would meet "at 8:30 a.m." But when I got there at that time, I found they had already left, as it had actually started at 8 a.m. I expressed disappointment — that I had hoped to ride with one of the hunters. "There are no rides," it was explained to me, "They're all on foot — it's a walking transmitter hunt."

Also, no directional antennas were permitted. Hunters were to use only their hand-held radios. I was shown how to hold my radio to my chest, using my body as a shield, to null out the signal. When I found such a null, watching the bar-graph S meter on my IC-02AT, the transmitter was in the direction behind me.

(L to R) Bryan Perkin, N6RSW; K6FO; and Chuck Lindsley, N6GAL

There was a carrier on 146.55 MHz, with an ID, KB6BA, about every 15 seconds. It was a fairly strong signal, but I found I could definitely find a null using the method described above. So I

(please turn to page 10)

ON THE COVER:

Jim White, N6UGO, operating at Sutter's Fort in Sacramento, CA, helps celebrate the 150th birthday of the city.

Yes, this is the same Jim White who was on our front page in December, while on duty near the epicenter of the big quake.

We were impressed! He didn't rest on his laurels or adopt the attitude that he had done his part and others could take care of this event. (There really aren't that many "others.")

Jim's father, also Jim White, WS6K, says that when his son goes into something "he does it 100 percent." The interesting thing is that all this dedicated activity is coming from someone who has been licensed only one year. Maybe they put vitamins in the water fountain at H-P.

For the sesquicentennial scoop turn to page 6.

CONTENTS

FEATURES

COLUMNS

TM

Worldradio

February 1990
Vol. 19, No. 8

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

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

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

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

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

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

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

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

Subscription rates: $13 per year, $25 for two years, $36 for three years and $130 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

Editor and Publisher.....Armond Noble, N6WR
Managing Editor.....Marra McElroy, N6WLM
Associate Editor.....Norm Brooks, K6FO
Assistant Editor.....Kaye Schwartz
Consulting Editor.....Lou Ann Keogh, KB6HP
Advertising Director.....Helen Noble
Ass't Adv. Director.....Rosalie Hernandez
Graphics Director.....Dianne Dunning
Circulation Mgr.....Dorothy Campini

PUBLISHER'S MICROPHONE

The exciting 28 MHz band was more exciting than usual. It was the ARRL's 10M Contest on Dec. 9 and 10.

K3ZJ added a classical touch by using "Julliard" as the phonetic for the last letter of his call.

On Dec. 11 John Ogle, KA6SQN, of Walnut Creek, CA, called with an idea to boost Amateur Radio. He believes that some of our retired educators who are also Amateurs might arrange to go back in the classroom (junior high and high school) and teach a course on radio communication for credit, with the Novice test being the final for the course. Use computers, packet, etc.

Bill Minton, AA5HI, of San Antonio, TX, dropped us a card showing an address label with an Amateur call sign on it. He says the Disabled American Veterans will make them up for you for a small donation.

•

We now recognize those ultra-brights who are the most recent to take out Lifetime Subscriptions. The latest **Worldradio** Super-Boosters are: Giles Berry, KA3CHY, Newcastle, DE; Bradford French, WB8NGI, Charlotte, NC (a Christmas present from his mother); John Marks, KM4CH, Slaughters, KY; Larry Hoepfer, N7BJT, Columbia Falls, MT; Michael Coolidge, N9ITX, Woodstock, IL; Thomas Earnest, W5UFO, San Angelo, TX; Scott Seamans, N7MNV, Yuma, AZ; Charles Carpenter, N6CFQ, Riverside, CA; Richard McIlroy, WB6VFZ, Huron, CA; Bruce Chapman, W2ISJ, Point Reyes Station, CA; Carl Alger, WB6JOT, Redding, CA; Norman Merrill, N6RXU, Placerville, CA; Warren Follett, Elgin, OR.

•

Bruce Eggers, WA9NEW, of Raleigh, NC, wrote: "That December 1989 issue is here and what a job it must have been to get THAT one out. Absolutely outstanding. I think I counted seven different articles on the 'Quake' and nine photos. I suppose such extensive and rapid coverage was facilitated somewhat by the juxtaposition of your office to the epicenter, but I'm sure it took a little overtime to put it together. I've commented on that issue a few times on local/section nets. Good work!"

Thanks. That issue was made possible by those involved putting their fingers to the keyboard. You can't imagine how many times I've asked Amateurs to write something about their special activity, only to hear, "I'm not a writer."

We don't really want bad imitations of Hemingway, just write as you would in a letter to a friend.

It may be that so many people have an aversion to "writing" because having to write essays in school was sometimes used as punishment. Or Miss Hortense Higginbotham, the English teacher, was always overly critical of the assigned book review.

Don't worry about it. We have a nice young lady who will add the commas, or, if need be, take them out.

Dave Witt, KA9GVI, of Berlin, WI, said, "One of the most intelligent things I have ever done was to become a life member of **Worldradio**. The education received from Aerials and Mobile was worth the price of membership alone."

Thanks to all of you who participated in our survey. The number one column, far and away, was that of "Kurt N. Sterba."

Little could I have imagined, lo those many years ago, when checking into a classroom (late 50s) that the man with the chalk to the blackboard would play such a role later in my life. I still remember his TBS-50.

Should you hear some strange signals on 2M (I mean even more strange than already heard), it may be from people who have bought a rig that "Ace" Goodwin, K5AR, Dallas, TX, told us about. Supposedly for security personnel, construction crews, etc., it is a 1W FM unit that operates 144 to 174 MHz made by R-Columbia Products. Where is the FCC when we need them?

Michael Migliaccio, N3HLM, Philadelphia, PA, says he likes the balance and variety of coverage in **Worldradio**.

He says he likes the human interest and news coverage (SF earthquake stories were OUTSTANDING), excellent photography and "I like **Worldradio** because it has a sense of humor."

Speaking of photographs: We'd run more if they came in. You don't have to be W. Eugene Smith! Just shoot.

•

Many letters say readers would like to see small construction projects and reviews of products not necessarily with a laboratory analysis, but just impressions and comparisons.

—Armond, N6WR

The Best of the Best

Performance.

Performance. Yours and your radio's. They go hand in hand. To be a truly world-class competitor, you've got to have a truly world-class rig. And it's here, now. The versatile new FT-1000 from Yaesu.

The FT-1000 will blow away your competition with a spectacular combination of power and operating flexibility with such features and options as:

• **Direct Digital Synthesis (DDS),** two ten-bit DDS plus three eight-bit DDS for fast lock-up time and lower synthesizer noise than other traditional PLL systems.

• **High RF Power Output,** continuous adjustable output from 20 to a full 200 watts.

• **Dual Receive** utilizing two tuning knobs for easy spotting; with optional BPF-1 module allows cross-band dual receive.

• **Digital Voice Storage (DVS-2)** option provides instant playback of 16-second receive memory, plus two 8-second "CQ Contest" messages on transmit.

• **Automatic Antenna Tuner** built-in with fast action and 39 memories for quick band changes.

• **QRM Rejection Systems,** including a variety of cascaded filter selections, width control, IF shift, IF notch filter, all-mode squelch, dual-mode noise blanker and a CW audio peaking filter.

Additional Features: 108dB dynamic range • front panel RX antenna selector • built-in electronic keyer module • stereo dual receive • flywheel effect on main and sub VFO tuning dials • twin frequency displays • CW spot.

A product of three years of intensive research and design. This HF rig will allow you to achieve a position of competitive dominance.

See the exciting new FT-1000 at your Yaesu dealer today. It's the best of the best.

YAESU

Performance without compromise.

DDS Direct Digital Synthesis

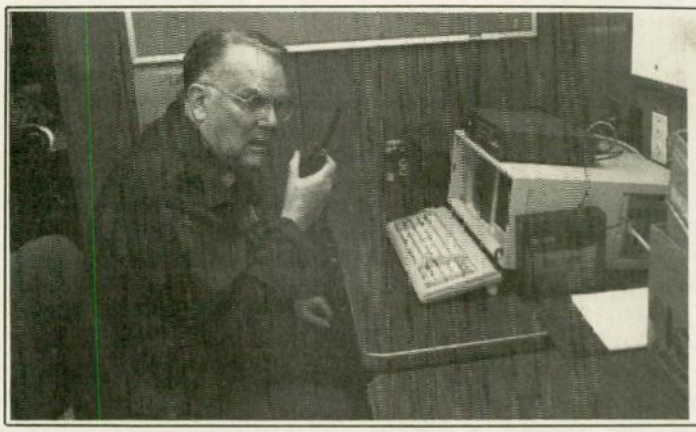
W6AK — the Sacramento Sesquicentennial station

JIM L. WHITE, N6UGO

One hundred-fifty years ago, horse-drawn wagons pulled into Sutter's Fort. On Dec. 2, the Sacramento Amateur Radio Club pulled up in the State of California Office of Emergency Services van. Thirty feet long, diesel-powered, fully heated and air conditioned and having up to five radio operating positions, the van is a stark contrast from the tattered wagons which must have rolled into Sacramento in its beginning.

The club station operated 30 hours as an official Sacramento Sesquicentenial special event station. During that time club operators made 270 QSOs on 10, 15 and 20M. Sacramento received 150th birthday wishes from stations in 42 states, 3 provinces, Mexico, Australia and Johnston Island.

The van was parked just outside the Fort's walls and dipole antennas were raised into the nearby oaks with slingshots and fishing line. By 1700Z the first station was set up and on the air on 15M. Jim Rich, N6SZQ, was making the first contacts. Jim was the organizer of the event and lead the group with 64 contacts.



Keith Crandall, K6QIF, ramrod of many of the emergency communications and public service activities in the Sacramento area

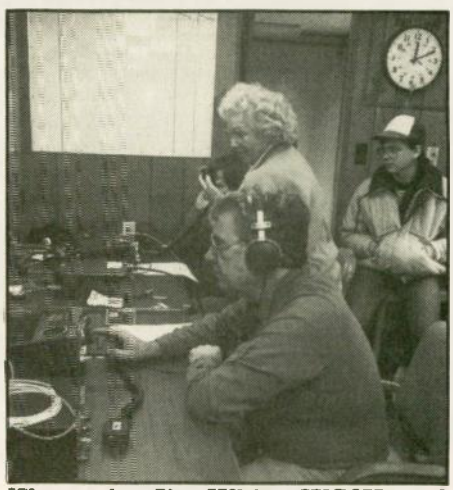
Meanwhile Jim C. White, WS6K, and myself were busy getting 10 and 20M stations operational. Operators changed frequently. After calling "CQ CQ CQ Sacramento Sesquicentenial Station W6AK calling CQ" over and over, the tongue tends to become tied.

Also working the stations were Art Hartwell, WA6YZD; Carl Crump, WA6VLS; Rick McCusker, N6UBJ; Don Younkers, N2DME; Rich Brimhall, N6UAF; Lee Rominger, KB6RIH; and Chris Touponce, KC6GWS. Keith Crandall, K6QIF, ran 2M packet and promoted Amateur Radio by passing traffic for the visiting public to Bob Cloud, W6CFQ, and the NTS system.

Once relieved, I had an opportunity to visit Sutter's Fort and the historic exhibits inside. Founded in 1839 by Captain John Sutter, the Fort was the first permanent white settlement in the area. The land, granted by the Mexican governor, was issued with the stipulation that 12 families must be persuaded to settle near the Fort.

A native of Switzerland, Sutter was fond of farming and frontier industry. Having traveled extensively from Florida to Hawaii, New York to California, Sutter had long held the dream of establishing his idealistic town, "New Helvetica" or New Switzerland.

During his travels he gathered the knowledge and materials he would need. In the American midwest he learned the principles of fort building and Indian negotiations. In Hawaii he purchased the cannons he would use at the fort. Along the way he promoted himself first to Colonel and then to Captain.



The senior Jim White, WS6K, and others of the "radioactive" crew on hand

While viewing the exhibits it occurred to me that, in many ways, Captain Sutter and the Amateurs operating near the Fort had much in common. Known as an articulate communicator, Sutter was described as being captivating in conversation and a man of profound sincerity. An altruist by nature, Sutter's dream of "New Helvetica" was meant to provide a better existence for both white settlers and the Indians of the area.

He also had an appreciation for technology. The Fort was less a garrison than it was a trading post and industry center. Sutter prided his community on its relatively high living standards and technological sophistication.

Sutter's Fort is one of the top tourist attractions in Sacramento.

Far more comfortable than the covered wagon of yesteryear which carried the hardy in search of California's gold

The Fort housed a blacksmith, cooperage, foundry, bakery, tannery, tack shop, gunsmith and the only hospital for hundreds of miles. Sutter sought out men who were "good mechanics," such as James Marshall, the man who set up the mill in the nearby mountains and who would later discover gold, resulting in the great gold rush.

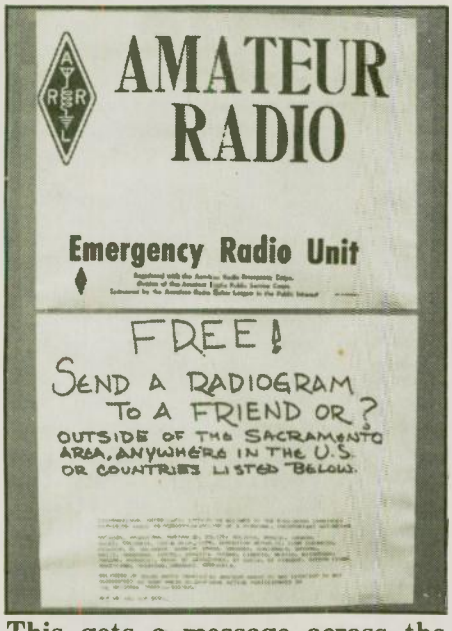
Had Captain Sutter been able to visit our van and see our radios operating, he would no doubt have immediately recognized the value of this enhanced form of communications. Communicating was difficult but essential to frontier existence. When his settlement was young, Sutter sent representatives north to the Oregon trail to convince emigrants to venture south to Sutter's Fort. When early snows caught the Donner party in the Sierras, the distress message was sent to Sutter's Fort by foot through the snow. Before a rescue could be effected, much of the party had starved or resorted to cannibalism to survive. I think Sutter would have liked to have been an Amateur.

On Sunday, the second day of the special event operation, the California International Marathon took place. The course wound past the Fort and I managed to get an assignment only a block away from the van.

While I worked the race, W6AK operators were working the bands. Ten meters was particularly hot that day. I returned to the van at about noon to find Don working a pileup. I took over the 20M station while Rick was pounding out a CW QSO at 20+ wpm. That's lousy for him, but then he was loathe to use my keyer in place of his straight key.

By three o'clock, enough was enough and members started to break down their stations. By five everything was packed up, including the antennas. It's amazing how it may take hours to get an antenna up into a tree, but you can take it down in seconds.

Happy birthday Sacramento. I wonder what kind of radios will be here to celebrate your 200th? □



This gets a message across the country much faster than the Pony Express, for which Sacramento was the western terminus.

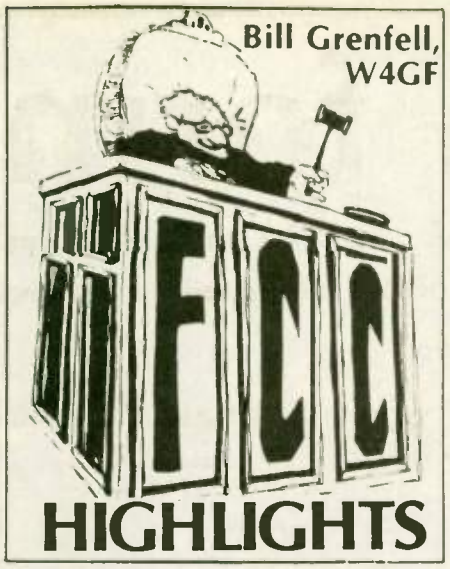
On the Dog Trail. . .again!

LOREN KUHNLY, KA0TMW

From Duluth to Grand Portage, MN, and back via the *Beargrease Sled Dog Trail* is a long, hard 500 miles. Only about half as long as the *Iditarod Race* of Alaska, but just as grueling to dogs, humans and radio gear used by Amateurs who provide health and welfare communications for the race.

In the late 1880s to 1899, a Chippewa Indian named John Beargrease delivered the mail under contract along the North Shore of Lake Superior. In winter John used a team of four dogs and a modified toboggan for his route. When he considered the ice safe, he traveled on the Lake to avoid the ups and downs

(please turn to page 33)



The FCC has "... received 41 responses to its wide-ranging HF letter of inquiry, which looks into unlawful or excessive third-party traffic, phone-patch, CW training and bulletin operations on the 20M band.

"... In October, FCC Special Services Division chief Robert McNamara sent the letter to 19 Amateurs and organizations believed to be involved in the high-pressure disputes over these different usages of the band. The responses contain wildly varying accounts of the situation.

"At one extreme some commenters believe that no problem exists. Others plead for rule changes and rapid FCC enforcement to stem flagrant rule violations that threaten the total destruction of the service. The majority believes nets and patches are useful, that the benefits outweigh the drawbacks and that a handful of lids are ruining the fun for everybody else.

"At the center of attention are two Amateurs." One is ... KV4FZ, whose transmissions the letters allege are "... jamming communications with bizarre lectures over the propriety of messages and patches.

"The other Amateur in the middle of the dispute is ... K1MAN, manager of the International Amateur Radio Network ..." His "... daily multi-band broadcasts are often cited as repetitious spectrum wastage instead of legitimate Amateur news bulletins." (*ARRL Letter,* 12/1/89; *W5YI Report,* 12/01/89. See also the first paragraph of FCC Highlights, 11/05/89.)

•

A Corpus Christi, TX, General class Amateur licensee has been fined $300 by the FCC for "... attempting to obtain an Amateur service license by fraudulent means." He qualified for General class in August 1988 and submitted a new application for upgrade to Advanced class in June 1989 with a false Certificate of Successful Completion of Examination (CSCE) attached. The CSCE he submitted with the Advanced application was an altered photocopy of the 1988 General class CSCE. (*W5YI Report,* 12/01/89).

•

On Nov. 28 the FCC adopted a Notice of Proposed Rule Making, Docket PR 89-552, allocating the use of 220 to 222 MHz by Private Land Mobile services. Pending adoption of appropriate Land Mobile rules, Amateur stations may continue operation on these bands.

•

On Oct. 12 the United States and the Federated States of Micronesia entered into an Amateur Radio third party agreement, which allows Amateurs in both countries to relay personal messages on behalf of non-Amateurs. Communications relating directly to the safety of life or property may be handled by Amateur stations in the two countries. (*ARRL Letter,* 10/24/89; *Westlink Report,* 10/10/89).

•

"Thank you for your recent letter concerning the proposed fees on Amateur Radio operators. I agree that Amateurs often provide valuable public service in times of emergency and that many school children become introduced to science and engineering through their introduction to Amateur Radio. Recognizing this, I have spoken with Senator Levin and have agreed to work with him to strike these fees from the current legislation." — Ernest F. Hollings, Chairman.

Senator Hollings is Chairman of the Committee on Commerce, Science and Transportation. (*W5YI Report,* 11/15/89).

•

Seeking alternative relief at the Federal level from state and local so-called scanner laws, the ARRL has asked the FCC (Part 97 Rules rewrite) to adopt a rule which would provide that: "... any station apparatus may be used in an Amateur station, fixed, mobile or portable, whether or not such apparatus is incidentally capable of operation on frequencies assigned to another service." (*W5YI Report,* 11/15/89).

•

END-OF-MONTH LICENSE TOTALS

	Sep 1989	Oct 1989
Extra	49,545	49,883
Advanced	101,514	101,725
General	116,496	116,797
Technician	112,631	113,786
Novice	84,614	84,780
Totals	464,800	466,971□

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

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 Dec. 1, 1989.

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

Radio District	Group A Am. Extra	Group B Advanced	Group C Tech./Gen.	Group D Novice
0	WY0H	KF0GP	N0LGU	KB0FLF
1	NZ1W	KC1RO	N1HDM	KA1USB
2	WU2S	KE2QQ	N2KCM	KB2IVC
3	NX3L	KD3QE	N3HQY	KA3VJU
4	AB4RY	KN4BN	N4XMC	KC4NHA
5	AA5PA	KI5AB	N5PQH	KB5LBH
6	AA6SJ	KK6CO	N6XBF	KC6HED
7	AA7CP	KF7YN	N7NXF	KB7IZJ
8	WX8O	KF8CO	N8LOU	KB8ILU
9	WM9T	KE9TG	N9JCB	KB9DPW
North Mariana Is.	AH0H	AH0AF	KH0AM	WH0AAL
Guam	KH2L	AH2CF	KH2EH	WH2AMI
Johnston Is.	AH3B	AH3AD	KH3AB	WH3AAC
Midway Is.		AH4AA	KH4AD	WH4AAG
Hawaii		AH6KC	NH6VG	WH6CGF
Kure Is.			KH7AA	
American Samoa	AH8D	AH8AD	KH8AH	WH8AAZ
Wake Wilkes Peale	AH9A	AH9AD	KH9AE	WH9AAH
Alaska		AL7LP	NL7TA	WL7BVY
Virgin Is.	NP2F	KP2BR	NP2DN	WP2AGZ
Puerto Rico		KP4QJ	WP4XD	WP4IPO

Subscription form

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

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

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

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

(SOURCE)

(59 60)

Name _____

Call _____

Address _____

City _____

State _____ **Zip** _____

☐ NEW	☐ Renewal	☐ Gift
12 issues	($1.08 per issue)	$13.00
24 issues	($1.04 per issue • save $1)	$25.00
36 issues	($1.00 per issue • save $3)	$36.00
Lifetime	(Be a WR super booster)	$130.00

Overseas Readers! Prices quoted are U.S. funds. Please include **$10** extra/year for surface mail delivery outside the U.S. Subscriptions may be paid in U.S. funds drawn on U.S. banks, by International Money Order, VISA or MasterCard. Canadian Postal Money Orders (in U.S. funds) are also acceptable.

☐ **Check enclosed** ☐ **MasterCard** ☐ **AmEx** ☐ **VISA**

Card # _____ **Exp. date** _____

Signature _____

Please clip and mail to . . .

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

For Subscriptions
(charge cards only)
TOLL FREE 1-800-365-SUBS 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, and will be mailed to you in early May.

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

TRANSMITTER hunt

(continued from page 3)

decided to give it a go, even though I was a half-hour late.

There was a freeway underpass nearby, and the signal seemed to come from there. In the underpass, I got indications that the signal was definitely coming from the side of the underpass away from the hotel. That area was a warehouse area, with blocks and blocks of large buildings of "tilt-up" concrete construction.

A few more readings, and walking a few more blocks, I found that I had caught up to the hunters, as I ran into them at every intersection. Signals seemed to come from everywhere, and it was obvious that we were getting reflections off buildings and chain link fences.

I found that standing in the middle of an intersection was the best place to get a direction reading. Fortunately, being Sunday morning at 9 a.m., there was hardly any traffic.

Soon, I found that I was getting close to the hidden transmitter as I got "S-9" signals no matter what direction I turned. What to do?

I detuned my radio by 5 kHz, which let me get a null for about another block. I took off the "duckie" antenna and got *no signal at all.* Visions of a paper clip went through my head when I got an inspiration.

I took off my convention ID badge, straightened out the pin and used it as a two inch antenna! This time I held the HT out in front of me, using my body as a reflector. I found I could DF the signal, this time tuning for maximum signal!

It was a pleasure to lead myself to a car parked near one of the warehouse buildings. I looked in the hatchback window, where there was a sign saying, "Congratulations, you have found it!" KB6BA, who ran the hunt, was nearby to check in the successful participants.

Michael Friedman, KC6FYG/KT, and his father Gary, W6YKF, are standing in front of the car which held the treasure.

The hidden transmitter was a standard mobile 2M radio owned by KB6BA. It was set for low power, further attenuated to 1W output. It was parked about ¾ mile from the starting point.

There were 10 participants who started out on time, at 8 a.m. They were Byron Smith, WA6YLB, accompanied by James Williams, KA6YHO; Chuck Linsley, N6GAL; Ben Young, KA6SIQ; WA6ZQZ; Bryan Perkin, N6RSW; Lauren Stiles, WA6CIE; Michael Friedman, KC6FYG/KT, accompanied by his father Gary, W6YKF, who did not hunt; Don Village, K6PBQ; Teryl Pratt, N6NRQ; and Ron Gross, AA6JV.

Byron came in first. During the prize drawings he was presented with a handsome plaque as his prize.

I was the eighth hunter to find the transmitter out of 11 original groups, and that's never having been on a hunt before!

How about your club putting on a hunt like this? Preparation is practically nil, as specialized hunting equipment is not allowed. All you need is a HT to participate, and there's a great sense of satisfaction in finding the fox.

What about no-code? (part one)

RAY ADAMS, N4BAQ

I've heard the FCC officials in Washington say more than once that a no-code Amateur license would never have a chance of getting off the ground until and unless it is supported by the ARRL.

I'm sure most of you know the ARRL Board of Directors recently suported the idea of filing a petition for rulemaking to create a codeless Amateur license. In my opinion that is the hurdle that will cause it to become a reality. If that be so, there is no point belaboring the desirability or undesirability of the condition. Let us therefore concentrate on how it can be made to the betterment of Amateur Radio. If it is to be, then it is to be regardless of what we say or do, however, carefully worded comments on the notice of proposed rulemaking when released by the FCC can certainly affect the Report and Order by which the rules are eventually changed, as evidenced by the number of times my name is mentioned in the discussion that is part of the report and order rewriting Part §97.

I fully intend to file comments on the no-code situation, and would appreciate your opinions as to what privileges the licensee should have and how the test should be compiled as well as administered.

I believe I am one of the few Amateurs in the nation who will take the time to write a meaningfully articulate comment that does not have an axe to grind. I am not supported by any

(please turn to page 18)

Pitcairn Island Bicentennial — 1790-1990 (conclusion)

Dr. G. O'TOOLE, KB6ISL, and SUZANNE MORELL

Part one last month began with a monologue written from the viewpoint of famed mutineer Fletcher Christian himself.

Christian and nine others seized the HMS Bounty *from Captain LT. William Bligh in 1789. These men are the forefathers of Pitcairn's inhabitants today.*

When we left last month we learned that the 45 islanders work continually, only stopping to rest on Saturday, their day of Sabbath.

Gardening is one of their tasks which takes up much time when the season arrives. The gardening is done on a sunny plateau where later their dark, rich soil bears them luscious edibles such as sugar cane, papayas, yams and breadfruit.

How ironic that Captain Bligh left Portsmith, England, on Dec. 23, 1787, in route for Tahiti to acquire food. This food would later feed the bondmen of Jamaica.

Their quest was to fulfill the King's request of finding breadfruit and nurturing these plants to feed many for the cost of a few. When Fletcher Christian mutinied against his Captain and sailed back to Tahiti and later to Pitcairn, the men found themselves with an evergrowing abundance of breadfruit: Enough for many, many slaves to have been fed.

If only Captain Bligh had altered his course and destination, to find Pitcairn Island before his crew mutinied, he would have been held in high esteem by his peers for accomplishing the mighty task of feeding the slaves.

Some of the other jobs the islanders do are fishing, weaving and carving. The ladies present their talent in the intricate designs and patterns they weave, things such as baskets of all sizes and colorfully designed purses that have the embroidered name of their beloved homeland.

As for the men, they have a unique craftsman ability. They will carve anything from sharks, dolphins or whales and even *Bounty* replicas that are carved in great detail and possess many of the characteristics of the original *Bounty*. These hand autographed carvings are truly works of art.

As the ladies weave and the gentlemen carve, they are assembled in what is similar to a picnic. They do their work in beautiful locations overlooking the sea or they sit on their mountaintop or work on flat land.

They are often found working on the grass chatting, while watching their children jumping on the trampoline or rooting them on as they partake in a healthy game of softball.

At the time when the community is found together working, a pleasant portrait is portrayed as the workers gossip and laugh at the stories that they share. This is the time when they are brought up to date on what is happening either there on the island or around the world. The hams join in on the conversation when they tell of the weather of a distant land, the United State's Presidential elections, what the Queen of England and her family are doing for the weekend or what new Hollywood gossip has arisen!

But when the islanders are through learning of current events, they ease into a pleasant evening of listening to the tunes of their most beloved and idolized singer: Elvis Presley. It was once said by one of the islanders that the

spirit and memory of Elvis Presley will never die on their island . . . Alive or not, he is their hero.

A past necessity of Pitcairn has now slowly evolved into history. The necessity: The wooden longboat. Since Sept. 4, 1928, when the first wooden longboat was launched, until December 1987, longboats have been a much needed and much loved essential of the island. Recently the second from the last wooden longboat was put to rest and has now become an island museum piece. Although the modern aluminum longboat has replaced the older one, the wooden longboat will always be remembered for its heroic exploits upon the rough seas.

Items the island would need but not be able to resource are all brought in by regular supply ships. In the interim between the arrival of these supply ships, the Pitcairners have to depend solely on the voluntary assistance of passing vessels. Remember that Pitcairn has much of the ocean all to themselves! These much appreciated bearers of joy bring such items as fuel, food, school and mechanical supplies, building materials and mail.

Pitcairn's main source of communication to distant lands is through Amateur Radio, which has been a part of the island for many years. This cherished pastime of the island has expanded through the years with the dedication of its operators. One such operator was Andrew Young, who communicated to faraway places using a spark gap generator in 1937.

Andrew Young's charisma and vitality was heard on airways around the world. His energy was taken as an example, and thus motivated his neighbors to share in on the fun. Soon after, the island was but a chorus of reed whistles playing the tunes of the Morse code.

In 1937 Andrew Young was able to communicate with his simple crystal receiver to a radius of 1,000 miles. But on one extraordinary day, he was able to listen to KFI in Los Angeles, 3,500 miles away. With his aged 12-volt spark gap generator he was helping to make history.

A short time later, this ham's paradise was in threat of closing down due to the antiquity of the station. But the island Amateurs' luck prevailed with the more common usage of the A1 tube transmitter.

Since then, the island's progress in communication has vastly improved. Today, all Amateur Radio stations on the island use solid-state equipment, including RTTY. Today there is a continually growing number of Amateur Radio operators on the island. They assist in the operation of the commercial radio station and newly installed satellite communications system.

Beginning on Jan. 1, 1990, through Dec. 31, 1990, The Pitcairn islanders will celebrate their 200th anniversary, commemorating the arrival of Fletcher Christian and his mutineers. To celebrate this splendid occasion, Pitcairn Island will hold a special event via Amateur Radio. For the entire year nine Amateur Radio operators on Pitcairn will be making glorious contacts around the world with the other Amateur Radio stations. These operators will use a special call sign: VR200PI.

To make contact with only one operator on the island will enable you to obtain a handsome, multicolored 11×14 document that you will no doubt always cherish.

So mark those calendars with this historic bicentennial and join the fun of speaking to direct descendants of heroes you've always heard mentioned! Help yourself to a memory you'll never forget!

Colvins in Niger

In January 1989 Mr. and Mrs. DX, Lloyd and Iris Colvin, W6KG and W6QL, arrived in Niger after a very rough trip from Nigeria. They had corresponded with the communication authorities for more than a year and expected to receive permission to operate Amateur Radio. Such was not the case.

They were told that all major departments must approve permission and that it would take many more months. Greatly disappointed, the two left, but told the authorities they would return if it was decided they could operate. Later they were notified that they could operate Amateur Radio in Niger, but that it must be done in 1989.

The Colvins immediately arranged to return to Niger and obtained the call 5U7QL (for both of them). They have just concluded a very successful operation on four bands CW and SSB during which they made some 8,000 QSOs with Amateurs in 146 countries, from Nov. 3 through 18.

The natives helped the couple erect their antennas (a Cushcraft 4-band beam). They failed to tighten the elements to the boom properly and after the beam was 30 ft. in the air, it was discovered that the elements would twist in strong winds. The problem was solved by pushing the elements back in line daily using a 25 ft. tree branch.

The next stop for the adventuresome duo is Ouagadougou, in Burkima Faso.

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

MFJ TUNERS

Here is the finest 3 KW Tuner money can buy with roller inductor, dummy load, *new* peak reading meter, antenna switch, balun plus more ... $349.95

The MFJ-989C is not for everyone.

However, if you do make the investment you get the finest 3 KW PEP tuner money can buy - one that will give you a lifetime of use, one that takes the fear out of high power operation and one that lets you get your SWR down to absolute minimum.

The MFJ-989C is a compact 3 KW PEP roller inductor tuner with a new **peak** reading Cross-Needle SWR/Wattmeter. The roller inductor lets you get your SWR down to absolute minimum.

With **three continuously** variable components - two massive 6 KV capacitors and a high inductance roller inductor - you get precise control over SWR **and** the widest matching range possible from 1.8-30 MHz.

MFJ-989C **$349.95**

You get a **new** lighted **peak** and average reading Cross-Needle SWR/Wattmeter with a **new** more accurate directional coupler.

You get a giant two core balun wound with teflon wire for balanced lines and a 6-position antenna switch with extra heavy switch contacts.

Its compact 10¾x4½x15 inch cabinet fits right into your station.

You get a 50 ohm 300 watt dummy load for tuning your exciter, a tilt stand for easy viewing and a 3-digit turns counter plus a spinner knob for exact inductance control. Add $10 s/h.

2-knob *Differential-T*™ Tuner

MFJ-986 **$269.95**

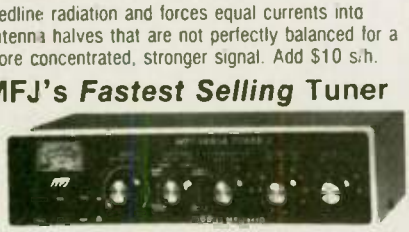
The new MFJ-986 Differential-T™ 2 knob Tuner uses a differential capacitor to make tuning foolproof and easier than ever. It ends constant re-tuning with broadband coverage and gives you minimum SWR at only **one** best setting. Covers 1.8-30 MHz.

The roller inductor lets you tune your SWR down to absolute minimum. 3 digits turns counter lets you quickly return to your favorite frequency.

You get MFJ's **new** peak and average reading Cross-Needle SWR/Wattmeter with a **new** directional coupler for more accurate readings over a wider frequency range. It reads forward/reflected power in 200/50 and 2000/500 watt ranges. Meter lamp uses 12 VDC or 110 VAC with MFJ-1312, $12.95.

A **new** current balun for balanced lines reduces feedline radiation and forces equal currents into antenna halves that are not perfectly balanced for a more concentrated, stronger signal. Add $10 s/h.

MFJ's *Fastest Selling* Tuner



MFJ-941D **$109.95**

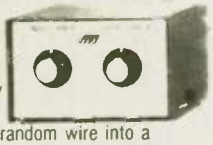
The MFJ-941D is MFJ's fastest selling 300 watt PEP antenna tuner. Why? Because it has more features than tuners costing much more and it matches everything continuously from 1.8-30 MHz.

It matches dipoles, vees, verticals, mobile whips, random wires, banlanced and coax lines.

SWR/Wattmeter reads foward/reflected power in 30 and 300 watt ranges. Antenna switch selects 2 coax lines, direct or through tuner, random wire, balanced line or tuner bypass. Efficient airwound inductor gives lower losses and more watts out. Has 4:1 balun. 1000 V capacitors. 10x3x7 inches.

MFJ's *Random Wire* Tuner

MFJ-16010 **$39.95**



You can operate all bands anywhere with any transceiver when you let the MFJ-16010 turn any random wire into a transmitting antenna. Great for apartment, motel, camping operation. Install a wire anywhere! Tunes 1.8-30 MHz. 200 watts PEP. Ultra small 2x3x4 in.

MFJ's *Deluxe* 300 Watt Tuner

MFJ-949D **$149.95**

The MFJ-949D gives you lower SWR than any tuner that uses two tapped inductors. Why? Because you get two **continuously** variable capacitors that give you infinitely more positions than the **limited** number on switched coils.

This gives you the precise control you need to get your SWR down to a minimum. After all, isn't that why you need a tuner? Covers 1.8-30 MHz.

You get MFJ's **new** lighted 2-color **peak** and average reading Cross-Needle SWR/Wattmeter, dummy load, antenna switch, and 4:1 balun - all in a compact 10x3x7 inch cabinet. Meter lamp uses 12 VDC or 110 VAC with MFJ-1312, $12.95.

With MFJ's **deluxe** 300 watt PEP tuner you get an MFJ tuner that has earned a reputation for being able to match just about anything - one that is highly perfected and has years of **proven** reliability.

MFJ's *Mobile* Tuner

MFJ-945C **$89.95**

Don't leave home without this **mobile** tuner! Have an uninterrupted trip as the MFJ-945C **extends your antenna bandwidth** and eliminates the need to stop, go out and adjust your mobile whip.

You can **operate anywhere in a band and get low SWR.** You'll get maximum power out of your solid state or tube rig and it'll run cooler and last longer.

Small 8x2x6 inches uses little room. **SWR/ Wattmeter and convenient placement of controls make tuning fast and easy while in motion.** 300 watts PEP output, efficient airwound inductor, 1000 volt capacitors. Mobile mount. MFJ-20, $3.00

144/220 MHz VHF Tuners

MFJ-921 **$69.95**

MFJ's new VHF tuners cover both 2 Meters and the 220 MHz bands. They handle 300 watts PEP and match a wide range of impedances for coax fed antennas. SWR/Wattmeter. 8x2½x3 in. **MFJ-920, $49.95.** No meter. 4½x2½x3 inches.

MFJ

MFJ ENTERPRISES, INC.
Box 494, Miss. State, MS 39762
(601) 323 5869; TELEX: 53 4590 MFJSTKV

MFJ ... making quality affordable

MFJ's *Artificial* RF Ground

$79.95 MFJ-931

You can create an artificial RF ground and eliminate RF "bites", feedback, TVI and RFI when you let the MFJ-931 resonate a random length of wire and turn it into a tuned counterpoise. The MFJ-931 also lets you electrically **place a far away RF ground directly at your rig** - no matter how far away it is - by tuning out the reactance of your ground connection wire.

Barefoot/1.5 KW Linear Tuner

MFJ-962C **$229.95**

For a **few** extra dollars, the MFJ-962C lets you use your barefoot rig now and have the capacity to add a 1.5 KW PEP linear amplifier later. Covers 1.8-30 MHz.

You get two husky **continuously** variable capacitors for maximum power and minimum SWR. And lots of inductance gives you a wide matching range.

You get MFJ's **new** peak and average reading Cross-Needle SWR/Wattmeter with a **new** directional coupler for more accurate readings over a wider frequency range. It reads forward/reflected power in 200/50 and 2000/500 watt ranges. Meter lamp uses 12 VDC or 110 VAC with MFJ-1312, $12.95.

Has 6-position antenna switch and a teflon wound balun with ceramic feedthru insulators for balanced lines. 10¾x4½x14 7/8 inches. Add $10.00 s/h

MFJ's *smallest* Versa Tuner

MFJ-901B **$59.95**

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

It matches whips, dipoles, vees, random wires, verticals, beams, balanced and coax lines from 1.8-30 MHz. Efficient airwound inductor. 4:1 balun.

FOR YOUR NEAREST DEALER OR TO ORDER

800-647-1800

• 1 year **unconditional** guarantee • 30 day **money back** guarantee (less s/h) on orders from MFJ • Free catalog • Add $5.00 s/h (except as noted)

Talk about space aliens

HANK BROWN, W6HB

Every few weeks a friend of mine has an appointment at a Veterans' Administration hospital as a result of having gone ashore on Guadalcanal Island during the early part of the second World War.

At the hospital my friend meets all sorts of people, most being veterans who have suffered — taking it on the chin in any of several wars going back over the years and, now, as recently as Vietnam and Grenada. There are plenty of oddballs but, outstanding among these, is one who claims he is a space alien.

He seems to be normal, otherwise well balanced, personable and evidently raised in a normal family atmosphere. He is married and has children and holds a job. He says he does not know specifically why he is here, but says he knows he was placed on earth for some fixed purpose. However, the mother ship has never contacted him and he feels that he's been left high and dry. Poor guy.

As my friends know, all my life, from the mid '20s and the years of high school, onward to the present day, I have emphasized an interest in space and communicating through space. This interest shaped my professional career and, before and after, was the backbone of my interest in ham radio (I prefer to think of it as Personal Radio).

This mind-set led to my part in the first two-way moonbounce QSO and active participation in the early OSCAR program, notably OSCAR 3, the world's first non-military real-time-repeater satellite.

But let's go back, way back: Licensed in 1923, the radio signals I sent out during my school years are still radiating outwards; out there somewhere traveling at the speed of light, 186,000 miles per second, spreading, diluting themselves in the awesome voids of the cosmos.

They started in 1923 and their farther edge is still spreading outward at the steady rate of over 16 billion miles a day for each of the days of the past 66 years. Of course, they are now quite weak, diluted by diffusing into that boundless void. But they are there, churning along like the foamy edge of a wave hissing up a beach. And they could be detectable as they reach and pass among solar systems that are the home of intelligent beings.

The earth is surrounded by a layer of rarefied air ionized by ultra violet rays from the sun that, until short waves were generated, normally reflected radio signals back to earth. It was as though we were inside a sphere that let very little out beyond the shell that has become known as the Heaviside Layer.

In the early days of "wireless," the longer wavelengths, those over 200M crest to crest and longer, much, much longer, were the ones the experts judged to be of value. The shorter waves were thought to be useless. So, by treaty and fiat, we hobbyists and learners were confined to the "useless" part of the spectrum.

No one knew it then but those shorter wavelengths were the waves that could readily penetrate the ionospheric shell. Forced to do so if we wanted to be involved, we were the first significant numbers of radio operators with stations generating radio energy capable of routinely penetrating the barrier layer surrounding the earth and thus gaining access to outer space.

And there were lots of us. So, day or night, from the radio shacks of the kids of the world came this preponderance of the earth's first signals to outer space.

Now, nearing the last decade of the 20th century, with our powerful television, FM broadcast, radar and communications stations, there is a massive cacophony of radio borne sight and sound pouring forth from earth, bombarding space as it bombards our citizenry. But the signals from my peers and me, from our school years of over six decades ago, are out there at the leading edge, probing and seeking, for the surge of modern TV and FM and the other waves dally 25 to 30 years behind, travelling at the same speed as those we sent, destined forever to never catch up with, let alone pass, the leaders.

So, thinking of that poor soul waiting for word from the mother ship, who are the true space aliens? Well, to paraphrase Jon Carroll *(San Francisco Chronicle)*, here we are spinning through the unmapped void without a road map, preceded by radio waves generated by a bunch of kids, bound to spread unease for any distant civilization that intercepts them. . .we'll be lucky if they don't fumigate before landing.

"We, bolstered only by the evidence of things not seen, book ended between birth and death, bewildered by our own emotions. . .talk about space aliens." □

A lightning bolt can be as long as 20 miles. —*Central Arkansas Radio Emergency Net*

K2VJ Portable Italy Two (part one)

VINCENT J. LUCIANI, K2VJ

It was 9 a.m. local time — seven hours ahead of EST, two hours ahead of UTC and eight hours after departure from New York — when our big TWA bird touched down on the approach runway at Milan International Airport in Italy. There to greet me after the inevitable but thankfully brief customs ritual was my friend, Dr. Giorgio Beretta, better known in certain international circles as I2VXJ.

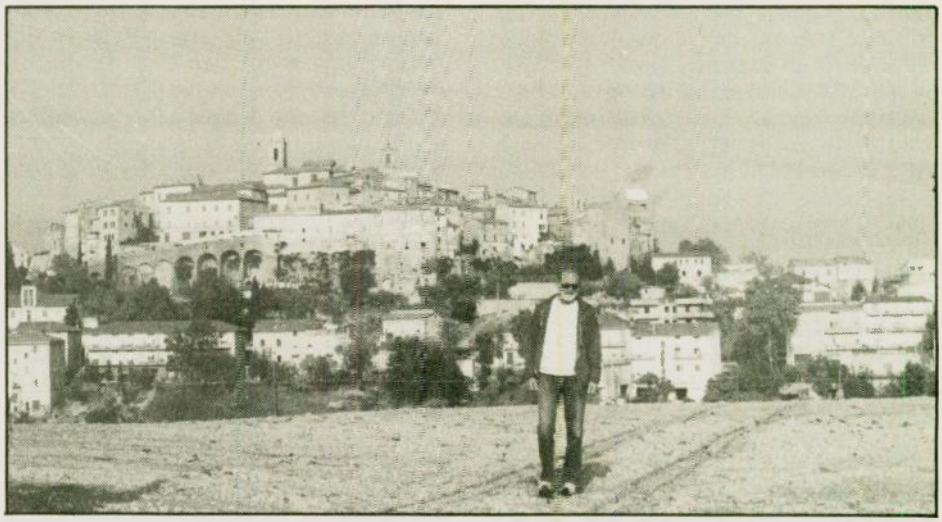
This one-time "Italian Odyssey" of mine held various objectives, such as a return in kind to Giorgio for his past visit to America; of course there were many relatives to visit, none of whom I had ever ever seen; and there was the inherent need for a "roots" trek to the small mountaintop birthplace of my parents.

Naturally, I planned to tour several of Italy's famous cities, including Rome for a visit with the Pope. Unfortunately, on my day in Rome, I had been talked into climbing the narrow, winding, unending sets of cramped stairways leading to the top of St. Peter's dome — if you've been there, you know — and missed the Pope's scheduled appearance.

Also, my less fortunate friends back home were entitled to a reliable report on those delicious Italian dishes, cheeses and wines (vino). Too, there was a mild curiosity over how today's Italian woman compared to what I remembered from my past when I'd been there as a young shipboard Radio Officer.

Planned or not, ham radio couldn't be far away, could it? For example, on the first weekend we went to Bologna, about 120 miles distant, to attend an annual gathering of Italy's top DXers. Although I spoke a not-very-good Italian, hams are hams everywhere, particularly DXers, so it wasn't difficult to get the drift of how warm the discussions ran. But, then, is there a satisfied DXer anywhere?

A delightful seven-course meal followed the meeting. At the time, I had rated this dinner as among the best of my life, yet it was to be but one of many such treats I was to enjoy over the next several weeks whilst being stuffed to the gills with a wide variety of Italian delicacies by generous relatives, each of whom were dedicated to being individually responsible for converting my bony frame into a genuine Italian butterball.



K2VJ walking across a freshly planted field in Cossignano, one of Italy's finest DX locations

Giorgio lives about 30 miles southeast of Milan in the Po Valley farm country. His home had been renovated from a farming complex, a "cascina" (cah-sheen-ah), as they are called in Italian.

His is a ham's house, first and foremost. The living room into which one steps from the front door is a ham radio studio, the long side of the room being a huge operating console. Cables run neatly everywhere, no need to disguise them. Wood is a scarce commodity as Italian homes and buildings are constructed of stone, marble, concrete and brick (their telephone poles are made of concrete). Electric cables in remodeled houses, therefore, do not pass through joists and studs, hidden from view by wall paneling. Instead, wiring is often paired cable stapled to the concrete wall. No problem.

Outside, towers support separate six-element monobander beams on 10, 15 and 20M, plus a three-element Yagi on 40M. A seven-element TH7DXX tribander on yet another tower serves solely as backup to the big guns. Inverted vees (properly referred to as "chevrons," according to my friend KB6DZU) on 80M and 160M and a 2M beam round out the antenna complex. The coax cables leading to the I2VXJ shack resemble the wiring harness of a goliath-type PC board.

CQ's Worldwide DX contest came up the following weekend (late October) for which operating help from Milan arrived in the form of IK2EGL, I2EOW, IK2CFH and IK2FXZ. Dedicated operators? At no time during the 48-hour contest period were any of the three operating positions vacant for more than 15 seconds.

Nor did any of us go hungry or thirsty for more than 15 seconds. You see, in addition to his supremacy at contest-

ing, Giorgio, an anesthesiologist at the hospital in nearby Lodi, is also a gourmet chef. He makes 22 different kinds of spaghetti sauce for which, if the remainder compare to the dozen or so varieties I had enjoyed during my stay, he could become Italy's version of our Kentucky Colonel.

And in case you wondered, we made 4,500 DX contacts.

Some of you may have worked I2-VXJ during the contest with IK2FXZ at the mic. They call him "Quissella," from the way, after he gave a report, he would follow up in his limited English with "Quissella?"

As in the heat of any good DX contest, Murphy (Morfi?) proved not to be an exclusively American phenomena, for after the crew had worked so hard before the contest to get the electric crank tower assembled and its six-element 10-meter beam and rotor installed on top, the Po Valley's annual windstorm struck.

When the SWR shot up in the early a.m., flashlights revealed a dangling beam that had slipped out of its rotor mounting bracket, being suspended solely and delicately by a lightly-taped rotor cable. To have conveniently lowered the tower by electric operation was to have invited the beam to come crashing down.

Instead, on a cold, wet tower not designed for climbing, I2EOW went up the next morning while the rest of us anxiously watched him lash the beam to the tower. Soon after, the tower was tilted over and repairs made on the ground.

I was impressed. They never seem to do anything jiminy-cricket-right-away over there, a custom I suppose I could have adjusted to in another 30 to 40 years. Yet, when turned loose on an emergency, they showed enough to convince me they could have put a man on the moon in a fortnight, let alone a decade, had it counted for contest points.

Having had enough hamming for a while, it was time to get serious about other odyssey objectives such as sightseeing, the first of which conveniently began in nearby Milan, whose Piazza del Duomo turned out to be one of the most artistic churches in all Italy, in my opinion. True, there are fabulous structures all over the country, yet despite it being my first such eye feast, I continue to rank Milan's famed church as one of the most beautiful.

Speaking of beauty, Milan's business district at lunchtime is a delight, when waves of those leggy mini-skirted women dash around. Clones. All tall, thin . . . enhancing high-heel leather boots . . . smiles . . . that special Italian look. Pal, this generation is far ahead of what I remembered.

An ambition was realized by attending La Scala, Milan's famed opera house, for a performance of one of Italy's finest symphonic orchestras. The fascinating atmosphere of La Scala's unique seating received a full "10" on my Pleasure Scale. Don't bypass Milan if you go to Italy: Piazza del Duomo, La Scala and downtown at lunchtime.

Be sure to catch part two next month when Vincent shares more of his Italy trip. Attend a club meeting and learn some of the horrors of driving in this paradise.

Radio inspires students

The following is part of an article entitled, "Lee ham students are learning in Hugo's wake," by Tracy Decroce, which appeared in the Fort Myers *(FL)* News Press *on Sept. 21.*

As Hurricane Hugo tore through the eastern Caribbean islands, some students paid close attention to the countless Amateur volunteers helping to coordinate emergency activities. The students imagined themselves as Amateurs picking up signals from Puerto Rico, Antigua, Guadeloupe and the US Virgin Islands and transmitting messages about the numbers killed, homeless or in need of supplies.

These exemplary youngsters are not your run of the mill teenagers. They are middle school students working toward certification as Amateur Radio operators.

One seventh grade student, John Varner, said, "I was trying to get the license earlier, so I could help when the hurricane came."

The 22 potential Amateurs took up their noble pursuit in an advanced reading class taught by Phyllisan West, KA4FZI, a recent ARRL Professional Teacher of the Year honoree.

New students this year are constructing their own Morse code devices, which they can use to practice the second language at home. Vic Richard, KC4EGO, is helping the students build the crude beeping devices. The retired electronic engineer shows them how to solder pin-size pieces to tiny square grids and complete necessary wiring.

"They jump out of their skin when it works," said Vic, who later tells them how it actually did work.

(please turn to page 27)

NO-CODE?

(continued from page 10)

membership that I would want to see increased; I do not sell study guides, magazines, newsletters, equipment, antennas or other material related to the hobby. My only compensation is the satisfaction of speaking my mind, and occasionally seeing a related improvement of the fraternity called Amateur Radio.

The League's position will be set out in the petition for rulemaking they will cause to be filed, but that document does not dictate to the FCC what the rules will actually say when the report and order comes out. For instance, no one outside Washington, to my knowledge, even thought seriously of dividing Element 3 (Technician/General class written test) into an Element 3a (Technician class written test) and an Element 3b (General class written test) until the Report and Order known as Novice Enhancement hit the street.

It didn't happen because those staid civil service employees of the Federal Communications Commission, resting on their laurels up there in Washington, proved to be too smart to let it happen! They sorted through the piles of material heaped upon them and collated for the Commission's formal action a scenario of Volunteer Examiners that, although it is not without problems, is better than the FCC themselves could ever cause to happen using a paid staff, and at absolutely no cost to the government at any level. Thus we see it is not even dependent upon the continuing appropriations of Congress for continuity. I therefore suspect it to be here for the duration.

Can we do the same with a no-code license? I well remember the gnashing of teeth at the very thought of giving a Novice voice privileges. Just think of the hordes of operators that would immediately clog beyond any possible constructive use those sub-bands for which they were authorized, then spill over onto unauthorized frequencies.

More than two years into it, and we now see some additional activity on 10M. Check out those operators folks. They are mostly Technician (they picked up HF phone privileges as a side effect, remember) and higher class operators. Two by Twos and even Two by Ones, and yes, even One by Twos, are quite common in the Novice portion of 10M, as well. So the lingo of some of the operators there is somewhat different than the veteran ham of the forties. What harm are they doing? At least part of 10M is now being used.

I was one of the less than half-dozen East Tennessee Amateurs who originated occupancy of the 220 MHz band in the area when, as President of the Radio Amateur Club of Knoxville, I put a "store bought" repeater on the band and came by my own equipment, fixed, mobile and portable in 1988. We've picked up a couple of Novice operators there due to Novice Enhancement, but the band is still underutilized to the point that I have never, even yet, made a useful transmission on any frequency below 222 MHz! That includes remote control of the repeater system I installed!

Few people thought of destroying the various areas of authority so far as a VEC is concerned and allowing all 18 of them to operate anywhere until the Report and Order of the rewrite of Part §97 was disclosed to public domain. Those items both came by way of comments from the public on the Notice of Proposed Rule Making. I'm given credit for the latter one in the discussion of the issues in the Report and Order itself, so we know there are times when someone does in fact read what we have to write.

Now is the time to organize our thinking and be ready for the inevitable changes that loom on the horizon. During the recent fifth annual conference of Volunteer Examiner Coordinators in Gettysburg, PA, it was fairly well accepted that no-code is inevitable. The only remaining questions are when and how. When does it get here and what form does it take?

Six years ago Amateur Radio was shuddering at the very thought of licenses actually being issued pursuant to tests adminstered by Amateurs themselves. The woods were full of theories as to how the "good old buddy system" would take full control, resulting in licensing not as a result of what you know, but who you know. I think we are all proud of the fact that didn't happen. Did you ever stop to think why it didn't?

Be sure to catch the conclusion next month when Ray lists questions he'd like answered by all hams so he can include a consensus opinion in a clearly worded comment regarding no-code to the powers that be. □

Just another QSO

RICHARD LEACH, KB6PBR

Amateur Radio can be an exciting hobby and sometimes exhilarating moments can arise when we least expect them.

Like other ham operators, I have purchased a home in a housing tract with covenants against antennas. So, wishing to continue my hobby, I've looked for new directions to take.

I installed a complete low band rig in my car and have made several interesting QSOs. However, I was quite unprepared for the thrill I received while attempting to pursue another avenue of Amateur Radio.

Recently, I bought a used Heathkit HW-8. I didn't expect great things from it, but I thought a QRP rig might be fun and the price was right.

I planned to operate it as a portable station, so I set it up at my business location. Having a 10M vee dipole that I had previously built out of two lengths of ½ inch electrical conduit, I added some old copper tubing and extended the elements for 15M.

It looked kind of funny, but mechanically it stayed together and I saw no reason why it wouldn't tune.

When I had some free time, I decided to put all the components together and give this rig a try. Installing the antenna was no real challenge, as I simply attached it atop a mast I had previously put up.

But while performing this task I managed to have a small accident and cut my right hand in several places. Fortunately, none of the wounds were serious and, undaunted, I continued with my installation. I then retired to my shack, an old cab-over camper, and began to make the necessary connections, all the while fuming at myself for being so clumsy and cutting my hand.

There were a few minor problems with my setup. I used an unmentionable brand of very low quality coax cable for a feed line and my system had no ground of any kind. The antenna was sandwiched between and below two large metal buildings; its height was insufficient and it was too close to several power lines. On top of this, I had no keying device to test the rig with.

Naturally, being of "great" technical expertise, I ignored all of these problems. To test the rig I used two wires and struck them together. Thus equipped I set the VFO to 21.125, put on my earphones, "keyed up", zeroed my watt meter and checked my SWR, which was a little under 3 to 1. I had about 1½W forward, ½ reflected or 1W out. This is not your average well tuned QRP antenna.

As I was contemplating trimming the elements or possibly giving up altogether, I was also idly listening through the earphones and I heard a CQ.

Now, I'm not particularly adept at copying code and, like others, have allowed myself to be seduced by phone, but I do enjoy occasional CW and, after all, here was my big chance at QRP. So I listened and wrote, "CQ CQ CQ DE KB4OGI K."

At this point I got shy fingers. I really didn't want to get involved with a QSO and have to fool with these wires. But what the heck, I knew nobody was going to answer me.

So, holding the wires one in each hand, I feebly sent a reply and waited. Through several other signals I heard "KB6PBR DE KB4OGI KN."

How many times do we get ourselves involved in something and then wish we hadn't? I did not expect anyone would be able to copy my poor fist and

(please turn to page 41)

Special Events...

Center of the world

The Yuma (AZ) ARES is sponsoring Amateur Radio Day 1990, a special event demonstration station and charity benefit for the International Red Cross from 1500 to 0100 UTC Feb. 24.

A certificate confirming communication with the internationally recognized official center of the world is offered to all participating radio Amateurs submitting a QSL confirmation and 9×12 SASE to Yuma ARES, c/o US Post Office, Felicity, CA 92283.

Watch for special event station KJ6OZ on the following bands: 10M Novice SSB 28.418 MHz, 15M General SSB 21.318 MHz, 17M General SSB 18.114 MHz and 40M General SSB 7.230 MHz. □

1990 Yukon Quest

The Arctic Amateur Radio Club is sponsoring special event station KL7KC during the eighth running of the 1,000 mile Yukon Quest International Sled Dog Race, which starts on Feb. 25 in Fairbanks, AK, and ends in Whitehorse, Yukon Territory. The special event will run from Feb. 23 to March 16.

For a commemorative QSL please send a SASE to the Arctic ARC, P.O. Box 81389, Fairbanks, AK 99708. □

Radio animals

The San Benito Amateur Radio Club will operate special event stations N5COW on SSB and N5HOG on RTTY to commemorate the 10th anniversary of the Cameron County Fair and Livestock Show in San Benito, TX, from Feb. 9 to 18.

Approximate frequencies are: 28.360, 21.350 and 14.335 SSB and 14.090 RTTY, from 1800 to 0100 UTC.

For a certificate send a business size SASE folded, 9½ X 11 unfolded and QSL card to: San Benito ARC; Brenda V. Ryan, QSL Mgr.; P.O. Box 1382; San Benito, Texas 78586-1382. □

Groundhog station

The Four Lakes Amateur Radio Club (Sun Prairie, WI) will operate special event station W9JZ from the "Groundhog Capital of the World" Feb. 2 and 3; 1400Z to 0200Z each day.

Suggested frequencies: *SSB* — lower portion of the General 40, 20 and 15M bands; *Novice* — 10M.

For a certificate send a QSL, contact number and 6 X 9 SASE for unfolded or #10 SASE to: Jake Kitzinger, N9ITN, P.O. Box 277, Sun Prairie, WI 53590 □

Dayton get-together

Hungarian speaking US and Canadian radio Amateurs are organizing a meeting of Hungarian-American Amateurs and their friends during the 1990 Dayton Hamvention. The meeting will include a dinner, hospitality suit, 2M call-in and banquet participation.

For information on the festivities, which will begin Thursday, April 26, contact Laci Radnay, W1PL, 66 Wheeler Ave., Melrose, MA 02176; 617/665-6419; or on 28660 SB at 14Z on weekdays and 7160 SB at 14Z Sundays. □

Silver Jubilee

The L'anse Creuse Amateur Radio Club of Utica, MI, will commemorate their 25th year by operating special event stations during a 48 hour period from 0001Z, Feb. 24 to 2400 Feb. 25.

Member stations calling "CQ LC Jubilee" will give out facts about the LCARC. Non-members place the facts on the back of your QSL card and the member station giving you that fact. One contact will qualify for a QSL card. Five or more contacts will qualify you for a certificate.

The non-member Amateur making the most club member contacts will receive a special certificate. Certificates will show the number of member stations you contacted.

Frequencies will be 3.545, 3.725, 3.925, 7.045, 7.125, 7.275, 14.045, 14.325, 21.045, 21.125, 21.425, 28.045, 28.125 and 28.425, based on propagation.

Send a SASE to Vince Cuker, WA8BIJ, 145 Huron St., Mt. Clemens, MI 48043-1713. □

Birthday

The Kachina Amateur Radio Club will celebrate Arizona's 77th birthday. The youngest of the contiguous states was admitted to the Union on Feb. 14, 1912.

Operations will be on 40 and 20M in the general class phone band, 15M CW Novice subband and 10M Novice enhancement band, from 1500Z to 2359Z.

For a certificate please send QSL and SASE to Kachina ARC, P.O. Box 2996, Show Low, AZ 85901. □

Pitcairn Bicentennial

Beginning at 0001 UTC Feb. 1 through 2359 UTC Feb. 28, Betty Christian, VR6YL, will continue with the VR200PI/YL call sign in celebration of the island's Bicentennial year.

Operation will be in the 10M SSB Novice portion and 15M and 20M SSB General portions of the bands.

All VR200PI QSLs are direct only and should be sent to the award manager, Dr. G. O'Toole, KB6ISL, 9605 San Gabriel Ave., So. Gate, CA 90280-4725, with a #10 SASE for confirmation. □

A wireless day

The St. Paul Radio Club will operate special event station K0AGF from the Pavek Wireless Museum on Feb. 17 and 18 from 1400Z to 2300Z each day.

The operation commemorates the issuance of the audion triode tube patent to Lee DeForest and the birthday of Silent Key, Joseph Pavek, W0OEP, founder of the museum.

Suggested frequencies: *SSB* — 3.860, 7.247, 14.287, 21.387 and 28.387; *CW* — 7.047, 14.047, 21.147 and 28.147.

For a certificate and a museum brochure, send a 9×12 45¢ SASE to Jay Smith, KK0O, 6931 Carmen Ave. E., Inver Grove Heights, MN 55075. □

88s

The Loveland Repeater Association will operate 1990 special event station KA0 Valentines for Friends during Loveland's Valentine festivities.

Operation will be on Feb. 10 and 11 from 1500 to 0500 UTC, with some activity on Wednesday, Feb. 14th, from 2500 UTC to 0500 UTC.

Look for them approximately 25 kHz up from the lower portion of the General class phone and CW bands.

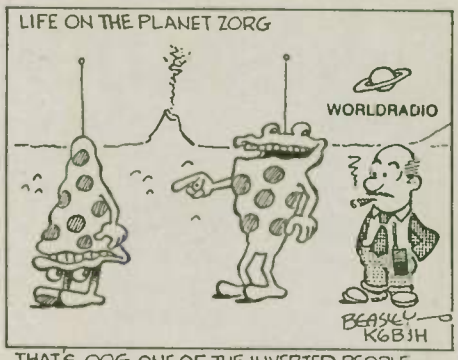
Several members of the LRA will be in operation from their Loveland QTH. Please QSL via Michael H. Walker, KA0VFF, 3816 Ash Ave., Loveland, CO 80538. Send a SASE for your 8½ X 11 inch certificate commemorating Valentine's Day from Loveland, the Heartland of Colorado. □

Volt and ohm values to change

National representatives of the world's weights and measures community met recently in France to adopt new "conventional values" for the Josephson constant and the von Klitzing constant. These are the fundamental physical constants required to determine the operational values of the volt, using the AC Josephson effect, and the ohm, using the quantum Hall effect.

The changes will take effect in 1990 when all industrial nations will share, for the first time, a common practical basis for measuring voltage and resistance. Before this there was a difference of 1.2 parts per million between the US voltage standard and that of most of European countries purely because of differences in how the national standards were maintained. *—Stanislaus ARA Inc., Modesto, CA*

••• ••— —••• ••• —•—• •—• •• —••• •



THAT'S OOG, ONE OF THE INVERTED PEOPLE--- THEY'RE FOREVER CONDEMNED TO USE THE LOWER SIDEBAND, WHILE WE GET TO USE THE UPPER!

STATION APPEARANCE

Dick and Nancy St. Amant
W8PDV and KB8BJN

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

This month's winners are Dick and Nancy St. Amant, W8PDV and KB8BJN, of Trenton, MI. Following Dick discusses the equipment and its utilization.

Back wall — a framed world map with stick-pins indicating points of contact, HT accessories and earphones.

Side wall — certificates, radio club ID badges, my grandfather's telegraph sounder from his days as a telegrapher on the railroad (circa 1905), antenna selector switches for HF and 2M.

Foreground — Star NX-1000 printer.

Desk bottom row — TV attached to outside antenna (TVI monitor), Commodore 1541 disk drive with Kenwood phone patch on top, Kenwood MC-50 mike, Kenwood speaker/filters, AT-230 antenna tuner, TS-830S transceiver, Drake watt/SWR meter, Commodore C-64 computer.

Desk top row — Franklin Word Ace, HT desk top charger and batteries, Radio Shack 12VDC power supply for Micropatch (CW and RTTY), Ham IV rotor control, Commodore color monitor, Computer oriented books and disk storage.

In my haste to neaten up the radio room I neglected to include our two handi-talkies. These are both from Icom — the 02-AT and the Micro 2.

Please note that next to the telephone is a device I use every time I turn on the equipment. It is a dimmer control for the lights in the operating area — very useful for eliminating glare on the monitor and for reducing strain on our over-50 eyes.

The antenna selector boxes on the side wall allow switching the 2M Ringo Ranger to any of four locations in the house: Radio room, living room, kitchen and laundry room. This helps maintain contact between the house and the car whenever one of us is mobile.

The other selector box allows usage of the tri-band beam and dipoles for 80, 40 and 30M. It also switches to our 12M "garage plane" (see March 1989, issue of *Ham Radio)* antenna.

I have been a licensed operator since 1953. Nancy has been licensed since early 1987. She is a General and I am halfway to upgrading from Advanced to Extra.

We both get a great deal of satisfaction from our hobby. We like the uniqueness of our "electronic leashes" whenever one of us is away from home or when we separate on shopping outings.

The HF rig has only gone on vacation with us once. We always have one of the HTs on in the motorhome while on vacation. We use a 30W PA and ⅝ wave on the roof with good results.

The new version of the radio room layout was necessitated by the need to find a place for newly acquired computer equipment. The shelving unit was constructed of ¾ inch oak veneer plywood. The edges of the plywood were finished with iron-on pre-glued veneer strips. I found this to be a relatively inexpensive way to construct a shelving unit that looks just like solid oak. □

Amateur "Hi"

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

This month's winner is Jim Goodman, WB6RSY, of Redding, CA. Some poor little boy is still probably walking around in a state of utter confusion.

I was riding the fine train in Vancouver, BC, visiting the EXPO. A young fellow passenger couldn't keep his eyes off my cap with my name, JIM, and my call, WB6RSY, on it. Finally he got up nerve enough to ask, "Is that really your name?"

And a little devil made me reply, "Yep, I'm Polish." □

OFF THE AIR

Making our drill enjoyable

While doing drill duty with the Auburn, CA, National Guard, on Oct. 14, 1989, our unit flew to our training site three miles south of Loon Lake in El Dorado, CO. When our company completed training for the day, we were to return to Auburn for the night. Soldiers did not think it would be necessary to bring jackets or sleeping bags for the night.

The Chinook helicopter landed and the pilot turned off the engines to wait for the first group of soldiers to arrive. When the troops arrived and boarded the craft, the pilot tried to get the engines going, but after many tries had to call it quits. We now had no transportation out of the area.

The radios we had could not make contact with anyone. I had my Kenwood TH205AT hand-held radio with me. My first sergeant, knowing my radio could possibly be used as a phone, asked if I could contact the Stockton flight facility and let them know our situation.

I used my hand-held radio with 2W out and got on 147.195, the N6ICW repeater, and asked for help in making contact with Stockton. N6ICW answered my call and asked what was needed.

I asked if he could make a phone call into Stockton and he patched us through via phone patch.

During the phone call my battery went dead. I took a battery from our military radio and connected it to my hand-held. Now, having 13-volts to make 5W out, I called again.

N6NMZ answered and said the flight facility still had questions. He reconnected us to Stockton via phone patch.

We now had transportation on its way and at 10 p.m. our ride had arrived. Thanks to N6ICW and N6NMZ for giving us the ability to "reach out and touch someone."

If it were not for the two aforementioned Amateurs and myself, the pilot of the disabled Chinook would have faced a flight evaluation board as a result of a search and rescue mission to find our stranded company.

Not only that, but our company would have spent a cold, restless night at 7,000 ft. The effort involved is sincerely appreciated by the entire company.

Thanks, guys, for showing what Amateur Radio can do.

JERRY STEINHARDT, N7LMV
Tacoma, WA □

Let's roll with it

Many are the times I have seen invitations to your readers to submit letters, articles, etc., to your fine publication. I am prompted to write now due to some of the notions promulgated in various magazines, as well as on the air. With my soapbox suitably dusted off, here goes.

Much has been said of late about the proposed no-code license. In my estimation a lot of what has been put forth, especially on the con side, is pure batpuckey.

Let's take, for instance, the idea that a "CB mentality," or some analogous mode of operating, will arise with a no-code license. As someone who started out on CB (mea culpa), that "CB mentality" was one of the driving forces that motivated me to get my ham license. With first a Novice and then a Technician class license, all was well, as far as it went. But I wanted the almighty voice privileges on HF, so I upgraded to General with the full intention of going on to Advanced, as soon as possible.

Well, it's been nearly a year, and I still hold a General class license and possess no great desire to upgrade. The reasons? Have you listened to 75M phone lately? Or how about 20M, supposedly THE DX band? Or 40 (this one is not quite as bad as the others mentioned, but it's getting there)? I have a news flash for all the boys and girls who are so concerned about the no-code license bringing a bad influence to Amateur Radio. The "CB mentality" is alive and well on the aforementioned bands, and spreading. Foul language, malicious interference, harassment, inexcusably sloppy operating practices, the list goes on and on.

Clearly, a code requirement is not keeping out at least some of the "undesirables." As an example, I was almost ashamed to even admit I was a ham after monitoring the Hurricane Gilbert emergency nets on 20M last year. Besides the wholesale malicious interference with these nets, there was almost always some bozo 10 to 20 kHz up or down from the net frequencies, overdriving his rig and splattering to beat the band, adding to the QRM problem.

As an aside, I wonder how many ARRL 0.0. cards were mailed out in the wake of the aforementioned disgraceful behavior?

Most of the other reasons given aganst a no-code license ("maintain discipline," "control the quality of operators," "tradition," etc.) have the smell of elitism about them. And elitism, for lack of a better word, seems to be the real problem here.

Many an old-timer has told me that Amateur Radio started becoming moribund, not in the last few years, but several years ago, especially in the wake of the so-called incentive licensing scheme pushed through by the ARRL. The only rationale for incentive licensing that I have heard (that makes the least bit of sense) was to allow a

relatively small number of "well connected" big time operators to have their own private slices of bandwidth without having to share it with the "riffraff." At least this makes more sense than the idea that incentive licensing was to increase our numbers.

Now we see the ARRL, in an attempt to close the barn door years after the horse departed, coming up with various schemes to shore up the declining Amateur ranks. I seriously wonder if Novice enhancement or the no-code license would have even been necessary if the League had simply left well enough alone as far as the licensing setup was concerned (not that I have anything against Novice Enhancement or the no-code license). Unfortunately, the chances of the incentive licensing fiasco being repealed are about as great as my being offered a free ride on the Space Shuttle.

According to the report of the ARRL committee established to study the no-code license, a written test roughly equivalent to a General Class test (at least somewhere between a Tech and General) would be given to the candidate. Just for the sake of evenhandedness, let's change the proposal a bit; make the written test the same for the proposed no-code Tech, Tech Plus and General class of licenses, with the proviso that if more than one year passes between upgrades, the written test must be taken over until a Technician Plus license is acquired. With adequate testing, acquisition of the no-code license will not be the cakewalk some people seem to think.

The CW mode is certainly secure; it cannot be eliminated, even if we wanted to. An international treaty, signed by the United States, clearly states that proficiency in Morse code is required for access to the Amateur HF bands. Period.

Let's face it, people, our bands above 30 MHz are under attack. There is no other word to describe it. The reallocation of 220-222 MHz is only a foretaste. If we do not start making better use of our VHF/UHF bands, we stand to *lose* them. If you doubt this look how easily, almost casually, that United Parcel Service picked up that slice of 1.25M. There are powerful interests out there who would dearly love, and are waiting for the opportunity to, scoop up more of our (currently) little used VHF/UHF bandwidth.

If adding to our numbers by implementing a no-code license will at least slow down this encroachment, then so be it. If there are 220 or 70 cm repeater operators out there who don't want any "lowlife CB operators" on their machines, well, put a PL board on your repeater. As for the simplex frequencies, remember that big fat knob in the middle of the front panel of your rig? It's called a VFO. Grab and turn. Problem solved.

Well folks, like the song says, the times they are a changing. Rather than fight it, let's embrace it and make the most of it. Our Amateur Radio community stands to be better off in the long run.

KENNETH P. MYERS, N5MZL
Hockley, TX □

WWII Amateur Radio

An interesting QSL card from Nazi Germany in your *DX World column* (May issue). Germany was indeed at war on the date shown on the card. If the date indicated is the standard German method of writing day/month/year, then that would be 12 April, 1940. This would be three days into operation Weseruebung (Weser Exercise), the code name for the invasion of Denmark and Norway.

Also, this was only three days away from the end of the so-called "phony war" or "sitzkrieg," in which no physical hostilities had occurred. Although Britain and France had declared war on Germany on Sept. 3 of the previous year, they apparently didn't feel strongly enough to bring the war home to the Germans. The Denmark/Norway invasion of April 9 broke the stalemate.

I imagine that at this period in history, the Nazis were feeling pretty invincible and were optimistic about their fortunes of war, so didn't feel it necessary to clamp the lid on Amateur Radio operation. It would be interesting to know precisely just when they did stop the Amateurs, as it was less than 30 days after the date on the QSL card that the Wehrmacht initiated Fall Gelb (Case Yellow), the code name for the invasion of Holland, Belgium and France. From this point on it was clear that there was no turning back and it was full scale war.

We here in the United States lost our operating privileges immediately after the Pearl Harbor attack by Japan, so I guess we weren't quite as optimistic about an immediate term solution as the Nazis were.

BOB BEASLEY, K6BJH
Homeland, CA □

ARRL defended

"Dr." Wayne Green, Editor, Publisher, CEO, etc., of *73 Magazine,* took a nasty swipe at the ARRL again, this time in his October 1989 "Never Say Die" column.

"Until fairly recently," said "Dr." Green, "it was impossible for a Jew to get on the (ARRL) board."

This is not true. Paul M. Segal (100 percent a Jew) was ARRL Director for the Rocky Mountain Division in the 1920s, and later became the League's general counsel.

LOUIS R. HUBER, W7UU
Seattle, WA □

ALINCO ELECTRONICS

The Magnificent Six Gives You More Power

DR-570T

Set your sights for dual!

The Alinco DR-570T "Twin Bander" has dual LCD readout, volume, squelch and tuning controls. Double barrelled power with 45W on 2M and 35W on 70 cm, plus simultaneous receive on both bands or intermix with four modes of scan. The DR-570T will win the "battle" with its illuminated front function panel and LCD readout, readable in any lighting conditions. Don't let the "Tiny" DR-570T fool you! It's fast, and leaves the competition in the dust with many standard features you expect. Cross band repeat with the flick of a switch. Full duplex, 20 memory channels, call channels, 16-key DTMF Microphone, and subtones are just a few. "Reach" for the DR-570T today!

DR-510T

Best Dual Value on the Market!

The Alinco DR-510T has most of the outstanding features of it's sister the DR-570T, including 14 memory channels, cross band duplex and cross band repeat. The multi color LCD display, and simple tune control panel makes simplicity the key word. The DR-510T with 45/35 watts is the best, feature-packed dual bander on the Amateur market today. See the DR-510T along with the other Alinco "Magnificent" ones at your favorite dealer today!

DJ-500T

Power-Packed Dual Handi!

20 Memory channels, subtones, built-in DC to DC, 700 mah nicad battery, LCD readout with 6W on 2M and 5W on 70 cm (with optional battery) call channels, DTMF Touchtone, and direct keyboard entry, are just the few winning features of the Alinco DJ-500T Dual Band Handheld. Easy to use, and Value Priced at your Alinco Dealer.

DR-110T&R-410T

Tiny 2M Power From Alinco!

DR-110T, this 2M Alinco, enters the nineties a proven winner with the "reputation" of best value. The DR-110T packs a powerful 45W on 2M and sports all the features you expect in todays transceivers. Tuning is a snap with the multi-functioned easy-to-see keyboard, 14 memory channels, subtones, scan, multi- colored LCD readout, reverse, are a few of the many features of the DR110T. The mobile of the future — today! DR-410T available for 70 cm.

DJ-100T&DJ-200T

Best 2M Micro Value Anywhere!

The Alinco DJ-100T is "Magnif cent" for its tiny size, but stands up to the competition with power and capability. 10 memory channels store offsets and subtones. Has LCD readout with call channel and reverse at your fingertips. 500 mah battery with direct DC to DC is standard. 3W on standard battery, 6W on optional battery leaves the competition in the dust! DJ-200T for 220 MHz.

DJ-160T&DJ-460T

2M H/T is here! And wow!

"Bells & Whistles" is a tame word to use for the new DJ-160T, newest "Magnificent" one from Alinco. Keyboard entry is just one of four ways to enter a frequency in the extended receiver (137-173.995 Mhz) of the DJ-160T. You can store duplex/simplex pairs in any of 20 Memories, or Call Channel, with offsets, and any of 38 encoding subtones. Choose one of 3 scan modes, "Band" "Program" or "Memory" and one of five step ranges in VFO. Priority mode can be used in VFO, Memory or Call. "Dual Watch" allows the DJ-160T to scan 3 seconds alternately on CALL, VFO or one MEMORY. "Pager" is for group or single person alert. Other features include: Auto "Battery Save", Auto "Power Off", and 2-Memory Autodialer. Get 3-watts on standard 700 mah battery, or increased power from built-in DC to DC, or optional 12V battery. The Alinco DJ-160T, now the "Top Gun" with the competition today! DJ-460T for 70cm.

ALINCO ELECTRONICS, INC.
20705 S. WESTERN AVE., SUITE 104, TORRANCE, CALIFORNIA 90501
TEL: (213) 618-8616 • FAX: (213) 618-8758

Product Review

Inline Components active antennas

RICH ARLAND, K7YHA

Active receiving antennas have been around, in various forms, for many years; however, the majority of them are not true active antennas.

Typically, these antennas use a three ft. whip and a bi-polar device to provide 12 to 18dB of gain (and a noise figure of 5 or 6dB) from 150 kHz to 30 MHz. This kind of raw gain and a poor noise figure will really trash out the front end of most receivers. As a matter of fact, using a pre-amplified antenna with the Sony 2010 or Sangean ATS-803 is not recommended for this very reason.

A true active antenna uses electronic circuitry to transform the impedance of a short whip to an impedance more suitable for the desired frequency range. For frequencies between 150 kHz and 15 MHz, some pre-amplification is also present. However, over 15 MHz most true active antennas do not provide any pre-amplification.

So, the basic difference between a true active antenna and a pre-amplified antenna system is one of impedance matching vs. raw amplification.

Why would an Amateur Radio operator want or need an active antenna? Several reasons come immediately to mind. First there is the situation of having a second station receiver that sits on a net frequency for continuous monitoring. Why tie up an external antenna system on a monitor receiver when an active antenna will do the same job with a lot less hassle? How about the traveling ham who wants to listen on some favorite HF frequencies (like the QRP calling freqs) from a motel room. Then there is the case of the ARES volunteer who needs to follow the action on several HF frequencies simultaneously. A portable HF receiver (like the Sony 2010) and an active antenna are the answer to his prayers.

How about 160M operation from an apartment. I have used this particular system while in the UK as G5CSU. My rig was a British Mk 128 "spy set." Power output was a massive 900mW and the receiver was quite deaf, even with a good antenna.

On 160M a Datong AD-250 active antenna supplied signal for the receiver while the transmitter was fed into a ½ size G5RV via a tuner. Bandwidth was an extremely narrow 10 kHz, but I did manage quite a few 160M contacts with this lash up.

Finally, there is the SWL or SW DXer who, for various reasons, cannot put up an external antenna. An active antenna is the obvious solution to this and other tricky receiving antenna situations.

All these applications have one thing in common: The need for a small, high performance antenna system. Enter the Inline Components Inc. AC-1 and AD-2 active antennas.

Both of these antenna systems are true active antennas covering 150 kHz to 30 MHz. They act as impedance matching devices for a short whip (about 1M long) and are both very compact and easily transported by the traveling ham/SWL.

Performance is spectacular when compared to a full size external antenna system and the built-in whip on the Sony 2010 receiver used for the tests.

The AC-1 Indoor Micro-Module Active Antenna is a scant 2 X 2.5 X .75 inches in size. The 1M wire ship protrudes from one edge of the plastic case while the receiver coax and the power connector are on the opposite edge.

It has wide dynamic range and a 1.5dB noise factor. It operates from 5 to 16 volts DC and is supplied with a 9VDC adaptor for AC mains use.

There are no controls on this active antenna. Just hang it in a window by the whip using the small suction cup supplied, plug in the AC/power supply and connect the 10 ft. length of RF-174 coax to the receiver. The entire antenna system can be rolled to form a compact bundle only a couple of cubic inches in size.

When compared to the built-in whip on the Sony 2010, the AC-1 consistently yielded two S-Units more signal strength. Stations barely audible with the built-in whip suddenly became readable copy when the AC-1 was plugged into the Sony. There was little increase in background noise and no noticable intermod or adjacent channel interference when switching between the active antennas and the 2010 whip, indicating that the AC-1 and AD-2 do not adversely affect receiver performance.

The AD-2 portable AC/DC Active Antenna measures 4 X 5.25 X 1.5 inches in size and has a built in 9 V

battery for power. A collapseable three ft. whip on the top of the box is pulled up for use or collapsed for transport. An AC adaptor is also supplied.

This antenna is connected to the receiver by a 10 ft. length of RG-174 coax. Controls are simple. . .an on/off switch, power connector and RF connector. That's it. Plug it in and go to work.

In a side by side test using the AC-1 and AD-2 on a Sony 2010 and comparing the results using the 2010's built-in whip (on the same signals), the two active antennas consistently outperformed the 2010 whip. A second receiver (Icom R-70) using an external 50 ft. sloper was also used to see how the active antennas performed against a "real" antenna system.

In several instances (namely on frequencies below 5 MHz) the two Inline Components active antennas actually outperformed the Icom R-70 and the external antenna system. The tests were conducted on several afternoons using African stations on 4 MHz.

Additional testing was done in the 80/40/20M ham bands. The results were truly amazing. I suspected that there would be a definite improvement in signals when using the active antennas as compared to the Sony whip. I was NOT ready for the surprise results when the active antennas were compared to the R-70 with its external antenna system. African signals heard clearly on the 2010 using the AD-2 and AC-1 active systems were much less readable on the Icom due to increased noise from the external antenna system.

To be fair, in my neighborhood there tends to be some intermittent noise generation that adversely affects reception on external antennas. Tests at a later period showed no local interference, and the Icom rig with the external antenna system performed slightly better than the active systems.

Testing done in the ham bands was interesting in that when used with the R-70 or the Ten-Tec Argonaut 509, little difference could be discerned between the active antennas and the Sky Raider sloper. This could be a real boon to the MARS or CAP member who needs to guard one HF frequency while operating on another. Why use a second external antenna system when an active antenna will do the job.

If you need an excellent active antenna system, I suggest you contact Inline Components, 4521 Campus Dr., No. 113, Irvine, CA 92715, and request their latest catalog and price sheets.

The AC-1 "Window Sticker" active antenna system sells for $33, including UPS. The AD-2 portable AC/DC active antenna system sells for $61, including UPS.

Both antennas come with AC adaptors. An inductive wand to couple the output of the active antenna to a ferrite rod antenna in a receiver (if no external antenna jack is available) is also standard for the AD-2.

Note: In talking with Wes Olsom from Inline Components, I was advised that late model Sony 2010 receivers had a design change in the RF front end that made them perform less than adequately with their AC-1 and AD-2 active antennas.

Apparently this has led to many retail outlets offering the sony AN-1 preamplified antenna system as a freebie when you purchase a Sony 2010. In any event, the Inline Components active antennas work VERY well with my Sony 2010, which was purchased September '88. □

STUDENTS inspired

(continued from page 16)

Phyllisan said she hopes the class will produce responsible volunteers who understand the importance of public service. "They have been very interested in knowing about people who help in emergencies," she added.

Several years ago, an adolescent trained by his grandfather was among the youngest to volunteer his Amateur services for Lee County's Emergency Operations Center, director John Wilson said.

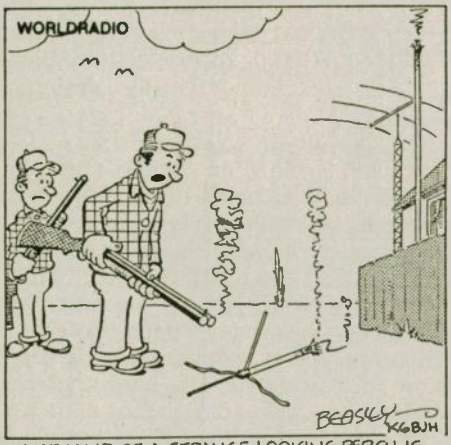
Wilson said he would be happy to recruit more young enthusiasts who fancy the high-frequency art.

"Sometimes you have a tendency to downgrade kids in emergencies," he said. "I haven't seen too many kids go off the deep end. They usually handle themselves quite well."

At least one seventh grade student won't need much by way of recruitment. She's ready to try her hand in the public service arena.

Marilyn Stevens admitted that news reports showing American Amateurs helping the Puerto Ricans had inspired her to dream about one day doing the same thing.

"It made me think of what I could do with it," she said. —*Information submitted by Cash Luzny, W4MPV* □



WHAT KIND OF A STRANGE LOOKING PERCH IS THIS THAT MY DOVE WAS SITTING ON ?

SEA PAC

NW DIVISIONAL HAM CONVENTION

JUNE 1-3, 1990

PLAN *NOW* TO ATTEND THE NORTHWEST'S LARGEST HAM CONVENTION

Seaside/Pacific Ham Convention, Seaside Convention Center, Seaside OR

Banquet & Program	**Manufacturers**
Seminars	**Awards**
No-Host Breakfast	**Dealer Exhibits**
Repeater Owners Forum	**VE Testing**
100+ Flea Market Tables	**QCWA Meeting**
Ladies Luncheon & Activities	**And Much More**
Friday Social Casino Night (Fun-Snacks-Prizes)	

Convention Hours:
SAT, JUN 2
9am-4:30pm
SUN, JUN 3
9:30am-1:30pm

EXHIBITORS:

For early booth reservations, please respond VIA: OTVARC, Box 219142, Portland, OR 97225-9142, or call Al WB7SIC, at (503) 640-5456 at any time, or Jim, KB7ADH, at (503) 245-2518, evenings.
MOTEL ASSISTANCE: IN OREGON 1-800-444-6740. OTHERS 1-503-738-6391

NOTE:
Exhibitors & Flea market setup starts at 11:00am Fri, JUN 1

MAKE CHECKS PAYABLE TO: SEA PAC

REGISTRATION

No._____ Office Use Only

Mail To: OTVARC Box 219142 Portland, OR 97225-9142

_____ Registrations at $5.00 ea. ($7.00 at the door) ---------- $_____
_____ Teens Convention Registration at $2.00 ea. ---------- $_____
_____ Children 12 and under FREE.
_____ Flea Market Tables at $10 per table per day or $17 per table for 2 days $_____
_____ **Friday Social Casino Night at $10.00 (300 person limit)** ---------- $_____
_____ Saturday QCWA Lunch at $7.00 (150 person limit) ---------- $_____
_____ Saturday Ladies Luncheon at $7.00 (80 person limit) ---------- $_____
_____ Saturday Banquet Halibut Dinner at $16.00 ea \ (Sat. Banquet ----- $_____
_____ Saturday Banquet Prime Rib Dinner at 16.00 ea / 400 Person Limit) - $_____
_____ Sunday No-Host Sit-Down Breakfast at $5.00 (400 person limit) ------- $_____

NOTE: Flea Market Participants must be registered for the convention.

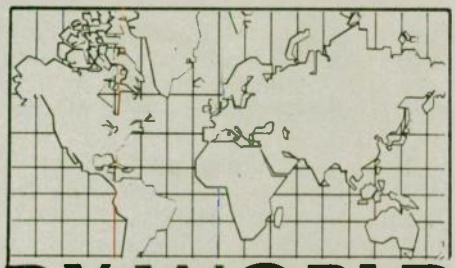
Total $_____

NAMES (please print) Calls

_____ _____
_____ _____

Registration Questions
Call Lorna, KA7RFD,
503-297-1175

Address_____ City_____
City_____ State_____ Zip_____ Phone(___)-_____-_____



DX WORLD

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

Activities Calendar

3-4 Feb.	RSGB 7.0 MHz Contest (SSB)
10-11 Feb.	VERON Dutch DX Contest
10-11 Feb.	RSGB First 1.8 MHz Contest (CW)
10-11 Feb.	SRJ Yugoslavian DX Contest (CW)
17-18 Feb.	ARRL International DX Contest (CW)
23-25 Feb.	CQ World Wide 160M DX Contest (SSB)
24-25 Feb.	UBA/REF French DX Contest (SSB)

W-100-N

The following DXers successfully completed the requirements for Worldradio's Worked 100 Nations Award this last period:

370. N0HRK Terry R. Vanderloop

371. LU1JDL Marta M. de Hendlin

(Photo courtesy of A24KH)

Meet the Honeys, Robin, A24RH, and her OM Keith, A24KH. They are involved in missionary work at Shakawe, Botswana. They hold stateside calls KA5UGK and KA5UGL.

Keith says that they hold Tech class licenses in the United States and Novice calls in Botswana. There are only two levels there: Novice and Full. Both have the same privileges. The only difference is the power level.

Keith also reports that there are currently only 33 other operators in Botswana. Makes for rare DX. Novices hold the A24 prefix and those with "full" privileges hold the A22 prefix.

Bouvet Island (3Y)

The 3Y5X team was expected to arrive on Bouvet Island on Christmas Day for 23 days of operation. This should have taken the operation well into the middle of January and they may still be there by the time this issue reaches you.

Their CW transmitting frequencies are 1.828, 3.502, 7.002, 14.022, 21.022, 28.022 and 50.022 MHz. SSB types should listen near 1.842, 7.045, 14.145, 21.195, 28.395 and 50.195 MHz, with the 75M frequency to be announced. Three frequencies, 14.085, 21.085 and 28.085 MHz have been set for RTTY contacts.

As of Dec. 3 the team of operators on the DXpedition includes LA2GV, LA1EE, JF1IST, HB9AHL and F2CW. Five complete Icom stations will be in operation.

If you miss the 3Y5X DXpedition, you should have another chance with the 3Y0B group due to show shortly.

Pakistan

Reported several times on 21.335 MHz at about 1530 UTC was AP2JZB. He has been on the 15M band elsewhere too, so just don't sit there on that single frequency.

During the last part of November a station signing AP2ASA was reported from the 5th call area on 21.294 MHz around 1515 UTC.

Also active on 20M SSB, we have reports of these three stations:

AP2AF	14.200 MHz	1300 UTC
AP2AU	14.183 MHz	0400 UTC
AP2NK	14.173 MHz	1300 UTC

We also had a report for AP2AU reported by a DXer in California on 21.170 MHz. Now was this a Novice CW contact or was the DXer out of the band on SSB?

Palmyra Island (KH5)

Richard LaChance, AH6IO, is looking for a few qualified operators for a DXpedition to Palmyra Island this Spring. The tentative schedule would be the week of March 11 to 17. Rich says this would also include operation from Christmas Island in Eastern Kiribati for the CQ WPX Contest on March 23 and 24.

Rich says that DXers will fly Air Tungaru from Honolulu to Christmas Island on the once a week flight leaving Wednesday morning, March 7. At

Christmas Island they will board a chartered sailboat for Palmyra Island. The return flight to Honolulu is March 28, and those who do not wish to remain for the contest can leave on March 21.

A preliminary cost estimate for the Palmyra DXpedition is about $28,000, to be divided among five operators. If any DXer wishes to participate or give financial support, contact Rich at 23 Kaiulani Ave. #10A, Honolulu, HI 96815. Fax 808/949-1209.

Sudan (ST2)

G4WYG/ST2 has a schedule every evening with his QSL manager, G4OHX, on 20M CW. Upon completion he will move to 14.010 to 14.020 MHz to work callers. If you need a schedule with him, please contact his manager (and include a SASE if you require a reply).

G4WYG/ST2 sports a TS430S and is presently using a G5RV antenna soon to be replaced by a beam.

WZ6C/ST4, according to *QRZ DX*, has also been reported operating in Sudan and was recently reported on 17M near 18.074 MHz at 2330 UTC.

Turkey (TA)

Turkey DXers are on the increase — we mean the country, not lids. Even RTTY is in the picture. On Nov. 18 TA1AR was reported near 21.090 MHz at 1530 UTC working the west coast. Also reported on that mode was TA3B on 21.084 MHz around 1100 UTC.

There were many reports involving 10M, such as the following:

TA1AL	28.457 MHz	1400 UTC
TA2AU	28.640 MHz	1445 UTC
TA2B	28.015 MHz	1345 UTC
TA2BK	28.112 MHz	1600 UTC
TA2BU	28.010 MHz	1615 UTC
TA2G	28.008 MHz	1630 UTC
TA2PC	28.313 MHz	1600 UTC
TA3D	28.013 MHz	1500 UTC
TA3F	28.570 MHz	1530 UTC

Note that TA2BK was in the Novice subsection of the band. Also reported near there on 28.111 MHz around 1530 on Nov. 26 was TA2BU.

With the winter months here, 40M may bring you a contact with Turkey. Reported on this band recently was TA1AZ on 7.001 MHz at 2230 UTC, TA2AI on 7.002 MHz at 2245 UTC and TA3D on 7.003 MHz at 0330 UTC. TA2BK produced the only 80M contact reported on 3.511 MHz at 0200 UTC.

Try 20M SSB for these:

TA1AL	14.264 MHz	0600 UTC
TA3A	14.160 MHz	0030 UTC
TA8KA	14.226 MHz	0130 UTC

And finally, for 15M, the following were reported during the month of November:

TA1U	21.220 MHz	1730 UTC
TA2D	21.022 MHz	1230 UTC
TA3C	21.292 MHz	1900 UTC

Mali (TZ)

Very active from Mali is TZ6VV, who has been reported on 14.182 MHz at 0745 UTC, between 21.262 and 21.297 MHz after 2230 UTC and between 28.477 MHz and 28.528 MHz from 2345 UTC.

Stations reported less active include the following:

TZ1RP	21.292 MHz	2130 UTC
TZ6PD	21.281 MHz	2000 UTC
TZ6PS	14.222 MHz	0630 UTC
TZ6ZZ	7.068 MHz	2330 UTC

Kaliningrad (UA2)

For some reason this one doesn't get reported much. Kaliningrad, although separated from the main body of Russia by Byelorussia (also known as White Russia), counts as a separate DXCC country. DXers hearing this one most likely think it just another garden variety Russian. We found the following reported during November:

UA2AO	28.518 MHz	1615 UTC
UA2FGO	7.003 MHz	0445 UTC
UA2FJ	28.513 MHz	1430 UTC
UA2FX	14.019 MHz	1515 UTC
UZ2FWA	28.031 MHz	1515 UTC

UK bases Cyprus (ZC4)

According to *QRZ DX* G4MVA has returned to Cyprus for a three-year assignment. He is to sign with his former call of ZC4CZ.

On Nov. 18 it was apparently a busy day for at least two 10M stations on Cyprus: ZC4EPI on 28.493 MHz and ZC4ESB on 28.535 MHz, between 1200 and 1400 UTC. No other reports for these two. Maybe they couldn't stand the heat.

Also taking the heat on this band was ZC4FJ on 28.016 MHz at 1200 UTC and ZC4MK on 28.552 MHz at 1330 UTC.

Then again, others thrive on it, such as ZC4MT, who prefers 20M SSB between 14.181 and 14.228 MHz from 0430 UTC. Also reported on this band was ZC4AB on 14.226 MHz at 0100 UTC and ZC4MK on 14.160 MHz at 0045 UTC.

If you are looking for RTTY action, ZC4NC was reported early in November on 28.086 MHz at 1747 UTC.

The only 15M activity reported was that of ZC4AB on three different days on 21.335 MHz after 1800 UTC.

St. Helena (ZD7)

Long Skip reports that G3JKM will be on St. Helena Island for about a year and mostly prefers CW. Look for this one near 21.011 to 21.021 MHz from 2100 UTC. Other activity from the island includes the following:

ZD7CW	14.083 MHz	0045 UTC
ZD7DF	21.295 MHz	1930 UTC
ZD7JM	21.333 MHz	1945 UTC
ZD7VC	28.466 MHz	1945 UTC

Ascension Island (ZD8)

ZD8VJ has been very active from Ascension Island recently. Check 7.006 MHz around 0100 UTC, 14.025 MHz at 2300 UTC and 28.023 MHz at 1545 UTC.

ZD8BOB is another active station and has been reported operating both CW and SSB. Check 21.006 or 21.305 MHz after 2000 UTC. Also active on 15M is ZD8GT near 21.015 MHz at 1900 UTC, ZD8PJ on 21.294 MHz at 0100 UTC and ZD8RP on 21.373 MHz at 1900 UTC.

Active on 20M CW were ZD8IAN near 14.006 MHz at 2300 UTC and ZD8SE on 14.035 MHz after 2100 UTC.

1990 International DX Convention

Now is the time to be thinking about the big Visalia get-together. The date is the first weekend in April — the 6th through 8th.

Sponsored this year by the Southern California DX Club, it will be held at the Holiday Inn. Pre-registration is $40 and after March 23 it will go up five bucks. Send your registration to Don Bostron, N6IC, 4447 Atol Ave., Sherman Oaks, CA 91423. The price includes a banquet and brunch.

The Holiday Inn and the Lamp Liter Inn are already full. Nearby hotels or motels include Best Western, 732-4561; Motel Astri, 627-2885; and Sundance Inn, 732-6641. All are area code 209. See you there?

DX World Guide

DX World Guide is an interesting addition to the DXers library. Written by well-known DXer Franz Langner, DJ9ZB, it is printed in both German and English. The Forward part of the volume is in German, but who reads

that part of a book anyway.

Franz's book contains over 350 pages, with a separate page devoted to each DXCC country. Facts concerning each country include the country's area, coordinates, both ITU and CQ zones, prefix and other important particulars. Often a photo of a QSL card is included and in some instances photos of active stations. Almost all pages include a map of the country. At the bottom of each page, space is provided for the entry of two contacts to be used for DXCC record purposes.

I am sure you will enjoy this little volume as an addition to your library, available from most Amateur Radio outlets.

Trophy Ukraine

This award is offered by Federation Radiosport of Ukraine and the club Crystal. The object is to work and confirm all 27 oblasts of the Ukrainian SSR on any two bands. All modes count and all contacts made since Jan. 1, 1988.

Prepare a list of your 54 contacts certified by at least two licensed Amateurs to Edward Kritsky, NT2X, P.O. Box 715, Brooklyn, NY 11230. Include a fee of $30.

The award is probably a plaque, which explains the rather high cost. The award manager is Victor Trachenko, RB7GG. DXers outside of North America can apply through RB7GG at P.O. Box 73, Kherson 325 000, USSR. The fee is the same or 60 IRCS.

Our latest list of oblasts shows 25 oblasts for the Ukraine, 057 through 082, with 061 deleted. The two additional ones were added in 1984 — UT5U Kiev city (186) and UT5J Sevastopol City (187). Have fun!

Antique QSL department

Here is another one of those obsolete prefixes, this one submitted by Charlie Winkley, W1EIF. Charlie says that he was cleaning out the old shoe box file and saw this oldie.

MI3LZ was the call used by Al Helms of Asmara in Eritrea. Al worked Charlie on 10M phone back on the second day of January 1949. Charlie was using an old unity coupled rig, cathode modulation to an old 829B. That was 50W to a 300 ohm ribbon dipole. To you newcomers to Amateur Radio, phone in those days

was AM, not SSB.

In March 1979 we ran another card for this one, MI3US. Both calls were connected with Radio Marina. The MI3 prefix later became ET3 and Eritrea became a deleted DXCC country on Nov. 15, 1962. I wonder if Charlie has used this card for DXCC credit?

DX Prediction

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

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

FEBRUARY 1990

WEST COAST

UTC	AFRI	ASIA	OCEA	EURO	SO AM
10	(16)	17	23	(14)	21
12	(16)	17	22	(13)	20
14	(24)	16	21	20	40
16	33	17	30	24	44
18	37	17	26	(19)	47
20	38	26	30	15	48
22	32	36	38	(14)	48
24	28	38	44	(14)	43
2	25	33	43	13	33
4	20	22	34	13	28
6	(18)	20	29	15	25
8	(17)	18	26	14	23

CENTRAL USA

UTC	AFRI	ASIA	OCEA	EURO	SO AM
8	20	14	23	14	22
10	(20)	13	21	(13)	21
12	31	13	20	20	31
14	42	18	32	27	40
16	47	(17)	30	27	44
18	47	(17)	26	23	47
20	38	25	30	17	48
22	32	30	39	15	47
24	28	26	44	14	38
2	25	17	36	14	32
4	23	(16)	28	13	28
6	21	(15)	25	13	24

EAST COAST

UTC	AFRI	ASIA	OCEA	EURO	SO AM
7	20	(14)	(22)	14	23
9	20	13	21	13	22
11	39	13	20	20	30
13	46	15	38	28	38
15	49	(14)	32	29	43
17	49	(13)	28	26	46
19	42	(13)	(25)	20	48
21	35	25	35	16	48
23	27	25	42	15	40
1	24	17	29	14	34
3	22	(16)	26	13	29
5	21	(15)	23	13	25

QSL information

The subject of mailing QSL requests is often a frustrating one. You send your request and nothing happens. Unfortunately, often your request never gets there and some postal employee supplements his income.

Here are a few suggestions to keep this from happening:

Never put call signs or other indications of Amateur Radio on the envelope. I remember many years ago the ARRL stressing the importance of your call on your envelope — be proud of your call. This, of course, was correspondence with other Amateurs in this country. Therefore, old-timers may have a tendency to do this.

In the latest issue of *The DX Magazine,* a suggestion was made to avoid the tell-tale bulge of the folded return envelope. This is an easy solution; mail your return envelope unfolded in a larger envelope.

Use security-type envelopes, none of those see-through envelopes. Those are blouses for pretty girls. I always place our QSL card and IRCs or currency in the return envelope with the flap folded back.

Sam Kennard, G4OHX, recommends sending a single dollar as opposed to two IRCs, which cost 95¢ each. US dollars are accepted in many countries and cover the cost of a return via air mail.

Several Soviet stations are now accepting dollars. I usually send the two IRCs, as we have good supply and didn't pay anywhere near the cost charged at your friendly post office.

QSL routes

A35ML	—OH4ML	EA8AGD	—OH6DK
AH0F	—JA2NQG	EA9OB	—EA5BY
C6AFP	—KR8V	EK9AYB	—UA9YAB
CN2CW	—F2CW	EO5BGH	—RB7GG
CT3M	—CT3EE	FG5R	—W7EJ
D2/LU6ELF	—N4THW	FK8FU	—NA5U
FO5BI/P	—F6HSI	V63DX	—JA7HMZ
G4WYG/ST2	—G4OHX *(See Note 4)*	VP2EM	—KV4AM
		VP5P	—WV5M
HC5/W2JGR	—W2JGR	VP5Q	—K2LE
HC8U	—W6UE	WZ6C/ST4	—W4FRU
HD5Z	—W2JGR	XE2GCK	—AA6EE
I9VDQ	—IT9VDQ	XF4T	—XE2TCQ *(See Note 2)*
J20TW	—K3ZO		
J6LRT	—NC8Q	XL3RBG	—VE3YRU
J79DX	—AA5DX	XT2KG	—YASME
JW9XG	—LA9XG	XX9AF	—K8CW
JY9SR	—W3FYT	YB3ASQ	—W7TSQ
K1TN/C6A	—K1TN	YV4DQI	—N4THW
KH0AM	—JE1CKA	ZB2/F2JD	—F2JD
KH0/JF2SKV	—JF2SKV	ZC4CZ	—G4SSH
OX1O	—OX3JUL	ZD8DQ	—KB4FEP
P40GD	—N2MM	ZD8VJ	—G4ZVJ
PJ2J	—K1CPJ *(See Note 3)*	ZK1TB	—W7TB
		ZK2VB	—OH3GZ
PJ4U	—K3IPK	ZW0F	—PY7ZZ
PJ9JT	—W1AX	3D2HJ	—WA4HHJ
RH8AA	—RB7GG	3D2XR	—SM7PKK
RH8AX	—RB7GG	3D2XV	—VK2BCH
RL9MM	—RB7GG	3W0JA	—JA7JPZ
RV0YF	—RB7GG	5H1TW	—K3ZO
T28RW	—ZL1AMO *(See Note 4)*	5N0ELT	—G4OHX *(See Note 4)*
T32BE	—WC5P	5N29ELT	—G40HX *(See Note 4)*
T32BO	—WD5F		
TA3C	—DL5YCQ	5W1HK	—SM7PKK
TA3F	—DL5YCQ	5W1ML	—OH4ML
TE88M	—N4THW	6W1QB	—DK3NP
TI8CBT	—N4THW	7S4DX	—SK4DX
TI8M	—N4THW	8J6BAL	—JA6PWN
TI9M	—N4THW	8P6EM	—G3VBL
TZ6FIC	—F6CRS	8P9HR	—K4BAI
TZ6VV	—N0BLD	8Q7BX	—I4ALU
UA0KK	—RB7GG	8Q7MT	—JI1DBQ
UA0ZZ	—RB7GG	9H3LP	—N6LL
UJ8XA	—RB7GG	9M6OO	—N2OO
US1GB	—UK3A	9M6ZR	—WA2HZR
EK9AO	—P.O. Box 44, Novosibirsk 630 093, USSR		
GU4VPM	—A.D. Stafford, 79 Barton Hill Road Hill, Torquay, Davon TQ2 8JF, ENGLAND		
GU0/KD7TT	—David Keith, 6 Rue de Douzaine, St. Peter Port, Guernsey, CANNEL ISLANDS		
HL9HH	—PSC Box 3695, APO San Francisco, CA 96366 *(See Note 1)*		
XW8KPL	—Mr. Inh Siphachanh, Deputy General Director of Khao San Pathet Lao, P.O. Box 310, Vientiane, PDR LAOS		
YL1XX	—RPI DX Club, P.O. Box 100,Riga 7, Latvia 226 007, USSR		
7P8EL	—P.O. Box 521, Maseru, LESOTHO		

Notes:

1. This route applies for contacts made since June 1, 1989. This is the call for new recipient Harry Herr, KJ6YR. You may also send your request to his home address.
2. US Amateurs provide SASE with 25¢ US postage.
3. Applies for the ARRL DX Contest (CW) only.
4. QSL direct only. Do not QSL via the bureau.
5. The route applies only for contacts made during the recent *CQ* World Wide DX Contest. Direct only, no bureau cards will be accepted.

The 1989 Worldradio DXathon

ELIGIBILITY — All licensed Amateur Radio operators, worldwide.

DATES — Start: 0000 1 January, 1989. End: 2359 31 December, 1989.

Exceptions: No contacts made during the time frame of any DX Contest will be valid. This is to be a prestigious award program, made so by its difficulty.

BANDS — 80, 40, 20, 15, 10 meter bands, plus satellite/moonbounce frequencies.

MODES — Phone, CW, Digital (includes RTTY, AMTOR, packet), Visual (SSTV), and Satellite (includes moonbounce).

Five Bands/Five Modes equals DXathon.

CATEGORIES — There is only one category — Single Operator.

OBJECTIVE — Contact as many NATIONS on as many modes as possible. A NATION is defined as an entity with enough sovereignty to issue its own postage stamps.

VALID CONTACTS — A NATION may be worked but once, on each mode, regardless of the frequency band. This is not a five-band per mode contest.

SCORING — Final score will be the total number of NATIONS contacted on the various modes. Contact with your own NATION does not count. The highest possible score would be about 900.

SUBMISSIONS — Entries must be received by 1 February, 1990. No QSL cards need be submitted or received by the entrants. Send signed log extracts to:

WORLDRADIO
2120 - 28th Street
Sacramento, CA 95818 USA

Award winning logs will be published in Worldradio. Decisions of the DXathon committee will be final. The committee has the right to disqualify entries for violation of the letter or the spirit of the rules. By submitting an entry, the participant agrees to abide by the decision of the DXathon Committee.

AWARDS

World Champion — The World Champion will receive a trophy significant enough to honor the effort.

Gold, Silver and Bronze Medals will be awarded for the highest scores on each continent.

Certificates will be awarded for:

A.—The highest score in each NATION.

B.—The highest score in each USA call area.

C.—The top single-band score in A. and B. above.

D.—Technician/Novice scores as warranted.

E.—High scoring 4 mode, 3 mode, 2 mode participants.

Nations with the highest participation (weighted vs. Radio Amateur population) will be honored.

In case of ties, duplicate awards will be made.

A certificate of participation will be awarded each "radio athlete."

It would be appreciated if monthly scores were sent in for publication.

RULE CHANGES — Rules may be modified over the years to reflect feedback from the participants. Please send copies of this page to your DX friends.

1989 Worldradio DXathon

Many thanks to the following contributors: W1BIH, W1EIF, W2JGR, N4THW, AA6EE, W6TUR, AH6IO, A24KH, DJ9ZB, G4OHX, RB7GG, Club Bouvet, Heard Island DX Association (VK9NS), Western New York DX Association (KD2YP), Southern California DX Club (WB6PSY), Northern California DX Club (KE6ZE), Northern Arizona DX Association (W7YS), Western Washington DX Club (KS7L), *The DX Magazine* (VP2ML), *Long Skip* (VE3IPR), *DX News-Sheet* (G4DYO), *The Long Island DX Bulletin* (W2IYX), *Inside DX* (N2AU), *QRZ DX* (W5KNE) and *The DX Bulletin* (VP2ML).

Here I sit, almost two weeks before Christmas, trying to think of something brilliant. I managed to work a few new ones in 1989, including a couple of the new added ones. However, I still haven't hit that 300. Maybe in 1990?

All the best to you in this new decade and I hope it produces some good DX for you. In another 10 years it is going to look strange writing the year as 2000. Maybe I will have my 300 by then. Very 73 es GL DX de John N6JM. □

DOG Trail

(continued from page 7)

of the shoreline where the race is now run.

In 1899 the trail was brushed sufficiently to use a team of horses and that ended John's mail carrying days. But his memory lives on as the North Shore comes alive in January for the longest Sled Dog Race in the lower 48, "the Beargrease."

Amateur Radio's role started in 1984 during the second annual race and has been heavily involved ever since. The network used is primarily 2M with HF as a backup. A 2M repeater in Duluth is linked via UHF to another repeater in Silver Bay, MN, 68 miles away. Through this link, about 400 miles of the race can be covered with a mobile rig or handheld.

The problem is the farthest checkpoint — Grand Portage. From here communications are done either by HF or 2M packet with the help of Upper Michigan's digipeaters. With an average of 25 teams in the race (at the start), alot of traffic goes over the airways.

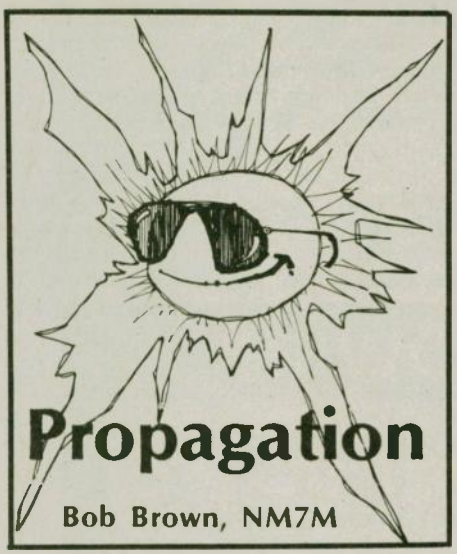
As we get more into the race, traffic increases and the importance of Amateur Radio moves into high gear. Much third party traffic is now being passed for veterinarians and race officials regarding health and welfare of everyone involved. Weather updates are continually brought in to the net as needed because "Old Man Winter" changes things in minutes to total white-outs, courtesy of the big Lake Superior.

The trail is rough, as only about five to eight teams finish the race each year. Amateur Radio is consistently put to the test, just as in a simulated emergency. Long hours, cold and snow, rough terrain and radio gremlins put this year's 32 hams to a real workout. A total of 617 hours were volunteered, making it the biggest year so far.

The Beargrease Amateur Radio Coalition (BARC) was formed to help keep improving emergency radio communications from one year to the next. As in the Iditarod, ham radio is providing an important service with a constant challenge for next year when we'll "be on the dog trail. . .again." □

WANTED:

Picture stories about outstanding hams. Know of any? Let us tell the world!



Propagation

Bob Brown, NM7M

Now that the discussion has reached the point where phrases like "maximum useable frequency," or "MUF," are used, perhaps it would be good to have a pause, something like an intermission for the latecomers, and recapitulate a bit before going on. For one thing that would allow them to understand better the limitations and some other aspects of all that has gone before.

For example, take MUF curves. I mentioned at the end of a previous article that there's more to propagation than just MUF predictions, pointing to the real need for signal strength information as well. However, even before that we should consider the other limitations of MUF curves.

One thing is that typical MUF calculations only consider the critical frequencies of the F-layer, leaving out completely the possible screening of signals by the E-layer. That would occur when the critical frequency for the angle of incidence on the E-layer is higher than the operating frequency.

As a result the actual hop structure would be different, possibly involving a mixture of E- and F-hops as well as different radiation angles from point A to point B.

It should be noted that such considerations are most important on the lower bands, say 10 MHz and below, and particularly during daytime hours. With the rise of the sunspot count in Cycle 22, however, the MUFs have increased to the point that the 21 and 28 MHz bands have come alive again. That being the case, the fact that MUF curves usually only consider F-layer hops is less important and times when the MUF curves are above those higher operating frequencies give a better indication of when those bands would be open, both propagation and signal strength considered.

On another point, in an earlier article reference was made to the control of the ionospheric layers, the lower D- and E-regions being under solar control, growing and decaying as the sun rises and sets and the F-layer being under geomagnetic control. That is just another way of saying that processes deep in the ionosphere are rapid, while those at a higher level are slow enough that the relatively quiet geomagnetic field can exert control.

But considering the pure F-layer origin of MUF curves, if the geomagnetic field goes over to disturbed or storm conditions, the MUF predictions based on ionosonde data from quiet times all go out the window. Typically, during storm conditions the level of ionization in the F-layer is lowered, with a corresponding drop in the MUF; in addition, the effective height of the F-region is lowered and that affects the skip distance as well.

While we're on this point, let me give you an example that stands out like a sore thumb. This case goes back almost 25 years and was reported by R.B. Norton of NOAA. The time was April 1965 and the observations were taken by two ionosondes, one at ground level and the other aboard the Canadian satellite, Alouette. The data was obtained near St. John's, Newfoundland (70 deg dip latitude), during storm conditions as well as quiet conditions both before and after the storm.

The storm observations showed that the electron density in the F2-layer peak around 250 km altitude decreased to such an extent that the region was obscured by the lower F1-region and was not visible to the ionosonde at ground level. Topside ionograms, as they are called, were obtained during a satellite pass close to the ground station and showed the F2-layer above the F1-region, but with a depression of the electron density by almost a factor of four. Those changes are shown in Figure 1.

With the storm depression of the F2

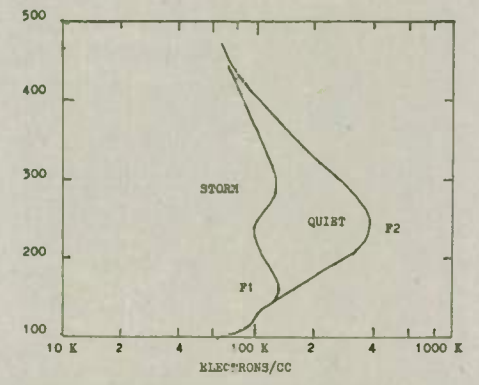


Figure 1. Electron density (horizontal) vs. height in km (vertical)

layer, the lower critical frequency of the F1-region was the limiting factor to propagation and also, with its lower height, it gave rise to a shorter skip than during quiet times.

The observations cited above were obtained during severe storm conditions, the geomagnetic K-index being 8 on a logarithmic scale from 0 to 9. Now that term is heard on WWV broadcasts, but is a new one in our discussions and deserves some comment, especially since magnetic activity and ionospheric disturbances seem to be related. So let's make a brief digression into the world of geomagnetism and talk about the units used in reporting the observations and the range of variability in the earth's field.

If you go back to your high school physics, you'll recall that magnetic fields are expressed in units of gauss, after the great natural philosopher Karl Friedrich Gauss. The strength of the earth's field at its surface is about 0.5 gauss, but geomagneticians, if you will, use a smaller unit for reporting the field strength and variations, the "gamma" or 1/100,000 gauss. Thus, instead of 0.5 gauss for the field strength, they'd report 50,000 gamma; also, any changes or disturbances would be reported in those units.

Having said all that, the question then involves the actual variability of the earth's field and its origin. We'll have to defer that last point until later.

But on the first point, the variability expressed in gamma depends on the location of the recording station, larger changes in the field being found at high latitudes near the auroral zone and smaller changes found in going toward the geomagnetic equator. Indeed, each magnetic observatory will have its own range of variation in gamma for the various levels of disturbance.

The magnetic station with which I am most familiar is the one at College, AK. There, the range of disturbance in the horizontal component H is noted in three-hour intervals and converted to a logarithmic scale from 0 to 9.

For example, K=0 corresponds to a gamma range between 0 and 25, K=1 for a range between 25 and 50 and K=2 for 50 to 100. Modest levels of disturbance at College are around K=3 (100 to 200 gamma) and K=4 (200 to 350 gamma). After that, the disturbance level becomes much greater, with K going from a value of 5 (350 to 600 gamma) to 6 (600 to 1000 gamma), 7 (1000 to 1650 gamma), 8 (1650 to 2500 gamma) or 9 (above 2500 gamma).

The A-index, like that on WWV broadcasts, is obtained by first taking one-tenth of the center value of the gamma range for a given K-value and then the average of the eight values durng a day. Thus, at College an A-index of 15 would be assigned for a three hour period if the average of the gamma range was about 150 and the daily value for A taken from the average of those eight values.

Again, we have modest disturbances for A from about 15 to 37 or so and then greater disturbance levels are characterized by values of A greater than 48.

Now, having gone through that discussion, let's go back to that severe storm which depressed the level of ionization in the F-layer. If you check on the level of solar activity at that date in 1965, you'll find that the sunspot number was 14 and the event occurred just after cycle 20 got under way. While it's not clear at this late date just what DXing was like at that time, it's pretty obvious that the ionosphere was badly disturbed around St. John's, Newfoundland, and perhaps other sites with comparable geomagnetic dip latitudes.

One path that was surely disturbed is the one from the Eastern United States into Western Europe. There, the distance is about 8,000 km and St. John's is located in the vicinity of where the first return from the F-layer would occur on that path during quiet conditions.

As indicated above, each magnetic observatory will have its own range of disturbance in gamma to fit the scale from 0 to 9 for the K-index. In an effort to obtain global measure of a magnetic disturbance, the A- and K-values are averaged from a selected number of observatories around the world, giving Ap and Kp values for the planetary indices.

In the case of the disturbance in April 1965, while the local K-index at St. John's peaked at K=8, the planetary average Ap was only 69. However, that is well above the value of Ap=40, which is used to identify significant magnetic storms.

With that example of a magnetic disturbance from a distant time, let me now give you a more recent example, March 13, 1989.

The magnetic storm on that date was the largest since 1960 and was characterized by an Ap value in excess of 200. Thus, it was not a trivial affair by any means and HF propagation conditions were disrupted even down to low latitudes.

Now that was a big storm, from both magnetic and ionospheric standpoints, but it still doesn't challenge the record storm in the last half century; there, the Ap index reached 312 for the period of Sept. 18 to 19, 1941. Surely the heavens were in a state of global distress on that occasion.

(please turn to page 58)

Toward the end of Feb. I will celebrate my 37th year on the "green keys" of RTTY. It's been a long time since I made my first contact using the FSK mode, but I still think it's the best communication system of all of those available to the Amateur fraternity.

I wish I hadn't lost my log of those early days, for I would like to review those wonderful early contacts. I have a drawer full of logs, but that gem is missing from my collection.

Many Amateurs do not log their contacts anymore and I think they're missing something. It's fun to go back and jog your memory by turning the pages of old log books, both the Amateur Radio and aircraft flying kind. I do it quite often.

I was on 40M RTTY the first weekend we were allowed to use frequency shift keying on the HF bands. A few years ago I bought a copy of the April 1953 issue of *CQ* magazine at a flea market. To my surprise it contained Wayne Green's RTTY column, which covered the opening of HF RTTY. My second happy surprise was finding my call listed with those HF pioneers who had invaded the high frequency bands with frequency shift keying.

That was back in the days when certain unhappy CW operators maliciously tuned up on top of our 850 cycle shift signals with the express idea of blanking out our contacts. I guess the idea was to QRM us and thereby destroy our will-to-live on FSK. But we prevailed and we're still at it.

For you computer newcomers, that period was in the good old days of oil-soaked mechanical teletype machines. The TTY monsters were used machines which we rescued from the trash heap by paying $50 to an agent of the Associated Press. To get one, we had to sign a waiver that we would not use it for commercial purposes and we had to wait until a Model 12 was replaced by a newer version somewhere in the United States.

My 12 came from the *Chillicothe Constitution Tribune* in the Missouri town. It was a bulky job that made more noise than a .30 caliber machine gun. But that's another story.

I never think of Chillicothe without remembering the time I filmed a movie sequence at the Litton Charolais cattle ranch, located just north of town. After a hard day of shooting, we retired to a local bar. When we entered the saloon, located on the main town square, I felt like I was entering a frame out of the L'il Abner cartoon strip.

Behind the ancient ornate mahogany bar stood the bartender, Earthquake McGoon. Yes, he was dressed in bib overalls. At one of the customer tables, two elderly ladies were each drinking a schooner of beer while sharing the local *Constitution Tribune* newspaper. Those gals were characters out of the strip, too. One, a portly lady in a printed cotton dress, was a dead ringer for Powerful Katrinka, while the other, a rough-hewn little old lady, resembled Mammy Yokum in every respect.

"Look," I said to my crew, "I think we've discovered the real Dogpatch!"

There were other characters in the room that fit the cartoon roster, too, so we began naming them. It was really fun. But here's the payoff: Believe it or not, at the very moment I pointed out Mammy Yokum to the others, she pulled out a corncob pipe and lit it with an old fashioned "farmer" match. Now there was no doubt.

And so, as I think back through those olden days, I always remember my first TTY machine. It's now known as the "Dogpatch Clunker." It gave me RTTY, and that has been a gift of enjoyment for 37 great years.

Trickery Trickery doc

Back in my early days of Amateur Radio, the local Amateurs would play a lot of tricks on each other. One of the favorite gags was to simulate a rare DX station and answer the CQ DX calls of local stations.

With our home-built CW rigs, it was easy to run the oscillator only. Enough RF energy would feed through the following disabled amplifier stages to produce an extremely weak signal for a radius of a few blocks. It was standing procedure that when the DX hunter come back to our call, we would leave him high and dry. We would never answer him when he stood by for his report.

AC4 was a favorite prefix to use because Tibet was so far away and so rare. Unfortunately, no Amateur in Fargo ever got a QSL from that country to prove his QSO.

What brought this to mind was a packet message from a former neighbor who now lives in Midland, MI. Jack Frost (yes, it's for real), W8PHG, lived two blocks from me while he was going to college. Because of our proximity, he worked a few of my mythical countries.

Jack visits me every summer when he returns to Fargo and we enjoy reminiscing about the "good old days," although I never bring up the DX days of our younger years.

I'm reasonably sure that Jack does not read this column, so I would like to play a prank on him again, only this time on a bit grander scale. I would like to have all my packeteer reader friends help me by sending Jack a message on the packet system. Be creative, but don't mention my name or call. Be sure and ask for an answer and put your packet address in the message so Jack will know where to send it. I'll report on what happens when retired chemist Mr. Frost figures out what happened. It should be fun. Address your packet message to W8PHG @ WB8I.MI.USA.NA and sit back.

AMTOR antics

I have rediscovered AMTOR for the Nth time. W1DA and I have been trading messages via an Australian mailbox. It beats, by days, the packet paths we were using heretofore. Where our packet exchanges wander around the country and take days to reach their destination, the AMTOR mail is quick and sure. The biggest problem is propagation blackouts.

I've noticed that whenever you scan the RTTY/AMTOR portion of the 20M band, you will find ARQ QSOs outnumbering the Baudot connections. With multi-mode TNCs like the PK-232 in such widespread use, it's only natural that more and more Amateurs will discover the joys of digital communications on the airwaves.

Keyboard kapers

From time to time I have blasted the manufacturers of computers because there seem to be no standards for

keyboards. I have two PC clones that have identical keyboards, but when I purchased an AT clone, I found I was spending more time on the backspace key than those going forward. The function keys were on the top of the board, the arrow keys were in a dumb "T" formation and the feel of the keyboard was much different than the others in my shack. I never liked that keyboard for a minute.

An advertisement in a PC magazine caught my eye and I ordered a replacement keyboard called "OminiKey Plus," by Northgate Computer Systems in Minneapolis. Although not all the keys are in the same place as my other two, most of my keyboard blues are over. I was instantly pleased, and my fingers seem to like it too because they haven't complained to the backspace key as much as before.

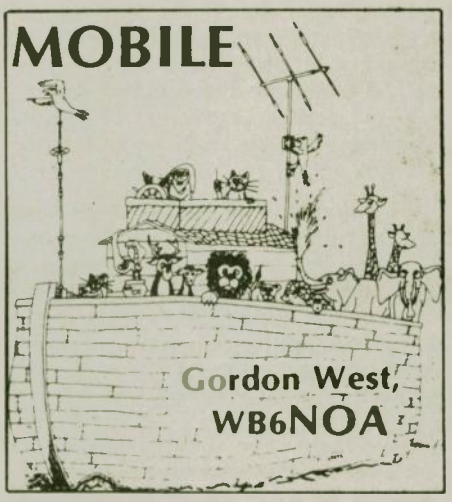
Eavesdroppings

"I HOPE TO GET A TRIBAND BEAM — PERHAPS THE EASTER BUNNY IS WATCHING THIS AND WILL BRING ME ONE IN HIS BASKET...IF I SHOULD GO OFF THE AIR EITHER THE POWER COMPANY HAS FAILED AGAIN OR THE BEAM HAS COME DOWN ...NICE DAY TO DRY RAISINS ...YES, I KNOW ABOUT NOISY LOCATIONS, I WORK IN A STEEL BOILER FACTORY...I KNOW FROM PAST EXPERIENCE, DEAR FRIEND, THAT YOU ARE A VERY RARE AND DESIRABLE DX STATION AND THAT YOU WILL BE CALLED BY VERY MANY STATIONS SO I WON'T HOLD YOU TOO MUCH LONGER BECAUSE OF THAT FACT. SO WILL LET YOU GO NOW AS SOON AS I GET YOUR NEEDED QSL ADDRESS. PLEASE SEND IT TO ME, DEAR FRIEND...6W6JX HAS RETURNED FROM HOLIDAY WITH A NEW ANTENNA MAKING A VERY BIG NOISE...I UNDERSTAND THAT ONE GROUP ON BOUVET WILL HAVE RTTY WHILE THE REST WILL HAVE ONLY WHITE NUCKLE MICROPHONE HOLDERS AND SOREARM KEY THUMPERS...ANTENNA AT T77C IS VERY LOW, ONLY 3 METERS OFF THE GROUND...CQ CQ CQ DE P1RATE ON LUNAR MOON...SOLID ON SOME OF THAT LAST TRANSMISSION ...ARE YOU THERE, REGGIE, AND IF SO WHY?...I'M CAUGHT BETWEEN A ROCK AND THE FCC...MY ANTENNA IS A VERY LONG WIRE ON A VERY SHORT CITY LOT...MY SHACK IS RAPIDLY FILLING UP WITH COMPUTER 'HOW TO DO IT' BOOKS, BECAUSE I REALLY DON'T KNOW HOW TO DO IT...MY ANTENNA IS THE SAME BEAM USED AT THE KNOXVILLE WORLD'S FAIR...THIS AREA IS NODE HAPPY — EVERYBODY HAS A NODE OR TWO...PACKET IS VERY EFFICIENT — I SAW A MESSAGE FROM CANADA TO HONG KONG WITH ONE LINE OF MESSAGE AND 18 LINES OF FORWARDING INFORMATION PLUS IT HAD BEEN ENROUTE FOR OVER NINE DAYS...MY WIFE IS GETTING A FACE LIFT AT THE FACTORY...TWO EARS ARE BETTER THAN ONE COMPUTER WHEN IT COMES TO COPYING CW."

Dave Warncken, GJ4YMX, has been putting Jersey Island on the RTTY map. He runs 90W into a mini-beam.

My thanks go to W0HAH, AA6LG, DK1KM, KB0CTG, WA0LRE, K3ZR, K3EJ/6, WD9AGR, W7VFR and N6VQX this month. If you wish to send me a packet message, my address is W0LHS @ W0LHS.ND.USA.NA; or if you wish to write, my address is 1514 S. 12th St., Fargo, ND 58103.

I plan on attending both the Visalia DX clambake and the big Dayton Hamvention this year. Hope to see you there. 73 de Bill Snyder, W0LHS. DIT DIT. □



Liquid crystal displays

Don't take your transceiver's liquid crystal display for granted. There are some precautions about LCD protection and some new improvements in LCD displays that you'll want to keep your eyes peeled for.

Amateur Radio manufacturers switched their readouts over to LCDs about five years ago on most mobile sets and all hand-held transceivers. It was a necessity that mobile units and hand-held sets have a good visible readout in the direct sunlight.

I can still remember the Santec hand-held sets, with their tiny red LED readouts — you would have to cup your hand over the readout to see what frequency you had selected. Same thing with the Kenwood 7800 mobile units — great at night, but during the day the red LEDs were tough to see. And when was the last time you saw someone wearing a LED watch?

A LCD display, on the other hand, excells in sunlight and is easily backlit for nighttime viewing. Well, that's what the sales literature says. But before we look at some problems with LCD displays, let's quickly review how a LCD display works.

Polarization of light waves is the heart of LCD display operations. In fact, if you ever looked at your Amateur transceiver's LCD display with polarized sunglasses, chances are you noticed that the display either looked gray, white or black — depending on how you tilted your head! This same principle exists within the LCD screen.

Inside the screen is an intricate and fragile glass plate, looking much like a glass microscope slide. But this is a very special glass plate — it has tiny conducting contacts around the edge and inside is the liquid crystal that changes polarization when slightly energized by a tiny voltage.

In order to define your readout's numbers, letters and tiny symbols, the liquid crystal display is divided up into hundreds, and sometimes thousands, of tiny boxes, called pixels. Each pixel is capable of getting turned on to pass light (white) or to block light (black). The command is sent to the pixels via the tiny contact points found on the edge of the LCD glass plate.

The LCD display needs very little energy to do its job. In fact, once the tiny pixel changes polarization to create a black dot or rectangle, it stays that way without any further voltage until it's been commanded to revert back to its original polarization. This means a LCD display requires next to nothing for its operation. Take a look at your wristwatch — how long has that LCD display been doing its thing on just the tiny internal battery?

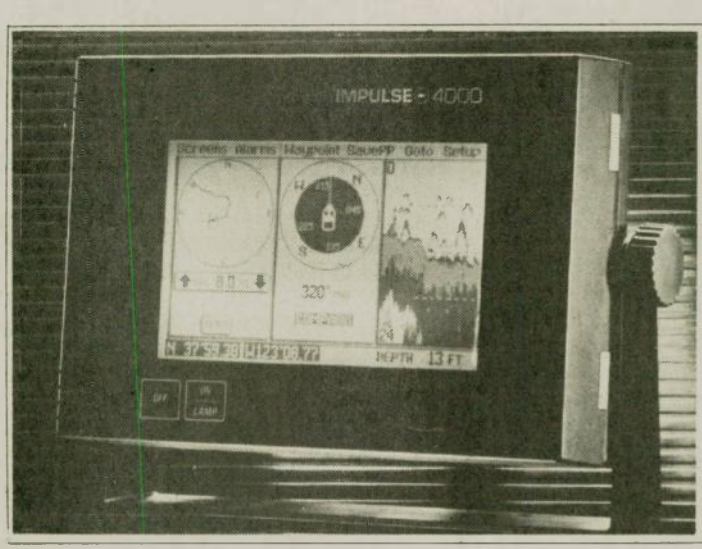
Amateur manufacturers are also looking at "super twist" LCD displays for future equipment. The "super twist" display may have an advantage over regular displays — the "super twist" may create up to 10 shades of gray within each pixel.

Traditionally, a pixel is either on or off, but with "super twist" coming soon, we might see a signal strength readout or a power output readout go from black to dark gray to light gray and then eventually to white. "Super twist" displays are popular in the marine electronics field to yield exquisite definition to radars, depth recorders and track plotters.

And then there is the full color LCD display. You've seen color LCD displays — the tiny 2 inch portable TVs are using them with relatively high user satisfaction. The color LCD display is at its best when it's properly backlit and is a bust if it's not.

Just ask Kenwood about their early dual-band mobiles and the RZ-1 scanner with a colored, backlit display. At night its dim, colored glow was attractive. During the day, the Kenwood dual-band mobile display was impossible to read.

Kenwood now has their dual-band



Big LCD screens are popular in marine electronics.

mobiles outfitted with a traditional black-and-white LCD display and this one is fine, day or night. Kenwood indicates that they are going to offer a retrofit kit for older, colored LCD displays for about $100. I wouldn't hold my breath — I've opened up both units and it doesn't look to me as though they will be field-head-interchangeable.

Marine radars are available with a LCD screen for better daylight viewing.

So, for now the black-and-white, bold LCD is the way to go for any display that is going to be seen easily outdoors, day or night.

Here are some precautions to keep your display sharp, brilliant and responsive to quick frequency changes:

1. *Never allow it to freeze.* LCD displays lose their crispness after months of exposure to freezing temperatures in your mobile back East.

2. *Don't bake your LCD.* An LCD display may turn black in the direct, hot sunlight. Cool it off and it returns to normal — almost normal. Every time a display goes black because of cold or heat, its return is never as sharp as the original.

3. *Don't scratch the screen.* While some larger HF transceivers have a protective plastic plate over the LCD screen, most hand-held sets do not. Scratch the screen and you may need to replace your entire LCD unit. This requires complete disassembly of your set and precise alignment of the new display onto the tiny gold contact points.

If you follow these few steps your LCD display will serve you for years.

If you are considering a light-emitting diode (LED) display for a mobile transceiver, better take a look at it in the direct sunlight before you make your buying decision. LCD is obviously the best display for mobile use. □

Just another QSO

(continued from page 19)

when someone did, I was upset. Sending code poorly is one thing, but knowing someone else is listening is downright embarrassing!

My anonymity breached, I figured if this operator copied me thus far, he could continue. So I answered with my name, a signal report and a KN.

When he came back again I grabbed my pencil and while waiting to write his reply, felt a strange sticky sensation. Looking down, I found my copy paper was smudged. I was still bleeding!

This would have been a good time to quit, just walk away and try it all another day. I was seriously considering this very thought when I heard that wondrous signal we hams all live for, QTH. Ignoring my hand, I listened and wrote Jacksonville, NC. Since I was about 20 miles from the Pacific, here was a coast to coast contact! We continued our QSO and after closing with 73s, I went and found my call book.

Somewhere there is probably a "Ham Operator Code of Ethics" and the purists of our hobby will no doubt think I broke it, but I was so excited, I just had to talk to KB4OGI. So, after getting his address from the call book and his telephone number from the operator, I called him on the land line.

He and I had a good laugh about our experience on the air. . .coast to coast, CW with two wires and no key, poor SWR with 1W out, a questionable antenna, not to mention installation and me bleeding like a stuck pig.

I know it was just another QSO, but it was exciting. Amateur Radio, I love you! □

Good operating

Good operating calls for friendly operating. It serves no useful purpose to bad-mouth a repeater — on that repeater or on any other repeater. It serves no useful purpose to argue about how the controls of a repeater are set — on the air.

Do it on the telephone or do it at a meeting. Always keep in mind that many are listening on scanners or VHF receivers. Many are trying to decide whether they like Amateur Radio. You do not help when you stir a hornet's nest.

Good operating demands friendly operating. —*Arrowhead RAC, Duluth, MN* □

Esther Given, W6BDE

QCWA's 33rd annual QSO Parties were announced by activities manager Onie Woodward, W1ZEN. The CW Party will commence at 0001 UTC Saturday, Feb. 10, and end at 2400 UTC Feb. 11.

The Phone party will be a month later starting at 0001 UTC, Saturday, March 10, and concluding at 2400 UTC March 11. QCWA's QSO Parties combine fun and fellowship with operating abilities and achievement.

The top OP in each party will earn a plaque. The next four runners-up in both the CW and phone parties will receive a certificate. In addition high scoring stations in each of the six continents, Europe, Asia, Africa, South America, Oceania and North America (other than the United States) will be awarded certificates of achievement in both CW and phone parties.

Of QCWA's 11,000 plus members, approximately half belong to one or more of the 173 chapters. Those who do not are known as "AL" (member at large). In addition to the count of one point for each contact, multipliers are earned for the number of different chapters represented by members worked and for one AL from each state, province or country.

A valid log entry must show both QSO numbers, contact's handle, chapter number or "AL" and state, province or country. DEL-MAR-VA Chapter 150 will tabulate logs, which must be mailed to Walt Brink, W3WPY, 919 Cloverfields, Kent Island, MD 21666-9363, postmarked by March 16, 1990.

For complete information, official rules and helpful hints, QSO Party participants should refer to the winter issue of the *QCWA Journal*.

•

Chicago Area Chapter 2 was recently entertained by Suzuki Junior Violinists trained at the Montay College Fine Arts Center. These tots are introduced to music and the violin at the same time they are learning to speak.

Sinichi Suzuki's "mother tongue" system is designed to bring confidence, self discipline and concentration into the lives of the very young and by the time a youngster is three, he has been trained in the language, culture, behavior requirements and musical enjoyment of his surroundings.

Noting these capabilities, one wonders what happens to that tremendous ability to store information, develop self esteem, tackle difficult situations and gain a life-long appreciation of those early exposures? Why doesn't it continue?

What the world needs now, in addition to "Love Sweet Love," is someone to come up with a system that will prolong those mental capabilities. Instead of recalling the past, "mature minds" would regenerate, tackle new ideas and continuously seek and store knowledge. Think what such a discovery would accomplish in introducing Amateur Radio to the retiree faced with a whole new life of leisure time. It would certainly create a new meaning for "second childhood"!

•

Marin-Sonoma Chapter 161 reports the sad loss of two of its charter members. The chapter's secretary, William G. "Bill" Humphries, W6ZUB, a retired Marin County Fire Department captain, became a silent key on Thanksgiving. He had been secretary of his chapter since its chartering in 1987.

Dr. Cornwall "Doc" Everman, W6BCM, a retired physician, belonged to both Marin-Sonoma and NorCal chapters of QCWA. In addition he had been an active leader in the "Professional Loafers," an organization of retired professionals enjoying Amateur Radio. □

Shop tips

ROGER MACE, W6RW

To stop your screwdriver or pliers from picking up steel nuts and screws, insert the screwdriver all the way into the area between the rods of your soldering gun. Then turn on the gun and slowly withdraw the screwdriver. It will be demagnetized upon withdrawal. — *L'anse Creuse Amateur Radio Club, Utica, MI* □

Visit Your Local
RADIO CLUB

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

ALABAMA

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

ALASKA

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

ARIZONA

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

Tucson Repeater Assoc., P.O. Box 40371, Tucson, AZ 85717-0371. 2nd Sat./monthly, 7:30 p.m., Pima Co. Communications Bldg., 2545 E. Ajo. Net Thurs. 7:30 p.m. 146.28/88 (146.22/82, 147.88/08, 147.70/10-PKT).

Western Arizona Radio Club. Meets: 2nd & 4th Thur./monthly, 7:30 p.m. at Fort Mohave Mesa Fire Dept., ½ mi. East of Hwy. 95 on Joy Ln., Mohave Valley, AZ. Net Tues. 7 p.m. 147.12 or call (602) 758-5171.

CALIFORNIA

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

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

Citrus Belt Amateur Radio Club. P.O. Box 3788, San Bernardino, CA 92413-3788. Meets: 1st Fri./monthly, 7:30 p.m. at 777 E. Rialto Ave., San Bernardino.

Clairemont Repeater Assn. P.O. Box 7675, Huntington Beach, CA 92615. Meets for breakfast 3rd Sat., 8 a.m. odd months. W5YI Broadcast Sun. 2000. Net last Tues. 2000. WB6HUL/R 145.220-1A PL.

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

Downey Amateur Radio Club. 12708 Glynn Ave., Downey, CA 90242. Meets 1st Thur./monthly, 7:30 p.m., South Middle School, 12500 S. Birchdale, Downey, CA. Weekly nets Thurs. - except 1st, 7:30 p.m. 144.930 (S) Voice - Tues., 8:00 p.m. 145.700 (S) RTTY.

East Bay Amateur Radio Club. P.O. Box 1393, El Cerrito, CA 94530. Meets: 2nd Fri./monthly 8 p.m., Salvation Army, 4600 Appian Way, El Sobrante. Nets: Slow CW, Wed., 8 p.m. & SSB Net, Wed., 9 p.m., 21.395. Info, Bob Fields, KC6AOH.

The Electronic Museum ARC. Meets 1st Fri./monthly, 7:30 p.m., Electronic Museum at Foothill College, Los Altos, CA 94022. Call-in 145.27/145.67.

Fullerton Radio Club, Inc. W6ULI. P.O. Box 545, Fullerton, CA 92632. Meets: 3rd Wed./monthly, 7:30 p.m., Sr. Citizens Center, 340 W. Common Wealth, Fullerton. Net: ea. Tue., 8 p.m. 147.495 simplex. Info, Gracie Hastings, N6FSL (714) 990-9203.

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

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

Hilltop Amateur Mastertie System (HAMS). Informal mtgs. weekly/Mon. 5 p.m. at Shakey's Pizza, 12924 Washington Blvd., Mar Vista, CA, except 3rd Mon. Call for location. Info, N6FD 213/823-0767.

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

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+. Elizabeth Zalaznik, KB6DLT, (415) 455-0361.

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

Mount Diablo Amateur Radio Club. P.O. Box 23222, Pleasant Hill, CA 94523. Meets: 3rd Fri./monthly, 8 p.m., Grace Presbyterian Church, 2100 Tice Valley Blvd., Walnut Creek, CA. Net Thur., 7:30 p.m. 147.06+. Info, Vicki, (415) 458-4527.

Northern Calif. Vaca Valley Radio Club Inc. Meets 2nd Wed./monthly, 7 p.m. at Vacaville Fire Dist. Station, 420 Vine St., Vacaville, CA. Net: WX6F club net every Tues., 7:30 p.m. 147.475/146.475 rptr. (1 MHz split) PL removed during nets.

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

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

Orange County Amateur Radio Club. Meets 3rd Fri./monthly, 7:30 p.m. at Mercury Savings, Tustin, CA, 1095 Irvine Blvd. 2 Meter Net Wed. at 9 p.m. 146.550 simplex.

Radio Amateur Mobile Society. P.O. Box 214091, Sacramento, CA 95821-10091. Meets 2nd Tue./monthly, 7:30 p.m., Carmichael Elks Lodge, 5631 Cypress Ave., Carmichael, CA. Net Saturday a.m., 224.84 at 8:30 & 146.79 at 9:00.

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

Riverside County Amateur Radio Assoc. c/o County Emergency Services Div., 4080 Lemon St., Ste. 8, Riverside, CA 92501. Meets: 2nd Thur./monthly, 7:30 p.m., bsmnt., County Adm. Bldg., 4080 Lemon St., Riverside. Nets: Mon., 7:15 p.m., 222.860/224.460 and 7:30 p.m., 146.28/88; Tue. — YL Net, 7:30 p.m., 224.460, Bkfst, 3rd Sat., By You Bob's Rest, Riverside.

Sacramento Amateur Radio Club. Contact: Gary Bryant, KB6KZZ, (916) 646-1171. Meets Sacramento Blood Bank, 32nd St. & Stockton Blvd., Sacramento, CA, 2nd Wednesday/monthly, 7 p.m.

Sacramento "Old Timers" Ham Radio Brkfst. Club and Sacramento Valley Chapter #169 QCWA (Quarter Century Wireless Assn.). Meets 2nd Wed./monthly, 8 a.m., Carrow's Restaurant near Watt Ave., and Hwy 80 exit. For info contact Paul Wolf, W6RLP (916) 331-1830.

San Fernando Valley Radio Club, W6SD. P.O. Box 3151, Van Nuys, CA 91407. Meets: 3rd Fri./monthly, 7 p.m., Red Cross Van Nuys, 14717 Van Nuys Blvd., Van Nuys, CA.

San Gabriel Valley ARC. P.O. Box 88, Monrovia, CA 91017-0088. Meets 1st Tues./monthly, 7:30 p.m. (except Dec.) at Bowling Green Clubhouse, 405 S. Santa Anita Ave., Arcadia, CA 91006. W6QFK, Rptr. 147.165/765.

Santa Clara Valley Rptr. Society (SCVRS). P.O. Box 2085, Sunnyvale, CA 94087. (408) 247-2877. 146.76 (–600 kHz), 224.26 (–1.6 MHz), 444.60 (+5 MHz). 2 meter/220 net Mon. 9 p.m. Mtgs.-3rd Fri.

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

Sierra Foothills Amateur Radio Club. P.O. Box 3262, Auburn, CA 95604. Meets: 2nd Fri./monthly at Auburn Fire Station, 226 Sacramento St., Auburn, CA. Nets 7:30 p.m. Tue. 28.443 MHz, Thur. 145.43 MHz link with 223.86 MHz.

Simi Settlers Amateur Radio Club. P.O. Box 3035, Simi Valley, CA 93063. Meets: 2nd Thur./monthly, 7:30 p.m., at Seventh-Day Adventist Church, 1636 Sinaloa, Simi Valley. Rptr. 147.93/33.

Solano County Amateur Radio Society. P.O. Box 457, Fairfield, CA 94533. Meets: 3rd Wed. 7:30 p.m., Vanden High School. 441.150+5 (Remote 145.69 simplex) PL 77Hz, (707) 448-1461.

Southern California Amateur Transmitting Society, SCATS, WB6LRU. P.O. Box 1770, Covina, CA 91722. Meets 1st Mon./monthly, Community Presbyterian Church, 540 E. Vine St., West Covina, CA. Net, Sun., 7 p.m. 147.765–, W6QFK/R. Classes. Contact: Pat McNulty, N6GXZ (714) 622-8315.

Southern California DX Club. P.O. Box 56292, Sherman Oaks, CA 91413. Meets: 2nd Thur./monthly, 7:30 p.m. at Dept. of Water & Power, 111 No. Hope St., downtown Los Angeles. Weekly DX roundtable, Thur., 7:30 p.m., 145.480- PL 100hz. DX Packet system 145.680. Info: Gary WB6PSY (818) 710-1705.

Southern California Six Meter Club. P.O. Box 10441, Fullerton, CA 92635. USB Net Tue., 8 p.m., 50.150 and 8:30 p.m., 28.400. FM Rpt. Net Wed., 7 p.m., 52.18/98 and Thur., 8 p.m., 52.28/88. FM Smplx call freq. 50.300.

Southern Humboldt Amateur Radio Club, (SHARC). P.O. Box 701, Redway, CA 95560-0701. Meets 4th Mon./monthly. 8 p.m. SHARC Clubhouse, Garberville. Rptr. 146.19/79. Info (707) 923-2373.

Stockton-Delta Amateur Radio Club. Meets: 2nd Thur./monthly 7:30 p.m. Red Cross Bldg., 747 N. Pershing, Stockton, CA (Hwy 5, Pershing off-rmp). Net 28.450 SSB 8 p.m. Wed. Visitors welcome. Club Rptr. W6SF receives 147.165 MHz.

The Trinity County ARC. P.O. Box 228, Weaverville, CA 96093. Meets 2nd Wed./monthly, at the CD Hall in Weaverville, 7:30 p.m. WD6FHX Rptr. 146.13/73.

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

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

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

West Valley Amateur Radio Assoc. 18011 Saratoga — Los Gatos Road, Los Gatos, CA 95030. Meets: 3rd Wed./monthly, 7:30 p.m. W6PIY/R. Net Tue., 8:30 p.m., 147.39+, 223.96–.

Yucaipa Valley Amateur Radio Club (YVARC). Meets 3rd Mon./monthly, 7:30 p.m. Far West Savings & Loan Community Rm., 1195 Calimesa Blvd., Calimesa, CA 92320. Pres: Don Ames W6RTM, (714) 795-5743.

CONNECTICUT

Tri-City ARC. Groton Public Library, Route 117, P.O. Box 686, Groton, CT 06340. Meets: 2nd Tue./monthly. 7:30 p.m.

FLORIDA

Gulf Coast ARC, Inc. P.O. Box 595, New Port Richey, FL 34656. Meets 4th Mon./monthly, 7:30 p.m., Colonial Hills Civic Ctr., 87 Peacock Dr., New Port Richey. WA4GDN Rptr. 146.67/.07.

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

West Palm Beach Amateur Radio Club, Inc. P.O. Box 6834, Southboro Station, W. Palm Beach, FL 33405. Meets: 2nd Tue./monthly, 7:30 p.m., Palm Beach Emergency Op. Cntr., 3723 Belevedere Rd., W. Palm Beach. Info: Jeff, WB2OUK, 586-5120, Henry, WA4HXZ, 655-4632 or Hyacinth, N4QWN, 848-0513.

HAWAII

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

ILLINOIS

Amateur Cross Link Repeater. 10, 6, 2 mtrs., 220, 440, 900, 1.2 MHz, ATV. Meets: 1st Sat./monthly, 7:30 p.m. Info: net Sun., 8 p.m., 147.225 MHz. KD9FA Rptr./Chicago.

Bolingbrook Amateur Radio Club. Meets 3rd Mon./monthly, 7:30 p.m., Bolingbrook Pk. Dist. Rec. Ctr., Briarcliff Rd., Bolingbrook, IL. Info net Thursdays, 8 p.m., WD9AKO/R 147.33 MHz +.600 and WA9DIP/R 224.54 MHz –1.6. Info hotline (708) 759-7005. ARRL affiliated club.

Central Illinois Radio Club, W9AML. Meets 4th Wed./monthly, 7:30 p.m. (from Sept. to May), McLean Co. Law & Justice Center, ESDA Rm., Bloomington, IL. Club Rptr. 146.94 –600kHz.

Chicago Suburban Radio Assoc. (CSRA). P.O. Box 88, Lyons, IL 60534. 447-HAMS. Meets: 2nd Wed./monthly, 8 p.m., Clyde Bldg., 7222 W. Cermak, N. Riverside, IL. Net Mon. at 8 p.m., 147.225+ and 29.68–.

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

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

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

Hamfesters Radio Club, W9AA. P.O. Box 42792, Chicago, IL 60642. Meets 1st Fri./monthly, 8 p.m., Crestwood Civic Center, 139th & Kostner Ave., Crestwood, IL. Nets: Sun. 8 p.m., 28410 MHz and Mon. 9 p.m., 146.43 MHz.

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

Northwest ARC/W9LM. Meets: 2nd and 4th Tue./monthly, 7:00 p.m., Oehler Funeral Home downstairs community room, Lee & Perry Street, Des Plaines, Illinois.

Schaumburg ARC (SARC). Meets: Schaumburg Park District Community Rec. Cntr. at Bode and Springinsguth Roads, Schaumburg, Illinois. Third Thur./monthly, 7:30 p.m. Net 28.350, 8:00 p.m. Thur.

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

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.

KENTUCKY

Kentucky Colonel's Amateur Radio Club, Inc. (KCARC), P.O. Box 9781, Bowling Green, KY 42102-9781. Meets 3rd Thur./monthly, Greenwood Mall mtg. place, Scottsville Rd., Bowling Green, KY. ARES Net 7 p.m. each Thur. 146.85 (-)KA4CLL/R.

MARYLAND

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

MASSACHUSETTS

Mohawk Amateur Radio Club. Meets: 4 Wed./monthly, 7:30 p.m., American Legion Hall, 325 Pequoig Ave., Athol, MA. (One block north of downtown traffic lights, past the bridge)

Mt. Tom Amateur Rptr. Ass'n., Inc. P.O. Box 3494, Springfield, MA 01101-3494. Meets: 3rd Thurs. (Sept.-May), 8 p.m. Holyoke Com. College, Holyoke, 2M, 220, 440 & packet. Info net Wed., 7:30 p.m. 146.94/R. Emer. net Sun., 8:45 a.m.

MICHIGAN

Black River A.R.C. Meets 2nd Sat./monthly, 7 p.m., Chicken Chalet, Hwy 43 East, Bangor, MI. Contact Wm. Lee, KB8DWQ, (616) 764-8480. Rptr. 147.360 + .

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

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

South Eastern Michigan A.R.C. Meets: 1st Fri./monthly, 7:30 p.m. Grosse Pointe North High School, Bldg. C. Cafeteria Commons. For info contact: AK8I (313) 372-1252. W8FWC Rptr. 146.740/146.140.

NEVADA

Frontier Amateur Radio Society (FARS). Meets: 3rd Mon./monthly, 7 p.m. Denny's Restaurant across from Nevada Palace, 5318 Boulder Hwy. Net Mon. 7:30 p.m., 145.39 rptr. on Black Mountain. Club info, Jim Frye, NW7O, 456-5396.

Las Vegas Radio Amateur Club (LVRAC). Meets: 2nd Tue./monthly at 7 p.m., Nevada Power Bldg. Wengert Rm., 6226 W. Sahara Ave. (Near Jones). Net Tue. 8:00 p.m. on 146.94 MHz. Info: Call Jeff at 363-9013.

Sierra Intermountain Emergency Radio Assoc. (SIERA). P.O. Box 2348, Minden, NV 89423. (702) 782-8266. Meets: 2nd Tue./monthly, 7:30 p.m., Douglas County Lib., Minden, NV. Talk-in: 147.330.

NEW HAMPSHIRE

Great Bay Radio Assn., WB1CAG. P.O. Box 911, Dover NH 03820. (603) 742-0130/742-1374. 2nd Sun./monthly, 7:00 p.m. Dover City Hall. Talk-in 147.57.

NEW JERSEY

Bayonne Emergency Mgt. ARC (BEMARC). 16th St. & Ave. A Firehouse, Bayonne, NJ 07002. Meets: 2nd Tue./monthly, 7:30 p.m. Rptrs: 53.09/145.430/224.280/445.575 MHz.

Delaware Valley Radio Assoc. (DVRA). Our Lady of Good Counsel Church. 137 W. Upper Ferry Rd., West Trenton, NJ 08628. Meets: 2nd Wed./monthly, 8:00 p.m.

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

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

NEW YORK

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

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

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

Orleans County Amateur Radio Club (WA2DQL). Meets: Office of Disaster Preparedness (CD), West County House Rd., Albion, NY 14411, 4th Wed./monthly, 7:30 p.m., 145.270 – WA2DQL.

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

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

Suffolk County Radio Club. 3rd Tue./monthly, 8 p.m. Bohemia Rec. Ctr., Ruzicka Wy. W2DQ/R 144.610/145.210, 223.080/224.680 rptr. Info call Jim Heacock (516) 473-7529.

Westchester Amateur Radio Assoc. (WARA). Scarsdale Village Hall, Scarsdale, New York. Meets: 1st Wed./monthly, 8:00 p.m. For info call Dan Grabel, N2FLR, Pres. (914) 723-8625.

Westchester Emergency Communications Assn. (WECA) 147.66/147.06, 222.80/224.40, 447.475/442.475. Meets: 2nd Mon./monthly, 7:30 p.m., Westchester County Ctr., White Plains, NY. Info: P.O. Box 831, N. Tarrytown, NY 10591. (914) 631-7424.

NORTH CAROLINA

North Carolina Chapter TSARC. Meets: Mondays, 28.350 on the air, 8 p.m. local time. "The Alligators" — all mouth, no ears.

Raleigh Amateur Radio Society, Inc. P.O. Box 17124, Raleigh, NC 27619. Clubs net nightly, 8 p.m., W4DW, 04/64. Meets: 1st Wed./monthly, 7:30 p.m., YMCA. 18th Annual Hamfest, April 8, 1990.

OHIO

Amateur Radio Fellowship (ARF). Keith Melvin, KA8TKE, Sec. P.O. Box 2486, Streetsboro, OH 44241. Meets: 1st Sat./monthly, Kent Wally Waffle. KA8YKT rptr. 147.675/075.

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

Clyde Amateur Radio Society (C.A.R.S.) Meets: 2nd Tue./monthly, 7:30 p.m. Municipal Bldg., Clyde, OH 44811. NF8E Repeater 144.75/145.35. Net Sun. 9 p.m.

Dayton Amateur Radio Assoc. P.O. Box 44, Dayton, OH 45401. Meets 1st & 3rd Fri./monthly (Sept. thru June) 8 p.m., Career Academy on River Corridor Dr. Info on W8BI 146.34/94 & 222.34/223.94.

Lancaster & Fairfield County A.R.C. Meets 1st Thur./monthly, 7:30 p.m., City Hall, Basement Club Rm., Broad & Main. Info Net every Mon., 8 p.m. K8QIK/R 147.63/03 Rptr.

North Coast Amateur Radio Club. P.O. Box 30529, Cleveland, OH 44130. Meets 1st Thurs./monthly at the Old North Olmsted Town Hall, at Dover Center and Lorain Roads, between City Hall and the Police Station. Repeaters - (all K8SCI/R) 145.29, 224.76, & 443.15.

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

OREGON

Keno Amateur Radio Club. P.O. Box 678, Keno, OR 97627. Meets 3rd Thur./monthly, 7 p.m., Keno Fire Station. Rptr. 147.32+ W7UFM. Info: Tom Hamilton, WD6EAW, (503) 883-2736.

PENNSYLVANIA

Butler County Amateur Radio Club. P.O. Box 1787, Butler, PA 16003-1787. Meets 1st Tue./monthly, 7:30 p.m. at Red Cross Bldg., 312 Mercer St., Butler PA 16001. Call-in: W3UDX 147.96/36. Net 10:10 p.m. nightly.

Mercer County Amateur Radio Club W3LIF. P.O. Box 996, Sharon, PA 16146. Meets: 4th Tue./monthly at 7:30 p.m. at Shenango Valley Medical Center, Farrell, PA. Net, Thur. 9 p.m. on 147.75/15 W3LIF/R.

Warminister Amateur Radio Club, WA3DFU. P.O. Box 113, Warminister, PA 18754. (215) 443-5428. Meets 1st Wed./monthly, 8 p.m., St. John's Evangelical Lutheran Church, Hatboro, PA. Net on 147.690/147.090 Wed., 8:30 p.m.

TEXAS

Sun City Amateur Radio Club. Meets 1st and 3rd Fri./monthly, 7:30 p.m., 3709 Wickham Ave., El Paso, TX. K5WPH 147.240/147.840 Rptr. with remote operation on 220, 440, 6M, and 10M.

VIRGINIA

Southern Peninsula Amateur Radio Klub (SPARK). Meets: 1st and 3rd Tue., Salvation Army Community Bldg., Hampton, VA. Operates 146.13/73 Rptr., VEC Information (804) 898-8031.

Virginia Beach Amateur Radio Club (VBARC). Open Door Chapel, 3177 Virginia Beach Blvd., Va. Beach, VA. Meets First Thur./monthly, 7:30 p.m. For info (804) 497-1235.

WEST VIRGINIA

Jackson County Amateur Radio Club. D. Geneal Bailey, NK8P, Sec.-Treas. 113 Winters Dr., Ripley, WV 25271. First National Bank of Ripley. Meets: 1st Thur./monthly, 7:30 p.m. Net Mon. 9 p.m. on 146.67/.07 WD8JNU/R.

Tri-state Amateur Radio Assn. Meets: 3rd Tue./monthly, 7 p.m., Green Valley Vol. Fire Dept., Norwood Rd. & 16th Street Rd., Huntington, WV. ARES net Thur. 9 p.m. on 146.76(–) W8VA/R. Info KB8EHJ (304) 824-5958.

WASHINGTON

Mike & Key Amateur Radio Club. 3rd Sat./monthly, 10 a.m. Tukwila Com. Ctr., 4101 So. 131st St., Seattle, WA. Net. Wed. eve., 7:30 p.m. 146.22/146.82 rptr.

North Seattle Amateur Radio Club (NSARC). Meets: 3rd Tue., 7:30 p.m., (except Jul. & Aug.) at the First Interstate Bank, 30th Ave. NE and NE 125th St. (Lake City) in basement. Info: Mike Jr., W7WHT, (206) 282-1438 or P.O. Box 20279, Seattle, WA 98102.

WYOMING

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

Maureen Pranghofer, KFØI

It's Monday and I am in one of those kind of serious Monday morning reflective moods. At least that's what I call it. Others may call it procrastination. You know, the longer you think about the weekend, the longer you can delay getting into the real work mode.

I have nothing against work and enjoy my job thoroughly here at the Handi-Ham Headquarters; however, the events of the past weekend are worth reflecting on as they have to do with some special Handi-Ham traditions.

Once a year, generally the first weekend in December, the Handi-Ham system has what is known as the Winter Hamfest. Some of you may be shaking your heads and saying, "But wait, I've been active in Handi-Hams for years and have never been invited to this."

If you live outside Minnesota or perhaps the western part of Wisconsin or the north part of Iowa, you are right in saying this. For this is one of the few "local" type Handi-Ham activities which has stayed with the Handi-Ham system throughout its 23 year existence. Sometimes I feel like it is one of the last traditions left of the old Handi-Ham system.

If you are wondering to what the old Handi-Ham system refers, I'm thinking of the earlier days. Then Handi-Hams was a one-man operation.

The idea was Ned Carman's, WØZSW, back in 1967 in Rochester, MN. In his work with the Mayo Clinic, Ned traveled throughout southern Minnesota and often found people literally stranded in their homes due to climate and inaccessibility. He saw a need for Amateurs to be available during the day in case of emergencies and started thinking about the possibility of creating a group by which handicapped persons could learn how to become radio Amateurs and meet this need.

Once he had seen this need the next step was to find some assistance. He began talking with local Amateur clubs — old Amateur cronies whom he had known for years — and then with the Sisters of St. Francis, who have their Mother House in Rochester at Assissi Heights. Though everyone had a part to play in the early development of the Handi-Ham system, the Sisters of St. Francis made the system blossom through their hard work and dedication. Sister Alverna, WAØSGJ, who is on our staff, is a charter member of the Handi-Ham system and, since obtaining her Amateur license through Ned's urging, has been a stalwart Handi-Ham supporter.

Once volunteers were found to assist in working with students, the next step was to find study materials for these persons to use and equipment so that a fixed income would not keep individuals from becoming Amateurs or being on the air.

From here the basic steps of the system were put into place and it began to grow. Ned quickly recognized that it was going to take more support than a group of volunteers, dedicated though they were, could provide. For that reason, with Ned's insight and fortitude, discussions began on a very informal basis with Minnesota Society for Crippled Children and Adults, which later became Courage Center.

The Handi-Ham system merged with the Courage Center in 1974, two years after Ned's untimely death. Since then, the Handi-Ham system has expanded in ways which were unimaginable. As it has expanded it seems that these traditions which were the basis of its founder — seeing a need to have volunteers at its core who are providing a service and are willing to change with the times — have kept the system continuously growing.

We still continue to see needs. Perhaps that is why we developed a Handi-Ham net on 10M when students said they would like to know other members of the system more closely, or perhaps that is why we have recently made an attempt to get the newest Technician and General questions put into Braille so that a deaf/blind individual in Idaho can take the theory portion of his General exam (he already passed the code at 20 wpm).

We are still very much in the business of the tradition of volunteering. In fact at the Winter Hamfest held last weekend, as I looked around I saw scads of volunteers who were having a good time socializing with one another and participating in the silent auction, whose proceeds act as a fund raiser toward the system. If it weren't for these wonderful people here in Minnesota and in other parts of the country and world, the Handi-Ham system would not be in existence today.

As the system has grown, the need for providing services has also changed. Initially there were only a few print books, but as the system began to serve more persons who were sight impaired or had other reading problems, we expanded services to include both tape and Braille materials. Today the Handi-Ham system boasts an extensive library of up-to-date materials on cassette and, if need be, in Braille. Students pay only a small fee for these tapes. □

This month's column is going to be a bit of a potpourri. First off, if you haven't obtained a copy of Fine Tuning's *Proceedings '89*, you are cheating yourself out of a fine publication.

Proceedings '89 is a great source of information on the radio hobby. Primarily geared to the ADVANCED SW DXer, *Proceedings '89* is a wealth of information on all aspects of the hobby. The premier edition, *Proceedings '88*, took the hobby press by storm. This year's offerings are even better.

Although geared for the SW listening hobbyist, the sheer number of Amateur Radio operators now turning to the SW side of the hobby makes this publication doubly important. *Proceedings* is rapidly becoming THE technical publication for the SW hobbyist.

Senior editor John Bryant has brought together some of the biggest names in the SW hobby to share their expertise in print. The editorial staff of *Proceedings '89* includes: Gerry Dexter, Don Jensen, Don Moore, Mitch Sams, Jerry Berg, John Fisher, Dave Clark, Guy Atkins, Chuck Rippel, Dallas Lankford, Nick Hall-Patch, Chuck Bolland, Kevin Atkins, John Tow and others.

All submissions are critically reviewed by a board of senior editors. Technical content and writing style are critiqued and the end result is a superb collection of technical papers which are must reading for anyone interested in HF communications.

Proceedings '89 is divided into five technical areas: Propagation (15 pages), Antennas (40 pages), Receivers (31 pages), Peripheral Equipment (19 pages) and Features (92 pages).

Dave Clark gives us an in-depth look at the Auroral Factor (doughnut hole propagation over the polar regions). This information will enable a DXer (either Amateur or SW) to understand the phenomena and predict openings in to the South Pacific via trans-polar propagation.

Small-loop antennas for 60M are the topic of one of those sections that, after reading, make you want to run right out and duplicate the installation and continue the research started by Guy Atkins and Craig Siegenthaler. This article is based upon Dave Clark's excellent article on Delta loop antennas which appeared in *Proceedings '88*. (As a side note: Jim Thompson of The Radio Works is currently doing research into small loops for SW purposes and will hopefully be releasing a new series of SW loops by mid-1990.)

The Receiver and Peripheral Equipment sections present in-depth information on the NRD-525, R-70 and FRG-8800 receivers, the Multiband AM Pickup (MAP) Unit and other goodies to enhance your shack.

The Features section is an absolute wealth of DXing info that will definitely enhance your listening sessions. This section alone is worth the price of *Proceedings '89*. Three DXing articles about Brazil, Java and the Arab World are priceless in their content. "How to QSL the Latins" and "Preserving your QSLs" are two more outstanding articles included in *Proceedings '89*.

The 220 pages of *Proceedings '89* will provide you with many hours of interesting, thought-provoking reading. Priced at $19.50 plus $2 postage, *Proceedings '89* is a steal! If you are interested in a copy, contact: Fine Tuning Special Publications, c/o John Bryant, RRT #5 Box 14, Stillwater, OK 74074.

Our second topic concerns some phenomenal QRP tests conducted on 10M between Bob Moody, K7IRK, in Palestine, TX, and Bill Smith, WA6YPE, in Glendora, CA. At 0008Z on Oct. 23, 1989, WA6YPE was in QSO with KE0QN in Kansas. K7IRK broke

WA6PYE holds the QSL for six Microwatt reception of K7IRK's test transmission.

in on the QSO and asked if Bill, when he was finished, would mind moving up the band and listening for IRK's QRP signals.

Tests began on 28.636 MHz between the two. A test message was sent by Bob using a crystal controlled transmitter at the 2 milliwatt level. Bill received this test transmission at RST 529. Bob then dropped the power down to 35 MICROwatts and Bill received this transmission at 429!

Further tests were conducted two nights later between these two stations, with the ultimate accomplishment of K7IRK using six MICROwatts to send a test message to Bill, who received it FB! WOW!

Six microwatts across a distance of 1,311 miles equates to 218,500,000 Miles/Watt! Not bad guys. Although not a world record (that's held by KL7YU and W7BVV at one MICRO-

watt level on a 1,650 mile path, between Alaska and Oregon in 1970 for 1.6 BILLION Miles/Watt), it shows what CAN be done with QRP power levels. This backs up Chris Page's (G4BUE) theory that extremely low QRP power levels can be used to make and maintain QSOs over great distances on 10 and 15M during a sunspot maximum.

Much more experimentation needs to be done in this area of low power communications using microwatt power levels. This is the ultimate QRP frontier. With the upswing of sunspot Cycle 22, I hope some of you out there take the opportunity to add to the information about microwatt QRP operation by trying some QRP experiments.

I will make this column available to anyone who wishes to submit microwatt QRP experiments for publication. Go get 'em, gang!

Jim Thompson's Radio Works is marketing a selection of high quality PL-259 connectors at very inexpensive prices. Jim sent me a sampling of the new connectors and I am impressed.

He sent along two each of nickel, silver plated and gold (yep. . .GOLD!) plated PL-259 coaxial connectors that he now carries in the Radio Works product line. These connectors are made in America (unlike the proliferation of connectors currently flooding the market from the Offshore Empire). They all have a Teflon (tm) dielectric and are very well made.

Jim has the gold ones plated to his specifications. Gold, you say. . .well if the US military can use gold connectors, why can't we? They are the ultimate for VHF!

Cost? Glad you asked: Retail cost in Jim's catalog is $.69 each for the nickel plated, $1.39 for the silver plated AND $1.69 for the gold plated PL-259s. Not bad for quality RF connectors.

For more information on these and other outstanding products in the Radio Works catalog, contact Jim Thompson, W4THU, at P.O. Box 6159, Portsmouth, VA 23703; 804/484-0140.

An ancient signaling scheme

GWYNN SUITS, W8BY

We modern Amateur Radio operators make use of a multitude of high-tech communication methods — FM repeaters, SSB, ATV, SSTV, CW, RTTY and packet nets, to name the most popular — but many overlook the possible low-tech schemes used by our ancient ancestors, which were very useful to them.

The ancient Greeks used runners, of course, which is the inspiration of our marathon races, but they also used a very clever signaling system which Alvin Harlow, *Old Wire and New Waves*, reports.

Greece is a rather mountainous country, so communication by travel was difficult and slow. When the troops at the battle front had to communicate promptly with headquarters some 50 or 100 miles away, they needed a far faster method to call for weapons, food, more men or assistance from another part of the army. A time delay would be unacceptable. So here is their scheme:

They made a couple of large, identical clay crocks with a small hole on the side near the bottom. Inside each crock they made a set of horizontal lines spaced equal vertical distances apart. On each line they inscribed a special message calling for some important possible action needed. The hole near the bottom was closed with a cork.

In action these crocks were taken to a mountaintop and filled with water to the top. The observer at the front would receive his messages from the army commander. Other relay observers were placed on mountaintops some 50 miles apart in line of sight of the observer and leading back to the crock at headquarters. Everyone was equipped with a big torch.

Now, to send a message, the observer would raise his torch and wait for the first relay man to raise his torch in acknowledgement. Any other relay men would then respond in like manner all the way back to the crock operator at headquarters.

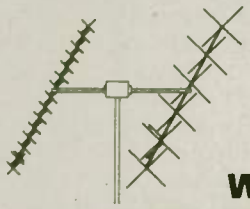
After a suitable pause the observer would then drop his torch and uncork the crock. All relay men would drop theirs as each saw the torch in their line of sight go down. The crock operator at headquarters would then pull his cork.

When the observer sees the water line fall to the appropriate message he would then raise his torch again. The raised torch signal would propagate back to the headquarters crock, whereupon the crock operator plugs his crock and reads the message at his water line.

You packet folks eat your heart out! Instead of calling your TNC a Terminal Node Controller, you should call it your Terminal Node Crock. — *The Arrow Communications Association Inc., Ann Arbor, MI* □

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

Amateur Satellites



WB5ZDP
Keith Berglund

I hope that this beginner's satellite column is what you are looking for. Some say the material is too advanced, while others say it's too basic. But the vast majority of the feedback I am hearing is favorable.

Last month we agreed that a satellite was just a repeater in orbit, with some striking similarities to your local 2M repeater. As you know, on 2M the input and output are separated by 600 kHz. On all Amateur satellites the input (uplink) and the output (downlink) are separated by entire bands.

Modes

In satellite lingo a "mode" is a shorthand method of describing the uplink and downlink bands (see Figure 1). For example, The Mode "A" transponder of satellite RS-10/11 has its uplink on 2M and its downlink on 10M. I suppose they initially called it the mode "A" transponder because it was the first widely used Amateur satellite transponder. Also, it is a good first transponder for the beginner in Amateur satellites.

Figure 2 is a chart of all active Amateur satellites and the modes of the transponders on them.

The Mode A station

With very few exceptions everybody that I talk to on the satellites started out using Mode A. It's an excellent mode for the beginner as well as the long time satellite user. If you understand the ins and outs of a Mode A station, you'll have no trouble configuring your station for other modes.

Many people that I talk to in the AMSAT booth at the local hamfests are surprised to learn that they already have the majority (or all) of the equipment required to operate Mode A in their hamshacks. If you have a HF radio capable of receiving 29.300 to 29.500 MHz, you're halfway there. Figure 3 is a block diagram of a typical Mode A station.

MODE	UPLINK	DOWNLINK
A	145.9 MHz	29.4 MHz
B	435.5 MHz	145.9 MHz
J	144.3 MHz	435.9 MHz
L	1.269 GHz	435.8 MHz
S	435.5 MHz	2.400 GHz
K	21.2 MHz	29.4 MHz
T	21.1 MHz	145.9 MHz

Figure 1. Amateur satellite modes

Antennas

Antennas for Mode A are not as critical as antennas required for some of the other satellite modes. The reason for this is that the present active Mode A satellite (RS-10/11) is in a 1000 KM circular polar orbit. In other words, the satellite orbit takes it over the North and South Pole at a virtually constant height above the earth.

Not only is the satellite not extremely high, the receivers aboard the satellite are extremely sensitive. The reason for this is that the Russians are only allowed 5W on 2M (Why? I don't know.) and, in order to access the bird, they must point some sort of directional antenna as the satellite passes over.

In this country, however, you and I are allowed to transmit considerably more than 5W. So, instead of using 5W and a steerable, directional antenna, you can use an omni-directional antenna and 25 to 75W. The effective radiated power toward the satellite will be the same.

In the past I have made many successful satellite QSOs using mobile whips, J-Poles and Ringo-Rangers.

On the receive side, you can use virtually any antenna capable of receiving 10M energy. I have used long wires, mobile whips, dipoles, ground mounted verticals and tribanders.

The antenna I usually use is my HF

MODE	SATELLITE
A	RS-10/11
B	OSCAR-10, OSCAR-13
J	OSCAR-13, FO-12
L	OSCAR-13
S	OSCAR-13
K	RS-10/11
T	RS-10/11

Figure 2. Active Amateur satellites and modes

Yagi at 50 ft., mainly because it is the antenna already in place. For Field Day I have used a 10M dipole only eight feet above the ground strung between two trees (eight feet because that's how high I could tie the strings).

The advantage of using linear, omnidirectional antennas is that you don't have to point them and the tracking of the satellite is not nearly as important. The disadvantage is that the satellite's antennas are also linear dipoles. What this means is, as the satellite tumbles in its orbit, there are times when its antennas are "cross-polarized" to yours.

Basic antenna theory says that in order to receive a vertically polarized signal, the receive antenna should be vertically polarized. Likewise, a horizontally transmitted signal should be received using a horizontally polarized antenna.

If the transmit and receive antennas are crossed polarized, then the received signal strength will be greatly attenuated. What this means for the Mode A satellite station using linear antennas is that, as the satellite tumbles, there will be times when the satellite downlink fades. This is not a "show stopping" problem, though, and many thousands of QSOs have been made using dipoles and other linear antennas.

One type of simple antenna that is

somewhat immune to the rotation of the satellite is a "turnstile" antenna (see Figure 4). This antenna is nothing more than two crossed dipoles fed 90 degrees out of phase.

This type of antenna exhibits circular polarization. Circular polarization can be modeled as a long piece of twisting ribbon. Instead of the RF field having a constant orientation to the Earth, the field rotates through all polarizations once each cycle. In other words, as the satellite tumbles the downlink to you may be any random polarization; however, the received signal will be the same.

I don't have the space to go into a construction article on this antenna; however, an excellent article can be found in *The Radio Amateur's Handbook* and *The Satellite Experimenter's Handbook*.

The receiver

As previously mentioned, if you have a HF rig or general coverage receiver capable of receiving 10M, you're halfway there. The internationally allocated subband for satellites in the 10M band is 29.300 to 29.500 MHz. There should be no transmitting of SSB or FM there because of interference to weak signal satellite downlinks (FMers take note!). What you'll hear is just normal SSB or CW QSOs, except they'll be calling "CQ satellite" or "CQ RS-10" and there will be a noticeable doppler shift (sounds like drifting) on the signal.

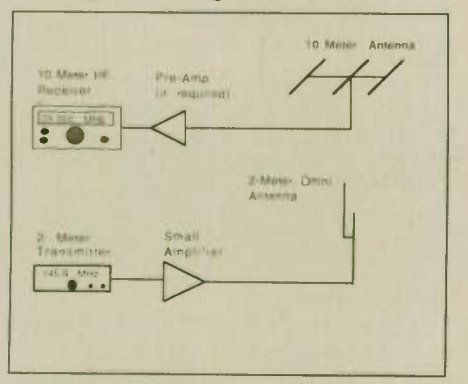


Figure 3. Block diagram of a typical RS-10/11 Mode A station

Some HF rigs may not be optimized for receiving that high in the 10M band. It seems that the manufacturers peak the performance of the receiver around 28.5 MHz at the expense of higher up (my Kenwood R-599D seems to work OK there). If this happens, you may want to consider placing a preamp between your antenna and the receiver. Pre-amps may be purchased from a variety of manufacturers, or they are easily homebrewed. Again, *The Radio Amateur's Handbook* has an excellent construction article on inexpensive 10M pre-amps.

The transmitter

The uplink of Mode A (and J) requires some sort of 2M transmitter capable of a few watts of SSB or CW. The vast majority use an all mode 2M rig.The term "all mode" implies that the rig is capable of transmitting and receiving CW, USB, LSB and FM.

The advantage of owning an all mode 2M rig is that you can use it for a variety of purposes.

First, on Amateur satellites, it can be used as the uplink for Mode A and Mode J. The receive portion can be used as the downlink for Mode B and Mode T. In addition, the rig can be used as a driver stage for a 1269 MHz Mode L transmitter or as a receive I.F. for a 2400 MHz Mode S receiver.

When the satellite is not in view, there is a lot of activity on 144.2 MHz SSB. Anybody not familiar with 2M SSB will be amazed at the DX. Contacts of 200 miles are an everyday occurrence and there are several folks out there with 30 or more states. Using 2M moonbounce, there are many who have worked all 50 states.

When you get tired of the SSB, there is always FM. The same repeater operation and packet that you do with an ordinary FM-only rig can be done with an all mode rig.

The smaller mobile all mode rigs are perfectly adequate for satellite operation and are usually somewhat easier on the old pocketbook. Also, consider the purchase of a used rig (or "previously owned," as the used car salesman likes to say) at a considerable savings over the new purchase price.

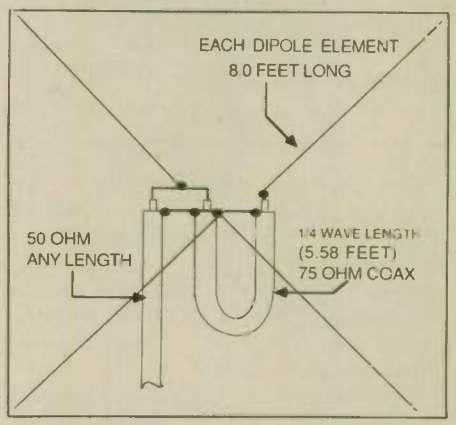


Figure 4. Block diagram of a turnstile antenna

Next month

For some, the purchase price of an all mode 2M radio is out of the question. An alternative is to use your HF rig to drive a transverter or just a transmit converter. Next time we'll cover what a transmit converter is and where to get one. Also we'll cover the basics of computer satellite tracking.

10-10 INTERNATIONAL News

Chuck Imsande, W6YLJ
10-10 19636

Now that the holidays are over, we have entered a new decade and all of those New Year's resolutions have either been forgotten or broken, it's time to get back to important things like Amateur Radio and learning how to operate the new equipment or computer that Santa left.

If you were one of the lucky ones who received a new computer for Christmas (or bought yourself one with the money Santa left for you), here is some information about an Amateur Radio computer program that I believe to be one of the best available. If you have been into computers for a time and have been looking for a program for your contact and contest logging, this program will also interest you.

A few months ago, in the October 1989 issue to be exact, I briefly discussed an Amateur Radio computer program called LOGic and said that I was going to load it in my computer and give it a trial run. I also mentioned in that article that I was impressed with the detail of the Instruction Manuals. There are two, one for the program and one for the Report Writer.

I have loaded the program on my hard disk, but you can also run from floppies. I then gave the program the "acid test."

It does everything the publisher claims and maybe even more! During my trial runs I did find a couple of things that I did feel need correction and improvement for use in tracking 10-10 information. I was particularly critical of the program as related to tracking 10-10 numbers and other record keeping for 10-10 awards and contesting. In discussing these additional features with Dennis Hevener, WN4AZY, the author of LOGic, he made several changes that enhanced the 10-10 aspects of the program.

The program operates as a data base program and has all of the features you would expect from one that is commercially available except that it is tailored to Amateur Radio. It is impossible for me to cover all of the features available in a short article, but here are some of the more important:

The screen used to enter your contact information is called the "Logging Screen" and has fields for you to enter notes about the station worked. Once the call is entered, the following information is displayed: A heading, both long path and short path to the station entered; miles to the call sign area (center of the state or country) (this is given both in Mi and Km); the state or country of the call sign; the time zone of the call sign area; and your local and UTC time.

There are also fields for you to fill for the name, address, state, report given and received, mode of transmission, frequency, band, time on and off and date. Several of these fields fill automatically, such as band if you list frequency, etc. You can also list the stations 10-10 number, county and other comments for future award tracking.

Of course one of the best features is being able to call up any call or 10-10 number to see if you have ever worked the station before. There is also a neat contest screen that will dupe check for you automatically.

Another feature, which I did not check, is an interface with computer interfaceable rigs. This, I understand, does some of the logging automatically for you.

As far as reports are concerned, the program has a number of reports built into the program and has the capability for you to generate any report for your own special purpose.

One of the things that makes LOGic stand out above other Amateur Radio computer programs that I have reviewed is the excellent instruction book, for both the program (60 pages) and the report written (65 pages). They are both well indexed and printed with easy to read type.

I have only covered the aspects of the program as it relates to 10-10, but you can track almost any award offered, such as County Hunting, DXCC, Prefixes, etc.

One of the advantages of LOGic is its ease of operation. Sure, there are commands to learn just as with every other program, but with a little practice you can zip through this program without any problems. And if you get into trouble, there is on screen help at the push of the "F1" key. Help is given for the current menu or field. You are given a brief explanation of each choice on the menu.

For more information about LOGic, contact Dennis Hevener, WN4AZY, 2634 Meadow Bend Court, Duluth, GA 30136-6037. The information package Dennis sends has a great deal more information than I have room to cover here.

Winter SSB QSO Party

The annual 10-10 Winter SSB QSO Party will be held on the weekend of Feb. 3 to 4. QSO Parties (contests) are fun and a great way to add to your 10-10 BAR award numbers and add new states and countries to your log.

Details of the contest were printed in the Winter Issue of the *10-10 News*, but if you are a new member and did not receive this issue, send me a SASE with 25¢ postage and I will send you all of the details.

A dupe sheet is required if you intend to send your log in for scoring. If a "dupe sheet" is new to you, a SASE to me will get you a sample dupe sheet and instructions.

Finally

If you are interested in obtaining an information pack and application form for 10-10, send me a "green stamp" ($1) and one of your address labels. Along with these I will send you the latest copy of the official 10-10 magazine, *10-10 International News*. My address is 18130 Bromley St., Tarzana, CA 91356-1701.

If you have lost your 10-10 number or do not know to whom to send your dues, a SASE to the above address will get you that information. If you are looking for your lost 10-10 number, please enclose a list of *all* of your previous calls as well as your current call. Previous address information is not required.

73 es cu next month. □

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

6M DXCC!

This subject gives me the greatest of pleasure! Earlier this year I made a prediction that has come true. I said that the first DXCC ever on 6M would come about before the end of the year. That was soon followed by (in no particular order) PY5ZBU-100, K5FF-106, W5FF-105, JA4MBM-110, K8WKZ-101, W4CKD-100, VE1YX-101 and K1TOL-100, all claiming to have done it!

It remains to be seen whose cards will first be approved by the ARRL. They will award a plaque to the first 10 awardees. Thanks to those SMIRK members who urged the ARRL to do this.

SMIRK will award the 100 Country Club trophy (wait until you see it!) to the first operator recognized by the ARRL to have earned DXCC on 6M. A plaque will be awarded to the first operator in the remaining five continents who first earn DXCC. These awards are sponsored by our Regional Coordinator for Africa, Hal Lund, ZS6WB! Who will be first?

ZL2TPY Auckland Island/Kermadek Island

ZL2TPY is headed for these destinations. From Jan. 15 to 26 he'll be on Auckland Island — ZL9, and from March 29 to April 8 Kermadek Island — ZL8. I believe he will be on 2M and EME. He will have a 5-element yagi and about 250 to 400W.

ZL2TPY has said this is a very expensive trip for him to make. Contributions would be greatly appreciated and can be sent to his CBA. *(Editor's note:* He is going out of his way to provide you with some very choice DX in prime time F2 periods. It would be good if we helped him financially. Please contribute to the cause.)

The DX report

On Nov. 1 at 1000, KG6DX worked Gs and 9H1s and from 1315 to 1400 there was a major opening from the US East Coast to Gs and Fs. At 1530 KØGJX got GØKPW/EA8 and ZS3s were into W8, Ø and 6s. Gs reported US video reception at 55.25.

On the 2nd at 0100, W6s got KH6s, JAs, MT, WA and OR. From 1200 to 1300 8P6JW got PA, F, SM, EA8 and GJ. At 1328 CT1DTQ got W3WFM.

On Nov. 3 at 0200, W5OZI in Texas heard OA8ABT. At 1540 HC2GE was in. At 2030 W6/W7s and NM get VK9, KG6 and KH3. At 2215 ZLs were into MT.

On Nov. 4 at 1210 HI8W got 9H1. At 1540 HC1BI was into Ohio. At 1900 KH6IAA was into W5OZI, ZB2/B got NI6E/KH6 and KH6s were into W9s and W4s. At 1927 K7ICW had ZL TV audio and at 2225 KG6DX was into W6s.

On Nov. 5 at 0015, K6QXY had JAs fading out and ZLs in and VK4BRG has N6CA. At 1245 N2AVR got CT1 and at 1323 he got HCs. At 1425 I got 9H1CG on CW! A new country! Others to the north and east also work 9H1 and TR8.

On Nov. 9 at 1330, the Northeast was open to Europe and HCs were in. At 1527 N5JHV in New Mexico got F9DI, as did W5OZI. At 1533 N5JHV got eight Gs including GJ4ICD. At 1615 Gs were into South Carolina and the Caribbean was into the Northeast.

On Nov. 12 at 1240, Europe had a Caribbean opening. At 1300 HC5K and KP2A were into Europe. At 1350 8P6JW was in here weak, as was the Northeast on F2 BS. HKs were also in. At 1420 Es got W4 and 9s. At 1630 VO1s and VE1s are in here and W5OZI got G4IDG. At 1640 I got G3UVR on CW and TF3EJ was into the Northeast. At 1740 VY1s and KL7s were in here. At 2000 VY1s and KL7s (10 of them!) were still in here weak. N5TX got eight KL7s. At 2045 KL7NO was still in here weak. KL7s and VY1s worked clear into W1, 3, 4, 6, 7, 8, 9 and 0s. At 2100 KL7s faded back up!

On the 13th the East Coast had CTs, EL2, Gs, HC2 and HC8. At 1336 DL3ZM/YV5 was in here, as was the FY7 Beacon.

On the 14th at 1335, OA8ABT and HC2 were in here and VE1YX got three SV1s. There was Europe to Caribbean/South American activity and CT1s, the ZB2 Beacon and the FY7 Beacon were into the East Coast.

At 1540 VO1s were in here and at 2245 KL7s got KH6s. At 2300 KG6DX got San Francisco W6s and JAs got the West Coast.

On the 15th at 1300, 9H1s got W8 and 9s and the East Coast and Europe also had South Americans. From 1550 to 1660 PAs were in here with VO1s and at 1555 G3JVL heard WA5IYX. From 1910 to 1920 KL7s were in here.

At 1925 KL7s got Ohio W1 to W4s and 1934 TF3 got W5FF.

On the 17th worldwide auroral activity killed 6M.

On the 18th at 1300, HH7PV was into Europe and CT3, PAs and 5N0 got the East Coast. At 1312 W6JKV/CT3, V47SIX (QSL to N4HSM), D44BC, V31, HR2, G3GJQ/5N0 (QSL via G4UPS), DL3ZM/YV5, PZ1AP, HK3AVR and YN3 were all into the East Coast. At 1705 WA6BYA got W6JKV/CT3. At 1810 N3BBI got NI6E/KH6 for WAS! At 1812 WA6BYA got V47SIX and at 1830 KH6IAA was into Arizona, Kansas and Oklahoma. At 1839 WA6BYA got D44BC, who also worked K6MYC.

On the 19th at 1300, Europe had Caribbean/South Americans. At 1402 8P6JW, V47SIX and V29OA (QSL to W7KNT) were all in here. I got V47SIX for a new country.

At 1437 the FY7 Beacon was into OHs and at 1500 the East Coast had Europeans, TR8 and ZS3s. At 1540 G4s were into Ohio and CT3 was in to the East. At 1600 HC2FG was in here, as was VO1QF at 1631. At 1634 W5OZI got FD1DQ, F9LT and GW4LXO! At 1645 the OX3 Beacon was in here. At 1935 KL7s were into the United States and from 2125 to 2252 AL7C got W9s and VE3s. Fairbanks KL7s got into Georgia and the Southeast and East Coast.

On the 20th at 0130, JA8TSG got OA8ABT. At 0217 AL7C got VS6WV, VS6XMQ and VS6XON! AL7FH got VS6WV. KL7IKV got VS6WV and VS6XON. KL7WE got VS6WV. At 1230 the East Coast was into Europe.

At 1430 V47 and the DL3ZM/YV5 Beacon were in here. At 1450 Fernando De Norona, ZS0F, was worked on the East Coast and by W5SFW! At 1600 PA0HIP was in here and WA5IYX got the GB3SIX Beacon for the first time. Gs were in on SSB, G3JXN, G4AHN, G4OCZ, G3JVL and G4JCC.

On the 21st at 1330, the East Coast had Europe and at 1430 OH2TI had HC and the Caribbean. At 1654 VE1HD was in here and at 1700 Z23JO was into the W0s and W7s. At 1700 W0KEA got ZD8MB!

On the 24th at 1230, the East Coast got Europe. From 1550 to 1558 FC1BYM, G8VR, G4CCZ, GW4LXO, G4JCC, G4PBT and G3JXN were all in here. From 2330 to 0030 WA5IYX got 11 JAs in JA1, 7 and 8. W5VY got several Okinawa stations on CW.

On the 25th at 0004, W3XO/5 got KE0SC/DU3! At 1450 HC5 and HC2 were in here and TF3EJ was into the W0s. At 2000 HL9TG got the West Coast and at 2350 KG6DX was into the East Coast.

On the 26th at 0010, DUs were into Idaho! JAs worked BYs. At 0100 K1HTV/3 had JAs and at 1330 OH1ZAA had a Caribbean opening. At 1500 ZC4MK was into the East Coast with SVs. At 2259 NL7OW was in here on 50.250. The Coasts were still getting F2 between them. At 2330 N5JHV got HL9TG.

On the 27th at 0022, N5JHV got HL9TG on SSB and at 1520 the HC2 Beacon was in here. WA6BYA is said to be the first ever to work Midway Island on Six! At 1545 V0s were in here and at 1608 VE1s were in here. At 2030 KD7P/WH4 was into W1, 2 and 4s! At 2300 HL9TG was into the United States again.

On the 29th at 1300, the East Coast was into Europe again, as was the Caribbean. At 1430 YV5, FY7 HC8 beacons and KP2A were in here.

From 1530 to 1800 Es got W4s and from 1845 to 2000 there was a very good KH6 opening here. □

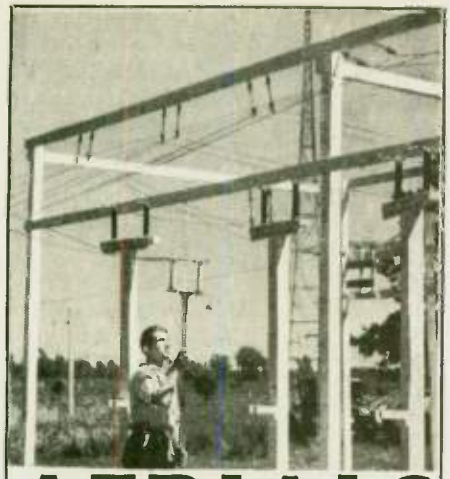
SMIRK/Worldradio subscription combo

The Six Meter International Radio Klub members whose dues are current (check your address label) are eligible for a combined SMIRK membership and subscription to Worldradio magazine.

Send SMIRK $16 (make the $16 check out to SMIRK and send it to SMIRK, 7158 Stone Fence, San Antonio, TX 78227 to cover both your SMIRK dues and a one-year Worldradio subscription — ONLY SINGLE YEAR SUBSCRIPTIONS, PLEASE.

Current Worldradio subscribers RENEW THROUGH SMIRK. Although your combination renewal notice will come from Worldradio, your $16 check should be made out to SMIRK and sent in the envelope provided to the SMIRK address. Be sure your name, callsign, SMIRK number, current address, and Worldradio subscriber number are included with your renewal.

Put the $3 savings in your piggy bank for that new rig!



AERIALS

KURT N. STERBA

Some antennas were sent to **World-radio** for a product review. What is the most rational thing they could have done with them? Right. The antennas were sent to me. (I've been taking lessons from Rush Limbaugh.)

These are mobile antennas manufactured by the Lakeview Co. of Anderson, SC. While the enclosed literature speaks of vehicles (vans, RVs, pickup trucks [why not load up the shotgun rack?] and autos), such antennas would be of use to condo dwellers and those wishing low profile radiators.

These antennas are not shiny aluminum, but rather a flat black, which lends itself to blending in better.

I took the 10M model to the BBY antenna range (that stands for Big Back Yard). Went in the 10M contest.

Running but 70W output and moving up and down the band answering the CQs of others, I had contacts at :35, :36, :37 and :38. There were also contacts at :09, :10, :11 and :12. There was a :29, :31 and a :33 and a report of "good signal." I even called weak signals and they answered me.

This antenna could be easily hidden in your yard. Could even plant a vine to climb up it. DX stations at the 5,000; 6,000; and 7,000 mile ranges were worked. Pretty good, I'd say, for a little antenna.

Then I went back to my regular antennas, a half-wave vertical for 10 and the big hummer. Interestingly enough, when switching back and forth, different signals would be louder on the different antennas.

Think I might use the Lakeview 20 and 15 verticals in the upcoming DX contest.

Forwarded to me from the **World-radio** offices was a photocopy of page 46 from the December issue, on which a reader had written, "Ya don't say now! What would Kurt say if this had appeared in another magazine! Hi."

That comment was about a statement in Gordon West's column: "Stacking elements inside the fiberglass tube (collinear feed) lowers the angle of radiation for longer range contacts." And, "lowers the angle of radiation" was underlined by the observant reader.

Methinks that West merely quoted the literature from the fishing pole company that we've talked about previously.

Observant reader (sorry, don't know who he was, so can't identify) is quite right!

For some, the concept is difficult to grasp, but: Putting more power into lobe (which stacking does) is not the same as lowering the angle of radiation.

The truly astute and studied (such as the observant reader) know such is true. More elements give more gain, but NO angle change. I care not how many antennas the fishing pole company sells to the Pentagon, they're wrong and I'm right.

If I get a lot of grief on this, I'll whip out the $5 version of what I've just said and send a lot of folks back to kindergarten where they belong.

Onward to the topic of the day, hoping to shed light.

"You're 40 over 9!" Or you could be "Not moving the "S" meter but you're Q5."

Most likely the truth lies somewhere in between. Let's take a look at what "Tremendous signal, you're pinning the meter" may mean, or not mean. At the end of this you may end up saying, "So much for "S" meters."

First, to establish the premise, let's look at the "S" scale as so determined by the Center of the Universe, Newington, CT:

S9 — Extremely strong signal
S8 — Strong signal
S7 — Moderately strong signal
S6 — Good signal
S5 — Fairly good signal
S3 — Weak signal
S2 — Very weak signal
S1 — Faint signal barely perceptible.

It takes a 10 times increase in power to realize a 10dB gain. A "S" unit is equivalent to 6dB (up or down).

If you are running 1,000W PEP output and you are "40 over," that means you could cut back to .1W (yes, one-tenth) and be a mere S-9.

So let's say you are running the full-bore, legal-limit, shack-warming (1,500W) amplifier and you drop to a peanut-whistle little HW-7 or HW-8, etc., your signal will drop from 40 over to a lowly 10 over.

To go from 10dB to 40dB (a gain of 30dB) is a 1,000 times power gain. To go from S9 to 40 over (40dB) takes a power gain of 10,000. The following chart should help explain:

40 over	1,500W
30 over	150
20 over	15
10 over	1.5
S9	.15
S8	.0375
S7	.009375
S6	.00234375
S5	.0005859375
S4	.00014648375
S3	.00003662109375

S2	.000009155273437
S1	.000002288818359
S0	.0000005722045897

S0 was there for those who are "Q-5 but not moving the meter." And yes, we know we carried out the decimals to ridiculous extremes, but to prove a possible point.

For recent graduates of the US educational system, we provide the following:

To the right of the decimal point, the first place in Tenths. Two places are Hundredths. Three places are Thousandths. Four places are Ten-thousandths. Five places are Hundred-thousandths. Six places are Millionths.

So .15 is the same as 15/100. We see that .0375 is almost 4/100. S7 is yours (.009375) with 1/100 of a watt. S6 comes with .002, which is 2/1000 or 1/500 of a watt.

Really now, you can generate that much power with warm breath on a diode.

Can we really expect a S5 (fairly good signal) with 6/10,000 of a watt? Will anyone ever tell you, "You're weak (S3) but I can make you out," when you are running 36/100,000 of a watt?

Well, something is wrong somewhere. Wouldn't you agree?

Are we really to believe that if a 1,000W output PEP station is 40 over, another station in the roundtable will be S9 with .1 (1/10) of a watt?

Let's say a station with 1,000W is S9 (and all other things, propagation, distance, etc., being equal), do you believe that the other station hitting your meter at 40 over is running TEN MILLION WATTS?

He may have a "tremendous signal," but it's not THAT tremendous.

To a related subject: "Which antenna is louder and by how much?" Here's antenna A. . ."and this is on SSB where a couple of inches difference, mouth from microphone, leaning back and forth, will make a big difference. Haw!

There is only one way to conduct such tests, and that is: Key down.

Yes, KEY down. That way there is a constant level signal. Our meters can't really follow voice peaks. If they could, the eye couldn't follow the meter.

Yes, key down. A nearby station, so you aren't testing one antenna on a propagation fade and the other on a rise.

All sorts of things may be learned from that procedure. For example, the "can't operate both ends of the band" crowd may be in for some surprises. Twiddling the knobs on the tuner will reveal the real story.

That only applies to dipole testing, because the yagi itself will have different gain figures across the band. Front-to-back varies also.

On the "A-B" testing, starting with some reference you'll be told which antenna was more or less. Take the actual figures with a grain of salt. Instruments that accurately measure signal strengths cost more than the transceiver and the amplifier that you are using.

By the way, any questions readers may have about antennas will be answered here or by letter. That is, unless I've heard you on the air going "CQ DX, CQ DX and listening." Then I send you the opposite of the real answer to insure that you won't be heard.

Grrrr. Could it be that sometimes you are NOT listening?

Another gem we hear is, "Give my regards to your family." Do we really think that Luigi, when sitting down to dinner with his XYL says, "By the way dear, Bob Broken-old-bottles in Kokomo, IN, wished to be remembered to you." Boy, that's asking for a bowl of pasta to be dumped on the head Three Stooges style.

(Krusty Kurt goes by his special moniker so he can sit at the meetings of his Amateur club in peace. He says he is getting too old to tolerate twaddle.) □

"Grand Ole Man"

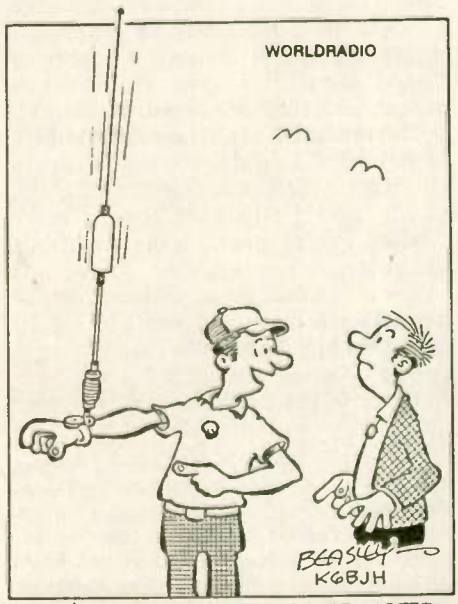
Sidney Chiswell, W2ICZ, of Buffalo, NY, received the "Grand Ole Man" award at the ARRL Atlantic Division/New York State Convention in Rochester, NY. Based on nominations received from the Amateur community, the awards committee may present this award to an older Amateur having a particularly long, outstanding history of service to Amateur Radio.

During 50 years as an Amateur, Sidney has served as an Elmer to many newcomers and has assisted blind Amateurs in becoming licensed and getting on the air. He has been an active participant in other public service communications and has frequently brought Amateur Radio into the public view. For example, he led Amateur communications for the Empire State Games in Buffalo and was instrumental in creation of his area's Amateur Skywarn system.

Back in the early days of the Soviet Sputnik satellites, Sidney tracked the birds and provided up-to-the-minute information for local TV stations. When a local Boy Scout was selected to visit the US Research Team in Antarctica during the International Geophysical Year, he maintained communications between the boy and his parents via Amateur Radio.

Through his efforts, Amateur Radio has been brought into local classrooms as an exciting way to learn. His latest project is a proposal to obtain a grant for a complete Amateur Radio and computer installation at the new magnet school in Buffalo that is associated with the Buffalo Museum of Science.

Like others who have received the "Grand Ole Man" award, W2ICZ continues to set an example of energy and excellence for all radio Amateurs. □



HOW'S THIS FOR QRP?--A 75 METER WRISTWATCH TRANSCEIVER!

Florida

The Sarasota Hamfest, which is doubling as the South Florida Section ARRL Convention and Computer Show, will take place from 9 a.m. to 4 p.m. Feb. 17 and 18 at Robarts Arena in Sarasota. Admission is $5 in advance; $7 at the door.

Featured will be technical, ARRL and new products forums; a traffic handlers luncheon; a banquet and ladies' activities. Free parking and RV space will be available, as will a food concession.

Talk-in on 146.31/-.91, 147.90/-.30 and 449.425/-.925.

For information contact Hadley Carrigan, N4ODK, 101 N. Adams Dr., Sarasota, FL; 813/388-2868. □

Illinois

The Sterling-Rock Falls ARS 30th annual hamfest will be held at the Sterling High School Fieldhouse on March 11 in Sterling.

There will be a large flea market area and space to accommodate self-contained campers overnight. Set up Saturday from 6 to 9 p.m. and on Sunday beginning at 6:30 a.m. Doors open to the public at 7:30 a.m.

Tickets are $3 in advance, $4 at the door. Tables are $5, including electricity. Bring your own cord.

Talk in on 146.25/146.85, W9MEP repeater.

For information, tables or tickets, contact Sue Peters, Sterling-Rock Falls Amateur Radio Society, P.O. Box 521, Sterling, IL 61081; 815/625-9262. □

Indiana

The LAPORTE ARC's Winter Hamfest will be Saturday, Feb. 24, at the Laporte Civic Auditorium.

Forums will include the Midwest Microwave Society's construction exhibit and seminar (bring your SHF projects).

The required donation is $3.50. The table charge is also $3.50 and may be reserved in advance by SASE (LPARC P.O. Box 30, Laporte, IN 46350).

Talk-in on 146.52 simplex. □

•

The MORGAN COUNTY REPEATER ASSOCIATION is sponsoring the Indiana Hamfest beginning at 8 a.m. Sunday, March 11, at the Indiana State Fairgrounds Pavilion Building in Indianapolis. Tickets for the indoor flea market, which will boast 60,000 square ft. of space, are $6 at the door.

No space without a table will be sold. Eight foot flea market tables (including space) are $10 each. Advance reservations are suggested as tables have sold out the last two years.

Vendor setup will begin Saturday from 3 to 9 p.m. Overnight security will be provided. Setup will conclude from 6 to 8 a.m. Sunday.

Free paved parking will be available. Featured will be VEC exams and ladies' programs.

Talk-in on 145.25.

For table reservations or information, send a SASE before Feb. 23 to Aileen Scales, KC9YA, 3142 Market Place, Bloomington, IN 47403; 812/3394446. □

Iowa

The DAVENPORT AMATEUR RADIO CLUB will host its 19th annual hamfest on Sunday, Feb. 25, 1990, at the Davenport Masonic Temple. Doors open at 8 a.m. and the grand prize drawing is at 3 p.m.

The hamfest features a large indoor flea market, commercial exhibits, food, VE exams and door prizes. Talk-in on the W0BXR 146.28/.88 repeater.

Tickets are $2 in advance, $3 at the door. Tables are $7 each.

For more information, tickets or table reservations, contact: Dave Johannsen, WB0FBP, 2131 Myrtle St., Davenport, IA 52804. For ARRL/VEC exam information contact: Al Broendel, N9OK, 2712 38th St., Rock Island, IL 61201. □

Massachusetts

The ALGONQUIN AMATEUR RADIO CLUB is sponsoring a hamfest from 10 a.m. to 3 p.m. Saturday, Feb. 17, at the Marlboro Middle School cafeteria in Marlboro. Doors open to sellers at 8 a.m.

Admission is $2. Tables are $10 in advance, $12 at the door.

Featured will be an electronics fleamarket. Talk-in on 146.01/61. The site is wheelchair accessible.

For more information call KA1PON at 508/481-4988; or write AARC, P.O. Box 258, Marlboro, MA 01752. □

•

The MT. TOM REPEATER ASSOCIATION is sponsoring an Amateur Radio and electronics flea market from 9 a.m. to 2 p.m. Sunday, March 4, at the Smith Vocational High School in Northampton. Doors open for vendors at 7 a.m.

Admission is $2 per person; children under 12 enter free. There are over 200 23 X 6 ft. tables available for $10 in advance; $12 at the door. Power outlets are available upon request. Volunteers will help load and unload.

Featured will be ARRL/VEC exams at 10 a.m. Walk-ins are welcome. There will also be a raffle, door prizes and food. Talk-in on the 146.94 and 223.82 repeaters and 146.52 simplex.

The facilities are handicap accessible.

For information contact Marvin Yale, N1CDR, 6 Laurel Terrace, Westfield, MA 01085; 413/562-1027. □

Ohio

The Mansfield Mid-Winter Hamfest/Computer Show will be held Sunday, Feb. 11, 1990, at the Richland County Fairgrounds in Mansfield. Doors open to the public at 7:00 a.m.

There will be plenty of prizes and a flea market with over 300 tables in large modern heated buildings. Tickets are $4 in advance

and $5 at the door. Tables are $7 in advance and $10 at the door, if available. Advanced ticket/table orders must be received and paid by Feb. 1, 1990.

Talk-in, call W8WE, on 146.34/94.

For additional information or advanced tickets/tables, send SASE to Dean Wrasse, KB8MG, 1094 Beal Rd., Mansfield, OH 44905; 419/589-2415 after 4 p.m. EST. □

Oregon

The SALEM and OREGON COAST EMERGENCY REPEATER ASSOCIATIONS will sponsor the 1990 Ham Fair on Saturday, Feb. 17, beginning at 9 a.m. at the Polk County Fairgrounds. Admission is $5 in advance or $6 at the door. Talk-in on 146.26/.86.

For more information write: Salem Repeater Association, P.O. Box 784, Salem, OR 97308.

Vermont

The eighth annual Northern Vermont Winter Hamfest will be held Saturday, Feb. 24, from 9 a.m. until 3 p.m. at the Milton High School in Milton. Featured will be a flea market, auction, demonstrations and meetings. VE Exams will be held at 1 p.m. on site, no preregistration needed.

Admission is $2; no extra charge for sellers.

Talk-in on 145.47- and 146.85±.

For more information contact WB2JSJ at 802/879-6589. □

Licensing fees abandoned by Congress

On Nov. 22, 1989, after weeks of negotiation over its complex provisions, Congress forwarded the Omnibus Reconciliation Act of 1989 to President Bush for his signature. As adopted, the Act contains no schedule of fees for Amateur Radio licenses.

Deletion of the fee schedule was a victory for radio Amateurs, who provide public service communications without compensation of any kind and who therefore viewed the proposed fees as a tax on volunteers.

Amateur Radio license fees had been proposed in both the House and Senate as a small part of the process to reduce the federal deficit. A $30 fee was proposed in the House, while in the Senate the proposed figure was $35. Amateurs objected to the fact that the fee would be due every time an application went to the FCC, even if the application was simply to change address, to demonstrate qualifications for increased operating privileges or to renew a school radio club or military recreation station license.

Eventually, the conference committee charged with resolving the differences between the House and Senate versions of the legislation acknowledged that a fee was inappropriate since amateurs do not operate their radio stations for profit.

"The exemplary performance of radio Amateurs in responding to Hurricane Hugo and the northern California earthquake helped make our point," observed David Sumner, K1ZZ, Executive Vice President of the American Radio Relay League. "We faced an uphill battle in Congress against a wave of red ink and a general feeling that user fees aren't a bad way for the government to increase its revenues. Fortunately, enough key people in Congress recognized that the services performed by radio Amateurs are far more valuable than the fees that would have been collected."

Key officials who helped turn the tide included Representative John Dingell, D-MI-16; Senator Ernest F. Hollings, D-SC; Senator Carl Levin, D-MI; Representative Leon Panetta, D-CA-16; Senator Jim Sasser, D-TN; and Representative Bob Wise, D-WV-3. ARRL volunteers in these states and districts, among others, played a decisive role in the victory. —*ARRL news release* □

Youngsters meet

"Youth Link Net" is open to all Amateurs under the age of 18. They try to meet every Saturday at 2000 UTC on 28.425 (+/-) MHz.

For more information contact Net Control, George Manning, WB5NMH, 602 Glendale St., Burkburnett, TX 76354. — *Information submitted by Bobby Blakeslee, KB2GHX* □

If you don't learn from your mistakes, there's no sense making them. —Cuyahoga Falls ARC, Cuyahoga Falls, OH

Vermont QSO party

Sponsored by the Central Vermont Amateur Radio Club (W1BD), the party will be from 0001Z Feb. 3 to 2400Z Feb. 4.

Suggested frequencies: *Phone* — 80 to 15M; The first 25 kHz up from the beginning of the General phone band edge; Novice 10M phone portion; 50.110 and 144.2. *CW* — 3540, 3720, 7040, 7120, 14040, 21040, 21140 and 28040. *RTTY* — 3620 and 90 kHz from lower edge of other bands.

Exchange: Vermont stations send RS(T) and county (CW two letter county designators — AN, BN, CA, CN, EX, FN, GI, LA, OG, OL, RU, WA, WM and WR). Other stations send RS(T) and state, province or ARRL country.

Scoring: Vermont stations — one point per phone contact; two points per CW or RTTY contact. Multiply by number of Vermont counties + states/Canadian Provinces/ARRL countries (non-W/VE). Add 20 bonus points to total score for working W1BD. *Other stations* one point per phone contact; two points per CW or RTTY contact. Multiply by number of Vermont counties. Add 20 bonus points to total score for working W1BD.

Rules: A station may be worked three times per band; once each on phone, CW or RTTY sub-bands. Duplicate and repeater contacts invalid. W1BD may be worked on each different band for bonus points.

Awards: *Non-Vermont:* Certificate to highest-scoring station in each state, province and country (non-W/VE). *Vermont:* Certificate to each station submitting a log. Plaque (annual) to highest scoring Vermont station. Special certificates for highest scoring stations in CW, RTTY, HF PACKET, SSTV, etc. W/VT Award to stations working 13 of Vermont's 14 counties.

Send SASE now for official score and log sheets and one for results. Send logs/facsimiles, name, address, county (Vermont), by March 1, 1990, to: D. Loverin, WA1PDN, 50 Liberty St., Montpelier, VT 05602.

Note: For the purpose of working Vermont counties, 146.52 will be used at 9 a.m. and 9 p.m. EST during the contest. □

New Hampshire QSO Party

The 1990 New Hampshire QSO Party, sponsored by the New Hampshire Amateur Radio Association, is from 1900Z Feb. 3 to 0700Z Feb. 4 and 1400Z Feb. 4 to 0200Z Feb. 5.

Exchange: Signal report and QTH (county for New Hampshire stations, state/VE province/DXCC country for others).

Scoring: All stations count one point per phone QSO, two points per CW/RTTY QSO and five points per Novice/Tech CW QSO. New Hampshire stations multiply QSO points by number of New Hampshire counties/states/VE provinces/DXCC countries (except United States, Canada, Alaska and Hawaii) worked; others multiply QSO points by number of New Hampshire counties worked (maximum of 10). No repeater QSOs permitted. Stations may make contact on more than one band or mode.

Twenty bonus points may be added to your final score for contacting each of the following NHARA member club stations: WB1CAG, NY1Z, N2BD, W1GUA, W1WQM, K1RD, WB1HBB (for a maximum of 140 bonus points).

Suggested frequencies: *CW* — 1810, 3535, 7035, 14035, 21035 and 28035; *Phone* — 1875, 3935, 7235, 14280, 21380, 28380 (Novice), 50115 and 144205; *Novice* — 3735, 7135, 21135, 28135 and 28380 (SSB).

Awards: Certificate to highest scorer (five QSO minimum) in each New Hampshire county/state/VE province/DXCC country. Logs must be postmarked by March 10, 1990. Include a large SASE for results. Send logs and comments to: Mount Moriah Repeater Society, c/o Bud Valcourt, NY1Z, 19 Teague Dr., Salem, NH 03079.

YL - OM contest

Sponsored by YLRL, the contest will be held over two weekends. The phone portion will be from 14:00 UTC Saturday, Feb. 10, to 02:00 UTC Monday, Feb. 12. CW will be from 14:00 UTC Saturday, Feb. 24, to 02:00 UTC Monday, Feb. 26. All licensed men and women operators throughout the world are invited to participate.

Procedure: OMs call "CQ YL" and YLs call "CQ OM."

Operation: All bands may be used. No cross band operation. Net contacts and repeater contacts do not count. A station may be worked and counted once on each band. Participants may work only 24 hours of the time. Operating breaks must be indicated in the log.

Exchange: Station worked, QSO number, RS(T), state/province/country. Entries in log must also show time, band, date, operating breaks and transmitter power.

Scoring: A. Phone and CW will be scored as separate contests. Submit separate logs for each contest. B. Score each band separately. One point is earned for each different station worked on each band; YLs count only OMs and OMs count only YLs. Add together the QSO points earned for each band. That is your total number of QSOs. C. Multiply the number of QSOs by the total number of different states/province/countries worked. D. Contestants running with a power output of 100W or less on CW and 200W PEP or less on SSB at all times may multiply the results of C. by 1.50 (low power multiplier). The maximum power output that may be used at any time during the contest is 750W on CW and 1500W PEP on SSB.

Logs: All logs must show your state/province/country of station worked, time, band and date. Logs must also state the power output used and the operating breaks taken. If you have 200 or more QSOs, submit a separate log for each band and submit a "dupe" sheet. Do not send carbon copies of logs. Please print or type.

Logs must be signed by the operator and no logs will be returned. Remember to file separate logs for each contest. Logs must show claimed score and be postmarked by March 15, 1990, and received no later than March 31, or they will be disqualified.

Please send logs to YLRL Vice President Dana Tramba, c/o DANDY'S, 120 N. Washington, Wellington, KS 67152.

Awards: *1st place phone* — YL cup, OM cup; *1st place CW* — YL cup, OM cup. The 2nd and 3rd place YL and OM winners in each contest will receive certificates. The winner of the phone contest cup is also eligible to win the CW cup. Certificates will be awarded to the high YL and OM phone and YL and OM CW winners of each US and VE call district and country provided there are at least 10 valid contacts on the log.

Suggested frequencies: *CW — (80M)* 3.540-3.570; *(40M)* 7.040-7.070; *(20M)* 14.040-14.070; *(15M)* 21.180-21.210; *(10M)* 28.180-28.210. *SSB — (80M)* 3.940-3.970; *(40M)* 7.240-7.270; *(20M)* 14.250-14.280; *(15M)* 21.380-21.410; *(10M)* 28.380-28.410 MHz. □

Crooked Stick and Rats Nest QSO Party

Sponsored by the Issaquah Amateur Radio Club, this fun operating event is designed to encourage elmering of new Novices and participation by handicapped Amateurs and other interested persons.

Contest period: Feb. 11 from 2000 to 2300Z.

Suggested frequencies: *CW* — 28.100 to 28.110; *SSB* — 28.300 to 28.320.

Power: Limited to 200W PEP output.

Exchange: Signal report, QTH and serial number of contact.

Scoring: *SSB contacts* — one point; *CW contacts* — five points.

Multipliers: X 2 with an apprentice; X 2 if using an antenna built per the **Rules** paragraph; X 2 if using 10W PEP or less. Multipliers are cumulative (i.e., if unlicensed assistant makes a SSB contact using CS and RN antenna, it is worth a total of four points).

Bonus points: *100 points* for each newly licensed Novice making *first ever* contact; *100 points* for each operator or apprentice who is physically handicapped; *50 points* for working all US call areas; *25 points* for a description of contest activity or a photograph of antenna, contest operation or contest group. Note — an apprentice is an unlicensed individual, a Novice or a Tech needing assistance getting on the air.

Rules: To obtain the antenna multiplier, the antenna must be constructed of wire especially for this contest. No part of this antenna may be more than 20 ft. above the ground. The antenna must be constructed of no more than 100 ft. of wire.

Suggested frequencies are to group participants close together. Go up for QRM.

Awards: Certificates will be issued for first, second and third places for SSB and CW. Certificates will be issued to all entries with an unlicensed or handicapped participant.

Entries: Submit log copies and summary sheet to Martha Stedman, N7IVX, 15423 SE 7th PL, Bellevue, WA 98007, by March 15. Specify names of individual for special participation certificates. □

Propagation

(continued from page 37)

But enough history; let's wind up this discussion and see where to turn next.

In summary, predictions can be made as to the MUF on a given path and for specific dates and solar conditions; the only thing that is needed is data on critical frequencies at reflection points along the path.

Predictions obtained in that way will have some statistical uncertainty in them due to the averaging process that is used in building up the data base. However, during disturbed periods, the peak MUFs may be lowered, up to about 50 percent in extreme cases, and the number of hops on a path may be increased due to a lowering of the F-layer.

Beyond those ideas, there's still the important question of signal strength to be explored. That will concern us in a later article. □

Daffynitions

Balun: A North Carolinan balloon
DED: Dark Emitting Diode (a burnt-out LED)
Full Wave: "Surf's up!"
Ohm: Where the art is.
QSL Bureau: A piece of furniture used to store acknowledgement cards
Watt: A unit of power. Watt? I said, a unit of power. WATT? I SAID . . .
— *Submitted by Richard Stuart, WF7A* □

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

Mobile van unit

Aluma Tower Company Inc. of Vero Beach, FL, announces their "Mobile Van Towers" especially designed for broadcasting from a radio station's mobile studio.

Model #BD-150 mounts on top of the radio station's vehicle for rapid deployment and extends to a height of 50 ft. The mobile van unit allows on-site transmission in remote locations, saving rented telephone lines and providing improved, dependable signals.

Contact Aluma Tower Company Inc., P.O. Box 2806, Vero Beach, FL 32961-2806; 407/567-3423. Or use the FAX — 407/567-3432. □

Video Digitizer

MFJ Enterprises Inc. announces the release of the new MFJ-1292 "Picture Perfect" Video Digitizer for IBM compatible computers for only. . .$199.95.

The MFJ-1292 gives you an easy-to-install expansion card for your IBM or compatible computer. It lets you plug a camcorder or video camera into your computer and use it to instantly capture digitized video snapshots on floppy or hard disks. You can display these digitized video snapshots on your computer screen or use your drawing or paint program to add lettering, color or other graphics or enhancements to your pictures. Included software lets you create pictures in VGA, EGA, CGA, Hercules or Raw Data formats.

The resolution of the pictures is as good as your computer. On a VGA computer your pictures are virtually the same as high-quality photographs. Even CGA pictures digitized with the MFJ-1292 have good graphic quality that you'll be proud to show off.

You can use your MFJ-1278, MFJ-1270B, MFJ-1274 or most other packet radio controllers along with included MFJXFER picture passing software to transmit your digitized snapshots to your ham buddies via packet radio.

The MFJ-1292 "Picture Perfect" Video Digitizer comes with a complete software package plus utilities. You get a program that lets you capture digitized snapshots, a pro-

Here's Aimee from the MFJ order desk. This unretouched photo was shot directly from a VGA computer screen and digitized with a camcorder, MFJ-1292 "Picture Perfect" Video Digitizer and an IBM compatible computer.

gram that lets you view your pictures, a program that lets you capture graphics from your screen into the MFJ-1292 format, a program that lets you convert graphics files to MFJ-1292 format and a program that lets you transmit your digitized snapshot files to your ham buddies with your MFJ-1278 or other packet radio controller.

As an added bonus you get a handy Contrast and Brightness control unit that you can conveniently place near your keyboard for fine-tuning your pictures.

For more information contact any MFJ dealer or MFJ Enterprises Inc., P.O. Box 494, Mississippi State, MS 39762; 601/323-5869. Order toll free at 800/647-1800. □

Morse code training program

The desire to network computers by radio has brought about a renewed interest in Amateur Radio and Amateurs have developed extensive X.25 digital radio networks throughout the country.

To facilitate passing the Morse code test, the National Amateur Radio Association is distributing a shareware program called Super Morse, written by Lee Murrah, WD5-CID. The program can be used with any IBM or compatible computer with MS-DOS.

Super Morse is organized into the four phases of the Morse code learning process: 1. Learning the characters, 2. Building speed, 3. Enhancing skills and 4. measuring progress. An on-screen display permits configuring character sets in addition to the sending and word speed. A "zoom" mode permits increasing the speed automatically during a transmission session. Files are included on the disk, which simulate actual radio transmissions between Amateurs such as those which might be copied off-the-air with a receiver.

In addition to a visual presentation of the characters, the sound of the Morse is reproduced by the speaker in the MS-DOS computer and the tone frequency is variable. The sound from the speaker can also be recorded to make code practice tapes.

Two unique features are provided which are not found in any other code practice program. It is possible for two users of Super Morse to practice receiving code over the phone line. An interactive mode permits using a modem to transport the code characters. For example, depressing the "A" key at the sending end results in the "dit-dah" sound of the Morse code (representing the character "A") emanating at the other end of the telephone circuit. A second feature permits Morse code to be generated from ASCII files prepared by a word processing program. This prevents memorizing code sequences, which often occurs with code practice tape recordings.

To obtain a free copy of Super Morse, send $3 postage and handling to the National Amateur Radio Association, 16541 Redmond Way, Suite 232, Redmond, WA 98052. For additional information call NARA at 206/232-2579. □

DXLOG DX Tracking Program

DXLOG is a program for IBM PC compatible computers that automatically tracks DX QSOs, DXCC and WAZ award status and other useful information.

This program is designed to perform the tasks useful to active DXers quickly and easily. DXLOG can print checklists of worked and confirmed DXCC countries and CQ zones by band and mode, with totals. It can also print DX logs, QSL Needed lists, QSL labels and more.

The Quick Check feature permits ultra fast checking of DX status with a particular country. DXCC country and CQ zone information is automatically determined from the entered call sign.

DXLOG automatically evaluates eligibility for the Worked All Zones awards and all low band DXCC awards and endorsements. It will even print completed award applications, ready for signature! The user can add to the supplied DXCC country list, which includes all current and deleted countries. Professional documentation is supplied.

DXLOG is an easy to use, menu based program (not in BASIC) and is not copy protected. The price is $39.95 plus $5 air mail shipping for overseas orders. Orders should include call sign and indicate 5.25 or 3.5 inch diskette.

For more information contact PAYL Software, Dept W, P.O. Box 926, Levittown, PA 19058-0926; 215/945-4404. □

220 MHz FM transceiver

ICOM introduces the new compact, streamlined IC-3SAT 220 MHz FM transceiver, weighing just 9.9 ounces and measuring only 1.9 X 4.0 X 1.4 inches, with internal NiCd batteries. The transceiver fits easily anywhere — belts, shirt pockets or handbags!

The IC-3SAT features:

- Built-In NiCd batteries. The IC-3SAT is equipped with rechargeable 7.2V, 300mAh internal NiCd batteries. Never worry, when the internal batteries are exhausted, connect one of the optional battery packs or case on the bottom of the transceiver and the IC-3SAT operates continuously.
- Tuning control and keyboard. Operating frequencies can be easily and immediately selected with the convenient built-in keyboard. The top panel tuning control can also be

used for easy frequency changing.

• Forty eight memory channels and one call channel. The IC-3SAT has 48 fully-programmable call channel. Each memory and call channel stores operating frequencies and other information required for repeater operations.

• DTMF code memory for auto dialing. Ideal for autopatching, the IC-3SAT includes 10 DTMF code memory channels. Each channel stores up to 15 digits for DTMF code. No need to punch in multi-digit phone numbers. Now, with the IC-3SAT, it's just a touch of a button!

• Convenient scan functions. The efficient CPU in the IC-3SAT provides excellent scan functions, including full scan, programmed scan, memory scan, memory skip scan and priority watch.

• Built-In clock. The IC-3SAT is equipped with a 24-hour system clock with timer function. Pre-program the transceiver to turn itself on and/or off. Perfect for scheduling QSOs and preserving battery power.

• External DC power jack with charging capability. Even though the IC-3SAT is incredibly small, the transceiver can be connected to external 6-16VDC power supply directly. This convenient feature also allows you to charge the internal NiCd batteries or an attached optional battery.

• Five Watt output power. Utilizing a specially designed, ultra small, highly efficient power module, the IC-3SAT delivers a full 5W of output power at 13.7VDC. Make yourself heard!

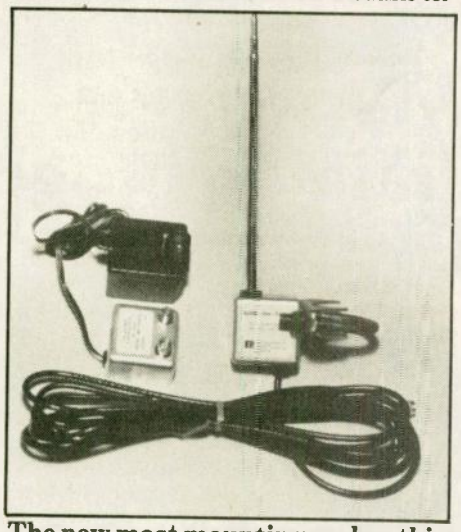
Other options available include the UT-49 DTMF Decoder Unit, UT-50 Tone Squelch Unit and the UT-51 Programmable Tone Encoder Unit. Suggested retail price is $449.

For more information contact ICOM America Inc., 2380 116th Ave. NE, P.O. Box C-90029, Bellevue, WA 98009-9029; 206/454-8155. □

End bells from discarded power transformers make ideal recessed mounting brackets for panel-mounted devices. *—Dave Guimont, WB6LLO; North Shores ARC, San Diego, CA* □

SUPER VAK-TENNA now mast mounted

Electron Processing Inc. announced that their premium active receive antenna, the SUPER VAK—TENNA, is now available for mast, as well as suction cup, mounting. Now those who have outdoor antenna masts can benefit from the high performance of this antenna.



The new mast mounting makes this a perfect antenna for towers or TV masts.

Coverage of all frequencies between 0.5 and 800 MHz with moderate performance up to 1.5 GHz is possible. An internal 14dB signal intensifier assures the strongest signals possible at all times.

The new SUPER VAK-TENNA-MM mounts to any mast up to 1.75 inches in diameter by means of a rugged clamp. Wind loading is minimal and the telescoping whip of the antenna extends to 38 inches, yet collapses to only 14 inches.

A full 15 ft. of coax cable is provided between the antenna and the remote power unit to aid in installation. The antenna is powered by 110VAC and provides a female BNC jack for receiver connection. DC and 200 volt European power sources are now also available.

Pricing starts at $149.95, with quantity discounts available. Accessories include a 50 ft. extension cable ($20) and additional mounting adapters for various situations. To order or for additional information, contact the Sales Department, Electron Processing Inc., at P.O. Box 708, Medford, NY 11763; or call 516/764-9798. □

Computer combinations

Kantronics is now shipping three PC programs on one disk and three Commodore 64 programs on one disk.

The PC disk is called PC Combo and will consist of Kanterm PC, Pacterm PC and Superfax PC. The Commodore 64/128 disk is called 64/128 Combo and consists of Kanterm 64, Maxfax 64 and Pacterm 64. Retail price is $49.95.

Please contact your favorite dealer for more information or contact Kantronics: 1202 E. 23rd St., Lawrence, KS 66046. □

Mobile wonder

How about this? Kenneth Wosika, KB7QO, Las Vegas, NV, is credited as being the first Amateur to transmit from every county in the United States SSB/Mobile. Wonder about the fantastic number of stations he contacted in his travels? — *Triple States Radio Amateur Club, Adena, OH* □

THE 1990 QSL BOOK!

Extending a 69 year tradition, we bring you three new Callbooks for 1990, bigger and better than ever! The North American Callbook, the International Callbook, and the new Callbook Supplement bring you accurate up-to-date QSL information on over 1,000,000 amateurs throughout the world.

The North American Callbook lists the calls, names, and address information for over 500,000 licensed radio amateurs in all countries of North America from Canada to Panama, including Greenland, Bermuda, and the Caribbean islands plus Hawaii and the U.S. possessions.

The International Callbook lists over 500,000 licensed radio amateurs in countries outside North America. Its coverage includes South America, Europe, Africa, Asia, and the Pacific area (exclusive of Hawaii and the U.S. possessions).

The 1990 Callbook Supplement is a new idea in Callbook updates, listing the activity in both the North American and International Callbooks. Published June 1, 1990, this combined Supplement will include thousands of new licenses, address changes, and call sign changes for the preceding 6 months.

Every active amateur needs the Callbook! The 1990 Callbooks will be published December 1, 1989. Order now for early delivery as soon as the new books are available. See your dealer now or order directly from the publisher.

- Over 1,000,000 current amateur listings in all countries of the world • Telegraph Codes
- Then & Now call changes • Silent Keys • Census of Amateur Licenses in all countries
- Standard Time Charts • International Postal Information • World-wide QSL Bureaus
- Table of Amateur Prefix Allocations • Prefixes of the World • Plus many other features.

Publication: Callbooks - December 1, 1989
Supplement - June 1, 1990

	Including shipment to U.S.A. points	Illinois residents, incl. tax & shipping	Including shipment to foreign countries
☐ Single 1990 North American Callbook	$31.00	$32.80	$37.00
☐ Single 1990 International Callbook	33.00	34.95	39.00
☐ Single 1990 Callbook Supplement	13.00	13.65	14.00
☐ SPECIAL OFFER: Order both 1990 Callbooks at the same time for shipment to one address.	61.00	64.80	71.00

Name _____ Amount enclosed _____

Address _____

_____

radio amateur **callbook**

Dept W
925 Sherwood Dr., Box 247,
Lake Bluff, IL 60044, USA

Mon-Fri 8-4 Central
Tel: (312) 234-6600

VISA MasterCard

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 two months in advance. For example, if your VE group is scheduling an exam for September, please have the information to us by mid July.

Worldradio, 2120 28th St., Sacramento, CA 95818. Please mark the envelope "VE Exams."

List the location, and information examinees should have (advance registration, etc.) and the name and telephone number of a person to contact for further information.

p/r = pre-register w/i = walk-in

Date	City	Contact	Notes
Arizona			
Feb. 3	Tucson	K7OPX (602) 886-7217	w/i OK
Arkansas			
Feb. 24	Mountain Home	WM5W (501) 430-5123	p/r pref; w/i OK
California			
Feb. 3	Burbank	KE6AR (818) 349-0927	w/i OK
	South San Francisco	WO6F (415) 333-1916	w/i OK
Feb. 4	Chico	W6YKU (916) 342-1180	p/r pref; w/i OK
Feb. 10	San Pedro	N6DYZ (213) 325-2965	p/r; ltd w/i
Feb. 15	Fountain Valley	N6ISY (714) 775-6095	
Feb. 21	Eureka	KB6FIW (707) 442-9245	p/r pref by 2/19
Feb. 24	Los Angeles	KB6RXE (818) 791-1779; AA6HE (213) 256-2904	w/i
	Stockton	AA6NO (916) 662-0801	w/i
Colorado			
Feb. 17	Westminster	NØHNR (303) 451-1231; (303) 278-4280	p/r or w/i
Florida			
Jan. 19	Ft. Myers	WV4F (813) 481-4880	p/r
Feb. 17	W. Palm Beach	W4SS (407) 967-1477; KG4U (407) 582-7617	w/i
Georgia			
Feb. 25	Atlanta	KC4MJ (404) 449-3340	w/i
Idaho			
Feb. 10	Boise	W7JMH (208) 343-9153	
Illinois			
Feb. 1	Schaumburg	W9JUG (312) 929-8500	p/r
Feb. 10	Oak Forest	KA9HDN (312) 247-0650	w/i
Indiana			
Feb. 3	South Bend	NI9Y (219) 255-4455	w/i OK
Iowa			
Feb. 25	Davenport	N9OK (309) 786-7203	w/i OK
Minnesota			
Feb. 3	Duluth	KAØSYN (218) 879-4010	w/i OK
Nevada			
Feb. 3	Las Vegas	(408) 255-9000	w/i OK
New Jersey			
Jan. 20	Bayonne	WA2QYX (201) 451-9471	w/i OK
Feb. 5	Sayreville	K2FD (201) 442-9215	w/i
Feb. 14	Fort Monmouth	K2USA (201) 532-5354	w/i
Feb. 15	Bellmawr	WA2VQG (609) 546-7710	w/i
New York			
Feb. 16	Verona	KA2NIL (315) 363-4297	w/i
North Carolina			
Feb. 10	Yadkinville	N4UAN (919) 679-8954; N4AAD (919) 679-8059	p/r; ltd. w/i
Pennsylvania			
Jan. 27	Butler	NC3W (412) 285-3714	p/r pref; w/i OK
Feb. 3	Erie	W3CG (814) 665-9124	w/i OK
Tennessee			
Jan. 6	Memphis	Maxine Balentine (901) 386-4375	p/r by 1/4
Feb. 3	Memphis	W4MI (901) 357-8148	p/r by 2/1
Texas			
Feb. 10	Midland	KT5G (915) 694-9450	
Feb. 20	Sherman	AA5MF (214) 786-3847	w/i OK
Vermont			
Feb. 24	Milton	WB2JSJ (802) 879-6589	w/i
Wisconsin			
Feb. 3	Racine	NW9P (414) 658-8390	w/i

A solar powered station

DAVE MULLER, KK2E

Ever since the Arab oil embargo I have had in the back of my mind the goal of building a completely solar powered station. Since that time I have waited for the promised drastic reduction in the price of solar electric panels.

The drastic reduction has still not materialized, but several years ago I did find a good deal on some surplus four inch diameter solar cells. I purchased 32 of them and they have been languishing on some shelves ever since. Last month I finally dusted them off, built a plywood frame and a regulator circuit, and placed the panel on the roof.

The regulator is from the August 1980 issue of *QST*, pages 12-13. It essentially disconnects the panel from the battery when the battery voltage exceeds a threshold. A car battery is used.

The results have been very pleasing. Even on cloudy days the panel produces useful output. I have several QRP rigs, my keyer, my 2M rig and two lights all running off the solar system. The lights are automotive brake light bulbs.

Future plans call for more 12VDC powered rigs and possibly a 12 V powered antenna rotator control unit. In the meantime, the solar panel gives me new motivation to try some QRP contesting, which I will be doing in both the ARRL DX Contest and Field Day. Later I hope to add additional panels to make 100W contest operation more practical.

In the meantime, it's nice to be able to operate in a manner which does not rely on LILCO, uses no fuel, produces no pollution and (once the initial investment is made) costs nothing! — *Larkfield Amateur Radio Club, Huntington, NY* □

The old days

Remember how you could tell if another Amateur in your town was listening on 5M? Many homebrew receivers used super-regenerative detectors in those days and unless their builders went to the trouble of adding a RF stage between the antenna and the detector, they would radiate like crazy. — *The ECARS Monitor, Hilton Head Island, SC* □

A smile is contagious

When will AMSAT-OSCAR-13 be in range?

ROSS FORBES, WB6GFJ

Those just starting out in the world of OSCAR communications would like to know when they can hear a satellite. The following charts are produced to give you a rough idea as to when OSCAR-13 will be within range of your location. The three charts as printed are centered on the following geographic locations: East = New York City; Mid = St. Louis, MO; West = Reno, NV.

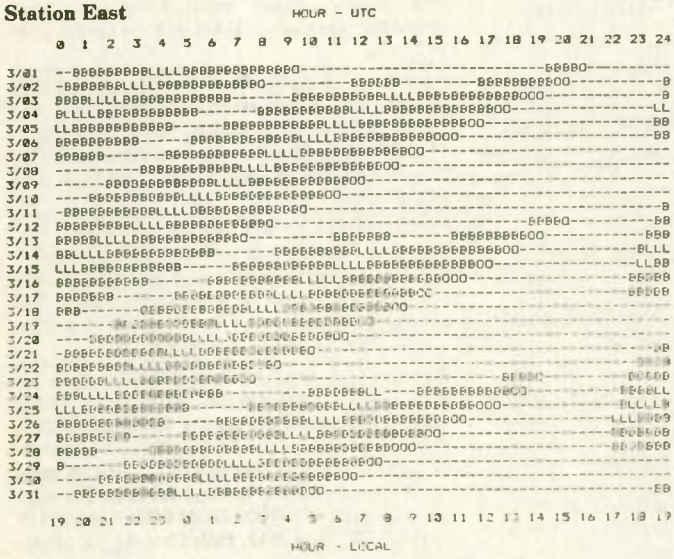
As you read the chart nearest your location, keep in mind the following details — all dates and times are given in UTC. The date is printed on the left hand column and the UTC hour along the top.

A dash mark indicates the satellite is out of range and therefore not able to be heard. The letter "B" indicates OSCAR-13 is audible at that location and signals should be heard between 145.810 and 145.880 MHz (SSB and CW). A letter "O" indicates the satellite is audible, but the only signal you will hear is the telemetry beacon on 145.810 MHz. The letter "L" indicates the satellite is audible but you will hear signals between 435.650 and 436.000 MHz (SSB and CW).

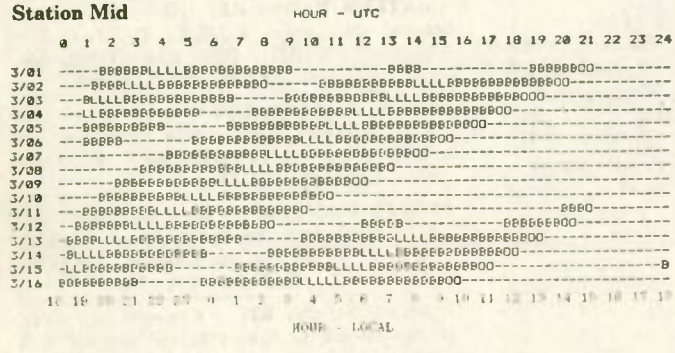
Remember, if a letter is printed on the chart, you should be able to hear OSCAR-13.

For more information about OSCAR, please send a SASE to either of the following: Project OSCAR, P.O. Box 1136, Los Altos, CA 94023-1136; AMSAT-NA, P.O. Box 27, Washington, D.C. 20044. □

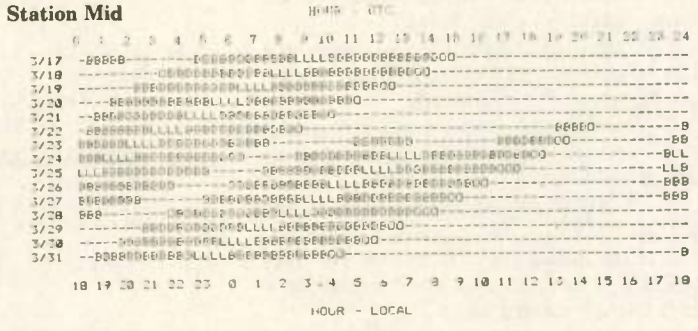
Station East



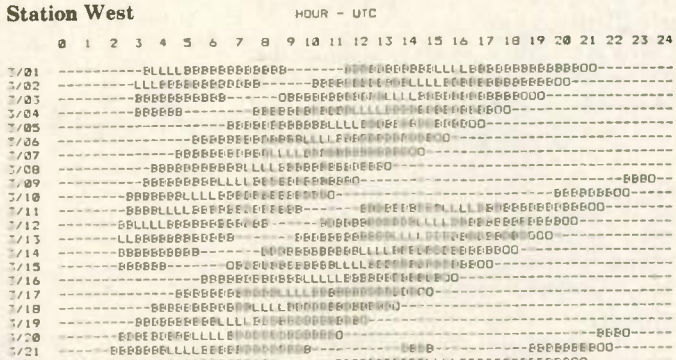
Station Mid



Station Mid



Station West



Share your knowledge with your fellow amateur and Worldradio reader.

West Siberia DX Club

The West Siberia DX Club (WSDX-C) was formed by the Amateurs of Omsk city, USSR, in 1988.

Club Goals:

1. Enhance international goodwill and friendship between the Amateurs of the Soviet Union and ham community worldwide
2. Popularize Amateur Radio through HF/VHF communications and SWL
3. Make West Siberian stations even more active on all ham bands
4. Organize DXpeditions to the rare USSR oblasts, as well as DX territories
5. Sponsor club awards
6. Coordinate and assist its members with All-Union and international contests
7. Information exchange with other clubs of similar nature (worldwide)
8. Conduct a regular net on HF frequency to keep in touch with members and non-members alike
9. Provide up-to-date information and assistance to the diploma-interested ham community

Any Amateur may become a member of the club if he or she satisfies the following criteria:

1. Has obtained at least 100 different diplomas and certificates, including "R-150-S" (or equivalent, like DXCC) and any three awards sponsored by the WSDXC or has 200 confirmed countries (from the R-150-S or DXCC list) and any three awards sponsored by the club
2. To apply one must submit an application stating the names of awards the applicant possesses, their dates and numbers. For international applicants the cost of membership is 20 IRC.
3. Club members will receive the club membership certificate and a club roster.

The Club was formed by Serge Kruglov, UA9MC, Gene Kolmakov, UA9MA, and Mike Verhovsky, UA9MD.

Inquiries from individuals and other clubs worldwide regarding the Club programs and activities should be directed to: USSR, 644099, Omsk-99, P.O. Box 836, West Siberia DX Club. *—Information submitted by Ed Kritsky, NT2X.* □

North America is slowly sinking into the ocean. This is because of the accumulated weight of the back issues of **Worldradio** and *National Geographic Magazine. —Arrowhead RAC, Duluth, MN*

More MART

INTERESTED IN PUBLIC SERVICE? Join your Local Radio Emergency Associated Communications Team. In Pennsylvania call 717/938-6943 or WRITE REACT, 1160 Old Trail Rd. Etters, PA 17319.

CODE PROFICIENCY DRILLS are transmitted from WB3IVO Brass Pounders ARC, each Saturday, Sunday, Monday and Thursday on 7060 kHz, starting 2000Z. Each Tuesday and Friday on 14060 kHz, starting 2000Z. Speeds range from 20 to 60 wpm.

CAPS, T-SHIRTS, with your name & call. Discount $2.00 with this ad. Caps - $7.95, red, blue, gold. T-Shirts, s, m, l, xl, white, yellow, lt. blue, aqua, $9.95 + $2.50 S&H. Check/MO to: PERSONAL IMPRESSIONS, P.O. Box 591, Hollister, MO 65672.

LEARN CODE THE EASY W6PHA WAY! Former USAF code champ's unique, simple system allows all ages to learn quickly. No tapes, etc.! Revised booklet $5.00 ppd. Guaranteed. GLOBALMAN PRODUCTS, Box 400WR, El Toro, CA 92630.

LEARN THE CODE — A course for family members and friends who don't know the difference between a dot or a dash. Monday through Friday, 0630-0700 California local time, 3760 KHz ± A2/A3/LSB, March, April, May, September, October, November, K6RAU. Starts first Monday of each month.

1990 CALLBOOKS: North American, $24.50; International, $27.00. Both, $47.50. ARRL Handbook, $22.50. Antenna Book, $17.50. Postpaid USA. California residents add sales tax. DUANE HEISE, AA6EE, 16832 Whirlwind, Ramona, CA 92065. 619/789-3674.

COLLINS 30 LI with manuals and 4 new 811 A's extra. Excellent, $600. Butternut HF6V with 12 and 17 as new, $100. HEATH HW9 and tuner, factory aligned, as new, $125. Palomar Tuner-Tuner excellent, $40. MFJ 989C 3KW as new, $200. MFJ 949D as new, $100. PAUL, N5OKD. (601) 264-4983.

ROSS' $$$$ USED FEBRUARY SPECIALS: Kenwood TS-520S/WCWFL — $459.90, AT-200 — $119.90, DG-5 — $159.90, TH-45AT — $249.90, SP-180 — $49.90, ICOM IC-2KL — $1395.90, PS-15 — $122.90, IC-900 — $379.90, IC-PS20 — $159.90; Yaesu FTV-901R/W, 6M — $379.90, FT-730R/W, YM-50 — $229.90, FC-902 — $169.90, YO-901P — $459.90, FRG-8800 — $549.90; Gonset 3049 (6m) — $79.90, 4050 — $49.90, 677 — $79.90, 866B — $109.90; Tempo One & AC Supply — $269.90. Looking for something not listed?? Call or write, we have over 220 used items in stock. Mention ad. Prices cash, FOB Preston. Hours Tuesday - Friday 9:00 to 6:00, 9:00 - 2:00 P.M. Mondays. Closed Saturday & Sunday. ROSS DISTRIBUTING COMPANY, 78 South State, Preston, ID 83263. (208) 852-0830.

WANTED: FT 102 Yaesu no modifications. Mint cond. Call or write: MIKE, (201) 866-4272, 707 8 St., Union City, NJ 07087.

SOLAR POWER FOR YOUR HAMSHACK, repeater, home, or? ARCO Solar Cells, Zomework Trackers, Controllers, Inverters. Everything you need to go totally solar. 60 page color catalog and price list $5.00 to SOLAR FUTURES/KB6DQG, P.O. Box 328, Placerville, CA 95667. 916/626-7337.

ANTENNA TUNER KIT — Basic Parts Kit for 2KW Tuner, only $142.00 plus shipping. KILOTEC, P.O. Box 1001, OakView, CA 93022 • To order, call 805/646-9645!

OWL DECOY keeps birds off your antenna $19.95. N6RJ 2nd OP DX Wheel $8.95. N6RJ 2nd OP for IBM $59.95. TS-COMM to control Kenwood from your IBM $69.95. Add $3 UPS. HAM RADIO OUTLET, 1-800-854-6046.

QSL CARDS — Look good with top quality printing. Choose standard designs for fully customized cards. Better cards mean more returns to you. Free brochure, samples. Stamps appreciated. CHESTER QSL's, 310 Commercial, Dept. D, Emporia, KS 66801.

FREQUENCY DIRECTORIES: Large selection, SWL and scanner books, frequency guides: SWBC, mediumwave, Utes, Spy, Press, Weather, FAX, RTTY, Military, Federal Agencies, Marine, Aero, Police, Fire, etc. Big FREE catalog! CRB RESEARCH, Box 56-WR, Commack, NY 11725.

BEAM HEADINGS — YOUR QTH. Unfolded NLQ printout. $9.95. W8JBU, Box 397W, Hinckley, OH 44233.

GET SMART POWER when you need it! Universal regulated multi-voltage DC for Experimenters! Laboratories! Industry! Send for facts! PEPPERKIT, 527-10th Street, Sparks, NV 89431-0811 USA.

CUSTOMIZED BEAM HEADINGS! Worldwide headings from your QTH. Only $7.00! Unfolded NLQ printout. FUNDSERV, 1546B Peaceful Lane, Clearwater, FL 34616.

WANTED: HAM EQUIPMENT AND OTHER PROPERTY. The Radio Club of Junior High School 22 NYC, Inc. is a nonprofit organization, granted 501(C)(3) status by the IRS, incorporated with the goal of using the theme of Ham Radio to further and enhance the education of young people nationwide. Your property donation or financial support would be greatly appreciated and acknowledged with a receipt for your tax deductible contribution. If you call or write today it's not too early to get a 1990 tax deduction. It's easier, faster, and usually more profitable to donate than to sell. Most important, you're helping. Write us at: P.O.Box 1052, New York, NY 10002. 'Round the clock hotline: (516) 674-4072.

DIGITAL AUTOMATIC DISPLAYS. Any radio. Be specific. Large 45¢ SASE. GRAND SYSTEMS, Dept. B, P.O. Box 3377, Blaine, WA 98230.

FOR SALE: KENWOOD TS440S — $900.00. Astron 35M power supply — $125. Kenwood TM221 2-meter 45w Mobil Rig — $320. Kenwood AT45 Handie Talkie 440 MHz — $250.00. All equipment is less than a year old, in mint condition, with boxes and manuals. FRED J. STELLABOTTE, N2JCD, 60 Cornehlsen Drive, Huntington Station, NY 11746.

RADIO SHACK COLOR COMPUTER, Ham software, and hardware. Free catalog. DYNAMIC ELECTRONICS, POB 896, Hartselle, AL 35640, 205/773-2758.

C-64 PROGRAMS: SUPERNET net control's program (described in July, QST, page 77) — $8.00. Also, SUPERLOG logbook program — $9.00. G.R. CUNDIFF, N5ASD; 108 Northside; Vivian, LA 71082.

WANTED: EXTRA CLASS LICENSE holders to assist in giving V.E. exams in Sacramento area. I have forms for easy accreditation. Please include phone number. KB6YBY, 224 Dean Terrace, Mather Air Force Base, CA 95655.

$50 PACKET DIGICOM 64 — software based PACKET for Commodore 64. Software is public domain and requires a modem for the C64 which is provided by our kit. Board plugs into cassette port or remote mounted via cable, both connectors included. Power derived from computer. Uses 7910 chip — no alignment required. Switch allows HF or VHF operation. Order Kit #154 for $49.95 or Assembly #154 for $79.95 both include free disk. Add $2.50 s/h. A & A ENGINEERING, 2521 W. LaPalma #K, Anaheim, CA 92801. 714/952-2114. MC or VISA accepted.

G5RV ANTENNA KIT only $29.95 + S.H. Plus much more! Catalog available, .45¢ postage appreciated. Kilo-Tec, P.O. Box 1001, Oak View, CA 93022 or call 805/646-9645 to Order!

QSLs. QUALITY AND FAST SERVICE FOR 30 YEARS. Include call for free decal. Samples 50¢. RAY, K7HLR, Box 331, Clearfield, UT 84015.

HAM LAB PROJECT. Want several pieces HP G-382A variable attenuator. Will consider any repairable condition. K6GOX, P.O. Box 10, O'Neals, CA 93645, (209) 868-3548 collect.

COVER CRAFT DUST COVERS: Anti-static vinyl computer and Amateur Radio dust covers. Prices starting at $8.95. Universal Electronics coax-seal, $2.49 roll. Information $1.00 (refundable). GAUTHIERS' COVERS PLUS, PO Box 495, Prescott, AZ 86302. 602/776-9711.

AMATEUR RADIO TRANSMITTERS, receivers, etc., that you can build dirt cheap. Write for list — WA4DSO, 3037 Audrey Drive, Gastonia, NC 28054.

INTRODUCING 4-ELEMENT QUADS: 6 meter — $135.00; 10 meter — $169.95. LIGHTNING BOLT ANTENNAS, RD #2, Volant, PA 16156. 412/530-7396.

MACINTOSH SOFTWARE: Send for info on exciting ham radio programs. ZCO CORPORATION, P.O. Box 3720, Nashua, NH 03061. (603) 888-7200, Fax (603) 888-8452.

HAM SOFTWARE IBM/compatibles 10 disks ham radio software, $26.95. Packet, formulas, antenna calculations, Morse Code, more. 10 disks $26.95 MC/VISA/Discover. de/N5ABV, EAPCO, Box 14, Keller, TX 76248-0014. 817/498-4242.

GREAT RADIO READS! Ham, shortwave listening, scanner, AM, FM, RTTY, antennas, pirate radio, utility, VHF/UHF, more. Catalog $1. TIARE PUBLICATIONS, P.O. Box 493WR, Lake Geneva, WI 53147.

ELECTRON TUBES! Transmitting, receiving, military obsolete. . .all types. Large inventory. Fast delivery. DAILY ELECTRONICS, P.O. Box 5029, Compton, CA 90224. 213/774-1255, outside CA 800-346-6667.

QSL's TOP QUALITY, BEST PRICES, ARRL official membership QSL's. Five dimes and SASE brings samples. K3LQQ, 84 Chapel, Zephyrhills, FL 33544.

"REAL RADIOS GLOW IN THE DARK" . . .Bumper Sticker, $1.00 each with #10 SASE. We service American-made Amateur Radio equipment circa 1940's, 50's, 60's, and 70's. Collins and Drake our specialty. Call for a quote on your service needs. CLASSIC RADIO, P.O. Box 3486, Eureka, CA 95502. 24-hr. tele: 707/444-3911. K6VHP.

ALL ABOUT METERS. A learn-by-doing history of the development of electrical meters. Build seven simple meters using common hardware. $7.95, ppd USA. ALLABOUT BOOKS, Dept. W., Box 14155, Fremont, CA 94539.

POLICE/FIREFIGHTER HAMS — Please send your call, name, address, rank, department name, for inclusion in special roster. Available early 1990. Capt. Bob Blakeslee, N2IHQ, 1½ Macomber Ave., Binghamton, NY 13901.

THE SPEC-COM JOURNAL is published bimonthly, 6 times per year. Dedicated to Fast Scan Television but committed to covering slow scan television, facsimile, RTTY, ASCII, AMTOR, packet radio, satellites, TVRO and all other specialized modes of communication. Now with thicker, color enhanced issues. Back issues and sample copies $3.50 ppd. Annual subscriptions: USA $20, Canada/Mexico $25, foreign surface $30. MC/VISA add 5% and Iowa residents add 4% for tax. KAØJAW has now joined WBØQCD to co-publish the SPEC-COM Journal for specialized amateur enthusiasts. Contact: MEMBERSHIP SERVICES, 1520 Cerro Drive, Dubuque, IA 52001 or call 319/557-8791.

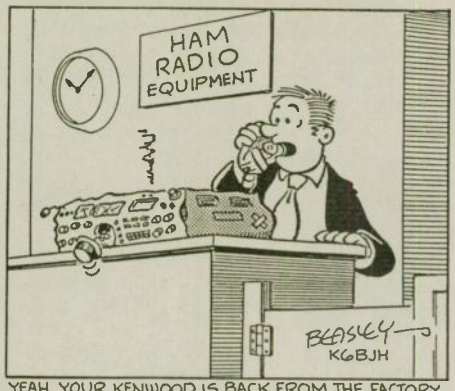
HUNGARIAN-AMERICAN HAMS meet at Dayton Hamvention April 26-29. Info: L. RADNAY, W1PL, 66 Wheeler, Melrose, MA 02176. Phone: (617) 665-6419.

USED TECHNICAL BOOKS: Radio, electronics, math, military, magazines, catalogs, etc., large list: $1.00, (stamps ok). SOFTWAVE, Dept. WR, 1515 Sashabaw Ortonville, MI 48462.

HI-TECH TRADER, A national buy, sell, trade, publication for Amateur Radio and related equipment and services. Published twice monthly, mailed first class to subscribers. Annual subscription rate, $13.00 (24 issues). Send #10 SASE for sample issue, new subscribers receive one free ad (50 words maximum please). HI-TECH TRADER, P.O. Box 1152, Norwalk, CA 90651-1152.

FOR SALE: Kenwood TH3500A. Mint cond. Extra battery, speaker microphone, battery eliminator belt clip — $350.00 firm. I ship. Call PM (201) 866-4272, MIKE, 707 8 St., Union City, NJ 07087.

LET THE GOVERNMENT finance your Amateur Radio-related small business. Grants/loans to $500,000. Free recorded message: 707/449-8600. (LH3)



YEAH, YOUR KENWOOD IS BACK FROM THE FACTORY, BUT I HAVE TO RETURN IT FOR A LITTLE TWEAKING --- IT FELL OFF THE TRUCK JUST OUTSIDE DENVER!

JOIN CANADX, the Canadian DX Association. Receive 'LONG SKIP' monthly, QSL via outgoing club bureau (including W to W), etc. Sample copy of LONG SKIP $2.00 or 4 IRCs: Box 717, Stn. 'Q', Toronto, Ont., Canada, M4T 2N7.

COMPUTERS: Get ready for the next contest with a new computer from AMSOFT. 80286 12MHZ VGA computers with 640K RAM, 1.2M Floppy, 101 keyboard, 2 serial 1 parallel, Hard drive, VGA color monitor. 20Meg HD system - $1,595. 60Meg HD system - $1,795. 8088-10, EGA, 10Meg HD system - $1150. 80386 and other configurations available. Mention ad. Prices cash, FOB Friendswood. AMSOFT, Box 291, Friendswood, TX 77546, 713/996-1551.

ICOM, KENWOOD, YAESU, Drake, Collins, & Heath owners: International Radio & Computers, Inc. & Fox Tango 8 Pole & 10 Pole Crystal Filters. Ask yourself these questions! Are you continually being interfered with during QSO? You can't seem to pull out a weak signal in the QRM? Yes, to either, purchase our SSB or CW filters! Monthly Icom, Kenwood, & Yaesu separate Newsletters. 10 to 13 years of Back Issues. Send .65 SASE for Free 16 page catalog to INTERNATIONAL RADIO & COMPUTERS, INC., 751 S. Macedo Blvd., Port St. Lucie, FL 34983, 1-(407) 879-6868.

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 MEYERS, N8AIK, 510 W. Harrison, Alliance, OH 44601.

FREE Ham Gospel Tracts, SASE, N3FTT, 5133 Gramercy, Clifton Heights, PA 19018.

CLIMBING BELT — Almost new, $40.00; temperature control soldering station, $45.00; wooden telephone booth, genuine Bell System, 1959-60 vintage, $395.00. BILL, KØOWO. Days 303/623-7700, evenings 303/674-0510.

YAESU-747GX $640.00. W6XM, 619/459-5527.

FOR SALE: Kenwood R-2000 SW receiver, $400. Ranger AR-3500 10 meter, 100W mobile XCRV, $300. Both excellent condition and appearance. MATT, WAIHRE, (203) 693-0468/693-6596, leave message.

FCC RULES ON DISK! The new Part 97, late amendments, plus references to non-97 rules. Specify Commodore or MS-DOS disk, $6. Printed rules, $8. Wisconsin orders add 5% tax. WEEDEN RADIO, 6802-B Putnam Road, Madison, WI 53711.

ROSS' $$$$ NEW FEBRUARY SPECIALS: Kenwood TS-440S/WAT — $1159.90, TS-140S — $769.90, TS-950S — $3719.90, TM-231A — $339.90, TM-3530A — $344.99, TM-401B — $307.99, TM-411A — $339.99, TM-701A — $479.90; ICOM IC-900 — $458.99, IC-725 — $789.90, IC-32AT — $539.90, IC-2SAT — $374.90, IC-751A — $1449.90, u4AT — $286.99; Yaesu FT-757GXII — $989.90, FT-736R — $1559.90, FT-411 — $319.90, FT-747GX — $689.90, FT-470 — $434.90; Heathkit — $679.90, HN-31A — $21.90, HD-1234 — $27.90, HD-1250 — $119.90, HD-1416 — $22.90, HW-2-M — $379.90; A E A PK-232MBX — $309.90, PK-88 — $119.90, MM-3 — $159.90, PK-64A/HFM — $189.99, MP-64 — $99.99, MP-20 — $69.99. All L.T.O. (limited time offer). Looking for something not listed?? Call or write. Over 9004 ham-related items in stock for immediate shipment. Mention ad. Prices cash, F.O.B. Preston. Hours Tuesday-Friday 9:00 to 6:00, 9:00 - 2:00 P.M. Mondays. Closed Saturday & Sunday. ROSS DISTRIBUTING COMPANY, 78 South State, Preston, ID 83263. (208) 852-0830.

CLASSIFIED ADS FOR JOBS WANTED OR POSITIONS OFFERED will be run free of charge in Worldradio's MART.

ADVERTISER'S INDEX

Share your knowledge with your fellow amateur and Worldradio reader

ICOM

IC-24AT
IC-32AT

WE CHALLENGE YOU TO A DUAL.

ICOM'S DUAL BAND HANDHELDS

ICOM's IC-24AT and IC-32AT call you to action with the most feature packed, power packed dual band handhelds available. Whether you prefer the convenience of a mini-handheld or the grasp of a full-size handheld, ICOM has the dual-bander fit for you.

The IC-24AT mini-handheld and the IC-32AT give you full operation on the 2-meter and 440MHz amateur bands. Outstanding Performance!

POWER PACKED HANDHELDS. The IC-24AT provides up to 5 watts on 2- meters and 440MHz with a 12V battery while the IC-32AT is 5 1/2 watts on 2-meters and 5 watts on 440MHz.

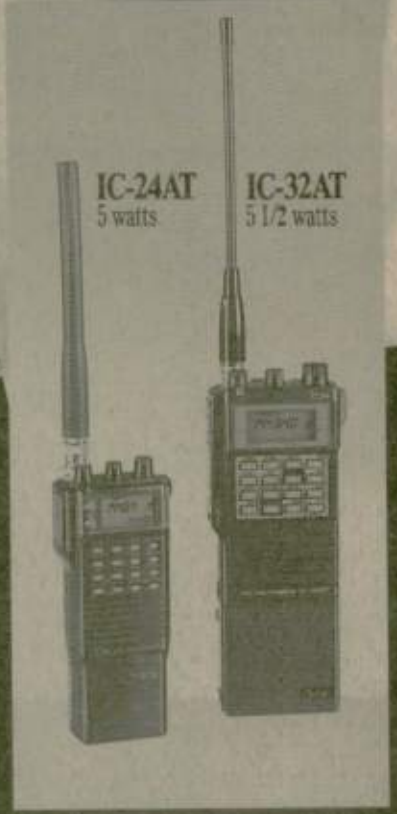
PLENTY OF MEMORIES. Store any frequency, Tx offset and subaudible tone in any memory. Total flexibility to meet your needs.

PROGRAMMABLE SCANNING. Both units scan band and memories plus offer easy memory lockout and instant memory recall.

PRIORITY WATCH. Monitor the call channel, a memory channel or all memory channels every five seconds while operating!

ADDITIONAL FEATURES INCLUDE: Battery saver, all subaudible tones, multi-function LCD readout, dial selectability and DTMF pad for memory channel auto-patching. The compact light-weight IC-24AT also features a 24 hour clock with timer, and an autodialer. Access to multi-digit phone numbers at the touch of a button.

ACCESSORIES: The IC-24AT uses accessories from the "S" Series handhelds while the IC-32AT is compatible with all IC-2AT/02AT accessories. An optional UT-40 beeper silently monitors a busy channel for your calls. When the preprogrammed subaudible tone is received, the unit beeps and the LCD flashes.



The dual is over. ICOM's IC-24AT mini-dual bander and IC-32AT full-size dual bander give you maximum performance in the package best suited for your needs. Check you local ICOM dealer for the finest dual banders available today. The ICOM IC-24AT and IC-32AT.

ICOM

First in Communications.

ICOM America, Inc., 2380-116th Ave. N.E., Bellevue, WA 98004 **Customer Service Hotline (206) 454-7619** 3150 Premier Drive, Suite 126, Irving, TX 75063 / 1777 Phoenix Parkway, Suite 201, Atlanta, GA 30349 ICOM CANADA A Division of ICOM America, Inc., 3071 - #5 Road, Unit 9, Richmond, B.C. V6X 2T4 Canada