World Radio

Year 14, Issue 12

June 1985 • 95¢

Hams rush to help after tornado

Roger Burnham, KC4MA

In the early morning hours of 15 March, a tornado hit an area of Venice, Florida, causing at least 41 injuries and the loss of two lives. Property damage ran into the millions of dollars.

Two amateurs were victims of the unexpected storm, and many others were on the scene and at other locations within minutes, providing very necessary and informative communications for a variety of agencies.

Special thanks goes out to Lloyd Pfahler, W8FKL, and the crew in the area who put their lives on the line and helped as much as they did. And a special thanks also goes to those who went to various locations to provide communications for agencies.

In the aftermath, the countless number of health and welfare messages that were handled by people like Maria Taylor, KJ3T, and Joe Walker, WD4BYK, and many others. There are a lot of people all over the world who rested a bit easier thanks to all of your efforts and those amateurs who also helped in traffic handling.

Here is a brief report that has been submitted to our Emergency Coordinator. Final reports have not yet been tallied, but Sheriff Geoff Monge, the County Commissioners and the Office of Emergency Management (CD), expressed their gratefulness and pleasure at the professionalism and discipline that the amateur community showed during this actual disaster.

At 6:40 a.m. I received a call from EC Lou Boehlein, N4EWR, saying that a tornado had struck at 5:30 am. in the Venice area. I was told to proceed to the Red Cross headquarters radio room on Orange Avenue in Sarasota.

I went immediately to this location, bringing my Kenwood 7850 and my Yaesu hand-held with me.

George Morgan, WB3EMQ, had been previously informed of the Venice tornado and was at the Red Cross building when I arrived at 7:05 a.m.

He put my 2-meter 7850 on line and began operations using the Venice 5.13 repeater. He was using the one external antenna available, so I set up and operated as net control on the .73 repeater.

We both operated for five hours and handled messages (both formal and informal) on both repeaters. The messages originated from Civil Defense HQ and came to us from George Emigh, KB4EYH, our amateur liaison with the CD radio. We also received 12-15 messages — some formal, some informal from our amateurs at the site of the disaster in Venice.

Lloyd W8FKL, at the request of Bob Barnhart of the Red Cross, made an unofficial but accurate survey on the extent of the damage. He determined at about 8:30 a.m. that there was major damage at the Jacaranda Shopping Center and the three streets surrounding this area. He reported 24 homes totally destroyed; 24 homes 50% destroyed and six homes suffering relatively minor damage.

Personal casualty figures came at about 8:45 a.m. from KB4EYH, figures CD had received from Venice Hospital. They reported 41 persons injured and two

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Post-flood driving conditions. ***(Photo courtesy of Register Star)***

Amateurs aid in Dixon flood

Severe flooding brought about by huge blocks of river ice damming bridges saw amateurs in the Dixon, Illinois area come to the rescue. At the direction of Charles W. Randall, W9LDU, teams of amateurs spent the next 48 hours sloshing through knee-deep ice and water.

Hams equipped with hand-helds, some with mobile rigs in four-wheel drive vehicles, facilitated communications for the Red Cross, utility repair crews, law enforcement and most importantly, the victims themselves. With Nell Meyers, KA9DVY as net control, the amateur community responded in the best tradition of community service in this emergency.

The Tri-County Amateur Radio Association has actively supported emergency preparedness in the area. A complete HF, VHF and UHF station run on standby generators is always ready for potential disaster situations.

The Lee County Emergency and RACES net on its 146.37/97 repeater is also very active in community service, utilizing walk-a-thons, races and even the occasional visit home by native son Ronald Reagan to keep skills finely tuned.

Spring brings tornados to this area of the country, and while all hope their skills will not be needed, the amateurs of the Dixon area are ready to serve. □

Amateurs save crash victims

Boyd S. Miner is a ham radio operator and a member of Laurens Electric Cooperative. He began his Radio career in 1951 and has taken part in providing communications during quite a few disasters such as hurricanes and typhoons. He also works with the Laurens County Civil Defense.

From his home in Gray Court, Miner played a part in the rescue of two airplane crash victims on a Tennessee mountain on 02 February. His account of the event is as follows:

Mayday, Mayday, Mayday, this WB4AYI.

So started an occurrence on the 145.41 MHz Amateur Radio (ham) repeater located near Greenville, Tennessee. Larry and Judy Hunt of Woodbridge, Virginia had crash landed on the side of a mountain just a short distance southwest of Greenville, TN. All they were able to salvage from the crash was an Amateur Radio handi-talkie (hand-held two-way radio on VHF) and the emergency location transmitter (ELT). The ELT had not started transmitting when the crash occurred as it should have done.

Mayday, mayday, mayday this is WB4AYI.

Larry sustained a two-inch cut underneath one eye, suspected two broken ribs and an injured leg. Judy had minor cuts and bruises to show for her experience.

They could not pinpoint their exact location, no roads or identifying landmarks were in sight and it was 2:30 p.m. — not too much chance of rescue for these survivors. No shelter and inadequate clothing to survive the forecasted 15 degrees for the area.

After the mayday call, they decided to try to walk out. Eddie Palmer, K4LSP, of Kingsport, TN, and Dave Powell, WA4QIC, of Gray, TN were on frequency. CAP and FAA were notified. Emergency medical help in the area, was on standby. Still no location to start the search. One ham heard their weak signal on the direct frequency. So that placed their location probably in the Greenville, Newport, (Tennessee , Asheville, (North Carolina) triangle.

All this time they were following a stream down the mountainside. Finally they found two uninhabited mobile homes. FAA relayed, "Break into one of the trailers for protection from the coming night cold." A temporary electric pole marker was found, but no other help to identify their position.

The batteries were getting weak, so Judy was told to close down (at about 5:00 p.m.) and come back on the air at 6:00 p.m. to conserve the battery. Larry had tried to get the ELT working but was unsuccessful in the attempt. So wait!

Boyd K4KEP, near Laurens (a member of the Laurens Electric Cooperative), was unable to make contact through the Greenville, TN repeater but could hear it fairly well. He went to the Mount Mitchell (near Asheville, NC) repeater (145.19 MHz) and called Sam Cook, KB4KIE, in southwestern Tennessee, "Sam, please go up to the Greenville (TN) repeater and tell Dave WA4QIC to ask Larry and Judy to give him the serial number from electric power meters by the trailer when they come back on the air."

Sam relayed the message to Dave which in turn, Dave relayed to Judy when she came back on the air (Larry, injured, was lying down).

Judy found the meter and read the two serial numgers over the air. The handi-talkie radio battery was getting weaker so Eddie told Judy to close down. The hams would monitor the frequency all night in case of further emergency and that she should come on Sunday morning at 8:00 a.m.

One of the hams, Chuck N4KCY at Greenville (a volunteer city policeman), had copied the numbers so he called a fellow ham from the Green County area REA Co-op. Bingo! They were able to verify the meter number was theirs.

Chuck got the owner's name and called him by telephone. Yes, Mr. "L" had a green and white trailer near another trailer with a swimming pool "way up the mountain." At 6:20 p.m. Mr. "L", with some rescue people from Greenville were on their way. Mr. "L" and the rescue peo-

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Help Westlink

If you appreciate the work Westlink has done with keeping the ham community up to date on ham news, and would like to see them remain on the air, please send donations to Bill Pasternak, WA6ITF, 28197 Robin Ave., Saugus, CA 91350. □

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Worldradio (USPS 947000) is an international conversation. You are invited to take part. Our newspaper is written by its readers.

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 into this avocation.

Our readers are participants — an alliance of active radio amateurs who are concerned with reality, who use radio as a communications tool. We ask your cooperation in helping us develop the skill, quality and full potential of Amateur Radio.

We are positively-oriented. We print all the news of this great activity, and particularly desire an input of stories dealing with the dramatic, the personal and humanitarian uses of Amateur Radio.

Worldradio needs your help to reflect the invaluable service of Amateur Radio.

Through **Worldradio** you can make contact with other individuals who share your interests.

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Second-class postage paid at Sacramento, CA.

NA Teleconference Radio Network

With the declining sunspot cycle and the worst yet to come, you will not want to miss the next North American Teleconference Radio Network on 14 June. New and exciting developments in the Amateur Radio space program will be reviewed. Basic information on how you can get started in satellite communications will be provided.

Some of the topics to be covered include:

What are satellites?

How can they be used to QSO?

How can you get started?

How do the amateur satellites get built and launched?

Where can you go for help in getting started?

What kind of activities are planned for the future in the amateur space program?

These, and many other questions you may have, will be addressed in the teleconference. Many opportunities for questions and answers will be provided. No questions will be considered too basic, so if you have been trying to get started in this area because you're frustrated with present HF band conditions, now's your chance to get some help.

AMSAT will have some of its top volunteers available on the teleconference: John Browning, W6SP; Vern "Rip" Riportella, WA2LQQ; Tom Clark, W3IWI; John Champa, K8OCL; Bill Tynan, W3XO; Harold Price, NK6K; and Jan King, W3GEY.

Don't miss this opportunity to learn more about the fantastic activities in the works in the amateur space program.

Under the direction of net manager Tim Loewenstein, WA0IVW, the net will begin at 8:00 p.m. Nebraska time on 14 June. Over 235 amateur repeaters throughout the North American continent will participate. Should you have questions or wish information about linking your repeater to the NTRN, please send SASE to: North American Teleconference Radio Network c/o Timothy Loewenstein, WA0IVW, Box 1231, Kearney, NE 68847-1231.

Worldradio on tape

For the last 14 years, George Hicken, W4GH, and Tom Carten, K1PZU, have been recording **Worldradio** for blind amateurs. They are currently sending out 300 tapes per month, and as word grows about their availability, the membership continues to grow.

It is time to ask for contributions so that a high-speed tape duplicator that will handle the operation better can be purchased. In the past, all expenses for this service have been borne by George, the funds coming from his own pocket without saying a word about it.

Should the general readership of **Worldradio** desire to help, contributions should be sent to: George Hickin, W4GH, Box 7497, Macon, GA 31209. □

WWII items needed

The Pueblo Historical Aircraft Society is interested in obtaining command radio sets for its "squadron" of 22 World War II vintage aircraft. Any manuals pertaining to the radios, flight instruments, flight clothing, logbooks, etc., would be gratefully accepted.

While the list of aircraft is far too long to be included here, some of their display consists of a Boeing B-29 Superfortress, a Douglas C-47 Skytrain, and many others. For a complete list, write to Bill Feder, Sr., President, Pueblo Historical Aircraft Society, P.O. Box 7433, Pueblo West, CO 81007. □

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WHEN PURCHASING GOODS, SAY YOU SAW IT ADVERTISED IN **WORLDRADIO.**

Repeater Directory

Here are some interesting facts and figures on this year's upcoming *Repeater Directory*.

There are 9351 listings, up 14.3%. Two meters constitutes 5931 listings, up from last year's 5517. The biggest individual band gainer is 220 MHz, with 1758 entries, up 32.1% — good ammunition for the "use it or lose it" campaign. The largest state in repeater population is California, with 927 repeaters, followed by Florida, New York and Texas.

In compiling the *Directory*, computer printouts were sent out for verification to 39 coordinators representing 42 states and two provinces. A total of 179 long-distance phone calls were initiated to confirm listings with coordinators in these and the remaining states, including Alaska and Hawaii.

The new *Repeater Directory* should be available by the end of April, just in time for Dayton. The price is $3, but if you buy five or more, the price goes down to $2.75. — *The ARRL Letter* □

• **Help a friend become a ham!** •

Pitcairn fuel fund

The following have generously contributed to the fund to provide gasoline which keeps Pitcairn Island on the air:

K6CE, C.J. Casebeer, San Carlos, CA
W4UMC, Frank Brooks, Fredericksburg, VA
NQ6W, Norm Gould, Burbank, CA
Larry and Paula Meyer, Reedsport, OR
W5VJW, David Combs, Wichita Falls, TX
W1VKQ/4, John Kenny, Hendersonville, NC
W6QYO, Carl W. Olson, Twain Harte, CA
KG6IP, Russ Mason, Culver City, CA
K9CJK, James Buth, Milwaukee, WI □

• **Pass it on . . . WORLDRADIO** •

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COLUMNS

Death Valley rescue

Jerry Bertacchi, NM6T

While visiting Death Valley on 03 April, Jerry (NM6T) and Phyllis (N6JNF) Bertacchi found themselves involved in the rescue of a 14-year-old Ventura, California boy, Philip Corsi.

Jerry and Phyllis were hiking along a steep canyon wall located between Furnace Creek and Badwater in Death Valley, California. During their hike, they came upon a small group of hikers who were yelling at a boy who had become stranded on the steep canyon wall over 100 feet above ground level, on very treacherous volcanic material. He was unable to move from his perch on a tiny ledge.

Early in the evening at about 5:30 p.m., Philip went hiking with his mother and father. They decided to climb some rocks so Philip could take some photographs of the area. Philip became separated from his parents. When Jerry NM6T and Phyllis N6JNF arrived on the scene, another adult attempted to climb the rugged cliffs to rescue the boy and came within about 30 feet of him. However, he fell to a ledge and sustained minor injuries.

It was apparent that professional rescue help was needed soon, since darkness was imminent. Jerry asked the people to remain talking to the boy periodically while he and Phyllis went to their automobile and called for help via their 2-meter radio, and also look for Philip s parents on the way to the parking lot. The only repeater accessible from the site was located in Juniper Hills, California (W9TTT) south of Little Rock and about 10 miles east of Palmdale, California.

A plea for assistance was made on the 2-meter repeater. Immediate response came from three Amateur Radio operators in the Lancaster area. Response came from Earl Post, WA6ITG; Keith Wilkason, W6CRE; and Delbert Ellison, W6ZGF. Earl W6ITG went immediately to the landline, and with help from various operators and agencies was able to get through to the responsible authority — the National Park Service, Death Valley National Monument.

Two park rangers with mountain climbing experience soon arrived at the parking lot at the foot of the trail. Darkness had now fallen. While the two park rangers, Jennifer Detterline and Roy Griffith, began getting into their climbing gear, Jerry went up the trail to advise the boy, the small group of hikers and Philip's parents (huddled together near the base of the cliff) that help was on the way.

Jerry took his 2-meter hand-held unit to the site while Phyllis remained in the car near the main road to maintain contact with the repeater. Jerry used his nicad-powered emergency flashlight to help illuminate the rescue scene.

The climbers quickly arrived at the base of the cliff and left one of their two hand-held radios with Jerry in the event the two climbers got into a position where they could no longer maintain communication with their base control.

After two hours of climbing and driving pitons and long metal rods into the very fragile cliff wall, one of the climbers arrived at the ledge where the stranded boy was perched.

Philip was very brave and calm during his ordeal of waiting. We all tried to encourage him to keep calm as possible. During the tedious climbing operations, Jerry kept reassuring the boy's parents that the two climbers were very professional and were making slow, deliberate and safe progress.

During the climbing operations, many rocks were dislodged along with dirt, dust and other debris that cascaded to the base of the cliff. Ranger Roy Griffith attached a safety harness to Philip and belayed him down the treacherous wall of jagged and slippery shale-type material about 30 feet to where Ranger Jennifer Detteline was positioned. Philip's Dad climbed part way up the cliff and assisted the rangers in the rescue of his son.

When Philip finally reached the cliff floor, cheers went up by the small group of hikers who had gathered to observe the rescue attempt. During the rescue, some of the hikers had shown their flashlights to help light the eerie scene. Needless to say, everyone was very elated after the successful rescue which consummated approximately 2½ hours of arduous work by the two rangers.

Philip started his climb about 5:30 p.m. and was back down on the trail at about 9:45 p.m. He was given water, which he drank with a flourish. Before he left, Ranger John Radtke arrived and completed the necessary report. While Philip was drinking water, Jerry informed him of the opportunities available for Philip to become an Amateur Radio operator. Although he seemed interested, his priority was to embrace his mom, dad and sister. They quickly whisked him off to a dinner, shower and warm bed.

Jerry and Phyllis remained at the parking lot to advise the others on the repeater of the successful culmination of the rescue attempt. They also awaited the arrival at the parking lot of the three tired rangers, as they loaded their equipment into their trucks. All departed with thanks and 73's all around.

Finally the weary Jerry and Phyllis climbed into their little car and likewise disappeared into the darkness of the Death Valley, thanking the Lord for sparing the young boy. NM6T and N6JNF clear. 73's. □

Crash

(continued from page 1)

ple took Larry and Judy to Mr. "L's" home and the ambulance carried them to one of the Greenville hospitals.

The Co-op electric meter serial number had cut more than 15 hours off the rescue time.

Score:

Mr. Mountain — 1 Cessna 152 totaled.

Amateur Radio with electric meter serial number — two humans rescued.

Others participating were Le Wayne Wall, N4EAD, and John McKee, K4GGA. Our apologies to any ham that was overlooked. Mr. "L's" full last name was not logged and no slight to him is intended.
—Laurens Electric Cooperative □

Tornado

(continued from page 1)

deaths, at that time.

A Red Cross shelter was officially opened as at about 8:00 a.m. at the Venice Civic Center and staffed by Red Cross and essential emergency personnel to handle persons needing first aid — blankets, etc.

The Salvation Army arrived and set up a kitchen and provided coffee, drinks and plenty of good food for victims and workers at the scene.

We were informed that a second shelter had been opened at the Venice Gardens Community Center at about 9:00 a.m. This report proved false as W8FKL was informed as he arrived at this center to provide communications.

There were several problems that surfaced and some of them were:

1) There were problems of intermodulation and some confusion of the three nets all running at the same time in the same small room. This proved to be difficult to operate at times.

2) There was only one external antenna for amateur use.

3) The 2-meter equipment present in the Red Cross building designed for amateur use was inoperable.

Gary Mixon, N4HAP, and Charlie Farrell, N4AJC, arrived at noon to relieve the morning operators. They carried the ball effectively until the closing of the net for a lack of need of amateur participation at about 3:15 p.m.

Many ham stations stood by offering their help and assistance, and their presence was satisfying.
— Sarasota ARA, FL □

2-meter assistance during fire

Bob Josuweit, WA3PZO; Tom Powell, K3YPO; Jeff Chapman, WA3RIZ; and Carter Craigie, KA3IME, assisted Red Cross communications at a 07 January apartment fire on Lancaster Avenue in Ardmore. The 4-alarm fire burned a number of third-floor apartments in the business district but caused no serious injuries. Several residents of destroyed apartments accepted the Red Cross offer of shelter at the St. David's Inn.

Bob, Tom, and later Jeff were at the fire scene. They communicated on 2M, principally using our 147.06 machine, to Carter. He, in turn, relayed messages by telephone to Wells Wilbur of the Greater Main Line branch of the American Red Cross. The regular traffic net was cancelled so that Carter and those at the scene could keep the messages flowing. Obviously, you don't have to be in the boondocks or a hurricane to need radio.

Edith KA3NKP, one of our new Novices, accompanied Jeff to the fire scene; although she obviously couldn't participate on the air, she got right into the work of public service anyway.
— Mid-Atlantic ARC, Villanova, PA □

Voiding coordinated repeater

For the first time, a common standard for voiding a repeater's coordination was adopted. Failure to notify the local coordinator and get written permission for raising the power or antenna, changing the frequency, antenna pattern or other system elements will void the coordination, and the sponsor or trustee will have to re-apply.

This does not mean that a repeater's parameters cannot be changed, just that the written permission of the local coordinator, where one exists, must be obtained. The purpose of repeater coordination has always been orderly growth and the prevention of interference by newly evolving systems to existing repeaters based on good engineering practice and geographical considerations.

Making system changes after checking with the coordinator should help to suppress the problems that arise when one system makes unilateral changes that affect its neighbors on the band.

More details on the specific standards agreed to at the meeting may be obtained by sending a business-size SASE to the Tri-State Amateur Repeater Council (TSARC), P.O. Box 444, Little Ferry, NJ 07643. — *ARRL Letter*

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When submitting photos, please *DO NOT* write on the backs of them — they often stain the fronts of other photos, making them unusable.

The case for 20 kHz channel spacing

Norm Brooks, K6FO

If you are purely an HF operator, or if you live in a sparsely populated part of the country, you may not be aware that a major change is taking place in the 2-meter band plan.

Originally, 2-meter FM repeater channel spacing was 120 kHz. Then, to accommodate more repeaters, channels halfway between were used, resulting in 60 kHz spacing. Then a similar split ended in 30 kHz spacing. Now repeaters are squeezing in between the 30 kHz channels, creating 15 kHz spacing. This has resulted in adjacent channel interference so severe that many parts of the country are re-channeling their 2-meter repeaters to 20 kHz.

The Northern Amateur Relay Council, which coordinates repeaters for northern California, invited Clay Freinwald, K7CR, to come to the 13 April 1985 meeting of NARC and tell the representatives of over 200 repeater owners how they changed to 20 kHz spacing in the Pacific Northwest.

Clay has been on the ARRL's VHF Repeater Advisory Committee for over seven years. He was accompanied on the visit by Jon Marcinko, W7FHZ, Chairman of the Washington Amateur Relay Council; Dale Justice, K7WWR, Chairman of the Oregon Relay Council; and Bob Smits, VE7EMD, the 2-meter frequency coordinator for British Columbia, Canada.

What is the 20 kHz band plan?

The band plan is stated as follows:

Band	146-148 MHz
Channel spacing	20 kHz
Input Output spacing	600 kHz
146 MHz systems	In low and out high
147 MHz systems	In high and out low
First pair	Input 146.02, Output 146.62
Last pair	Input 147.98, Output 147.38

Total = 40 Pairs

All pairs are 2-digit numbered. This makes the 20 kHz plan "user friendly". You never need to use the 5 kHz switch on your 2-meter radio.

History of the 20 kHz plan

It all started in 1978 at a hamfest. Clay and Dale were musing over "What do we do when the 30 kHz spaced band becomes full?" The options were:

- Hold the line
- Allow 15 kHz spacing "upright"
- Rechannel the band to 20 kHz spacing.

Upright means to have the split channel's repeater transmitter on the same end of the band as the adjacent 30 kHz repeaters' transmitters. Reversed means to do just the opposite, so that the repeater on your 2-meter radio dial is "upside down."

They felt there was no way to hold the

Dale Justice, K7WWR

line. Repeaters were springing up on the split pairs without being coordinated (or sanctioned). They knew that a 16F3 signal was not going to fit into a 15 kHz channel without splattering into adjacent channels, degradation of operation with de-sensing and the like. There would be no geographical freedom as to where 15 kHz repeaters could be placed. As a matter of fact, they would have to be carefully placed to cause the least damage to adjacent channel operation.

They also knew that even though they could cut deviation levels, etc. at the repeaters to make 15 kHz spacing work, there was little control over the average "Joe Ham" and his 2-meter radio. 15 kHz operation put a great deal of burden on the average amateur operator — more than anyone could expect him to handle.

The 15 kHz plan.

In spite of all this, Clay said, "The Colonies got together, along with ARRL," and established the technical standards that were to be met to make the 15 kHz spacing work. Here are some of the standards:

Frequency tolerance at 146 MHz: 365 Hz (a 2-meter radio in a hot car could be off more than this.)

Peak deviation: 4.5 kHz; nominal voice deviation 3.5 kHz.

Audio frequency response: 3 kHz max. with 40dB per octave rolloff after limiter.

There are other technical standards to be met, too numerous to list here. The Northeastern U.S. Repeater Councils have adopted these standards and will stay with 15 kHz spacing. Recently, southern California has adopted similar standards and also plans to stay with 15 kHz.

The Motorola report

W.L. Firestone, Director of Engineering for Motorola, Inc., published a paper — "Review of Communications Interference problems." The paper stated that at 15 kHz spacing, adjacent channel splatter can be reduced from a level of 37dB down to 53dB by reducing the deviation level to 2.5kHz!

Clay and his conferees asked themselves, "Are these standards something we want to put up with to make 15 kHz work in the Pacific Northwest?" They decided No.

What do others do?

They noted that 20 kHz spacing was already solidly established.

2 meters, 144.5-145.5 MHz
20 kHz spacing, from the beginning
6 meters, 52-54 MHz
20 kHz spacing from the beginning
1-3/4 meters, 222-225 MHz
20 kHz spacing, split from 40 kHz

Jon Marcinko, W7FHZ

10 meters, 29.5-29.7 MHz
20 kHz spacing, changed from 15 kHz

VHF Marine Band	20 kHz spacing
Mid-band 72-76 MHz	20 kHz spacing
UHF band, 430, 450 MHz	25 kHz spacing
Other countries, 2 meters	20 or 25 kHz spacing

Even Japan uses 20 kHz spacing!

20 kHz design criteria

In the spring of 1978, western Washington decided to use 20 kHz in the upper 2 MHz of 2 meters. The following design criteria were met:

1) Negligible degradation to existing systems due to adjacent channel QRM.
2) Negligible degradation to users' radios due to adjacent channel QRM.
3) Elimination of the threat of adjacent channel 15 kHz *uncoordinated* repeaters.
4) Newly created pairs are usable without restrictive adjacent channel physical separation requirements.
5) Newly created pairs are just as viable and usable as the 30 kHz channels.
6) Users are not required to operate with restrictive or unobtainable technical parameters beyond those required for 30kHz operation: i.e., frequency deviation, frequency tolerances, etc.
7) Compatibility with all commercially produced transceivers manufactured within the last five years.
8) The change from 30 to 20 kHz spacing (or 30 15 to 20) is a situation where everybody, existing systems, users and future systems and their users come out ahead.
9) The underlying guideline is *quality* spectrum utilization *not quantity* spectrum utilization.

Clay Freinwald, K7CR

National band plan

Clay said he and others are confused because there never has been a National Band Plan for 2 meters. He said, "We have actually seven different band plans for the two segments of 2 meters . . . from 144.5 to 145.5 we have three: 20 kHz spacing on odd-numbered frequencies (the most popular system) . . . 20 kHz spacing on even numbered frequencies (the southern California system) and 15 kHz spacing (Colorado only). From 146 through 148 MHz we have four systems . . . 30 kHz with no splinters . . . 30 kHz with upright splinters . . . 30 kHz with reverse splinters . . . 20 kHz spacing. The only 'National' system we have going is the 600 kHz offset . . . and this in some congested areas has been altered to squeeze in a few more repeaters at the expense of the simplex frequencies."

The $40 phone call

Clay discussed 20 kHz spacing with Steve Mandalsohn, WA2DHF, president of Tri-State Amateur Repeater Council. Steve is the principal architect of the Northeast 15 kHz Plan.

Clay asked "How do you feel about 20 kHz which is sweeping the country?" Steve answered that we can't do it here because we have too many repeaters. There are 200 2-meter repeaters within 50 miles of the Empire State Building! (There are 200 in entire northern California.)

Steve added that if it were 10 years ago, it would be a great idea. Clay responded, "Steve, to your point of reference, it *is* 10 years ago to a lot of us out here."

Clay asked, "Steve, if you had it to do all over again, what would you do?" Steve responded that he would use 1 MHz offset, with 20 kHz spacing!

Implementation

In Washington, the Board voted to place 20 kHz spacing into effect voluntarily. No pressure was placed on anyone to change. Three months later, Seattle 81/21 moved to 80/20. Suddenly, 82/22 was born. Then the dominoes started to fall. They observed a phenomenon they called the "self-preservation QSY".

One of the biggest problems is the uncoordinated splinter channel repeater that can cause havoc on the band. Several systems asked for permission to move to a 20 kHz pair to preclude a splinter from moving in next to them . . . even to the point of encouraging another repeater to move 20 kHz away from them to "lock up" a portion of the band and prevent the problem.

They corrected a lot of mistakes. 20 kHz was viewed as an alternative to 15 kHz spacing, on a case-by-case basis. There are still a few odd-numbered pairs out in the boondocks where additional frequencies are not needed.

Lessons learned

Users go where the repeater goes. At the outset, some systems were reluctant to change frequency for fear of losing some that have been on the repeater for years or, in particular, those that have supported the financial aspects of the operation. Those fears, as it turned out, were groundless.

- They have created peace.
- They have created quality.
- They don't have adjacent channel QRM.
- They're glad they didn't wait to do it later.
- The costs of QSY are nominal. You *don't* have to hire a technician to retune your duplexer.

Who has gone 20?

Clay held up a map of the United States which looked like the presidential election map of last November. He inked in the 20 kHz area in red, those considering it in red crosshatch. The 15 kHz areas were colored in blue. The Northeast was the big blue spot, along with southern California, Colorado, the Carolinas and Virginia.

Solidly in the 20 kHz column are Washington, Oregon, Idaho, Montana, Utah, British Columbia, Canada, Michigan, Texas and the country of Mexico. Areas considering 20 kHz are Louisiana, Oklahoma, Kansas, Minnesota, Florida, Nevada, New Mexico, and northern California. Clay predicts the 20 kHz plan will sweep across the South. New England will stay at 15 kHz, although many up there are unhappy.

Conclusion

Clay sums up the overall situation:

"Two meters has been transformed from a vast wasteland where a few amateurs operated CW/SSB/AM etc. to the most viable communications sytems in the history of radio. The single factor affecting that transition has been the repeater.

"Repeaters allowed us to cover the miles that were naturally limited by the short-range propagation characteristics of the band. Amateurs saw the possibilities and installed systems in just about every town in the country . . . in the West they used mountaintops, in the East building tops, building systems that would go farther . . . multiple systems were linked together to cross even larger areas . . . autopatches were installed to permit instant access to the law enforcement agencies . . . and on it went.

"Every coordination council in the populated areas of our country has or soon will be, forced to deal with how to limit the growth and crowding on this our most popular band. Most coordination organizations have done all they can . . . some others have simply given up . . . and many users have walked away . . . you will find them on 220/450 or 6 meters . . . talking about how they have witnessed 2 meters go from the "great" band to the over-crowded one that they don't use anymore.

"It is clear that to continue to fill the band with more and more repeaters is not the answer . . . a goal of *quantity* at the expense of *quality* has never created a better environment . . . perhaps this is why the Pacific Northwest was the one to reject the, "but we can put on more repeaters with 15 kHz spacing . . ." argument . . . Northwesterners are used to clean air . . . lack of congestion . . . we are pioneers at heart that don't always look up at what has been done in New York or Los Angeles . . . we didn't on 2 meters and as a result threw out the 30/15 system in favor of 20 kHz spacing . . . preferring *quality* to quantity. The coordinators in the Northwest have rejected the crowded concepts of the Northeast and Southwest as not requested, not required, not needed and *certainly not in the best interests of Amateur Radio.*

"The Northwest had a chance, with its switch to 20 kHz, to limit and control the growth of 2 meters and create a system that would insure maximum peaceful use of the spectrum, perhaps at the expense of a few ego repeaters and criticism from the excessively congested areas of the country.

"Coordination councils have not only a responsibility to the existing repeater operators, but to those that will come on board. Beyond that, the coordinators have a responsibility to the users of today and tomorrow to not only plan the growth of the band, but the *orderly* growth of same. The smart man is one that learns from, and does not make the same mistakes as those who have gone before him . . . i.e., *conformity at the expense of quality is not good judgment.*

"We in the Northwest are proud of our 20 kHz system; just ask anyone who lives here, repeater owner or user . . . or better yet come see for yourself . . . should you decide that it's 20 for you, we have just one question . . . How can we be of help?" □

Hallicrafters note

Anybody have a piece of Hallicrafters equipment that they are willing to let someone work on? If so, Albert Bojanower, WA6WDY, is the man to contact. His address is: 7519-4th Place, Downie, CA 90241. □

New repeater list

The new Rio Honda ARC TASMA repeater list for Southern California is now available. To receive a copy, send a 7" × 10" envelope (SASE), with two stamps, and a $1 donation to: TASMA, c/o Thomas Polley, WA6GEV, P.O. Box 603, La Mirada, CA., 90637.

Automatic ID illegal

In a letter to Southern California Frequency Coordinator and VRAC member Karl Pagel, N6BVU, Carol Fox Foelak of the Commission's Enforcement Branch wrote, "This is in response to your letter dated 18 April 1984, concerning automatic identifiers on amateur repeaters. Amateur repeaters should be identifying only when they are retransmitting signals they have received. It is not permissible for a repeater to be automatically identified every three minutes or other interval when it is not retransmitting signals. Such transmissions are prohibited by Section 97.113 of the Commission's Rules on broadcasting."

Pagel made inquiry of the FCC because of a dispute between two currently uncoordinated repeaters vying for a channel pair. Both were using IDs to serve as notice that their systems were in operation. According to the FCC, such activity is illegal, and citations will be issued against repeater operators who do it.
— *Westlink Report* □

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Contact Worldradio for hamfest prizes.

Ham team plays at Super Bowl

Patty Winter, N6BIS

It was the hottest ticket in the country that weekend, so why not have a little fun by getting into the thick of it?

That was the feeling of 10 amateurs from the San Francisco Peninsula when Super Bowl XIX came to Palo Alto last January. Although the nature of the activity forced us to take our communications out of the amateur bands, the event provided many of the same conditions as other emergency preparedness exercises, plus a few new ones.

The ham crew was assembled by Ted Harris, N6IIU, the ARES (Amateur Radio Emergency Service) Emergency Coordinator for Stanford, California. The game was actually held at Stanford, although Palo Alto is the nearest incorporated city. Most of the 10 volunteers helped either with the pregame show (produced by a commercial organization) or the half-time show (presented by the U.S. Air Force). A couple were left unassigned to float as necessary.

Just as was done last summer when Olympic soccer games were held at Stanford, local Air Force representatives graciously loaned us some of their frequencies. This allowed us to get the valuable experience of helping out at a public event without running afoul of the regulations regarding commercial traffic on the ham bands.

The amateurs participating besides Ted Harris were Rick Joslin, WB5VUL; Jay Damkoehler, N6JCD; Sy Stein, WA6ROM; Jim Koski, KT6W; Hope Antasek, KB6FEE; Ray Antasek, WA6TKV; Rich Duffy, N6KFJ; Mike Weaver, KA6YFB; Frank Wyatt, N6FW; Oliver Barrett, KB6BA; and Patty Winter, N6BIS. Palo Alto Red Cross first-aiders Carol Coppock and Steve Rooks were also part of our team.

As an example of what we did, Oliver Barrett and I were assigned to shadow the people coordinating the balloon release — not a trivial task with 50,000 balloons. The balloons were contained in nearly 20 football-shaped bags positioned around the field. The head of the balloon company needed communications both with the pregame director, and with his own assistant on the other side of the stadium.

Oliver wound up at the 50-yard line on the San Francisco 49ers' side of the stadium, and I was directly across from him on the Miami Dolphins' side. Every exercise is a learning experience, and this time I definitely learned that it's impossible to hear a radio when you're standing in front of thousands of screaming football fans. Just as the Dolphins were being introduced, I was vainly trying to find out whether several Air Force F-15s were going to fly over at the end of the national anthem. (As may have been evident on television, the normally sunny peninsula was invaded by San Francisco's fog that day, and the flyover was cancelled.)

Our role ended with the beginning of the game, although I managed to watch the first few minutes of the action from just behind the Dolphins' end zone. Then, those of us whose "tours of duty" were over repaired to a local pizza emporium to watch the game.

Although our actual participation was very brief (the pregame and half-time shows were each only about 15 minutes long), the day was definitely worthwhile — For the fun of it as well as the disaster-preparedness experience. Besides, the next day, when anyone asked "Did you go to the Super Bowl?", we could say, "Funny you should ask . . ." □

Sy Stein, WA6ROM, assists during pregame ceremonies at the 1985 Super Bowl.

Rich Duffy, N6KFJ, and members of a military honor guard prepare for the opening of Super Bowl XIX.

•••••••

Hope we can serve you.
Your comments
and suggestions
are welcome.

Chris Wilson

Ham electronics store now in USA

More than 30 of the people who work for Dick Smith Electronics, including Ike Bain, VK2AIG, president of the U.S. operation, hold current Amateur Radio operator's licenses.

Dick Smith, VK2DIK, who started the company in Australia over 17 years ago, has always been a radio and electronic enthusiast, having built his first crystal set at 8 years of age.

Although Dick recently sold Dick Smith Electronics to a large Australian retail chain, his license is still current and many amateurs around the world spoke with him when he made the first solo helicopter flight around the world in 1982/83.

Dick Smith Electronics now has over 60 stores in three countries as well as hundreds of resellers and a large international mail order business.

The first U.S. store was opened in Redwood City on 01 April 1985 and the company is already doing a brisk mail order business.

The small nucleus of Australians who

The exciting new Dick Smith Electronics showroom and large distribution center at Redwood City, California.

came over to start up the U.S. operation are actively recruiting Americans to expand the business and are very interested in hearing from licensed operators and electronic enthusiasts who may be interested in employment.

Dick Smith Electronics' president, Ike Bain, says they plan to open six stores in the San Francisco Bay area and when proven successful, will be opening stores across the United States.

The company stocks a large range of components and amateur products as well as a huge range of kits, including UHF and VHF kits that are unique to Dick Smith Electronics.

Following a long tradition of innovative projects, including jumbo jet flights to Australia, Dick Smith Electronics is organizing a charter flight in a Boeing 747 to track Halley's Comet in April 1986.

The flights will be run from both San Francisco and Sydney and will "ride the tail of the comet" for three to four hours to give everyone a view of the comet never before possible. □

Motorcycle Club Net

It is springtime again and time for the Amateur Radio Motorcycle Club Net to move to 40 meters. On Thursday, 02 May (Friday, 03 May UTC) the net will begin meeting on 7.2375 MHz. This is a regular move that we make each spring to keep propagation as much in our favor as possible. With the sunspot cycle as it is this year, things are rough. All we can do is to try, try, try, and hope the bands improve soon.

Remember also that the time for the net is still 0300Z, even though that means one hour later local time.

The net has grown by leaps and bounds during the past year and we have almost 600 entries on the database at this time. Of those, there are approximately 400 stations remaining on the active list.

The eastern net moved to 3.888 MHz to escape some of the QRM in the upper part of the band. They will remain on 75 meters throughout the entire year. If you are east of the Mississippi, or are otherwise interested in the eastern group, listen at 0200Z on 3.888 MHz. Shawn Kelley, WB1AEL, is eastern net manager.

Our third annual ARMC Rocky Mountain Roundup will be held 30 July through 01 August this year. Detailed information about location will be available around the middle of June. It will be in the Colorado Rockies west of Denver somewhere.

For more info on the net or the Roundup, send business-size SASE to: Gary McDuffie, AG0N, Route 1 Box 464, Bayard, NE 69334. Please mention what information you want and your call sign if you have one. — *Gary McDuffie, AG0N* □

A5 in transition

Mike Stone, WB0QCD, announces the transition of the 18-year-old fast scan TV periodical **A5 ATV Magazine** to a more general coverage of all modes of Amateur Radio specialized communication including FSTV, NBTV, MSTV, SATV, TVRO, SSTV, FAX, RTTY, AMTOR, PACKET, OSCAR, EME and others. The premiere issue of *SPEC-COM* (TM) appears this April with an enlarged page format.

According to Stone, "A5 readers have become specialty operators in other than Fast Scan Television modes. We are simply covering the Amateur Radio specialized communication modes that few other publications include in their issues. Fast Scan TV is the first interest of the new *SPEC-COM* (TM) journal and a large percentage of the publications will always reflect this. We are, however, enlarging the number of pages per issue to give good representation to other specialty modes."

SPEC-COM (TM) will be published 10 times per year at $20 per year annual subscription rate. A special six-month trial subscription is available for new readers for just $10.

Limited *free* sample issues of the premiere April issue are available to **Worldradio** members. Send your request direct to: SPEC-COM Specialized Communications Journal, P.O. Box H, Lowden, IA 52255. Allow two to three weeks delivery after publication. □

When submitting photos, please *DO NOT* write on the backs of them — they often stain the fronts of other photos, making them unusable.

A formerly amateur-licensed person whose license was suspended or revoked has forfeited the right to operate an amateur station, according to the Chief of FCC's Private Radio Bureau. In a letter to a former licensee he stated:

"Section 97.79(d) of the Amateur Rules allows a licensed amateur to '*participate*' in Amateur Radio communication from his station. This rule exists to allow persons who are not licensed Amateur Radio operators to experience the benefits of this service and to stimulate their interest in Amateur Radio. Accordingly, it permits incidental communication by non-amateurs over amateur stations under certain very limited conditions.

"You, on the other hand, were formerly a licensed amateur who forfeited the right to operate an amateur station. Therefore you are not in the class of persons intended to be exposed to Amateur Radio by virtue of Section 97.79(d). Hence you are prohibited from communication over Amateur Radio under any and all circumstances." *(ARRL Letter* 03/14/85)

Comments on this Docket, PR 85-51, were due at FCC, Washington, D.C. 20554, on 14 May, with reply comments due 17 June 1985. See last month's 'Highlights' for the text of the proposed amendment of rule Section 97.79(d) which would prohibit participation in Amateur Radio communications by revoked or suspended former amateur licensees.

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The FCC is waiting "with bated breath" for a proposal from ARRL to provide "assistance" to the FCC in the issuance of amateur station call signs, was the response I received from an FCC official to my question about such a possibility. He also said that the Private Radio Bureau Chief, Robert S. Foosaner, has advised League officials that they would have to take over the entire process ("lock, stock and barrel" was the way my contact put it). I believe this means it is likely that receiving and processing a request, and issuing a desired amateur station call sign would have to be accomplished without *any* cost to the FCC. The Executive Committee of the ARRL Board of Directors recently voted to continue "the study of this issue".

•

The FCC has proposed to increase the level of leakage permitted from cable TV systems in the 54-216 MHz band from 20 to 50uV per meter (measured 3 meters from the leak). This would be accomplished by deleting present Cable Television Rule Sections 76.601, 76.605 and 76.609 and substituting a new Section 76.601 with the new limit(s).

In the Notice of Proposed Rule Making, the Commission states that the relaxation is "... subject to the condition that actual cases of interference must be promptly and effectively eliminated, regardless of the leakage levels found in accordance with Section 76.613.

"3/Accordingly, any interference complaint arising from normal usage must be resolved even if the signal leakage is below the level allowed by the table. Comments are requested on the appropriateness of the proposed values."

Comments were due by 29 March and reply comments by 15 April 1985. The ARRL comment opposed any relaxation of the leakage restrictions.

•

FCC's PR Docket 85-21 proposal to delete the current 30-day wait required before re-taking an examination after failure was countered by ARRL's comment which requested a different approach. The League asked the Commission "... to require a 27-day waiting period after failure, and to require advance public notice of every examination opportunity in the interest of preserving the integrity of the VE program." *(ARRL Letter,* 03/85)

In addition to leaving the waiting period to the discretion of the VEC, the FCC proposed to require public notice of examination opportunities only for those sessions which would serve five or more applicants.

•

A 45-day extension of time for comment on FCC's PR Docket 85-22 Notice of Proposed Rule Making (NPRM) regarding resolution of interference between repeaters has been requested by the ARRL. The NPRM proposes to require resolution procedures, such as: "Where one repeater is coordinated and the other is not the station with the noncoordinated repeater has primary responsibility to resolve the interference."

See last month's 'Highlights' for more details. The NPRM specified 01 July for original and 30 September 1985 for reply comment limits. An FCC official advised me that the League's request would likely be granted (probably move the original comment deadline to 15 August, etc.).

• The PR Docket 85-23 NPRM to implement WARC '79 amateur allocations has received a mixture of approval and objection from the ARRL. In its March 23rd meeting, the League Executive Committee voted to file comments urging the Commission to implement the planned allocations as soon as possible, but to continue its "... opposition to footnotes placed against the 10 and 24 GHz bands and against the 220 MHz band which would reduce the status of the Amateur Service relative to other services in the band."

The comment periods ended 11 March for original and 26 March 1985 for reply comments.

•

Progress toward achievement of the appropriate allocation of the 10, 18, 24 and 902 MHz bands to the Amateur Radio Service in the PR Docket 84-960 proceeding has been delayed as a result of an FCC action granting a request for an extension of the reply comment period (from 16 January to 12 March 1985).

I understand that the work on this Docket is to be divided into two different parts, with the intent to move forward first on the part that is not controversial. However, it is likely to be several months before this first part is final.

•

ARRL 1985 Repeater Directory Statistics are: 9,351 listings, up 14.3% from '84; 5,931 on 2 meters, up from 5517 for '84; 1,758 on 220 MHz, up 32.1%; maximum per state is 927 repeaters in California, followed by Florida, New York and Texas *(ARRL Letter,* 03/28/85).

The engineer in charge (EIC) of FCC's Atlanta, Georgia field office ordered two southeastern area amateur licensees to cease 2-meter band operation because of interference to cable TV reception *(Westlink Report,* 03/22/85).

Arbitrary action and bypass by the EIC of all established procedures in the handling of interference complaints is alleged. It was reported that the order to the Gainesville, Georgia amateur has since been rescinded. The Greenville, South Carolina amateur was put on quiet hours (one hour of operation per day) after "... a new inspection of his station indicated that some direct, non-cable, transmitted-to-viewer RFI in the form of audio rectification still existed ..."

Earlier tests by an ARRL Technical Coordinator indicated that the cable was poorly shielded. (*Westlink Report,* 03/22/85).

•

No mention of license fees for operator licenses, amateurs or the general mobile radio service is in **Broadcasting Magazine's** report of FCC's recommendation to Congress that it impose license fees on commercial users of radio. (*ARRL,* 03/12/85)

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"The FCC Gettysburg field office has advised League staff that the successful completion certificate issued by a volunteer examiner team is not sufficient to entitle a person to take the next higher class license examination. A letter from ARRL Legal Counsel Chris Imlay, N4AKD, dated 15 March, asks the FCC to clarify this situation." (*ARRL Letter,*

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 01 April 1985.

For more information about 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 17325.

Radio District	Group A	Group B	Group C	Group D
	Am. Extra	Advanced	Tech./Gen.	Novice
0	NJ0U	KD0WC	N0GBK	KA0UJA
1	KY1Y	KB1RZ	N1DLZ	KA1MVE
2	NJ2H	KD2MC	N2FLK	KA2YCD
3	KV3L	KC3RM	N3EHO	KA3NWL
4	AA4II	KJ4BP	N4LTN	KB4NNR
5	NU5Y	KE5YK	N5HVK	KA5VUH
6	WF6W	KG6QM	N6LVG	KB6IIN
7	NM7U	KE7FD	N7GZO	KA7VCU
8	NK8W	KD8XM	N8GJJ	KA8WFL
9	ND9X	KD9OK	N9FCJ	KA9TIZ
N. Mariana Is.	AH0D	AH0AC	KH0AH	WH0AAG
Guam	AH2V	AH2BD	KH2BV	WH2AFQ
Johnston Is.	AH3A	AH3AC	KH3AB	WH3AAC
Midway Is.		AH4AA	KH4AD	WH4AAF
Hawaii	WH6Y	AH6GA	NH6DF	WH6BDB
Kure Is.			KH7AA	
American Samoa	AH8B	AH8AB	KH8AD	WH8AAO
Wake Wilkes Peale		AH9AB	KH9AB	WH9AAE
Alaska		AL7GS	NL7FO	WL7BGR
Virgin Is.	KP2L	KP2AT	NP2BH	WP2AEJ
Puerto Rico	WP4G	KP4IJ	NP4MY	WP4DZX

03/28/85) Both FCC Rule Sections 97.25(d) and 97.28(e) limit use of the Successful Completion Certificate to credit for the telegraphy examination elements 1(A), 1(B) or 1(C) only.

•

At its March 28th open meeting, the FCC made preliminary findings that limited federal preemption over satellite receiving antennas is warranted, and that there should be no size discrimination for such dish antennas. The FCC then adopted an appropriate Notice of Proposed Rule Making. "ARRL observers on the scene believe that Commission action is a good omen toward adoption of amateurs' own preemption matter, PRB-1, later this spring." (*ARRL Letter*, 03/28/85)

•

The new Advanced Class amateur operator license examination questions, Element 4A, were published in the March 1985 PR Bulletin 1035C and released by the FCC in mid-March.

•

The volunteer monitoring activity under the ARRL amateur auxiliary to the FCC's field operations bureau sent a total of 1,038 advisory notices to amateurs during the initial four-month period of its existence beginning 01 September 1984. The statistics reveal that "chirp discrepancies are the most numerous, at 25% of all reports sent, followed by out-of-band operation at 19%."

•

The Field Operations Bureau (FOB) of the FCC had taken power measures at 172 amateur stations during a program phase ending 25 February. "Objectives were to discover whether amateurs can reduce power; what levels most amateurs use; what effects a 50% reduction in power have on a WSO in progress; and whether there is a general awareness and compliance with Section 97.62(a) of the Amateur Rules which mandates use of the minimum power necessary for the communications in progress."

When asked, (by ARRL) "the FOB official was not sure exactly what the data will be used for" but "believed the results of the study would be available in early summer." (*ARRL Letter*, 03/14/85)

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The volunteer examination statistics for February 1985 are: Sessions 168; Locations 160; Passed 1,873; Failed 1,555; Elements administered 3,428; Average pass rate 54.64%; Worst pass rate 25%; Best pass rate 80%.

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Excerpts from the hearings before the communications subcommittee of the Committee on Science, Technology and Space of the United States Senate, (03/20/85), regarding cable TV leakage and Senate Bill 66 follow:

(Senator Barry Goldwater, K7UGA, chairman of the sub-committee is questioning Mark Fowler, Chairman of the Federal Communications Commission) "Am I correct in believing that no change is proposed to the second half of the present governing scheme; that is, regardless of whether any leak is above or below the minimum standards, the cable operator is in all cases responsible for eliminating any interference to communications caused by the leakage?"

Mr. Fowler: "Yes, Chairman Goldwater, that is correct. The cable operator may not interfere, and that is a black letter rule." . . .

Senator Goldwater: "I hope you enforce that."

Mr. Fowler: "We are. But we also need your Senate Bill 66, which would give us a little more enforcement power than we have now by providing criminal penalties. So we support Senate Bill 66 very strongly." . . .

"(Mr. Fowler:) . . .As I mentioned, we really need something to permit us to get these people into federal district court and to have the threat of criminal as well as civil penalties visited on people who willfully interfere. Now we only have administrative sanctions. We can revoke their license, or we can fine them. But the criminal penalty, Senator, I think is just exactly what we need."

•

On 27 March, the FCC received a petition from Gordon West, WB6NOA, "to allow Amateur Radio operators who possess marine single-sideband Part 83 type-accepted equipment to operate this same equipment on Amateur Radio frequencies as authorized by class of Amateur Radio license held.

This would increase the chances for a licensed Amateur Radio operator to signal a Mayday on any maritime mobile or Amateur Radio frequency with the same transceiver. This would also discourage the widespread use of non-type-accepted Amateur Radio equipment on maritime single-sideband frequencies."

•

On 29 March 1985, the FCC released an order (subject to appeal) revoking and suspending the amateur station and operator licenses of James W. Smith, W6VCE, of El Cajon, California, for causing willful and malicious interference to radio communications, in violation of Section 97.125 of the Amateur Radio Service rules. The Order stated that he ". . . at the same time, violated Sections 97.113, 97.115, 97.84(a) and 97.123." These Rule Sections are titled: 97.84 Station identification; 97.113 Broadcasting prohibited; 97.115 Music prohibited; 97.123 Unidentified communications.

Apparently, the violations have taken place starting at least in February 1984 in the course of a feud between Smith and a group of repeater users carried on in the amateur 2-meter band. The Commission's document uses 23 pages to describe the history of and procedures involved in this case!

•

The FCC has dismissed a petition to incorporate the ARRL 2-meter band plan in the Amateur Radio Service rules. It indicated belief that voluntary plans are preferable to rigid regulations and that operation in nonconformity was not harmful enough to require Commission action.

•

The FCC has shown interest in an ARRL filter project and would like it to publish a list showing the relative effectiveness of various filters in the consumer marketplace.

"In turn, the Commission would furnish copies of our list to consumers having TVI, with some assurance the complainant would buy one which really works. Neither price nor manufacturer's name has much to do with effectiveness.

"For instance, one widespread chain of stores sells three TVI filters; one works, the other two do not!" One $2.50 filter ". . . works much better than some costing eight or ten times as much." (ARRL, 02/20/85)

•

FCC amateur operator and station license totals as of 28 February were: Extra Class, 36,303; Advanced, 97,518; General, 116,874; Technician, 80,658; Novice, 79,497; Total operators, 410,850; Club stations, 2302; Military recreation, 175; Secondary stations 0; RACES, 399; Total stations, 413,726. □

VE exams

Virginia

The RICHMOND ARC volunteer examining team has scheduled exams for 20 July and 28 September. The site will be the J. Sargeant Reynolds Community College, 1651 E. Parham Road, Richmond, Virginia, at 10:00 a.m. Cut-off date is 30 days before the exam date, although a limited number of walk-ins will be accepted.

Applicants should send a completed Form 610, along with a copy of any present license, and a check made out to ARRL/VEC for $4. Send to E. MacCrush, WB4UOI, 9302 Ledbury Rd., Richmond, VA 23229. If a Form 610 is needed, send an SASE to the above address. You may call 270-0478 for any additional information. □

California

On Sunday, 16 June, Amateur license exams will be given for classes Novice to Extra. Test fee $3.50. Exams given at Fort Miley VA Hospital, Auditorium 4150 Clement St., San Francisco (near Cliff House).

Exams start at 10:00 a.m. PDT. Preregistration not required, but people who pre-register have priority. To pre-register, send a completed FCC 610 form, a copy of any FCC amateur license, and an SASE for confirmation. Send to: SFRC/VETL, POB 741, San Francisco, CA 94101. □

Maryland VEC team has good results

The Peninsula Radio Operators Society (PROS) has recently held two VEC exam sessions, with an overall passing rate of 80%. Both exam sessions were conducted via the Laurel, Maryland ARC VEC and were held in the Salisbury, Maryland area. Assisting the PROS were members of the Sussex Amateur Radio Association of Delaware.

Following the 26 January session, a surprise 39th birthday party was sprung on John Rupprecht, K3NOQ, (instructor and session coordinator of events), by the participants.

Anyone interested in the PROS examination program or their free training classes should contact PROS, P.O. Box 2315, Salisbury, MD 21801; (301) 749-7444, after noon daily. □

SPECIAL EVENTS

Zoo expedition

The Hazel Park Amateur Radio Club will operate W8JXU on 01 June, from the Detroit Zoo. They hope to make contact with other amateurs as close as possible to other zoos in the country. Operation will be 10 kHz above the lower edges of the General and Novice bands.

Certificate for contacts via W8JXU, P.O. Box 368, Hazel Park, MI 48030. □

Harry's Heydays

The Southside Amateur Radio Club will operate station N0EWP on 01-02 June in honor of President Harry S. Truman's 101st birthday.

The station will operate near the old Truman farm home in Grandview, Missouri during the annual "Harry's Heydays" celebration. *Times of operation:* 1700-2400 UTC, 01 June; 0001-0400 UTC and 1700-2200 UTC, 02 June. *Frequencies:* 7235 ± QRM and 14235 ± QRM.

A commemorative certificate will be available for a 9″ × 12″ SASE with 33 cents postage. QSL to Southside ARC, P.O. Box 412, Grandview, MO 64030. □

Ohio Wine Month

The Wireless Institute of Northern Ohio (WINO), an organization sponsored by the Lake County Amateur Radio Association, will be on the air with a special event station to commemorate Ohio Wine Month.

The station will be operating Saturday, 01 June and Sunday, 02 June. On Saturday evening we will be on between 7:00 and 11:00 p.m. EDST (2300Z, 01 June to 0300Z, 02 June) on 3860 kHz and 7235 kHz. On Sunday we will be on between 11:00 a.m. and 3:00 p.m. EDST (1500Z to 1900Z) on 7235 kHz and 14235 kHz. The station will be located at an actual winery in Madison, Ohio, and will use the call KO8O.

A special 8½″ by 11″ QSL certificate will be available from: KO8O — WINO Weekend, 7126 Andover Dr., Mentor, OH 44060 for a legal-sized SASE. □

Please send news and pictures to Worldradio

Boy Scouts' 75th

The Chicago Suburban Radio Association will operate a special event Amateur Radio station, N9BAT, from Brookfield Zoo in celebration of the 75th anniversary of Boy Scouts of America. The zoo will be hosting Scout-O-Rama, sponsored by the West Suburban Council, with over 5,000 Scouts participating on the beautiful 200 acres of the zoo.

Amateur Radio operation will be on 08-09 June from 1500Z to 2300Z using the phone frequencies of 7.250 MHz and 14.250 MHz. A special "Eagle" QSL card symbolizing the highest rank in Boy Scouts will be available to all stations that reply with their QSL card and a #10 business-size SASE to: N9BAT Special Event, P.O. Box 88, Lyons, IL 60534. □

Cobb Island

The Bowie Amateur Radio Club of Maryland will operate N3GR/3 from Cobb Island where Fessenden and Very sent and received intelligible speech by electromagnetic waves in December 1900.

Operation will start at 1400Z on 15 June and will end at 1400Z, 16 June. Phone and CW in General band segments of 80 through 15 as propagation permits. CW: 30 kHz up from bottom and Novice portion. Continuous operation on 7.250 MHz.

Certificate for SASE to confirm contact with N3GR/3 during this annual Bowie ARC expedition. □

Buffalo Bill

The North Platte Amateur Radio Club (Nebraska) will operate W0CXH from 1700Z to 2300Z, 15-16 June, during Nebraska Land Days from the home of "Buffalo Bill" Cody.

Frequencies: *CW* — 7.125; *Phone* — 7.250, 14.290, 21.400. Certificate via NPARC, Box 994, North Platte, NE 69103. — *Ernest Navis, KB0OS* □

National Hollerin' Contest

The Cape Fear Amateur Radio Society, of Fayetteville, North Carolina, will be operating a special event station on Saturday, 15 June, from the 17th Annual National Hollerin' Contest in Spivey's Corner, North Carolina. The station will be operating under the club call, WB4YZF, from 8:00 a.m. till 5:00 p.m. eastern time on or near 7235 kHz.

A special certificate will be available upon receipt of your QSL and requested QSO information, along with $1 to help cover printing and postage. Send QSL and QSO info to Hollerin', WA4LZD, P.O. Box 332, Dunn, NC 28334. Please allow four weeks for delivery of certificate. □

Revolutionary Fort

The Tusco Amateur Radio Club, W8ZX, of Tuscarawas County, Ohio, will operate from Fort Laurens State Memorial near Bolivar, Ohio, in conjunction with the Brigade of the American Revolution's re-enactment of 18th century military encampment, battle tactics and field maneuvers.

Fort Laurens is the site of the only Revolutionary War Fort built in Ohio. Operation will be on lower 25 kHz of General Class bands, 10 through 80 meters, SSB and CW, and Novice 7.130 and 21.150 ± 10 kHz, from 1400Z, 29 June till 2200Z, 30 June.

Special commemorative confirmation will be issued. Send legal-size SASE (3 IRCs for DX) and QSO info to William K. MacNealy, WD8LFM, RR# 1 DRW, Bolivar, OH 44612. □

Nazarene Amateur Radio Fellowship

The Nazarene Amateur Radio Fellowship (NARF) will operate WA0HPW/6 to commemorate the 25th anniversary of this organization during the General Assembly of the Church of the Nazarene in Anaheim, California from 22 June to 29 June. Frequencies will be 14.280, 14.305 and 21.385 during daylight hours. There will be some 40-meter activity.

For a special QSL card, send an SASE to Robert Buck, WB6UCO, 5162 W. Ave. L 12, Quartz Hill, CA 93534. □

Fort Laramie

The High Plains ARC will operate K7YPT at Historic Fort Laramie from 0000Z, 04 July, until 0000Z, 05 July. **Frequencies:** *Phone* — 3.850, 7.250, 14.300, 21.360, 28.550; *CW* — 50 kHz up from lower band edge.

QSL for business-sized SASE to: K7YPT, P.O. Box T, Torrington, WY 82240. □

Heritage Days

Members of the Lamoine Emergency Amateur Radio Club will operate WB9TEA in celebration of Macomb Heritage Days, Macomb, Illinois, 22-23 June.

Frequencies will be 3.860, 7.235 and 14.235 (phone) from 1500Z to 2300Z each day. Certificate for SASE and QSL card to: Lamoine Emergency Radio Club, Dave Nissen, N9DZP, RR #4 Box 210, Macomb, IL 61455. □

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The SS-32HB is a new hybrid sub-audible encoder plucked from Communications Specialists' Hothouse. It has grown through a cross of the time tested SS-32, the subminiature SS-32M and space age micro circuitry. This programmable 32 tone encoder measures a scant .5 x 1.0 x .15 inches; no small wonder it allows the addition of continuous tone control to a bunch of hand held transceivers that lack space.

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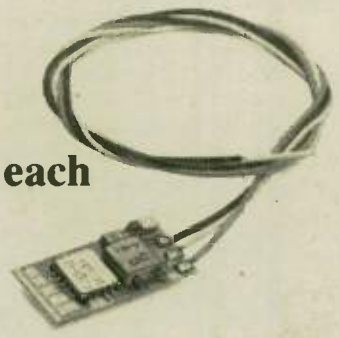

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VISA

Back to school

Norm Brooks, K6FO

He held a homemade breadboard trans mitter up in the air. He said he had built it himself. It had three tubes and a lot of wires, but it was the coils made of copper tubing that caught my eye. He said he used Morse code to talk to Amateur Radio operators all over the world with this transmitter. His name was Homer Shatto, and he lived across the street from the school. Our general science teacher asked him to come talk to our 9th grade class and tell us about Amateur Radio.

It all came back in a flash, even though it happened in Colebrook, Ohio over 50 years ago.

Homer's visit must have impressed me, because I found myself saving me pennies (literally) to amass $1 to send away for the Radio Amateur's Handbook. I studied that handbook from cover to cover. I saved more pennies to send away for parts to build my first receiver.

But I digress. That's how *I* became acquainted with Amateur Radio.

All this came back to me because my daughter, who teaches science at Hiram Johnson High School West Campus, Sacramento, California, asked me to come to her class and tell the students about Amateur Radio.

Of course I would! I even agreed to talk to two classes, one after the other.

The students had already studied the concept of the frequency spectrum in their school texts, so I tied my talk to that. As an attention grabber, I brought along an audio oscillator and a small oscilloscope. I showed them how you could actually "see" the individual cycles in a signal oscillating thousands of times a second.

Then I showed them where their favorite AM and FM radio stations were on a frequency line which I had drawn on the chalkboard. The line went from audio, through the various radio bands, all the way to light. I showed them where the TV channels fell, and of course, I included the amateur bands.

Then I gave them a demonstration of talking on a 2-meter FM repeater. I drew a picture on the chalkboard, explaining how repeater stations worked. Over the air, Mildred O'Brien, W6HTS, Doug Bee, W6OFQ, and Ed LarRieu, W6BEM, told the students about Amateur Radio public service activities. Sal Tesoro, W9QG, even called in from a mobile.

I described the various classes of amateur licenses and assured them a Novice license was well within their grasp.

I had invited Armond Noble, N6WR, to come out and take pictures, which you see here. He did double duty and became an antenna engineer too. When my signal was noisy into the repeater from inside the classroom, Armond moved my magnetic mount antenna outside the door. After I heard some metallic banging, my signal improved. Later, I found he had overturned two trash cans and stacked them vertically to give my mag *mount some altitude!*

The kids seemed to enjoy the visit, especially when we talked on the radio. My daughter said one boy was hanging onto my every word. My daughter later reported that that boy got a much higher than expected grade in a test for that segment of the test. Who knows, maybe I planted a seed or two, like Homer Shatto did so long ago! □

Norm Brooks, K6FO, demonstrates Amateur Radio to a Sacramento, California high school class.

Mayor Koch meets Amateur Radio

At 1700 hours UTC on 08 February 1985, the students at Junior High School 22 on Manhattan's Lower East Side are calling CQ on their favorite frequency, 21.395. This is the segment of the period these kids can operate after learning their English for the 7th grade, via Amateur Radio.

Returning their call is WA9YHW/HR, off the coast of Honduras. John, an old classroom friend, makes the usual exchange of information and then asks a special favor, "If you can call up my friend Ed, that's right, your mayor, and tell him your friend and his friend John from Westhampton Beach wishes him the best of luck for eight more years in office!"

Immediately the crew went to the phone, called City Hall, and asked for Ed.

Joseph Fairclough, WB3JKJ (right), with two of his students at the classroom station.

The secretary on the other end did not know quite what to think; however, after an explanation of Amateur Radio she promised to get the message through.

She did and here is the result. Recognition of our marvelous hobby, and our teaching tool, Amateur Radio.

Mr. Joseph J. Fairclough, WB2JKJ

Thank you for your passing along Mr. Miller's message.

I am delighted to learn about your Ham Radio program, and I wish you continuing success in communicating with people around the world.

I appreciate your taking the time to write and invite me to your classroom. I hope someday to have an opportunity to visit.

All the best.

Edward I. Koch, Mayor □

Can anyone beat this?

This picture was taken at the Radio Amateurs of Skagit County's Old-Timer's Night at our club meeting in Mt. Vernon, Washington.

My first call was NU9EML (in 1919) from the Department of Commerce with a power input of 5 watts (spark, ICW, CW). They wanted to know what five stations you were going to talk to!

My XYL is Ruby, W7QME. She got her ticket in 1951. Can any other team beat this 100 years in Amateur Radio? *Reg and Ruby Hoskin, W7ROL/W7QME* □

Ruby Hoskin, W7QME, and Reg W7ROL

Watch your language!

Remember not to use Amateur Radio slanguage or words that mean nothing to the layman but so much to amateurs.

Case in point: Did you hear about the ham that called up a lady and said, "I have a message from MARS for you." Her reply, before she hung up on him was, "What are you, some kind of weirdo?" (MARS is an acronym for "Military Affiliate Radio System").

Keep it simple. "My name is Joe Smith. I live at Smithtown. I am an amateur, commonly called a ham, and I have a *routine* message for you. Can I read it to you?" (Questions and explanations may follow the message delivery if they have not had past experiences with such things. But again, don't get technical — keep it simple.)

— Triple States RAC, Adena, OH

• *Enthusiasm creates energy* •

Packet Radio

Amateur Digital Communication

Part II

Bob McCormick, KA1KPH

As you may have guessed after reading last month's article, the range of packet radio (on 2M) is limited by the reliable propagation. As with VHF voice communication, packet has overcome the distance limitation by the automatic retransmission of signals — repeaters. The unique thing here is that, in fact, every packet station can act as a repeater. Packet radio repeaters, or digipeaters as they are called, only require one frequency; that is to say these digipeaters are simplex repeaters. Let's explain this further.

Figure 1

In *Figure 1*, AC1T and KA1KPH maintain 2M packet stations in their shacks. They live several miles apart and have no problem connecting their TNC's together. If AC1T wished to connect to KA1KPH he would merely type: CONNECT KA1KPH on his terminal.

In *Figure 2*, KA1KPH wants to connect for a QSO with K1BXE. KA1KPH can't connect directly because of a large hill between the KA1KPH and K1BXE QTH's. AC1T can connect directly to K1BXE because he does not have the problem with the hill, and he has more power and a better antenna than KA1KPH. KA1KPH can cause the AC1T TNC to "digipeat" the KPH packets over to K1BXE by typing the command: CONNECT K1BXE VIA AC1T.

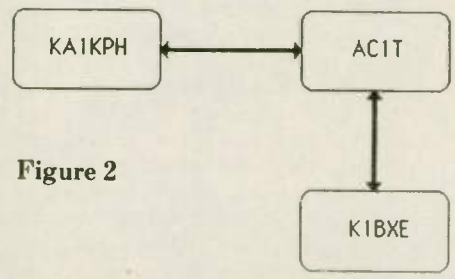

Figure 2

Last month we noted that the TNC is always monitoring the activity on frequency. Note the addition of the keyword VIA followed by the AC1T call in the connect command. When the initial connect request is broadcast by KA1KPH, it contains AC1T's call in a "digipeater list" (you may specify up to eight digipeaters!). If AC1T's TNC is listening on frequency it will receive the KA1KPH connect request packet. When it sees that its own call is in the digipeat list it will wait for the frequency to become quiet and retransmit the packet. K1BXE did not copy the initial connect request broadcast by KA1KPH, but will copy the rebroadcast packet from AC1T. And it all occurs on one frequency!

Some important things should be noted here. This will continue to work fine as long as AC1T's station is on the air. KA1KPH and K1BXE can QSO using AC1T as a digipeater. But if AC1T turns off his TNC rig . . . you guessed it! No more connection. The fact that AC1T is performing the digipeater function will not in any way interfere with his station. In fact, the only way he would know that he was digipeating packets would be the occasional click of the t/r relay in his rig.

As with normal voice repeaters, you would not expect that an effective digipeater could be located anywhere but on top of a mountain. So the real digipeaters utilized here in the northeast are, of course, located atop some of the higher peaks. *Figure 3* shows some of the digipeaters currently on the air.

The KA1KPH-1 digipeater is currently located at the W1KK/W1NY QTH on Art's new tower. The antenna is a new Ringo Ranger topping out at about 100 feet and is fed with 7/8 hardline. The TNC is a GLB board setup to run as an unattended digipeater. The rig is a Drake TR33 and a KLM amp with about 80 watts output. It operates on 145.010 MHz but will only come on the air by receiving a packet with its call in it. It is hoped that come spring we will find a mountain top QTH for the digipeater with the goal being to provide coverage out to eastern Massachusetts without having to go up and through Mt. Ascutney.

As you can see in *Figure 3*, if you are in the coverage area of any of the indicated digipeaters you can connect to anyone else within a reasonable range of an adjoining digipeater. For example, KA1KPH has connected to stations in New Jersey via W1AW-5, KG1O-9.

A limited access channel is available on the AO-10 satellite for packet. Contacts have been made between the United States and New Zealand using this path. Packet shares 145.812 MHz equally with 50 baud RTTY, CW and the 400 BPS PSK telemetry. Access to the satellite is limited because of the orbit, sun angles and other user requests. The modem re-

quired is a bit more costly than the standard on-board TNC modem. But have no fear! The FCC has authorized a dozen or so stations to act as gateways or teleports under full automatic control. One of these stations is W1AW. This means that you will be able to go through the W1AW digipeater up through a satellite and down to some other distant area. Now how is that for networking!

Future satellite projects will even involve more packet activity. Word has it that a modified Phase-3C bird will be built for an Ariane-4 launch. One of the additions to this Phase-3C satellite would be a packet radio computer and beacon unit. The computer will have one million characters (1mb) of storage which will give it the ability to store and forward messages. Just think: you connect to this satellite and leave a message for a DL ham friend who later retrieves it when the satellite is over Europe. There is also work occurring on PACSAT, a packet radio satellite. It is expected PACSAT will be launched in mid 1986.

Getting back down to earth, let's look at some meteor scatter packet radio experiments. Those of you who are avid VHFers know meteor scatter contacts are difficult to complete, the problem being to catch the meteor scatter at the right time. Often these bursts only last a few milliseconds and go unnoticed. Here's where packet radio comes in.

A packet radio transmission at 1200 baud, with 8 bit characters, figures out to about 150 characters or 30 words *(per second)!* This is about six times faster than human speech. After you factor out the overhead for the AX25 protocol the speed is still about 25 words per second!

K1HTV in Maryland and W0RPK in Iowa made what is believed to be the first two-way meteor scatter contact during the peak of the Perseids meteor shower on 12 August 1984. At 0354Z 4 seconds of a 12 second burst were strong enough for reception of packets containing signal reports. Later at 0545Z a packet containing the "rogers" was copied. One of the reasons it took so long to complete the QSO is the high signal to noise ratio needed by the FM ASFK packet modems. Needless to say, there is now a group working on other modulation schemes to improve signal reception as well as better hardware and software to facilitate meteor contacts.

With the availability of the low cost Xerox 820 computer boards, many hams have built PBBS - Packet Bulletin Board Systems. For those of you who are not avid PC hackers, a BBS is a computer that has special software that allows you to access the system, leave and read messages and even upload/download software. Most PC BBS are accessed by dialup telephone. Packet radio BBS are accessed by (yes, you guessed it) packet radio. Instead of connecting to another ham's TNC and having a QSO you connect to a TNC that has a computer running PBBS software.

Hank Oredson, W0RLI, in Westford, Massachusetts, has written what is becoming the standard PBBS software utilized all over the country. Hank W0RLI and Bob Clements, K1BC, maintain PBBS machines in eastern Massachusetts, accessible via WA1TLN-1 on Mt. Ascutney.

In Hyde Park, New York, Jerry Koniecki, WA2RKN, also maintains a PBBS with W0RLI software. Down at the League, a Xerox 820 also runs a PBBS, but with software written by the League.

On a PBBS, you can read messages, leave a message for an individual or general QST information. For example, AC1T sits down at his packet station and tries to connect to KA1KPH. But KA1KPH is working late and not on the air. So AC1T connects to W1AW-4, the League's PBBS, and leaves a message for KA1KPH. Later that evening, KA1KPH comes home, connects to W1AW-4 and is notified that he has pending messages. The message is read, deleted and a reply left for AC1T. Sounds like electronic mail!

Another feature that has been recently implemented on the PBBS is the forwarding of messages automatically. For example, KA1KPH could connect to W1AW-4 and leave a message for KA1T. A table of calls maintained at W1AW-4 indicates that KA1T usually is found on the W0RLI PBBS. So, in the middle of the night, when the activity is light or non-existent, the W1AW-4 PBBS will come on the air and connect to the W0RLI PBBS, through a number of digipeaters. W1AW-4 would transfer the message for KA1T and any other messages for users on W0RLI. Likewise any messages on W0RLI bound for Newington would be transferred.

This could be the beginning of the NTS of the future. KA1T has been working on software running on a DEC PDP-11 to handle NTS traffic. Messages can be left on a PBBS system and picked up by traffic handlers to be distributed through the system. As the packet network grows and high speed inter-city links are built the error free transmission of NTS traffic could occur on packet radio. This will come a reality as Level III is built.

Currently packet radio, using the AX.25 protocol, implements layers one and two. Layer I is responsible for the physical communication; rigs, modems, bit protocols and baud rates. Layer II, known as the Data Link level, is mainly responsible for taking the features of Layer I and making it error free and dividing the bandwidth among the users.

The third layer, Level III, is the Network layer. This layer will be responsible for routing packets between two stations. We currently do this with the VIA keyword followed by the list of stations (digipeaters) used to reach the desired distant station. Although the final details of Level III are not complete, Level III will automatically route packets between two stations. Level III will also re-route packets in the event one of the relay stations terminates operation.

In many areas of the country experimentation with high speed modems has yielded links of 9600 baud (9.6kb) and even a 1.5mb link in the San Francisco bay area. Of course, because of the band width of these high speed digital signals, you are limited to the higher VHF bands. Frequency coordination is now underway to allocate channels for high speed packet links.

Packet radio is an evolution. It is as much a communications mode as AM, SSB or CW. Its capabilities are only bounded by the imagination of the user. Within a short time the network of packet stations and digipeaters will be the backbone of a communications system whose size would only be exceeded by Ma Bell & Co. High speed links will move data in large volumes between major population centers. Slower speed links (2M) will provide inexpensive access to gateway nodes.

Finally, I'll elaborate on what is available for TNC equipment. The first TNC's were developed by Doug Lockhart, VE7APU and VADGC in Vancouver B.C. When the FCC finally allowed ASCII digital communications in the United States, a group of interested hams formed the Tucson Amateur Packet Radio Corporation (TAPR).

TAPR offers a TNC that handles both the AX.25 protocol as well as the older VADCG protocol. Although VADCG protocol still exists, and is in use still in some

(please turn to page 16)

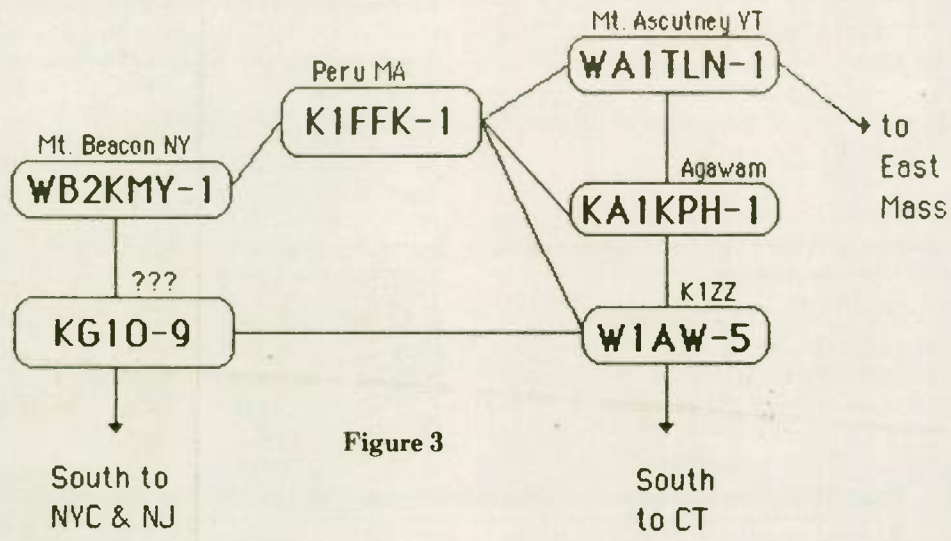

Figure 3

HENRY REPORT #2

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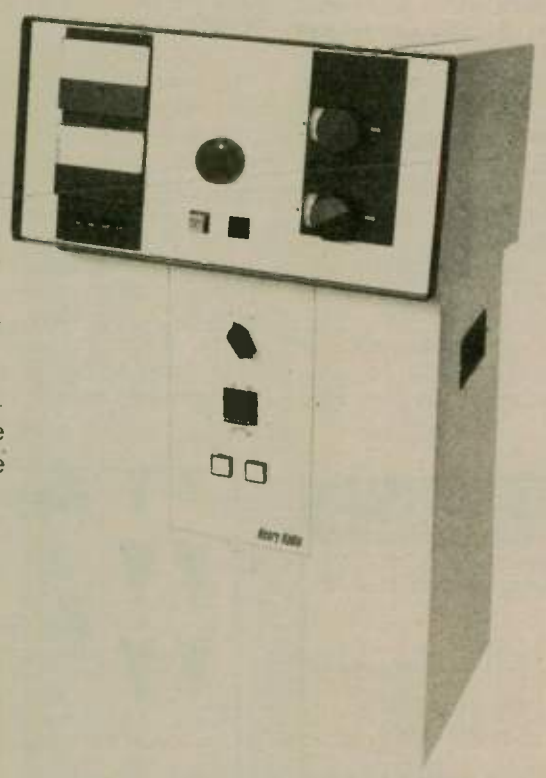

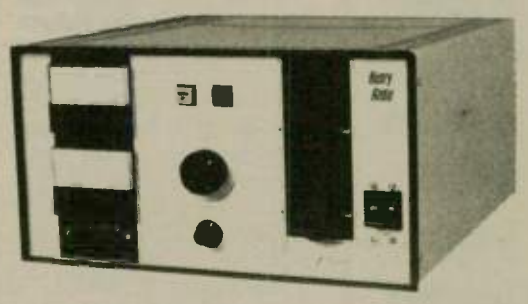

2KD Classic...a desk model designed to operate at 2000 watts effortlessly, using two Eimac 3-500Z glass envelope triodes, a Pi-L plate circuit and a rotary silver plated tank coil. We challenge you to find a better desk model for even a thousand dollars more.

2002-A...a bright new rework of our popular 2002 2 meter amplifier. Uses the new Eimac 3CX800A7. The RF chassis uses a 1/4 wave length strip line design for extreme reliability. It provides 2000 watts input for SSB and 1000 watts input for CW. Because this tube is rated at an unheard of 15dB gain, only about 25 watts drive is required for full output.

2004-A is identical to the 2002A except that it is set up for the 430 to 450 MHz band. This amplifier uses a 1/2 wave strip line and offers all of the same specifications as the 2002A.

1002-A A rack mount 2 meter amplifier with the same design as the 2002A, except using one 8874 tube for 1/2 power specifications. Rated at 600 watts PEP output and 300 watts continuous carrier output. It employs the same strip line design as the 2002A.

1004-A...a rack mount half-power version of the 2004A. Covers the 430 to 450 MHz band using a 1/2 wave strip line design.

Henry amateur amplifiers are available from select dealers throughout the U.S. and are being exported to amateurs all over the world. In addition to our broad line of commercial FCC type accepted amplifiers we offer special RF power generators for industrial and scientific users. Call or write Ted Shannon or Mary Silva for full information.

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Packet

(continued from page 14)

areas, the AX.25 protocol is the accepted standard. The GLB people in Buffalo, New York also have a packet TNC. AEA is currently offering a TNC which is a TAPR TNC fully assembled and supported by AEA.

My first TNC was the TAPR board. This is a kit taking a little over 8 hours to assemble. I've built a lot of Heath gear and the TAPR hardware and documentation far surpasses anything I've seen from Heath. The engineering quality is parallel to that of some of the work I've seen from DEC. Not bad for a non-profit organization!

I ordered a GLB TNC for the KA1KPH-1 digipeater for two reasons. First, it came assembled, and second, it cost less. Needless to say I was (and still am) not very happy with the GLB product. They quoted two week delivery and took two months to deliver; in the meantime they had charged my credit card. Many phone calls were made to gain shipment. Upon receiving the GLB TNC the PROM, which should have had my call burned in it, had the call QA1QPH burned in instead. I have had to obtain a number of software updates because of bugs. This requires exchanging PROMS with them. I am not impressed with the quality of the board; the documentation is poor and the user interface is cryptic. Guess you get what you pay for!

To quote Harold Price, NK6K, who implemented the TAPR software and who is now working on PACSAT " . . . Take the [TAPR] kit, $240, and 11 hours construction time . . . Want the security offered by a reputable commercial dealer? Spend the money [AEA]. Like to build? Buy the kit . . . only got $150.00 but want to get on packet? . . . Buy the GLB. Got only $150.00 but want to run 300 baud HF, OSCAR-10 with on-board filtering, or experiment with 4800 baud? Want a 240 page manual/tutorial on packet radio? Save up some more money [and buy the TAPR TNC]."

I couldn't have said it better! □

Planning for PACSAT

Harold Winard, KB2M

Every few years in Amateur Radio, a new technology or mode of operation comes along that requires hams to band together into groups to solve mutual problems. The ARRL was the result of just such a need and repeater councils are a more recent example of the desirability of concerted efforts by individuals within the framework of an organization.

A new technology has forced the amateur community to again think about the need for formal organization. Packet radio, once the plaything of self-described "bearded experimenters," is now a thriving branch of our varied avocation and one that promises to bring us many benefits. One of the first will be PACSAT, an orbiting digital mailbox that will store and forward messages to radio amateurs all over the world.

Hams in sparsely populated areas will have no difficulty sending a message to the satellite as it makes one of several passes each day. However, hams living in heavily populated areas will have a problem. Everyone will want to send and receive messages during convenient times and many may not have the equipment or know-how to set up a fully automatic station.

A practical solution to the problem appears to be the gateway station. A radio amateur would prepare a message for a distant friend and send it to a regional gateway station for storage and subsequent transmittal to PACSAT during one of its several daily passes. It will be able to send messages in an orderly, serial fashion, one after the other, allowing everyone's message to be received and stored without interference. The gateway station makes eminent good sense, but it does pose some problems.

Like all forms of communication, packet radio requires a set of protocols that extend beyond merely the equipment, software and communication conventions. In order for people to communicate via packet, especially over very long distances, the amateur community must come to grips with not only what networking scheme to use, but also who will pay for it, who will install it, and who will maintain it.

Unlike FM repeaters, which can be installed by an individual or a club for the benefit of many, a packet radio network is beyond the financial capabilities of the lone ham or even a small group.

To stretch data from coast to coast — or even several hundreds of miles across barren terrain — demands the expertise of the RF expert, the money or a substantial organization and the unanimity of all concerned. As a link from one point to another, a gateway station or network controller must be reliable and have the sustaining support of a group large enough to ensure continuity.

With the start of PACSAT development near, now may be the best time to start thinking about how packet activity to the satellite will be handled. It's quite obviously a problem beyond the scope of an individual and requires radio amateurs to once again band together to pool financial and technical resources. The committees and councils formed for the purpose should have a clear understanding of the importance of their work, the short time left to accomplish it, and the absolute need for cooperation, both on the local and regional levels, and also on the national scene.

To prepare for the arrival of spaceborne communications, perhaps the newly formed packet committees should undertake a study of how terrestrial communications can be improved. How wide an area should each committee encompass? Who should deal with the interconnect needs of packet committees in adjacent geographic areas? What types of networks should be established and who should be required to pay for the equipment? Those are some of the questions that face the new committees, but they are certainly not all.

Some of the stickiest problems will be those that others before have had to deal with, albeit in a different context. For example, can an Amateur Radio group be truly democratic? That is, should the majority rule on questions of standards and protocols or should such matters be totally within the province of the technical and operations leaders? If money is collected, how should it be spent and for whose benefit? If a digipeater is built, should it be on 220 MHz where it would help populate an as yet underused band, or should it be available to the larger group of users on the 2-meter band?

As you can see, there are many problems to think about and many solutions to be found. Before Amateur Radio embarks on this grand project to connect the world with digital communications, shouldn't we all think a bit about what directions we should take here on the ground? Like the troika, packet committees will have to pull together in one direction to accomplish their goals.

— *AMSAT Satellite Journal* □

SWL Callbook

For the first time ever, an SWL directory is being compiled for holders of WPE Short Wave Monitor call signs. More than 25 years after the inception of the registration program by **Popular Electronics** magazine, the Great Circle Shortwave Society has undertaken the monumental task of researching and compiling lists from various sources, as many records are no longer available.

During a 10-year period beginning around 1960 the now defunct magazine sponsored the WPE program under the leadership of columnist Hank Bennett, WPE2FT/W2PNA. Some 40,000 calls were issued to SWLs the world over.

One of the fastest growing radio listening organizations around, GCSS already has a number of member volunteers working as Regional Editors in their respective call areas. They are listing the WPE call signs, names and addresses (city and state only, current one preferred) to be published in this unique directory.

Even if you had a WPE call that was later converted to a WDX prefix under Hank's current program (he is now WDX2FT, for example), we still want to include you in the Callbook. There is no charge for your listing. Just send your own along with any others you know of to: GCSS WPE Directory, Attn. Vern A. Weiss, WPE9GHF/WA9VLK, Box 874, Kankakee, IL 60901. This may be done with a QSL, postcard or letter. If known, please include the date on your registration certificate.

Great Circle also has plans to offer exact reproductions of the original Short-Wave Monitor registration certificates. Information about this, or the GCSS awards program, the weekly SWL net conducted on Amateur Radio by Larry Wheeler, WPE9AVS/K9ZCH, and many other features of special interest to shortwave enthusiasts are published regularly in the club's newsletter which can be had free for a 22-cent stamp sent to the same address.

In order to make the WPE Callbook the most complete and accurate possible, please be sure to get your listings in to us. GCSS also hopes to be able to give credit in the publication itself to all sources who contribute to the project with call sign listings. — *Paul W. Moratto, WPE5AV/KC5JK* □

PUBLIC SERVICE

The real test

How do you schedule an emergency? It seems to me we should review what we do on Field Day. Perhpas we have our priorities a little out of order.

The cleanup efforts last year, at least, were not goal-oriented. I untangled and re-rolled several bunches of coax which resembled an oriole's nest. I have the impression that we should schedule a couple of emergencies to get things ready for Field Day!

Consider, for a moment, what Field Day is supposed to do for us. It does have goals. Field Day is an activity to bring together a group of individuals to form a team. This team is to see if they can prove their skills and equipment and can function in an emergency environment. It is fun, of course, but fun is a secondary goal. The ability to arrive at an area where an emergency exists, establish communications and provide needed services, is the name of the game when disaster strikes. Field Day only provides practice and training for this goal, and the fun comes from fellowship and doing things you like to do.

The parts of Field Day are: setting up, checking out, operating and tearing down. One of the most important parts is tearing down. When you just wad things up and leave them, how do you expect to be ready to go if an emergency arises between Field Days?

Field Day proves the equipment works or needs repair, but unless the items are put away properly, it is a total loss and a waste of time. Use care and role the coax properly. Make things neat. I know everyone is dead on their feet following the exercise, but this last effort can spell success or failure regardless of your operating score.

So there you have it. Not time to rest on your laurels yet, however. In spite of the good job you have now done in stowing everything, remember: it has to be sorted and *labeled*, too! — *William Hulse, W5NI, from PHD NEWS* □

Phones out, radios on

Joe Moell, K0OV

On 26-27 February, the Hospital Disaster Support Communications System was activated due to an internal telephone system failure at Kaiser Hospital in east Anaheim, California. The outage on the 26th kept amateurs involved from about 9:30 a.m. until the phones came on line at noon. Communications were maintained for five key areas of the eight-floor facility.

Unfortunately, the phones failed again the next afternoon. Shortly after the hams arrived again, the phones were up, but due to the uncertain system reliability, hospital administrators asked that the hams stay on the scene. For almost three hours they made themselves available — just in case.

Three of the amateurs who responded are also members of the GSG ECT. They are "Bip" Bachman, WD6BIP (first on the scene), WD6Y, and Joe Moell, K0OV. — *Hughes Fullerton Employees Assn., CA* □

Iowa hams assist in search

Four local Coon Rapids (Iowa) young men set out to float the Middle Raccoon River, on 28 May 1984 — Memorial Day. Around noon, their flat-bottom boat capsized in the rain-swollen river a half-mile north of town.

As Dave Blanchard, KA0HIB, was eating lunch, he saw the local Coon Rapids Fire Department's equipment parking on the street next to his house. While he watched, he saw firemen run toward the river, which is only two blocks away.

As people started to gather at the bottom of the hill, he went to investigate. Enroute, he was in communication with Randy Shirbroun, WA0VBW, who said his dad — who lives near the scene — had heard the yells of the boating party, that someone was lost in the water and presumed drowned.

On reaching the river next to Riverside Park, where firemen had set up watch, he heard that the firemen were having trouble with one of their radios. At this time, the river was very high, and they could do nothing but watch for the victim. The boat and some of their belongings were caught at the park about a half-mile south of where they capsized the boat. The rest of the day turned up nothing.

On Tuesday, 29 May, KA0HIB talked to Fire Chief Larry Cady and offered help from the Coon Valley Amateur Radio Club with communications during the search for Bill, the young man who was still missing. At this time, Larry said he would keep it in mind.

On Saturday, 02 June, at about 10:00 p.m., Police Chief Jim Hildebrand asked KA0HIB if the radio club would help with a search. At this late hour, help was hard to find. Tom Tipton, KA0OVE, and Don Bowman, WD0HND, who live in Coon Rapids, were contacted. Other members

of the club who live in town had plans for Sunday that could not be changed.

Richard Gordon, KV0N, the club president, was raised by radio and informed of the request by the police department. KA0HIB was told that KV0N; Pierre Kellogg, KA0JPN; Warren Rowles, W0ZHF; Tony Bowman, N0FMZ, would help.

KA0OVE reached Steve Larsen, KA0LZT, and he informed KA0HIB that Steve would help, but would be late in arriving. It was agreed to meet at KA0HIB's at 6:30 a.m., where they would be directed to the area where a command post ws to be set up.

At 7:00 a.m., Police Chief Jim Hildebrand informed KA0HIB that he needed radios in two boats that would be going up and down the river.

We were told that two diving teams from Perry and Boone Fire Departments would be working most of the day. KA0OVE, WD0HND and Ted Schulze, KA0NID, were placed in boats. KV0N was sent to fence #1, which firemen had placed in the river to catch the body if it were to float. W0ZHF was stationed at fence #2, about four miles southeast of Coon Rapids.

It had been decided to use the 79/39 club repeater so that low power and battery consumption could be minimized when using hand-helds.

KA0HIB worked as command post operator until Willard Sauvago, N0ATN, arrived. KA0JPN helped with security at the gate. KA0LZT was stationed at the point where a wrecker crew was pulling debris out of the river.

At one point in the day, there were nine divers in the water at one time. The radio operators assisted with boat dispatching and general communication between watch points.

Around 9:00 p.m., the search was ended for the day. The police and fire departments continued to search by boat until Tuesday without success.

Tuesday afternoon, 05 June, Police Chief Jim Hildebrand contacted KA0HIB about the club helping with another attempt on Wednesday, 06 June, with the help of a psychic.

KA0HIB contacted Arnie Krauel, WA0GUD, about the availability of a phone patch for 2 meters. WA0GUD put together a working patch. On Wednesday morning, 06 June, WA0GUD and KA0HIB called Greta, the psychic, and patched her to Jim Hildebrand, who was in a search boat with KA0OVE as radio operator. WA0GUD and Les Larsen, KA0LZU, saw to it that the patch was operating properly before returning to their work in Audubon.

Frank Beach, WA0OVU, called KA0HIB and informed him that he was recording the conversation with Greta on tape. Jim said he was going to go over the tape made by WA0OVU for his reports.

KA0HIB called and patched Greta to Jim four times during the day with the longest call lasting about two hours. Greta had pointed out an area where she felt Bill would be found. At 4:00 p.m., the project was shut down for the evening. Greta's last remark was to look for his hand.

On Thursday, 07 June, about 3:30 p.m., a routine boat watch found Bill caught on a log with his hand in the air. At 8:00 p.m., Thursday evening, KA0HIB received a phone call from Jim Hildebrand, informing him of the events of the afternoon. At this time, he thanked KA0HIB and the club for all the help and time given. — *David Blanchard, KA0HIB* □

Check your license expiration date.

A green elephant and amateurs

With only a day's notice, seven amateurs provided communication for the fancy Beverly Hills St. Patrick's Day Parade which was filled with famous stars proceeding on green carpeted Wilshire Boulevard and Rodeo Drive. Parade officials requested Frank Pettinato, WB6ELR to gather together some of his AREST (Amateur Radio Emergency Support Team) operators. As he had in the past for many Hollywood Santa Claus Parade events, Frank was able to come up with experienced hams and their hand-helds.

Famous faces such as Milton Berle, Ernest Borgnine, Zsa Zsa Gabor, Dennis Weaver and many others delighted the crowds. However, the inevitable mix-ups as to "who's in which auto?" required good communication along the route, especially for the sidewalk announcers as well as for Channel 11's coverage.

It was an extremely colorful affair, mostly green. Bob Burns, N6ZH, reports seeing the green elephant receive his cosmetic touch as the pachyderm politely knelt for the make up artist.

With little time to prepare, Bob enlisted a "basketball player type" to reach up nine feet to place his mag mount atop a no parking sign for better coverage.

Archie Willis, W6LPJ; Lou Berger, KA6CAQ; John Benka, KF6JG; James Feld, N6KWI; and Len Drayton, WA6LAU, were the other operators relaying helpful information along the parade route. They were recipients of the Giorgio Perfume sprayed from one float — in true Beverly Hills style, it was the $200 per ounce variety.

Although it was a jolly occasion, Frank felt it was one more opportunity to provide a service to the general public and at the same time refresh techniques which may one day save lives. □

'SAVE THE LADY'

RUSPRINT, designers and producers of QSL cards, has joined the nationwide effort to raise funds for renovating the Statue of Liberty in a unique manner, targeted at winning the support of Amateur Radio operators throughout the United States.

Michael O'Laughlin, KA0CSR, president of Rusprint, commissioned artist Craig Warner to design a commemorative limited-edition "SAVE THE LADY" QSL card.

Produced by Rusprint, the card is green and metallic gold (the flame of the "Lady's" lamp) against a pale blue sky. The full-color, full-size QSL is printed on heavy-coated card stock, with report form on back. The call, name and address are imprinted in black. Detailing is exceptional, even to the windows in "her" crown.

In addition, each order is accompanied by a suitable-for-framing "award" that reads, "Let it be known that this Amateur Radio station helped restore the Statue of Liberty through Rusprint's 'Save the Lady' QSL campaign", acknowledging the $1 per order, donated in the *customer's* name, to the restoration fund for the "Lady".

For additional information, contact SAVE THE LADY QSL, c/o Rusprint, Box 7575, Kansas City, MO 64116; or telephone, toll free, (1-800) 531-7373. □

AR demonstration at Hanna Boys Center

John Sharpe, W6TWQ

On Valentine's Day, the Valley of the Moon Amateur Radio Club (VOMARC) put on an Amateur Radio demo for about 40 boys at Hanna Boys Center. It was a great success, and a lot of interest was generated.

Kermit Parker, W6JFN, Floyd Whitfield, K6KQJ, and I had a great time putting up a random wire for HF and a Ringo Ranger for 2 meters. On 40-meter phone we had two contacts — one in Victorville, California, and one in North Hollywood. On 2 meters we used my Kenwood 4000A, and Floyd operated RTTY into Mt. Tamalpais. After the demo we had lunch at the Center and chatted with some of the boys.

All in all, it was a fine showing for Amateur Radio.

VOMARC Wednesday Nite net

We have a roll call and gabfest on 147.47 MHz every Wednesday event at 7:30 p.m. Try it — you'll like it! □

AWARDS

Scouting award

On 03 February, Ray Hensler, KB4BBC, received the God and Service Award. The presentation was made during a ceremony held at the Senoia United Methodist Church in observance of the Boy Scouts of America Sunday.

The award is given in recognition of those who have guided children and young people in their spiritual, social and physical development through church and community programs.

The award emblem was given to Ray by his grandson, Glenn Wieringa, who is a member of Troop 49. Ray is the assistant Scoutmaster.

— *Bill Gremillion Memorial RC, GA* □

Send NEWS and PICTURES to WORLDRADIO

OFF THE AIR

Is your address correct?

I would like to point out the problem of wrong addresses in the Callbooks. I send out approximately 100 QSL cards every month. I assure you it is no fun sending QSLs to addresses which are as much as two years out of date — and that isn't even considering the postage costs wasted.

Common courtesy would be to drop a postcard to the Amateur Radio Callbook and give the current address.

I also agree the keyboard should be slowed down on the Novice bands. Have they forgotten what it was like to listen to code way over their heads?

CLYDE STANFIELD, WA6HEG
Upland, California □

Radio Archives Novice Newsletter

*H*A*R*K Radio Archives Novice Newsletter*, featuring fundamentals, now opens a Quietus Cassette Net and H*A*R*K Hotline: 1-(612)874-9561 weekends (0200Z) to those hobbyists who wish to relate bygone or unusual happenings to record. Shortwave listeners may also participate.

Short stories of excellent band conditions, when crystal sets and regens were the rage, your first Novice contact, how AM'ers differ from other ops, etc. These anecdotes may be compiled onto a C-60 cassette and "shared" for a non-profit, blank C-60 cassette plus return postage. Share-the-air recordings over newsprint (sometimes) enables the prime posterity to "HEAR AMATEUR RADIO (OVER)" as opposed to reading recollections. The excitement in each amateur's voice is food for thought and is, indeed, something we should retain to maintain our hobby.

Send me your audio contribution, either retold on cassette, over-the-air (applications SASE) frequency/time; or by phone via the H*A*R*K Hotline (address above). Let's organize a record of fact and fancy. Your anecdote could frame the future of tomorrow's radio amateur, if only you would take the time today.

ARNOLD TIMM, KA0TPZ
2308 Garfield, #304
Minneapolis, MN 55405 □

Landline alive

Relative to an article in the April issue by Joe Rice, W4RHZ. In his article titled "The telegraph", he states the only code being used on the air is the International Code.

When the band is good, one can hear some fast Morse Telegraph Code (Landline Morse) on 7115 MHz. Many ex-Morse telegraphers are hams; this net meets every Monday, Wednesday and Friday at 9:00 a.m., Central Time.

There are also Morse telegraph nets on the east and west coasts, sending the Landline Morse. That code is not dead. Perhaps Mr. Rice hears the Morse, but is unable to read it.

We use converters and bring the code out on a sounder, and at times the radio shack sounds like the old telegraph office in the old depot or Western Union office.

Anyone who can send and copy Morse or CW is invited to join in our nets.

Each April, Western Union hooks up all chapters of the Morse Telegraph Club with a telegraph circuit, and members enjoy talking via Morse code to the various chapters in the USA and Canada. This event is in celebration of the birthday of Samuel F.B. Morse, inventor of the telegraph. This circuit is via microwave.

There is a Morse Telegraph Net on 7040 MHz at 9:00 a.m. Central Time and 7:00 p.m. Anyone welcome.

I hope Mr. Rice will tune in on one of these nets. If so, I am sure he will find two codes being used on the air. The Morse code is still *ALIVE*.

HARRY A. TURNER, W9YZE
Alton, Illinois □

A need for CW

Federal estimates show many millions suffer hearing impairment ranging from total deafness to inability to hear certain frequencies. There are thousands of Amateur Radio operators among such millions. Someday there will be an accurate count made. Perhaps then, there many be more concern shown when it is realized how great their numbers.

In the meantime, it must be said again and again — whenever you register an opinion as to how the bands should be divided, *please keep in mind the great numbers that may "prefer CW" because they can only communicate there.* They find it difficult and often impossible, due to their impairment, to operate effectively on the phone bands.

ARMOND BRATTLAND, K6EA
Chula Vista, California □

STATION APPEARANCE

Here is a station that proves you don't have to own a huge station and acres of land to win Station Appearance. Bob Simons, N6BZC, of Chula Vista, California, wins the June award with his station description and photo.

"Numerous ham friends have told me that my ham station is a classic, but that I must be the 'gravest ham of all.' Who else would ever think of putting the 'shack' in the wife's front room?

"I've decided to give it a try and send the enclosed photo of my layout, although I have seen many more elaborate stations than mine in your 'best station's award.'

"I don't think my frugal station is too shabby. The bad part is we live in a mobile home part and can only use a Spider mobile antenna.

"LAYOUT, left to right: *(top of hutch)* Motorola spk-on-CP-1, RCA scope, Landliner spk-P, Yaesu SP-102P, Palomar bridge, Kenwood 7400A, 2-meter; *(desk)* Drake MN4 tuner, Commodore cassette; *(drawer)* Commodore VIC-20, MBA text; *(on side)* 19" Zenith for monitor. Antenna is a Spider mobile antenna for 10-40 meters (only talks to the Big Guns)." □

Ohm-Brew

Stella Shaffer, NØFAF, of Ames, Iowa, sent several excellent 'Ohm-Brew' entries, a few of which are shown here. She'll be receiving a free three-year subscription as her prize. For the answers, turn to page *32*.

All "Ohm-Brew" entries should be neatly drawn on 3" × 5" cards, for easy handling. On the backs of the cards, print or type your name, address and call sign. Entries not used will not be acknowledged, due to the volume of entries received. □

• Silent Keys •

Max Marants

Max Marants, KA2WFV, joined the Silent Keys on 17 March 1985. He was a truly remarkable man. Born in the Soviet Union over 60 years ago, he was a ham in the true spirit of this word and was with Amateur Radio for more than 40 years.

Max possessed remarkable experience and thorough knowledge of electronics and antennas. Throughout his life he was a VHF enthusiast. A native of Ukraine, Max lived in Tashkent and over the years held UI8AAV and UI8BN calls. He was well known as an avid DXer and antennas experimenter.

For the last five years he lived in New York. By overcoming English language difficulties (he spoke nine other languages), he became KA2WFV. Always full of energy and interest in life, he never ceased to amaze me. And never did he refuse to help anyone; no job was too small or too big for him. He was a kind, unselfish, amicable man with a youthful glitter in his eyes.

And now he's gone. It's too bad I didn't know him for long. Max was more of a father to me than just a friend, and his life story could have made a book.

Farewell, dear old man. Never again will I hear your voice. Rest in peace. You'll be missed by many. Farewell . . . — Edward Kritsky, KA2MXO □

George A. Masden

One of the most interesting amateurs of southeast Iowa has passed away.

George A. Masden, WØLPW, Mount Pleasant, Iowa, died on 07 March at the age of 75. He had been in failing health for the past year.

WØLPW was a true radio pioneer. He began operating back in the spark gap era and drew local attention as one of the early radio experimenters. In the 1960's George was active with the Iowa 75-Meter SSB Net and served as net control.

In the early 1970's George worked with young people and the local school system, trying to interest them in electronics and Amateur Radio. As a part of that work he constructed a working replica of the spark gap transmitter from the great passenger ship *Titanic*. The demonstration fascinated all of those that saw WØLPW fire up the five-foot tall coil. Today, the replica stands in a maritime museum near Baltimore, Maryland. A story on this appeared in the September, 1984, issue of **WORLDRADIO.**

George Masden was also widely known for collecting and restoring antique radios. His prized collection included Grebe's, Crosley's, and Atwater Kent's.

WØLPW was born near Salem, Iowa and married Lena J. McCombs at Rock Island, Illinois, who survives. He received a bachelor of science degree from Iowa Wesleyan College, Mount Pleasant, in 1931, and earned a masters degree from the University of Iowa in 1938.

He taught school in Winner, South Dakota and Danville, Illinois, then worked for the Sheaffer Pen Company before retiring with the Iowa Army Ammunitions Plant. George also taught electronics and ham radio classes in his home.

WØLPW was a member of the Mount Pleasant Amateur Radio Club. All amateurs around the community will miss his wisdom and sparkling personality, but will always benefit from his contributions. — *Dave Schneider, WDØENR*

DX WORLD

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

Activities Calendar

18-19 May	ARI International Contest
25-26 May	CQ World Wide WPX Contest (CW)
08-09 June	GACW World Wide South America Contest (CW)

Clipperton Island (FO0XX)

The Clipperton Island DXpedition is now history. After the unsuccessful attempt a year ago, the group finally made it. The operation did not go without incident, and getting on and off was risky.

The group had planned a day of operating from Revilla Gigedo signing XF4ZU enroute, but passing the island they saw it would be difficult to land. As they did not want to risk losing any equipment or an injury, they decided to pass it up.

Upon arrival at Clipperton the latter part of the week, they were plagued with bad weather and rain. Then on Friday the swells were too great to land. Finally, Clipperton Island came on the air Saturday afternoon, with the call FO0XX. Word got out that they were on the air and the DX'ers were all ears.

Monday morning I went to work without having made a Clipperton Island contact. I was beginning to wonder if I would get it at all. Reports were going around that many of the fellows had worked FO0XX on all bands, 10 through 160 meters, both CW and SSB! The crew there, consisting of 16 operators, was doing a very fine job. Just listening to the operators working the pile-ups at the rate they did was amazing. I don't know about the rest of the world, but the signal into central California was very good.

Later on during the week, the pile-ups were still heavy, but by the time they were scheduled to leave on Thursday, 11 April, they were again plagued with the swells. They didn't get off the island until that Saturday afternoon. They did take advantage of the situation though, by running a single station to add to their QSO count.

Our many thanks should go to the team of 16 operators that included W6OAT, W6RGG, N6GJ, KK6X, N7NG, K3NA, WA7NIN, F6GXB, F9LX, DJ9ZB, TI2CF, XE1ZZA, JG3LZG, FO8HL, FO8GW and W8TN, who replaced W6SZN, who had business commitments. The operators represented seven different DXCC countries — a true international Amateur Radio DXpedition.

As for the climate of the operation, it was good. Those who stood by on their favorite frequency with their list-master didn't work Clipperton. Of course, the big guns made their contacts with little or no trouble at all. The rest had to work at it. One wonders if some of the mob ever bothered to listen. FO0XX came back to a call, and many kept calling. Some even called on his frequency after he clearly stated he was listening elsewhere. I guess with the confusion this can happen.

If you wondered, yes I did work the DXpedition. I came home from work on Monday and worked them on 15 meters, both SSB and CW, and later in the evening on 40 meters SSB. The following evening I worked them on 75 meters, and on Thursday evening I worked them on 20 meters SSB and 40 meters CW with little or no effort at all. This sure blows holes in the argument that lists are for the little pistol who can't compete with big guns. All I have is an IC-740 running about 100 watts. I accomplished what I hoped for — to work them on CW and 80 and 40 meters. It would have been nice to get them on 160 meters, though.

If you worked Clipperton Island and want to know some additional information about the island, Bob Winn, W5KNE, wrote an interesting article in his *QRZ DX* about the history of the island. Perhaps Bob has some extra copies around and you could write and ask for a copy. This publication comes to you via first class mail weekly at $30 per year.

Revilla Gigedo (XF4)

I am waiting to the last minute for this one, but nothing has shown up. The XF4MDX DXpedition was due to begin operations 14 April from Benito Juarez Island. And about the same time, the returning Clipperton DXpedition team was to stop for a day on San Benidicto Island signing XF4ZU. Permission to land on Benito Juarez Island had been denied as the Mexico DX Club would be there, (that makes sense). The Mexico DX Club originally had planned to be there at an earlier date but had some transportation problems.

If and when either team lands, I'll be looking for a CW contact, and perhaps a 160-meter QSO.

Republic of Nauru (C21)

Rob C21DX, who is the son of C21BD, has been active as a newly licensed amateur since last fall. He likes 75 meters and has often been reported on 3.791 MHz from about 1330 UTC. Rob has also been busy working Europeans on 40 meters around 0730 UTC on 7.085 MHz. There is a 20-meter report for Rob on 14.216 MHz at 1100 UTC.

Rob's dad, C21BD, has been active on 20 meters and has been reported on 14.225 MHz at 1315 UTC, and higher in the band for the General Class ticket holders on 14.309 MHz at 0345 UTC.

Also down on 75 meters, two additional stations have been active. C21RK has been very active around 3.799 MHz between 1000 and 1300 UTC, and sometimes wanders as high as 3.821 MHz. The other call is C21LD who has been worked on 3.785 MHz around 1345 UTC.

During the early part of March there was activity from C21NI, a club station on the island with activity reported on 40, 80 and 160 meters. Cards for C21NI during the period around 05 March should be sent via Kazu Nakamura, JJ1TZK.

Lebanon (OD5)

I'm sure many of you need this one. Believe it or not, so do I. I worked OD5LX on CW back in 1971 and have never worked another one since then. And the 1971 date is too early to count for my CW DXCC. Oh, well.

Several reports for OD5SH have been received for activity on at least three bands. On 20 meters he has been on both modes near 14.027 MHz at 1745 UTC and 14.246 MHz at 2300 UTC. On 75 meters he has been near 3.790 MHz plus and minus a few kHz and has been reported at two different times — 1530 and 2300 UTC. Europeans have worked him on 3.650 MHz around 2145 UTC and on 40 meters on 7.045 MHz at 2130 UTC.

Twenty meters is a popular band for Lebanese stations as OD5AH and OD5HM have been together on 14.247 MHz at 2330 UTC. The two stations have also been on 40 meters a couple of hours earlier on 7.045 MHz working the Europeans with the company of OD5SH.

St. Helena Island (ZD7)

A new XYL operator is on the air from St. Helena Island. Patsy ZD7XY meets with Mary Anne Crider, WA3HUP, on 14.190 MHz around 2300 UTC. This is sort of an informal net-type operation.

Also active from the island is ZD7CW, who has been active on 15 meters near 21.335 MHz from 1730 UTC. Look for this one on other bands too, as he has been reported on 14.182 MHz at 2100 UTC, 7.073 MHz at 2400 UTC and 1.843 MHz at 0645 UTC. Another station signing ZD7AL has been reported on 7.021 MHz at 0030 UTC.

St. Brandon Island (3B7)

This one was due about now, the latter part of April, when this is being written. The operation was to include operators LA7XB, SM0AGD and 3B8CF. The length of this one was to be about one week. Each operator handles his own cards via his home call.

Syria (YK)

According to *QRZ DX*, Al Gear, VE3KFE/4U, has been signing from Golan Heights on 14.201 MHz around 2030 UTC, 14.145 MHz around 1415 UTC, and 7.084 MHz at 0100 UTC. The QSL route for this one is VE3PET, where the QSL cards will be picked up by manager VE3OSF.

Burma (XZ)

There was a rumor floating around that an unknown Czechoslovakian amateur was to be in Rangoon for a month begin-

ning on or about 04 April. The call sign was to be XZ2HN and would be on Friday, Saturday and Sunday on 20 meters. The suggested frequencies were to be 14.040 MHz and 14.220 MHz, CW and SSB, respectively. As of this writing, nothing further has been heard.

Bophuthatswana (H5)

The Long Island DX Bulletin reports that the African Homeland of Bophuthatswana is represented by H5AQ on 14.280 or 14.332 MHz from 2030 UTC. A YL operator, her former call was H5AJQ.

This country is still not recognized for separate DXCC status, but does count as a nation for Worldradio's Worked 100 Nations Award (W-100-N). As for DXCC, it counts as South Africa only.

Navassa Island (KP1)

This one came and went. The operation had been planned for two calls to be used — 6Y0NR/KP1 and 6Y5FS/KP1. The former was to be busy with SSB and RTTY while the latter was to hand out CW contacts.

The group left Kingston, Jamaica on the *High Isle*, a 78-foot fishing boat, but had to return on 02 April to Jamaica for repairs due to a sheared bolt on the propeller shaft. They were able to get going again a couple of days later.

The group ended up using only one call for the DXpedition, that being 6Y5NR/KP1, and Riaz Ahamed, 6Y5NR, will handle all QSL requests. Unfortunately, the group went at the wrong time, so to speak. While they were busy giving out contacts to the deserving, the Clipperton DXpedition was also in full swing.

IOTA

Owing to the continued ill health of his XYL Marjorie, Geoff Watts has resigned from the administration of the IOTA (Islands-on-the-Air) Program that he created several years ago. A member of the RSGB HF Committee, Roger Balister, G3KMA, has assumed the responsibility of administering this program. All claims, requests for IOTA directories and general correspondence concerning the program should be sent to Roger at La Quinta, Mimbridge, Chobham, Woking, Surrey, GU24 8AR, ENGLAND. There sure are a lot of parts in this address — don't ask me which words go on which lines!

Although Geoff does not possess an amateur ticket, he probably has done more for the DX'er than he gets credit for. It was Geoff who established *DX News Sheet*, now edited and published by the RSGB.

DX News Sheet lists some recent activity from various islands which are provided here. The frequencies and times are in MHz and UTC, respectively. The first entry is the identification number with its corresponding continent.

EU-40	Berlenga Island	CT0BI	14.026	1715
EU-52	Levkas Island	WA1ZCE/SV8	14.267	1445
EU-62	Alsten Island	LA6WEA	14.147	1930
EU-46	Ringvassoy Island	LA1CI	14.262	0825
EU-45	Ponziane Island	I4ALU/IB0	DXpedition	
EU-52	Corfu Island	SV8BE	14.151	1600
EU-16	Brac Island	YU2GF	14.030	0800
AS-42	Severnaya Zemlya	UA1AFM/UA0	14.047	0930
AS-18	Sakhalin Island	RA0FA	14.288	0800
AN-12	Brabant Island	VP8BDG	14.128	2100
NA-36	Vancouver Island	VE7NI	14.197	1715
NA-80	Abaco Island	DJ0SB/C6A	14.137	1715
NA-25	Bequia Island	J87BI	14.223	2015

240 Group

Glenn Koropp, W6YFW, reports on the 240 Group. This is a new net that meets on 14.240 MHz at 2130 UTC on Monday, Tuesday and Wednesday. It is a spin-off of the Brown Sugar Net. The net control is presently John, KV0YI, in Red Oak, Iowa.

Glenn says that countries such as Kenya, Cyprus and San Marino have been checking in.

TL8TX — Silent Key

QRZ DX reports that Tex TL8TX became a Silent Key in early February, after suffering from an injury from a fall at the lumber plantation where he was employed. He was evacuated to Paris in early December.

The logs for the last six to seven months, including those from a period January to August 1983, are still in Africa. Tom White, K0VZR, QSL manager for TL8TX, hopes to get possession of the logs. If not, he will have to return about 250 cards.

40th Anniversary of VE Day prefix

At the request of the RSGB, British amateurs have been authorized to use the special prefix GV for the period of 05-12 May to commemorate the 40th Anniversary of VE Day (08 May 1945). The GV prefix will be available in the following groups: GV0 plus three-letter suffix, GV1 plus three-letter suffix, GV2 plus two or three-letter suffix, GV4 plus two or three-letter suffix, GV6 plus three-letter suffix and GV8 plus three-letter suffix. The call GV2HQ will be active on 08 May and operated by the RSGB headquarters staff.

International Travel Host Exchange

Naoki Akiyama, JH1VRQ/N1CIX, at ARRL Headquarters, sent us the latest on the International Travel Host Exchange (ITHE) program. Included in the packet he sent us is a list of amateurs throughout the world who agree to participate in the program. There are presently about 30 amateurs from 13 countries.

For the ARRL member, the League has available about 200 information packages available to instruct members how to operate at any place of the world. Nao included a sample for the United Kingdom, which included an application for a Radio Amateur License A or B. This applies for non-U.K. residents, and you must be presently licensed with a Conditional Class or higher.

Also included was such information as to the 2-meter repeaters in the United Kingdom, the frequency allocations and a list of International Travel Host Exchange program participants (there are six listings).

Additional information for those who are interested may contact Nao at League Headquarters, ARRL Information Services Department, 225 Main Street, Newington, CT 06111. Be sure to include a business-size SASE with your request.

Canadian members should contact the CRRL, Box 7009, Station E, London Ontario N5Y 4J9. Telephone: (519) 451-3773. All other amateurs (other than U.S. and Canadian) should contact their national Amateur Radio society.

Letter to the editor

The following was written by Tom Hoyne, N6NI, a member of the Southern California DX Club, and appeared in the April 1985 issue of the Bulletin, *the official SCDXC newsletter (George Morris, W6ABW, Editor)*

"I am writing to express my views on the most controversial subject in DX'ing today — lists and nets.

"Some other countries, most notably USSR, refer to DX'ing as 'radiosporting.' It is an apt term since it implies competition. Indeed, the tabulation and publication of DXCC standings bring out the competitive nature in all of us; it's what keeps us chasing the rare ones. It is also this competition that has so widely polarized DX'ers on the subject of lists and DX nets.

"Many times, those who speak out against lists are told, "If you don't like it, ignore it." If this were simply a style of operation that was disagreeable but harmless, it would be easy to ignore. That is not the case, however. It is harmful because it cheapens the DXCC award.

"It has been said that the reason some of us are so anti-list is that we're on ego trips and resent the little guy getting through. *NOT SO.* Our hats are off to the little guy who gets through, as long as he does it himself. The upper ranks of the DXCC roster abound with those who got there using modest equipment and no lists. 'Yes, but it was easier when those guys did it. The bands are more crowded today, and the competition is stiffer, making the little guy's chances slimmer.'

"Was DX'ing really easier for the modest station in the days on the hetrodynes? On CW, I'll bet the smaller station has an easier time today than he did years ago since there is such a higher percentage of stations on phone. In addition, it sure seems like there have been more DXpeditions over the past decade than there ever were 30 years ago.

"Let's forget about the bickering for a moment. Look at what the hobby of DX'ing is really all about, and you can see the biggest reason of all for not working lists and nets. Supposedly, we are all doing this because it's fun and exciting. I'll admit there is some ego boosting that goes on, but it's really the excitement that has us chasing the rare ones.

"Can anyone deny that there's more excitement in working a rare one on your own (especially if it takes awhile) than in having someone else locate it for you and orchestrate the QSO? That's why the ones who suffer are *not* those who miss the rare one because they refuse to get on the list. The true losers are the list participants. They deprive themselves of the excitement of working it on their own.

"He who refuses the list knows what a great feeling it's going to be when he finds and works the rare one by himself. Clearly, those who operate lists are demonstrating that, to them, the almighty QSL is more important than the fun and excitement of the activity of DX'ing itself. Is there pride no bigger than that?

"Our government allows us the privilege of Amateur Radio because, among other things, the skills we develop while operating can prove invaluable in times of emergency. DX'ing has been touted as one of the activities within our hobby that hones such skills. The list operator suffers in this respect also. Whether he's one of those on the list or the DX operator himself, he doesn't develop much more than the ability to hold up his hand when his name is called. I'm not sure I'd want him on the other end when my ship is sinking in the South Atlantic.

"The very existence of DXCC establishes DX'ers as participants in radiosport. True sport provides the greatest amount of fun and excitement to the most people. True sport is

Keep batteries from children

Wafer-thin batteries used in calculators, watches and cameras spell danger for young children.

Because those batteries are bright and shiny, they are easily discovered by children and can be fatal if swallowed. Even "dead" batteries can be harmful because of their chemical composition.

In a recent incident, a young boy's parents were unaware of the danger when their child swallowed one of these batteries. Several days later they sought medical help.

Unfortunately, it was too late. The alkaline chemicals had destroyed their son's esophagus.

Four other children in Dallas received emergency surgery after swallowing the same type of batteries. Two other toddlers died because their parents were unaware of battery ingestion.

To protect your children from this potential killer, treat these batteries as you would any other poison — out of the reach of children.

Thanks to Joe Profitt of the Wright/Patterson Base Safety Office, and to *R.F. Carrier.*

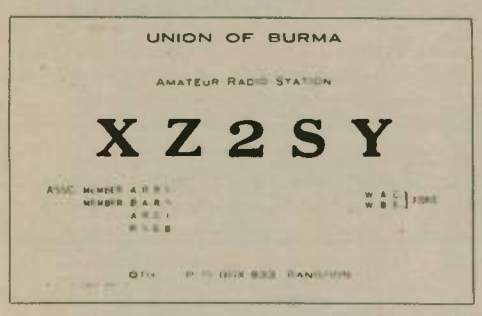
— Lake Erie ARA, Cleveland, OH □

the best way to improve skills. Working DX from a list or net is not true sport. If I stood in line at the Redondo Beach pier awaiting my turn to have a diver attach a large fish to my hook, I would be ashamed of myself. If I had obtained a fishing award through such a tactic, it wouldn't be worth the paper it was printed on. Let's get back to the true spirit of DX'ing! 73 and DX, Tom Hoyne, N6NI"

Tom's words of wisdom reflect that of many of us.

Antique QSL Bureau

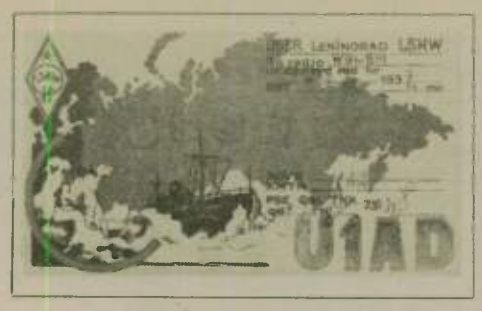
The following two QSL cards were submitted some time ago by Jerry Stover, W5AE, who made the contacts back in 1949 and 1950 when he was signing W5KZN. The contact with C1JH, operated by Jimmy Holt in Shanghai, was made on 10 meters on 19 March 1949, during a contest. C1JH was running 100 watts. The call letters and printing were in black ink on a buff card. The other symbols and such are in red with the information written in with green ink.



The XZ2SY card was for a valid contact with the Union of Burma, made back on 18 February 1950. Jerry received a 5-by-8 report for the contact on 20 meters. The operator was Soe Ya.

Jerry has been on the air since 1933, when he was first issued W9PEV. From 1938 to 1947 he operated from W5YF at SMU where he was trustee, and then W5KZN to 1973. In 1973 he received his present call, W5AE.

Some time ago (August 1979), we ran an antique QSL card for U1AD for a contact we made with VE5KC (now VE7KC) in 1938. Here is another U1AD QSL card with an interesting story to go with. It is



provided by Charlie Dewey, W0CD, who worked the Leningrad station back in 1937. Charlie writes: "The enclosed QSL from U1AD is not special for where it is from or as rare DX, but may be of interest due to the circumstances surrounding how we 'tail-ended' in those days.

"I was first licensed in 1932 as W9LBM in Jefferson City, Missouri. In those days, DX to me was the West Coast. However, in the 1937 era when I worked U1AD, that was real DX. I was running a 40-meter crystal oscillator, doubler of some kind and a pair of 210's in a push-pull final, (big signal, maybe 60 watts out!), into a Windom, (we called them off-center feeds in those days), for 20 meters. While I had some VK and ZL contacts in the log, Russia was rare for us in central Missouri.

"My log shows I worked U1AD from 10.13 p.m. to 10.23 p.m. June 1 with 4-5-9 both ways for my first European QSO . . . nothing unusual except . . . I asked him to QRX, took the crystal out of my rig, ran a block to a neighboring ham, W9OMG, beat on the door till his landlady let me in, explained to Doc what was going on and watched an listened as he plugged in my crystal, called and worked U1AD! Now that's the way we tail-ended in the old days."

QSL information

Joe Arcure Jr., W3HNK, sent us a note regarding obtaining QSL cards from various Soviet stations. Most of you will recognize Joe's call as one of the busiest of QSL managers, and most likely all of you have had cards that were handled by Joe.

In his letter he writes, "I am not the QSL manager, but I can get UJ8JCQ's card as I correspond with him on a daily basis. In fact, I can get just about any area of the USSR except UA9/UA0, after losing my outlet up there after 10 years of correspondence. I also can get from Franz Josef Land the following calls: UK1PGO, UA1PAL, UA1PAM and UA1OT. I can also confirm JT0GM. My correspondence for nearly 20 years also includes UI8, UM8, UL7, UR2, UQ2, UG6, UP2, UC2, UD6, etc. etc., (also U0Y Zone 23).

"All I ask for are the following: Depending on how many cards are sent to me, a good supply of #10 SASEs with the call sign of the U.S. station on each envelope, and either two 44-cent stamps or one "green stamp" to cover my postages. All cards go direct and no bureaus are involved. I do *NOT* guarantee any card, but after this many years, my track record is pretty good."

Joe did not state if it were two stamps or one "green stamp" for each card, but use your judgement. Remember, Joe is doing you a favor in helping you obtain those delinquent Soviet QSL cards.

If you check your Callbook for the address for QSL manager JF2QHC, (for EL2FJ), you will notice that there is no listing. We received a letter from Bill Snyder, KF8N, who gives the address for JF2QHC as follows: Nobuhide Tateyama, 1541-5, Ohyashiki Nakashidami, Moriyama-ku, Nagoya-shi, JAPAN 463.

In addition to the address supplied by Bill KF8N, there is also a P.O. Box address for JF2QHC. See this listing in QSL routes.

Ron Wright, ZL1AMO, who has been on many DXpeditions, has the logs for the following operations:

VR6HI	March-April 1979
ZK1MB	August 1979
ZK2EA	August-September 1980
A35EA	August-September 1980, March-April 1985
5W1CW	August-September 1980
H44RW	April-May 1981
VK4ANS/LH	July 1981
YJ8RW	November-December 1981
ZK1CQ	August 1979, April 1982
ZL1AMO/C	November 1980, March-April 1983
ZK9RW	October 1983
ZL8AMO	October 1983
ZL7AMO	May-June 1984
FW0BX	October 1984

QSL routes

A22ME	—AK1E
A22TE	—AK1E
A35EA	—ZL1AMO
AH2U	—K9XR
BV0AC	—JA9AG
C6ABA	—G3AMR
C21NI	—*(See Note 1)*
C31MD	—FE6AJA
C50RCL	—CT1ASY
GC3SAS	—VE3FOI
CN8EL	—W2PD
CO5GV	—W3HNK
CT2CB	—N2DUR
CX4GL	—*(See Note 2)*
CX5BW/D	—CX1AA
CX9AAK/D	—CX1AA
CX9AU	—CX2SA
D68AM	—WB2OHD
D68AR	—F6ACB
DJ0SB/C6A	—DJ0SB
DL7AH/3X	—DL7AH
DL7FT/SV9	—DL7FT
DP0GVN	—DJ4SO
DX1N	—JH3OII
EA9KF	—WA6OTU *(See Note 3)*
EC9FS	—EA9IB
EL1G	—WD9IDS
EM3W	—UZ3AXJ
EM4BMG	—UZ3AXJ
EM5BYY	—UB4YZZ
EM5T	—UT4UWV
EM6AAK	—UZ6AWA
EO1AOK	—UZ1OWA
EO1AZK	—UZ1ZWX
EO1AZM	—UZ1ZZZ
EO2QGL	—UQ1GQF
EO3ALS	—UZ3LWA
EO3ATD	—UZ3TWT
EO3AWK	—UZ3WWW
EO3AYB	—UZ3YWA
EO5BIM	—UB4IWA
EO5BQM	—UB4QWP
EO8M	—UM9MWA
EO9ACS	—UZ9CWW
EO9AYB	—UZ9YWA
EO0AAK	—UZ0AWB
EP2SV	—K6KM
ER3A	—UZ3AZO
EU1O	—UO1GWW
EU1Q	—UQ1GWW
EU1R	—UR1RWN
EU2P	—UP1BWW
EU8T	—RT4UW
EU8D	—UD7DWA
EV4AS	—UZ4SWM
EV4AW	—UA4WE
EV6TA	—UZ6YWJ
EV9AW	—UW9WR
EW1AA	—UZ1AWT
EW2C	—UC1AWC
EW6AA	—UZ6AWJ
EW7BF	—UB4FWW
FG0BKZ/FS7	—FE6AJA
FG0HVL	—FE6AJA
FG0HVL/FS	—FE6AJA
FG0HVM	—FE6AJA
FG0HVM/FS	—FE6AJA
FG/K2BS/FS	—W2GHK
FG/W0RLX/FS	—W0RLX
FG4CP	—FG7BT
FM4CT	—N7RO
FM5WD	—W3HNK
FM5WE	—FM7WE
FM0HVL	—FE6AJA
FM0HVM	—FE6AJA
FT8YY	—F2MO
FY0HVL	—FE6AJA
FY0HVM	—FE6AJA
GB2PX	—G3XTT
GB2SDD	—GW4HOQ
GU5CWW	—K6KM
H5AQ	—ZS6BWD
HC5EA	—K8IJG
HH2CQ	—WD4IKI
HI0B	—HI8IH
HK5ISX	—NJ5X
HK0HEU	—WB2CZB
HS4AMS	—W7PHO
HW5GE	—TK5CI
HW5LJ	—TK5UC
HW5NJ	—TK5JN
II8CS	—I8WYD
IR8CS	—I8LWL
IY4FGM	—I4IKW
J5WAD	—W6CNA
J39CM	—WB2LCH
J41SV	—SV1OI
J73D	—W2OB
J73LC	—KF4IL
J73RM	—VE3DFD
J87GL	—K0GVB
J87JCG	—KA9JCG
J87TIY	—WB9TIY
J87VV	—KB9AW
J88AQ	—W2MIG
J99A	—TI2BR
JR8BUU/5N0	—JA8FCG
JW1NQ	—DL1HH
JW5E	—LA5NM
JW0EQ	—LA5NM
K1MM/SV5	—K1MM
K4UEE/J8	—K4UEE
K5KG/VS6	—K5TU
K5LZO/KP5	—K5LZO
K5BA/KP2	—KU2Q
KA2DIV/V2A	—WB4OSN
KC6MR	—JJ1TZK
KC6MR/KX6	—JJ1TZK
KD7P/NH4	—KD7P
KD7P/KH4	—KD7P
KK9A/PJ7	—KK9A
KK9A/VP2E	—KK9A
KV4FZ	—W3HNK
N1AAX/PJ4	—K1RIF
N5CJN/5N1	—K4ZKG
NR5M/KP5	—K5LZO
OX3OA	—OZ1FAO
P29KJ	—VK9NL
P42J	—W1KDD
PT7SD	—WB8SSR
S42FXT	—VE3FXT
S8FXT	—VE3FXT
SV0AC/SV9	—WB4GCP
T30ZK	—JJ1TZK
T32AR	—W0RLX
TG0XHQ	—JA1FGD
TR8DM	—F5CY
TR8DR	—W2PD
TR8IG	—N6CW
TR8JD	—FE6AJA
TR8YL	—FE6AJA
TR0AB	—FE6AJA
TU2BR	—KN4F
TU4BR	—KN4F
V2ACW	—WB4OSN
V2AZM	—WB8SSR
VE3KFE/4U	—VE3PET
VI3XB	—VK3XB
VP2EAA	—W0RLX
VP2EAG	—KJ0D
VP2EC	—N5AU
VP2EH	—N5AU
VP2EW	—N5AU
VP2EZ	—AA4GA
VP2MP	—W2KF
VP2VEG	—W0DVZ
VP2VIP	—KP2AJ
VP5GEX	—K0GVB
VP5SBX	—KC2RS
VQ9NC	—WA4MQW
VQ9YR	—KA4SPA
VR6AB	—ZL4DW
VR6BR	—KA9W
VU2YOU	—N3US
W9NUF/PJ3	—K9QVB
WP4F	—WP4AQK
XE1FR	—W5QK
YS1UL	—WA0JYJ
YS9CHE	—WA0JYJ
YW5R	—YV5HUJ
ZC4CN	—G3SNN
ZC4CZ	—G4MGQ (or G8MWS)
ZC4RM	—G3EMY
ZC4ZN	—PA0GMM
ZF2AQ	—WA3YJA
ZF2AY	—K9LA
ZF2HI	—KZ2E
ZP5XDW	—N4DW
ZS3KL	—K1ZLA
ZS4MG/H5	—ZS4MG
ZV9ZZ	—PY5IW
1S1CK	—WB0TEC
3X0HBG	—F0GTI
4K1A	—UA3GD
4K1F	—UQ2GAG
4N4EXA	—YU4EXA
4U1ITU	—*(See Note 4)*
4X4NJ	—WA4WTG
5B4LP	—KA3FIB
5H3QM	—VE7QM
5N9GM	—I8XIU
5T5CJ	—W4BAA
5T5RY	—F6FNU
5V8WS	—DJ6QT
5W1EJ	—W0WP
5W1FC	—WA6VNR
6W1DY	—VE4SK
6W1LL	—DL1HH
6W1NQ	—DL1HH
6W2EX	—F6EYS
6Y5FS/KP1	—GW3YDX
6Y0NR/KP1	—6Y5NR
8Q7GW	—W9GW
8Q7RD	—DF2RG
8Q7YL	—JA1AEQ
9D5A	—K6KM
9H1GX	—G4WFZ
9M2HB	—N4FFN
9M6YY	—K5YY
9N1AW	—W1GAY
9N1NFO	—W1GAY
9N38	—W1GAY
9Q5CT	—AK1E
9U5JB	—ON5NT
9X5AL	—SM5IR
9X5WB	—WB6VKD
9Y4F	—VE7DRW

BY5RA	—PO Box 730, Fuzhou, PEOPLE'S REPUBLIC OF CHINA
C21DX	—PO Box 225, REPUBLIC OF NAURU
CM8AR	—PO Box 9028, Havana, CUBA
CO7FM	—PO Box 247, Avila, CUBA
CT3FU	—PO Box 1, Norwich NR2 1TL, ENGLAND
D68AZ	—PO Box 410, Moroni, COMOROS
EA9KD	—PO Box 291, Ceuta, SPAIN
EL2AC	—PO Box 58, Monrovia, LIBERIA
EL2CJ	—Nobuhide Tateyama, PO Box 45, Moriyama 463, JAPAN
EL2FJ	—Nobuhide Tateyama, PO Box 45, Moriyama 463, JAPAN *(See Note 3)*
EL2P	—PO Box 1929, Monrovia, LIBERIA
EL8M	—PO Box 707, Monrovia, LIBERIA
FO0XX	—YASME Foundation, PO Box 2025, Castro Valley, CA 94546
FR4ZD	—94727 Etang Sale Lesbains, REUNION ISLAND
FR7ZD	—94727 Etang Sales Lesbains, REUNION ISLAND
FW5AF	—F Catala, PO Box 92, Mata-Utu, WALLIS ISLAND
HC1BW	—Roy Gould, PO Box DX, Stow, MA 01775
HC5NAI	—PO Box 815, Azoguez, ECUADOR
HH7TV	—Yves Patrick de Verteuill, Grande Anse, Abricots, HAITI
HL4XM	—PO Box 211, Kwagju 500, KOREA
HP1XFF	—Box 1748, APO Miami, FL 34003
J6LNU	—PO Box 611, Castries, ST LUCIA
J73AU	—PO Box 389, Roseau, DOMINICA
KB6DAW/KH2	—Ed Campbell, 300A Redova, APO San Francisco, CA 96334
OD5AS	—PO Box 121, Tripoli, LEBANON
OX3HX	—Renna Nhamenkensvej, PO Box 22, Godthaab DK3900, GREENLAND
P29PR	—R.E. Parkes, PO Box 2778, Boroko, PAPUA NEW GUINEA
PY0FNT	—PO Box 4411, Recife 50000, BRAZIL
RK0A	—DOSAAF Sport Technical Club, PO Box 11973, 660028 Krasnoyarsk-10, USSR
SV5TS	—PO Box 251, 85100 Rhodes, GREECE
SV5RX	—PO Box 45, Zante Island, 29100 GREECE
SW2XR	—PO Box 33, Kilkis, GREECE
TT8CW	—Jacques Calvo, PO Box 70, 91605 Savigny Cedex, FRANCE
UA1OT	—PO Box 261, Rovno 266000, USSR
UB4JWF	—DOSAAF Sport Technical Club, 12 Chevhov St., 334202 Talta, USSR
UK0AAB	—DOSAAF Sport Technical Club, PO Box 11973, 660028 Krasnoyarsk-10, USSR
UK0AWB	—DOSAAF Sport Technical Club, PO Box 11973, 660028 Krasnoyarsk-10, USSR
VP8ALJ	—Mario, PO Box 68, Port Stanley, FALKLAND ISLANDS
VP8BDM	—Pete, PO Box 217, Port Stanley, FALKLAND ISLANDS
WB5YWU/HR1	—Gary Kessler, Dept COM, Minas de Oro, HONDURAS
WP2ACV	—PO Box 7631, St. Thomas, VI 00801
XX9WW	—PO Box 922, MACAO
YC1NDU	—PO Box 392, Duri, Sumatra, INDONESIA
YD5QYM	—J.L. Gunarat, II, Manado 95115, INDONESIA
YI0AY	—PO Box 5864, Baghdad, IRAQ *(See Note 6)*
Z21EI	—PO Box 2234, Bulawayo, ZIMBABWE
ZC4ESB	—JSB, BFPO 53, c/o BFPO London, ENGLAND
ZD7AL	—Mike, PO Box 25, ST HELENA ISLAND
ZD7XY	—PO Box 25, ST HELENA ISLAND
ZD8LA	—L. Aylott, 1 Kennedy Close, Oakham, Rutland, Leics., ENGLAND
ZK2IE	—PO Box 37, NIUE ISLAND
4K1C	—A. Baksakov, PO Box 204, 443010 Kuibyshev-10, USSR
5H3DG	—PO Box 6306, Dar-es-Salaam, TANZANIA
8Q7AC	—PO Box 0207, Naifaru, MALDIVE ISLANDS
9M2CO	—Adrian Ooi Cheong Ban, PO Box 10777, Kuala Lumpur, WEST MALAYSIA
9M8LN	—Via ETS 24 SSB Miri, Sarawak, MALAYSIA
9V1VP	—Bob Furzer, Jahnstrasse 16, D-6365 Rosbach 1, WEST GERMANY

NOTES

1) JJ1TZK handles QSL cards for C21NI during the on or about operation of 05 March.

2) Use Callbook address only — no bureau.

3) New address for WA6OTU: Mark Beckwith, 789 Brookside Lane, Sierra MAdre, CA 91024.

4) For the operation by DF2PI and DF7PN for the period 28 February through 03 March. QSL via DF2PI; the operation on or about 16 February goes as AA4V.

5) This is the address for JH2QHC, see also comments under QSL Information.

6) Send IRC's only. Do not send "Green Stamps".

Thanks to the following contributors for this month's column: N1CIX, W3HNK, W3YX, W5AE, KA6A, W6FGE, W6YFW, W7AMX, KF8N, W8TN, W0CD, Carolina DX Association (W4WMQ), Kansas City DX Club (AB0X), Southern California DX Club (W6ABW), *DX News Sheet* (G4DYO), *The Long Island DX Bulletin* (W2IYX), *The DX Bulletin* (K1TN), and *QRZ DX* (W5KNE). Good DX to you es 73! de John N6JM. □

AEA equipment review

Doctor DX

It was a sleepy Sunday afternoon and 20 metres, which had produced its usual morning flurry of local activity, had just died out. Not even a Woodpecker from one end of the band to the other. Skimming over 15 and 10, the result was the same. One weak JA on 15 metres, but even he wasn't getting any answers to his CQ calls!

What to do? I didn't feel like wasting the afternoon by snoozing in the sunshine. The wife had taken the harmonics to visit grandma, but the next-door neighbour was spoiling the tranquility of the day with his lawn mower . . . a pity there are no "audio inspectors."

With little else in store and the prospect of finding myself at the top of the 80-footer trying to fix that loose balun if I didn't think of something soon, I decided to stroll down the road and visit Bob — my very own source of, among other things, RF breakthrough and new antenna ideas.

Bob's a bit of an experimenter; likes building odd bits and pieces. His last effort was a CW keyer that did just about everything except write out the QSL cards, so I was keen to see what he had been up to since we last met.

No new antennas, I observed as I wandered towards his garage shack, so he must be working on something inside. But no . . . to my amazement and, understandably, deep shock, he was busy working a pile-up on the bottom end of 10 metres! On CW! I hadn't even thought of checking out the CW end of the band. Shame, shame, shame.

A new transceiver, too! His homebrew techniques are obviously coming together . . . not too many knobs and gadgets, but it seems to be doing the job. "Gidday, Bob. Working any rare ones?"

"Well, actually, I'm just brushing up on my CW contesting skills . . . take a look at the log."

Strike me pink! He'd worked almost 100 countries on 10 metres alone in the last three hours! Surely that new TET beam can't be *that* much better than my good old tribander?

"Mind if I have a crack at a few, Bob?"

"No, go ahead. I was just gonna get up and make myself a brew anyway. Haven't seen the wife all day. Think she's packed up and left me, but the bands are open so it doesn't really matter."

As I slipped the headphones on, I had the funny feeling that things were not all roses at Bob's place. Anyway, that's not my problem . . . let's get stuck into a few of these hot contesters. Contesters? What contest is on in the last week of December? Must be one of the little ones I guess. Still, what the heck? This keyer of Bob's sure is a ripper.

I wound across the band, passing over what sounded like a massive pile-up on 28.050, and heard a UA6 station calling "CQ TEST" about 20 kHz up. Wrapping my fist around the paddle, I quickly shot my call back. "UA6AAY UA6AAY DE VI3CE VI3CE VI3CE KN".

"VI3CE DE UA6AAY UR 59961 K". A bit brief, but at least I got a 59. OK: "UA6AAY DE VI3CE TNX 69951 UR 59901 QSL KN".

"QSL QSL QRZ DE UA6AAY UA6AAY TEST". Oh well. Must be one of these hard-nosed contestors who'll only chat when there's nothing else to do. Maybe it's a Russian contest? Now, who was that causing the pile-up on 050 before?

The pile had been reduced a little, but it was still hard to hear who was in the middle of it: "QSL599150 QRZ"; "QSL 599151 QRZ"; "UR CALL AGN WA2?"; "QSL 599152 QRZ". Hmmmm . . . another super-keen contester, is it worth the effort? I suppose so: "VI3CE"; "VI3CE".

"VI AGN PSE . . . VI QRZ". I'm in! "DE VI3CE VI3CE UR 59902 59902, UR CALL PSE". "QSL DE VP2EKB 599153 QRZ TEST".

Well, Anguilla eh? Haven't heard anyone from there for ages. Funny, I thought they only went out there for the big ones. Where the hell as Bob got to? He'll know what's going on for sure.

"Well, what d'you think?", Bob slyly asked as he entered the room with a mug of coffee in his hand and a spreading grin on his face. "Isn't she a beauty?"

I looked at his "homebrew" transceiver again and thought to myself: It's nothing special really . . . "Yeah, Bob. Impressive stuff, I guess. But how come you get so much better propagation than I do?"

"Propagation? I haven't even got an antenna connected! You've been working The Doctor!"

"Doctor? Doctor who? What the hell are you talking about Bob? Are you trying to tell me I didn't work that UA6 station . . . or the VP2 in Anguilla?"

"Oh, no . . . you worked them all right. It's just that they're not really there. I mean, they're all inside my computer."

Now I was really confused. I mean everyone knows computers can do the odd bit of code, but we were talking about band noise, interference and fair dinkum QSOs here. None of your random character sets to fool this boy.

"Come on Bob. I think you'd better explain. I'm totally lost."

"You're not alone, Tony," he said. "Just about everyone who's been into the shack in the last week has been fooled by this one. It's the Doctor DX cartridge from the States that plugs into my Commodore 64 computer."

Doctor DX

Doctor DX is a new and revolutionary amateur radio program designed and marketed by Advanced Electronic Applications (also known in the USA as "AEA").

It's actually a couple of cleverly programmed EPROMS, backed up by some pretty neat ICs, that have the end result of letting you chase DX on CW without disturbing the ionosphere. As the manufacturer boasts in the promotions for Doctor DX:

Propagation

Maximum Usable Frequency from Burbank, CA
(courtesy of W6LS)

The numbers listed in each column are the Maximum Usable Frequency (in megahertz) for contacting five major areas of the world (Nairobi, Tokyo, Melbourne, Frankfurt, Rio de Janeiro) for low fire angle antennas.

You can get a free *complete* set of these predictions for low angle antennas, Maximum Usable Frequency (MUF) and Frequency of Optimum Transmission (FOT). Requests should be sent to Bill Welsh, W6LS, 2814 Empire, Burbank, CA 91504. Each request should be accompanied by a self-addressed stamped (54¢) envelope at least 9" × 11½".

JULY 1985

UTC	AFRI	ASIA	OCEA	EURO	SO AM
0100	11.9	18.8	22.6	13.5	18.0
0200	10.3	19.2	22.4	13.0	18.0
0300	10.8	20.3	22.4	12.8	16.7
0400	15.0	19.9	22.3	13.2	15.0
0500	15.8	19.6	21.6	13.9	13.8
0600	13.9	18.0	19.8	13.7	12.6
0700	12.2	16.9	17.5	12.6	10.9
0800	10.7	16.4	15.3	11.6	9.6
0900	9.8	15.6	13.7	10.8	10.2
1000	9.8	14.2	12.7	10.5	13.1
1100	10.7	12.9	12.5	11.6	12.7
1200	12.2	12.3	12.6	12.7	13.3
1300	13.9	12.6	12.7	14.5	15.5
1400	15.6	13.8	13.0	16.3	17.9
1500	16.6	15.9	13.4	17.5	18.5
1600	16.9	15.1	13.3	17.6	18.0
1700	17.1	14.7	12.5	17.5	18.2
1800	17.4	14.9	11.7	17.9	19.8
1900	17.7	15.9	12.3	18.5	21.7
2000	17.7	17.9	14.7	18.7	22.7
2100	16.3	19.6	17.8	18.4	23.1
2200	15.2	20.3	20.2	16.1	21.5
2300	14.2	20.0	21.7	15.0	18.8
2400	13.4	19.2	22.4	14.1	17.7

- Go on DXpeditions from your shack!
- Operate any time you want!
- No landlord problems!
- No television interference!
- No radio required!
- No antenna!

Doctor DX is a DX simulator that lets you operate from just about anywhere your little heart desires. Ever wondered what it would be like to fire up from Mozambique? Or perhaps Albania is more to your liking. With "The Doctor", you can find out without ever leaving the comfort of your shack.

It sounds pretty incredible. And perhaps that's why so many people have been fooled by this program. There is just so much realism there that we of the daydream fraternity have a hard time believing that it's not all happening.

Doctor DX plugs into the cartridge port of your Commodore 64. The only other peripherals required are a screen (with audio) and a key or keyer.

When the program is initiated, the screen display asks for the coordinates of your location. These can be either the latitude and longitude of where you are . . . or those from somewhere you might like to be.

It then asks that you set up the correct time of day . . . again, this can be either the actual time or the time you'd like it to be . . . say the best time for 160-metre DX operation!

You then set up the power output. The choice is between a QRP output of 2 watts, a 'novice' output of 20 watts and a full power output of 200 watts.

You then set up the band on which you wish to operate: they're all there . . . all the DX bands from 1.8 to 28 MHz.

What you will hear is entirely dependent on what band you have selected, where you have told "the doctor" you are, and what time you've claimed it is.

Like the real stuff, propagation in the Doctor DX cartridge is set up to simulate what you would actually hear at that time of day, on that band, in that part of the world . . . at the peak of the sunspot cycle!

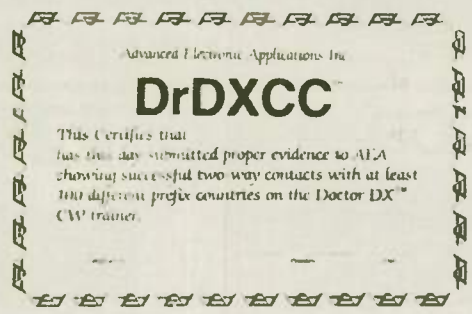
Talk about a walk down memory lane! 10 and 15 metres are wide open during daylight hours; 160, 80 and 40 bound in during the evening; and, of course, good ol' 20 metres hardly ever stops running. Remember how it was?

But it doesn't end there. The program also generates random call signs . . . but not *that* random. The call signs you hear are weighted according to the number of amateurs in each country; for example,

DOCTOR DX CONTEST BOX

TOP SPRINT SCORES	TOP MARATHON SCORES
1. _____	1. _____
2. _____	2. _____
3. _____	3. _____
4. _____	4. _____
5. _____	5. _____

WILL YOUR CALL APPEAR HERE?



you'll hear a lot of W's and JA's, but not many XU or BV stations. The manufacturer guarantees that at least one station *will* appear from each of the 304 'CQ' countries included in the program. That's a damn sight more than IDXF could ever say. HI!

The stations you work will also be influenced by where you tell the computer you are located. If, for instance, you say "VK", you will hear mainly VKs and ZLs on 80 metres. If you say you're in "ON", you'll hear mainly Europeans on 80.

As you slip up and down the CW segments of each band, you also notice changes in the stations you're hearing. As you would find on the real bands, the low end is occupied by the high-speed operators — the 30 and 40 wpm boys. As you move up the band, you start to hear a few slower stations.

You can't, of course, have a QSO with these stations — although I guess it'll only be a matter of time before someone works out a way of doing that too! What you get is a call sign, a signal report and a serial of the type used in CQWW — the zone of the station you're working. If you miss the report, you can ask for a repeat. You can also ask the other station to increase or decrease sending speed (QRQ or QRS).

The function keys on the Commodore 64 are used as the controls for tuning rate: F1 tunes up the band at 20 kHz/second; F3 tunes up the band at 2 kHz/sec; F5 tunes down the band at 20 kHz/sec; and F7 tunes down at 2 kHz/sec.

The program display keeps you constantly in touch with everything that's going on around you: the band you are on; the frequency down to the nearest 100 kHz; whether you're transmitting or receiving; what power output you're using.

An on-screen log shows how many stations you have worked on each band, how many countries and zones those stations were in, your QSO rate (contacts per hour), the UTC time, date, your longitude and latitude plus how you are getting on in the contest.

Even the length of the contest itself can be varied — from a one-hour quickie to a mini-marathon.

To illustrate just how the program works in practice, here's what Craig Clark, N1ACH, had to say about it in **Ham Radio** magazine:

"Now that everything is all hooked up and location, time of day, power and frequency (160 metres of course) are all programmed in, it's time to get this mock contest started. The first station worked was a K2, and I even got a 599! Hey, I'm off and running!

"The first thing to decide is whether I'm going to find a clear frequency and call CQ or do a 'hunt and pounce' contest. Since I want to try both, I start by calling CQ. After two calls, a VE3 comes back with a 589 in zone 5. I quickly work another 10 stations before a VE2 starts calling CQ a few kHz up from mine.

However, I hear a weak call, and ask QRZ? By golly, it's my first DX, an HI7. He gives me a 589 and zone 8. I shoot back his report only to have him ask twice for a repeat. Repeat? I am talking to a computer aren't I? After a couple of minutes, I'm not so sure.

"Now it's time to do some looking to see what I can find. I change bands and start at the bottom, looking up frequency. The first station I tune by is running at least 40 wpm. I call him twice only to have him go back to two other computer calls. Finally he calls me and I put another into the log.

"After about an hour's worth of operation it's time to see how I've done. I have 28 contacts on three bands, with the majority (22) on 160 metres, 4 on 40 metres and one TI3 on 80 metres. I'm sure I would have done better during my one-hour sprint if there'd been no phone calls or other interruptions.

"My QSO rate varied from 35 to 45 QSOs per hour while I was able to dedicate full time and attention to the test. I feel quite strongly that with a little practice my rate during actual contests would improve dramatically."

So "the doctor" offers at least an interesting and different way to improve

(please turn to page 44)

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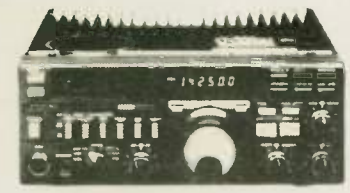

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B1016	2M	Yes	10W	160W	20A	$249
B3016	2M	Yes	30W	160W	17A	$199
C22A	220	Yes	2W	20W	5A	$89
C106	220	Yes	10W	60W	10A	$179
C1012	220	Yes	10W	120W	20A	$259
D24	440	No	2W	40W	8A	$179
D1010N	440	No	10W	100W	20A	$289

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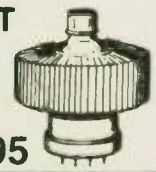

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AMSAT OSCAR

Dr Norman L. Chalfin, K6PGX

In mid-March we spent a weekend attending the Fourth Biennial Communications Law Symposium presented by the Communications Law Center and the International Bar Association at Schoenberg Hall, UCLA. The general topic of the meeting was International Satellite and Cable Television.

A major area of discussion was the Presidential Determination No. 85-2, dated 28 November 1984, in which the Department of State and the Department of Commerce were jointly directed "to inform the FCC of criteria necessary to ensure the United States meets its international obligations and to further its telecommunications and foreign policy interests".

The "determination" came about as a result of a rash of applications from private and independent sources to the FCC for approval of proposed international satellite communications systems.

The United States is a signatory to an international agreement which set up INTELSAT. INTELSAT is an international cooperative which operates International Communications Satellite Systems for its 109 member countries on a not for profit basis. Seventy-four letters were sent by 63 of these member countries to the FCC protesting the proposed entry of private companies into the international satellite communications markets. Thirty-seven letters were sent by 36 of the members countries to the State Departments, also protesting the action set up by the "Presidential Determination". The fear is, principally among the Third World countries, that they would be cut off from their present low cost advantage in satellite communications which they enjoy as INTELSAT signatories — or "parties", as they are called.

The applicants for the international satellite communications slots include: Orion Satellite Corporation; International Satellite, Inc.; RCA American Communications, Inc.; Cygnus Satellite Corporation; and Pan American Satellite Corporation. The latter has used the designator, "PanAmsat". AMSAT has advised them that the use of PanAmsat would be likely to be confused with the AMSAT registered trademark. Two applications by Systematics General Corporation have since been withdrawn.

It seemed to us that with all of these satellite proposals and their proposed capacity, AMSAT and its international affiliates might seize an opportunity to persuade the applicants to provide a transponder aboard their birds for the worldwide amateur communications fraternity.

Orion proposes a pair of in orbit satellites and a ground spare in which each satellite has 22 transponders with a bandwidth for each of 36 MHz. The Orion Systems are proposed for the 11-14 GHz range.

ISI has proposed to place two satellites in orbit with a ground spare. Each satellite would have 32 transponders with 54 MHz bandwidth each operating in the 11-14 GHz band.

Cygnus has proposed two in-orbit satellites and a ground spare, each with 16 transponders having bandwidths of 54 MHz in the 11-14 band.

RCA American proposes a system with six transponders for international communications on their already authorized SATCOM VI satellite. This would operate in the 4-6 GHz range.

Pan American has proposed a single satellite in orbit with a ground spare. Of the satellite's 36 transponders, 12 with 72 MHz of bandwidth each, would be used for international traffic between North and South America and the Iberian Peninsula. The remaining 24 are planned for domestic South American service. They would uplink at 6.4-6.9 GHz and downlink at 10.7-11.2 GHz.

The "Determination" was issued with the stated purpose of encouraging competition in the international satellite communications field. With the low cost of INTELSAT's services on a non-profit basis for its member nations and the anticipated start-up costs of new satellite enterprises, one wonders if encouraging competition is all there is to it.

A/O-10 has revised schedule

Because of the changes in sun angle and the need for making thermal adjustments which becomes more important as the season continues, the A/O-10 operating schedule will be changed to the following Mean Anomaly Points:

032-119	Mode B
120-137	Mode L
138-200	Mode B
201-031	OFF

If the term Mean Anomaly Points is unfamiliar to you, the following explanation may help:

The orbital ellipse of the A/O-10 spacecraft has been divided into 256 points for the purpose of computer identification of the location of the spacecraft in its orbit at any time. At Perigee, the point in orbital ellipse nearest Earth, the count is 0 or 256. At Apogee, the orbital point at which the spacecraft is farthest from Earth, the count is 128.

On 31 March 1985, A/O-10 for the first time reached an Apogee Latitude in the Southern Hemisphere. Because of the angle of the orbit, there will be further incursion into the Southern Hemisphere. Had not the orbital inclination of 26° — rather than the desired 57° angle — been achieved, the entry into the Southern Hemisphere at apogee would have occurred a great many years later. However, it will be back into the Northern Hemisphere again some time later.

Phase IIIC will probably have four transponders. There will be a Mode B similar to that on A/O-10 with 70cm uplink and 2-meter downlink.

A new Mode JL transponder is being planned to combine uplinks from 2 meters and 24cm into a 70cm downlink.

The third transponder will be a Mode L Packet transponder with 2400 bps FSK on the uplink and generate a downlink signal at 400 bps FSK.

The fourth transponder, which as yet has not been given a Mode character, will use a 70cm uplink and generate a 13cm downlink with the modulation presently being proposed as FM 20 kHz wide.

The future satellites amateurs can be looking forward to include the Phase IIIC mentioned above, with a schedule mid-1986 launch; the JAS-1 from Japan; the Arsene from France — a companion to Phase IIIC; a repeat of the MARCE experiment out of Marshall Amateur Radio Club to getaway on an early forthcoming shuttle; and PACSAT, the "Flying Mailbox". AMSAT UK is being urged to consider a third UOSAT.

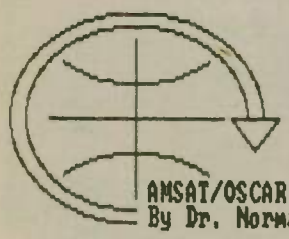
Dr. Tony England, W0ORE, is expected to be the next ham in space from the shuttle within the year. Dr. Owen Garriott, W5LFL's next ham in space mission has been postponed for at least a

year. He is involved in the NASA Space Station Project in the interim. Also coming along are World Space Foundation's Solar Sail Project and The Independent Space Research Group's Amateur Space Telescope Project.

For those of you who may have tried the computer program we published recently in this column to produce an AMSAT LOGO, there was a gremlin-generated error. The display was on a 200 640 pixel screen, *NOT* 600 × 640 as published.

We have added a new logo program which produces a color display in a medium resolution format (200 × 320 pixels). The new program generated the AMSAT/OSCAR portion of the display entirely in BASIC.

For anyone who would like to use the logo in connection with AMSAT/OSCAR displays or club meetings, there is a slide of the display as it appears on a color computer screen available for an SASE and two bits (the coin type, not the computer type).




```
10 REM *** A-O COLOGO ***
15 PI=3.141628
20 REM ** Set Medium Resolution **
30 CLS
40 KEY OFF
50 SCREEN 1, 0
55 COLOR 9, 2
60 '
80 CIRCLE (110, 92), 80,, 0, 4.71239
90 CIRCLE (110, 92), 70,, 0, 4.71329
100 LINE (172, 92)-(180, 92)
105 LINE (190, 92)-(198, 92)
110 LINE (172, 92)-(185, 104)
120 LINE (198, 92)-(185, 104)
130 '
140 CIRCLE (110, 17), 70,, 3.9793, 5.4555
150 CIRCLE (110, 167), 70,, .8277, 2.3139
160 '
170 LINE (110, 40)-(110, 146)
180 LINE (54, 92)-(166, 92)
185 LINE (22, 17)-(312, 172),, B
190 LINE (17, 12)-(317, 177),, B
200 LINE (111, 158)-(119, 126)
201 LINE (119, 126)-(127, 158)
202 LINE (115, 142)-(123, 142)
203 LINE (130, 158)-(130, 126)
204 LINE (130, 126)-(138, 142)
205 LINE (138, 142)-(146, 126)
206 LINE (146, 126)-(146, 158)
207 CIRCLE (157, 134), 8,, 0, 3.5343
208 CIRCLE (157, 150), 8,, 2.7489, .3927
209 LINE (149, 136)-(165, 148)
210 LINE (168, 158)-(176, 126)
211 LINE (176, 126)-(184, 158)
212 LINE (172, 142)-(180, 142)
213 LINE (191, 158)-(191, 126)
214 LINE (183, 126)-(199, 126)
215 LINE (198, 142)-(206, 142)
216 CIRCLE (221, 134), 8,, 0, 3.1416
217 CIRCLE (221, 150), 8,, 3.1416, 0
218 LINE (213, 134)-(213, 150)
219 LINE (229, 134)-(229, 150)
220 CIRCLE (240, 134), 8,, 0, 3.5343
221 CIRCLE (240, 150), 8,, 2.7489, .3927
222 LINE (232, 136)-(248, 148)
223 CIRCLE (259, 134), 8,, 0, 3 .1416
224 CIRCLE (259, 150), 8,, 3.1416, 0
225 LINE (251, 134)-(251, 150)
230 LINE (110, 150)-(110, 158)
231 LINE (270, 158)-(278, 126)
232 LINE (278, 126)-(286, 158)
233 LINE (274, 142)-(282, 142)
234 LINE (289, 158)-(289, 126)
235 CIRCLE (295, 134), 10,, 4.5, 1.5708
236 LINE (289, 126)-(297, 126)
237 LINE (289, 142)-(297, 142)
238 LINE (297, 142)-(305, 158)
239 PAINT (35, 92)
240 PAINT (315, 15)
```

□

Exchange student phones home

Dave Schneider, WDØENR

A foreign exchange student thousands of miles from home can easily become homesick during her stay in the United States. She is a long way from her family and friends and probably is anxious for a letter from home. Her only chance to talk to her parents is a long-distance phone call. But at $60 for three minutes, how much can she talk?

Through the efforts of an amateur, a girl from Punta Arenas, Chile — who is serving as an AFS student at Waco High School in Olds, Iowa — can talk long and often with her family back home.

Barney Barnum, KAØMTS, who lives in nearby Mount Pleasant, makes his ham shack available every two weeks to exchange student Ljubica Vrsalovic while her parents in Chile go to a neighbor, CE8ECP, on schedule.

Barnum says they can usually make good contact on 14.271 MHz for the duration of their hour-long (or more) conversations.

Both Ljubica and her host family, the Ken Reschlys of Olds, were ecstatic the first time they made contact. "She jumped up and down the first time she heard those familiar voices from back home," said Barnum. Mrs. Reschly added "it came in so loud and clear considering the distance" between Iowa and Punta Arenas, the southernmost city in the world.

Barnum, a member of the Mount Pleasant Amateur Radio Club, has received letters of thanks from the girl's parents expressing their gratitude for the opportunity.

"I really get a lot of enjoyment out of doing it," says KAØMTS. "It's such a thrill to watch that girl sit down in front of the radio, put on those headphones and talk with her folks."

VHF direction finding

Good news if you have ever been tempted to look into VHF-FM direction-finding equipment — those add-on devices work on the marine VHF frequencies as well as the 2-meter ham band. When you're out on the water, you can use your marine VHF direction-finder with any type of marine VHF transceiver; and when you are ashore, you can hook up this same device to work with your 2-meter setup.

More good news. Those new add-on VHF direction-finders will also work quite nicely with handheld sets.

There are five manufacturers I know of who produce relatively inexpensive marine VHF automatic direction-finder devices: Apelco, Regency, Sitex, Intech and Taiyo.

The actual equipment consists of a 4-pole Adcock antenna mounted on a nonconducting fiberglass mast, and a readout unit that interconnects with your existing marine or ham VHF mobile, base or handheld unit. The readout unit consists of indicators that spot the incoming signal direction in either liquid crystal display, pointer needle or LED.

In addition, the more sophisticated units will also feature a digital relative bearing indicator that goes along with the pointer to give a numerical readout of the incoming signal direction.

A loudspeaker is part of this unit, and it lets you hear the incoming signal; and of course, there are intensity controls to turn up the brightness of the display.

One additional feature that might be found on the automatic direction-finder readout unit that attaches to your existing VHF radio would be direction memory indicators that will record three different incoming bearings and store them for future reference to triangulation.

These add-on direction-finders don't have any radio receiver in them at all. They rely on the audio output of your marine VHF set, your ham 2-meter radio, or your marine or ham walkie-talkie. You simply plug the readout unit into the external speaker jack or the earphone jack of your ham or marine set, and the audio output of your existing radio does all the work in determining the incoming bearing direction along with the 4-pole Adcock antenna.

Emergency Position Indicating Radio Beacon that can be tracked down with an ADF

The Doppler principle provides the basic mechanism for the generation of FM signals which contain phase information related to the received FM signal bearing. Your automatic direction-finder will produce a heterodyne signal that will mix with the incoming audio from your radio receiver.

The 4-bay Adcock antenna is electronically rotated by high speed switching of the individual elements. The instantaneous time of arrival of the signal will vary as the function of the physical location of the rotating antenna. This causes the apparent received frequency of the incoming wave to change sinusoidally at a rate equal to the antenna rotation rate. Frequency deviation, "f_d", is given by the relation:

$$f_d \text{ - } \frac{\text{velocity}}{\text{wavelength}}$$

This works out that f_d is the deviation frequency; V is the tangent of the velocity of the circle of rotation and the wavelength. The 4-bay fixed antenna is switched electronically approximately 50 times per second in a circle. With just four antennas, good and precise Doppler information is obtained as opposed to a system that might contain as many as 32 elements in a circle. Over the water, one might expect, with the Adcock 4-bay antenna, plus or minus two degrees at a distance of 50 miles.

Don't get overwhelmed at all of these big words — the system is quite simple to add on to your existing VHF set. The Adcock antenna contains only two cables — the coax cable for the signal, and the control cable that electronically switches the antenna. Both cables go to the back of your automatic direction finder readout unit. A single coax patch cord interconnects your existing VHF radio to the ADF readout unit. Your original VHF marine antenna or 2-meter antenna also plugs into the ADF readout unit, and you can easily switch from the ADF Adcock antenna to your active communication antenna at the flick of a button. Some ADF's also have a built-in relay that automatically switches in your communications antenna for transmit.

Finally, a regular shielded audio cable interconnects your earphone or speaker jack to the input of the ADF readout unit. The audio is then amplified (which is nice for hand-helds) and brought out to the external speaker jack, as well as to the internal built-in speaker on your ADF readout unit.

The only other connection is 12 volts for the ADF readout unit.

The Adcock antenna will accept any frequency from 140 MHz to 170 MHz without loss of bearing accuracy. Each of the rods is approximately ¼-wavelength long, and they are spaced precisely to develop the necessary Doppler shifts for bearing readouts.

The typical current consumption at normal audio levels is less than 400mA for the ADF network. This means you can build up a small 3-amp-hour gel cell battery in a carrying case and tie this system into your hand-held, and walk down the street while trying to T-hunt a hidden transmitter.

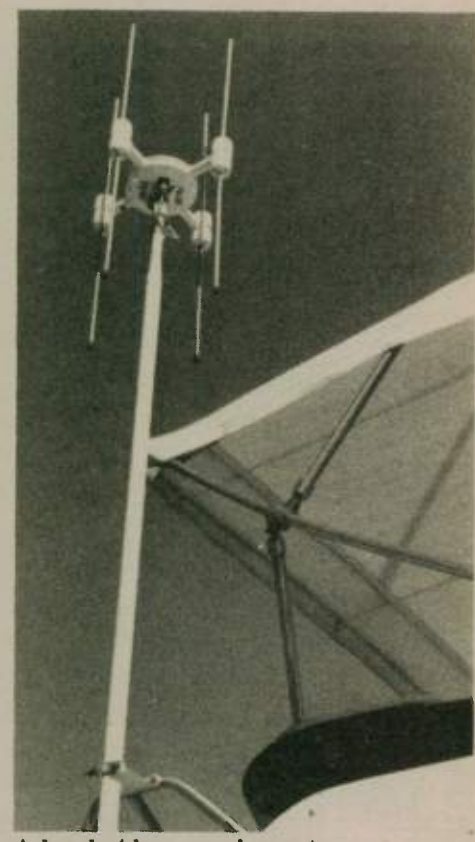
While you might look a little silly with a 4-bay Adcock antenna on a pole above your head, that's the price one pays as a T-hunter. In a marine installation, the 4-bay Adcock antenna is as common as any Loran or sideband antenna.

The 4-bay Adcock antenna offers unity gain to incoming signals. You will probably notice a drop in signal strength when you go from a beam antenna down to your Adcock assembly for direction-finding. However, you will actually notice an increase of reception when you go from a hand-held "rubber duckie" to the 4-bay elevated Adcock antenna.

One of the biggest problems in VHF direction-finding is multi-path reception of the incoming signal. While your FM receiver has the characteristic to capture the strongest signal and to reject all others, most of the time the direct wave will be stronger than the multi-path wave and you will receive an accurate bearing of the incoming station. At least, this is the case on sea water.

On land, it's a much different story, and you may have to do some repeated bearing taking before relying on any one single bearing if you are stationary. If you attempt to T-hunt with this setup in a vehicle, your best bet is to make sure the vehicle is moving so you can average out the erroneous readings from the true direction of the incoming signal.

In large cities, it's quite normal for the



Adcock 4-bay marine setup

VHF pointer to go literally crazy as you move among the tall buildings. Indeed pointing to the strongest incoming signal, and many times in big cities, incoming signals may be stronger via multi-path than they are directly from the outlying transmitter.

Out on the open road, you can watch the needle faithfully point to the location of the transmitting antenna. Sure, you're still going to get some bending and multi-paths from big mountain ranges, but after awhile, you will finally be able to track down the elusive transmitter.

Listening to the audio input in your active direction-finding may catch you off guard because of the annoying heterodyne tone that accompanies each and every incoming signal. This tone is necessary for Doppler shift operation, and you just have to put up with it.

Some of the better units use audio filters that tend to reduce the tone before it is brought out to the receiver, but nonetheless, the high-pitched sing is always there. You can live with it; and after you have made your bearing determination, switch back to the normal mode from the normal antenna. The tone will cease, and you will hear gorgeous amplified audio.

The offshore ADF unit requires only a few hundred milliamps of current, so you can play a system like this along with a hand-held portable on a gel cell nearly all day at medium audio levels. Using an earphone will prolong the life of your rechargeable battery for longer T-hunts.

Apelco AXL 1500 Automatic Direction Finder that works with any VHF ham radio.

If you are involved in Amateur Radio as well as marine VHF radio search and rescue operations, the VHF ADF will work nicely in your operation. Just remember, when you use it on shore in a fixed location, watch out for momentary false bearings because of multi-path reception.

It's always a good idea to keep your antenna well away from other 2-meter antennas by at least 50 feet to prevent this problem from occurring. You should also make sure your shoreside Adcock antenna is not near any large metal surface that might re-radiate the stronger concentrated VHF signal from the wrong direction instead of the true direction.

Aboard a boat, the system works nice in tracking down anything between 140 MHz and 165 MHz. It also works quite nicely on tracking down the marine VHF emergency position-indicating radio beacon, Class C type, that transmits on 156.800 MHz, the international distress and marine calling frequency.

The beauty of this VHF direction-finding system is that it adds easily to any existing marine VHF or ham radio 2-meter setup. If it takes you more than two minutes to screw on the Adcock antenna element, or more than one minute to interconnect your existing radio to this VHF direction-finding system, something went wrong!

It's a snap to hook up, works with any kind of VHF radio, and you can track down any signal that's our there between 140 MHz and 165 MHz with your existing communications equipment. Oh yes, you can also use this with a hand-held, base or mobile programmable scanner. □

Marquesas Net

If you plan to cruise to the Marquesas, there are two nets that cater to mariners making the crossing as well as mariners close to the islands.

The Marquesas "Coffee Clutch Net" takes place on Mondays, Wednesdays and Saturdays at 1800Z on precisely 14.285 MHz. This net is a good one to check into after you have left the Pacific Coast enroute to warmer waters.

When you are within four days of the Marquesas, tune in 7076 kHz at 1800Z for another local Island net. You will find a friendly gang of fellow sailors ready to welcome you to their tropical paradise.

Remember not to operate your radio any further once you are within the local waters of the host country. You will need to obtain a reciprocal operating permit before continuing to operate in port. You may inquire about how to secure the reciprocal operating permit on these two nets as you approach port. □

Georgia VEC tests

A very successful Columbus (Georgia) Hamfest was held the weekend of 30 March at the City Municipal Auditorium. This is an annual event sponsored by the Columbus Amateur Radio Club.

FCC testing was done by CAVEC Montgomery under auspices of the Central Alabama VEC, Inc. Forty-seven elements were administered with 28 elements passed resulting in 20 upgrades. In addition, two code credit certificates were awarded.

A special *congratulations* to Lex ... Scott, KB4MVC. He came to the session a Novice but left as an Extra Class operator!

Members of the VE team were Chief Examiner Bob Garrett, W4MF: Bobby Chandler, N4AU: Wayne Gentry, AA4BL; Joe Lacey, KB4ALW; Leroy Bell Jr., KA4WZD; Al Erdman, W4CNQ; and Ray Brougher, W4IK. □

10-10 INTERNATIONAL News

Chuck Imsande, W6YLJ
10-10 19636

What is TEN-TEN?

The Ten-Ten International Net, Inc. (or commonly referred to as 10-10) was originally formed back in 1962 as the Ten-Ten Net of Southern California. Its purpose then, as it still is today, was to promote activity and good operating practice on the 10-meter band. During the early years it grew slowly, but by 1975 there were approximately 10,000 members, and the word "international" had crept into the name. Today we are issuing 10-10 numbers in the high 39000 series and number "40000" may be issued very soon!

The Ten-Ten International Net, Inc. is a non-profit entity, incorporated under the laws of the state of California. Ten-Ten has no paid employees. All its officers and managers serve on a voluntary basis and are reimbursed for necessary expenses only.

With the great expansion of the organization in recent years, it has been necessary to go to computer processing of membership records. This has permitted the publication of a Ten-Ten Membership Roster and has facilitated the mailing of the 32-page quarterly 10-10 *International News* to all paid up members. The nominal annual dues of $4 ($5 foreign) provides the funds for the printing, computer processing and mailing of the quarterly *News*. The annual dues also provides funds for membership cards, certificates and other membership services.

Jim Michaels, W6PGM, 10-10 #10, holding a can of Ten Ten Peanuts purchased in Turkey by Brian Tredwell, WV4V, 10-10 #35787, during a recent trip. *(Photo by W6YLJ)*

Each new member is assigned a unique 10-10 number, which is his for life, whether he maintains his dues current or not. Current dues-paying members, in addition to receiving the quarterly *News*, are eligible to participate in various activities and contests.

Ten-Ten has local chapters all over the world. Each chapter has its own plan of organization and requirements for membership. The basic requirement, of course, is that one must be a Ten-Ten member. Many local chapters issue certificates and awards under rules which they themselves establish. As a result, a local chapter may have members all over the world.

If you would like a Chapter Net Guide, listing approximately 200 chapters along with the day and time of their net and frequency, send a #10 SASE to the writer at 18130 Bromley St., Tarzana, CA 91356.

Once a 10-10 member, you can work toward "Bars" which are awarded for having established contact with other 10-10 members on 10-meters. A "Bar" is awarded for each 100 such contacts. When the "500 Bar" is attained, you become a members of the International 500 Club and are assigned an Honorary VP number. There have been almost 1600 10-10 members reach the "500 Bar" so far, and Robert Osborn, WA5JDU, is the present holder of #1 on the TOP TEN Honor Roll, with a total of 14,100 10-10 contacts on record!

Ten-Ten also awards a "Worked All States" Certificate and a "Countries Award" for conformation of QSOs exchanging 10-10 numbers with members in 25 or more countries. As of the date of this writing, a total of 199 certificates for working 25 countries have been issued to date with Helen Tielemann, N9CDO, being the first to receive confirmation of working 115 countries. James Hardy, K4HAV, was #2 and Raymond Huberdault, W1FPH, was #3 to confirm 115 countries. Certificate #4 for attaining 115 countries has just been issued to Michael Davidson, KC5CP. 10-10 is truly "international".

Although receiving "Bar Awards" is strictly on the honor system (confirmation by QSL card is not required), the Worked All States and Country Awards require QSL card confirmation of contacts.

If you are interested in joining the Ten-Ten organization and participating in the fun of collecting 10-10 numbers, 10-10 states and 10-10 countries, as SASE to the writer will get you all the information you need to obtain your own 10-10 number for life. Address: Chuck Imsande, W6YLJ, 18130 Bromley St., Tarzana, CA 91356.

Ten Ten Peanuts

While shopping during a recent business trip to Turkey, Brian Tredwell, WV4V, 10-10 #35787, noticed a can of peanuts on the shelf. He did a double take when he read the label which said in bold English "Ten Ten Peanuts". All other printing was in Turkish. After first announcing the acquisition of his unique purchase to the White House Chapter, his local chapter, Brian sent the Ten-Ten Peanuts to Jim Michaels, W6PGM, 10-10 #10, (Jim is editor of the *Ten-Ten News*), who displayed them at the recent 10-10 brunch and business meeting for all to see.

When asked about his Ten Ten Peanuts, Brian said, "I'm pleased to know my little can of peanuts will contribute to the propagation of 10X and 10 meters." Thanks to Brian, 10-10 #3578, for an interesting twist to Ten-Ten.

10-10 from Jordan

Alan Kaul has received his permanent call of JY9RL and has been operating from the club station in Amman until his equipment arrives and he gets his station on the air. Alan, 10-10 #19628, will be on 10 meters as soon as his equipment arrives. Gerry Gross, WA6POZ, 10-10 #21274, (10-10 treasurer) will be Alan's QSL Manager.

10-10 brunch

The quarterly meeting of 10-10 International Net will be held at 11:00 a.m. on Sunday, 09 June 1985 at Woody and Eddy's in San Marino, California. All are invited to attend. If you live in southern California or will be visiting in the area and would like to attend, contact Norm Lefcourt, W6IRT, 10-10 #14981, at (818) 765-4475 for additional information or reservations.

Record keeping

Many new 10-10 members are interested in how experienced 10-10'ers maintain their records of 10-10 numbers worked. Drop the writer a note with your procedure and experiences in record keeping. If you use a computer and are willing to share your program, be sure to give all pertinent information, such as your computer make and model, cassette or disk, etc.

Keep your dues current

If you have not received your latest copy of the *10-10 News*, it may be that your dues has expired. If you live in the 4th U.S. call district, send your dues ($4) to one of the following District Managers, depending on the state in which you reside: *VA, NC, SC* — Malcolm Spangler, K4KUT, Box 481, Shelby, NC 28150; *KY, TN* — Ollive C. Justice, N4IT, P.O. Box 683, Pikeville, KY 41501; *AL, GA* — Jim Beswick, W4YHF, Rt. 5, Box 77B, Ellijay, GA 30540, *FL* — Dave Buschow, WD4MPG, 7725 Fisher Drive, Falls Church, VA 22043. □

A note on TVI

Alex Calabrese, WA2ADS

I had a terrible TVI problem when I operated on 2 meters on any mode. I interfered with all channels on our local Cablentertainment cable TV system. Even though I feel strongly about the cable industry's responsibility in providing interference-free TV, I must say the local CATV technicians were very cooperative in resolving the problem.

To keep a long story short, the technician suggested disconnecting the cable converter box and connecting the cable directly to my TV. I then operated my H-T and what we found was terrible TVI on channel 2 but none on channel 3 or any higher VHF channel.

The technician said my converter box was a "channel 2" box, and this was why I had TVI on all channels. He suggested I call the cable company and trade my "channel 2" box for a "channel 3" box. This I did, and guess what — no TVI! A fairly simple solution to an annoying problem.

Now if we could only get the CATV industry to stop using carrier frequencies that are in the ham bands (e.g. ESPN locally is on 147 MHz).

— *Shore Points ARC, Absecon, NJ* □

Ohm-Brew Answer

GN-OHM (Gnome)
OHM-GROWN (Homegrown)
P-OHM (Poem)
OHM-LAND (Homeland)
OHM-TOWN (Hometown)
OHM-BREW (Homebrew)
OHM-COOKING (Home cooking)
OHM-RUN (Homerun)
OHM-SWEET-OHM (Home Sweet Home)

TEACHER

Alan Kline, KB1DJ
P.O. Box 54
West Lynn, MA 01905

VE program, Part V

Over the last four months, I have given you some of my observations and recollections as to how we ran the ham community's first large hamfest VE exam session. It was a part of the VE's program history, and I was glad to have taken part in int.

In the eyes of the ARRL and the Boston FCC office, we did a very successful job. After all the sessions were over and all the paperwork returned to the League, I volunteered to be the exam chairman again.

When it was all over, I wanted to get the VE's reaction gained their individual experiences. I couldn't possibly write about all of little problems we encountered. I knew that they would have comments to add to this series, so surveyed them.

I tabulated the final results and sent them out to all the VE's who helped out, even the General Class hams who were the door monitors. A generalized thank you note asked them for their comments, and I enclosed an SASE for their use. Many of them had not realized they had given over 309 elements. Here's what they had to say:

W1HBB: "Exams must be held in a quiet room, as little or no noise as possible. Examinees must be assured the VE's can do the job required, so that the examinees can relax."

KG1U: "We needed four VE's to do all the paperwork. Also the VE manual did not say how many correct answers 74% is."

K1RB: "Answer keys were needed to speed up the correcting of the exams; method used was very time consuming. Must give exams in larger rooms. Please allow for three hours for each session."

W1TUM: "Upgrade card, as supplied by the ARRL, was poorly designed. It was difficult to punch."

KM1Y: "Try not to mix upgraders of different elements. Allow adequate time for those that are taking more than one element."

KJ1J: "Different exam elements should be color-coded. Large sessions should have four VE's, one of whom should be the liaison who has seen all the 610 forms in advance. Could use a Candidate Summary sheet that would show all the different elements an applicant was taking."

KB1DJ: "I should've taken more time to be involved with the actual giving of the exams."

All of the above comments were helpful to me in planning our next large session, but John Maglio, KJ1J, and Bob Burns, K1RB, had some of the best. In a large session, each sitting needs a separate liaison to sit on a subcommittee of just the liaisons. This committee must be involved with all facets of the session.

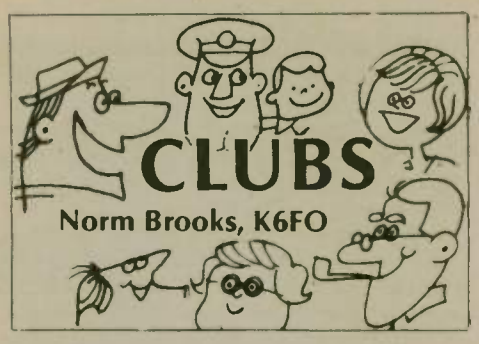
John put in over 30 man-hours of his time checking and tabulating the results of the 309 exams. Prior to the weekend, we had already put in about 25 man-hours. As our goal was to run a successful event, we know we over did it in the rechecking of the paperwork, but we also didn't want to upset any amateur who had upgraded.

Were we successful? Well, I'm sure the 250 hams who upgraded think so. We received over 25 thank you notes from hams all over New England saying so. We received only three complaints, one of which I created. It seems I was joking around outside one of the exam rooms with a good friend who had just flunked the Extra. I said, "I guess you didn't pay the VE's enough." Well, those in the hallway who were waiting for the next exam didn't find it very funny.

Final comments

Now that our exam is over and the 40 pounds of test papers have been sent back to ARRL headquarters, the ARRL can make changes in the VEC/VE program to make it easier for the rest of you to give exams in a most efficient manner. After coordinating the efforts of 21 amateurs to give the 309 exams to the over 250 applicants, I had a great time, and it was fun to become a part of Amateur Radio history.

Very special thanks to my committee of Amanda (N7BI) and Wilson (KA1AE) Smith, and Bob K1RB, who joined the committee late and John KJ1J, without whom I couldn't have completed the exams. And a special thanks to our respective families who put up with us until the weekend was over. □



Exchange papers

It is **Worldradio's** policy to send **Worldradio** to every club newsletter editor who regularly sends us his or her paper. We feel this is a good deal for both of us. The editor gets **Worldradio** and may use anything he or she wishes in the club paper, with the only proviso that **Worldradio** and the original source, if any, be given credit. Similarly, we scan all the papers and republish gems we find there.

We love to see **Worldradio** columns reprinted in club papers, and we hope you editors feel the same way when we use your material.

I have been poking around in our computer printouts and am startled to see we have been getting papers from clubs we don't have on the mailing list. I apologize for the omission, and I'm taking steps to correct all I find. On the other hand, I find clubs and editors on the mailing list who have not been sending us their papers. Shame on you! Maybe you should check *your* mailing list.

Our address for club papers is: Worldradio Club Liaison, 2120-28th Street, Sacramento, CA 95818.

If you are sending a club paper for the first time, include a note to bring my attention to the fact. Then I'll see that your proper club address is put into our computer for an exchange subscription. There is no charge — just send your paper regularly.

I'm going to be paying a lot of attention to our club mailing list for the next few months. If you're one of the editors who should be getting an exchange paper and have not been receiving it, let me know. A postcard would be appreciated.

Our exchange papers are identified by a serial number in the 300,000 series. If you are getting such a paper, but your club or newsletter name is not on the label, let me know immediately, because I'm having trouble matching up some of the labels with a club or a paper. □

SPREAD THE WORD ABOUT AMATEUR RADIO!!!

VISIT YOUR LOCAL RADIO CLUB.

ALABAMA

Telephone Pioneer Amateur Radio Club of Alabama (TPARCA) 1st Thurs/monthly — 11:30 a.m., Rm N102, SCB Data Ctr 1st Fri/monthly — 11:30 a.m., Caf Pvt Rm, SCB HQ Bd WD4BXA/R 147.285/885 Coco Cmptr, Net Mon/wkly 8 p.m. K4FUM/R 449.3/444.3 — Info. N4DLE 205/663-2171, Bhm,AL

ALASKA

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

ARIZONA

Arizona Repeater Assoc., Inc. (ARA)
P.O. Box 5291
Phoenix, AZ 85010
4th Thursday/monthly except July/Dec. 7:30 p.m.
4250 E. Camelback Rd., Suite 475-K

Tucson Repeater Association
P.O. Box 40371, Tucson, AZ 85717-0371
2nd Sat/monthly — 7:30 p.m., Pima Co. Bldg.
Net Thurs 7:30 p.m. 146.22/82 (146.28/88 & 147.69/09)
(602) 747-8903 or 899-4776

CALIFORNIA

Amador County Amateur Radio Club
P.O. Box 1094, Pine Grove, CA 95665, Pioneer Elementary School, Pioneer, CA • 1st Thurs/monthly 7:30 p.m.
WA6WIY Rptr. — 146.835, 146.235.
Net Tues. 7:30 p.m.

Contra Costa Communications Club WD6EZC/R
P.O. Box 661, San Pablo, CA 94806
Meets 2nd Sunday at 9:00 a.m.
Hickory Post Restaurant/Lucky Lanes
For info call Carl KA6OLK (415) 237-2621

East Bay Amateur Radio Club
Salvation Army Center
Rheem Ave. & 36th Street
Richmond, CA 94804
2nd Friday/monthly — 8:00 p.m.

El Dorado County Amateur Radio Club
P.O. Box 451, Placerville, CA 95667
W6HBH Repeater — 147.825 Out/147.225 In
Net Thursday 7:30 p.m.
Meets 4th Tuesday/monthly • Call for location

Fresno Amateur Radio Club, Inc.
P.O. Box 783, Fresno, CA 93712
Meets: 2nd Friday/monthly — 8:00 p.m.
Wawoha Middle School; 4524 N.
Thorne; Fresno. W6TO/R 146.34/94

Gabilan Amateur Radio Club
Monterey Savings & Loan Public Room
Corner First & Westwood
Gilroy, CA 95020
2nd Thursday/monthly — 7:30 p.m.

Livermore Amateur Radio Klub
3508 Gresham Ct., Pleasanton, CA 94566
Meets: Valley Memorial Hospital
Multi-purpose room, Livermore, CA
2nd Saturday/monthly — 9:30 a.m.

North Bay Amateur Radio Association (NBARA)
Homestead Savings
440 Santa Clara
Vallejo, CA 94590
4th Wednesday/monthly — 7:30 p.m.

North Hills Radio Club
Meets: 3rd Tuesday/monthly — 7:30 p.m.
Carmichael Elks Lodge
5631 Cypress Ave. • Carmichael, CA.
Net 145.19 Thur. at 8:00 p.m.

Sacramento Amateur Radio Club, Inc.
Contact: Norm Nelson, KA6YRC, (916) 428-7122
after 6 p.m. Meets: Army Reserve Ctr., Army Depot, Fruitridge and Florin-Perkins Road
2nd Wednesday/monthly — 7:30 p.m.

San Fernando Valley ARC Inc. (W6SD)
Red Cross Building
14717 Sherman Way
Van Nuys, CA 91704
3rd Friday/monthly — 7:30 p.m.

San Gabriel Valley ARC
Bowling Green Clubhouse
405 S. Santa Anita Avenue
Arcadia, CA 91006
1st Tuesday/monthly — 7:30 p.m.

S. Counties Amateur Teleprinter Society (SCATS)
2nd Sat/monthly — alternates in L.A. & Orange Counties
60 WPM RTTY Net, Wed. 8 p.m. on 146.10/.70 W6IWO/RPT.
For info. call Howard Rose, N6CPP, (818) 997-1067

Sierra Foothills ARC
P.O. Box 3262, Auburn, CA 95604
Office of Education Bldg.
360 Nevada St., Auburn, CA 95603
2nd Friday/monthly — 1930

Simi Settlers ARC (SSARC)
P.O. Box 3035, Simi Valley, CA 93063
3rd Thursday/monthly — 7:30 p.m.
Bank of A. Levy (across Larwin Sq.)
K3HZP/R 147.165/.765 Simplex 147.48

South Bay Amateur Radio Association
P.O. Box 91 • Fremont, CA 94536
Fremont School, 40230 Laiolo Rd
3rd Wednesday — 7:30 p.m.

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

Sonoma County Radio Amateurs, Inc.
Box 116, Santa Rosa, CA 95402
Hank Davis, W6DTV (707) 823-7885
County Office of Emergency Service
1st Wednesday/monthly — 7:30 p.m. rpter 146.13/73

South Bay Amateur Radio Assn (SBARA)
Fremont School, Laiolo Rd, Fremont
3rd Wednesday/monthly - 7:30 p.m.
Talk-in 147.015 MHz
Frank Kibbish, WB6MRQ/(415) 657-5730

Southern Calif. Amateur Transmitting Society (SCATS)
Vine Elementary School
1901 E. Vine St.
West Covina, CA 91790
1st Monday/monthly — 7:00 p.m.

West Coast Amateur Radio Club
Fun Meetings — No Business
Fountain Valley Elementary School
Visitors welcome — call in 144.330 simplex
Call KA6RRR (714) 636-8661 for dates

West Valley A.R.A. W6PIY
Meets: Los Gatos Red Cross Bldg.
18011 Los Gatos - Saratoga Rd.
Los Gatos, CA 95030
1st and 3rd Wednesdays/monthly

CONNECTICUT

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

FLORIDA

Dade Radio Club, Inc.
Museum of Science
3280 South Miami Ave.
Miami, FL 33133
1st and 3rd Tuesdays/monthly — 8:00 p.m.

Platinum Coast Amateur Radio Society
1150 S. Hickory St., P.O. Box 1004
Melbourne, FL 32902-1004
Meets: 2nd Monday/monthly at Melbourne Red Cross
Talk-in on 146.25/85 or 146.01/61 rptr

HAWAII

Big Island Amateur Radio Club
Helco Auditorium
1200 Kilauea Avenue, Hilo
Call-in 146.28/88
2nd Tuesday, monthly — 7:30 p.m.

ILLINOIS

Bolingbrook Amateur Radio Society
532 Sheffield Rd
Naperville, IL 60565
(312) 369-0747 / call in 147.93/33
3rd Monday/monthly — 7:00 p.m.

Chicago Suburban Radio Association (CSRA)
Clyde Federal Savings & Loan Assn.
7222 West Cermak Road
North Riverside, IL 60546
2nd Wednesday/monthly — 8:00 p.m.

Dupage Amateur Radio Club W9DUP
Mid-America Savings and Loan
55th & Holmes (55th St. near RT 83)
Clarendon Hills, IL • 4th Monday/monthly — 7:30 p.m.
(312) 971-1156 for more information

Fox River Radio League
Valley National Bank, Lower Level
Northgate Shopping Ctr. & RT. 31, Aurora, IL
(312) 898-2779 for more information
2nd Tuesday/monthly — 7:30 p.m.

Radio Amateur Megacycle Society, Inc.
Irvingwood Acacia Church
3900 N. Plainfield, Chicago, IL 60634
(312) 625-2879
3rd Friday/monthly — 8:00 p.m.

Schaumburg Amateur Radio Club
Meineke Rec. Center, Schaumburg
3rd Thursday/monthly — 7:30 p.m.
Net on remaining Thursdays — 8:00 p.m.
147.285 and 443.625

Six Meter Club of Chicago - K9ONA
Rptrs. 146.37/146.97 448.300/443.300
Info net - Tues. 9:00 p.m. 146.37/97
Annual Hamfest 2nd Sunday in June
Santa Fe Park, Willow Springs, IL.

INDIANA

Fort Wayne Radio Club
Ron Koczor, K9TUS
P.O. Box 15127, Fort Wayne, IN 46885
The Salem Church
3rd Friday/monthly — 7:30 p.m.

IOWA

RSCB (Radio Society of Council Bluffs)
Richard Swig, WA0ZQG, Secretary
46 Rolling Hills
Council Bluffs, IA 51501
2nd Tuesday/monthly — 7:30 p.m.

MARYLAND

Frederick Amateur Radio Club
Old Frederick Court House
Rick Ogden, N3RO
(301) 845-2670
Meets: 2nd Tuesday/monthly — 8 p.m.

MASSACHUSETTS

Billerica Amateur Radio Society (BARS)
1st Wednesday/monthly - 7:30 p.m.
Honeywell Cafeteria
300 Concord Rd., Billerica, MA 01821
Near Jct. Rte. 3 - Info - Rptr. 147.12

Quannapowitt Radio Assn. (QRA)
United Methodist Church
Vernon St.
Wakefield, MA 01880
4th Friday, September-May at 8:00 p.m.

Whitman Amateur Radio Club (WARC)
Pine Street, P.O. Box 48
Whitman, Massachusetts 02382
Call-in 147.825/225
1st & 3rd Mondays/monthly — 8:00 p.m.

MICHIGAN

South Eastern Michigan A.R.A.
Meets: 1st Fri./monthly 7:30 p.m. K8FC Rptr. 147.75/15
Grosse Pointe North High School
Building C, Cafeteria Commons
For info contact N8CDY (313) 885-5557

MISSOURI

Heart of America Radio Club
American Red Cross
3521 Broadway
(816) 756-2365 x65
3rd Tuesday — 7:30 p.m.

NEW HAMPSHIRE

Great Bay Radio Assn., WB1CAG
P.O. Box 911, Dover, NH 03820
(603) 742-0130/332-8667
2nd Sunday/monthly — 7:00 p.m.
Dover Dist. Court. Talk-in 147.57

NEW JERSEY

Central New Jersey Chapter No 138, QCWA
Net: Ea Tue. evening - 10:00 p.m. 147.645/147.045 MHz
Mtgs: Quarterly; Membership or more info:
Bob McKinley, W2OMR, Sec., 89 Stratford Rd.,
Tinton Falls, N.J. 07724 (201) 542-2113

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

For information on how to get your club listed in this column, plus receive many other benefits, write to Dave Tykol, WA6RVZ, Club Liaison, Worldradio, 2120-28th Street, Sacramento, CA 95818.

NEW YORK

Hall of Science Amateur Radio Club, Inc.
P.O. Box 131, Jamaica, NY 11415
Queens County Dental Society Bldg.
86-90 188th St., Jamaica, NY
2nd Tuesday/monthly — 7:30 p.m.

Orleans County ARC
Civil Defense Center
West County House Road
Albion, NY 14411
3rd Wednesday/monthly - 7:30 p.m.

Staten Island Amateur Radio Assn. (SIARA)
P.O. Box 495, Staten Island, NY 10306
3rd Friday/monthly — 8:00 p.m.
Rm. B-201, College of Staten Island, Sunnyside
Club Repeater — KA2PBT/R — 440.825/445.825

Westchester Amateur Radio Association (WARA)
Scarsdale Village Hall
Scarsdale, New York 10583
Bernard Dubbs, President, WA2FSR
1st Wednesday/monthly — 8:00 p.m.

Westchester Emergency Communications Assn. (WECA)
147.66/147.06, 222.80/224.40, 447.475/442.475
Mtgs: 2nd Monday/monthly - 7:30 p.m. Little Theater
County Center, White Plains, N.Y. For further info write:
P.O. Box 131 N. Tarrytown, N.Y. 10591. Call (914) 631-7424.

NORTH CAROLINA

Rowan Amateur Radio Society
Supplementary Education Building
Salisbury, N.C. 28144
2nd and 4th Mondays, 7:30 pm

OHIO

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

C.A.R.S. (The Clyde Amateur Radio Society)
Ervin Remaley, KA8CAS, Secretary
2nd Tuesday/monthly — 7:30 p.m.
Community Rm., City Building, Clyde, OH
Repeater 144.75/145.35

NOARS - Northern Ohio Amateur Radio Society
P.O. Box 354, Lorain, OH 44052 - 3rd Mon. 7:30 p.m.
K8KRG — Home of the WW II Submarine USS COD
WB8JBM — Noars Contest Station — K8KRG/Repeaters:
— 146.10/70; 144.55/145.15; 449.8/444.8; 223.10/224.70

OREGON

Oregon Tualatin Valley ARC
Beaverton Elks Lodge
3500 SW 104th Ave.
Beaverton, Oregon
2nd Wednesday/monthly — 7:00 p.m.

VIRGINIA

Eastern Shore ARC (ESHARC)
110 Church Street
Chincoteague, VA 23336
Repeater WA4TVS 147.855/.255
Net Mon. 9 p.m. Mtgs. as announced

Southern Peninsula Amateur Radio Klub (SPARK)
Repeater 146.13/146.73 - K4DHO (804) 851-5573
Salvation Army Community Center (Big Bethel Rd.)
P.O. Box 4128, Hampton, VA 23664
1st and 3rd Tuesday/monthly — 7:30 p.m.

Virginia Beach Amateur Radio Club (VBARC)
Open Door Chapel
3177 Virginia Beach Blvd., Va. Beach, VA
1st Thursday/monthly — 7:30 p.m.
For information (804) 497-1235

WEST VIRGINIA

Jackson County Amateur Radio Club, Inc.
Bob Morris, WA8CTO, Sec.-Treas.
308 Edgewood Cir., Ripley, WV 25271
First National Bank of Ripley, WV
1st Thursday/monthly — 7:30 p.m.

Ohio club leaves 'contesting business'

Joe Pater, WB8GEX

The Hilltop Amateur Radio Club, WB8HUC, which was organized in March 1970, has decided to go out of the contesting business.

The six-man club has been active in all June and September contests, and some January contests, when the snow was not too deep to get to their Indiana contest location.

Although the club membership has been maintained at six members, mainly because everyone got along so well together, they have had two former members — Carl WB8GEZ and Kyle K8UJ — pass away.

The club held the ARRL VHF section record of 69 sections for many years and has also been in the top ratings several times.

The club is saddened to give up contesting, but under the ARRL rules, we feel it is impossible for a small club with a three-band station and low power of 400 watts on 6 meters to compete with the other multi-op stations of five bands and a KW on each band. We have voiced our opinion many times to no avail. We have always felt there should have been a power class (like Field Day) for competing with stations of equal class.

The club wants to thank all of the operators in the United States and foreign countries who have given us contest points and new sections during the VHF contest. We have always looked forward to working all of you and wish you all the best of luck. CQ!

Hilltop ARC members: (*seated*) Jerry Pater, WB8GEU; (*standing*) Don Koedel, WB8GEY; Joe Pater, WB8GEX; Joe Barbro, WD8BMC; and Adrian Fallert, WB8GEW. (*Absent*) Roy Elliott, WB8GFA.

Keep it down!

Keep the output power down on everything. It is like salt. Pretty soon you will get used to less of it. — *Ed Beinlich, KZ2W (ex-WB2IBQ)*

WITH THE HANDI-HAMS

Maureen Pranghofer, KFØI

It is a well-known fact that Amateur Radio is an excellent hobby for anyone, but especially for the handicapped. It allows them to meet friends, gain self-confidence and provide valuable public services to their communities. And for some, it allows them to experiment with equipment design and modification so that hamming will be easier. Such an experimenter is Frank Casey, a HANDI-HAM member from Nassau Bay, Texas, who doesn't let his blindness stop his interest in the technical field. In a recent letter he explained:

"I am still an active experimenter. I'll describe what I'm doing. I've been playing a lot with computers — specifically the 99A. What I did was to see if I could convert an (ASCII) and RTTY-type signal to a voice synthesized type output. I ran it through my TI 99A system. I have used existing equipment with very little modification to the internal circuitry of the computer but have expanded the memory of the 99A up to about 48K ram. I have two tandem disk drives, a standard TI voice synthesizer, which is incorporated into my programs, and I have an outboard voice synthesizer made by Intac, which I use for the RTTY experiment.

"Essentially what I had done was to plug a Kantronics RTTY synthesizer, which I had borrowed, into the system and run it out to the Intac voice synthesizer. This gave me usable RTTY. I am now writing a conversion program which will take into account all of the abbreviations and pecularities of RTTY. This will give me a clearer spoken message from the Intac, and this is my main objective at present.

"I am also actively pursuing using the joy stick or game port of the TI as a means of keeping track of the status of lights (i.e., display lights, warning lights, like the over-modulation drive lights. I'm running it into the computer through the joy stick port so that the transceiver or anything with multiple displays which has a change in light status will be indicated to me through the voice synthesizer in a verbal fashion. I've been having good luck with this.

"What I'm doing is 'velcroing' a Radio Shack type photoresistive cell over light-emitting diodes to complete the circuit of joy stick port pins and then feeding them into a very simple program which says things like 'the power is on' or 'the power is off'.

"I am also doing a bit of experimenting with meter movements. One of the things we have trouble with are transient meter movements. I'm working with an ICOM transceiver now which has a 0.2mV full scale reading. I've taken the voltage out from the meter pins to the rear of the panel and then run it through an analog digital chip which gives me a digital voltage readout much like a digital volt meter, running that into the computer which can keep up with fast pin movements and converting that into a verbal indication.

"I'm trying to do things as cheaply as possible and I think it is feasible to get meter movements verbalized. Jerri Arnold, WØJNI, has available digital readout of frequency displays, but responses to meter movements such as SWR meters is what I have in mind. These are my experiments at present.

"Some of the ICOM equipment I'm using has provisions for computer management of frequencies, and it's a simple matter to send signals to the ICOM to change frequencies, update frequencies and keep logs of frequencies within the computer. These can be easily verbalized with the TI-99A. A BASIC program is all that is required. Computer interfaces hold a lot of promise to the handicapped ham, I think. I chose the TI-99A because it is inexpensive and is still available even though it is not being manufactured. Also, it is simple to modify an interface for it.

"The cassette reading ports on my TI are essentially 600 baud ports. I'm trying to trick those ports to be used for something else besides loading cassettes of electronic nature. I think these ports could be used for other purposes than originally intended. I'm thinking in terms of tactile raised dot graphics.

"I have taken a standard Epson printer and worked on the platt. This must be done with an impact type printer. I'm converting the printer platen into use like a raised line drawing kit. In other words where the printer impacts a friction fed mylar sheet (I've replaced the paper with mylar), the printer is put into a friction drive mode. You get a tactual raised representation of curves, simple graphics. I like to use it for setting up curves of voltage vs. current in a particular circuit that I'm measuring, or from textbook converting it to something I can feel.

This works quite well although it is not the best as yet. I am thinking of getting a better rubber system to put in the platen; the drawings will be better quality. I have chosen the Epson over standard equipment available for making brailled and raised drawings because it is infinitely cheaper and that's what I'm doing at present."

Frank lives at 18290 Upper Bay Road, #77, Nassau Bay, TX 77058, and is open to any questions, comments or suggestions. □

Determination

Joe Rice, W4RHZ

Readers of **Worldradio** will recall the HANDI-HAM article which appeared on page 36 of the August 1984 issue. It was the story of Larry Clements, N4FXU, who persevered with his ham career even though he could not hear a sound.

After many trials and tribulations, he submitted to a special operation to implant a special cochlear coil inside his head, which excited the fluid in his inner ear and enabled him to at least hear tones.

Although he still cannot hear voices, he can at least tell when someone has stopped talking, and he can hear code.

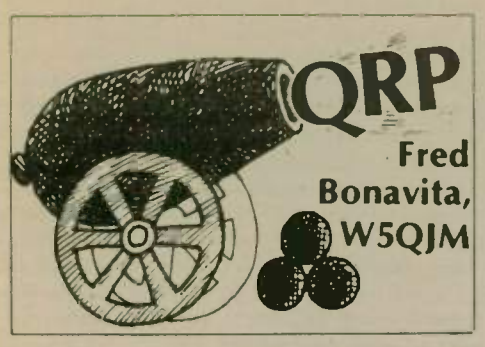
We are all happy that Larry upgraded to Extra Class at the ARRL convention in Cincinnati this past 24 February. Here is a person who does not know the word "quit" and is still in there pitching at age 70. Our very heartiest congratulations! □

CW not pointless to this ham

Dick Silberstein, WØYBF, received the following information from Dr. Uwe Radock of the Cooperative Institute for Research and Environmental Studies (CIRES) in Boulder, Colorado. Dr. Radok was visiting his retired friend, Lew Mullen, formerly of NOAA in Boulder, who introduced him to David Fraser, KH6BIH (Big Island Hawaii). They communicated as described below. (David lives near the town of Captain Cook, about two miles up the slope of Mauna Loa.)

"David Fraser contracted arthritis as a small boy and was treated with massive

(Continued on next page)



When a friend wrote from El Paso recently, asking for a source of modification articles on the HW-7 transceiver, I lost no time in referring him to a manual published not in this country but in Great Britain.

It's the *G-QRP Club Circuit Handbook*, now out in its second printing. The first printing about three years ago sold out in short order.

The demand for the handbook was such that the Radio Society of Great Britain (RSGB) took over the publication for the second printing. The handbook now is a permanent part of the RSGB's stable of Amateur Radio publications.

The 96-page handbook is a collection of articles which appeared in G-QRP Club's quarterly newsletter *SPRAT* between 1974 and 1982 and compiled by the Rev. George C. Dobbs, G3RJV, the club secretary.

SPRAT is well known and respected in the worldwide QRP fraternity as an outstanding source of quality technical articles on low-power operating, which explains why the first printing of the handbook sold out so soon.

In addition to the HW-7 modifications, of which there are five pages of text and schematics, this handbook offers articles on easy-to-construct transmitters, receivers, transceivers, antennas, tuners, power supplies, modifications to other low-power gear, active audio filters, keyers and so on. You name it, and if it's related to QRP, chances are nine out of 10 that it's there.

These circuits have been developed by well-known QRP'ers, including George Burt, GM3OXX; Ha-Jo Brandt, DJ1ZB; Roy Lewallen, W7EL; and Colin Turner, G3VTT, to name a few. The common denominator for all is simplicity plus performance.

This second printing is an improvement over the first, which the G-QRP Club undertook on its own at a minimum of cost and which suffered from occasional poor reproduction. The text and drawings have been reworked for this latest version and, as a result, a first-class, professional handbook is available.

If there is one drawback, it is that some of the transistors specified carry European designations (BFY50, BC108, etc.), and there is no translation to their U.S. made equivalents (2N2222, 2N3904, etc.). That might pose problems in constructing otherwise interesting circuits, but there are manuals available for cross reference, and some U.S. firms (such as MHz Electronics, which advertises in these pages) carry a few types of the European units.

Despite that, the *G-QRP Club Circuit Handbook* is well worth the modest price of £4.52, including surface-mail postage. At the exchange rate between the pound and the dollar at this writing, that's about $5 — a bargain.

Orders should be sent to RSGB Publications (Sales), Alma House, Cranborne Road, Potters Bar, Herts EN6 3JW, ENGLAND. Payment must be in pounds sterling by check or money order, and delivery will be four to six weeks.

While the ARRL has been stocking and selling some RSGB publications through a reciprocal agreement, the G-QRP Club handbook was not yet among them.

If you are interested in learning more about the G-QRP Club, drop a line to the Rev. George Dobbs, G3RJV, St. Aidan's Vicarage, 498 Manchester Road, Rochdale, Lancs. OL11 3HE, ENGLAND. Send along an IRC or two for membership information. □

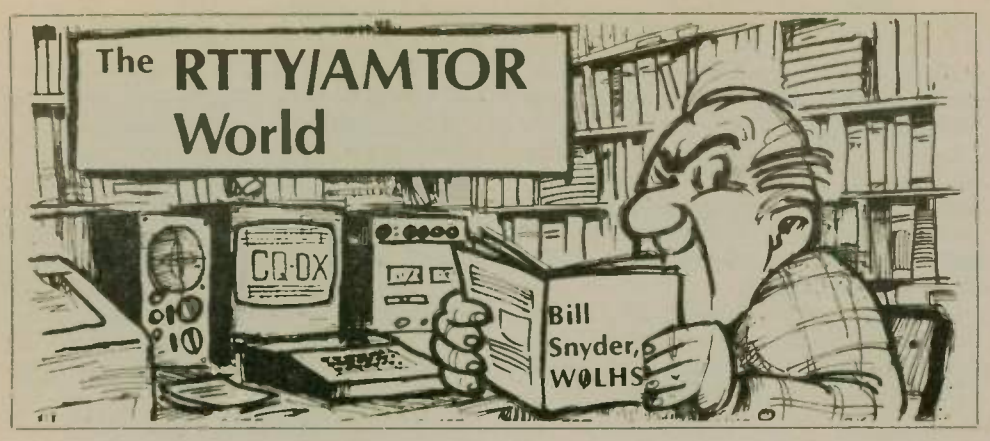
CW

(continued from page 36)

doses of cortisone that left him completely blind and deaf. Before losing these faculties, he had learned the Morse code and become an accomplished radio operator. That is now his only means of communication with the wider world (through his CW radio communications on 14067 kHz); and with those around him who type their messages that are transalted into Morse signals, he senses with his fingertips.

"He would appreciate greetings from Colorado [and elsewhere (R.S.)]. Mention Lew Mullen [who introduced Dr. Radok]." — *Rocky Mountain VHF Society, Boulder, CO* □

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



My grandfather, a wise old western pioneer, liked to say: "A little bit of knowledge is mighty dangerous. It'll cause you to jump to conclusions rather than figure out your problems logically." A recent electronic experience of mine proved Grandpa to be completely right.

We've had cable TV in our house for about five years. Last December the cable folks installed a new descrambler in addition to the black box channel selector. Apparently, the old decoders were prone to being tampered with by the subscribers.

At our latitude, 15 meters has been a disaster for some time. Jack Whitacker, W5HEZ, usually alerts me when he hears new and exotic DX appear on the bands. A short time ago he called to tell me he had just worked a rare one on the 15-meter band. When I tuned in, there were no signals at all.

However, I did notice a strong video "buzz" present on the band. It had been there ever since the cable company had installed the descrambler; but because the band was practically dead, I put off doing anything about it. But when Jack called again to tell me WH8AA was operating from Western Samoa, I thought I had better investigate the noise.

When I rotated the beam, the buzz would increase in intensity, reaching maximum when the beam was parallel with the cable system feedline which runs through our alley.

When the beam was turned 90 degrees away, the buzz would diminish to its lowest level. I turned off all my computers, TV equipment and the cable company's stuff, but alas — the noise still remained at the same level on the S meter.

I jumped to the conclusion that the video buzz must be caused by a leak in the cable system's distribution system. I found, and fixed, a poorly made ground connection belonging the cable company. The noise still persisted. So, I called the cable system's chief engineer on the phone. "I think we have a leaky cable in my back yard," I said confidently. "Is there some way you can check it?"

"I'll send someone out right away," he replied. In less than 30 minutes, two young gentlemen — armed with a box called a sniffer — were at my door. I demonstrated the buzz to the technicians who listened attentively. They explained that the cable system has a special signal, around 108 MHz which is used exclusively for "sniffing" out cable leakage. They set about their work in my back yard. I watched the proceedings with interest.

The leakage meter on the sniffer stayed well in the green, never once pointing in the red danger zone. Then the technicians began to doubt their instrument was accurate, suggesting that the batteries were too low to measure the leakage properly. So they returned to the cable company, and I went about eavesdropping on the 20-meter band.

The next day I got a call from the two lads asking permission to come out and do more checking. When they arrived, we tuned in the buzz on the transceiver; they telephoned their main office and had them drop the entire cable system of Fargo off the line. You guessed it — the buzz was still there, loud and clear.

"Thank you, Mr. Snyder," the lead man said, "we're happy to know it's not our fault!" With that they departed and the buzz remained.

So the ball was back in my park. I took a battery-operated all-band receiver, tuned it to the buzz and started my own search. It had to be somewhere in the neighborhood, and I was determined to find it.

When I walked away from the house, the buzz diminished in intensity. I circled the house. Every indication lead me back to the ham shack. The buzz was coming from it! What could it be? It was a mystery.

A few days later, I was seated in my office directly above the basement ham shack when the cause of my problem hit me! I use a venerable old SOL computer and a NEC Spinwriter for my word processing efforts. I have used them since 1978 brought computers into my life. I had turned off the SOL and the Spinwriter when I checked for buzz, but I had missed one little piece of equipment which was buried back of the computer and out of view. It was a 64K spooler which I have between the computer and the printer. The spooler has a wall plug power supply, and because it was out of sight, it was not turned off during the tests. I pulled it from the wall, and the buzz ended.

The spooler, housed in a flimsy plastic box with membrane switches, was radiating like crazy. I knew the SOL computer was not shielded, but I had completely forgotten about the spooler hiding behind my computer. During the same month as the cable people installed the new black box, I had moved the SOL computer from a downtown office to my home. Because of its location, I never bothered to turn the spooler off at all, it was completely forgotten.

I'm still trying to build up enough courage to tell the cable people the true story. My red face will really glow in the dark!

Mailbox QRM

How do you feel about automated CQ's from mailbox RTTY machines? Some of them call CQ every two to four minutes. Frankly, I am appalled by this practice, particularly on weekends. They are what I call the QRMSO problem. Don't the system operators have any respect for other amateurs? I don't think anyone has invented an MSO that can determine if the frequency is busy before it begins its long-winded procedural CQ. If so, they are keeping it under wraps.

Recently I left the printer copying a Mailbox 64 while I was away from the house for a few hours. When I returned, the floor was covered with paper. During the period, the mailbox had served only two amateurs, one of which was a brother-in-law of the system operator and didn't need the CQ to be able to call in. The printout indicated that the CQ had been repeated every two minutes during the period.

This procedure doesn't make sense to me because we just do not have enough frequencies available for everyone to have his own discrete QRG for mailbox purposes. So I picked out a few pages of the CQ print, wrote a note complaining about the idea and mailed it to the system operator.

A few days later I was called by the SYSOP when I finished with a QSO on 20 meters. He explained he was going to limit his activities with the mailbox and not leave it on hour after hour, cluttering up our bands. I thanked him for his consideration and hoped he would refrain from using it at all. I suggested he join a national mailbox frequency and not try to keep one spot on the dial for himself.

With our modern transceivers, we can record dial readings and repeatedly access mailboxes without any problem. We do not need endless CQ's punctuating the person-to-person contacts of others. If you choose to run a mailbox or a mail-drop, please join a national frequency, and do not CQ unless you plan on answering in person.

Every month I receive letters and phone calls condemning mailbox operations. I have heard this line many times: "We gotta do something about those damn mailboxes!"

Please, I am not against mailboxes — they do serve a useful purpose. In fact, I would like to see W1AW set up one for bulletin use. But I would like to see it above 14100 MHz; in fact, I suggest all MSO operations move that area of the 20-meter band. Including that EL4 maritime mobile station that even gives automated RST reports.

If you feel mailbox CQ's are out of place in our bands, please let the SYSOPs know your displeasure. Peer pressure may straighten out this problem.

Eavesdropping

"MY CRAWL SPACE IS FULL OF WATER." ... "I FLUNKED THE COURSE IN HUMAN ENGINEERING BECAUSE I DIDN'T FIT THE NORM." ... " I RECENTLY URP-GRADED TO EXTRA CLASS." "STATIONS WHICH SAY 'WELCOME TO MAILBOX 64 ARE NOT WELCOME IN THIS SHACK." ... "PLAYING THE DX-HOCKEY GAME HERE TODAY." ... "I'M IN THE SLY-TECH INDUSTRY, I'M A DETECTIVE." ... "TTTHERE IS SSSOMETHING WRR-RRRONG WITH MMYY KEYBOARD-DD." ... "MY NAME SPELLED BACKWARDS OR FORWARDS IS STILL BOB." ... "THE SSB BAND

AIN'T DEAD, IT'S JUST FULL OF DEADWOOD." ... "DID YOU EVER TURN THE BEAM AND WATCH THE SIGNAL STRENGTH RISE, THEN DISCOVER YOU WERE ON YOUR VERTICAL?" ... "I WOULD LIKE A COMPUTER THAT COULD THINK." ... "WAS A CW OP FOR AN AIRLINE, BUT RTTY PUT ME OUT OF BUSINESS." ... "MY WIFE OF 45 YEARS SEZ THE ONLY REASON I LIKE SQUARE DANCING IS SO I CAN SQUEEZE THE YOUNG ONES!" ... "SAVE A NICE DAY, CUAGN SON." ... "MY ANCESTORS DOMESTICATED WOLVES." ... "LET YOU GET BACK TO THE HL9 CANDY STORE AS OTHERS ARE CALLING." ... "STANDING BY FOR A CALL FROM THE WASTE COAST." ... "I HAVE 27 MEGABYTES JUST FOR THE MAILBOX." ... "I'D GET AN EAST COAST STATION, GIVE HIM A SAD TALE OF WOE ABOUT NO DX, AND THEN GET THEM TO HELP ME SNAG A GOOD ONE." ... "MY MASTER'S MAILBOX CAN BE FOUND ON 3613 MOST EVENING AFTER 7PM." ... "GOOD LUCK AND SEVERAL DX'S." ... "THEY ARE FILED UNDER 'EPISTLES' LIKE EP-1, EP-2 ETC." ... "AFTER THREE TRIPS TO THE FACTORY I THINK THEY SHOULD REPLACE MY RIG WITH ONE THAT WORKS."

Operating tip of the month

See how short a call you can use to catch DX. Use this formula: short call, listen, short call, listen, short call, listen. Forget the RYs, they only delay the DX station, and in most cases make him mad. Don't bother with his call more than once, even if you are working split.

MSO manners

This little eavesdropping was seen on a big MSO frequency: "YOU'RE A BIG JERK! THANKS FOR SCREWING UP MY TX TO THE KOZ BOX!" Although this is only one of the many insults exchanged that day, it should give you an idea of what went on. It all started innocently when the insultee tried to open a mailbox while the insulter was in the process of leaving a message in another MSO.

We share a very small band of frequencies, kiddies, and this is a hobby, not a battleground, so please behave accordingly.

Little bits and bytes

Carl Steavenson, K6WZ, had a problem with his C-64 computer. When it heated up, the voltage would drop and cause failure. A little muffin fan fixed it quickly.

Walter Skudlarek, DJ6QT, performed like a symphony when he recently operated from 5V8WS. Walter, with RTTY gear provided by Gin Naniwada, JA1ACB, has given us many new and rare countries.

The BARTG contest was held in good band conditions. G. Morris, 9H1EL, was over 500 contacts when last seen in the test. Other big scorers were Bo Stjernberg, SM6ASD; J.D. Lasson, OZ1CRL; George Hitz, W1DA; and Roy Gould, KT1N. But right in the middle of all the contest signals was — yup, you guessed it — a Mailbox-64 calling CQ again and again.

Why can't we indicate portable stations like this: GJ/W0LHS. In other words, put the country prosign first rather than last. I list portable calls that way in my computer so the sort routines list them properly. With the country prefix last, it is easy to miss it by tuning away before the station has finished it all. I have missed a couple of rare ones for just this reason.

Tom Esterbrook, WB6DNV, would like information on copying press with his C-64/CP-1 combination. He has the frequencies, but is having troubles with speeds and shifts. Can anyone help Tom?

I still like mail with suggestions, ideas and what have you. If you are planning a DXpedition to anywhere, let me know in advance. 73 and DX. Bill Snyder, W0LHS, 1514 So. 12th St., Fargo, ND 58103. DIT DIT. □

RTTY/AMTOR

QUARTER CENTURY WIRELESS ASSOCIATION INC.

Esther Given, W6BDE

Ten of QCWA's 14 officers and directors attended the spring board meeting in Dallas, Texas, 15-16 March 1985. Some of the highlights of accomplishment follow:

The board is considering the purchase of an in-house computer system in order to be better able to produce, protect and preserve the data of the association. The present computer system used is on "when available" lease basis, resulting in increasing delays and added expense. A fully owned and operated in-house system will enable headquarters to process records, produce special runs and safely store data. An internal modem in such equipment would allow for direct communications between headquarters and chapters or individuals.

President Stuart Meyer, W4GHK, was directed by the board to file an immediate reply with the FCC supporting the "co-primary" use of the 160-meter band. He was also directed to file with the FCC in support of a petition to reconsider its interpretation of rules governing amateur participation in the volunteer examination program.

The proposed amendment would allow advanced and general class amateurs to administer license examinations for any class below that held by the examiner. President Meyer was further instructed to file regarding Docket #85-38 supporting ARRL's filing on Cable Leakage.

Leo Myerson, W0GFQ, chairman of the Scholarship Committee, announced that QCWA is within $3,000 of its goal of a $50,000 working principle. Only the interest generated is used for the annual scholarship awards.

The board directed the 1985 election of officers and directors be handled as in the previous year when postage-paid envelopes were supplied to the voting membership, resulting in the highest number of responses in QCWA history. It further recommended that the mailing envelope from Headquarters request address correction information so records can be updated accordingly.

Harry Dannals, W2HD, presented a comprehensive report as Membership Chairman with excellent suggestions for the enlistment of new members and retaining current members.

Director Wade Holland, W4AZT, was unable to attend due to illness but submitted an excellent survey of the responses received from chapter secretaries in QCWA's first request for an annual report from each of its 153 chartered chapters.

Although the replies fall short of a 100% response, the information and input from these sources is proving most valuable. Reports of all officers, committee members and the association's general manager indicate that the board's goal of setting up better lines of communications between Headquarters and the chapters is successfully under way and producing very favorable cooperation and response.

Those who participated in QCWA's Spring Board Meeting came away with a very positive attitude and the feeling that much important business had been accomplished.

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QCWA has not filed and does not anticipate filing any recommendation or documentation with the FCC concerning the reduction of required code speed for General Class licensing to 10 wpm. This topic was introduced at the board meeting in September 1984, at which time a draft or rough outline of proposed sub mission was requested. No further action was forthcoming, and the matter has been dropped.

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QCWA takes great pride in the recognition given its members for outstanding accomplishments. Congratulations go to Arthur Westneat, W1AM, of Newmarket, New Hampshire, who was honored when the Institute of Electrical and Electronic Engineer's Centennial Medal was presented to him "for extraordinary achievement" as part of IEEE's hundredth anniversary celebration.

A research fellow of the Marine Systems Engineering Lab, at the University of New Hampshire, Westneat specializes in knowledge-based systems, microcomputer application, applied acoustics, signal processing and advanced ocean robotics.

He is a past president of IEEE's Society of Ocean Engineering and currently chairs the Society's Committee on Autonomous Vehicles. In addition he is chairman of the Marine Technical Society's Professional Committee on Applied Artificial Intelligence. □

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Share your knowledge with your fellow amateur and Worldradio reader .

Vince Luciani, K2VJ

members Craig McMillan, VK3CRA (who, coincidentally, lived only one km from me, but I had not met up with him before), and Kirk McMillan, ZL4PX (no relation, he and Craig), from Christchurch, New Zealand.

The small response in numbers was more than made up for in their marvelous enthusiasm. Craig is now CARI's VK coordinator, and Kirk is ZL coordinator and tournament director.

Contacts to the States were still disappointing, so I decided to try halfway across the Pacific by writing to CARI member Tom Wagner, NH6R, for a sked to play games. Tom, who was stationed at a U.S. Coast Guard station in Hawaii, became a regular on our nets and a bridge across the Pacific for us.

Local membership continued to grow with new stations from not only VK and ZL, but then there was Jim Kun, C21RK, Island of Nauru, and Fr. "Doc" Hager, via P29FS at Papua, New Guinea.

By May 1983, check-ins to our 20-meter net included up to 18 stations from six countries. Our net control, ZL4PX, put out the big signal that became our main link with the United States. There must be something about that New Zealand soil!

Oceania has VK3CRA, ZL2BHE, VK6NS and VK2CLT in its top-ten active radiochess players.

Of late, CARI DX activity has been on the decline due to poor conditions, but we still run the 20-meter nets and will run them right through the sunspot minima. Our Oceania 80-meter net and local 2-meter net are still going strong and providing lots of local radiochess enjoyment.

We all owe much to those who started and who sustain CARI. Our heartiest thanks and 73 from Down Under.

For information on CARI, please send SASE to: CARI, P.O. Box 682, Cologne, NJ 08213, USA. □

The Australian Connection

(NOTE: This month's contribution is from "Down Under" CARI member, Kevin Moore, VK3ASM.)

One day in July 1982, a cold, wet and windy mid-winter day in Melbourne, Australia, I was browsing through some magazines in our local news agency when I chanced across **CQ Magazine** with its full colour, front-page photo of Jim Luciani, WA2JNN, playing a game of radiochess with Mike Sakarias, KL7KE.

This was a special ray of sunshine for me, and another of a number of coincidences, as I had at the time been considering calling "CQ chess" on the air in desperation to see if I could bring together the two great passions of my life — namely, chess and Amateur Radio.

My letter to CARI founder, Vince Luciani, K2VJ, was on its way in the next mail, and within a week I had become CARI's first overseas member.

After a number of failed skeds due to poor conditions and despite trying at all sorts of odd hours, Vince and I finally managed our first QSO on 08 August on 20-meter CW. I soon found that my dipole and FT-101Z wouldn't allow me all the games I wanted via DX stations, so I decided to promote CARI locally.

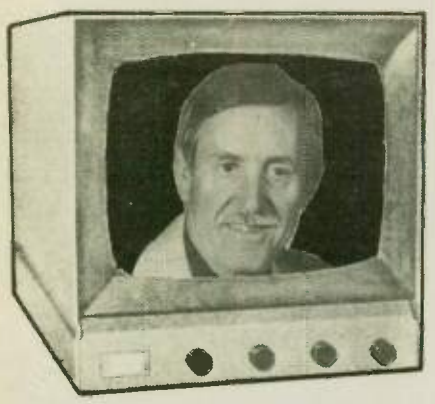
My small article in **Amateur Radio Action, Australia's only commercially produced ham magazine, resulted in two new**


Kevin Moore, VK3ASM, in his walk-in wardrobe/ham shack

If your club is involved in any emergency situations, send the story and pictures to **Worldradio.**

See your group in print and help your fellow amateurs with shared experiences. Your story may help others be better prepared.

SSTV



G.E. "Beb" Bebermeyer, WB0UNB

With the bad propagation and spring weather in the air, slow scan television on the 20-meter band is very slow these days. Due to this, the other modes are taking over 14.230. Therefore slow scanners should get on the air as much as possible to police this frequency or we will lose it completely.

New program available for 1200C

A new program has been written entirely in machine language designed to permit full remote control and implementation of many special effects using the new Robot 1200C Hi-Res Color Scan Converter interfaced through the CIM-80 to the Radio Shack Color Computer. The CIM-80 is a parallel interface. This program was rewritten by D.E. Wright, KQ9T, and it features the following:

1) Reduce a picture in Robot memory to one-quarter size and overlay it *anywhere* on the screen.
2) Fill around the reduced picture in any one of 13 colors.
3) Put up to a three-level multi-colored frame around the reduced picture.
4) Turn a hi-res color picture upside-down.
5) Fill the screen instantly with one of 13 colors.
6) Allow full use of the four Robot graphics sets (8x3, 8x6, 16x6 and 16x12).
7) Automatically print a multi-colored version of your call sign and/or name in a choice of six different screen locations with the press of just two keys.
8) Frame an entire picture with an attractive two-color frame in your choice of 13 different color combinations.
9) Place color bars at the bottom of the picture.
10) Perform *all* Robot control functions including Zoom, etc.
11) Automatically transmit RGB in 1/1/1, 2/1/1 or 2/2/2 formats.
12) Also includes camera input for B&W camera using filters.

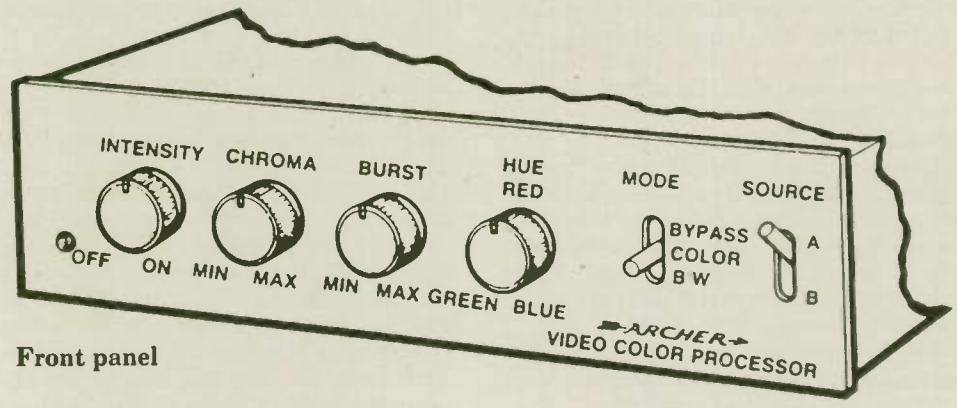
All picture processing is HI RES and the results can be quite spectacular, depending of course on the imagination of the operator. The program is menu-driven and extremely easy to use. The program is written entirely in machine language (a compiler was not used) and is very fast and efficient.

To obtain a copy of the program, send a cassette, an SASE and your call sign and name as you wish it to appear in the program to: D.E. Wright, KQ9T, 2331 Balsam Way, Green Bay, WI 54303. A check for $20 or whatever you care to give to Cerebral Palsy, Inc. would be greatly appreciated. The local Wisconsin group does great things for kids and adults afflicted and really needs the help.

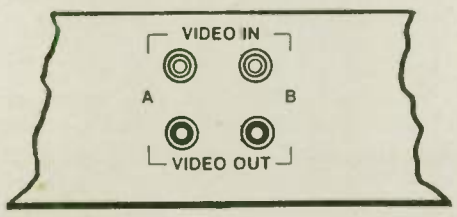
(NOTE: The CIM-80 interface is available from Robot for $110. The above program will not work with the Botek or other serial-to-parallel converters.)

Video color processor

There are numerous SSTV'ers and ATV'ers now using the Radio Shack Video Color Processor connected to their video cameras. I have bought one of these processors, and from my evaluation it does improve the picture quality. It features the following:



Front panel



Back connections

1) *MODE switch* — Allows you to compare the processed color signal (COLOR position) with the unprocessed signal (BYPASS position) by moving a single switch. In the B/W position, you will see a pure black-and-white picture. Artificial color tint will be eliminated.

2) *INTENSITY Control* — Varies the intensity of the colors in the picture from faded to "saturated". This control works with the BURST control to compensate for too little or too much color.

4) *BURST Control* — Adjusts the burst signal to give the most useful operating range of the CHROMA control.

5) *HUE Control* — Adjusts the hue of the color picture. This function is similar to that of the tint control on your TV, but the range is greater. Use this control to compensate for too much red, green or blue.

6) *SOURCE A/B Switch* — Selects the signal to be processed by the processor from one of two video inputs. The selected signal is sent to both OUT jacks (A/B).

SSTV progam at Dayton

Don Miller, W9NTP, is again planning a great Friday night get-together of SSTV'ers at the Holiday Inn North at the Dayton Hamvention. It will be held on Friday night at 7:30 p.m. This is the same place it was held last year.

On the program this year will be demonstrations of computer-controlled Robot 1200's and other scan converter and computer combinations.

His Saturday afternoon forum will consist of three talks. A fast-scan talk by Murray Barlowe who runs Science Workshop. He will demonstrate and talk about getting on ATV cheaply by using commercial surplus. The slow-scan talk will be on Computer Fun with popular computers and the 1200C by Ralph Taggert.

The last talk will be "The Results of the Medium Scan TV Tests". This talk will touch on a new system that will provide limited resolution moving pictures for the 20-meter band. If you are going to Dayton, be sure to attend these events and see what's happening in the SSTV world today.

Please write WB0UNB on ideas and/or any news items which may be interesting to the SSTV world. Send information to Garnet Bebermeyer, 15 Almeda Ct., Fenton, MO 63026. Also, during the summer months the SSTV column may not appear each month. □

Homework Net

Down in Bridgeport, West Virginia, a ham chatting with a friend got the mutual idea to start a national homework net. Aimed primarily at teenagers but most happy to have any age to check in and help will be the National Homework Net, operating on Fridays on CW at 0030Z on 3725 kHz with Dave Allen, WD8LDY, WD8LDY, of Bridgeport, West Virginia, as NCS while on Saturdays at 0100Z on 3870 SSB will be his friend, Chris Anderson, of Jackson, Ohio. Check in and get or give help.

— *Triple States RAC, Adena, OH* □

TRAFFIC

Chuck Clark, K4ZN
Assistant Director
Roanoke Division, ARRL

Propagation problems

Any active amateur who hasn't experienced propagation problems these days must be operating exclusively on VHF. Long skip, fadeouts and dead bands seem to be the order of the day. Solar activity is down to quiet sun levels, and Cycle 21 still has two years to run, if it follows the normal 11-year course. While the resulting band openings on 80 meters do help amateurs seeking five-band DX awards, conditions make life miserable for traffic handlers on nets.

Yet in many cases, it's as much the operators trying to carry on business as usual when conditions are unusual, instead of making use of them intelligently. On a net, it's especially the net control station that must take conditions into account, because other stations are supposed to do what they are told. And when told to do the impossible, the result will be a delay at best, and sometimes if conditions deteriorate the lost time will allow the net to fall apart as contacts become spotty or fail completely.

The net control operator should keep constantly aware of who can hear whom. No use sending two people off frequency to pass traffic if neither can hear the other. Send along somebody to relay, or else send them to another band — the next lower one if skip is a problem, if they are too close to each other for communication, or to the next higher if they are too far apart.

In the evening, when ranges increase as darkness falls, clear all the short-haul traffic first before skip makes communication impossible over shorter distances. In the morning, for those who are on the air by dawn (yes, there are some), if you find you can't hear stations that are too close because of skip, wait until daylight, and you may find the station jump right out of the mud and up to 20 over in a matter of seconds.

But often the problem is that you can't hear net control. When conditions are like that, often an assistant net control station can help much.

The regular net control selects a station with a good signal and far enough away that either one or the other will be able to hear anyone within the coverage area of the net. Sometimes it may be necessary to appoint two, but usually one is enough. Or else, net control can direct another station so situated to make net calls from time to time.

Others on the net should be alert to pick up stations apparently not being heard by net control and pass along the word that somebody is out there. Often such a station will be off frequency, too, being unable to hear net control and tune to the frequency actually being used.

Some traffic nets use the unofficial Q signal QPC: the net control asks a station to QPC, put out a few net calls. Sometimes, of course, it may not be because of conditions. Maybe the net control operator wants to go get another cup of coffee.

One other problem rapidly changing conditions can cause: a clear frequency can suddenly become occupied. Then can follow harsh words.

"I've been on this frequency two hours and you guys have to start up that silly net right here without even asking if this frequency is in use!" "But we've been going on here for 20 minutes now. Will you please QSY?" "Why should I QSY? I've been here longer than you. I was here first. You guys with your nets think you're a privileged bunch, you and your ARRL. That's not what Amateur Radio is for." "Listen, if it wasn't for the ARRL, there wouldn't be any Amateur Radio at all. And our public service is more important than your rag chewing . . . "

And one more enemy is made, when a little understanding and willingness to go halfway, and a little awareness of band conditions would make a peaceful settlement possible. Slide the net up a bit and ask the others to slide down a bit, and each can go his own way.

Telephone numbers

Most amateur messages contain a complete mailing address including ZIP code, although messages are rarely mailed any more. The mail address remains useful, however, as a means of correcting the errors that sometimes find their way into a message that is relayed too many times. It's the principle of redundance, providing a way to verify the accuracy of what we receive.

A message received with a meaningless address in Camden, NC (ZIP 27921), for example, but carrying the ZIP code 08107, was probably intended for Camden, NJ, and somebody goofed. Maybe it was somebody sending in American Morse.

Most messages these days are delivered by telephone. And so the telephone number is the most important part of the address after the name of the addressee. It should be included wherever possible. And when it's not possible to get the telephone number, the rest of the address should be such as to make it easy for the delivering station to find the number in the phone book.

Married women, for example, are usually listed under their husbands' name, so it's best to say Mrs. Robert Smith, rather than Jane Smith. Of course, if her last name were Przybylski, it wouldn't be as much of a problem to find the entry in the phone book by looking up her address. (Names like that make one appreciate CW!)

A post office box or rural route number is seldom of much value unless the message is mailed. Fortunately, in small towns often the addressee will be known by most of the residents. Unfortunately, it's not so likely that a small town will have a resident traffic-handling amateur.

The ZIP code is often helpful, both as a means of deciphering garbled text and as an indication of where the addressee is located. The first three figures will indicate the part of the state where the addressee lives, and the last two digits in a larger city identify the part of the city. Use the ZIP code.

The area code for the telephone number is not a useful as the ZIP code. Normally a delivering station will not need it; it will be a local call. However, it's possible that the delivering operator will have access to a WATS line and will use that line to deliver traffic, and may need the area code.

The city of New York now has so many telephones that it has had to be divided, even though you can make a local call from one area code to another. And I personally recall cases where the area code proved the key to finding the correct address of a garbled message. Once, for example, a message addressed to Lexington, NY, with a telephone area code 606, proved to be really intended for Lexington, KY.

Transmitting phone numbers

It helps the receiving operator if the one transmitting a telephone number phrases it properly, or uses correct spacing on CW. The same holds for other numbers, ZIP codes and military serial (Social Security) numbers in particular, and in some areas street numbers too.

On this point, amateur practice and MARS practice differ. Amateurs generally send a phone number without punctuation, while MARS operators add hyphens or dashes between the groups. Thus an amateur would read (803) 761-8509 as "Eight zero three (space) seven six one (space) eight five zero niner," while on MARS it would be "Eight zero three, hyphen, seven six one, hyphen, eight five zero niner."

The reason for including the punctuation seems to be that MARS messages frequently go by Teletype for part of their journey, and machines are often set up to unshift on space. Thus, if you send a telephone number on a Teletype and leave a space between groups, you will have to punch the FIGS key again to shift back for the next group of numbers; but if you use a hyphen, the machine won't unshift, and you can continue with the figures.

Breaking a phone number in one way or another is important; it helps the receiving operator copy it correctly and to know it is copied correctly. With area codes, they should be sent in groups of three, three and four figures. If the area code is omitted, in groups of three and four. ZIP codes should be in one group of five, and military or Social Security numbers should go three, two, four.

A telephone area code must always have a zero or a one in the middle digit, while an exchange number (the group of three that follows the area code, or the first three digits of the number when the area code is not used) must never have a zero or a one in the middle. Neither group of three can have a one or a zero as the first digit. If any of these rules is violated, you know the number is incorrect.

What is said here is valid for the United States, Canada, northern Mexico, Bermuda and much of the Caribbean. But other parts of the world construct their telephone numbers differently. No space to go into that here, and such traffic is fairly rare; just be ready for an unusual phone number when such traffic does come your way. □

AERIALS

Kurt N. Sterba

Tough guys don't cry, but the tears are running down my cheeks. Why do people write such mish-mash?

I'd missed the article, but one of our sharp-eyed readers brought to my attention that *The Newington News* has done it again!

In an article written by one of its well-known staffers is found this absolute gem, "Most of the popular gain antennas are also directional." Are they doing this just to give an old man spasms?

Now I've received letters saying that I shouldn't criticize other magazines. Well, I look at it this way — someone has to protect the E-1s and E-2s of Amateur Radio! What *would* have been spectacular would have been an article about the gain antennas that are not directional.

I guess it's up to ol' Kurt to straighten things out (again). Gain, as measured in dB, is a ratio expressing more power in a given direction than does something that is used for a reference.

One term is dBi which means gain over an isotrophic antenna. Such is a totally imaginary device that radiates the same in all directions. One way to visualize such would be a pencil point right in the middle of a tennis ball. Radiation goes out from the point in all directions at equal strength. No such antenna exists.

Then there is dBd; that's gain over a dipole. Theoretically, a dipole radiates broadside to the antenna. If the antenna is running north and south, most of the power is going east and west.

Should you place another element near the dipole, about one-eighth of a wavelength away, and about 5% longer, you'll have a 2-element Yagi, with the other element acting as a reflector. The reflector does exactly what its name says — it reflects.

Less power is going in the direction of the reflector and more is going in the other direction; we have gain in the chosen direction. Now, the only reason we have gain in one direction is because we have robbed it from the other direction.

A 3-element Yagi (adding a director) has even more gain than a 2-element Yagi, and that's because even less is going to other directions. Yagis and quads are called "beam" antennas because they beam the energy in a particular direction.

There are some scientific ways of expressing not being able to create energy and all that, but the best way to describe it is, "There ain't no free lunch."

You just can't get more power in some direction without taking it from somewhere else, such as the back or the sides.

VHF gain antennas such as stacked verticals are taking it from the lobes that previously were going up. But the article was not addressing such because the next part of the sentence was, "and are erected so they can be rotated."

Should you have a vertical antenna on a tower, there is no need for a rotator!

Then, in 'Hints and Kinks,' someone was talking about a loaded vertical and a transmatch with this statement, "Although a transmatch allowed me to feed the antenna over the entire 80-meter band with a low SWR at the transmitter end, I felt that the antenna was performing poorly when I was operating about 30 kHz from the resonant frequency."

To put this in perspective, I'll make an extreme statement. There's no such thing as a "resonant" frequency being some sort of magical ideal. Some given length of wire or aluminum doesn't "hum" any better when one particular frequency hits it.

Resonance means the frequency at which there is no reactance when related to the feedline, and where and how you are feeding it. If the antenna is a little long (inductive) or a little short (capacitive) and your tuner compensates for it, everything is just fine — really!

Extreme example: You have a 40-meter dipole fed with open wire and a tuner. Now you pump 80-meter energy into it. You have a half-size antenna. Assuming the tuner will cover the range and essentially lossless line, you will have about 3dB less radiation (½ "S" unit) than a full-size antenna for the frequency.

So, if whacking the thing in half drops only 3dB, what tiny sliver do you think is lost when you are 1% off frequency, or even 10% off frequency?

To really know what is truly happening, put a field strength meter out somewhere and look at it from the shack with your field glasses. Go up and down the band, twist knobs, and see what happens.

There are a lot of beliefs, cherished assumptions and all that, but please know that field strength is truly the "bottom line". Again, what counts is not theory (supposed), but the level of radiation. If you measure what is happening, you are plugged into reality.

But then, SHAZAM! Page 45 and 46 of the March 1985 **QST** come to the rescue. Certain to send a good number of hamateurs into apoplexy, the antenna guru Walt Maxwell, W2DU, says such things as, "When conjugate match is accomplished at any of the junctions in a system, all reactances in the system are cancelled, including any reactance in the load." Some folks should cut out the page, laminate it, keep it at the operating position, and read it every day so there won't be so much bulloney heard on the air.

Maxwell goes on to say, "The logical place for a transmatch is on the operating desk, not at the antenna."

You can argue with ol' Kurt all you want, but the only people who argue with Maxwell (the defender of the truth) are know-nothing noodnicks.

Then on the same page, John Belrose, VE2CV, phrases it, "An ATU tunes the antenna and transmission line and 'matches' the radiating system to the transmitter."

Considering the myth-busting value of just the first paragraph of the Maxwell article, that page alone is worth the whole price of the magazine, a year's subscription or even a Life Membership!

The April 1985 **CQ Special Antenna Issue** has some good articles, particularly page 32 and the article about the Palomar impedance matching baluns. Oh, how I'd like to see a three-wire up in the air, the sun reflecting from copper wire . . . that's *real* radio.

Very good issue except for the mention of the coaxial double bazooka antenna, an expensive way of accomplishing nothing more than what any plain old wire will do.

The laugh of the month came from a contester telling how he just couldn't get out on 20 meters. It was a real fight just to make a few contacts. Later he found that he had his 40-meter antenna connected, instead of his 20-meter beam, and that was at the very beginning of the contest, not at the bleary-eyed, fuzzied brain condition that comes after many hours. (I thought every contester kept their SWR bridge on reverse just as visual guard against such a possibility.)

I'll end with this: If it matches, it's good for you.

(KNS pens covertly to avoid confrontation with those who put up antennas with directivity but no gain.)

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

Weather boots

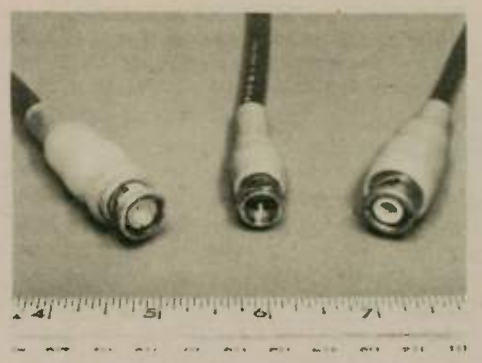
No more sticky tape, no more messy rubber products! Kilo-Tec announces a new custom weather boot for use with RG-58, RG-59 and RG-8X. Simply slip the weather boot over the coaxial cable before soldering on the connector, then slide the boot over the connector for a good weather seal.

The boots are manufactured with a flexible vinyl material that resists moisture and break down from the sun's rays. The boots are designed to keep the connections clean and dry.

We offer three new boots: Model KTBNC-59, for (F) BNC/RG-59 RG-8X; Model KTBNC-58, for (F) BNC/RG-58; Model KTBF-59, for (M) Type F/RG-59 RG-8X.

We also offer various models for PL-259 and type N. Boots for TNC are available on special order.

Ask your dealer or order direct from Kilo-Tec, *P.O. Box 1001, Oak View, CA 93022; (805) 646-9645.* We offer a kit of six boots, your choice for $8.95 p.p. (California residents add 6% California sales tax).



Custom weather boots can be made for other types of cables and connectors. Contact Kilo-Tec for a quote on your special requirements. □

Kenwood kits

The TS-530S SSB Cascade Kit works in both SSB and CW mode, without affecting other modes of operation or transmit audio quality. When you add the International Radio Inc. Cascading Kit, the wanted signal is first passed through the stock 2.4 kHz SSB filter (or optional CW filter). Then through the high-quality International Radio Inc. 8-pole Cascading Unit.

Here are some typical results:
(Before) with stock 2.4 kHz SSB filter. -30dB bandwidth 3.2 kHz; IMD Dynamic Range 79; IF Noise -0dB ref. *(After)* -30dB bandwidth 2.15 kHz; IMD Dynamic Range 102dB; IF noise -7dB below ref.

The narrower bandwidth improves selectivity, dynamic range and noise floor. The IF shift performance will be noticeably better. The modified 530 will have improved weak signal handling capability. Installation is easy and only requires a few solder connections.

If you have a friend with a 530, tell him about our new kit. You will be doing him a favor! IRI-530 Cascading Kit, includes 8-pole filter, PC board, and instructions. Just $79 plus $3 shipping USA, Canada and Mexico. Elsewhere $10.

TS-120S Cascading Kit
As above $79.

TS-130S Cascading Kit
As above $79.

TS-930S True FM Kit
No need to upgrade your 930 for FM mode! Receive and transmit true FM with your present TS-930. After this kit is installed, a transverter may be added for any VHF band, (i.e., MMT 28 MHz to 144 MHz). Then your 930 becomes a multi-mode VHF transceiver, with memory and memory scan (if enabled).

Specifications: FM-Mode transmit power is 30 watts, Receiver sensitivity better than .2uV for 20dB quieting (typical .15uV). Squelch control is the processor out control, in FM mode. A small switch inside the top cover sliding door, changes the AM mode to FM. No other modes of operation are compromised. Your 930 will work as before the modification.

Installing the kit is simple enough. All wiring is done to the component side of the large signal Unit PC board in the bottom of the TS-930. FM-930 wired and tested. $139 plus $3 shipping USA, Mexico and Canada. Elsewhere $10.

For more information, contact International Radio Inc., 1532 SE Village Green Dr., Ste. L, Port St. Lucie, FL 33452; (305) 335-5545. □

ATV transceiver

P.C. Electronics has introduced a new 1 watt 70cm ATV transceiver aimed at amateurs with interests in home videotape, bulletin boards, computers, emergency communications and public service.

The TC70-1 accepts standard composite video input from any source. Video and audio input RCA jacks on the rear panel are provided for connection to black and white or color cameras, computers, VCRs, TVROs, etc. A front panel switch selects video and audio input from these jacks or from the 10-pin connector which is provided for direct connection to many of the popular color cameras made for portable VCRs.

With the TC70-1, the only other items necessary to get on ATV is a good 70cm antenna and low loss coax, your TV set, and any device with a standard 1 volt p-p composite video output commonly found on black-and-white CCTV cameras, home video color cameras and VCRs.

Priced under $300. Call or write for more information and a complete catalog of ATV equipment and accessories: P.C. Electronics, 2522 Paxson Lane, Arcadia, CA 91006 (818) 447-4565. □

Touchtone decoder kit

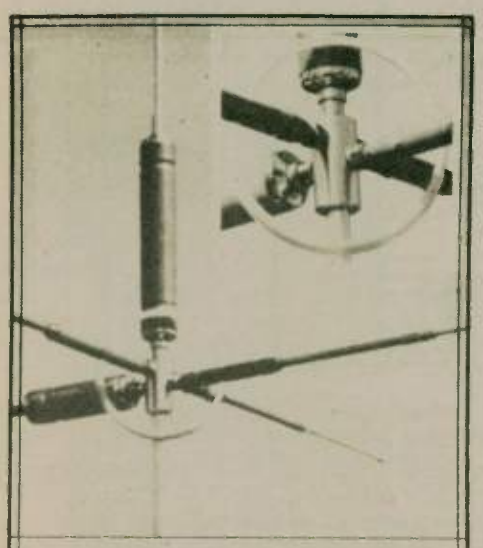
Engineering Consulting would like to announce the Model TSD 4-digit sequential touchtone (DTMF) decoder for mobile and base station use.

This decoder is for the amateur who would like to add the personal touch to his or her station. Each board can have a unique 4-digit user programmable access code.

The board will install in most VHF/UHF and HF gear allowing alarm or mute functions to be implemented. Typical applications include muting the audio circuit until a valid 4-digit code is received. An alarm can be sounded upon receipt of the access code to alert the operator that someone is calling on the channel, without having to listen for your call sign!

The Model TSD decoder is easy to install in any 12V radio. Speaker audio or low-level audio may be used to listen to the tones. An open collector transistor provides the output control to switch a small relay or alarm device. Either momentary or latching control is provided with jumper selection. Upon receipt of the access code, a latch or momentary pulse is provided. Send the code again and the latch with reset.

The TSD is available wired and tested from Engineering Consulting for $59.95. Telephone (714) 671-2009 or write to 583 Candlewood St., Brea, CA 92621.



Doctor DX

(continued from page 25)

your CW skills, whether for contesting or just ordinary operating. It also provides the chance to reminisce about what it was like to operate in 1979 when sunspots came around like early elections . . . and just as predictably!

It could provide, as Craig notes, the opportunity for a Novice to get used to on-air operation and improve CW skills without being embarrassed about lack of experience. To my mind, it could also be a good chance for many of the so-called "big gun" contesters to find out whether it's really they, or their stations, that win contests! Try operating all bands from VU2 on 20 watts in CQWW and see how you go.

Of course, these days service is the name of the game and in this regard, Advanced Electronic Applications, Inc. doesn't just leave you to your own resources. The company has instituted a complete awards program to support your use of Doctor DX.

Included are Doctor DXCC for working 100 countries on any mix of bands over any period of time. Doctor DX WAZ for working all 40 CQ zones, the AEA 5BDrDXCC for working 100 countries on each of five bands, and the Doctor DX Honor Roll for working 250 countries, with endorsement for every additional 10 countries up to 300 out of 304.

The company also has two ongoing contests: the AEA Sprint Contest — a timed, eight-hour non-stop event — and the AEA Marathon Contest — a timed, 24-hour, non-stop contest.

The award certificates are reportedly extremely good quality and the company even publishes a running tally of high claimed scores for awards and contests on Doctor DX. There is a small charge for these awards.

So . . . a game, or a new challenge for bored or frustrated DX'ers and contesters? I guess it's really up to the individual and what they want to make of it. There's little doubt that the apparent success of the program, even at this early stage, will lead to more adventurous initiatives by Advanced Electronic Applications in the future, and this can only benefit the hobby in the long run.

Doctor DX does provide, if nothing else, a chance for computer buffs to taste the fun of Amateur Radio without having to invest a fortune in equipment and study time.

If you'd like to have "the doctor" around the house, write to Advanced Electronic Application Inc., P.O. Box C2160, Lynnwood, WA 98036. USA.
— *Amateur Radio Action* □

TR-720 headset/boom mic

Communications Specialists has announced the availability of a high-quality headset/boom microphone which plugs directly into the TR-720 Hand-held Airband Transceiver. The CS-65 Headset/Mic was developed to permit improved transmission and reception with the TR-720 in noisy environments.

This new accessory is light, weighing only 12 ounces, and features cushioned, noise attenuating ear pads that may be adjusted for a comfortable fit. A flexible boom supports an electret noise cancelling microphone. The unit is supplied with a 5-foot cable to connect to the radio and comes with a push-to-talk switch attached.

The CS-65 Headset/Mic lists for $69.95 and is available from factory stock. For more information or to place an order contact: Communications Specialists, Inc., 426 West Taft Ave., Orange, CA 92665; (800) 854-0547. □

HF transceiver

ICOM announces the IC-735 ultra-compact all ham band HF transceiver and general coverage receiver . . . the most compact and advanced HF SSB unit on the market. Measuring only 3.7"H × 9.5"W × 9"D, the IC-735 is well suited for mobile, marine or base station operation.

To enhance receiver performance, the IC-735 has a built-in receiver attenuator and preamp. Plus, it has a 105dB dynamic range and a new low-noise phase locked loop for rock-solid reception.

The IC-735 features a large LCD readout and conveniently located controls which allow simple operation, even in the mobile environment. VOX controls, mic gain and other seldom-changed controls are kept out of sight behind a hatch cover on the front panel of the radio, but are immediately accessible.

Other standard features — at no additional cost: FM built-in, 500 Hz CW filter (FL-32), electronic CW keyer, HM-12 scanning mic, FM/CW/LSB/USB/AM (Tx and Rx), 12 tunable memories with lithium memory backup, program and memory scan, adjustable AGC, automatic SSB selection by band, RF speech processor, 12V operation, continuously adjustable output power up to 100 watts, 100% duty cycle, and deep tunable notch.

A new line of accessories will also be available, including the AT-120 automatic programmable antenna tuner and the PS-55 power supply. The IC-735 is also compatible with most of ICOM s existing line of HF accessories.

The IC-735 is available as of May 1985; pricing was announced the end of April. The IC-735 will be displayed at the Dayton Hamfest, 26-28 April.

For more information, contact ICOM America, Inc., P.O. Box C-90029, Bellevue, WA 98009-9029. □

Software for hams

TAB BOOKS Inc. introduces a new book — *Software for Amateur Radio*, by Joe Kasser, G3ZCZ. This book is a treasury for anyone interested in Amateur Radio and microcomputers. It is an ideal source for BASIC microcomputer programs and programming ideas, and includes software that has been fully tested and debugged. It covers contests, OSCAR satellites, antenna positioning and pointing, RTTY, packet radio and more.

The 352-page book contains 181 illustrations and costs $15.45, paperback only. Order No. 1560. Available from TAB BOOKS Inc., Blue Ridge Summit, PA 17214; (717) 794-2191.

(*About the author:* Joe Kasser, G3ZCZ, has been an Amateur Radio enthusiast since 1968, and has been involved in personal computers since 1975. He has written many magazine articles on both topics and is the author of several books on both communications and microcomputers. He lives in Israel.) □

Momentary PC mount switch

The DP2 series pushbuttom switch offers low cost and high performance with tactile feedback. Designed for data input applications which require reliable bifurcated, self-cleaning contacts.

The LED illuminated, modern front panel styling is available in various colors. Specifications include an electrical rating of 50mA — 24V DC. Applications include computer-related product, test equipment and telecommunications.

For more information, contact: Eagle Switch, Inc., 709 N. Memorial Parkway, Station C, Huntsville, AL 35801; (205) 534-1006.

Flea market (outside) $2 per space. Dealers (inside shelter) $5 per table. (Reservations suggested.)

Mobile check-in on .04/.64-WA8UXP.

For tickets and information write (include SASE) or call Don Rodgers, WA8SXJ, 161 S. Hawkins Ave., Akron, OH 44313; (216) 864-3665.

Pennsylvania

The MILTON ARC will hold their 14th Annual Hamfest on Sunday, 09 June, from 8:00 a.m. to 5:00 p.m., rain or shine, at the Winfield Fire Hall Grounds on Route 15, Winfield, Pennsylvania, south of Lewisburg, Pennsylvania, eight miles south of Exit #31, on I-80. Registration is $3; wives and children will be admitted free. There will be a flea market, auction and a contest.

Talk-in on 14637/97 and 146025/625.

For further details, contact Jerry Williamson, 10 Old Farm Lane, Milton, PA 17847; (717) 742-3027.

Washington

The Central Washington Hamfest, sponsored by the APPLE CITY RADIO CLUB, will be 08-09 June at Rocky Reach Dam. Seven miles north of Wenatchee on Highway 97. Free camp/trailer space with power is provided after 2:00 p.m. Friday. Reservation deadline for the June 9th banquet is 03 June. The banquet is $7 per person.

For reservations or more information write to Merton Hiatt, Secretary, ACRC, 1002 North Surry Rd., Wenatchee, WA 98801.

Wisconsin

CENTRAL WISCONSIN RADIO AMATEURS, Ltd. will be sponsoring its 8th annual swapfest and family picnic on Sunday, 16 June, at Bukolt Park on the Wisconsin River.

Admission is free. Ham gear will be displayed. Prizes and refreshments. Swaptables and tailgate sales are $2.50. FCC exams will also be given at 9:00 a.m.

Talk-in on 385/985, 07/67 and 22/82 — WB9QFW.

For more information contact WB9QFW at Stevens Point ARC, 1925-A Maria Dr., Stevens Point, WI 54481.

WWSA CW Contest

The World Wide Wouth America (WWSA) CW Contest, sponsored by **Antenna-Electronica Popular Magazine**, Rio de Janeiro, Brazil, will be held 08-09 June, from 1500 UTC Saturday to 1500 UTC Sunday. Supervising the event will be GACW, Argentine CW Group, Buenos Aires, Argentina, and PPC, Pica-Pau Carioca Group, Rio de Janeiro, Brazil, with the cooperation of several well-known South American Amateur Radio societies and CW groups.

The purpose of the contest is for contacts to be made between stations in all countries.

Bands: 1.8, 3.5, 7, 14, 21 and 28 MHz. Crossband contacts are not valid.

Classifications: *CW* (two-way only) — single operator, single band or all bands; multi-operator, single transmitter, all bands; SWL.

Call: CQ SA TEST.

Exchange: RST/QSO number starting from 001.

Points: Each QSO in own country 0 pts., only as a multiplier. QSO in same continent, 2 pts.; with other continent, 4 pts. Contacts with South American stations (only for DX stations), 8 pts.

Multipliers: Different countries (DXCC list) and different South American prefixes worked in each band.

Scoring: The final score is the total QSO points multiplied by the sum of total multipliers from all bands.

Awards: Certificates will be granted to three top scoring stations of each class in country, reasonable score provided. Results of South American entries and of other continents will be listed separately.

Logs: A separate log to each worked band must be sent no later than 31 August to WWSA Contest Committee (please follow standard international contest logging rules).

Mail logs to: WWSA Contest Committee, P.O. Box 18003, 20772 Rio de Janeiro, RJ - BRAZIL, South America.

9-Land CW Contest

The 9-Land CW Contest, sponsored by the Joliet Amateur Radio Society, will be held 15-16 June. The operating time will be a 24-hour period, from 1700Z Saturday to 1700Z Sunday.

Categories: Single operator, one transmitter; multi-operator, one transmitter; multi-operator, portable — field conditions, max. two transmitters.

Frequencies: 1.805 and 60 kHz up from lower edge of 80, 40, 20, 15 and 10 meters. *Novices* — 25 kHz up from lower edge of Novice bands.

Exchange: Consecutive serial number beginning with 001 and state/province/DX country.

Scoring: Contacts with 9-Land stations (Illinois, Indiana, Wisconsin) count 2 QSO points each. Contacts with other than 9-Land stations count 1 QSO point each.

Multipliers — total of states, provinces and DX countries worked (count first time worked only). *Bonus multipliers* — 1 extra multiplier for every 20 9-Land stations worked.

Awards: Certificates to high score in each category in each state, province and DX country. Plaques to high score single op in 9-Land, high score single op outside 9-Land and high score multi-op.

Reporting: Dupe sheets are required for more than 200 contacts. Logs must be postmarked by 20 July 1985. Enclose business-size SASE for results. Send logs, dupe sheets and summary sheet to: Paula Franke, WB9TBU, P.O. Box 873, Beecher, IL 60401.

Summer SMIRK Party

The Six-Meter International Radio Klub will be sponsoring the 11th Annual Summer SMIRK Party 28-30 June. Operating times will be from 1900 CDT, Friday, 28 June to 1900 CDT, 30 June, or 0000 UTC, 29 June to 2400 UTC, 30 June.

Operation: Exchange SMIRK Number and ARRL section or foreign state, province, prefecture or country. Under SMIRK rules, count ARRL sections in the 48 U.S. states only. KH6 and KL7 count as countries. Washington, D.C. counts as a section. Canadians count as provinces. All others count as states, provinces, prefectures or countries. No crossband contacts, multi-operators or partial contacts. Check logs or dupe sheets are not required.

Scoring: Count 2 pts. for each SMIRK contact, 1 pt. for non-SMIRK. Total SMIRK plus total non-SMIRK multiplied by total number of ARRL sections, foreign states, provinces, prefectures or countries worked = claimed score.

Awards: Certificates for high score SMIRK in two divisions: U.S./Canada and foreign. Certificates for high score in each ARRL section and foreign state, province, prefecture or country.

Entries: Entries, to be eligible, must be submitted on the Fall 1981 edition of the Official SMIRK Log. Send log requests (SASE) and entries (postmarked not later than 31 July 1985) to: Mark S. Anderson, WB5NPK, 8932 Saddle Trail, San Antonio, TX 78255.

RF TRANSISTORS, MICROWAVE TRANSISTORS

TYPE	PRICE	TYPE	PRICE	TYPE	PRICE	TYPE	PRICE	TYPE	PRICE	TYPE	PRICE	TYPE	PRICE	TYPE	PRICE
2N1561	$25.00	2N4416	2.25	2N5920	$ 70.00	181-3	15.00	40608 RCA	$ 2.48	A2X1698	POR	BFY90	$ 1.50	EFJ4017	24.00
2N1562	25.00	2N4427	1.25	2N5921	80.00	210-2	10.00	40673 RCA	2.50	A3-12	14.45	BLW60C5	15.00	EFJ4021	24.00
2N1692	25.00	2N4428	1.85	2N5922	10.00	269-1	18.00	40894 RCA	1.00	A50-12	24.00	BLX67	12.25	EFJ4026	35.00
2N2857	1.55	2N4430	11.80	2N5923	25.00	281-1	15.00	60247 RCA	25.00	A209	10.00	BLX67C3	12.25	EN15745	20.00
2N2857JAN	4.10	2N4927	3.90	2N5941	23.00	282-1	30.00	61206 RCA	100.00	A283	6.00	BLX93C3	22.21	FJ9540	16.00
2N2857JANTX	4.50	2N4957	3.45	2N5942	40.00	482	7.50	62800A RCA	60.00	A283B	6.00	BLY87A	7.50	FSX52WF	58.00
2N2876	13.50	2N4959	2.30	2N5944	10.35	564-1	25.00	62803 RCA	100.00	A1610	19.00	BLY88C3	13.08	G65739	25.00
2N2947	18.35	2N5016	18.40	2N5945	10.00	698-3	15.00	430414/3990RCA	50.00	AF102	2.50	BLY89C	13.00	G65386	25.00
2N2948	13.00	2N5026	15.00	2N5946	12.00	703-1	15.00	3457159 RCA	20.00	AFY12	2.50	BLY90	45.00	GM0290A	2.50
2N2949	15.50	2N5070	18.40	2N5947	9.20	704	4.00	3729685-2 RCA	75.00	AR7115	20.00	BLY92	13.30	HEP76	4.95
2N3118	5.00	2N5090	13.80	2N6080	6.00	709-2	11.00	3729701-2 RCA	50.00	AT41435-5	6.35	BLY94C	45.00	HEPS3002	11.40
2N3119	4.00	2N5108	3.45	2N6081	7.00	711	4.00	3753883 RCA	50.00	B2-8Z	10.70	BLY351	10.00	HEPS3003	30.00
2N3134	1.15	2N5109	1.70	2N6082	9.00	733-2	15.00	615467-902	25.00	B3-12	10.85	BLY568C/CF	30.00	HEPS3005	10.00
2N3287	4.90	2N5160	3.45	2N6083	9.50	798-2	25.00	615467-903	40.00	B12-12	15.70	C2M70-28R	92.70	HEPS3006	19.90
2N3288	4.40	2N5177	21.62	2N6084	12.00	3421	28.00	2SC568	2.50	BAL0204125	152.95	C25-28	57.00	HEPS3007	25.00
2N3309	4.85	2N5179	1.04	2N6094	11.00	3683P1	15.00	2SC703	36.00	BF25-35	56.25	C4005	2.50	HEPS3010	11.34
2N3375	17.10	2N5216	56.00	2N6095	12.00	3992	25.00	2SC756A	7.50	B40-12	19.25	CD1659	20.00	HF8003	10.00
2N3478	2.13	2N5470	75.00	2N6096	16.10	4164P1	15.00	2SC781	2.80	B70-12	55.00	CD1899	20.00	HFET2204	112.00
2N3553	1.55	2N5583	3.45	2N6097	20.70	4243P1	28.00	2SC1018	1.00	BF272A	2.50	CD1920	10.00	HP35821	38.00
2N3553JAN	2.90	2N5589	9.77	2N6105	21.00	4340P3	18.00	2SC1042	24.00	BFQ85	2.50	CD2188	18.00	HP35826B	32.00
2N3632	15.50	2N5590	10.92	2N6136	21.85	4387P1	27.50	2SC1070	2.50	BFR21	2.50	CD2545	24.00	HP35826E	32.00
2N3733	11.00	2N5591	13.80	2N6166	40.24	7104-1	28.00	2SC1216	2.50	BFR90	1.00	CD2664A	16.00	HP35831E	30.00
2N3818	5.00	2N5596	99.00	2N6267	142.00	7249-2	10.50	2SC1239	2.50	BFR91	1.65	CD3167	92.70	HP35832E	50.00
2N3866	1.30	2N5636	12.00	2N6304	1.50	7283-1	37.50	2SC1251	24.00	BFR99	2.50	CD3353	95.00	HP35833E	50.00
2N3866JAN	2.20	2N5637	15.50	2N6368	30.00	7536-1	30.00	2SC1306	2.90	BFT12	2.50	CD3435	26.30	HP35859E	75.00
2N3866JANTX	3.80	2N5641	12.42	2N6439	55.31	7794-1	10.50	2SC1307	5.50	BFW16A	2.50	CD3900	152.95	HP35866E	44.00
2N3866JANTXV	4.70	2N5642	14.03	2N6459	18.00	7795	15.00	2SC1424	2.80	BFW17	2.50	CM25-12	20.00	HXTR2101	44.00
2N3866AJANTXV	5.30	2N5643	25.50	2N6567	10.06	7795-1	15.00	2SC1600	5.00	BFW92	1.50	CM40-12	27.90	HXTR3101	7.00
2N3924	3.35	2N5645	13.80	2N6603	13.50	7796-1	24.00	2SC1678	2.00	BFX44	2.50	CM40-28	56.90	HXTR5101	31.00
2N3926	16.10	2N5646	20.70	2N6604	13.50	7797-1	36.00	2SC1729	32.40	BFX48	2.50	CME50-12	30.00	HXTR6104	68.00
2N3927	17.25	2N5651	11.05	2N6679	44.00	40081 RCA	5.00	2SC1760	1.50	BFX65	2.50	CTC2001	42.00	HXTR6105	31.00
2N3948	1.75	2N5691	18.00	2N6680	80.00	40279 RCA	10.00	2SC1909	4.00	BFX84	2.50	CTC2005	55.00	HXTR6106	33.00
2N3950	25.00	2N5764	27.00	021-1	15.00	40280 RCA	4.62	2SC1945	10.00	BFX85	2.50	CTC3005	70.00	J310	1.00
2N3959	3.85	2N5836	3.45	01-80703T4	65.00	40281 RCA	10.00	2SC1946	40.00	BFX86	2.50	CTC3460	20.00	JO2000	10.00
2N4012	11.00	2N5842	8.45	35C05	15.00	40282 RCA	20.00	2SC1947	10.00	BFX89	1.00	DV2820S	25.00	JO2001	25.00
2N4037	2.00	2N5847	19.90	102-1	28.00	40290 RCA	2.80	2SC1970	2.50	BFY11	2.50	DXL1003P70	22.00	JO4045	24.00
2N4041	14.00	2N5849	20.00	103-1	28.00	40292 RCA	13.05	2SC1974	4.00	BFY18	2.50	DXL2001P70	19.00	KD5522	25.00
2N4072	1.80	2N5913	3.25	103-2	28.00	40294 RCA	2.50	2SC2166	5.50	BFY19	2.50	DXL2002P70	14.00	KJ5522	25.00
2N4080	4.53	2N5916	36.00	104P1	18.00	40341 RCA	21.00	2SC2237	32.00	BFY39	2.50	DXL3501AP100F	47.00	M1106	13.75
2N4127	21.00			163P1	10.00			2SC2695	47.00			EFJ4015	12.00		

* R F TRANSISTORS *

TYPE	PRICE	TYPE	PRICE	TYPE	PRICE	TYPE	PRICE	TYPE	PRICE	TYPE	PRICE	TYPE	PRICE	TYPE	PRICE
M1107	$16.75	MRF221	10.00	MRF525	3.45	MSC82001	33.00	PT4642	20.00	SD1007-4	15.00	SD1088-8	22.00	SD1220	8.00
M1131	5.15	MRF223	13.00	MRF559	1.76	MSC82014	33.00	PT5632	4.70	SD1007-5	15.00	SD1089-5	15.00	SD1220-1	9.50
M1132	7.25	MRF224	13.50	MRF587	11.00	MSC82020M	130.00	PT5749	25.00	SD1009	$15.00	SD1090	15.00	SD1220-9	8.00
M1134	13.40	MRF227	3.45	MRF605	20.00	MSC82030	33.00	PT6612	25.00	SD1009-2	15.00	SD1094	15.00	SD1222-8	16.00
M9116	29.10	MRF230	2.00	MRF618	25.00	MSC83001	40.00	PT6619	20.00	SD1012	10.00	SD1095	15.00	SD1222-11	7.50
M9579	6.00	MRF231	10.00	MRF626	12.00	MSC83003	82.00	PT6708	25.00	SD1012-3	10.00	SD1098-1	30.00	SD1224-10	18.00
M9580	7.95	MRF232	12.07	MRF628	8.65	MSC83005	70.00	PT6709	25.00	SD1012-5	10.00	SD1100	5.00	SD1225	18.00
M9587	7.00	MRF237	3.15	MRF629	3.45	MSC83026	POR	PT6720	25.00	SD1013	10.00	SD1109	18.00	SD1225-1	15.00
M9588	5.20	MRF238	13.80	MRF641	25.30	MSC83303	POR	PT8510	15.00	SD1013-3	10.00	SD1115-2	7.50	SD1229-7	10.95
M9622	5.95	MRF239	17.25	MRF644	27.60	MSC84900	60.00	PT8524	25.00	SD1013-7	10.00	SD1115-3	7.50	SD1229-16	10.95
M9623	7.95	MRF245	35.65	MRF646	29.90	MT4150	14.40	PT8609	25.00	SD1016	15.00	SD1115-7	2.10	SD1232	4.00
M9624	9.95	MRF247	31.00	MRF648	33.35	MT5126	25.00	PT8633	25.00	SD1016-5	15.00	SD1116	5.00	SD1240-8	15.00
M9625	15.95	MRF304	36.00	MRF816	15.00	MT5596(2N)	99.00	PT8639	25.00	SD1018-4	13.00	SD1118	22.00	SD1244-1	14.00
M9630	14.00	MRF306	50.00	MRF823	20.00	MT5768(2N)	95.00	PT8659	25.00	SD1018-6	13.00	SD1119	5.00	SD1244H12	25.00
M9740	27.90	MRF313	11.15	MRF846	44.85	MT8762	25.00	PT8679	25.00	SD1018-7	13.00	SD1124	50.00	SD1262	15.00
M9741	27.90	MRF314	29.21	MRF892	35.50	NE02136	2.00	PT8708	20.00	SD1018-15	13.00	SD1132-1	15.00	SD1263	15.00
M9755	16.00	MRF315	28.86	MRF894	46.00	NE02160ER	$100.00	PT8709	20.00	SD1020-5	10.00	SD1132-4	12.00	SD1263-1	15.00
M9780	5.50	MRF316	55.43	MRF901 3 Lead	1.00	NE02135O	5.30	PT8727	29.00	SD1028	15.00	SD1133	9.50	SD1272	10.95
M9827	11.00	MRF317	63.94	MRF901 4 Lead	2.00	NE13783	61.00	PT8731	25.00	SD1030	12.00	SD1133-1	10.00	SD1272-1	10.95
M9848	35.00	MRF412	18.00	MRF902/2N6603JAN	15.00	NE21889	43.00	PT8742	19.10	SD1030-2	12.00	SD1134-1	2.50	SD1272-2	10.95
M9850	13.50	MRF420	20.12	MRF902B	18.40	NE57835	5.70	PT8787	25.00	SD1040	5.00	SD1134-4	12.00	SD1272-4	10.95
M9851	20.00	MRF421	25.00	MRF904	2.30	NE64360ER-A	100.00	PT8828	25.00	SD1040-2	20.00	SD1134-17	12.00	SD1278	13.75
M9860	8.25	MRF422	38.00	MRF905	2.55	NE64480 (B)	94.00	PT9700	25.00	SD1040-4	10.00	SD1135	10.25	SD1278-1	13.75
M9887	2.80	MRF427	17.25	MRF911	2.50	NE73436	2.50	PT9702	25.00	SD1040-6	5.00	SD1135-3	12.00	SD1278-5	13.75
M9908	6.95	MRF428	63.00	MRF965	2.55	NE77362ER	100.00	PT9783	16.50	SD1043	12.00	SD1136	12.50	SD1279-1	18.00
M9965	12.00	MRF433	12.07	MRF966	3.55	NE98260ER	100.00	PT9784	32.70	SD1043-1	10.00	SD1136-2	12.50	SD1279-3	18.00
MM1500	25.00	MRF449/A	12.65	MRF1000MA	32.77	PRT8637	25.00	PT9790	56.00	SD1045	3.75	SD1143-1	10.00	SD1281-2	8.00
MM1550	10.00	MRF450/A	14.37	MRF1004M	31.05	PT3127A	5.00	PT31083	20.00	SD1049-1	2.00	SD1143-3	17.00	SD1283	10.00
MM1552	50.00	MRF452/A	17.00	MRF2001	41.74	PT3127B	5.00	PT31962	20.00	SD1053	4.00	SD1144	4.00	SD1283-2	10.60
MM1553	50.00	MRF453/A	18.40	MRF2005	54.97	PT3127C	20.00	PTX6680	20.00	SD1057	10.00	SD1145-5	15.00	SD1283-3	10.00
MM1607	8.45	MRF454/A	20.12	MRF5176	24.00	PT3127D	20.00	RE3754	25.00	SD1065	4.75	SD1146	15.00	SD1283-4	10.00
MM1614	10.00	MRF455/A	16.00	MRF8004	2.10	PT3127E	20.00	RE3789	25.00	SD1068	15.00	SD1147	15.00	SD1289-1	15.00
MM1810	15.00	MRF458	$20.70	MSC1720-12	225.00	PT3190	20.00	RF35	16.00	SD1074-2	18.00	SD1188	10.00	SD1290-4	15.00
MM1810	15.00	MRF464	25.30	MSC1821-3	125.00	PT3194	20.00	RF85	17.50	SD1074-4	28.00	SD1189	24.00	SD1290-7	15.00
MM1943	1.80	MRF466	18.97	MSC1821-10	225.00	PT3195	20.00	RF110	21.00	SD1074-5	28.00	SD1200	1.50	SD1300	1.25
MM2608	5.00	MRF472	1.50	MSC2001	30.00	PT3537	7.80	S50-12	23.80	SD1076	18.50	SD1201-2	15.00	SD1301-7	3.00
MM3375A	17.10	MRF475	3.10	MSC2010	93.00	PT4166E	20.00	S3006	15.00	SD1077	4.00	SD1202	$10.00	SD1304-8	$ 2.50
MM4429	10.00	MRF476	3.16	MSC2223-10	245.00	PT4176D	25.00	S3007	10.00	SD1077-4	4.00	SD1212-8	4.95	SD1305	3.00
MM8000	1.15	MRF477	20.00	MSC2302	POR	PT4186B	5.00	S3031	22.00	SD1077-6	4.00	SD1212-11	4.95	SD1307	3.00
MM8006	2.30	MRF479	8.05	MSC3000	35.00	PT4209	25.00	SCA3522	5.00	SD1078-6	24.00	SD1212-16	4.95	SD1308	3.00
MM8011	25.00	MRF492	23.00	MSC3001	38.00	PT4209C/5645	25.00	SCA3523	5.00	SD1080-7	7.50	SD1214-7	5.00	SD1311	1.00
MPSU31	1.01	MRF502	1.04	MSC72002	POR	PT4556	24.60	SD345	5.00	SD1080-8	6.00	SD1214-11	5.00	SD1317	8.00
MRA2023-1.5	42.50	MRF503	6.00	MSC73001	POR	PT4570	7.50	SD445	5.00	SD1080-9	3.00	SD1216	12.00	SD1319	2.50
MRF134	10.50	MRF504	7.00	MSC80064	35.00	PT4577	20.00	SD1004	15.00	SD1084	8.00	SD1219-4	15.00	SD1345-6	5.00
MRF136	16.00	MRF509	5.00	MSC80091	10.00	PT4590	5.00	SD1007	15.00	SD1087	15.00	SD1219-5	15.00	SD1347-1	1.00
MRF171	35.00	MRF511	10.69	MSC80099	3.00	PT4612	20.00	SD1007-2	15.00	SD1088	22.00	SD1219-8	15.00	SD1365-1	2.50
MRF208	11.50	MRF515	2.00	MSC80593	POR	PT4628	20.00								
MRF212	16.10	MRF517	2.00	MSC80758	POR	PT4640	20.00								

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"All parts may be new or surplus, and parts may be substituted with comparable parts if we are out of stock of an item."

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C.O.D. Acceptable by telephone or mail. Payment from customer will be by Cash, Money Order, or Cashier's Check. We are sorry but we cannot accept personal checks for C.O.D.'s. C.O.D's are shipped by air only and thru United Parcel Service.

CONFIRMING ORDERS: We would prefer that confirming orders not be sent after a telephone order has been placed. If company policy necessitates a confirming order, please mark "CONFIRMING" boldly on the order. If problems or duplicate shipments occur due to an order which is not properly marked, the customer will be held responsible for any charges incurred, plus a 15% restock charge on the returned parts.

CREDIT CARDS: We are now accepting MASTERCARD, VISA, AND AMERICAN EXPRESS

DATA SHEETS: When we have data sheets in stock on devices we will supply them with the order.

DEFECTIVE MATERIALS: All claims for defective materials must be made within 30 DAYS after receipt of the parcel. All claims must include the defective material (for testing purposes), a copy of our invoice, and a return authorization number which must be obtained prior to shipping the merchandise back to us. This can be obtained by calling (602) 242-8916 or sending us a postcard. Due to Manufacture warranties we are unable to replace or issue credit on items which have been soldered to or have been altered in any way. All return items must be packed properly or it will void all warranties. We do not assume responsibility for shipping and handling charges incurred.

DELIVERY: Orders are usually shipped the same day they are placed or the next business day, unless we are out of stock on an item. The customer will be notified by post card if we are going to backorder the item. Our normal shipping method is UPS or U.S. Mail depending on size or the weight of the package. Test Equipment is shipped only by air and is freight collect, unless prior arrangements have been made and approved.

FOREIGN ORDERS: All foreign orders must be prepaid with a Cashier's Check, or Money Order made out in U.S. FUNDS ONLY. We are sorry but C.O.D. is not available to foreign countries and letters of credit are unacceptable as a form of payment. Further information is available on request.

HOURS: Monday thru Friday 8:30 a.m. to 5:00 p.m. Saturdays 8:30 a.m. to 4:30 p.m.

INSURANCE: Please include 25¢ for each additional $100.00 over $100 UPS ONLY. All insured packages are shipped thru UPS only. If you wish to have it shipped through the post office there is a $5.00 fee which is additional to the shipping, handling and insurance.

OPEN ACCOUNTS: We regret that we do not issue open accounts.

ORDER FORMS: New order forms are included with each order for your convenience. Additional order forms are available on request.

PARTS: We reserve the right to substitute or replace any item with a part of equal or comparable specification.

POSTAGE: Minimum shipping and handling in the U.S., Canada, and Mexico is $3.00 for ground shipments, all other countries is $5.50. Air rates are available at the time of your order. All foreign orders please include 25% of the ordered amount for shipping and handling. C.O.D.'s are shipped AIR ONLY.

PREPAID ORDERS: Orders must be accompanied by a check.

PRICES: Prices are subject to change without notice.

PURCHASE ORDERS: We accept purchase orders only when they are accompanied by a check.

RESTOCK CHARGES: If parts are returned to MHZ ELECTRONICS, INC. due to customer error, the customer will be held responsible for all fees incurred and will be charged a 15% RESTOCK CHARGE with the remainder in CREDIT ONLY. The following must accompany any return; A copy of our invoice, return authorization number which must be obtained prior to shipping the merchandise back. Returns must be done within 10 DAYS of receipt of parcel. Return authorization numbers can be obtained by calling (602) 242-8916 or notifying us by post card. Return authorizations will not be given out on our 800 number.

SALES TAX: ARIZONA residents must add 6% sales tax, unless a signed ARIZONA resale tax card is currently on file with us. All orders placed by persons outside of ARIZONA, but delivered to persons in ARIZONA are subject to the 6% sales tax.

SHORTAGE OR DAMAGE: All claims for shortages or damages must be made within 5 DAYS of receipt of parcel. Claims must include a copy of our invoice, along with a return authorization number which can be obtained by contacting us at (602) 242-8916 or sending a post card. Authorizations cannot be on our 800 number. All items must be properly packed. If items are not properly packed make sure to contact the carrier so that they can come out and inspect the package before it is returned to us. Customers which do not notify us within this time period will be held responsible for the entire order as we will consider the order complete.

OUR 800 NUMBER IS STRICTLY FOR ORDERS ONLY (800) 528-0180. INFORMATION CALLS ARE TAKEN ON (602) 242-8916 or (602) 242-3037.

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California

The Santa Maria Radio Swapfest will be held 16 July, at Union Oil's Newlove picnic grounds, south of Santa Maria, off U.S. 101. The SATELLITE ARC which sponsors the event, has as this year's grand prize an ICOM 730 HF xcvr (winner must be present). Swap spaces $3.50; dinner and drawing tickets $7.95. Reserve your spaces early, and indicate any special requirements (handicapped, etc.).

Talk-in frequencies are 146.34/94, WB6IIY/R, and 7230 MHz.

For more information and orders write to Santa Maria Swapfest, P.O. Box 1753, Santa Maria, CA 93456. □

Georgia

The JOHN ROSS ARC will hold its annual hamfest on 08-09 June, at a new location — the Lakeview-Ft. Oglethorpe High School in Ft. Oglethorpe, Georgia which is located on Hwy. 2A, Exit #141, four miles off I-75. Inside air-conditioned dealer spaces; also inside or outside flea market spaces. Tables available. FCC exams both days; refreshments and plenty of free parking.

Talk-in on 145.35/down.

For reservations and information write JRARC, P.O. Box 853, Rossville, GA 30741; (404) 861-5610. □

Idaho

The KOOTENAI AMATEUR RADIO SOCIETY will sponsor "Hamfest 85" on Saturday, 08 June 1985, from 8:00 a.m. to 4:00 p.m., at the Kootenai County Fairgrounds in Coeur d'Alene. Admission and swap tables are free. Set-up is at 7:30 a.m.

Plenty of free parking and RV's welcome. Food is available. Exams will be given and lots of prizes.

Talk-in on 146.38/.98 repeater.

For tickets or more information, contact Jim Monroe, N7ESU, W. 2455 Hidden Valley Rd., Rathdrum, ID 83858; (208) 687-0136. □

Illinois

The SIX METER CLUB OF CHICAGO, INC. announces its 28th Annual Hamfest, to be held Sunday, 09 June, at Santa Fe Park, 91st and Wolf Road, Willow Springs, Illinois (southwest of downtown Chicago). Gates open at 6:00 a.m.

Registration is $2 in advance, $3 at the gate. Large swappers' row, drawings, displays, AFMARS meeting and refreshments. Overnight campers subject to charges by Santa Fe Park Management. Tables are $20 each. Exhibitors must supply extension cords.

Talk-in on 146.52 or K9ONA/R 37-97.

Advance tickets can be ordered from Val Hellwig, K9ZWV, 3420 South 60th Court, Cicero, IL 60650. □

Indiana

The 39th Annual Wabash Valley Amateur Radio Hamfest (sponsored by WABASH VALLEY AMATEUR RADIO ASSOCIATION) will be held Sunday, 02 June at the Vigo County Fairgrounds, Terre Haute, Indiana, located on U.S. 41, a half-mile south of I-70.

Open Saturday for overnight campers ($5 fee), open Sunday 0800 EST. Free outdoor flea market, covered flea market, $3 for 12′ x 12′ space. Some AC and tables available on first-come basis. Food and refreshments; giant shopping mall nearby. Advance sale tickets $2 or three for $5, or $3 at gate. Children under 12 free.

Talk-in 25/85 and 52 simplex.

For tickets and information, send SASE to WVARA Hamfest, P.O. Box 81, Terre Haute, IN 47808. □

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The MAARC Hamfest, sponsored by the MUNCIE AREA ARC, will be held Sunday, 09 June, from 8:00 a.m. to 3:00 p.m. at the Delaware County Fairgrounds Memorial Building in Muncie, Indiana.

Advance tickets are $2; at the gate $3. Tables are $5. Major vendors, flea market and computer display. Set up after 6:00 p.m. Saturday. Overnight camping (water, lights and sewage — $5).

Talk-in on 13/73 and 52/52 simplex. For tickets, table reservations and general information, send SASE to MAARC, P.O. Box 2102, Muncie, IN 47302. □

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The LAKE COUNTY ARC will sponsor its 13th Annual Father's Day Hamfest on Sunday, 16 June, at the Lake County Fairgrounds Industrial Building which is located just inside the east gate.

Free parking. Tables will be available. General admission $2.50 with no advance sales. Set-up at 6:00 a.m. Hours are from 8:00 a.m. to 2:00 p.m. MARS, ARRL/ARES tables and computer demonstration. Refreshments available. Overnight accommodations are close by.

Talk-in on the Lake County ARC repeater, 147.84/24 or 52 simplex.

For more information, write Gene Hunkins, KC9LH, P.O. Box 1909, Gary, IN 46409, or call (312) 821-3210 (days) and (219) 937-9652 (evenings). □

Kentucky

The KENTUCKY COLONELS ARC will hold their annual Bowling Green Hamfest at the Jaycee Pavilion (inside, air-conditioned), on the South Kentucky Fairgrounds, just off U.S. 231 north, 08 June at 8:00 a.m.

Admission is $2 at the gate and $2 for tables inside. Outside set-up is free. Food and drinks available.

For more information, contact Ed Gann, N4HID, at 445 Elrod Rd., Bowling Green, KY 42101; (502) 843-8911 □

Maryland

The FREDERICK ARC will hold its 8th Annual Hamfest on 16 June, at the Frederick Fairgrounds. Admission: $3; YL's and children free. Hours: 8:00 a.m. to 4:00 p.m. Tailgaters extra $2. Gates open for exhibitors at 8:00 p.m., 15 June, with overnight security provided. Overnight parking welcomed. Exhibitor tables $10; each extra table only $5 each.

For additional info, write: Jim Kasunic, KA3LPC, 9419 Highlander Ct., Walkersville, MD 21793. □

Michigan

The INDEPENDENT REPEATER ASSOCIATION of Grand Rapids will hold its annual Hamfestival on 01 June, from 8:00 a.m. to 4:00 p.m., at the Wyoming National Guard Armory on 44th Street, west of US-131. Admission $3.50.

Programs include satellite operation, packet radio, CW receiver contest, shack picture contest, entertainment films for non-hams, and many others. 15,000-square-foot indoor swap area. *FREE* table space for all sellers. Dealer setup at 6:00 a.m. Advanced table reservations accepted. Dealers welcome.

Talk-in on 165/765.

For more information, call Paul Gardner, WD8IZB, (616) 538-8241, or write to IRA, 562-92nd St., SE, Byron Center, MI 49315. □

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The Chelsea Swap and Shop — sponsored by the CHELSEA COMMUNICATION CLUB — will be held on Sunday, 02 June, at the Chelsea Fairgrounds, Chelsea, Michigan. Gates will open for sellers at 5:00 a.m. and for the public from 8:00 a.m. until 2:00 p.m. Donation is $2.50 in advance or $3 at the gate. Childen under 12 and non-ham spouses are admitted free.

Talk-in on 146.520 simplex and 147.255 Chelsea repeater.

For more info, write to William Altenberndt, 3132 Timberline, Jackson, MI 49201. □

New York

The Long Island Hamfair, sponsored by LIMARC (LONG ISLAND MOBILE ARC) will be held on Sunday, 09 June, at the Electricians Hall, 41 Pinelawn Road, Melville, Long Island. Hours are from 9:00 a.m. to 4:00 p.m. General admission is $3 per person; $2 after 1:00 p.m. Table spaces sold only in advance from Hank Wener, WB2ALW, 53 Sherrard St., East Hills, NY 11577-1712. 4′ × 6′ table space available at $10 or your own for $6.

Contact Hank at (516) 484-4322 at night to 11:30 p.m. or Al Flapan, WA2FBQ, at (516) 796-2965 at night. □

Ohio

The GOODYEAR ARC's 18th annual hamfest will be held at Wingfoot Lake Park Akron, Ohio, 09 June, from 7:00 a.m. until 5:00 p.m. Family admission is $3 in advance or $4 at the gate. Park is located near U.S. 224 and SR-43, five miles east of Akron.

New Products

(continued from page 47)

Satellite TV downconverter

SAT-TEC has introduced the latest in its family of R-5000 satellite TV receivers — the R-5000XL. The new unit upgrades the R-5000 series without price increase.

Among the new features are a polarity control circuit that enables the unit to receive signals on both horizontal and vertical polarities, a Polarotor 1 interface, a skew control designed with built-in protection from accidental burnout, and an electronic A/B switch that automatically switches from VHF to the dish. All controls are located on the back panel for easy setup and adjustment.

A crystal-controlled modulator maintains drift-free operation and is switchable to channel 3 or 4. Double-sided printed circuit boards are plated through to improve reliability.

The R-5000XL's downconverter, the DC-5000, uses coax cables for both power and IF lines to afford extra protection against noise and stray signal interference. It provides enough gain to drive hundreds of feet of cable. For easy, trouble-free installation, the downconverter features F connectors.

Its weatherproof, zinc case is designed to "breathe", preventing damage due to condensation. A hard epoxy coating protects the unit from corrosion.

SAT-TEC manufactures satellite TV receivers and related equipment for both consumer and commercial markets.

For more information, contact SAT-TEC Sales, Inc., 2575 Baird Rd., Penfield, NY 14526; (716) 586-3950. □

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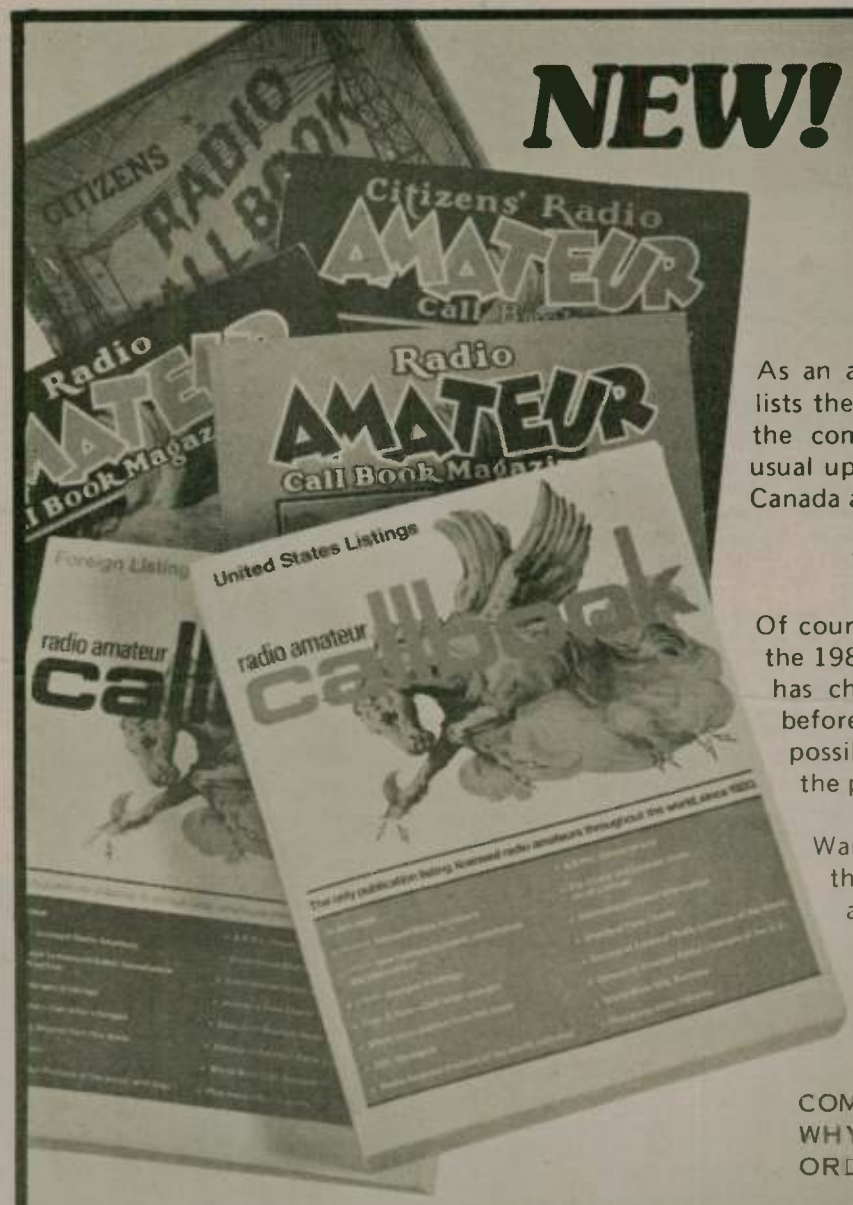

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