

Worldradio

Year 22, Issue 7

January 1993 • \$1.25

FEATURES

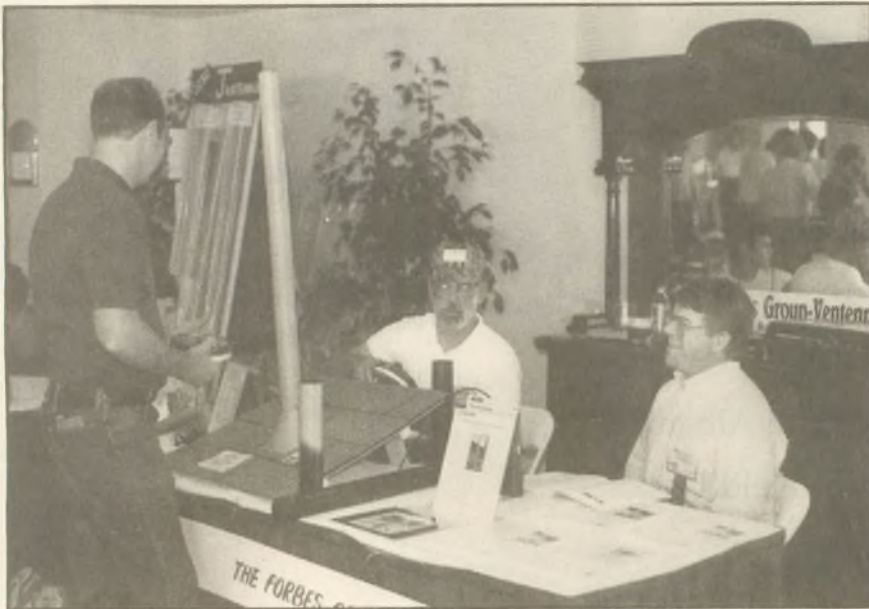
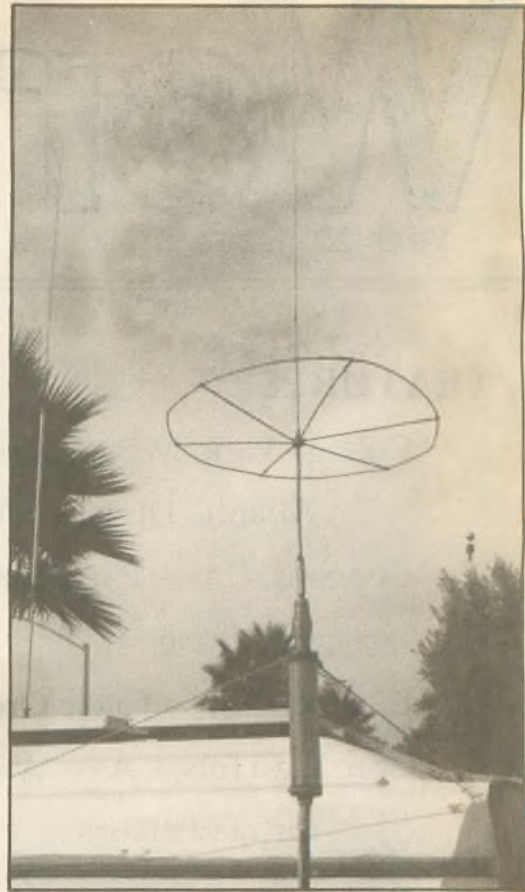
- College Park, MD — First Atlantic Division DXPO '92
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- Granada Hills, CA — Watch out for new errors
- Kauai, HI — Keeping Kauai connected
- Nashville, TN — Proper use of E-911
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- Woodbridge, NY — Different Field Day



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- Aerials • Amateur Hi • AMSAT-Oscar schedule • Construction • Contests
- County Hunter • Digital Bus • DX Prediction • DX World • FCC Highlights
- Hamfests • Mars • Mobile • New Products • Off the Air • Old Time Radio
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**Pacificon 1992
Concord, CA
Oct. 16-18**



Worldradio

Year 22, Issue 7

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Albania revisited

MARTTI LAINE, OH2BH

The initial ZA1A activity in September 1991 established Amateur Radio as well as on-the-air activity for Albania. The follow-up session was organized during the month of July 1992, and the initial ZA1A license was reactivated for this continuing IARU supported activity. Several volunteers participated, including DF3CB, KC6KOU, OH1MKT, OH2BSI, OH2BNW and OH6EI.

While on-the-air activity by the resident Albanians has exceeded all our expectations, it was still a positive sur-

prise to learn that more than 45,000 QSOs had been made by the locals since the initial ZA1A activity. Furthermore, at a scheduled get-together at Skanderberg Square all the resident ZAs appeared.

The ZAs had formed a sub-group approach to rotate the transceivers and antennas left by the ZA1A group in one-week turns. The rotation included five fully operational stations. Another four Yaesu stations with Cushcraft antennas have now been presented to the Albanians with all necessary cables and accessories. All this material was

financed by the ZA1A QSL surplus, presented by the Northern California DX Foundation, and now kept in a special account at the IARU.

During the visit it was announced that the ZA1T-series calls will be replaced by one-letter suffixes. Another 11 such calls were issued after the recent examination, making the number of resident operators now 23. These new licenses are the ones from ZA1N to ZA1Y, while ZA1TAA was changed to ZA1Z, allowing ZA1A to be held by the IARU program participants. The licensing for local and foreign operators is now well defined, eliminating the earlier confusion. The "spot-licensing"

please turn to page 15

Project Goodwill Albania

FRANK SMITH, AA7FM

It hardly seems like more than just a few months ago when the international DX team led by Martti Laine, OH2BH, Wayne Mills, N7NG, and Kan Mizoguchi, JA1BK, along with their associates electrified our world of DX with the news that Albania was soon to be a reality for once and forever. Soon thereafter, tens of thousands of hams worldwide were sharing in the thrill of making their elusive ZA1A contact and getting their ZA1Z QSL cards. That IARU-supported mission set an example for worldwide friendship through DX and gave the world Albania.

Little does the international amateur community realize that in bringing the ZA project to fruition, it was also the Albanians themselves who gave their country to the world. Here was (and is) one of the world's most impoverished, politically self-isolated countries ever in history unselfishly providing for the ZA1A crew, and thereby the DX world, kind, gracious and warm hospitality and asking nothing in return. And they did so at a time when unemployment in Albania soared over 70 percent, their country lay in the literal rubble and blood of turmoil, and when the Albanians were (and still are) suffering from widespread food shortages.

One Albanian in particular, Maren-



Geni, ZA1B, operates voice during one of last year's classroom training sessions; with him are (left) Dejljan Omeri, ZA1Z, Niko, ZA1D, and (right) Martti Laine, OH2BH.

glen "Geni" Mema, now ZA1B, single-handedly made the project not just a possibility but a happy reality for us all. Only the ZA crew will understand the extent to which Geni applied his 20 years' knowledge of telecommunications, his lifelong dream to bring ham radio to his country and, oddly, his love for world literature—and therefore his mastery of the English language—all

to the success of the ZA1A project.

As a prelude to going on the air from Tirana, the reader will remember, the ZA1A team conducted several weeks of Amateur Radio training to the soon-to-be Albanian licensees. But it was Geni who made the all-crucial transition from English to his fellow Albanians. It is doubtful, in fact, that any

(please turn to page 14)

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Keeping Kauai connected

John Dillon, KH6FMT, was one recipient of the Kauai Times' Na Me'e'o Iniki award given for outstanding contribution to the survival of and recovery from Hurricane Iniki. Following is his story as told by the man who nominated him, Chuck Lear of Koloa, in the Kauai Times, 1 November 1992.

Although their own home was severely damaged, forcing John and Charlotte Dillon to take shelter elsewhere, John Dillon returned to his ham radio shack on Saturday morning immediately after the storm.

Dr. Dillon has long been an avid Amateur Radio operator and with virtually no communications, he knew his service would be essential to Kauai and her people. Finding his antennas down, he set about the task of putting up emergency replacements.

With no electricity available, Dr. Dillon established power with the aid of a solar powered battery and commenced calling the "outside world," with relief messages meant to allay the fears of relatives and friends of his

neighbors (and their friends) who could not otherwise make contact with Kauai.

On the second day, through fellow Rotary Club member Jerry Bailey of Kauai Electric, John made contact with Citizens Electric Co. (Kauai Electric parent company) in Kingman, Arizona.

On a twice-daily basis, Bailey was able to act as liaison to enable Kauai Electric to order the men and equipment from the mainland that were so critically needed on Kauai. This liaison continued well into the aftermath, until more normal communications could be established.

In addition to the Kauai Electric schedule, Dr. Dillon maintained a twice-daily (morning and evening) routine of calling ham operators at various locations on the mainland in order that they in turn could make relief calls to friends and family on behalf of Kauaians. I was one of many who was a recipient of this good fortune.

Dr. Dillon kept the world aware of Kauai right after Iniki hit; his solar powered Amateur Radio station connected many a friend and neighbor to worried loved-ones. He also served as the first conduit to Citizens Utilities.

John and his wife are still living away from their once-lovely home while it is being rebuilt. Nevertheless, he can still be found at the ham station every day — at age 80! — helping others. I cannot imagine a more deserving nominee!

Airport musings

Next time you're in an international terminal, take a look at the identification numbers on the sides of the planes. When we were in South America we observed that the ID numbers on US planes began with "N." Planes from Brazil started with "PP." (Does this ring any bells?) Lufthansa was "D," FinnAir was "OH," and Peru was "OA." (By now the connection should be clear—if not, consult your DXCC list of country prefixes.)

—W6SD Carrier

Don't be shy

Worldradio is by, about and for you, the readers. Amateurs from all over the world submit news, features, public service information, construction projects, suggestions, opinions, hot tips and bits of Amateur Radio intrigue. You don't have to "be a writer," you just have to love Amateur Radio. So c'mon! Don't be shy, write something for Worldradio!

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The ARRL Pacific Division conven-
tion held recently in Concord, Califor-
nia, was truly an exceptionally fine
event.

On Friday night, however, when one
amateur asked another what was on
the program that evening, the
overheard answer was: "Just that civil
defense crap."

Sadly, there are in our ranks some
rather shallow individuals. Consider-
ing the recent massive disasters in the
Bay Area, such an answer reveals an
insensitivity that is almost incompre-
hensible.

Obviously, the amateur we're men-
tioning here was unaffected by
tragedies of the Bay Area and has no
sympathy for the people of Hawaii or
Florida. No area or person is immune
from natural or man-made plight.
Hopefully, the attitude of the flippant
amateur will not change only by learn-
ing the lesson "the hard way."

Probably the most-looked-forward-

to issue each year of *QST* is the one
with the Field Day scores.

"How did we do?" It's all relative to
where you are in the country (propaga-
tion) and how many operators you
had. Stations with one running the rig,
another logging, another operator
checking the dupe sheet and a flow of
fresh operators will (should) do better
than one operator doing eight hours
over the weekend.

Our little *Worldradio* group was
pleased with the results, particularly
since we scored well over double the
number of contacts, with one third the
operators, of a club that once, on
packet, called us "the Geritol group."

There are some strange FD scores.
For instance, one station, staying at
home with commercial power, had
seven stations on the air simultaneou-
sly and managed but 1,000 con-
tacts—how were they spending *their*
time?

How about 15 stations manned by
15 operators and 400 contacts? Or
seven transmitters, 23 ops and 150
contacts? That seems to be carrying
casual to an extreme!

And, we'd sure like an explanation
of one station which operated 25

transmitters simultaneously with but
eight operators—film at 11?

Continuing with our "Is RF danger-
ous to you?" series, just got a note
from 90-year-old Charles Gardiner,
W2TB, of Clovis, New Mexico. He was
licensed in 1920 as 8TB while he was
studying electrical engineering in
college.

Bravo to the ARRL! We all got our
dues worth from one action they took
recently. It seems that an article in
The New York Times mentioned scan-
ners that can be used to listen to
cellular phones as "an increasingly
popular pastime among possibly
millions of ham radio operators..."

Quickly, quickly, Steve Mansfield,
public information manager of the
ARRL, dispatched to the *NYT* a letter
which they printed on 20 October.

The newspaper gave Mansfield 45
lines in which he expertly and skillful-
ly described what Amateur Radio
truly is; he ended with the statement
that "mere possession of a scanner
does not entitle the person who
possesses it to be called a 'ham' any
more, certainly, than possession of a
typewriter entitles a person to be cal-
led a 'journalist.'"

We've commented on parties who
wish to see the General Class CW re-
quirement lowered to 10 wpm, and the
Extra to 15 wpm. There are those who
bleat that the theory tests are too dif-
ficult. Well, the newspaper *USA To-
day* just ran a survey and found that
30 percent of Americans could not find
the Pacific Ocean on a map. Good
grief—it takes up one third of the
globe and is bigger than all the land
masses combined!

As we see the way that knowledge is
going, let's be the last holdout; fight
to keep the Amateur Radio license the
last thing to be trashed. —Armond

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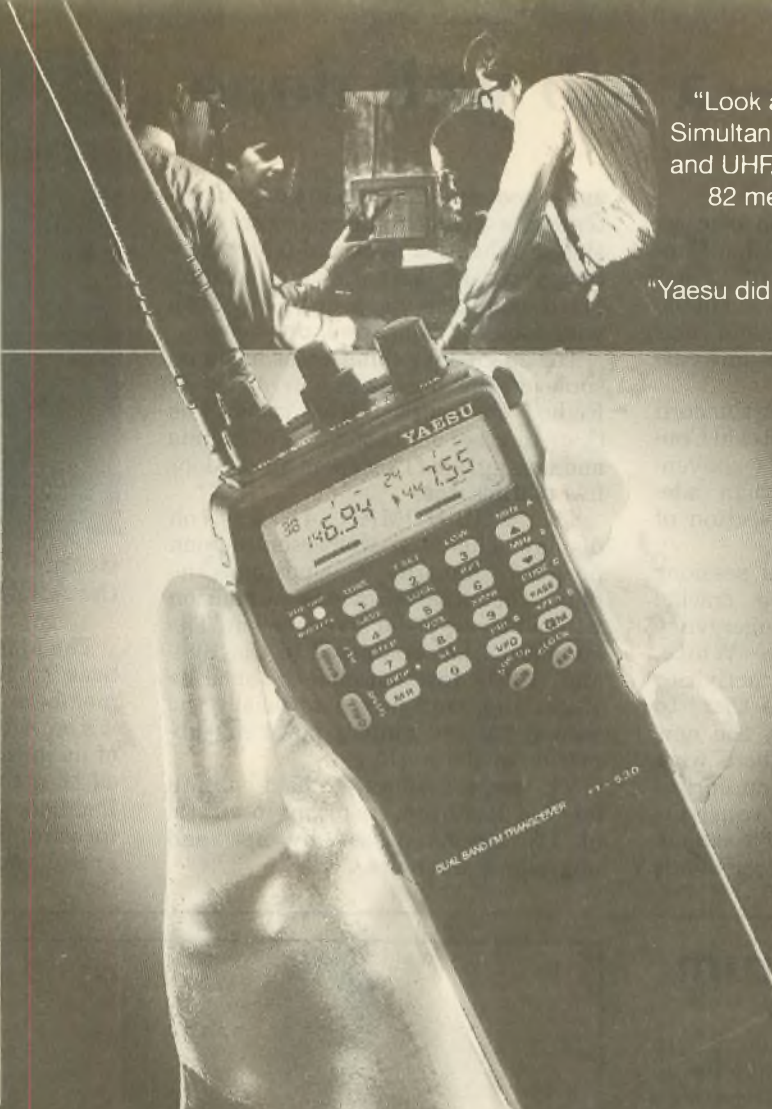
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First out with 82 memory channels included, not an option; a real plus for storing all your favorite frequencies. With this HT, just open the box and QSO.

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

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Pacificon—a job well done

NORM BROOKS, K6FO

It was a pleasant experience to attend the ARRL Pacific Division Convention, called Pacificon, on 16, 17 and 18 October 1992. The Mt. Diablo Radio Club was the sponsor, and their convention committee did an outstanding job.

Pacificon was put on at the Concord Hilton, a superb high-rise hotel in Concord, California. The hotel's convention facilities were more than adequate for the affair; the selection of this hotel was a wise choice.

The forums and technical sessions were established in three tracks: operating, new hams, and emergency communications. Rosalie White, WA1STO, the educational activities manager of the ARRL, was there to facilitate a youth forum in the new hams track. In addition, there were three special presentations on spread spectrum, MARS, and QRP construction. All three were very well attended. A transmitter hunt on three bands

and a foot-and-fanny contest gave attendees a chance to demonstrate their skills. What's a foot-and-fanny contest, you ask? Well, it's an opportunity to send code on a huge key with your foot and your, well, uh, fanny.

The 25 indoor exhibit areas included some of the big names in Amateur Radio. Of course, *Worldradio* was there to greet our thousands of friends and supporters. There was an outdoor flea market, too.

The SUB-HUMAN II was on display. This is a two-person, human powered submarine. One person is the pilot, the other provides propulsion with a bicycle pedal arrangement. The submarine has competed in the 1989 and 1991 International Submarine Races and, currently, is officially the second fastest human powered submarine in the world.

VE test sessions were held on both days of Pacificon, resulting in a total of 110 exams passed by new and upgrading amateurs.



George Wilson, W4OYI, addressed the ARRL Forum.

The Mount Diablo Radio Club dates back to 1947 and now has over 450 members. It is a very active club and it's an ARRL Special Service Club. All of us in the Pacific Division are pleased that the MDRC elected to put on Pacificon in 1992, and we're looking forward to an encore in 1993. Congratulations on a job well done! WR

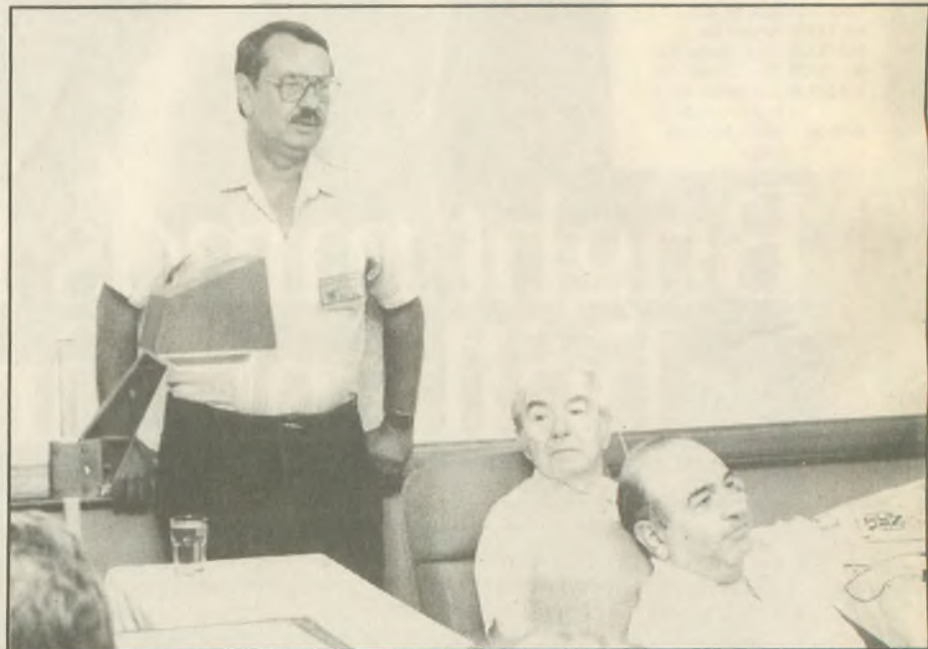
Spread spectrum

NORM BROOKS, K6FO

Your reporter has a confession to make. Usually, when I attend a forum at a convention, I write a report on what I learned and have a feeling that I have given you a reasonable account of what was presented. But I have now met my comeuppance.

At the ARRL Pacific Division Convention in October, Randy Roberts, KC6YJY, conducted a forum on spread spectrum techniques that pretty much stopped me in my tracks.

The room was packed, so much so that there was talk of moving the forum to another, larger room. They



Randy Roberts, KC6YJY, conducted the Spread Spectrum Forum.

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didn't though, after finding chairs for everyone in an adjacent room. As he talked, it seemed like most of the audience understood what he was saying. On second thought, that's as it should be, because we were near Silicon Valley, and most of the people there were probably into spread spectrum through their employment with a military or other high-tech contractor.



The efficiently equipped Martinez Police emergency communications van was on display in support of Pacificon's emergency communications focus.



noise level. Such weak signals can be demodulated, providing a negative signal-to-noise ratio.

The transmitted signals are coded, and a correlation circuit discriminates one code against another. If you have the right digital codes, you get intelligence from the "noise." If you don't have the right codes, you still get noise.

Another thing I learned: there is a lot of written material available on the subject. The ARRL has a good book, *Spread Spectrum Sourcebook*. It is recommended reading to get started. Randy Roberts publishes a newsletter called *Spread Spectrum Scene* about applications, how to use them and what spread spectrum is about, and the book is for beginners as well as experienced hams. Hams are interested because they use some of the same frequency bands as ISM—Industrial, Scientific and Medical—902, 2400 and 5700 MHz bands. Spread spectrum is in those same bands, and hams are already finding spread spectrum radios for these bands now in the surplus market.

If you want to know more about spread spectrum, pick up that ARRL book, or subscribe to Randy's newsletter. WR

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	(no xlmr or cable, with 26' bal. feedline)		

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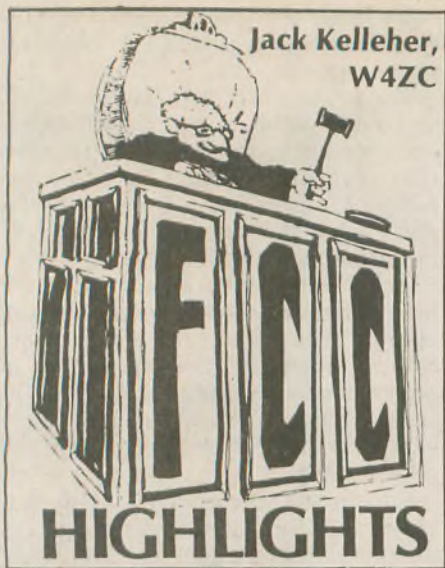
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All I can tell you is that there are two kinds of spread spectrum signals. The first is the friendly kind, and is frequency hopping. This is easy to understand. Just imagine the radio transmitter jumping around on "pseudo-random" frequencies, with the receiver exactly following it. So if you were listening to a frequency with an ordinary radio, you might hear tiny spurts of the spread spectrum now and then.

The other kind is called direct sequence spread spectrum. It covers a wide band of frequencies all the time and sounds like noise. Because the transmitted signal is so spread out, it is weak, and can even be below the



Prohibited amateur communications

1 October was the deadline for comments on the FCC's Notice of Proposed Rulemaking to relax the prohibited communications rule (Section 97.113). A summary of comments appeared in the *W5YI Report* for 15 October, from which the following is excerpted.

Some hams approve of the ARRL/FCC proposal to permit greater personal business use of the ham bands and reduced restrictions on serving the business and organizational needs of public service groups.

A sticking point in the proposed changes appears to be the proposal to prohibit certain kinds of non-amateur communications on a "regular basis." For example, the FCC proposed that amateur frequencies could not be used to transmit "communications, on a regular basis, which could reasonably be furnished alternatively through other radio services." *Editor's note: Before radio became the pervasive service that it is, the typical complaint was that amateurs were circumventing the telephone and depriving the phone companies of revenue.*

The ARRL, in its comments, tries at some length to interpret the proposed rule, concluding: "The use of the term 'regularly' in this context is ... not to be interpreted as a means of defining with numerical precision how often an amateur may utilize Amateur Radio frequencies as an alternative to other radio services, but rather to establish that such use is not a principal purpose of the Amateur Radio Service, that it is abnormal, and is not to be encouraged."

AMSAT believes that amateurs should be permitted to operate their stations in connection with broadcasts that are intended to promote the hobby (video programs such as *The Wide World of Amateur Radio*, for example).

The Radio-Television News Directors Association and the National Association of Broadcasters urge the FCC to "eliminate entirely the rule provisions relating to the protection of property and the safety of human life." This would, for example, permit the use of amateur frequencies for the non-emergency news and other operations of broadcast stations. *Ed: Does this portend use of amateur frequencies by non-amateurs?*

Comments from individual amateurs run the gamut from details to general concepts. Examples of the latter are (1) The Heart of America Radio Club Inc., which "... is solidly in favor of revising the rules ... to allow some types of communication which are not presently permitted. We believe the direction taken in the proposed rulemaking, that

of allowing some types of communication which only incidentally benefit the business interests of some party while preserving the non-commercial nature of Amateur Radio, is the correct one for the times in which we live." (2) Michael Reynolds, WKIE, comments, "The First Amendment to the US Constitution ... restricted congress from making any law abridging freedom of speech. The commission, acting under congressional authority, abridged this basic guaranteed freedom of speech when it adopted much of Part 97.113.... There is absolutely no justification for the commission to declare that music is not a permitted form of free speech. The use of the terms "regular basis" or "but only occasionally" are a further abridgement of this basic freedom."

Via the back door?

The House Congressional Record reports three Communications Act revisions mandated by the Telecommunications Authorization Act of 1992 that impact Amateur Radio.

1) An amendment concerning "signing of license applications" clears the way for electronic filing of Amateur Radio operator license applications;

2) The three-year statute of limitations between violation and issuance of a forfeiture (FCC administrative fine) notice is to be eliminated;

3) "The Commission, for purposes of providing radio clubs and military recreational call signs, may utilize the voluntary, uncompensated and unre-

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 November 1, 1992.

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

Radio District	Group A Am. Extra	Group B Advanced	Group C Tech./Gen.	Group D Novice
0	AA0KO	KG0BQ	N0UMM	KB0KTT
1	AA1EJ	KD1LA	N1NRO	KB1ALH
2	AA2LL	KF2LA	N2STS	KB2PNP
3	AA3CH	KE3FK	N3NOO	KB3AJL
4	AC4WU	KQ4IG		KD4TWT
5	AB5IY	KJ5GB		KB5VWB
6	AB6OV	KN6CN		KD6OSU
7	AA7SE	KI7HQ		KB7QNG
8	AA8JC	KF8XP	N8VZO	KB8OJC
9	AA9FG	KF9MA	N9RIE	KB9IFD
North Mariana Is.	AH0P	AH0AL	KH0AY	WH0AAT
Guam	NH2J	AH2CR	KH2GL	WH2ANB
Johnston Is.	AH3D	AH3AD	KH3AG	WH3AAG
Midway Is.		AH4AA	KH4AG	WH4AAH
Hawaii		AH6ME	WH6JN	WH6CQA
Kure Is.			KH7AA	
American Samoa	AH8G	AH8AE	KH8AI	WH8ABB
Wake Wilkes Peale	AH9C	AH9AD	KH9AE	WH9AAI
Alaska		AL7ON	WL7GN	WL7CGF
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imbursed services of Amateur Radio organizations authorized by the commission that have tax exempt status under Section 501(c)(3) of the Internal Revenue Code of 1986." (Thanks W5YI 11/1/92)

Never satisfied department

Westlink Report for 26 October reports that several petitions are about to be filed before the FCC that ask for expanded operating privileges for entry level license holders.

The National Alliance of Codefree Radio Amateurs says it is going to place a demand before the FCC that spectrum on all HF phone bands be made available for use by no-code Technician Class amateurs.

Mark Jenkins, NZ9B, says he has sent a petition for proposed rulemaking to the FCC that desires the reallocation of 2 MHz of the 30-35 MHz band for Amateur Radio use ... to offset the loss of 220-222 MHz and to provide codeless Technician Class amateurs with spectrum that offers propagation characteristics different from those encountered above 50 MHz, to encourage updating.

As we noted in last month's issue, Bill Welsh, W6DDB, has petitioned the FCC to make the entire 30M band (10.1-10.15 MHz) available to Novice and Technician Plus licensees, for reasons stated therein. *Ed: At this press time we are not aware that any of these petitions have received formal recognition at the commission.*

Just desserts

Have you watched a speeding car and asked yourself "Where are the police?" Consider this item from *Westlink Report* for 26 October. The FCC has slapped a Manchester Township, New Jersey, man with a \$3,500 fine for his use of a too-powerful Citizens Band radio that they contend wreaked havoc with his neighbors' television and radio reception. As part of a recent nationwide crackdown by the FCC against airwave violators, the fine was levied against Joseph Wirth and may be the largest ever issued by the agency in the Jersey shore area, according to FCC spokeswoman Gertrude Anderson.

"Instant" tickets for foreigners

The FCC has proposed Docket 92-167, outlining a plan to allow foreign amateurs who hold amateur licenses in their own countries to qualify for a 60-day operating permit in the US. The ARRL, in comments filed 27 October, agreed with the objective of the proposed new rules but discussed perceived flaws in the proposed approach, and

suggested alternative approaches. *Ed: More on this when the water becomes less murky.*

Gold plated cables?

The ARRL Letter, 28 October, reports that a Lancaster, Pennsylvania, woman has received two years probation, has been fined \$100 and has been ordered to pay restitution for damage to the station of a neighboring amateur operator, according to the *Lancaster Intelligencer Journal*. The woman was found to have cut two cables connected to her neighbor's equipment. The amateur, who was not identified, claimed damage to his transmitter of \$1,971.49.

Florida amateurs commended

Florida Governor Lawton Chiles has recognized the work of Amateur Radio operators in Florida following Hurricane Andrew in August. Chiles wrote the following to the ARRL:

"On behalf of the state of Florida, I am writing to thank the many Amateur Radio operators who assisted in the Hurricane Andrew relief effort.

"Scores of Amateur Radio operators rallied to southern Florida from across the United States, helping to provide desperately needed communications to local, state and federal agencies. They provided moral and physical support to local Amateur Radio operators, many of whom had suffered severe damage to their homes yet provided around-the-clock communications at emergency operation centers, food distribution centers and field medical facilities.

"Hundreds more assisted at their home stations around the country, passing health and welfare messages to concerned relatives of southern Floridians. The Amateur Radio Service can be proud of its members who, time and time again, serve the country unselfishly. The state of Florida owes them a debt of gratitude and thanks." (*The ARRL Letter*, 10/28/92)

Here's a piece (From *IEEE Transactions on Aerospace and Electronic Systems*, March 1990) for those of you who, like me, are addicted to word processors.

Catching misspelled swords with spilling checker.

As an extra addled service, I am going to put this column in the Spilling Checker, where I trust it will sale through with flying colons. In this modern ear, it is simply inexplicable to ask readers to expose themselves to misspelled swords when they have bitter things to do.

And with all the other timesaving

s in realty very easy to pit together a colon like this one and get it tight. For nstants, if there is a work that is wrong, I just put the curse on it, press Delete. and it's Well sometimes it de-letes to the end of the lion or worst yet he whole rage.

Four bigger problems, there is the Cat and Paste option. If there is some t

est that is somewhere were you wish it where somewhere else you jest put the curse at both ends and wash it disap-pear. Where you want it to reappear simply bring four quarts of water to a rotting boil and throw in 112 pounds of dazed chicken. Sometimes it brings in the Cat that was Pasted yesterday.

But usually it comes out as you

planned, or better. And if it doesn't, there are lots of other easy to lose options, one of which is bound to do exactly what you want. In no time at all you'll be turning out perfect artifacts like this one.444 So join the marsh of progress. Hitch your wagon to a stair. When you become adept at world pro-cessing there;s no end in sigh. WR

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Antenna ordinances

NORM BROOKS, K6FO

"If you have an antenna ordinance problem, I suggest you become the most avid emergency radio operator there is. You are constantly monitoring for seagoing ships in trouble." This was informal advice from the ARRL's General Counsel Chris Imlay, N3AKD.

Chris conducted a forum on antenna ordinances at Pacificon in October. In the statement above, Chris was alluding to a case where the amateur was attempting to get a variance from a restrictive antenna ordinance so that he could raise his antenna higher. When he was asked about participating in emergency communications, he stated that he was really not interested in that stuff, his radio activity was just a hobby. Needless to say, he had "shot himself in the foot." His application was denied.

PRB 1

The FCC PRB-1 preemption order was issued in response to the League's request seven years ago for a general statement of interest on the part of the FCC in effective amateur antenna operation. Before that, in dealing with antenna ordinance cases, attorneys tried a lot of different theories in law, and none of them were successful.

For example, they tried to argue that an antenna restriction was a violation of your First Amendment rights, your freedom of speech, and they thought that was a pretty good argument: you had not only a right to transmit, but also to receive information. The owners of satellite dishes used that argument on receiving satellite information, and the courts were pretty receptive to it in some cases.

But in respect to Amateur Radio, the zoning cases were not so favorable. Another argument the attorneys tried was that zoning ordinances against amateur antennas were a restriction on interstate commerce. Generally, all radio transmissions are classed as interstate in nature. They didn't get anywhere with that argument either, especially in cases of height limitation.

Then there was a case in Oklahoma City. In that case, the Amateur Radio operator was below a dam. He needed a support structure over 50 feet high so that his antenna could see over the top of the dam for his signals to have a reasonable take-off angle. He went up about 75 feet. Oklahoma City said "No."

He brought a federal suit against the city through an excellent ham

lawyer, Mike Salem, N5MS. He argued that antenna regulation to the extent that it would preclude effective operation of an amateur station was void as it was preempted by federal law. He argued that the FCC had an interest in the effective operation of an amateur station and the state can't regulate it to the point of uselessness. It was an argument that had been made before, but never quite so well.

The District Court didn't buy it. The court said they would like to help the amateur, but they couldn't find any federal preemption because the FCC had never said anything about it. The case was resolved adversely for the ham. The 10th Circuit Court of Appeals in Denver agreed with the District Court that there wasn't anything to indicate that the FCC has any interest in this subject at all. They ruled, "If the FCC has anything to say about this, let them say it."

The ARRL took that on as a challenge. They showed it to the FCC who said to come back with a declaratory rules request. So the League put in a request for a ruling asking for a statement of the FCC's interest in amateur antennas. The FCC was wary of this—they had never done anything like it before. The FCC sat on it for a while, which is their way of handling troublesome matters—to sit on them while they become cold and dead. The League did some lobbying to put pressure on them through Congress.

The straw that broke the camel's back was a case in Lakeside, Kentucky. The ordinance there didn't allow any antennas at all. The amateur was told he could keep his invisible dipole made of fine wire, as long as it was no more than 20 feet above the ground. He took the case to the 6th



Chris Imlay, N3AKD

Circuit Court of Appeals in Cincinnati. The day before the oral argument in that case, the FCC issued its preemption order.

PRB-1 basically says three things: a state or local authority cannot prohibit amateur antennas; it must make reasonable accommodation for amateur antennas; and it must constitute the minimum practicable regulation to accomplish the state or local authority's legitimate purpose. You will now find all this in the FCC rules paragraph 97.15(e).

The Court of Appeals in the Lakeside, Kentucky, case was impressed with PRB-1. They remanded the case to the District Court. Not only was the case settled in favor of the amateur, but he also made a few dollars on his attorney's fees.

We find ourselves out here in Burlingame, California, six years later: Howard vs. Burlingame. Jim Howard got his 50 ft. antenna, but he did not get his attorney's fees. The appeals court, and other appeals courts since then, have built in a sort of balance between PRB-1 and the rights of municipalities. They said that they were not going to tell municipalities that they couldn't reject conditional use permits. It depends on what the amateur wants to get. An individual application for a conditional use permit can be denied. An Amateur Radio operator must justify his needs for additional height, or the municipality can reject the application.

As far as zoning ordinances are concerned, the status of the preemption order is this: If you have a zoning ordinance that says on its face that you can't have an antenna, the courts will give you an antenna, and will strike down the ordinance. If the ordinance

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The guts of the AL-80B is its heavy *heavy* duty power supply. A 26 pound transformer using a high silicone steel core, computer grade capacitors, heavy duty bleeders and ten 3 amp, 1000 V power rectifiers give you a stiff 2700 volts fully loaded. Many amplifiers using two 3-500Zs use such small power supplies they don't deliver much more power output than the AL-80B.



NEW! \$1195 Ameritron AL-80B Suggested Retail

Genuine Eimac® 3-500Z Tube
The AL-80B uses a *genuine* Eimac® 3-500Z tube warranted by Eimac® -- not cheaper, less reliable 3-500Zs used by some competitors.

600 WATTS OUT... \$649

A tough low cost linear with REAL transmitting tubes!
Ameritron's new AL-811 linear amplifier gives you plenty of power to bust thru QRM. You get a quiet desk top linear that's so compact it'll slide right into your operating position -- you'll hardly know it's there . . . until QRM sets in. And you can conveniently plug it into your nearest 120 VAC outlet.

You get three tough vertically mounted 811A transmitting tubes, extra heavy duty power supply, all HF band coverage, pressurized ventilation, tuned input, dual illuminated meters, adjustable ALC, standby switch, transmit LED, UPS shippable and much more.

Select the 3 tube 600 watt out AL-811, \$649 -- or the new 4 tube 800 watt out AL-811H, \$799.

70% efficiency

The AL-80B is built on a rugged steel chassis. It has a separate RF compartment that's fully shielded to keep RF from leaking out. This keeps RFI and TVI to a minimum.

Superb RF design and layout, Hi-Q tank circuit and commercially rated RF power components give you nearly 70% plate efficiency over the entire operating range. Your power goes into your antenna instead of heating up your amplifier.

A whisper quiet internal fan draws in cool air over power supply components and pressurizes the 3-500Z tube compartment to remove heat for longest life.

Tuned Input lets your rig deliver full output
A 50 ohm broadband Pi-Network tuned input is used.

Pi/Pi-L Output Network
A carefully designed Pi/Pi-L output network using the optimum Q for each band gives you exceptionally smooth tuning, extremely wide matching range, full band coverage and peak performance at all power levels.

Has ball bearing vernier reduction drives with logging scales on plate and load controls.

Step-Start Inrush Protection™
Step-Start Inrush Protection™ stops damaging inrush current with a start up sequence that's easy on your tube and power supply components.

Multi-Voltage Power Transformer
Ameritron's exclusive *Multi-Voltage Power Transformer* lets you optimize for different line voltage. You can select from 14 different primary voltages from 90 to 140 VAC and 205 to 250 VAC.

Dual Illuminated Cross-Needle Meters
Ameritron's dual illuminated cross-needle meters give you four separate meters to monitor your operating conditions -- you can tell right away if something is wrong.

QSK Compatible
The fast custom T/R (transmit/receive) relay in the AL-80B switches nearly as fast as some vacuum relay QSK T/R switches.

For lightning fast QSK operation use the optional external Ameritron *electronic PIN diode* QSK-5 T/R switch or the internal QSK-5PC. Please contact Ameritron for details.

Plus more . . .
An *Standby* switch lets you run barefoot, but you can instantly switch to full power if you need it.

Has transmit LED; 12 VDC, 200 mA jack; 12 VDC keying relay for solid state and tube rigs; tough, nearly indestructible Lexan-over-aluminum front panel. Two year limited warranty.

AMERITRON offers the best selection of legal limit linears!

These 3 rugged linears all use a super heavy duty hypersil power supply capable of 2500 watts!
Ameritron's most powerful amplifier Ameritron's Dual 3-500Z linear Ameritron's 3CX1200A7 linear

AL-1500
\$2625
Suggested Retail

Ameritron super power amplifier uses the herculean Eimac® 8877 ceramic tube. It's so powerful that 65 watts drive gives you full legal output—and it's just loafing because the power supply is capable of 2500 watts PEP.

AL-82
\$1995
Suggested Retail

This linear gives you full legal output using a pair of Eimac® 3-500Zs. Some competing linears using dual 3-500Zs don't give you 1500 watts because their lightweight power supplies can't use the tubes to their full potential.

AL-1200
\$2095
Suggested Retail

Get ham radio's toughest tube with the Ameritron AL-1200—the Eimac 3CX1200A7. It has a 50 watt control grid dissipation—12 times tougher than the 4 watt rating of the 3CX800A7—yet you get the same full legal output as you get from a pair of 3CX800A7s.

AMERITRON brings you the finest high power accessories!

Legal limit antenna tuner

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\$399
Suggested Retail

Ameritron — the high power specialist — brings you the ATR-15 antenna tuner that's designed for legal limit amplifiers. Heavy duty silver plated bandswitch virtually eliminates switch failure. High power transmitting capacitors. 1.8-30 MHz. Peak reading SWR/wattmeter. 6 position antenna switch. Selectable 1:1 or 4:1 balun. 5¼ x 13¼ x 13½ inches. Meter lamps uses 12 VDC.

Legal Limit Dummy Load

Oil cooled 50 ohm dummy load. Handle 1500 W for 5 min. SWR under 1.2 up to 30 MHz. Low SWR to 400 MHz. 7½" H x 6-5/8" D.
ADL-1500X without oil, \$39.95. **ADL-1500** with oil, \$59.95

Remote Coax Switches

RCS-8V
\$149
Suggested Retail

RCS-8V, DC-UHF 5 KW Coax Switch. Replace 5 coax feedlines with one with this Remote Coax switch. Weatherproof box mounts outdoors on your tower or mast. Attractive control unit sits on your operating desk. Low SWR to 450 MHz. Low loss. Rated at 5 KW to 30 MHz, 1 KW at 150 MHz. **RCS-8VN**, \$169.95 with "N" connectors.

RCS-4, \$134.50. 4 position HF switch. Similar to RCS-8V. No control cable needed. Handles 2500 watts PEP.

RCS-4
\$134.50
Suggested Retail

QSK-5 Pin Diode T/R Switch

\$349 QSK-5 Suggested Retail

Self-contained, connects externally to most HF amplifiers. Handles 2.5 KW PEP, 2 KW CW. Six time faster than vacuum relay. 6x4x9½ inches.

Step-Start Inrush Current Protector

Stops power up inrush current and absorbs momentary high voltage spikes to your amplifier. ICP-120 for 110-120V or ICP-240 for 220-240 VAC.

ICP120/240
\$79
Suggested Retail

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says you can have an antenna, but its height is limited to 20 feet above the ground, that's not enough, and with a little effort on your part, you can establish through engineering evidence that you need an antenna higher than that in order to communicate.

Where there is a conditional use hearing, which in the East is called a special exception hearing, you must make your case and you must be pretty persuasive or your application will be turned down. If you are turned down, you can come back with another showing, and that is dealt with separately. So the PRB-1 order, even in the face of zoning ordinances, isn't the absolute protection that people might have thought it was. It has always had its limitations, and the courts have crafted this bit of balancing into the conditional use permit process.

On the horizon, not yet tested in the courts, is the indirect method of prohibiting amateur antennas by placing the fees so high that application for a variance is not cost effective. For example, the City of Orinda, California,

has proposed a \$1,100 permit fee for such an application. There are a series of tax cases that might help amateurs fight this. It's the same thing; you can tax something so high that people just won't do it.

Covenants

The preemption order has never applied to covenants. If you're not familiar with it, a covenant is a restriction on the use of land that is inherent in the deed. It carries from owner to owner of the land through the process of deeds. It's an agreement on your part that you'll refrain from doing certain things or that you'll comply with rules established by a homeowners' association. They apply even if you don't know about them in advance. They are restrictions on you because you have implicitly agreed to them.

There is language that the League's legal department will give you if you ask for it, which you can use when purchasing property to ensure that you are not bound by antenna covenants. You use this language as an addendum to your purchase contract.

In Foster City, California, an amateur had a Morgain dipole at the top of his fence. When the fence was damaged and rebuilt, the city told him he couldn't put the antenna back because there was a covenant against it. So the amateur had to apply for an exception. He applied for a tower and a Yagi. He finally got his tower and Yagi after much legal wrangling by Rusty Epps, W6OAT, and Kip Edwards, W6SZN. They were able to show that the covenant's prohibition of antennas was the equivalent to zoning that denies amateur antennas at all.

Other cases have provided "cracks" in the defense of covenants where the preemption order has been successfully used against them. This in spite of the fact that the order itself says it does not apply to covenants. We can not go back to the FCC and ask for that language to be eliminated because they might also dilute the order in favor of the municipalities.

The League plans to run an article in QST about protective covenants soon. Watch for it.

Goodwill

(continued from page 1)

other Albanian interpreter would have emerged who possessed both the necessary language skills and Geni's knowledge of telecommunications.

Geni, born into a family of five children, eventually graduated from the University of Tirana in 1973, in electronic engineering. Married with two sons, he is employed now in the telecommunications laboratory of the Albanian Defense Ministry.

Geni notes that he is particularly fond of literature, music, football, basketball, swimming, running, climbing and skiing. But now, he writes, "During the last year, I have not had much time left for sports because ham radio has so nicely entered my life." He continues, "Working over 20 years in telecommunications, ham radio has always been a nice dream for me, which fortunately came true last year. It is fantastic. It was magic to call, 'This is ZA...' and suddenly I was among friends from all over the world."

And now Geni desperately needs those friends from all over the world to come to his aid. Geni, in his early 40s, rather than pursuing his love for sports and the impulse to run with the excitement of a homeland that has awakened to the world from decades of slumber, is embattled with a severe medical problem; and it appears that only the amateur community can pull through in its best of traditions and give urgent assistance.

Stricken with an unusual renal (kidney) disease, Geni must seek medical assistance outside his country. Having learned of Geni's situation, Martti Laine immediately made contacts to amateurs in the United States, Japan and Europe to seek assistance.

Once the alarm was sounded, it was a matter of only a few short days when, thanks to the efforts of Dr. Warren Hill, KF7AY, a Mesa, Arizona, ophthalmologist/surgeon, and Dr. Vince Thompson, K5VT, oncologist, also of Arizona, crucial assistance was secured for Geni in the Phoenix medical community. Plans are now to fly Geni to Arizona for necessary treatment as soon as possible. Complimentary passage to the United States will be graciously provided by Swiss Air.

Yet, in spite of donated medical attention, ancillary expenses of Geni's

medical treatment still remain at a prohibitive level. This is where amateur worldwide need to step forward and assist Geni—Geni, who gave us all Albania—with unselfish and speedy donations. Amateurs worldwide, Amateur Radio clubs, societies, associations and organizations are being asked to make monetary contributions immediately so that Geni can receive much needed medical attention as quickly as possible.

In the United States, tax-deductible donations should be sent, with checks payable to WVARC, to:

ZA1B, Project Goodwill USA
The West Valley Amateur Radio Club
c/o Consulate of Finland
P.O. Box 1036
Sun City, Arizona 85372-1036

In Europe, donations should be sent to:

ZA1B, Project Goodwill Europe
c/o Martti J. Laine, OH2BH
Nuottaniementie 10D20
02230 Espoo, Finland

And in Asia, donations should be sent to:

ZA1B, Project Goodwill Japan
c/o Kan Mizoguchi, JA1BK
Sumitomo Suidobashi Bldg, 8F
7-8, Saragakucho 2 Chome
Chiyoda-Ku, Tokyo 101, Japan

Many who have been made aware of Geni's plight all share strongly with Martti that it is now our turn to give something back to the Albanians.

Battery & Charger \$79.95

This is a 6.5 AH sealed battery and a charger in one compact 7 pound unit! Perfect for Field Day, RACES, contesting or any 12 volt need. Output is 12VDC from "bolt" terminals on back and plug in front. 3, 6 & 9 VDC output tool AC Charger and cables included! Unit has voltmeter, automatic charge shut-off, low charge LED warning and power on/off LED indicator.



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Through the efforts of the Albanians, many radio amateurs received a new and long-awaited DXCC country. Now, hopefully, through the quick response of radio amateurs worldwide, one of those Albanians can receive a new and long awaited return to health.

As for Geni and his future plans, I can only refer to his own remarks: "I am really very glad to see that my sons

are so familiar with ham radio; they are not frightened at all to talk with friends on the air," (as was their dad on 16 September 1991 when he made his first-ever QSO as ZA1A).

Geni writes, "I hope and trust that very soon ham radio will be improved further in the future, and more so with young people. I think that my very first CQ call and other future events in

Amateur Radio prove to be a real enrichment, especially for my personal experiences in life."

And now, radio amateurs everywhere have the opportunity to make such dreams a reality for a friend, Geni, who so unselfishly gave of himself to us. The call is out to hams everywhere: let's make this happen and happen quickly. Please give generously. WR

Albania

continued from page 1

no longer exists as the vice sport minister lost his office. The ARRL and IARU has been officially informed concerning the current scope of licensing and authority in Albania.

It was also quickly noticed that many QSL requests sent via P.O. Box 66, Tirana, had not reached the ZA amateurs. It was estimated that some 80 percent of the letters had disappeared. Immediate action was taken, and it was agreed that HB9BGN will collect the QSL requests and all other mail directed to the Albanians and deliver the mail on a monthly basis, through the Swiss Air office in Tirana, to the signed members of the Albanian Amateur Radio Association (AARA).

Envelopes should clearly indicate the ZA call sign of the recipient, since HB9BGN will not open the envelopes but just act as the collecting point. He is only handling the previous ZA1T-series and these new one-letter calls; there should be only one recipient per envelope. The Albanians will mail their QSL cards directly from Albania since the outgoing service seems to be reliable although slow. If you wish to include a small donation to support your favorite ZA-operator or the AARA, it will be greatly appreciated. Some ZA-operators may continue to use similar QSL arrangements, such as via I2MQP. If you still are lacking QSL cards from the resident ZA operators, you may wish to try these new routes. Yaesu will be furnishing them another lot of QSLs shortly.

Another training session has concluded featuring many other areas of Amateur Radio that were not covered during the initial session. And again, most serious participation was noticed. Some of the sessions were organized at the PTT building and some at the Technical University, where a club station now is established with two new licensees in charge. Gene, ZA1T, an assistant professor, and the dean, Mr. Arben Tashko, were most helpful in providing the facilities for meetings and operating at the university building.

As part of the training session, participation as a team in an international contest was planned and implemented during the 1992 IARU Championship



At his apartment in Tirana, Geni is pictured here with his youngest son Eron, his wife, Lily, and his son Meril.

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Contest. The antennas were hoisted atop the university building, and four stations were activated jointly with the Albanian operators. The session included the planning for such an event, identifying the most suitable resources, the actual building of the station, and operating ZA1A in a multi-operator environment on SSB and CW. Beri, ZA1TAG (now ZA1M), showed the greatest operating ability and was the proud winner of a Heil BM-10 headset. ZA1A participated in the contest as the AARA headquarters station, and some 6,000 QSOs were made during the 24-hour contest. In all, ZA1A logged some 26,000 QSOs during the two-week visit.

Albania—the double-headed eagle—

is still in the middle of a major struggle to pave its way toward today's Europe and the world community. A long way is still ahead for the Albanians and the Albanian resident Amateur Radio operators to close the gap caused by several decades of isolation. It is hoped that individual Amateur Radio operators and clubs will join the IARU mission with their support for further development of Amateur Radio in ZAland. Good used transceivers as well as other basic material for building Amateur Radio stations is in high demand. Your contact for such donation is OH2BH, ON6WQ, DF5UG, N7NG, JA1BK, HB9BGN and I2MQP. Some activities for collecting equipment and funds are already underway, but much

more is still needed.

By writing to the AARA or to any of the resident ZA operators via HB9BGN (Albert Mueller, CH-8311 Bruetten, Switzerland) you can easily facilitate your visit to Albania, including your ZA license. QSL ZA1A via Erikki Helkkinen, OH2BBF, P.O. Box 53, SF-10901 Hanko, Finland. Your support to Amateur Radio in Albania is your contribution to the country on the air that you were once only dreaming of.

For this session the following supporters have helped to make Amateur Radio stronger in Albania: Yaesu Corp., Cushcraft Corp., Heil Sound, INDEXA, IARU, DARC, SRAL, PAØLOU, PA3FNZ, JP1NWZ, DJ9ZB, HB9BGN, OH2BC and Swiss Air. WR

Dramatically different Field Day

DAVID KANITRA, WB2AZE

"Let's do something different this year!" I had said this dozens of times, year after year. This time things were indeed different, but not the way I imagined.

Members of our Amateur Radio club decided to plan a joint venture with a neighboring club for Field Day '92. By combining our forces we estimated that we could increase our score as well as share the efforts in setting up a Field Day site.

About two weeks before Field Day we found out that the owner of the area which we use for our Field Day site was having an international soccer match on the same Saturday. We were told that our site would be roped off and the soccer match would not interfere with our operations.

We were running 3A and our antennas included an inverted V for 40 and 80M, a 20M beam, my Hustler vertical and a full-wave wire quad that was dedicated to the CW station. All stations were up and running when the first of about 2,000 automobiles invaded our site. It was chaos. We had to stop radio activity to direct traffic around our site. The "roped off" section was not roped off.

There were cars all over the place. Finally, the trustee came to take down the antennas and phone tent. A big fight broke out between club members and, after about 45 minutes of hearing four and five-letter words shouted, one guy took his tent, the other guy took his radio and the third took his antenna. The president said he was leaving and we would be dropping down to two stations.

Well, this is the magic of Field Day; never underestimate the ingenuity of a

ham radio operator. I didn't have a tent. I didn't have a table, or extension cords. But I did have my Atlas 210X with me, my Hustler all-band vertical was up, and I did have coax cables.

With the help of the other club's trustee, we brought a table over to my vertical antenna. He loaned me an extension cord and I set up the rig on a table in the middle of the bushes. I moved my car next to the rig to offer me some protection in case the soccer fans decided to come back.

With my station set up, I retrieved my Atari 800XL computer from my car along with the monitor and Indus GT disk drive, and I booted a database program to use as my logger. I managed to work about 35 stations in the following three hours. The band conditions were terrible and I really had to work to get those stations. The one thing I will say is that it's sure hard to read the digital displays on these new rigs in the sunlight. Even when the stations were in tents, it was nearly impossible to see

where I was. But not with my old Atlas; I had the digital and analog displays, and if I couldn't read one I sure could read the other.

I took a short break from radio to set up the tent. We finally moved everything inside. One of our packet operators, who'd remarked that I should dump my toy Atari computer for a real computer such as his IBM laptop, paid me a visit. When he saw my Atari he asked, "Are you playing video games?"

"No," I replied, "I am using it to log in stations, something you cannot do with your IBM." He didn't stay very long, I knew he didn't have a logging program. I had made my point.

I stayed until 11 p.m. and then went home to get some sleep.

Home, did he say *home*?

Yes, I did. Besides being a ham, I am a volunteer firefighter. I could respond to any fires from home but not from the Field Day site. And I would not like to be called to a working fire after being dead tired from Field Day.

The moral of the story is this; be prepared for the worst. Amateurs are out on Field Day as an exercise in preparedness. Even though your Field Day group has everything planned out, bring out your extra rig. Even if your radio has tubes, bring it out; in an emergency a rig is a rig. Bring out spare antennas, cables and connectors. Don't forget to bring the best set of tools possible, including a Swiss army knife or a Leatherman survival knife (these two items are invaluable). Nylon tie-wraps and electrical tape are always needed. My spare antenna was a Spider vertical.

Last of all, bring yourself. Operators are always needed, whether they operate radios, cook meals, run errands, bandage cut fingers or just give moral support. That's what Field Day and Amateur Radio are all about. WR



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100W HF XCVR with CW keyer and 160-10m automatic antenna tuner. Many other features make this radio an excellent mobile performer Call



FT-767GX
100W HF XCVR with automatic tuner, power supply, and more! Three optional slots for 6m, 2m, and 70cm Call



FT-736R
50W VHF/UHF XCVR with power supply and more! Two optional slots for 6m, 220MHz, 1.2GHz. A great radio Call



FT-747GX
100W HF XCVR. Optional AM/FM and remote mounting unit. This is the smallest HF mobile rig on the market Call



FT-5200
45W mobile 2m/70cm XCVR. Optional remote mounting kit for light spots. A great dual band mobile radio Call



FRG-8800 SWL receiver Call
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45W mobile 2m XCVR, built to military-spec. Tuned front end eliminates intermod. An excellent 2m radio Call



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150W HF XCVR with dual in-band RX, all mode digital signal processor, automatic antenna tuner, CW keyer, and much more! A great HF performer Call



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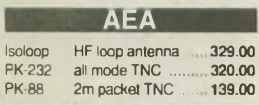


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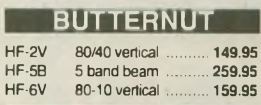


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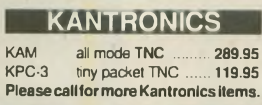
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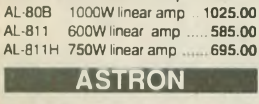
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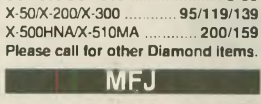
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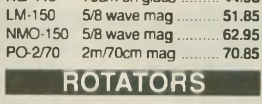
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 Please call for more Kantronics items.



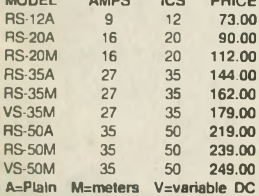
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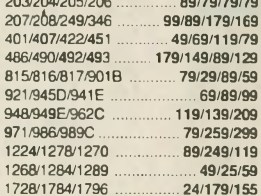
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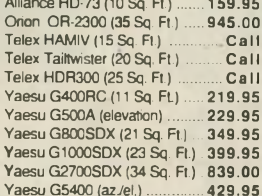
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PUBLIC SERVICE

Amateurs' support of Cycle Oregon V

JUDY GLENN, WZ7S

Recently 2,000 cyclists rolled over the finish line in Medford, Oregon, completing this year's Cycle Oregon V bicycle tour. This week-long bicycling adventure has covered a different area of Oregon for the past five years. The group is limited to 2,000 cyclists (with a waiting list of several hundred each year) who travel approximately 430 miles during the week. This year's ride began in Eugene with overnight stops in Oakridge, McKenzie Bridge, Redmond, LaPine, Chemult, Prospect, and Medford. The route toured mainly the backroads passing through the scenic areas of the Willamette National Forest, over the McKenzie Pass, the Lava Bed Observatory, and up to the rim of Mt. Mazama for a spectacular view of Crater Lake.

In addition to many volunteers who accompanied the cyclists throughout the week—medical and ambulance personnel, bicycle repair persons, volunteers in the towns along the way who helped in preparing and serving the more than 45,000 meals during the tour—one small but vital group were the fourteen hams who spent the week providing communications.

Radio operators were with the two directors of the event, in the mission control motorhome, and with the medic supervisor. Each of the seven "sag wagon" vans also had a radio operator. Two net control operators rotated daily throughout the week with the major job of keeping track of everyone's location. The two net control operators, who have participated in this event for several years, drive the route two or three times several months before the event to set up working frequencies for each area. They find the places where simplex can be used and, where necessary, get permission to use local repeaters. They also find mountain tops where coverage of each entire day's route can be maintained.

For the hams, each day began at 5:30, meeting their driver for that day at the campground. The ham in the first sag wagon out for the day informed net control when the first 150-200 cyclists had left camp. Net control would move Sag 1 to the first checkpoint, where they would put out an orange cone and checkpoint sign. The cyclists knew where the checkpoint, water and lunch

stops were for each day, and that each sag wagon had radio communications. When the next 150-200 cyclists left camp, Sag 2 would move to Sag 1's position. Sag 1 would move on to the next checkpoint, etc. through Sag 6.

Sag 7 was "sweep" and did not leave the campground until the last cyclists were on the road. Sag 7 remained behind the last cyclists until they arrived

in camp that evening. The sag wagon positions rotated each day, providing each crew an opportunity to be first out to set up checkpoints or to be sweep, pulling signs and cones. About every one-third mile there was a bright pink directional arrow which was put out the evening before.

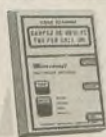
The ham with the medic supervisor was the tie to the medical personnel in three ambulances which accompanied the tour. The hams worked through net control except when they were at the scene of a medical emergency and needed an ambulance immediately. In this case radio contact was made to the ham with the medic supervisor directly to

A sag wagon driver loads a bicycle; the man with the helmet is Ben, 86, the oldest cyclist on the tour.



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dispatch an ambulance.

There were times when a cyclist would arrive at a checkpoint and notify the ham that a rider needed assistance between that checkpoint and the previous checkpoint. The information would be relayed to net control and within minutes help would be on its way, whether for medical, bicycle repair, or to be picked up by a sag wagon. As the sag wagons moved slowly from checkpoint to checkpoint the drivers and radio operators watched the cyclists to see if anyone needed assistance.

If the cyclists were doing fine they gave us a nod, smile, or the hitchhiker's



Cyclists roll into one of the checkpoints at Crater Lake.

thumbs up" sign. If they wanted assistance they gave "thumbs down," in which case the sag wagon stopped. The sag wagons were stopped for many reasons; some people couldn't ride any more because of exhaustion or sore knees and wanted to be "sagged in"; others asked if the sag wagon would take their extra gear into camp; some wanted to know how much further the next water stop was; and others needed assistance with their bicycles.

They were well aware of the communications available on the sag wagons. They needed bicycle repair, net control could locate the nearest of the fourteen bicycle repair units on the ride and send them to the cyclist. The cyclists also knew that the last sag wagon (sweep) would not pass them by! (The humor of each day—the sweep van had a broom fastened to the front grill!!)

Radio communications were valuable in locating cyclists in case of emergency. Each cyclist had a rider number and if someone was needed because of an emergency, the rider number was

taped on the back of the sag wagons in large letters. In one case a father and son got separated during the ride. The son was located via ham radio within ten minutes and was given instructions on where to meet his dad when he arrived in camp. Everyone was amazed that the hams could find people in such a short time, usually in less than ten minutes.

At the end of each day's ride the passengers and bicycles were unloaded in camp, the sag wagons refueled, and fruit and drinks purchased for the next day. The sag driver and radio operator found where they would be staying for that night and unloaded their gear. Each evening the radio operators had a dinner meeting to discuss the events of the day and to plan for the following day.

The hams received thanks and praise each day from cyclists, and the event organizers said many times, "We couldn't do this without you." It was obvious we were needed, especially when emergencies occurred. Even with all the praise, there were several times throughout the week when many of us wondered why we were spending our vacations participating in this fun but often hectic and stressful activity rather than lounging at the beach or beside one of the beautiful rivers we passed along the route. (No doubt some of the cyclist felt the same way!) It was a wonderful way to meet a great bunch of people. When asked if we would help next year, we said *you betcha!* WR

A real kids' club

The Springfield Estates Elementary School ARC in Springfield, Virginia, is organized and run by a fantastic group of kids. All officers are eight to 11 years old, and they hold monthly meetings at the school. Club Secretary Luke Ward, KO4IQ, recounts some of the club's recent activities and accomplishments.

Our demonstration at school on 23 September worked out nicely. Several kids from the fifth grade came down two at a time to help out with showing the equipment, QSL cards, maps, and those things at the station in Room 2. Grades three through six came down to listen to half-hour talks about ham radio. Both 2M and HF QSOs were



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made during these sessions.

On 25 September we had an organizational meeting at night. The purpose was to explain more about the club to interested students and their parents. Twelve new families attended. We got one HF contact from Mississippi. We also demonstrated 2M packet radio and the use of the packet bulletin boards and nodes, such as DCA, SMD, WA3TAI and WA5ZAI. Parents were given literature about the club and were invited to come to the next meeting in October.

Our first meeting on 2 October was well attended. The speaker we were planning to have was, at the last

minute, unable to come. Instead, Luke, KO4IQ, demonstrated Baudot and AMTOR communications on 20M. We had a good Baudot contact with a ham in San Antonio. Keith, KO4IO, also showed the shareware program *TRAKSAT*, which can be used to determine the ground path of satellites as they orbit the earth.

The club voted to join FAR, and four students volunteered to write *Auto-Call* articles in the next four months. Two reporters from the *Francia Gazette* visited, and they interviewed some of the officers in the club and took photographs of club members gathered around the demonstrations. Bill Schmitt, KD4CNS, handed

out syllabuses for new members wishing to take the SEESARC Novice classes. In addition, he distributed a club copy of *Now You're Talking* to each of the 10 families planning to take the classes. The Kenwood KIDS program provided these textbooks free to the club last year.

We received a packet message from former club members Dave Cowhig, WA1LBP, and Frances Cowhig, KD4BMJ. They live in Okinawa now, in a house on top of a hill which is very good for ham radio and great for getting into the local 430 MHz repeaters. Dave has a new Japanese call sign now! His packet address is 7J6CBQ@JR6RMV.47.JNETR6.JPN.AS.

—Auto Cal

Proper use of E-911

WAYNE RENARDSON, NZ4W

Since its introduction 24 years ago in the small town of Haleyville, Alabama, the 911 emergency phone number has become almost universal as a distress signal. It is estimated that 75 percent of Americans can now dial these three simple digits to summon police, firefighters, and paramedics.

Amateurs, with access to mobile and portable VHF/UHF radios using autopatch, are responsible for an increasing number of these calls. The influx of newcomers to the Amateur Radio Service as a result of the FCC no-code license that grants VHF/UHF privileges makes the proper use of the repeater systems even more important.

In the February 1992 issue of *QST*, Brian Battles, WS1O, notes that many amateurs use the 911 emergency telephone system incorrectly. His observation applies not only to amateurs but also to the general population. But numerous amateurs call 911 on their autopatch and make errors that, if corrected, might save lives. As a result, we should enhance the process for both the amateur and the communications personnel receiving traffic over the E-911 system. In order to understand the role of a modern urban emergency communications facility, some definitions are in order.

An emergency is any incident that involves immediate danger to life or property. This definition is broad enough to include everything from heart attacks to house fires, shootings to chemical spills, or drug overdoses to airplane crashes; many such emergencies are handled daily by E-911 communications staff. It does not include potential emergencies such as cats in

trees, information on other agencies, or missing children.

The "E" in E-911 means enhanced, indicating that the E-911 staff have the ability to monitor the address and phone number of the caller.

The Emergency Communications Center in Nashville, Tennessee, sits atop a high hill while the city, nestled in a beautiful valley, is subject to fierce electrical storms that spark power lines by the dozen. This prompts phone calls to the fire department on E-911 once the local electric service line becomes jammed with callers. Downed or arcing power lines are indeed a potential hazard, but when a family member is having a heart attack, your kitchen is ablaze, or someone has shot your mother-in-law, you indeed have an active emergency, not a *potential* problem. And this is the time you least need to receive a busy signal on 911 due to overloaded circuits from a borderline difficulty.

Any police or fire department has a

dedicated phone line for reporting such non-emergency incidents as cats in trees, keys locked in automobiles, or downed power lines. Everyone should know and use this number instead of E-911 for non-critical reporting and, where feasible, it should be incorporated into every Amateur Radio repeater as part of our public service responsibilities.

As our numbers increase, particularly on VHF/UHF, the Amateur Radio Service will have an opportunity to act as the eyes and ears of our communities. Repeaters should be equipped with non-emergency numbers for local police, sheriff, highway patrol, fire and medical agencies as well as other entities that serve the public in time of need.

Amateur Radio operators and cellular phone users should be aware that calling 911 on the local repeater may not put you in contact with the desired local emergency agency. Many large counties are politically divided with different agencies having jurisdiction within the geographic area served by a given 911 system, particularly in rural areas. It is not uncommon to find both a county and a city fire department within the same county. When you call 911, the switching system may be set up to direct your call to town A when the emergency is in city B, several miles away. A delay of a few minutes, particularly in case of a fire or medical emergency, may mean the difference between life and death.

Communications personnel at E-911 know that the most important call they have to answer is the one that's waiting. Of three calls, the first two may be someone reporting road kill, but the third may be a building on fire. Answering the third call quickly is essential. When you are in unfamiliar territory and call E-911 to report an emergency, be certain the agency you reach is the

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one that has jurisdiction and responsibility for that emergency.

Calls on the 911 system range from the amusing to the bizarre. Last year a display of northern lights sparked dozens of calls from nervous amateurs. Ed Hodges, N4ARK, a paramedic assigned to Medical Communications in the Nashville Fire Department, is also the owner of the N4ARK repeaters on 145.47 and 444.225 MHz. Ed recalled that one day an amateur called E-911 from his automobile to report a road-kill.

"A dog had been struck by a passing car, and the amateur, after giving us his call sign and the call sign of the repeater he was using, then reported this critical piece of information, tying up the line for several minutes," Hodges claimed. "To make matters worse, he reported it on I-65 westbound, and I-65 runs north and south. The amateur did not even know where he was calling from. Asked if the accident just occurred, the amateur replied that the dog had been dead for several hours."

Regarding other incidents he had heard on his repeater, Hodges said, "An amateur called E-911 and said he saw a wreck about a mile back. He did not know if anyone was injured but said it looked bad. The caller did not want to become involved but felt some responsibility to involve the police, ambulance, and fire departments.

If it is important enough to call in an accident on E-911, the caller should remain on the scene until emergency equipment arrives. In this case, the amateur could have been the eyes and ears of the response team. He could have provided valuable assistance to dispatchers before the first units arrived."

The original idea behind 911 is simple enough. A minute or more can be shaved from response time if an anxious person can remember a three-digit number instead of fumbling through a telephone directory for the correct fire, police, or ambulance number. But each year, more and more non-emergency calls clog the E-911 phone lines, wasting the time of communications personnel and tying up resources that threaten the safety of those who pay for a service for the moment when a true emergency arises. Many cities in the US report that these non-emergency calls comprise between 25 and 50 percent of all E-911 calls.

Linda Wagner, a former police communications officer, relates that a concerned dog owner called E-911 and insisted that the police search the kitchen of the Asian family next door for the remains of his German Shepherd. Another incident involved a distraught neuro-surgeon who wanted an "all points bulletin" issued for his missing

seventeen-year-old son who, it turned out, had stolen away for a weekend in Tahoe with the next-door neighbor's wife. Most memorable was the call that came in from the daughter-in-law of a famous poet; she commanded that the police pull around the back of her house and put her three-day-dead husband, peacefully "napping" on the parlor sofa, in the back seat of the patrol car "temporarily" so that guests about to appear for a brunch would not ask "inconvenient questions."

"We're the victim of our own success," said Captain Grady Curly, shift commander of emergency communications in Nashville. "The whole focus over the years has been 'Call 911 for anything out of the ordinary.' Many of our calls are nonsense, and we have become a catch-all for everything. The original focus of E-911 has been lost."

Historically, amateurs have justified autopatch on the FM repeaters by claiming it provides us with a rapid and efficient way to report emergencies. This ability was the main argument used by amateurs to keep these privileges when the FCC scrutinized amateur use of the autopatch. But anyone who listens to FM repeaters is aware that many calls made on the autopatch could wait until the amateur reached a pay telephone or arrived home. In order to increase our credibility and do a better job, amateurs should use autopatch only to make necessary E-911 calls and save the frivolous calls until they can locate the non-emergency number for their local emergency service.

Amateur Radio operators with mobile and portable radios, and numerous repeater systems using autopatch, are in a unique position to report real emergencies in our communities. For the most part we do an excellent job of serving the public interest. With a few adjustments, we can become an even greater asset by using the 911 system correctly.

For instance, do not give your call

sign or the call of the repeater you are using. This information is unnecessary and wastes valuable time. The communications personnel need only the nature and exact location of the emergency since they have the responsibility for sending the proper equipment based on what you report.

Calling E-911 to report an accident when you do not know your location is also a common mistake. Vague locations, particularly from mobile Amateur Radiostations, often do more harm than good. Callers to E-911 are often perplexed when communications personnel ask them questions they consider irrelevant. They become irate when the E-911 operator, instead of immediately sending equipment, will ask them for additional information. But it is improper or inadequate reporting techniques on the part of the caller that necessitates further questioning. Callers are often asked to provide additional information for the following reasons:

To gain information necessary in determining the appropriate response assignment. If a caller reports "an accident" on the interstate, the dispatcher will ask if there is anyone trapped in the vehicle, if the vehicles involved might contain hazardous materials, and the direction of travel since different equipment can reach a given location much faster if the direction of travel is known. If a person is trapped in a vehicle, extrication units will be required and chemical spills mean a hazardous material team must be dispatched with the responding units. Without adequate knowledge of the circumstances surrounding an incident, insufficient equipment may be sent, resulting in delay and possible death.

To identify and verify conditions that require pre-arrival instructions. Many people who call E-911 are in a position to help the victims of an accident, particularly in case of medical emergencies. If the E-911 personnel are aware of the conditions at the scene and the skills of the caller are determined, pre-arrival instructions given to the reporter can help save lives. CPR and Heimlich maneuver courses taught by local Red Cross groups are commonplace, but unless the E-911 staff determines that the caller is trained to perform

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various life-saving techniques, the skills of the caller remain unknown and the opportunity to save a life might be lost.

To identify hazards at the scene and risks to patients, lay persons, and professional responders. Persons trapped in burning buildings, hazardous materials on the scene or in the building, or any number of factors may represent a risk to both people in the vicinity and the responding personnel. If the E-911 communications personnel are not aware of these factors, the danger to all parties concerned is multiplied. These are just a few of the reasons why it is essential that E-911 staff ask time-consuming questions of callers to E-911.

Callers to E-911 are often upset, confused, and in a heightened emotional state after witnessing a traumatic event. "The callers often think that the faster they speak or the louder they talk, the quicker something will be done about the problem," said EMT Dispatcher Randy McNeese. "But the truth of the matter is that all the rapid-fire speech and loud talk does nothing but delay the response. If there were anything I could advise amateurs or any other citizen calling E-911, it would be to speak calmly and slowly, giving us as much detail as possible about a given incident so we can respond promptly."

"We encourage amateurs to become involved in public service," Hodges said. "After all, there is something to be said for being part of a team that saves a person's life—ask any paramedic. But there is a right and wrong way to use autopatch to access the E-911 system, and amateurs are in a unique position to help if only they will report genuine emergencies rather than calling in non-essential reports."

What steps should the informed amateur take when using the E-911 system? He or she should first ask if the call could be handled on a non-emergency phone line, and use it.

Do not give E-911 personnel extraneous information. Your call sign, the repeater you are using, and the fact that you are a licensed amateur are all irrelevant to the call taker.

Be as precise and accurate as possible about the exact nature of the problem. Do not call and describe "a wreck between I-65 and I-40," for example, when the accident involves a tanker truck containing gasoline or other hazardous material. What you describe to the call taker determines what equipment is sent, and vagueness and imprecision can cost lives.

Know your location and give it accurately. Many amateurs, particularly when mobile, call to report incidents

when they have no idea of their location. Reporting an accident on the wrong interstate in the wrong direction results in equipment being sent to the wrong location, delaying response time when dispatched equipment has to be redirected to the proper location. Know your location prior to calling. A moment to determine our exact location can save many minutes for the victims of the accident.

With a few adjustments in the thinking of the old-timers, and reliable, accurate information provided to our newcomers, our repeater systems can be an even more valuable resource and thousands of VHF/UHF equipped amateurs can better serve our communities.

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Archie and ham radio

After 51 years in the comic books and newspapers, the perpetual teenager "Archie" still gets kids' attention. Since 1986 when the American Radio Relay League introduced its *Archie's Ham Radio Adventure*, more than 320,000 copies of the custom edition comic book have been distributed free of charge to school classrooms in the US.

Archie's Ham Radio Adventure features Archie and his cohorts Betty, Jughead, Veronica, Reggie, Dilton, Moose, and the Feebly Twins, who use ham radio to relay messages out of the volcano-ravaged Central American nation of "San Melas," foil a jewel thief, and coordinate a complicated rescue from treacherous flood waters.

The original Archie character was created in 1941 by John Goldwater and illustrated by artist Bob Montana. The comic book is produced by Archie Comic Publications in Mamaroneck, New York.

"Archie and his friends have entertained youngsters for five decades, yet they have a fresh appeal to every new generation," says Rosalie White, educational activities manager at the ARRL. "The strip is about growing up

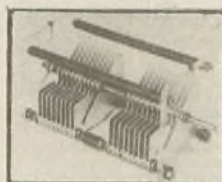
in America. The characters and the adventures are believable. That's why we thought an Archie comic book would be the ideal vehicle to deliver the Amateur Radio message. Archie isn't about the superficial superheroes that dominate children's entertainment today, but about realistic kids doing things that actually can be done with ham radio."

Using Archie to tell the Amateur Radio story has a fringe benefit, White says. "Parents grew up reading these comics. So, they'll let their kids read them because they trust the characters." White says the hams' message is getting through. According to the ARRL's recent survey of

about a thousand young readers, 90 percent felt that the comic helped them to understand ham radio, and slightly more than 90 percent said they wanted to learn more. Fully 64 percent said they were working on becoming hams.

The low-key approach in the Archie comic actually seems to be sparking an interest in electronics and communications. It's also a help for teachers who want to get kids more interested in math, geography, spelling and computers. The ARRL also publishes a supplementary newsletter and teacher guide, "Amateur Radio in the Classroom," three times a year for teachers using the comic book.

Archie's Ham Radio Adventure is a joint educational project of the ARRL and the ARRL Foundation with a consortium of ham radio manufacturers, publishers and retailers including AEA, CQ Communications, Inc., Ham Radio Outlet, Icom America, Inc., Kantronics, Kenwood USA Corp., MFJ Enterprises, Standard Radio and Yaesu USA. For more information on *Archie's Ham Radio Adventure*, contact Rosalie White, educational activities manager, ARRL, 225 Main Street, Newington, CT 06111; 203/666-1541. WR



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First Atlantic Division DXPO-92

JOHN MINKE, N6JM

At the suggestion of Armond, N6WR, our publisher, who also happens to be a DXer, we made the big trip to Washington, or more precise, College Park, Maryland, to attend DXPO-92. We arrived Thursday evening, 8 October, a day early, so we could socialize with early arrivals the following day. Unfortunately, there were only a few around dinner time, the first being Don Search, W3AZD, and his YL, Hope Smith, WB3ANE. What few DXers that did arrive all went in to dine together. These early arrivals included Charlie Sledge, W4JVU; Tom Wood, N4CID; Gus Brewer, W4FPW; Gary Chittum, WB4DNL; Alan Harp, K4PB; Weldon Wood, NT4O (who just happened to win the convention grand prize); and Karl Oyster, NQ1W, and his XYL. If I missed anyone, my apologies. N6JM had those Maryland crab cakes. I ate them every chance I got.

The program

The program began at noon on Saturday with introductions by Hugh Turnbull, W3ABC, director of the ARRL Atlantic Division. Hugh said that this was the first time that DXPO was held in the Atlantic Division and talked briefly on the happenings in the division. ARRL Roanoke Division Director John Kanode, N4MM, also spoke and made mention of the Guide for QSL Managers, prepared by the RSGB, which has been approved by Regions 1 and 2 of the IARU. Ever notice that ARRL directors are also DXers?

The discussion was then opened to the floor for questions. There was a question regarding the forwarding of QSLs to stateside managers. Evidently, it is the policy of the W2 QSL Bureau to not accept such cards from stateside. One DXer wanted to know the situation

for the bureaus of the former Soviet Union. This couldn't really be answered. There was no problem with cards to the Baltic states. Cards to the rest of the former Soviet republics are still sent via Moscow but are probably not being forwarded.



Hugh Turnbull, W3ABC, director of the ARRL Atlantic Division.

DXCC/DXAC Forum

Gary Dixon, K4MQG, DX Advisory Committee representative from the Roanoke Division, discussed the pending issues of the DXAC. The first concerned the status of the former Yugoslav republics. The vote on this one has since been tallied. The effective dates will be the date each individual republic claimed independence.

The second issue was the status of Abu Ail. The deletion regarding this one was scheduled for December and may be postponed as more information is needed, such as settling whether or not it belongs to Yemen. There is a lighthouse there.

The DXAC voted 16 to 0 against separation of Ceuta and Melilla into two DXCC countries. It did not meet the DXCC rules.

Regarding the deletion of the Spratly Islands the DXAC voted 15 to 0, with one abstention, against deletion; South-

ern Sudan was also retained on the list with a vote of four to one, with one abstention.

Regarding the creation of a new DXCC country for the Vatican Enclave the vote was 16 no and 0 yes. This was the Vatican call HVØHH, which was located at two places; one of them was in Rome, a mile or two from the Vatican.

Three other possible DXCC countries for study included Pratas Island, which is south of Taiwan and probably will meet the criteria; Tatar, possibly a new CIS republic; and Snake Island. However, only applications have been received for the first two and there has been no correspondence concerning the latter.

A DXer raised the question concerning the Czechoslovakia breakup. The DXAC presently has no action pending on this one.

There were several other open issues, some since voted on. These included such items as DXCC credit for docked maritime mobile stations. The consensus of the attendees was about 50-50.

QSL practices was another issue and included operation of the QSL bureaus. One DXer felt the system was abused such as contest stations sending QSL cards for all contacts made in a contest through the bureaus. Gary, K4MQG said that when he ran the W4/K4 bureau most of the cards were sent indirectly and not through League headquarters.

The Master DXCC Award was another open issue, such as that for those who reach the top of the Honor Roll. This item has also since been voted down. The same also applied to 4U1VIC, the Vienna International Center.

There were a few other issues that the DXAC is still working on which included the DXpedition disqualification criteria and a DXpedition operating band plan. There was some discussion on those DXers operating out of their normal operating call area, such as the case of K6IR/3. Does K6IR work for the sixes or does he call with the threes? From a tally taken there seemed to be a mixture.

The forum continued with Chuck Hutchinson, K8CH, membership services manager and chairman of the Awards Committee, who gave us details on the DXCC backlog at the DXCC desk in Newtonington. Chuck says that they are about six months behind with 3,800 applications. However, they haven't gone any deeper since last March. Much of the load has been cleaning up errors and converting three million paper entries. Most DXers have been very patient and the staff appreciate this.

One DXer asked about entries on

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Bob, N2OO, and Beth, KF2BQ, Schenck made a DXpedition for their honeymoon.

computer disks, and Chuck replied that they are working on it. If there are any conflicts with what your records show compared to that of the DXCC desk, it is better to write to them rather than call them on the telephone. Bill Kenamer, K5FUV, was introduced as the new addition to the DXCC desk. Bill was enroute to Arkansas to move his family to Newington.

Shunt fed towers

Bill Leavitt, W3AZ, gave an informative talk on automatic tuning of shunt-fed towers for 80 and 160M. Bill's presentation was supported with slides.

When shunt-feeding the tower the feedpoint should be about 10 feet above ground with the radials at the same point. Switching relays must have contacts with wide spacing as the large voltages present would cause arcing.

The Schencks

Bob, N2OO, and Beth, KF2BQ, Schenck talked about their honeymoon DXpedition to Malaysia and other spots in the area. As they were both amateurs they thought it would be a great idea to combine their honeymoon with a DXpedition. One of their first stops was on Rawa Island, an island off the Malaysian coast owned by the family of "Moody," V85MS.

Their next stop was Brunei, where they were hosted by Bill, V85AA. They operated with the calls V85OO and V85XYL. Bob said that Beth only had about 20 contacts prior to going on the DXpedition, and he put her on the air while he left the room; when he returned, Beth was buried in a pileup of Italians.

From Brunei they continued to East Malaysia where they operated as 9M6OO and 9M6BQ, where they made about 2,000 contacts.

Approaching the end of their honeymoon they went to Singapore and checked in to the Hotel Phoenix. They operated very little radio there and wrapped up their honeymoon in Hong Kong as VS6/N2OO and VS6/KB2BQ. They had been gone for five weeks.

Efficient antennas

Well-known big gun contester Frank Donovan, W3LPL, discussed the antenna design at his big Maryland antenna farm. In order to cover Europe in its entirety Frank calculated that he needed an azimuthal coverage of 50 degrees for the range of 20 to 70 degrees from Maryland, and he designed his antennas accordingly.

Frank discussed stacked Yagis and stated that the array is limited mainly by the height above ground. The top Yagi of a two-Yagi stacked array must receive 45 to 70 percent of the total power, and 30 degrees phase balance is required. Well, whatever Frank put up we here on the West Coast can understand the big signal.

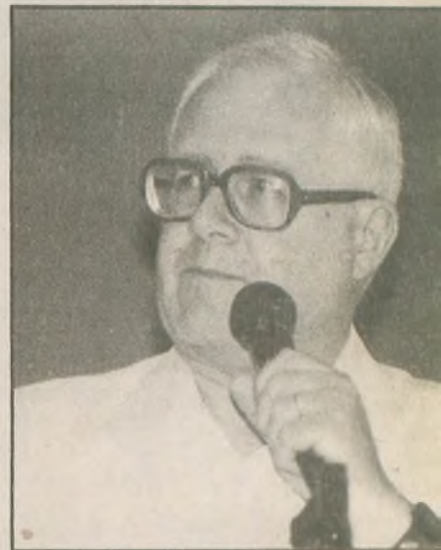
Propagation

This talk was given by Bernie Keiser WD4O, who was called in at the last minute to replace another speaker who had to cancel. Bernie explained such items as wave tilt and how long it takes a signal to go around the world. The propagation time is 0.8 second. For those DXers who have a real interest in propagation this was a very informative presentation.

K3ZO

The final presentation was given by none other than well-known Fred Laun K3ZO, who gave a short history on the various places in the world where he was assigned. Fred commented that those wishing to operate overseas should make it a point to visit the local amateurs.

Fred's first operation from overseas was between 1964 and 1967 in the Dominican Republic. He received the call HI8XAL just before Christmas 1964. Fred soon had a 40M Long John on a 130 ft. tower. He used to get the house boy to climb the tower to rotate the beam, as he had no rotator large enough to turn it. At that time 160M was no



Fred Laun, K3ZO

authorized. But he managed to get on as "experimental" and created a huge pileup.

Fred's next assignment was Thailand. He worked with Don, K7ZZ, now a Silent Key, to get Thailand off the banned-list and became HS3AL, and later HS5ABD in 1970. The country was originally divided into four call areas based on the military districts but Fred suggested that a better plan would be to base the call areas on the nine police districts. Fred said his first 80M contact from HS5ABD was with K6KA, with W6AM the second (Don received a collect call from K6KA). Soon the second, third and fourth call areas

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were calling him for his first experience on Grey Line.

Fred's next assignment was Viet Nam, where he spent 18 months. He worked with Chester Lungford, of KV5AC fame. The ambassador was married to the ambassador in Nepal and liked to talk to her, so they set up an Amateur Radio link for them. The ambassador was pleased with it so he got them a license. Fred also held the call, XV4AL.

Soon Fred was given an assignment in Argentina where he operated as LU5HFI. As he was fluent in Spanish he was happy to get back to a Spanish speaking country. A few years later this assignment was interrupted when he had a "disagreement" with the guerrillas.

Later, Fred received another assignment to Thailand where he operated as HS1ABD. Long time DXers most likely have QSL cards from almost all of Fred's calls. We can remember Fred operating as LU5HFI where he always put a big signal into California.

The banquet

There were two programs at the banquet. The first was a video of R3A, The Russian Coup, by Ed Kritsky, NT2X. In addition to the video Ed explained the QSL system over there which is presently chaotic. Many of the local bureaus have shut down and Ed suggested holding your cards. If the Russian has an outside manager, use that.

Special recognition was made to various visitors such as RC2AR coming all the way from Vladivostok. The youngest DXer was 5Z4FV at age 27 and the oldest DXer was KV4AM at age 82. The most photographed DXer was Ken Miller, K6IR.

Wayne Mills, N7NG, dropped in from Jackson Hole, Wyoming, to present ZA1A, The Albania Story. Wayne stated that there are now 65 licensees in Albania which includes both local and foreign visitors.

He also commented on the TV antennas—all pointed at Italy. Of course, they were all rusted and corroded, a contribution to intermodulation problems. Everything was fine until the team installed the 40M vertical antenna. People started coming out of their homes and started shaking their TV antennas wondering what was happening.

DXing from East Africa

There was no Sunday morning breakfast as in Visalia. The Sunday portion of DXPO began with Tom Warren, K3TW, discussing some of his African assignments with the US State Department.

From 1988 to 1990 Tom operated as



Frank Donovan, W3LPL, discussed his big-signal antenna farm in Maryland.

5H3TW. He always brought a variety of towers and antennas as he wasn't sure where he would be. The antenna that he depended upon was a Cushcraft A3 with a roof tower. His 5H3TW location was only 1,500 feet from the Indian Ocean. Other locations he operated from included such calls as D68TW and J20TW.

At his J20TW location he set up his antenna system on the roof of a restaurant. Only one thing—later there was a banquet held up on the roof. They just ate around it.

Tom offered several tips for effective DXpeditions: he recommended a tri-bandner on a roof tower, trap verticals over salt water, short whips and simple wire arrays.

In obtaining a license he said application forms are available from the ARRL or the local PTT. Also, contact active DX stations or the Department of State Amateur Radio Club (W3DOS).

Tom's tips on working DX pileups mentioned using complete calls at the top of the list; when working split, spread out; and, finally, listen, listen, *then* call.

Big installations

The subject, large tower and antenna installation and maintenance, was presented by Steve Jarrett, K4FJ. Steve doesn't particularly care for crank-up

towers due to a safety issue and the limited loads. The same applies for those aluminum towers.

A roof tower can hold up to a TH7DXX but mount it at the top of the tower, and not on a mast. When choosing a mast you must consider the wall thickness of the tubing. The greater the antenna area and mast height, the greater the thickness.

Steve suggest using a crane when you are ready to raise an antenna. However, talk to others who have used them. If you don't use a crane, then you can strong-arm the antenna up there, (block and tackle, etc.). If the antenna is very large, you can assemble it at the top of the tower, or try using the trolley method. This procedure requires aircraft type cable from the top of the tower secured at a solid base. However, this method is not recommended for large antennas. Don't forget to backguy your tower.

Plan it so it is safe. If you have any doubts, don't do it. Steve didn't mention it but we feel that if you lay out big bucks for a large antenna, then hiring a crane for a couple of hours is a sensible way to go.

VP8SSI

The South Sandwich Islands DXpedition was the final presentation of DXPO-92, given by Dave Schmocker, KJ9I, one of the members of the team. As we reported on this DXpedition when it was presented at the ARRL National Convention we will not repeat it here. If you overlooked it check the November issue.

An attendance of 126 DXers was recorded at the forums. Of this count 39 were members of the National Capitol DX Association, a membership of 75. Shame on the rest of you who didn't support the activities. Considering the number of DXers in the northeast the turnout should have been an East Coast Visalia. You missed a real fine business DX gathering.

We saw no one from the North Jersey DX group. The NCDXA excused them, however, as they were busy with the handling of the W2 QSL Bureau. However the W6 QSL handlers show at Visalia. The next DXPO will be in Atlanta. We hope to see a big turnout! WR

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Farnsworth Peak (conclusion)

This story continues from where we left off last month, the author having heard a loud snapping from his ham shack.

DANIEL METCALF, KF7TA

For what was to happen next, I suppose I should be grateful that I was in the bedroom instead of sitting at the radio table. It was a very loud sound which can only be described as a mixture of CRACK, SNAP, POP and BAM, all occurring simultaneously at about the volume level of a .357 Magnum being fired in the room.

I leaped from bed and ran into the kitchen to find the smell of ozone hanging in the air. I quickly deduced that something must have failed in my grounding system and that the coax was delivering lightning charges into my kitchen. This was such a disturbing thought that I froze for a few seconds, wondering what to do next. Then the old grey matter kicked in. Gotta get that antenna tuner away from everything. Mustn't touch it, though. Might get killed. Find an insulator. Where? A plastic pipe. Where did I see that plastic pipe? Oh, yes, in the bedroom, the walking-stick-like thing I'd made to press the buttons on the VCR while lying in bed.

I ran for the bedroom, grabbed the stick and gingerly hooked the tuner by a corner bracket (after the first few zaps, I had removed the lid and looked inside for damage, giving myself ample opportunity to become a human fuse, had the lightning hit at that time) and lowered it to the floor. I then ran upstairs, grabbed a piece of double-shielded video cable from the rack, ran back downstairs, jammed it into a grounded unistrut on the power panel by the table and carefully (and I do mean *carefully*) slipped it onto one of the connectors on the tuner, avoiding any two-handed contact and being content to merely engage the sleeve of the BNC connector, nevermind any twisting motion to lock the bayonets.

Having isolated what I believed was a potentially lethal tuner from the rest of the equipment by a few feet, as well

as having tied it to the ground power panel, I then felt relatively safe to investigate the damage. I turned on the TR7. Nothing. I turned on the 211. Nothing. I then looked at the battery clip on the 12V storage battery and found it had arced, melting away some of the lead terminal where the jaws of the clip made contact. I wiggled it. Small sparking, good. I then was able to get the TR7 turned on and it seemed okay. I touched the antenna input with a piece of solder and heard Andy, KR7V, from down below me in Tooele, on the 40M Beehive Net, so it seemed to be receiving okay. I put it on a dummy load, keyed it on CW and got full power. God was being good to me.

I then turned my attention to the Kenwood 2M rig to find its fuse blown. Up the stairs for a new fuse. Popped immediately. Never even got the chance to turn it on. Discouragement started to set in. I had scraped and scrounged for months to get enough money to buy the little Kenwood, using my \$100 Christmas bonus as half of the purchase price, telling everyone in the family not to get me any presents, that I had gotten myself a new radio, which was all I wanted. I was very proud to have a working 2M rig like all the other guys. (In my good old days of ham radio, 2M was practically an oddity, but now, in the age of NUs, it has become a necessity.) I had gotten a lot of enjoyment out of the little radio, not to mention many time saving phone patch calls from all over the Salt Lake and Utah valleys. Now my little radio was dead.

But wait a minute—I could take it apart and at least see if there was any hope. Maybe I'd been lucky. Maybe a miracle had happened to compensate for this mini-disaster. With hope renewed, if only a little, I put it on the bench in the transmitter room while the snowy gloom of January in April looked in over my shoulder. Damn that lightning. Killed my radio, coulda killed me. Maybe I better shut up and be thankful it didn't. On with the dissection of the radio.

Upon disassembling the PA section, I found the crowbar diode shorted,

having given its all in protecting the rest of the radio. Good. That was what it was in there for. I removed it (it crumbled at the first touch, a big beefy lump of ceramic with #16 leads) and replaced it with a reasonably healthy rectifier diode from my spare parts bin. Checked the 12V leads, no short anymore. Hallelujah! My radio is alive after all!

Wrong. No transmit, no digital readout—and what's this? The *up* button on the microphone is missing. How did that happen? After searching for several minutes, I found it on the kitchen floor. I also found the reason why. It had been blown off the mike by the force of an electrical discharge which had vaporized the spring underneath it. The mike now rattled. I was really getting depressed. But at least the TR7 was still okay. Good old Drake. Despite a multi-thousand joule discharge of energy between its upper left front panel and the tuner sitting on top of it, it had survived. I was able to be almost happy about that. There were little gaps of missing aluminum on the corner of its front panel, along with a round print of the tuner's rubber foot outlined in smoke on its top. But it had survived.

Wrong again. After a somewhat therapeutic break from Amateur Radio in the form of some legitimate work on a failed 450 MHz data link receiver, I found myself in need of a source of 10.7 MHz RF to test the II strip in the receiver. It dawned on me that the TR7 would transmit on that frequency. I could put it on a dummy load, put a little stub of coax close to the receiver and use it as a signal generator. What a great idea. Down the stairs to the kitchen I took the receiver, along with tools, meter, etc., and hooked everything up. Drake or Carrier control CCW. Key down, turn up a little carrier, everything okay. Set for about 3W into the dummy load. Everything looking good.

Then I smelled smoke. The power output on the TR7 had dropped to about 2W and there was resisto smoke coming out of the PA section. I turned it off and tried not to cry.

After several minutes of real effort trying not to think about the \$65 worth of matched RF transistors I had so recently, so lovingly replaced, I tried to think of anything good that had ever happened to me at any time in my life. I finally concluded that I was alive. After all, this might not be the case had Murphy's lightning struck while I was handling my tuner. And I did still have a Drake "R7," which could use for shortwave listening. There was still TV. I still had the book I had been reading, Cliff Stoll's *The Cuckoo's Egg*, a very interesting true

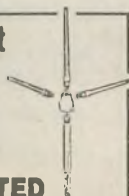
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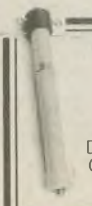
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story about tracking down computer hackers. And my family were, to the best of my knowledge, still all alive and well.

While sitting there at the small kitchen table, alone in my little mountain habitat, I came to the realization that in the interest of self-preservation, I must undergo a forced mental overhaul right away. I had to turn my back on ham radio. I had to convince myself that perhaps this would be a good thing in the long run. I had to convince myself that there are a lot more important things in life than being able to throw in witty comments on 3.815. After all, I did have children in the local telephone calling area, not to mention little grandchildren whom I could influence positively, should I take the time to call. There was much good I could do in the world. I began a mental reconstruction process. I could do without these physical electronic objects for a time, then I would build again. The phoenix would rise from the ashes of my little disaster and I would be a better person from the experience. I could replace these material things. It would take time, perhaps another year or more, but I could scrape together the money to fix or replace what had been blasted. After all, I still had the telephone. It would now serve as my primary means of communication.

The next day, the telephone died. Another week on the mountain.

Epilogue

To tie up the loose ends of this story, notwithstanding my discouraged mental state, curiosity finally forced me to investigate to determine exactly what had happened when the lightning struck. I found that the #12 stranded wire I had used to ground the coax at the tower base performed heroically. I had wrapped it around the tail of a stainless steel hose clamp which secured a large copper ground strap to the tower leg. The clamp was burned blue and the wire had moved to the very end of the clamp, but it had held. Then, at the suggestion of one of the other engineers (more experienced in this lightning-prone environment), I looked at the old telephone line which comes over from a neighboring transmitter site, a beefy three-pair cable which we once used for our own telephone service, finally abandoning it due to its propensity to act as a lightning antenna. I discovered that I had inadvertently laid the RG8 coax from my 2M antenna right on top of it! There before me lay the condemning evidence of my stupidity, the answer to the mystery.

The lightning surge had collected on the phone line and jumped from it into

the RG8, where it blew a ragged hole in the plastic jacket and vaporized a dime-sized chunk of the coax shield. The surge had then traveled down the 2M coax, through the Kenwood 211, into the TR7 and out of the building on its coax into the leg of the tower. It wasn't a full-fledged direct hit, otherwise I probably would have had balls of fire chasing me around the room. It must have been the fringe of a nearby strike, collected by the phone line and carried over to my site. Whatever it was, it was a radio killer.

As to what occurred in the room, I have reconstructed those events by tracing the circuit that the discharge followed: Contrary to my earlier belief, the HF tuner had not been hazardous to my health. Instead, the high-voltage surge came down the 2M coax shield, energizing the combination of the 211 and the TR7, since they shared the same storage battery power supply, arcing a half inch from the Drake chassis to the tuner, while simultaneously arcing from the Kenwood mike to the tuner cable. I suppose the inductance of the coiled mike cord had something to do with it,

probably acting as a crude pulse stretching circuit. Since the surge went through the Kenwood's gut and/or chassis, it is a wonder that anything at all works in it, although it does still have squelch function and some white noise in the speaker.

As to the reason for the telephone dying, the studio decided to commandeer the microwave link normally used for the telephone. It was needed for the handling of telemetry data interrupted by the 450 MHz receiver failure. Without that computer data link, no automatic logging of transmitter parameters can take place. Since logging data must take precedence over the transmitter engineer's personal conveniences, there went my telephone. I do still have a two-way business band radio, my only remaining communications link with the outside world. I wonder how long that will last.

By the way, it rained butterflies today. The snowdrifts are covered with thousands of little orange, grey and black butterflies. Don't ask me why. I just work here. Mother Nature and her husband, Murphy, run the place. w

Suction cup dipole

DAVE BRANDT, WA3GPM

Need a simple antenna that will enable good 2M FM communications into and out of today's brick, concrete and steel buildings? Like most of my projects, this one is cheap and easy to make. I like that. It is a dipole antenna cut for 2M, making an approximate total length of 37 inches. Remember, the same formula that works for the HF bands also works for higher frequencies. However, it requires two attachments, strings, etc., to hold it. I dispensed with the strings and such by using some soft plastic suction cups that are seen holding toy animals to the inside of car windows.

Today, most modern buildings have an ample number of windows, many of which cannot be opened. By simply attaching a small suction cup to the end of each leg of the dipole, as well as to the center coax feedline connection, the antenna can be stuck to the inside of any window in any position or polarization. And if the window just happens to be on the top floor, so

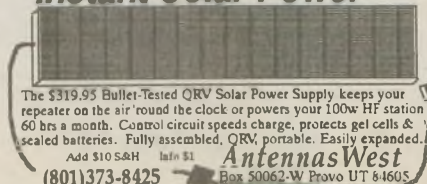
much the better. Just think of the wide coverage you can attain from such a location on a very low amount of power! By using a short run of coax you can set up an effective communications center at a comfortable distance from the window, or at an available table that can be found.

Sure, the dipole does not give any gain, but we should also know that the rubber ducky antenna itself is only percent efficient. Besides, if you want to hold that Statue of Liberty pose in order to conduct emergency communications, that is your business! It is incredible how fast your blood can rush away from your fingers when your hand is elevated in just such a manner.

Vertical antennas all need an effective groundplane in order to perform well, but the dipole inherently has it own, by design. This whole antenna and feedline can easily be coiled and stored inside a small plastic ziploc bag, making it easy to be carried around with you until needed.

After reading this, you might excitedly exclaim, "A simple solution to a simple problem from a real simple minded guy!" I won't mind a bit. Try it and remember to accept all those great signal reports you are going to receive with dignity and a serious sense of humor. That basic antenna design comes into use for more than just HF applications. In our world of concrete, steel and glass, this suction cup dipole really "holds" its own. w

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Watch out for new errors

B. CHANDLER SHAW,
WA6EWY

The following is in response to Hal Silverman's, W3HWC, efforts to debunk the antenna mythology that spoils the hambands" ("My Turn," ept. '92, p.70); as WA6EWY cautions, Watch out, lest new errors replace the old."

1. When amplifiers were made with tubes, no reflected power was returned to the tubes. The final tuning and loading were adjusted so that the tubes saw exactly the intended resistive load along with just enough inductive reactance to cancel the plate capacitance. The tubes went and still go merrily on operating exactly as they were designed to do with exactly the same dissipation as if the load were purely matched resistive, unless the operator doesn't know how to tune the rig.

Those of us who operated (and still operate) with 10:1 VSWR in tuned balanced feeders radiate very little less than our "flat line" friends, and usually more than those who use coax, even at 1:1 VSWR. The change in tank circuit reactances to make this happen may cause a very slight decrease or an increase in tank circuit efficiency from some design resistive load. Only if the unloaded Q of the tank is abysmal to begin with will the efficiency change be measurable at the receiver.

2. One can readily design and build an amplifier today (just as you could yesterday) that has the necessary adjustments to properly match any desired load impedance (including reactive components) to any currently or formerly made active device, which includes providing the active device with whatever complex impedance is required to make it operate efficiently at the intended power level. The "VSWR protection circuits" of most presently manufactured transmitters are quite valuable as an interface tool to save further growth of the "oops" pile of defective silicon in the "expensive trash" box.

Unfortunately, most RF transistors cannot stand a misloaded condition long enough for human corrective action to properly tune the amplifier. The VSWR protectors hence serve a valuable function. Unfortunately, most of the amplifiers in which they are used are inadequately designed in that they do not contain the necessary tuning elements to match to a wide range of real-world feedline input impedances. That is a circuit deficiency and has nothing to do with power in the feedline!

Hams, of course, knowing the real problem, will design their own final amplifiers to match their own feedline conditions, won't they? On the other hand, final amplifier design for an intermediate line impedance does provide the option of locating the tuning and matching elements remotely, such as at the antenna, or even combined with it.

3. The wave radiated by an antenna has nothing to do with the load

presented to the feedline. It is true, however, that the load impedance presented to the feedline is usually complex, but that is not in any way related to the sphericity (or lack thereof) of the radiated wave. Nor does the fact that the antenna load, even when purely resistive, usually has a value other than that of the feedline have anything to do with the antenna radiation pattern. From an impedance standpoint, the antenna is an impedance matching structure between the 377-ohm impedance of free space (as may be perturbed by local (please turn to page 36)

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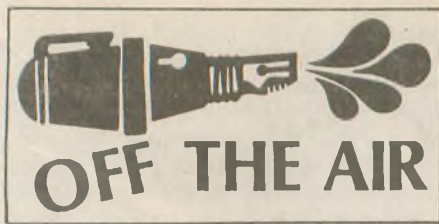
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Sea nostalgia

Boy, that story in the September issue (p. 12) by R.M. Saini, KC6IXM, regarding the liberty ship SS *Jeremiah O'Brien* sure brings back memories. I was a Radio Officer on board the liberty ship SS *James S. Lawson* when we made a trip to the South Pacific.

I boarded the ship at the Oakland Navy supply depot and got my first experience with the marine radio equipment. I got a big bang from the crystal detector receiver that was supposed to be used in emergencies.

The ship was taken to Point San Pablo where it was loaded with dynamite, demolitions, torpedoes, warheads, etc., from barges that were anchored in the San Pablo Bay. We returned to the Oakland Navy supply depot where they loaded on four PT boats for the South Pacific.

Those PT boats unbalanced the ship so badly that we had bad port side list; I thought the ship was going to roll over when we hit those big round swells just outside the Golden Gate Bridge. But we made it and they used up oil on that bad side to right the ship.

We made it to the Admiralties Islands in the South Pacific, where we met several hundred other liberty ships waiting for the Leyte landing in the Philippines.

The Navy took off the PT boats for Kennedy's outfit down there and we and the other liberty ships waited at anchor for the invasion.

One night with nothing else to do I went to the signal light and put out a CQ just for the fun of it, thinking some other Amateur Radio operator like myself would see it. Wouldn't you know it, I started a pileup you would never believe. So every night after that you could see some ham operator on one of the liberty ships QSOing some other ham. We could only send about 5 wpm with those signal lights but it was

fun until our hands gave out working the shutter on the signal light.

Well, we made it and returned to the States with a shipload of brass from the spent shells that were fired.

My next ship was a black oil tanker that had a different marine radio and a similar HF transmitter, but it was a Mackey radio installation instead of the RCA unit.

We put 100,000 miles on that tanker supplying black oil to the fleet off Japan at the end of the war. When the war finally ended and things got back to normal, we could start using the radio for sending messages to the States.

Listening on the HF amateur bands was fun, and a bunch of us on the ship at sea started putting the ship's radio on the ham bands and working a little DX. Boy, when the FCC found out they sure put a stop to that!

Being a land lubber that last year at sea and those 100,000 miles on that black oil tanker did it—no more sea duty for me. I never got sea sick but I sure got sick of the sea a few times.

It was March 1946 when I got back to the States on the old T2 tanker and went to work for the State of California Communication Division, retiring in 1974.

As a note of interest, Jeremiah O'Brien was a Navy sea captain during the Revolutionary War and captured a few limey ships. I have never found out what James A. Lawson did to get a ship named after him.

JULIAN J. FAAS, W6KMI
Fresno, CA

DX nets and lists

After following the comments on net and list operations in the DX World column, I thought that, as a subscriber, I would throw in my two cents worth.

N6JM stated, when he kicked the whole controversy off last April, that he had the privilege as an editor to spout off on a subject without being censored. This is only a relative privilege, as the subscribers as a group can exercise the ultimate censorship (with the exception of the lifetime subscribers who have passed on the economic options).

I have heard many net and list operations that have probably done a

great service to the "little guy" as well as anyone. The people who can be heard on the air running down lists and nets are the "big shots" who are not about to wait in line with anyone. They have the signal to walk in and out of pileups and not have to waste any of their valuable time. Why should they wait with the common rabble on a net?

A lot of the nets will keep taking list until stations calling and relays of those call signs are exhausted. This has the reverse effect of what John N6JM, suggests, as long as propagation holds out for most of the list.

I find it rather sad that, with so many poor examples being set on the air by US DXers, N6JM would take so much of his "net" running down those who unselfishly spend hours every week helping the many users of DX nets. If he would use his influence as an editor to promote responsible operating practices instead of promoting elitist agenda, things could improve for all DXers, big and small.

CLAY CONARD, WA0GFS
Boone, IA

Competition

Some history: It is often useful to learn how we got where we are today. In the very, very early days of radio up until the early spark days, the plural of antenna was antennae. This plural form was dropped in favor of antennas. If you read the definition of antenna carefully and thoroughly, in the "big dictionary," you will find that "antennae" refers to those things on bugs; the metallic, man-made ones are *antennas*.

Hence only old-old-timers (and there are hardly any of them around anymore) can refer to antennae with impunity. Hal Silverman's (see "My Turn," September, p.70) 30 years' experience hardly qualifies him to be an old-old-timer permitted to refer to antennae!

He also said that reflected power heats up the tube plates. It seems that 30 years ago was the beginning of the end of the vacuum tube era, so I guess he can be excused for not knowing that in the act of tuning the plate "tank" (tuned circuit) to resonance the dip in the plate current, you were tuning out the reactance being reflected back down the line (and at the same time, with the loading control, matching the tube impedance to the line) for optimum load transfer. This is the exact same operation a takes place in a 50-ohm in-line tuner but instead of matching 50 ohms to 50 ohms you are matching several 1000 ohms of plate impedance to 50 ohms.

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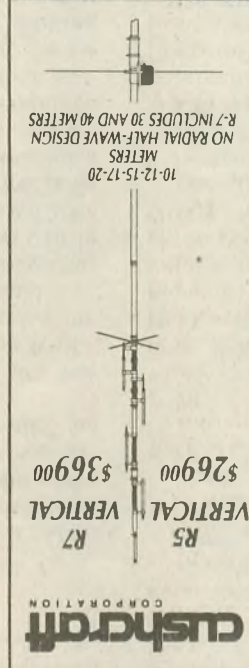
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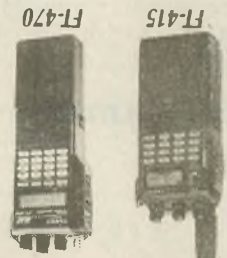
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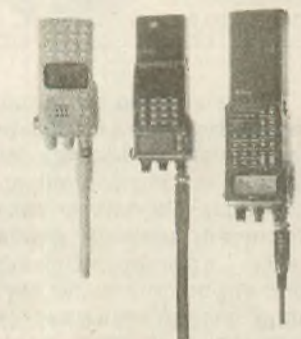
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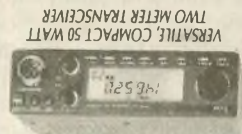


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Hence there would be no reflected power "heating up the tube plates." This is another one of those old wives' tales perpetuated by some who don't understand how plate tuned circuits work, don't realize they are the same as antenna tuners but operating at a different input impedance level.

Manufacturers of solid-state rigs could have incorporated these tuned circuits from the beginning but left them out as a space and cost saving ploy, putting the onus on us to provide the required 50-ohm resistive load. They didn't even have SWR protection in the beginning. This was a boon to tuner manufacturers, but then the rig manufacturers started offering built-in "tuners" as an option, and now even automatic ones. Ah, competition!

TED CHERNIN, KH6GI
Honolulu, HI

QSL standards

As an avid DXer and a QSL manager, I found the QSLing articles in the January 1992 *Worldradio* to be quite informative. From my own experiences several points should be clarified.

First of all, foreign QSLs are not oversized! It is the US QSLs which don't conform to international standards. Check your postal manual.

This doesn't solve the problem that 33 percent of foreign QSLs don't fit in the standard US envelopes without folding. This problem can be reduced to one percent with a trip to your local stationery store. Although rarely stocked, the "executive size" envelope can be special-ordered by most stationery stores. You'll probably be required to buy a box of 250. (Looking through the catalogs, I have never found any metric sizes listed.) The envelopes that I've been using are Eaton Berkshire airmail envelopes 32-634-10 (3 7/8 x 7 1/2). While you are there buy a box of the standard #10 envelopes 32-635-10 (4 1/4 x 9 3/8). The smaller envelope fits nicely into the larger one without folding.

When putting the smaller envelope into the larger one, insert the inner envelope with its flap toward the bottom of the outer envelope. As a QSL

manager, one of my pet peeves is having to supply new envelopes and postage for all those envelopes that I cut the flaps off while opening letters. These problem QSLs get answered after the NIL (not in the log) problems are resolved.

Before mailing two or more IRCs to a DX station for return postage, look carefully at your IRCs. Sometime during 1991 a new IRC was put into circulation. This new IRC is good for airmail return of a minimum weight (1/2 oz. or 10 grams) letter. As such only one new IRC is necessary for return of a QSL via airmail. What is unclear is what the redemption value of the old surface rate IRC is. The USPS manual makes no mention of the new airmail IRCs and the stated IRC redemption value is insufficient for airmail postage. The new IRCs look exactly like the old ones, except for changing the word "surface" for "airmail." I've received them from many European countries and Japan.

STEVE LUND, WA8LLY
Sebastopol, CA

Official Observer role

There appears to be confusion as to what the ARRL Official Observer does. With all the new amateurs added to our ranks, and those others who have not been able to keep up with advances in the hobby, I think a few simple words may clarify the duties of the Official Observer.

The Official Observer is an ARRL volunteer who is part of the Amateur Auxilliary of the American Amateur Radio Relay League. The O.O. has no enforcement authority but is an affiliate of the Federal Communication Commission.

The Official Observer monitors the frequencies used in Amateur Radio for infractions of the FCC's rules and regulations covering Amateur Radio. There are other guidances given to the amateur operator through gentlemen's agreements. The Official Observer does not monitor gentlemen's agreement violators except where they may violate FCC rules and regulations.

It is incumbent that amateurs be

made aware of these gentlemen's agreements. And I can think of no better place for this information to be disseminated than on nets and at club meetings. Copies of these agreements should be passed out, and knowledgeable speakers should explain in detail why these agreements must be upheld.

JOHN CANARIS, WY6O, O.O.
Sacramento, CA

Red carpet

Last summer my XYL and I made a camper trip which took us around the US. We started from Ocean Shores, Washington, and traveled to Arizona, New Mexico; Oklahoma; Texas; Mississippi; Ohio; New York; New Jersey; Maine; Cape Cod, Massachusetts; New Brunswick; Halifax, Nova Scotia; Vermont; Rochester, New York; Chicago and back on I-90 to Ocean Shores.

Wherever we were we made 2M contact with many wonderful hams. In Phoenix, Arizona, we participated in the yearly get-together of the California/Hawaii Net, hosted by KR7BT Stan. About 40 net members participated—it was a great event.

The most exciting experience was when we got to Canada on 4 June, and the amateurs there just rolled out the red carpet for us. I was invited to participate in the Field Day exercise with them and I gladly accepted. We met so many wonderful hams; I would like to convey our thanks to this wonderful group, through their president VE1LE, Martha, for making our stay so memorable.

This bunch of hams sure knew how to make us welcome!

ARNOLD SAMUELS, KH6COY
Ocean Shores, WA

Drug pirates

Unlicensed pirates, according to the area FCC representative, now cannot be prevented from using the amateur bands. The FCC, with new deregulation orders from Mr. Bush, can do nothing unless the pirates get on police or fire frequencies.

A local drug ring has been making itself at home here on 2M. First no code, then no license!

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Glenwood, AL



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Ron Payne,
WA6YOU

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Ron's, WA6YOU, "modest" station is this month's winner. We were particularly intrigued by his plethora of hand-helds.

I received my Novice call sign, WB6YOU, in April 1962 at the age of 14 while residing in Livermore, California. Thirteen months later I passed the Technician and was issued WA6YOU. During the past 30 years, I have pro-



gressed up the ladder through General, Advanced and Extra.

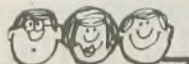
My modest station, now in Fairfax, Virginia, consists of a 15-year-old Trio-Kenwood TS-820D (purchased in Japan), Kantronics KAM, Radio Shack TRS-80 model 100, Cushcraft R-3 antenna, and a menagerie of hand-helds for all bands from 10M to 23cm. Along with the Icom R-71A and Yaesu FRG-7, I collect tube-era communication receivers and have a mint condition Drake 2B, a Hammarlund

HQ-129X, and a TMC GRC-90, among others.

DX-wise I have worked 287 countries, with 268 confirmed. Five additional DXCC awards were gained overseas while on assignment with the Foreign Service, and during the past 22 years I've held call signs WA6YOU/DU2, OD5MX, VU2YOU, VU9YOU, VU83YOU, 9N38, 9N1YOU, G4/WA6YOU, DA1PA and A25/WA6YOU. My primary interests now vary between DXing, packet, RTTY, SSB and CW. Finally, in an effort to repay Amateur Radio for many years of enjoyment and a fulfilling career, I serve as a VE for numerous radio clubs in the Washington, DC Metro area. □



Amateur "Hi"



Ever had a funny or strange experience with Amateur Radio, either on or off the air? If so, type it up (or print neatly) and send it to us for

consideration in our monthly AMATEUR "HI" contest. You could win a free year's subscription to Worldradio!

Blair Alper, KA9SEQ, on Mobile packet...

About two years ago we had a packet expo put on at a local college by Kantronics and a local packet club. It was my first opportunity to field-test my newly constructed portable packet station. The station consists of an Icom 2AT, a PacComm Handipacket, a VoCom 30W amp, a gel-cell and a charging circuit all in a portable cellular phone carrying case. The computer is an Atari Portfolio which is palm sized.

I arrived late and wound up in the back of the room where the lectures were being given. While listening to the lecture, I connected with one of the demo stations out in the hall.

He responded, "I am at the packet demo, where are you?"

I answered, "I'm here too."

He responded, "I don't see you, where are you?"

"I'm in the lecture room," I said.

He said he was going to poke his head in the door and asked me to wave. The door opened and I waved from the back of the room. He went back to his keyboard and responded, "Your station must be pretty small. Would you stop by during the break and show it to me?"

I said I would and disconnected. During the break he had a crowd around him and I couldn't get close. With the station slung over my shoulder, the computer in one hand and typing with the other, I connected to him.

Someone next to me saw what I was doing. I put my finger to my mouth and said, "Shhh..."

The operator of the station said to the crowd, "Hey, here's that guy I was talking to earlier." He sent, "Where are you?"

I responded on my keyboard with "Yo, look behind you!"

When was the last time that happened to you on packet? □

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New errors

(continued from page 31)

surroundings) and the desired or acceptable terminating impedance for the transmission line.

4. The incident wave on an antenna sets up a voltage and current in the feedline, as stated, but the relationship between the two is determined by the receiving end terminating Z translated by the line.

5. A portion of the energy of a disturbance propagated in a transmission line toward an antenna will be radiated whether or not the antenna and line are matched, unless the antenna presents a pure open or short circuit to the line. In short, the parenthetical expression starting at the bottom of the second column in W3HWC's article is misleading. If the disturbance is periodic at a high enough rate, the normal standing wave patterns (dependent upon the harmonic structure of the driving waveform and the separate complex load presented at each harmonic) will be established and the "CW" conditions will be obtained.

6. Antenna gain can be referenced to any radiating form whatever. For theoretical analysis the (also theoretical) isotropic radiator is convenient, but it is not essential to the definition. Note that the FCC uses gain with respect to a dipole (in the direction of maximum radiation) as its standard. This relationship is more correctly stated in the last sentence of the third paragraph of the last column.

7. It is useful to remember that at any plane transverse to the propagation direction in a transmission line it is impossible to measure a standing wave. It can only be inferred with *a priori* knowledge of the characteristics of the propagation conditions beyond (or before) the plane of investigation. At any particular cutting plane across the line you can measure power flow only in terms of e , i , and cosine theta, whether the frequency is 60 Hz or 60 GHz. Likewise you can cancel the reactance (our 60 Hz friends call it "making the power factor unity") and/or transform the real part from one value to another with lumped components (which cannot be said to have a VSWR) or with line sections, either fixed Z or tapered. The line sections used for matching may have a VSWR approaching infinity at that cutting plane.

8. The standing wave on a transmission line in the general case is *not* the same on receive as when transmitting. This is often unknown or ignored. The VSWR on receive is

determined by the load presented to the feedline by the receiver input including any tuning/matching elements in circuit during receive. This can have

a substantial effect on the efficiency of an antenna on receive. Poor overall station performance is sometimes the result. WF

Special Events...

Inauguration commemoration

The Maryland Apple Dumpling ARS will operate W3USS from 2300Z 15 January to 2300Z 18 January from the Russell Senate Office Building in Washington, D.C., to commemorate the inauguration of the 42nd president.

Operation will be on phone bands at 1.855, 3.905, 7.205, 14.270, 21.345 and 28.490 MHz, and on CW at 1.810, 3.640, 7.050, 14.050, 21.050 and 28.050.

For certificate, send 9 X 12 SASE to Box 2468, Wheaton, MD 20902.

Chinese New Year

The Uinta County ARC will operate NW7H on 23-24 January to celebrate the Chinese New Year from the only city in the Rocky Mountains observing this holiday.

Operation will be on 28.395, 24.945, 21.325, 18.140 and 14.245 on the phone bands, and 7.122 on CW.

For certificate, send QSL with 9 X 12 SASE to Vranish, P.O. Box 2048, Evanston, WY 82931-2048.

Bicentennial celebration

The Auburn ARA will operate KC2VB on 23 January to celebrate the bicentennial of the founding of Auburn and Winterfest.

Operation will be in the lower 25 kHz of the General 40, 20, 15 and 10M bands and the corresponding Novice bands from 1500Z to 2100Z.

For certificate, send 9 X 12 SASE to Sta. Gutelius, KC2VB, 4 Elizabeth St., Auburn, NY 13021.

Challenger remembered

The Challenger Junior High School ARC will operate KI6YG on 28 January from San Diego, California, to commemorate the Challenger Space Shuttle tragedy, occurring on this date seven years ago.

Operation will be on 14.270, 21.270 and 28.270 from 1500Z to 2400Z.

For special QSL card, send QSL and SASE to Frank Forrester, KI6YG, Challenger JHS ARC, 10810 Parkdale Ave., San Diego, CA 92126.

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Silent Keys

Ralph Janowsky, W2RPO

Ralph, a retired electronics engineer and World War II veteran, died Wednesday, 11 November, at his residence after an illness of about eight months. He was 74 years old.

Ralph served as a captain in the Army Signal Corps during World War II.

As an engineer for the former WBEN-TV, he helped to develop split imaging for the station. He later worked as an engineer for Columbus McKinnon Corp. manufacturers of lift equipment.

He was an elder, deacon and trustee at Payne Avenue Christian Church and belonged to the American Radio Association of the Tonawandas, the Quarter Century Wireless Association and Sikora Post 1322, American Legion, in North Tonawanda, New York. He was also member of the Amateur TV Group.

He is survived by his wife, Florence; a son, Mark; two daughters, Rola Peas and Ellen Santilli; two brothers, Glen and Lee M.; seven grandchildren and two great-grandchildren.—Information submitted by James E. Keller, N2LQC

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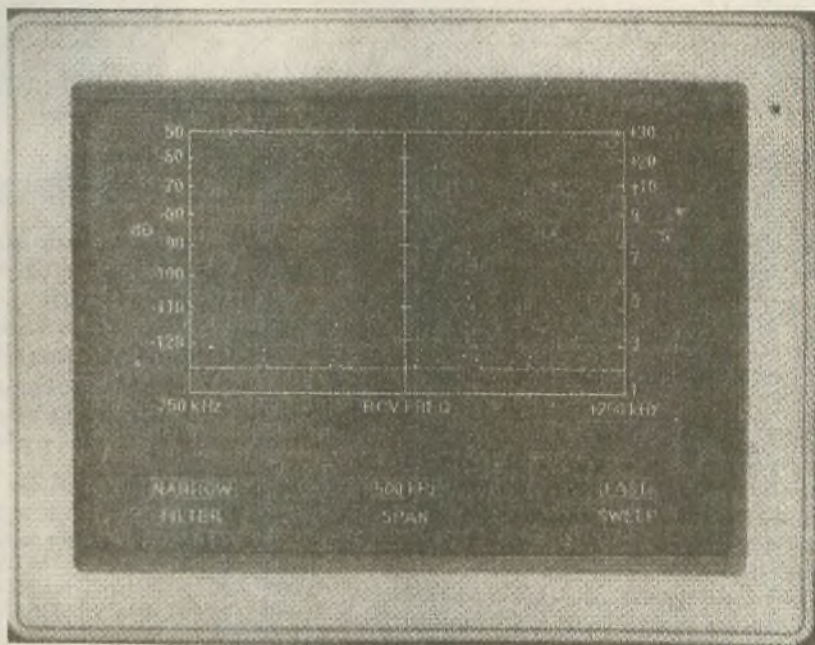
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DX WORLD

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W100N

The following DXer was awarded *Worldradio's* Worked 100 Nations Award during this past period:

438) Patrick H. Bailey, K7KBN; 12 Nov. 1992

Cyprus (5B4)

There has been almost no activity reported from this one recently. *Long Skip*, the official organ of the Canadian DX Association, reports 5B4ADA on 21.012 MHz at 1300 UTC working into the Maritime provinces, with 5B4KH on SSB near 21.309 MHz at 1930 UTC working a deserving DXer in Quebec.

Sierra Leone (9L)

Long Skip reports that 9L1JC is with the US Embassy and can be found on 15M after 1930 UTC. Reports for this one include 14.170 MHz at 2330 UTC and 21.219 MHz at 1830 UTC.

QRZ DX reports 9L1JI on 21.087 MHz around 1830 UTC on 1 November. On that part of the band this station was most likely on RTTY.

East Malaysia (9M8)

At least three calls from East Malaysia were reported recently that include the following:

9M8BL	21.344 MHz	1530 UTC
9M8PV	7.053 MHz	2100 UTC
9M8ZZ	18.135 MHz	1515 UTC

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In early August Franco Armenghi, I4LCK, flew off to the Solomon Islands, set up his radio and handed out M'Banica Island in the Russell Islands (OC-168) for a new one to the IOTA island chasers. A few days later he operated from Uepi Island of the New Georgia Islands (OC-149).

The photo shows Franco at his home location in Bologna. Catch all those trophies! Franco has been an amateur since 1960.

Ceuta and Melilla (EA9)

Check 10M for one of these as several calls were reported on this band:

EA9DX	28.475 MHz	1545 UTC
EA9IB	28.480 MHz	1800 UTC
EA9KQ	28.506 MHz	1715 UTC
EA9UK	28.451 MHz	1615 UTC

There has been an increased amount of activity to our newer bands, such as 12M, where we have EA9QJ on 24.893 MHz at 1715 UTC and EA9TL on 24.970 MHz at 1400 UTC. EA9KD was worked on 30M near 10.106 MHz at 2000 UTC.

Forty meter activity included EA9KD on 7.028 MHz at 0545 UTC and EA9KQ on 7.005 MHz at 2230 UTC.

Twenty meters had EA9KQ on 14.005 MHz at 0215 UTC and EA9UK on 14.012 MHz at 2130 UTC.

Activity on 15M was represented by several of these calls:

EA9KQ	21.320 MHz	1645 UTC
EA9KX	21.320 MHz	1630 UTC
EA9PB	21.260 MHz	1900 UTC
EA9UK	21.014 MHz	2230 UTC

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MS-088	160-80M V-SLOPPER	85' 12JING	\$54.00
MS-084	R1-40M V-SLOPPER	41' 12JING	\$45.00
MS-086	160M SINGLE-BAND V-SLOPPER	60' or 65' 12JING	\$52.00
MS-084-40	160-80 40M BEGGAR BANDER	105' 12JING	\$65.00
MS-084-832	160-80-40-30-15-12M DOUBLE SLOPPER	60' 12JING	\$67.00

Send 2-stamp SASE for details of these and other antennas. (SASE) \$5 PER ANT.

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Ethiopia (ET)

According to *Long Skip* ET3JR will be there for three years and has been promised written authorization. He was reported one Thursday evening on 21.188 MHz at 1700 UTC working European.

ET3PG was another call reported this one on 40M near 7.023 MHz at 2300 UTC.

The Hensons-Carl, WB4ZNH, and Martha-WN4FVU, were active in October at Addis Ababa signing ET3BO and ET3YL, respectively. No doubt Martha handed out a new one for the YL hunters. Those of you who worked them can QSL Carl via K4PHE, and Martha via N4NX.

Navassa Island (KP1)

Vance Lapiere, W5IJU, is assembling a DXpedition team of about eight operators for an operation from Navassa Island this Spring. The tentative dates on the island are 26 March through 3 April 1993.

The team is in need of funding and is requesting donations from DXers. With your donation please include an SASE with the amount written on the inside flap of the envelope. All donations will be returned if the trip does not come off.

Navassa Island is presently ranked 96th on the most-wanted countries list. However, this is not the case for Asia

which ranks 37. If you need this one then donations will be appreciated.

Aruba (P4)

The Quannapowitt Radio Association is planning a trip to Aruba for a week of operation 11-18 January, signing with P4/W1EKT. The operators will include Jim Fisk, W1HL; Mike Rioux, NW1J; Bill Plumber, N1NGK, and Bob Reiser, AA1M. All bands and modes will be used with special emphasis on the 10M Novice band.

Seychelles (S79)

On RTTY S79PDL has been reported several times. Try listening between 21.086 and 21.092 MHz from 1600 UTC or 14.088 MHz at 1800 UTC. Fifteen meter activity includes the following calls:

S79EC	21.024 MHz	1800 UTC
S79KMB	21.335 MHz	1600 UTC
S79MC	21.281 MHz	1645 UTC

Visitors from Japan signing S79ELY (JA1ELY) and S79IDY (JA1IDY) have been very active from the Seychelle Islands. S79IDY was to have been very active 21-26 October, mostly 20M CW.

Egypt (SU)

If you need a CW contact from Egypt try SU1HV, who was reported at 1915 UTC on 21.002 MHz working into Ontario; SU2MT on 21.003 MHz at 1915 UTC in the Maritime provinces; or SU2VU on 3.503 MHz at 2100 UTC one Sunday evening working Europeans.

Twelve meter activity includes SU1AL between 24.940 and 24.957 MHz around 1400 UTC and SU1HV on 24.895 MHz at 1300 UTC.

Fifteen meters SSB includes only one report: SU2MT on 21.283 MHz at 1800 UTC.

Belize (V31)

Art Phillips, NN7A, writes that he and Mike Sharp, NG7S, will be operating from Southwater Cay in the Belize Caribbean Sea Coast South group from 22-24 February 1993. This island group presently has no IOTA reference number and will be assigned when the team activates the island. Art will be signing V31JZ with Mike as V31RL.

Prior to this operation they will be operating as V31RL during the ARRL International DX Contest from the mainland.

Montserrat (VP2M)

Stu Stephens, K8SJ, will operate as VP2M/K8SJ, 5-17 February 1993, on all bands, mostly CW. Look for Stu 20 to 30 kHz up from the band edges. All QSL requests without SASE will be sent through the bureau.

Burkina Fasso (XT)

The DX Bulletin reports that XT2BW occasionally meets his QSL manger, WB2YQH, on Sundays at 2100 UTC near 14.211 MHz. Please wait until they are through before calling.

XT2BW has been reported on CW and RTTY several other times during October. For a CW contact try near 14.017 MHz around 2000 UTC or 28.035 MHz at 1815 UTC. On RTTY he was reported on 14.078 MHz at 2130 UTC and 21.078 MHz at 1515 UTC. He is new to RTTY, according to QRZ DX so be patient.

Gibraltar

At least five calls have been reported representing Gibraltar this fall. ZB2FK has been active on several bands, including 1.841 MHz at 2315 UTC, 7.069 MHz at 2145 UTC, 18.070 MHz at 2215 UTC and 28.410 MHz at 1400 UTC.

Activity from the other four include:

ZB2AZ	21.335 MHz	1530 UTC
ZB2FM	21.245 MHz	1700 UTC
ZB2JI	24.962 MHz	1400 UTC
ZB2X	14.025 MHz	2300 UTC

IOTA

There hasn't been that much activity for the IOTA chasers this past couple of months as can be seen by the following reports.

AF-053	Maskali Island	J28FO/P
	21.260 MHz	1530 UTC
EU-016	Korcula Island	9A1CDH
	14.257 MHz	1315 UTC
NA-067	Okracoke Island	N8SCH/OCK
	21.263 MHz	1915 UTC
NA-128	St Lawrence Wtrway	VE2OV/P
	14.260 MHz	2030 UTC
OC-137	Bribie Island	VK4LV
	21.018 MHz	1030 UTC

A fast QSLer in the IOTA program is Peter Marquardt, DL4KUM, on Ruegen Island (EU-057). Peter's former call is Y22MA.

If you are considering activating an IOTA island next summer please consider the RSGB Islands on the Air Con-

test. This new event will take place 1200 UTC 24 July through 1200 UTC 25 July. It should be fun.

One very active IOTA type is Babis Platsis, SV7BAY. Babis activated several IOTA island groups this past summer that include EU-060, EU-158 and EU-075. Presently, he is very busy with other activities.

The IOTA standings for September 1992 include the following North American DXers on the Honour Roll:

VE3XN	644
W9DWQ	632
W9DC	631
VE7IG	630
W4BAA	629
K9PPY	600
K2VV	566
KD7SO	523
K2EYJ	517
KE4I	482
W9NZM	464
WT2O	459
K5MK	428
KC8PG	427
K6DT	416
W1ENE	515
N3CWP	405
N6BOI	405
WB9EEE	405
WD8MGQ	402
VE6VK	394
VE6PW	390
W3KH	371

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Most wanted countries

Chod Harris, VP2ML, editor of *The DX Bulletin* and *The DX Magazine*, releases the latest findings on the most needed DXCC countries. The results are based on the response to a survey mailed to all subscribers. The list includes 100 DXCC countries, but we will list only the top 25.

Rank	Country	Prefix	% need	'91 rank
1	Peter I Island	3Y	67.8	7
2	Bhutan	A5	60.2	6
3	Libya	5A	59.5	13
4	Andaman Islands	VU4	58.0	11
5	Laccadive Is.	VU7	57.3	12
6	Heard Island	VK0	56.7	14
7	Tunisia	3V	49.9	18
8	Uganda	5X	49.6	21
9	Spratly Islands	1S	46.6	19
10	Madagascar	5R	46.4	23
11	Yemen	7O	46.2	26
12	Ghana	9G	46.1	29
13	Tromelin	FR/T	45.8	10
14	Bangladesh	S2	45.8	4
15	Iran	EP	45.2	15
16	Glorioso Island	FR/G	43.4	9
17	Kingman Reef	KP5K	43.4	28
18	Baker & Howland	KH1	42.9	24
19	Congo	TN	42.8	31
20	Mount Athos	SV/A	42.1	22
21	Macquarie Island	VK0	41.9	36
22	South Georgia Is.	VP8	41.5	17
23	Kermadec Islands	ZL8	40.9	25
24	Burma	XZ	40.4	2
25	Juan de Nova	FR/J	38.5	30

Way down on the very bottom ranking 100 is little Albania. Last year that one ranked at the top of the list.

If you desire the complete results of the survey contact *The DX Magazine*, P.O. Box 50, Fulton, CA 95439.

DXAC actions

The ARRL DX Advisory Committee voted to recommend the following additions to the DXCC Countries List.

Country*	Prefix	Vote
Croatia	9A (was YU2)	15 to 1
Slovenia	S5 (was YU3)	15 to 1
Bosnia-Herzegovina	YU4	13 to 3
Macedonia	YU5	13 to 4

The DXAC intends for the entity of

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Yugoslavia to continue on the list. This entity is composed of Serbia (YU1), Montenegro (YU6), Vojvodina (YU7) and Kosovo (YU8).

The recommendations now go to the ARRL awards committee for consideration. Start dates will be announced after the awards committee action. Please, do *not* send QSL cards to the DXCC desk for these countries until they have been officially added to the list and a date for acceptance has been announced.

The DXAC has also voted *not* to pursue the following items:

1) A change in the DXCC country status of the former USSR republics, (2 yes, 14 no).

2) Consideration of a DXCC rules revision to permit participation by stations located on board docked ships in ARRL awards programs, (3 yes, 13 no).

3) A study of an advanced DXCC award, (3 yes, 12 no).

4) A change in the DXCC country status of 4U1VIC, (3 yes, 13 no).

These items have been removed from the DXAC agenda. No further action will be taken at this time.

Pirates

Slim continues to think he is funny. 5A0DX continues to pass out contacts to those who think he is in Libya. His latest QSL route was K3CAR who is not listed in the *Callbook*.

Additional calls reported to be bogus include DL1KVC/P, OH0AY and TF5TP. Don't waste your time and cards.

Miscellaneous

Ron Faulkner, W6TUR, requests that African DXpeditions check long path on 20M, as it is difficult to work them short path over the East Coast. Anyone on the West Coast trying to work Africa can understand Ron's feelings.

Ron also states that he spends a lot of time on the radio—a testament to how bad TV is.

QSL cards

Fred Grant, AA4NG, writes regarding comments made by Dick Tesar, WA4WIP, in our October column. Fred comments, "I take strong exception to WA4WIP's silly recommendations for dates on QSL cards. Not Roman nu-

merals? Wrong! They are exactly what should be used and are used by sensible hams the world over.

"My private opinion is that many US hams are unable or unwilling to learn the first twelve Roman numerals. Ironically, they seem unaware that the months used in the US are derived from the Roman calendar. For example, January and March correspond to the Roman gods Janus and Mars. Our ninth to twelfth months are labeled (in Latin no less!) seven to ten because the Roman year started in March."

I really don't think Dick, WA4WIP had the Roman gods in mind when he made his suggestion. Silly? Far from it! I agree with him. To abbreviate the month or spell it out entirely makes good sense.

Another good reason for avoiding Roman numerals is the confusion of the digits 11 with the Roman numerals II. Is it November or February? Many DXers have a lot of QSLs to fill out and may tend to get sloppy. The bottom line? If you want to use Roman numerals—fine. But it might be best to avoid using them for digits!

IRCs

The November 1992 issue of *The DX Bulletin* had an interesting article on the new IRCs by Sandy Farley, N7PQF. Sandy states that the new IRC will cover the first unit of air mail postage. The older IRCs are also valid to cover the air mail postage, provided they are dated 1975 or later. IRCs dated prior to 1975 are obsolete and will not be honored.

The IRCs should also bear the date stamp on the left-hand side. We have several IRCs that bear no stamp at all and we suspect they could have been stolen or the postal employees may not have known how to issue them.

What to do with undated or obsolete IRCs? That's a good question. You could include them as a little extra when sending IRCs.

It is interesting to note that an IRC cost 26 cents in 1975.

Antique QSLs

Jim Gundry, W4JM, provides us with this month's antique QSL. Jim says that at the end of World War II he was Training Director of the Signal Corp

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CR9AG

PRE-WAR V56AG OF HONGKONG
W. A. C. PSE QSL J. J. ALVARES

DX Prediction — January 1993

Maximum Useable Frequency from West Coast, Central U.S. and East Coast (courtesy of Engineering Systems Incorporated, Box 939, Vienna, VA 22183).

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

CENTRAL USA

UTC	AFRI	ASIA	OCEA	EURO	SO AM
8	(15)	10	(15)	*10	*15
10	(15)	10	*15	(10)	*15
12	(14)	10	14	(10)	22
14	29	*13	*27	18	*30
16	33	(12)	23	(16)	*33
18	*33	(12)	(18)	(12)	*35
20	27	(11)	(23)	(11)	*36
22	23	20	28	(10)	*33
24	*18	(17)	29	10	*24
2	*18	(12)	20	10	*19
4	*16	(11)	18	10	*17
6	(15)	(10)	(16)	9	*16

WEST COAST

UTC	AFRI	ASIA	OCEA	EURO	SO AM
10	(12)	*13	*15	(10)	*15
12	(12)	*12	*15	(10)	15
14	(11)	*12	*15	(10)	28
16	(22)	*12	*23	(15)	*33
18	25	(12)	(18)	(11)	*35
20	26	(13)	(22)	(11)	*36
22	22	25	28	(10)	*34
24	(19)	*26	31	(10)	*29
2	15	22	29	10	*20
4	*14	16	20	9	*18
6	(13)	14	18	9	*16
8	(12)	*13	(16)	10	*15

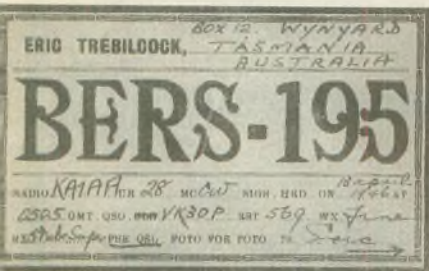
EAST COAST

UTC	AFRI	ASIA	OCEA	EURO	SO AM
7	15	10	(15)	9	*15
9	(14)	10	*15	*10	*15
11	26	10	14	16	22
13	32	11	*28	*20	*30
15	34	(10)	25	19	*33
17	*34	(10)	21	17	*35
19	*30	(10)	(20)	12	*36
21	*25	(16)	(26)	11	*33
23	*19	(16)	28	10	*25
1	*17	(12)	(19)	10	*20
3	*16	(11)	(17)	10	*18
5	*15	(10)	(16)	10	*16

4T7AI	—OA4ED	HA92ITU	—HA5NK
4U1TTU	(see note 1)	HC7SK	—SM6DYK
5N32HKC	—5N8HKC	HS0ZBB	—K9EL
5R8AB	—F6FNU	ID9/W7SW	—KC7EY
5X5MB	—DJ5RT	IG9/TK7RWE	—IK7JJP
6D2X	—KD5GY	IM0/TS0IMA	—IS0IMA
6V6U	—K3JPK	IQ8A	—I8RRD
8P9HT	—K4BA1	J28RG	—FD1RRH
8F9Z	—K4BA1	J37L	—WA6LOW
9ER1TA	—N4NX	J5UA1	—NW8F
9ER1TB	—K4PHE	J68AJ	—KR6ZBI
9L1U	—IK2ETO	J68AP	—K01YF
9M6JA	—JE2QZO	J68BB	(see note 3)
9M8R	—W7EJ	J68CM	—W7ZR
9N1DX	—DL4DBR	J68DX	—KH6WZ
9V1XE	—DL4DBR	J68MR	—N17T
A22MN	—WA8JOC	J68WZ	—KH6WZ
AA5K/AH8	—JA3JM	J68ZR	—W7ZR
C6AFT	—AA5NT	J7/DL5MAE	—DL5MAE
C6AHC	—WB2LMA	J80D	—W8KFP
C6AHH	—N50ON	J80X	—JH41FF
C6AHI	—WA3YVN	JH11QC/HR2	—JP1NZW
C6AHM	—N5TVL	JW5E	—LA5NM
C9RJJ	—W8GIO	JX3EX	—LA5NM
CE0Y	—K6VXN	JX7DFA	—LA5NM
CR1A	—CT1EGW	JY8VJ	—DL1VJ
CU2DX	—KB5RA	KC6WW	—JA2NVY
CU3LF	—KB3RG	KG4DD	—N5FTR
CW4B	—LU8DPM	KH2S	—JH4RHF
CY0NSM	—VE1CBK	KH8/JA3JA	—JA3JM
D2EL	—EA7EL	KP4SL	—N9LYZ
EA8BH	—OH2BH	OD5/SM3IKQ	—SM3CVM
EG4MC	—EA4CP	OT2C	—ON7LR
EH4MC	—EA4CP	OX3JF	—OZ1JFC
ET3BC	—K4PHE	OY/G4XRV	—G4XRV
ET3YL	—N4NX	P20A	—P29DX
EU00	—DL1GWS	P40I	—OH2KI
FK/Y58IO	—Y22CO	P40J	—WX4G
FK/Y32QD	—Y22CO	P40T	—K4PI
FK/Y31XO	—Y22CO	PQ0F	—PY5CC
FK/Y58AO	—Y22CO	PU0F	—PP1CZ
FM4FZ	—FB1MUX	PX0F	—PY2KP
FW/Y58IO	—Y58IO	PY0F/PP1CZ	—PP1CZ
FW/KG7XE	—J11NCJ	PY0TSN	—PY3ASN
FW/Y58AO	—Y58IO	RE92C	—DL6ZPG
FW/Y32QD	—Y58IO	RH0E	—W5BWA
FW/Y31XO	—Y58IO	RY0U	—K8YSE
FY5FP	—ON4ZD	RY11	—NA30
H44IO	—Y49RO	S21U	—JA1UT
H44XO	—Y49RO	S21ZE	—JA1UT

School in the Philippines at Manila. He was one of the first officially licensed hams following VJ-Day and received the call KA1AA, and Trustee of the School call, KA1SS. They used converted military gear on 10M, the only official band allowed at the time. As for the KA1 prefix, remember the Philippines was still a US possession until their independence in 1947.

The first card, that of CR9AG whom Jim worked on 16 April 1946, was a fellow with whom he used to ragchew a lot on CW. CR9AG was running a pair of 807s in push-pull with 65W input. The remarks included the comment, "Hope to work you on 20M." Jim says he



never since worked Macao.

The second is an SWL card Jim received confirming a contact with VK3OP. BERS-195, Eric Trebilcock of Tasmania, was perhaps the most widely known SWL of that era. Eric penned

an informative note on the rear of the card—a far cry from the SWL cards we receive today. Jim did not say if he knew if Eric ever upgraded to a full-fledged Amateur Radio operator. Jim has been an amateur since 1930.

QSL information

Dan Newcomb, W0RWS, is looking for a QSL route for 7R0ZZ, whom he worked in September. Every time the station would send his QSL route there was interference on the frequency. According to *The W6GO/K6HHD List* this station is a pirate! QSL via your wastebasket.

QSL Routes

3D2IL	—JA30IN	4J1FW	—OH2LVG
3D2IO	—Y32QD	4M5Y	—YV5LAS
3D2QD	—Y32QD	4N3E	—YT3AM
3D2XO	—Y32QD	4N5CEF	—YU5CEF
3DA/G4FAM	—G4FAM	4N7DW	—YU7GMN
4F2IR	—DU3DO	4O4XR	—YU4EBL
4J1FM	—OH2LVG	4T500DX	—OA4ED

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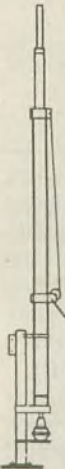
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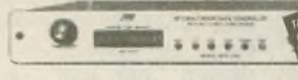
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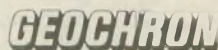
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Many thanks to the following contributors: SV7BAY, AA1M, W4JM, AA4NG, KB4VLO, W6TUR, KH6WZ, NN7A, KA8RAM, K8SJ, W0RWS, American Radio Relay League (K5FUV), Salt City DX Association (KB2G), Greater Milwaukee DX Association (N9XX), Northern Arizona DX Association (W7YS), Western Washington DX Club (WA0R-JY), CQ Ham Radio, The DX Magazine (VP2ML), Long Skip (VE3IPR), The W6GO/K6HHD List, DX News Sheet (G4DYO), The Long Island DX Bulletin (W2IYX), QRZ DX (W5KNE), and The DX Bulletin (VP2ML).

We haven't been very active recently as we have been rather busy with other projects. Whenever we checked the bands we didn't find much to get excited about and turned off the rig. But, what the heck-we all go through that phase at one time or another. Time for a recharge! Hope you are all charged up. 73 de John N6JM. WR

MARS in the Gulf

R. GODLEWSKI, KA4SBE

One of the worst parts about being a parent is seeing the child grow up and move on, but the rewards can be great. I was the self-proclaimed "father of Army MARS" in Saudi Arabia. I was the first to set up and operate from Saudi and I was the first Army MARS director. I went from six stations to well over 120 in a three-month period.

The first call signs and frequencies were passed to me over a scratchy phone line from the chief of Army MARS in September 1990. I put AEM3UA on the air and passed traffic to David Scott Lawrence, NNN0RWO, in South Carolina. He did some phone patches and handled MARSgrams for me while I was set up poolside at a recreation center in Dhahran. My radios came with me and clothes and uniforms were left behind

to make room for the hobby. The box with my extra equipment was placed on an air pallet and appropriately marked, "Godlewski's toys" by the unit movement personnel. They treated them with care because they knew what it would mean to have a link to the states in their own unit.

As my needs solidified, other units from Ft. Lewis brought over much needed equipment. The 62nd Medical Group carried over an R5 vertical with their troops and Lt. Andrew Morkunas mailed an amplifier and tuner. This was particularly gut-wrenching because the cost of the amp and tuner far exceeded the amount it could be insured for. Andrew and I played "gut ball" on that shipment but it finally made it, in one piece.

Other items came later and the program grew. The two biggest additions were a PK-232 and a laptop computer. These two items greatly increased the traffic flow, and I found myself handling up to 1,600 pieces of traffic a month in addition to 200-plus phone patch attempts. Since I was a company commander by the time the war started, this was all done in my "spare time," usually between 9 p.m. and 3

a.m. daily.

When the war started, there was a sudden drop in check-ins due to units moving into position. For about 10 days, I had free run of all the "no waiting" phone patches I could run. I rigged up my PC-1A into the tactical phone lines and started servicing other units that did not have MARS or commercial phone capabilities. It was so rewarding that I would find myself smiling while running every patch. Whether it was a private, a major or even a colonel, it didn't matter. I was doing something better than sleeping. I was operating once during a Scud attack and had to shut down fast. I was paranoid that my signals would be great for direction finding. I came back and forgot to take my mask off, causing me to be "weak and barely readable."

As units left, the radios left and AT&T phone banks were ever present. The MARS operators did a great job on both sides of the ocean, and once again we proved that there is a place for that "antique, single channel stuff" the Captain was always playing with.

While the Stars and Stripes newspaper usually makes it here four or five days late, the "Godlewski (please turn to page 66)

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When HF whips won't load

What's going on here? Your Hustler antenna system and your new Icom 728 won't load up in your new car! It worked fine on the old car, and your new installation is almost identical—the rig sits under the dash with a hefty power feed directly to the battery, and your HF whips go to that ball-and-chain mount which you were able to transfer over and mount to your new vehicle's rear bumper. It's unlikely that the Hustler coils went bad during the transfer. You even tried a friend's 40M setup, and still, the Icom won't load worth a darn.

With an SWR bridge in line, ultimately substituted for an MFJ SWR analyzer, you run the HF whip tip in and out, trying to get the 40M resonator to pop in. It does take a little dip around 7.295, but it just won't pull in below 3:1.

You can't blame it on the mobile HF antenna system, saying that it worked great on your old car but lousy on your new car. The problem is with your feedpoint: You either have the whip mounted on top of something that is not well grounded to the vehicle chassis, or the feedpoint is simply too low to see anywhere near a 50-ohm match. You could substitute another

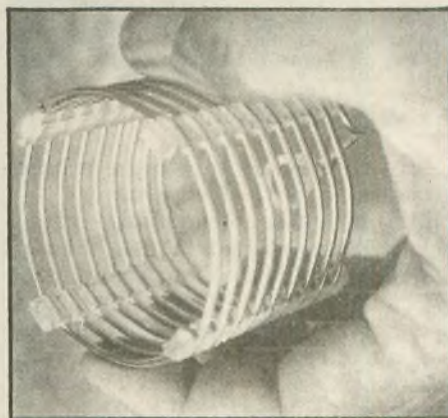


The new Outbacker Perth has a built-in coil which needs to be grounded at the feedpoint.

rig like a Kenwood 440 or a Yaesu 890 with a built-in automatic antenna tuner to compensate for the lousy feedpoint, or you could add the Icom 728 automatic antenna tuner box to the side of the radio, but all *this* does is mask the problem that ultimately

needs to be solved—you need a better feedpoint condition.

Mobile HF whips mounted too low down on a bumper may require an additional external coil or capacitance to bring the feedpoint impedance back to near 50 ohms. High frequency whips from Valor come with a little bag of capacitors that may need to be added at the feedpoint if you encounter a "no tune" installation problem. The big Texas Bug Catcher may also require a smaller coil at the feedpoint to get certain bands to pop in. Same thing with the new Outbacker Perth, which in-



This Lakeview coil will help some mobile HF whips match up to 50 ohms.

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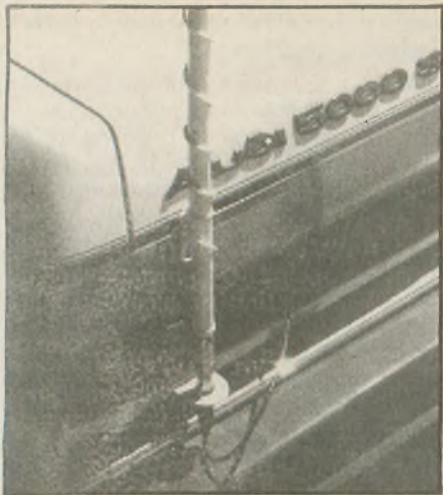
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This feedpoint is mounted too low for minimum SWR.

cludes a necessary tap to the vehicle ground right at the feedpoint.

MFJ offers an antenna noise bridge that will assist you in determining whether or not you need to add a shunted coil at the base of the HF whip, or add capacitance at the base of the HF whip, in order to bring the mobile whip into resonance by squaring away the feedpoint to look more like 50 ohms.

Some antenna manufacturers and antenna catalogs may offer matching coils that may simply slip under your

mobile whip as you screw it onto the mount, allowing you to select a tap point with a little clip for a better match (Antennas West, 800/926-7373, \$12). The new shorter Outbacker Perth incorporates the coil inside the base section of the whip, and a single wire to vehicle ground completes the necessary match when needed. On some bands, it is unnecessary.

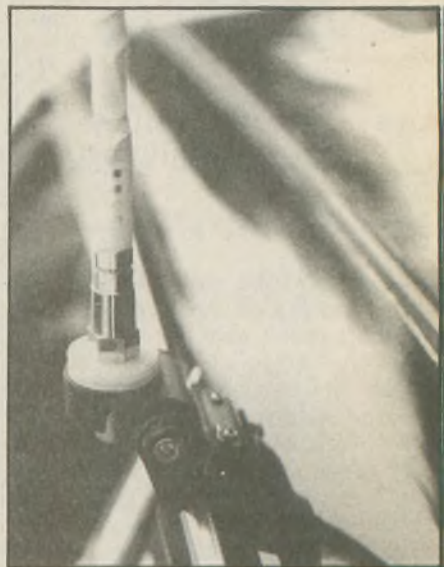
An even easier method of obtaining a good 50-ohm feedpoint for an HF whip is a relocation of your mount. Both Comet and Diamond antenna companies offer sturdy trunk-lip mounts that usually look more like a 50-ohm match and will support most light-weight HF whips. No, I wouldn't want to put a wonderful Texas Bug Catcher style antenna on a trunk-lip mount, but smaller antennas like Hustlers, Ham Sticks, Valors, and Outbackers will hold on quite fine.

So next time you install or re-install an HF antenna system and it won't load properly, and you know your coax connections are doublechecked for continuity and the antenna is indeed grounded at the feedpoint, explore further the possibility of a poor-feedpoint location for the bottom of the whip, and go for coils or capacitors to electrically readjust the impedance.

Easier yet, go for a new trunk-lip

mount for an almost sure-fire feedpoint match that your HF transceiver will appreciate. When you see your transceiver's output swing all the way to the right *without* any automatic antenna tuner in line, you'll know that you're probably going to have a great signal out there on the high frequency bands.

WR



A roof-level 50-ohm feedpoint can be achieved using a simple gutter-mount clamp.

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ALABAMA

Montgomery Amateur Radio Club (W4AP). P.O. Box 3141, Montgomery, AL 36109. Meets 3rd Mon./monthly, 7 p.m. State Trooper Dist. Office, Coliseum Blvd. & Federal Dr. Nets Sun. 8:30 p.m. 146.84- and Thurs. 8:15 p.m. 147.18+. Info: Fred, KB4JX, (205) 270-0909.

ALASKA

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

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

ARIZONA

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

Cochise Amateur Radio Assn. (CARA). Meets 1st Mon./monthly, 7:30 p.m. at club facility on Moson Rd., Sierra Vista, AZ. WA7KYTR 146.16/76 rptr.

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

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

CALIFORNIA

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

Amateur Radio Club of El Cajon. WA6BGS. P.O. Box 50, El Cajon, CA 92022. Meets 2nd Thurs./monthly, 7 p.m., La Mesa Church of Christ, 5150 Jackson Dr., La Mesa, CA. Rptrs. 147.675(+), 224.080(-). PL 107.2. Nets 147.570 Wed./Sat., 7 p.m. Info (619) 697-2700.

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

Conejo Valley Amateur Radio Club (CVARC). P.O. Box 2093, Thousand Oaks, CA 91358-0917. Meets 1st Thur./monthly at King of Glory Lutheran Church, 2500 Borchard Rd. Newbury Park, CA, 7:30 p.m. Info on 147.885/285 and 445.925/0.925 (PL 123) or call N6LQ Ernest (805) 499-5398.

Contra Costa Communications Club, Inc., WD6EZR/P.O. Box 20661, El Sobrante, CA 94803-0661. Meets 2nd Sun./monthly (except May & Dec.), 7 a.m., Baker's Square Restaurant in Richmond, CA. Info: Ed Caine, KA6OFR, (707) 996-0962.

Corona Norco ARC, (CNARC). Meets 1st Mon./monthly, 7:30 p.m., The Pizza Palace, 1197 Magnolia Ave., Corona, CA 91719. Talk-in 146.535 S.

Downey Amateur Radio Club. Meets 1st Thur./monthly, 7:30 p.m., So. Middle Sch., 12500 S. Birchdale, Downey, CA. Wkly nets—Thur., 7:30 p.m. 146.595 (S). For info: P.O. Box 207, Downey, CA 90241-0207.

East Bay Amateur Radio Club, Inc. Meets 2nd Fri./monthly, 8 p.m.-10 p.m., Northbrae Community Church, 941 The Alameda, Berkeley, CA. Info: Gordon Firestein, (415) 527-9382.

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

Gabilan Amateur Radio Club GARC. P.O. Box 2178, Gilroy, CA 95020-2178. Meets: First Interstate Bank, 751 First St., Gilroy, CA, 2nd Thur./monthly, 7:30 p.m. Talk-in 145.47/144.87.

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

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

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

Monterey Park Amateur Radio Club (MPARC), K6GIP. P.O. Box 403, Monterey Park, CA 91754-0403. Meets 2nd Thurs./monthly, 7:30 p.m., Community Rm.—City Hall, 320 W. Newmark, Monterey Park. Nets: Tues. 7 p.m. 147.48 Simplex — 7:30 p.m. 28.385 MHz. Info: John Duce, N6EDX (818) 280-7052.

Moreno Valley Amateur Radio Assoc. P.O. Box 7642 Moreno Valley, CA 92303. Meets 4th Mon./monthly, 7 p.m., City Council Chambers—City Hall, corner of Coltonwood & Frederick Sts. Net Tues. 8 p.m. 146.655- (PL 1A). Info, Larry Marcum, KA6GND, (714) 656-1643.

Mount Diablo Amateur Radio Club. P.O. Box 23222 Pleasant Hill, CA 94523. Meets 3rd Fri./monthly, 8 p.m., Our Savior's Lutheran Church, 1035 Carol Ln., Lafayette, CA. Net Thurs. 7:30 p.m. on 147.06(+). Info, George K16YK, (510) 837-9316.

North Hills Radio Club. Meets 3rd Tue./monthly, 7:30 p.m., Elks Lodge, on Cypress at Hackberry in Carmichael, CA. (PL 162.2) Net K6IS Thurs., 8:00 p.m. 145.190. 220 Net. Tue. 8:00 p.m. 224.40(-).

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

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

Sacramento "Old Timers" Amateur Radio Society and Sacramento Valley Chapter #169 CQWA (Quarter Century Wireless Assn.). Meets 2nd Wed./monthly, 8 a.m., Lyon's Restaurant, 1000 Howe Ave. For info contact Paul Wolf, W6RPL (916) 331-1830.

San Fernando Valley ARC. Meets 3rd Fri./monthly, 7:30 p.m., Red Cross, 14717 Sherman Wy., Van Nuys, CA. Net every Thur., 8:00 p.m. KB6CR 147.735(-).

San Gabriel Valley ARC. P.O. Box 88, Monrovia, CA 91017-0033. Meets 1st Tues./monthly, 7:30 p.m. (except Dec.) at Bowling Green Clubhouse, 405 S. Santa Anita Ave., Arcadia, CA 91006. W6QFK. Rptr. 147.165/765.

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

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

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

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

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

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

Stanislaus Amateur Radio Assoc. (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. 224.14 MHz.

Tehama County ARC. Meets 1st Fri./monthly, 7 p.m., Sept.-June, CA Div Forestry Training Rm., Antelope Blvd., Red Bluff, CA. For info: 144.850/145.450 W6SYYIR.

The Trinity County ARC. P.O. Box 2283, Weaverville, CA 96093. Meets 2nd Wed./monthly, at the CD Hall in Weaverville, 7:30 p.m. WA6BXN Rptr. 146.13/73.

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

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

Vaca Valley Radio Club. Meets 2nd Wed./monthly, 7 p.m., Vaca Fire Dist. Stn. on Vine St. in Vacaville, CA. Repeater: K6HIH 147.475 (-1 Meg) PL 127.3. Ph: (707) 448-4633.

Victor Valley Amateur Radio Club. P.O. Box 869, Victorville, CA 92393. Meets 2nd Tues./monthly, 7:30 p.m., Yucca Loma Elementary School, Yucca Loma Rd., Apple Valley, CA. Talk-in 146-940/340, info net Sun. 7 p.m. 146.940/340.

West Valley Amateur Radio Assoc. P.O. Box 6544, San Jose, CA 95150-6544. Meets: 3rd Wed./monthly, 7:30 p.m. (except Dec.) Cambrian School Dist. Office, 4115 Jacksol Dr., San Jose, CA. W6PIYR. Net Tue., 8:30 p.m. 147.39 +, 223.96-

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

COLORADO

Denver Radio Club. Meets 3rd Wed./monthly, 7:30 p.m., Denver Red Cross, 444 Sherman at Speer. Club net: Sundays, 8:30 p.m. 147.33 MHz.

CONNECTICUT

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

Tri-City Amateur Radio Club. P.O. Box 686, Groton, CT 06340. Meets 2nd Tue./monthly, 7:30 p.m. St. Lukes Lutheran Church at Rt. 12. Novice classes. Info, contact Bob, KA1BB, (203) 739-8016.

FLORIDA

Gulf Coast ARC, Inc. P.O. Box 595, New Port Richey, FL 34656. Meets 4th Mon./monthly, 7:30 p.m., 3852 Prime Place, New Port Richey. WA4GDN Rptr. 146.67/07.

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

Platinum Coast Amateur Radio Society, (PCARS). Meets 2nd Mon./monthly, 7:30 p.m., Red Cross Bldg., 1150 S. Hickory St., Melbourne, FL 32901.

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

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

Suncoast Amateur Radio Club. P.O. Box 7373, Hudson, FL 34676. Meets 2nd Mon./monthly, 7:30 p.m., First Lutheran Church, corner of Polk & Delaware. New Port Richey, FL. Sponsor of WC2G/Rptr. on 145.35, serving west Pasco County.

GEORGIA

Dalton Amateur Radio Club, Inc. (DARC). Meets 4th Mon./monthly, 7:30 p.m., Old City Park Sch. Bldg., corner of Waugh St. and Thornton Ave., Dalton, GA. Info, Bill Jourdain, NX4OG, (404) 226-3793.

Metro Atlanta Telephone Pioneer Amateur Radio Club. Meets 1st Tues./monthly alternately between 12 p.m. at 675 W. Peachtree St. and 6:30 p.m. at Morrisons on Jimmy Carter Blvd., Atlanta, GA.

HAWAII

Big Island Amateur Radio Club. P.O. Box 1938, Hilo, HI 96721-1938. Meets: 2nd Tue./monthly, 7:00 p.m., HELCO Auditorium, 1200 Kilauea Ave., Hilo. Talk-in on 146.760(-), 146.880(-), 147.020(+) and 147.040(+).

ILLINOIS

Amateur Cross Link Repeater Club. 29.680, 52.825, 147.225, 224.480, 921.225, 1292.10 and ATV on 916.25. Meets 1st Fri./monthly, 7:30 p.m. For info call (312) 594-1628. KD9FA Repeater/Chicago.

DuPage Amateur Radio Club, (DARC). P.O. Box 71, Clarendon Hills, IL 60514. Meets 4th Mon./monthly, 7:30 p.m., Holy Trinity Catholic Church, 110 Cass Ave., Westmont, IL. Sun. net on 145.25 MHz PL 107.2 at 2100 hrs. local time. Rptrs. 145.25 MHz PL 107.2, 224.68 MHz, 442.55 PL 114.8. Info. (708) 985-9256.

Fox River Radio League. Old Bank Bldg., 900 No. Lake St., lower level, Northgate Shopping Ctr. & Rt. 31, Aurora, IL. Meets 2nd Tue./monthly, 7:30 p.m. VEC Xams 3rd Tue./monthly, 7:30 p.m.
Hamfesters Radio Club, W9AA. P.O. Box 42792, Chicago, IL 60642. Meets 1st Fri./monthly, 8 p.m. Crestwood Civ. Ctr., 1391h & Kostner, Crestwood, IL. Nets: Sun. (local) 0100 UTC, 28.410 MHz; Mon. 9 p.m. 146.43 S.; Packet Mailbox 145.07. Info: (708) 535-3496.

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

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

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

Wheaton Community Radio Amateurs, (WCRA), P.O. Box QSL, Wheaton, IL 60189. Meets 7:30 p.m., 1st Fri./monthly, College of DuPage, Glen Ellyn, IL. Nets Sun. & Tue. 8:00 p.m., 145.39 MHz.

LOUISIANA

Baton Rouge Amateur Radio Club. P.O. Box 4004, Baton Rouge, LA 70821. Meets last Tues./monthly, 7 p.m., Catholic H.S. cafeteria, 855 Hearthstone Dr. Rptr. 146.19/79 & 28/88. Net Sun. 8:30 p.m., 146.19/79.

Southwest LA Amateur Rptr. Club, Inc. (SWLARC), Meets 4th Tues./monthly, 7 p.m. in the Parish EOC Rm. W5B11/R 146.073/146.013. Net MWF, 7:30.

MICHIGAN

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

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

Michigan Amateur Radio Alliance, (MARA). O-1555 8th Ave. NW, Grand Rapids, MI 49504. Meets 1st Thurs./monthly, 7 p.m., TJ Mfg., 1739 Elizabeth, Grand Rapids, MI. STBY 145.780 + 145.410.

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

MINNESOTA

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

MISSISSIPPI

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

MISSOURI

Gateway To Ham Radio Club, N0DN. Young hams of all ages. Meets 1st & 3rd Sat./monthly, 1-3 p.m., Sacred Heart Sch., 10 Ann Ave., Valley Park, MO 63088 (St. Louis) Net Sun., 8:30 p.m. 146.94 rptr. Beginners classes, VE exams, club station & mtgs. Info: Rev. Dave Novak—Fax (314) 225-1952

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

NEBRASKA

The Ak-Sar-Ben ARC of Omaha, NE. Meets 2nd Fri., 7:30 p.m. at Omaha Red Cross near 38th and Dewey Streets. Main 2M Net Sunday night 0200Z on 146.94R.

Pioneer Amateur Radio Club, (PARC). Meets 4th Fri./monthly, 7:30 p.m., Fremont Fire Station, Fremont, NE. ARES net 146.67 19:30 CDT/19:00 CST. Info: Dick Klebe, KB0HEC (402) 721-1326.

NEVADA

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

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

NEW HAMPSHIRE

Great Bay Radio Assn., WB1CAG. P.O. Box 911, Dover NH 03820. (603) 332-9137/332-7343. Meets 2nd Sun./monthly, 7 p.m., Rochester Court House/City Hall. Talk-in 147.57.

NEW JERSEY

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

Bergen Amateur Radio Assoc. (BARA). P.O. Box 304, Hackensack, NJ 07601. Meets 1st Sun./monthly, VFW Post #6699, E6 Winslow Pl., Paramus, NJ. Nets 28.350 Mon. 9 p.m., 144.400 9 p.m. Wed.

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

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

NEW YORK

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

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

Hall of Science Amateur Radio Club. P.O. Box 131, Jamaica, NY 11415. HOSARC, 2nd Tue./monthly, Hall of Science Bldg., 47-01 111 St., Flushing Meadow Park at 7:30 p.m. For info call Arnie, WB2YXB, (718) 343-0172.

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

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

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

Suffolk County Radio Club. 3rd Tue./monthly, 7:30 p.m., Bohemia Rec. Ctr., Bohemia, NY. Ruzicka Wy., off Smithtown Ave., approx. 8/10 mi. so. of Veterans Mem. Hwy. W2DQ/R 144.610/145.210. 223.080/224.680. 441.625/446.625 rptrs.

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

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

NORTH CAROLINA

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

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

OHIO

Ashtabula County ARC. Ken Stenback, A18S (964-7316). County Justice Center, Jefferson, OH. 3rd Tue./monthly, 7:30 p.m. County Rptr., 146.715.

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

Firelands Area Repeater Assoc. Inc. Meets 4th Tue./monthly, 7 p.m., First Federal Savings of Lorain, Huron, OH. Freq. of Rptr. 146.805/205. Info: Eugene Hutchins, AA8DL, 45 Welton Ave., Norwalk, OH 44857.

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

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

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

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

Toledo Mobile Radio Association. P.O. Box 273, Toledo, OH 43697. Meets 2nd Wed./monthly, 7:30 p.m., Luke's Barn, Lucas County Rec. Ctr., 2901 Key St., Maumee, OH. W8HHF 147.87/27 Rptr. Rptr. info/swap & shop, Sundays, wkly — 8:30 p.m.

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

OREGON

Central Oregon Radio Amateurs, (CORA). P.O. Box 723, Bend, OR 97709. Meets last Thur./monthly, 7 p.m., Bend Senior Cntr., 1036 NE 5th, Bend, OR. Net Sun. 7:30 p.m. 147.06 + MHz. Info call: (503) 382-1685.

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

Umpqua Valley Amateur Radio Club, Inc. 450 S.E. Leland St., Roseburg, OR 97470. Meets 3rd Thurs./monthly, 7:30 p.m., Douglas County Courthouse, Rm. 311, Douglas St., Roseburg, OR. Info: W5P11/R 146.90/30.

PENNSYLVANIA

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

Warminster Amateur Radio Club, WA3DFU. P.O. Box 113, Warminster, PA 18974. (215) 672-9985 Meets 1st Thurs./monthly, 7:30 p.m., Neshaminy-Warwick Presbyterian Church, Warminster, PA. Net on 147.690/147.090 Wed. 8:30 p.m. and 28.450 Sun. 9 p.m.

TENNESSEE

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

TEXAS

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

Sun City Amateur Radio Club. Meets 1st and 3rd Fri./monthly, 7:30 p.m., 3709 Wickham Ave., El Paso, TX. K5WPH 147.240, 443.4 with remote operation on 6M and 10M.

VIRGINIA

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

Virginia Beach Amateur Radio Club, Inc. (VBARC). Open Door Chapel, 3177 Virginia Beach Blvd., Va. Beach, VA. Meets First Thur./monthly, 7:30 p.m. Info on WA4KXV rptr, 146.97/37.

WASHINGTON

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

WEST VIRGINIA

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

Tri-state Amateur Radio Assn. Meets: 3rd Tue./monthly, 7 p.m., Green Valley Vol. Fire Dept., Norwood Rd. & 16th Street Rd., Huntington, WV. ARES net Thur. 9 p.m. on 146.76(-) W8VA/R. Info Bud Cyr. KB8KMH (304) 522-1294.

WYOMING

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

PUERTO RICO

Puerto Rico Amateur Radio Club. P.O. Box 360693, San Juan, Puerto Rico, 00936-0693. Meets every Thurs., 7 p.m., Civil Defence, Rio Piedras (next to AMA & San Francisco Shopping Cntr.). Nets Sun. 9 a.m. on 147.090, 28.450 & 7.250 MHz. Info: Raul Escobar, KP4QL, (809) 765-2745 (daytime).

Product Review

Radio Shack HTX-202 HT

RICHARD STECK, W9RS

Thanks to my friend Jay, N9LFG, I had the opportunity to inspect the HTX-202 2M transceiver offered by Radio Shack. Without the advantage of laboratory test equipment, this review will focus on the more evident features of the VHF hand-held. Objecting to their product quality in general, I am not normally a Radio Shack fan, so I must admit that my review started with a negative bias.

Physically, the HTX-202 is a full-sized HT. It is approximately the size of the Kenwood TH-225A and Icom IC-2GAT, though it looks more like the Kenwood than the Icom. The rear part of the body case is metal and probably a generous heat sink. The display is on the front and all indicators are easily read.

The HTX-202 has 12 standard memories, a calling frequency memory and three priority memories. Each memory is individually programmable in its offset and subaudible tones. This number of memories is probably more than adequate for the active 2M FM user. The subaudible tone encoder-decoder is included in the HTX-202. The subaudible tones are used not only in transmit mode, but can also be used for paging purposes. By pressing the M button at the side of the unit, one sees a useful display of transmit frequency, transmit subaudible tone frequency and receive subaudible tone frequency. Touch-tone sequences can be stored in five available memories and then recalled for autopatch purposes.

The stated frequency range of the HTX-202 is 144-148 MHz. Any attempt to enter a frequency outside of this range is rejected. I would imagine that in time, some secret keystroke sequence that opens up the receive frequency range will be uncovered and widely disseminated.

Using simple test equipment, I measured the power output to be as follows:

	Low	Full
Input voltage	power out	power out
13.8V	2.0W	7.0W
10.8V	2.0W	3.6W
7.2V	1.6W	1.7W

Output power was within specifications. Note also that the effect of the low-power switch is greatest at the higher voltages. With the supplied

7.2V pack, the low-power switch is not very effective. On-the-air tests with N9JJK validated this observation.

I found the general operation of the keypad, e.g. setting repeater offsets and subaudible tones, is not entirely obvious without the help of the manual. However, operation is within the generally accepted standards of complexity for modern microprocessor-controlled devices. Getting accustomed to it is not a problem. The keypad has a good feel and, unlike the miniaturized versions of HTs, is large enough to not require pointed fingertips.

Power to the HTX-202 may be supplied by a regulated external 12VDC source (not supplied), or by battery packs. The external source feeds through a standard coaxial 12VDC jack at the top of the HTX-202. Radio Shack elected to use the standard convention of center terminal positive. Two battery packs are supplied with the HTX-202—a 600mAh NiCd pack and an empty case for use with six alkaline batteries. The 600mAh NiCd pack must be charged through its own 12V jack. It was a pleasant surprise to discover that my Icom BP-8 battery pack was interchangeable with the HTX-202 pack. This feature probably will make the HTX-202 attractive to current owners of Icom HT equipment. However, the HTX-202 NiCd pack would not charge in the Icom BC-35 charger—it must be charged through its own charging jack.

The HTX-202 has an optional power-save feature that turns the receiver on for a programmed sampling interval. For example, on for 1/20 and then off for a selected period (e.g. 1/4 second). I did not see any automatic power-off feature which would turn the unit off after a programmed interval if accidentally left on. If you tend to be long-winded, there is a transmit time-out option that permits you to limit your transmission duration from 30 to 120 seconds.

The HTX-202 offers a variety of scanning modes in which either a stored frequency range or pro-

grammed memories may be scanned. Resumption of scanning is also optional; scan may be resumed after a 10-second delay, resumed after carrier drops, or not resumed. The frequency step is programmable and priority scan is offered.

Unlike the new crop of subminiature HTs, audio quality is crisp and undistorted. I was pleased to find that my two-plug Icom speaker mike plugged directly into the HTX-202 and worked well with it. Compared to the Icom IC-2GAT, the HTX-202 volume can be deafening.

Documentation consists of a 38-page manual and includes a schematic. The manual could have been more clearly written. On-the-air tests were satisfactory and produced no unpleasant surprises. I was able to trigger major repeaters 30 miles away with a rubber duck and the supplied NiCd battery pack. I found the HTX-202 receiver to be exceptionally sensitive.

I uncovered one anomaly which Radio Shack customer service in Fort Worth advises me is a defect in my unit and not a design flaw. In either VFO or memory mode, rotation of the main tuning knob sets the displayed frequency or memory channel *upward* whether the knob is turned clockwise or counter-clockwise. It should be upward or downward, respectively. Let's hope this is a bug in my up-down encoder which Radio Shack will promptly fix.

Overall, the HTX-202 exceeded my expectations. If you need a 2M HT, or an extra HT for packet purposes, do consider it—the price is right and it has many pluses. —Reprinted from *North Shore Radio Club Transmitter, Highland Park, IL*

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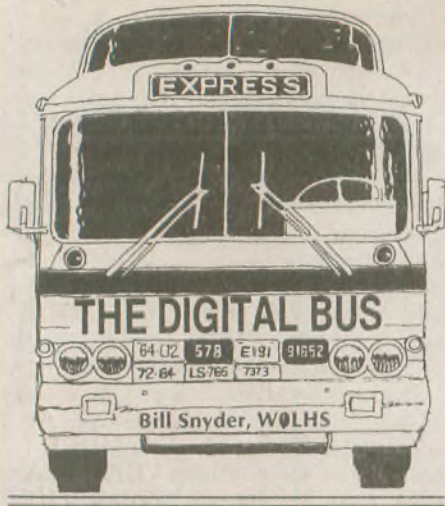
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In 1948 I had the pleasure (and also the problems) of operating the first American audio tape recorders in British East Africa. I had just finished my stint as VQ4EHG with the Gatti-Hallicrafters African Expedition and was waiting in Mombasa, Kenya, for a ship to take me back to the States, when I met American radio writer Arch Oboler.

Oboler, now deceased, was one of the best known writers of science fiction radio drama during the 1930s and '40s. In his career he created over 700 programs for *Lights Out*, *Suspense* and the like. He was a master of suspense writing, as many will remember.

When I met Oboler, he had just arrived in Mombasa on the American ship *African Sun*. Arch was accompanied by his wife, a homebrew house trailer, two Brush Sound Mirror audio tape recorders, and a barrel of quarter-inch audio tape. He also had a suitcase full of 16mm Kodachrome Commercial color film. His object was to join the University of California African Expedition headed by a young promoter named Wendell Phillips. The expedi-

tion was already in the field.

Phillips was supposed to furnish Oboler with cameramen and sound technicians so he could produce a batch of radio and TV shows. Keep in mind, this was the very beginning of widespread television in the United States.

I was introduced to Arch by the American Counsel stationed in Mombasa. Also present was a US Army geographer, Captain George Russell. He, too, was a member of the University of California group and was in Mombasa to tow Oboler's house trailer to Nairobi where Phillips had established the expedition headquarters.

In the course of conversation, Captain Russell mentioned to Oboler that the only expedition photographers and technicians were all part of a Navy medical research group out in the field. "You'll be lucky to get any photographers to help you—they all belong to the Navy," George told Oboler. The suspense writer went into shock. He had endowed the University for the privilege of accompanying the expedition.

When Arch found out that I was an industrial 16mm cinematographer and radio hobbyist with two weeks to wait for a ship back home, he offered to hire me for a few days until he could make other arrangements. Because Mombasa is so beastly hot and humid, I relished the idea of going back to the great weather of the Nairobi area, so I took up his offer.

We put Oboler's wife on the train to Nairobi, and then George, Arch and I hooked an Army truck onto Oboler's home-built house trailer and headed upcountry. The first 20 miles were on a hard-surfaced highway, but the rest of the 317-mile journey was over washboard country road. The trip was usually figured as a two-day journey by British motorists, but we impetuous Yankees aimed at doing it in one.

When we hit the washboard section, the dust rose in a huge cloud and it was hard to talk because of the vibrato in-

duced by the bouncing wheels. We had gone about 25 miles when Arch, apparently not used to such primitive roadways, asked Captain Russell to stop so we could check how the house trailer was traveling.

When Arch opened the door, he let out an oath! You should have seen the inside of the trailer. The floor was covered with a broken full-length mirror which had been on the inside of the clothes closet door. We could see the roadway through open cracks in the flooring. Almost everything that had been stored in the various drawers and cabinets was strewn over the broken mirror shards. The interior was a shambles, pure and simple. And we still had 270 washboard miles to go.

We passed Mtito Andrei, the half-way point where most motorists stay overnight, and kept on going. The sun went down and darkness set in. It was not considered wise to drive at night because of the preponderance of the wild elephant herds roaming the veldt. Elephants are dangerous obstacles to overcome if they suddenly appear in your headlights.

As we progressed, our headlights were reflected in thousands of animal eyes as we bounced and jiggled our way at about 25 miles per hour to Nairobi. I'd heard a local story that red eye reflections came from lions and other meat eaters, but all the reflections looked red to me. It was well past midnight when we arrived in the capital city with the remains of the trailer still rolling behind us.

The next day we met leader Wendell Phillips in his hotel. It was immediately obvious that Oboler was not about to have the services of a Navy cameraman or a recording technician, so I had a job. We cabled New York and requested air shipment of the 16mm camera gear we needed. It took a few days to arrive, so I spent my time becoming acquainted with the tape recorders.

The Sound Mirrors were simple consumer products which had been adapted by Oboler for the project. Keep in mind there were no "professional" audio tape recorders at that time; such equipment was under development. Oboler modified the primitive Sound Mirrors for travel by putting them in Halliburton metal suitcases.

For checking the recording level, the Sound Mirror used a magic eye cathode ray tube instead of a VU meter. When the peak level was reached the eye was fully closed. Most of the tape was black oxide on a paper base, although 3M had given Oboler some experimental plastic tape for trial.

The audio project was to be a radio travelogue of Africa featuring native

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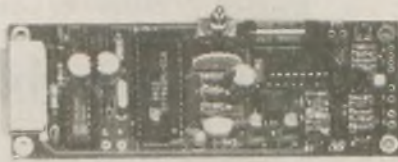
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music, interviews and verbal descriptions of various adventures like climbing mountains, etc. American television was brand new and so Oboler wanted to shoot some film as a hedge; however, the radio show was his primary mission.

Our first adventure was with the Masai tribe, the lion hunters of old: Young warriors would encircle a lion and then kill it with spears as the beast tried to escape from the ring of men. Would have made a great film; however, by 1948 that method had been outlawed by the British.

We trucked to a village near Mount Kilimanjaro, called Laitokitok. There the British district officer took us to a Masai village of huts made of cow dung. It was encircled by a thorn bush corral in which the natives kept their cattle and lived. The flies were a big problem, as you probably can imagine.

The Masai, with their Nilotic facial features, are a beautiful people to photograph. Their diet consists mainly of blood and milk obtained from their large cattle herds. The blood is drained periodically from each animal by shooting a tiny arrow tip into its jugular vein and catching a gourd full of the red stuff as it squirts out of the wound. When the gourd filled, they stopped the bleeding by applying mud to the cut. Then they turned the cow loose to graze again. The blood was then mixed with milk and consumed.

We filmed this blood and milk operation on a very slow color movie film of the day (full sunlight called for f5.6 at 1/24 second). Afterwards, we brought out the tape recorders and caught the sounds of the Masai singing and dancing. This was my first battle with the Sound Mirrors in the Halliburton suitcases. First the magic eye volume indicators were terribly sensitive to low frequency drum beats. If you kept the indicator hitting where it would normally peak, you wound up with low level recordings.

We recorded the Masai singing and dancing. They appeared to be having a great deal of fun performing. Then Geoffrey Hutchinson, our British East African official guide, asked me to play the recording back for the singers. They laughed and enjoyed the playback, too. Afterwards, I packed up the recorder and loaded it on the truck. Then all of a sudden Geoff, who spoke fluent Swahili and a smattering of

Masai, became engaged in a heated conversation with the tribal elders. Of course neither Arch nor I could understand a word of the discussion. "What's the problem?" I asked Geoff.

"They think that when you leave the area with that shiny box in the truck, you're going to take their voices along with you and they'll never be able to sing again!"

There were some tense moments until Geoff had them sing again with the recorder box stowed in the truck. The group slowly calmed down and apparently realized we were not going to steal their voices. I didn't realize how tense it had been until we were on our way back to Nairobi and heard Geoff's explanation.

Our African Adventures were later heard in five-minute segments on NBC's radio show *Monitor*, a weekend program during the 1950s. The native music was also released on a Capitol record called *Arch Oboler's African Adventure*. While we were out filming the Masai, my ship had arrived in Mombasa and promptly left without me, so I stayed with Oboler for the rest of his tour of Africa.

Eavesdroppings

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Thanks to W0HAH, AA7AJ, W0ML, and W7VFR for the help. Write me: Bill Snyder, W0LHS, 1514 South 12th Street, Fargo, ND 58103. My packet address is W0LHS @ W0LHS.ND.U.S.A.N.A. 73 and DIT DIT. WR

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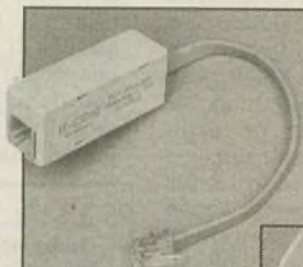
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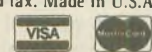
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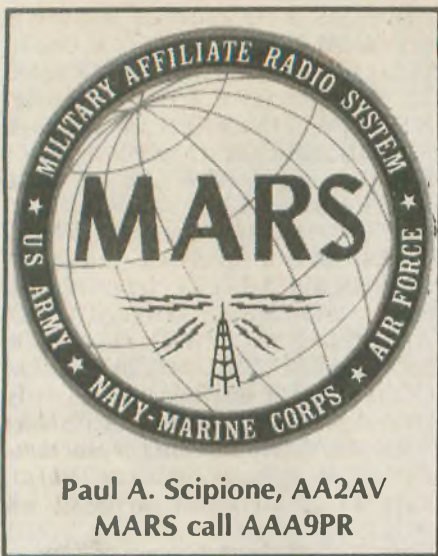
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We welcome any comments or suggestions you might have to improve *Worldradio*. Such information should preferably be typed or neatly printed in English. Thank you.



Paul A. Scipione, AA2AV
MARS call AAA9PR

What if ... the unthinkable happened?

When Hurricane Andrew recently slammed across southern Florida and later across Louisiana, tens of thousands of people and thousands of businesses temporarily lost telephone service and electricity, although many retained natural gas service and were able to navigate local highways. As bad as the damage was (insurance estimates are in the \$10 to \$12 billion range), government and health care services continued to function. Local emergency communications groups, such as RACES (Radio Amateur Civil Emergency Service), were immediately able to supplement normal lines of communication via hand-held UHF/VHF transceivers and larger radios powered by emergency generators. The telephone companies set up temporary phone booths using cellular technology, and airports were back in operation in less than 48 hours. In short, while physical damage was severe, few people were killed, the damage was geographically concentrated and various lines of communication were quickly replaced.

Now, what if a natural disaster dozens or even hundreds of times worse than Hurricane Andrew were to occur? While it may be difficult to fathom a disaster of that magnitude in the continental United States, the potential does exist. How would we cope if thousands or even tens of thousands of people were killed? How would we function if most of the infrastructure of highways, pipelines, airports and railroads were destroyed? And most appropos to this article, how could this country or a large section of it possibly function if most or all of the normal lines of communication were wiped out? Keep in mind that the United States now has an

economy that is based more on the flow of information and communications than it is on mines and smokestacks. Would the lack of communications be the most crippling blow of all?

To those of us in Army MARS, this is hardly idle chatter. Convinced that such a cataclysmic disaster is probable, we decided recently to hold a unique preparedness drill in the very area where a disaster of this magnitude is most likely to occur—the New Madrid geologic fault line, which runs roughly north/south from Illinois and Missouri down through Kentucky, Arkansas, Tennessee, Mississippi and Louisiana. Centered on the city and county of New Madrid in southeastern Missouri, this deep and highly erratic fault runs nearly a thousand miles right through the heart of the country. Conservative estimates are that more than 13 million people (nearly six percent of the US population) live within 100 miles of the fault, including such major cities as St. Louis, Memphis, Little Rock, and Jackson; and the additional cities of Baton Rouge and New Orleans could potentially be flooded under tidal waves if an earthquake along the New Madrid were to unleash the Mississippi River to flood the lowlands along its southern end.

Realistic estimates, some made by the foremost expert on a New Madrid earthquake, the late Dr. Otto Nutley, are that as many as 10 percent of persons in the directly affected area (about 1.3 million) would be killed immediately and that a similar number would die in subsequent weeks, left without adequate potable water, food, heat, shelter and medical care. Dr. Nutley also pointed to the existence of a 70-year cycle in earthquakes along this fault (there have been two major quakes in the past) and that the next one would be the worst, equal in force and damage to more than 150 of the atom bombs that were dropped on Hiroshima and Nagasaki in 1945.

For those of you who live in other areas of the country, don't bet that you would be unaffected, because a major earthquake along the New Madrid fault could and probably would have these far reaching effects: cutting nearly all major landline phone networks east/west and many north/south lines as well; cutting all major oil and natural gas pipelines running from Texas and the other oil basin states toward the east, thereby leaving tens of millions of East Coast residents in unheated houses and leaving more than a million businesses without both heat and fuels needed to support production; destroying as many as half a dozen nuclear power plants along the Mississippi and many more fossil-fuel electric plants, having the effect of cutting off our electricity while simultaneously endangering millions of people living downwind of the plants with nuclear contamination; destroying critical bridges and highways, thereby cutting off more than a dozen Interstate highway routes, as well as all major east/west railroad lines. Such an earthquake would also destroy or close scores of airports, thereby disrupting airlines nationwide by closing a number of key airline "hubs."

Now let's just focus for a minute on the damage that would be done to our communications systems. There would be a complete cut of landlines, so that only phone calls that could be accommodated by satellites could go through. Even some of that traffic might be cut off due to a lack of electricity. Hundreds of television and radio stations would either be destroyed or knocked off the air, leaving millions of people with no reliable source of emergency news. And cuts in the lines of communication would have other effects as well.

The military does not have fully redundant systems, so that the very airbases and army posts that could normally be expected to launch emergency service efforts might themselves have little or no communication. Nor could stock exchanges and banks as far away as New York and San Francisco function, because the phones and computers that are used to make transactions and the information nets used to report on them would both be cut off. Keep in mind that major Federal Reserve Banks located in St. Louis, Memphis and New Orleans would also be cut off. Are you beginning to get the picture of how bad such an earthquake could be for all of us?

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with FEMA (the Federal Emergency Management Association), all the armed forces and other federal and state agencies, and in direct support of both the Air Force and Army National Guards in Missouri and neighboring states, the Director of Army MARS in Missouri picked the weekend of 23-24-25 October for Rolling Thunder. Giving up the comforts of normal family life, nearly 500 MARS operators took to the field, many living in tents or in the backs of duce-and-a-half trucks, eating MRE meals and braving the elements.

Going far beyond the scope of their normal home-based operations, these MARS operators, all of whom are also licensed Amateur Radio operators, moved into National Guard armories, military airfields, even helicopters, to provide the backbone of communications for Guard and Reserve troops, realistically assuming that most or all of their normal communications would have been destroyed by the earthquake. According to the worldwide Director of Army MARS, Bub Sutton, AAA9A, "With many fewer American troops serving around the world these days, the primary mission of Army MARS now is to provide state-of-the-art emergency communication in direct support of the military. The goal of all 6,000 of us who are Army MARS operators is to meet the communications needs of our sponsors, whatever Army and DOD units those might be in a particular emergency. We believe in meeting their needs 100 percent."

The performance of the volunteer Army MARS operators in Operation Rolling Thunder was magnificent, according to officials with the National Guard in Missouri and neighboring states. They got on the air within minutes of the simulated earthquake and stayed on the air continuously throughout the 72-hour emergency preparedness exercise. Just how were they able to do this from a technical standpoint? And what are the implications of Operation Rolling Thunder to the readers of *Worldradio*? In Part II



WORLD RADIO
THIS IS A QSL CARD FROM THAT GUY THAT'S ALWAYS TELLING ME WHERE TO GO?

of this article, to follow in the March issue, I will present details—HF communication, VHF, UHF, packet radio nets, satellites, emergency power sources, and other aspects of our net control procedures that I am allowed to describe outside of MARS.

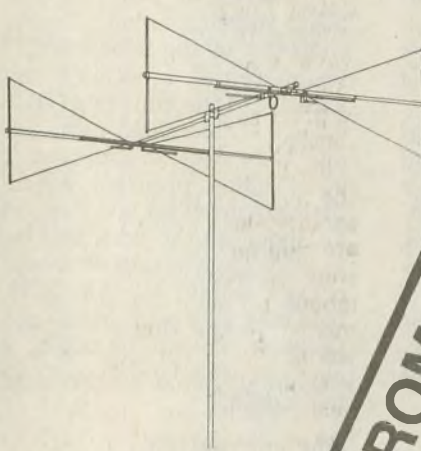
Until the second part of my article, let me leave you with a disquieting thought. As you sit in the comfort of your home shack, reading my article via AC power from the local power company, with a highly reliable telephone as well as assorted radios for putting you in instant touch with nearly every corner of the globe, just imagine how quickly your comfortable bubble would burst if the shaky tectonic plates in the New Madrid fault

gave way or some other major disaster struck. Most likely you would not be prepared to cope. Beyond any question of the physical safety of you and your family, the worst part of your suddenly upside-down world would be your nearly total inability to communicate.

Dr. Paul Scipione, AA2AV/AAA9PR, is responsible for public relations worldwide in Army MARS. His new book MARS: Calling Back To The World From Vietnam, The History of MARS Operations during the Vietnam War, is due out in early 1993. Anyone with either suggestions for future MARS columns or reactions to previous columns can write Paul at: 5 Burr Drive, Metuchen, NJ 08840. WR

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
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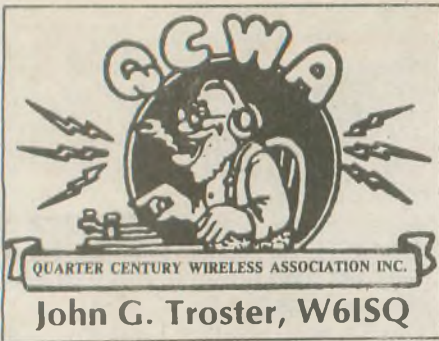
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What's new?

Ethel Smith, K4LMB, wrote this column in *Worldradio* for four years and, as you readers know, did a wonderful job. But something happened on the way to the January issue. At the Phoenix National QCWA Convention in October, Director Ethel was given the job of chairperson of the Publicity and Awards Committee. Being the new kid on the block, I was assigned to that committee. Chairperson Ethel looked at me and said, "You will enjoy writing the QCWA news for Chairman Armond at *Worldradio*." And that is how I volunteered to write this short story which we hope will be perused by all of our over 10,000 QCWA members.

Actually, I'm happy to relieve Ethel for a month or so . . . ahhh . . . (is that correcto, Ethel?) because she has other pressing duties on the board of QCWA. She does much for many in QCWA and, in addition, is editor of the 50-plus-page monthly *Auto-Call*, the journal of the Foundation for Amateur Radio which administers our QCWA scholarships. A big job which she does with great skill.



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The QCWA Presidential Award was presented to Laird Campbell, W1CUT, by Milt Chaffee, W1EFW, and John Huntoon, W1RW.



Scholarships

Speaking of scholarships, at the board meeting Leland Smith, W5KL, chairman of the Scholarship Committee, presented a motion to approve an increase in the number of QCWA \$800 college scholarships from the present nine to 14. Motion approved. This is an outstanding program which QCWA fittingly provides and supports. After all, shouldn't the old-timers be the ones to encourage young students in their college ambitions? All QCWA members may take pride in this scholarship program. We will be telling you more about our scholarship students in coming months.

The convention

This two-day annual convention was held at the Safari Resort, Scottsdale, Arizona, and hosted by Barry Goldwater, Chapter #16 of QCWA.

The board met on Thursday, the day before the festivities began, and on into Friday. Late Friday morning, President Harry Dannals, W2HD, convened the QCWA Forum, reviewed opera-

tions and fielded questions. Later in the day, Lew McCoy, W1ICP, spoke on his favorite subject: antennas. Incidentally, do you know what a McCoy antenna is? He was followed by John Elwood, WW7P, with an interesting discussion of his vibroplex key collection. In the evening, Leo Meyerson, W0GFQ, rendered his annual mellow organ serenade, plus the accompaniment for an old, silent Laurel and Hardy film. All that—plus popcorn.

Saturday, Barry Goldwater, K7UGA, and his wife, Susan, were much honored guests at a special breakfast. Barry welcomed us to Phoenix and recalled, with chuckles, some of his early radio experiences and associations. Following that, we bussed to Champlin Air Museum (fighter planes only and very interesting) and in the afternoon attended an ARRL forum conducted by Fried Heyn, WA6WZO, and Rod Stafford, KB6ZV, vice president of the ARRL.

The awards

At the Saturday night banquet, the speaker was Richard L. Baldwin, W1RU, who was inducted into the QCWA Hall of Fame in 1991. He told some great stories about the folks at the ARRL in the early days, including some of those present at the banquet.

Esther Given, W6BDE, was honored with the Distinguished Service Plaque for her capable service on the board of QCWA for eight years and for writing this *Worldradio* column for most of her tenure. The award was voted to Esther in 1991, but due to logistics and timing it wasn't presented until this convention. This merited recognition, for many years of dedication and produc-



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ive service to QCWA, marks the thanks and awareness of all of us for Esther's contributions to QCWA. She not only worked with full effort, she was thoughtful and effective, a valued member of the board.

Presidential Awards were given in absence of two internationally recognized QCWA members who have dedicated much time and effort to Amateur Radio. First was Laird Campbell, W1CUT, erstwhile long-time editor of *QST* who, among his other usual editorial chores, had the distinction of being the keeper of the Wouff-Hong. When Laird looked up from his desk in his *QST* office, he looked directly at that dreaded instrument encased on the opposite wall! It either scared or inspired him to great heights, because Laird served the ARRL with distinction for many years. The award was presented to Laird at his home a week after the convention by QCWA members John Huntoon, W1RW; Richard Baldwin, W1RU; Milton Chaffee, W1EFW, QCWA board member; and Byron Goodman, W1DX, old-time friend and associate, with a goodly gathering of current ARRLers on hand for the presentation.

Richard Kirby, W0LCT, was honored also with the Presidential Award. He was director of the ITU

International Radio Consultative Committee in Geneva and received the award for "ensuring equitable availability of frequencies for worldwide Amateur Radio activities 1974-1992."

Kirby responded in part, "My heartfelt thanks to QCWA for the marvelous recognition you have bestowed on me. For me, ham radio has been a lifetime of gifts: teen-age years of discovery in physics; clear focus in university studies; singular opportunity in military service; a satisfying career; and friends from every continent and culture. Amateur organizations have helped ITU provide for and protect this great hobby, this training ground for science and technology, this communications service in distress and disaster, this bond among friends around the globe. The good work must continue." Well stated, and congratulations. Director Jack Kelleher, W4ZC, presented the award to Mr. Kirby in Washington and forwarded his comments to us for publication.

We all had a good time, worthwhile with pleasurable highlights. As I reflect on the convention, I find myself chuckling over the moment when John Trent, KL7DG, almost stopped the show at the ARRL Forum with an impassioned objection to the term "XYL." He pled that there had to be a

more complementary term. Someone commented that, since OM was used all the time, how about OW? Oh oh! My boss Ethel, K4LMB, thought not, and offered a quick and positive, final alternative: "wife!" Seems XYL ... ahhh ... likes it too!

Megathanks

Finally, megathanks to Gerry Higgins, W9INP, and his efficient crew at Chapter #16. Their hospitality and planning were much in evidence. They did a super job of organizing transportation, the meeting facilities, ladies' events, special entertainment and sight-seeing activities. Members and guests certainly felt treated to the best of Phoenix.

Free QCWA Journal

If you have been an amateur for 25 years you are eligible to join the distinguished ranks of QCWA. And perhaps you would like to see our 50-plus-page journal, which is published four times per year. We'll be happy to send you a free copy of the *QCWA Journal*. Just write: QCWA headquarters, 159 East 16th Avenue, Eugene, WA 97401-4017.

Okay, Ethel, that's it for now. You want to take it next month? What was that you said? Ahh ... yes, boss. And Happy New Year to all!

WR

Recruiting PIAs

Improving the public's understanding of Amateur Radio has to be an effort from the "grass roots" up. Neither the League nor any other body can do it alone.

Every Amateur Radio club or organization should have someone assigned to the responsibility of informing the public of its activities. This is not a daunting or mysterious task — you would be amazed at how easy it really is to get your story out.

The first and most important thing to do is simply to give someone in your organization that responsibility. That means making a commitment by organization to communicate your activities to the public. You can do that on your own or by asking ARRL section public information assistant (PIA), an ARRL Field Organization appointment.

We would like to see every Amateur Radio organization in every section with a PIA in place. How you choose to do it isn't as important as doing it. Talk about this at your club's next meeting and try to encourage the members to make a commitment to make a regular, sustained effort at communicating your club's activities to the public. —*The ARRL*



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Back in the 18th Century, an English nobleman wrote to his son, "Never complain, never explain!" when giving him some mottos to live by. Those pose quite a challenge, as complaining comes as second-nature to some of us. As for "never explaining," it would be all too easy to ignore the need for explanation by thrusting out the jaw in defiance, turning about and leaving the listener standing there, pondering that attitude.

But I like to think that I do both well, complaining and explaining. That's because in my role as critic/analyst, I try to keep the two together in a common theme, such as HF propagation. Thus, when the bands are quite a disappointment to me, I complain to any and all who will give me the time of day, and then I follow with my explanations.

If you want to learn about propagation conditions without hearing any complaints, you'll have to use a more dispassionate source, say your computer connected to its modem. In this way my friends avoid my harangues and get a neutral appraisal by contacting the NOAA/SESC BBS, where one can get an HF propagation report and forecast every day.

The daily NOAA/SESC BBS report provides observations and forecasts of HF propagation conditions for the Northern Hemisphere; this is done in an interesting way, by latitude ranges in four longitude sectors. By giving the report in latitude ranges from the pole to the equator, you are alerted in a subliminal way to the fact that most propagation disturbances affect the earth's magnetic field, starting at high latitudes.

Thus, there are five latitude regions, or zones, starting from polar latitudes (more than 70 degrees); to auroral latitudes (55 to 70 degrees); then to middle latitudes (30 to 55 degrees); and down to low latitudes (10 to 30 de-

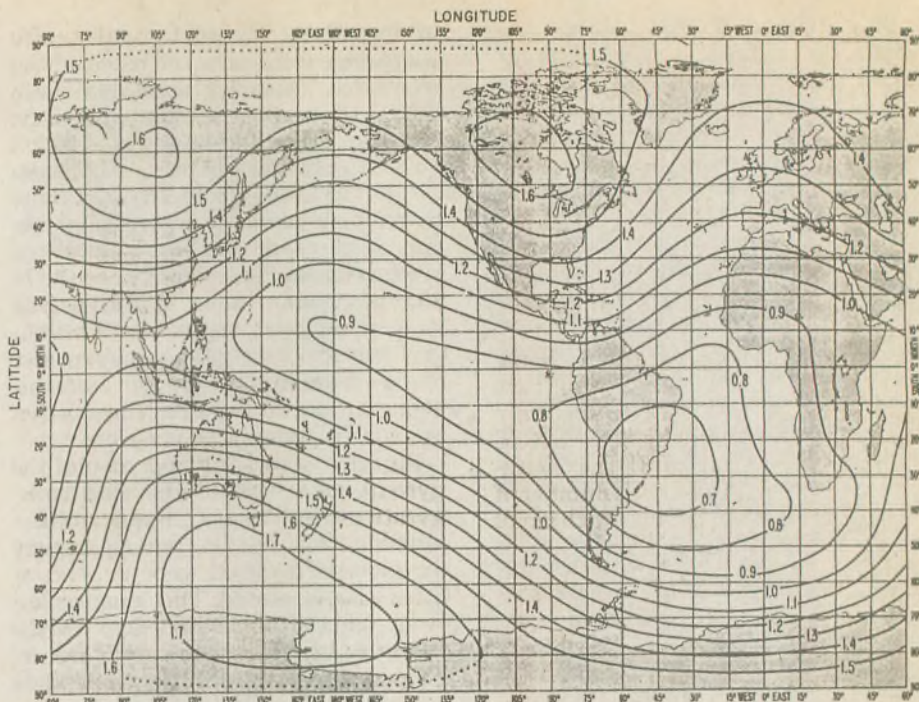


Figure 1

grees); and finally reaching equatorial latitudes (0 to 10 degrees). This order is important to keep in mind.

The longitude sectors start at the Greenwich meridian and go westward; sector I goes from 0 to 90 degrees west; sector II from 90 to 180 degrees west; sector III from 180 to 90 degrees east; and sector IV from 90 to 0 degrees east. Since the primary HF propagation report is issued at 0600 UTC and secondary reports are then issued in six-hour intervals, one can see by the longitude ranges just which sectors are in sunlight for the time of a report and which are in darkness.

Beyond that, it's best to call the BBS when the report, primary or secondary, would be most helpful to one's DXing. For example, during my year-long long path study, I often called the NOAA BBS in the early morning, just before getting on the band, thus benefiting from the primary report as well as the secondary report issued at 1200 UTC.

Typically, the report lists the longitude sectors across the screen of one's computer and then the latitude zones go downward, starting with the polar zone. Propagation conditions, specific to the regions, are listed by the use of

three letters—N, U and W, for normal, fair and poor, respectively. I might add that I have my own personal interpretations for the three; N means "nice," U is "ugly" and W is for "wretched."

Each letter is followed by a number from 1 to 9, e.g. 1 for useless, 5 for fair and 9 for excellent. Thus, what one would like to see is a screen full of N9s, not U5s or W1s. You get the idea. But I should add that the values for each zone are based on single-hop paths of about 4,000 km where the mid-point of each path is located right within the grid block. If one were mainly interested in paths which remain below about 55 degrees latitude, conditions in the auroral and polar zones could be ignored. Of course, if conditions were disturbed, it would not be surprising to find some degradation of propagation conditions in the listings for the lower latitudes.

Also found in those reports for conditions in the various zones would be something about how the maximum useable frequency (MUF) compares with normal, seasonal means. Thus, deviations of 20 percent or more might be listed, say N5/-20 (for fair conditions but with an MUF some 20 percent below what would be expected for that time of year). Depressions (-) of the MUF are listed as well as enhancements.

Mind you, all this is given in the daily report as well as the forecast for each six-hour period. In addition, there are summaries of flare-induced disturbances, essentially for the record, as well as observed and predicted values for the 10.7cm solar flux, the daily A

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and three-hour K magnetic indices. Given the current state of our budget, this report gives the "bare-bones" essentials for use in one's HF propagation efforts.

But there's a major flaw in all this: the NOAA BBS report is only for the Northern Hemisphere! What does one do for paths which cross the equator, on either short or long path propagation, or are all in the Southern Hemisphere?

For general Amateur Radio work here in the US, it may not be all that much of a problem. After all, only something like 91 of the 300+ DXCC countries have locations in the Southern Hemisphere. And a good number of those calls represent islands with small Amateur Radio populations. So you could go a long way toward DXCC without ever having your signals cross the geographic equator, and the NOAA BBS report would serve you well.

The land masses and the earth's population are largely in the Northern Hemisphere. In a sense, that has already dictated the database from which the earlier propagation forecast was made. Thus, for ionospheric and geomagnetic studies, there are three times as many observatories in the Northern Hemisphere as in the Southern Hemisphere. Such a bias indicates that any predictions for paths across the equator might be less reliable based on a less extensive database than for paths above the equator.

It would be tempting, and a good number of HF propagation computer programs go along with the idea, to think that one could simply treat the other hemisphere just like the Northern Hemisphere, differing only in season by six months. Thus, for those parts of a path in the north, the larger database would be used and then, when the path dipped below the equator, the theoretical approach would be to use the northern database for a southern latitude in the opposite season.

That's a nice idea but it doesn't work all that well with the ionosphere; one can't change seasons with the illumination of the D-region, and it is found wanting when it comes to the F-region. The problem is simple: ionospheric electrons, once released there by photo-ionization, are controlled by the earth's magnetic field, which is simply not symmetrical across the equator—the magnetic field at 30 degrees north latitude does not have the same strength or direction as the field at 30 degrees south latitude at the same longitude.

In fact, the earth's magnetic field at the surface level or ionospheric heights is a complicated beast, requiring

surveys every 10 years to keep up with the changes with time. Here in the US, that is a responsibility that has been given to the Defense Mapping Agency, and you can buy large charts showing every aspect of the earth's field, from the horizontal and vertical components to the magnitude itself, all across the globe.

Since ionospheric electrons in the F-region gyrate around the local field lines, there's no simpler way to see the problem than to look at a global plot of the gyro-frequency of the electrons. That reduces the number of charts that one has to review to exactly one.

Figure 1 shows a global map of the gyro-frequency with which electrons gyrate around the field lines at 100 km altitude. You can see that symmetry across the equator, geomagnetic or otherwise, is lacking. This is particularly striking in the low values in the "South Atlantic Anomaly" around Brazil. There, the magnetic field is unusually low, giving rise to effects at F-region altitudes as well as increased "leakage" of trapped radiation out of the Van Allen belts. And there's nothing comparable in the Northern Hemisphere.

For forecasting purposes, there's no substitute for actual observations from the Southern Hemisphere. The

question then becomes, just what selection of paths, commercial or otherwise, would be available for purposes of observation? The Australians and South Africans, being major players in the Southern Hemisphere, probably have some answers. But they don't show up in the NOAA BBS.

I should add that in the area of ionospheric predictions, the Australian Ionospheric Prediction Service has its own computer program, ASAPS. As a matter of curiosity, it would be interesting to compare their predictions in the Southern Hemisphere with those of IONCAP. Both are found in the CCIR database, or Atlas of Ionospheric Characteristics, but one may wonder if the Australians put in some of their own touches too, just to make their predictions more relevant to the Southern Hemisphere.

Note the magnitudes of the electron gyro-frequencies in Fig. 1. Ionospheric effects from them become important on the lower bands, say 160 and 80M, where the RF frequencies are comparable to the gyro-frequencies. Effects from wave polarization become significant at those frequencies and the usual ideas of reciprocity, such as found on the higher bands, begin to break down. You probably knew that, but I thought it worth repeating. WR

Only a piece of paper...right?

CHAUNCEY G. POWIS, JR.,
WSØO

The yearning for an Amateur Radio license had plagued my life since I was a small boy. It was finally realized in early August of 1985.

The license was not unlike other government forms, a piece of paper sandwiched next to carbon paper in a "please pull here" perforated envelope. Carbon smudges from minor crumpling in the mailing process did not hamper the legibility of the license when it was removed.

There it was, KA7VXK, the station call I had been waiting for since passing the examination. That call sign, almost buried among the other items standard on all government forms, was the confirmation to the advertising I had been receiving for several weeks from electronic equipment dealers.

License in hand, I hastily made my way to the corner of the basement that had been designated as the shack. The Tempo-One transceiver had been waiting there for several days, cables connected and ready for key-down. Hesitantly, I brought out the operating instructions and read through them again. The rig's main tuning knob was then used to find other recipients of

other carbon smudged forms.

The new "language" emanating from the rig was very difficult to understand. Further movement of the main control revealed, "CQ CQ DE KA6 — KA6 — K." Another licensee inviting a reply. This was the moment of truth. I froze.

Yet another signal was heard, "KA6 — KA6 — DE W7 — W7 — KN." My heart dropped. My chance was quickly lost as these two amateurs were already in conversation, talking in that strange new language. I would not interrupt.

Many other CQs have been heard, answered and sent since that first licensed day. The new language is not as new as it once was, though the old-timers seem to know Morse code best. New languages made available through license upgrades have made a keyboard or spoken English the most common mode of communication in my shack. Many good friends have been made through this strange but wonderful medium called Amateur Radio.

This hobby, dreamt of as a boy and achieved as a man, will be a great comfort as I, too, become an "old-timer." — *The Round Table, Lakewood, CO*



Booking your traffic

Hopefully all traffic handlers have heard that "book traffic" procedure was changed (October '92) in the way it is listed (on a net) and counted (for your monthly activity report). Each three addressees used to count as one. Now *each* addressee will count as one. It seems strange, and it's often hard to adjust to change. I suppose it's natural for people to want a full count on their traffic. Booking does make life easier for those who transmit it. Nothing is more boring than copying the same message over and over. A book is comprised of two or more messages having the same preamble and text. After those are sent, message numbers and addressees are sent. If the signature is the same for all, it's added after the text. If they are different, they're added after each addressee. Since the message numbers go with the addressees, a book starts: "Book of (number); precedence (R, W, P, E); etc." There is no reason now not to book.

Disasters/health and welfare traffic

To beat the crowd, some must start their welfare traffic before the hurricane actually hits. To keep traffic from overwhelming them, some station operators send messages that no welfare traffic will be accepted for 48 hours. Neither of these approaches is really helpful. The ideal approach is to set up outlets in the disaster area (shelters and government centers, such as fire and police; and/or community agencies, like the Salvation Army or Red Cross).

The option of sending a few messages to relatives and friends should be offered to each person entering the shelter. Radio stations, TV and newspapers should mention where you can go to send a message. If everything is not coordinated with the media as to where to go to send or receive a message, this approach will not work. That leaves us dealing with thousands of incoming messages. This should not be a great problem. Packet is a perfect mode for a great quantity of traffic entering a disaster area.

Packet SYSOPS in the area should work together so that traffic is accumulated at the closest functional PBBS and held until one in the disaster area is ready to receive it. When a PBBS station is back up and running, traffic handlers could download the traffic into their computers, do a sort by last name in alphabetical order and, once a day, deliver the list to several shelters. At the same time, they could receive outgoing messages.

For this method to work, ARES and

traffic handlers must have a working relationship in advance of any emergency. They must set up a loose plan as to where shelters may be located; who has the equipment (generators, packet, computers able to sort) to be useful; who could be a runner (deliver and pick up messages to and from shelters); and phone numbers available or addresses of people in the media who will assist with public messages. With this skeleton in place, messages would flow.

The ARES EC (emergency coordinator) in any community should have the media and shelter side organized. The section traffic manager should be informed as to which traffic handlers in the affected area have the equipment and expertise needed. ARRL should issue bulletins as to which PBBS emergency messages should be directed toward. Messages could easily start on any net and be redirected toward this PBBS as they move toward the disaster area.

Why hasn't all this been tried? Advance planning for a disaster that will probably never happen is often thought of as futile. Shelters, people, phone numbers keep changing. The life of welfare traffic is generally short. In the US, phones are not down very long. Perhaps the effort to generate and maintain such a plan for years is not worth the trouble. How many of you know the name of your EC? And, how many emergency coordinators know who the traffic handlers in their area are, and how to reach them?

ZIP codes

Rand McNally has had, for several years now, a ZIP code directory available for \$6.95. It is very useful. You can use it to check the spelling of cities, check area maps and double check ZIP code digits.

TCC operators

TCC operators are those who pick up traffic on one area net for the other two areas. These operators then take the traffic to the other area net or to a one-on-one sked. There are two complete cycles, daytime and evening. Just how it is passed depends on the distance and time differences between the areas.

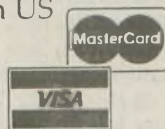
Here is an example using the Eastern Area Net (EAN), evening cycle. It meets at 8:30 p.m. On Saturday night, K4WJR picks up traffic listed for PAN (Pacific area) and W2LWB picks up traffic listed for CAN (Central area). At 9:30 p.m. Eastern time (8:30 Central time and 6:30 Pacific time), while W2LWB is listing his traffic on CAN K4WJR is meeting W6EOT (in California) and passing the PAN traffic. W6EOT will take this traffic to the Pacific Area Net.

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a few good people. All sorts of skeds are available. There are two cycles (daytime, evening). Every mode is utilized. Some skeds are on APLINK. Contact your director if interested: EAN — KW1U/W2FR; CAN — N0FBW/ K5GM; PAN — ND5T/W7GB.

Packet

Even though amateur-to-amateur traffic is legal with most countries, finding an outlet is not easy. The last time I received a message for England, I chose, at random, a PBBS (GB7SCA) and sent the message off, asking if that operator could help get it delivered. I was delighted to get a return message from G4SCA @ GB7SCA saying that the message had been delivered.

Sending packet messages in the US and Canada requires typing ST (ZIP code) @ NTS (state two letters). Can anyone send me the heading for a foreign country where a PBBS is not known?

The Networks

A newsletter for all EMRI (Eastern MA and Rhode Island) traffic handlers always has interesting articles in it. WA1KKP, Lynne, suggests you keep in touch with the college crowd with Amateur Radio.

K1CE, Rich, head of ARRL Field Services was guest net control for the Heavy Hitters Net. Rich also checks into the ARRL's International Assistance and Traffic Net regularly. It sure is nice to see our chief staff person enjoying traffic handling.

There were many training tips, such as Jim's, WA1TBY, article on how to ask for fills, and "Timely Tips for CW Operators."

Training

Many of us try to infuse traffic training in hamfest meetings, newsletters, on-the-air sessions, etc. And yet, many stations don't use recommended procedures. Do you think it would be beneficial to have one of the ARRL's newsletters (like *Field Forum*) deal with specific traffic issues? I see it as a running dialogue where someone comments about a procedure which is being misused or is felt to need change, and others then respond in the next issue. Sort of comments to traffic handlers.

The comments should be short and directed to a procedure and not a person. If the issue is unimportant enough to draw no comments, it would be dropped. If it turned into a hot debate, perhaps some action could be taken by our staff at the ARRL. This wouldn't be a place to rave about, or dismiss, any mode, but rather a forum to discuss how you feel traffic could be passed better. If you would like to see this, you might send a note to Richard Palm, 225 Main St., Newington, CT 06111. You do need to be an ARRL member to get *Field Forum*.

Our ARRL staff at headquarters told me that a video of a traffic net would be too expensive. How about an audio tape? They could even be sold for a dollar. What would be on the tape? A demo (one side CW, other side SSB) of a typical traffic net followed by sending several pieces of traffic using correct procedures for asking for fills. This would be followed by a brief explanation of some procedures. Would any of you buy and listen to such a tape for self improvement? Send in your feedback on this idea.

Letters

Thanks to N8RNY, in West Virginia, for his card on why he is not the Country Cousins of so many radio messages.

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County Hunter

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CHUBS!

WOW! That's what I thought after I reviewed *CHUBS!*, a new, powerful county hunting software program. In fact, *CHUBS!* is advertised as "the only complete logging and reporting solution" for the active county hunter. The program tracks progress toward many awards—MARAC awards, *CQ* magazine's USA-CA, Mobile QSL Bureau awards, B&B Shop awards, even ARRL (WAS and DXCC) awards. The first thing I did when I received the program was print the manual from disk. The 44-page manual clearly defined the program's many features and

answered frequently asked questions. The manual states, "Nobody reads these things for pleasure and technical type people usually read the book only as a last resort!" I found that humorous because that's exactly what I did. The point is, the program is generally very easy—and intuitive to use.

Installation was simple and straightforward, though I must admit I had to clean up my hard disk first. The program requires an IBM XT, AT, or 386 compatible computer; a 1.2 megabyte, 5¼ inch disk; CGA or VGA monitor; and a 10 megabyte hard disk (minimum size) with at least 6 megabytes free. If you haven't already purchased a hard disk for your computer, now is a good time to get one.

When executed, the program gives the user an option to choose five functions from the main menu: log, edit, confirm, search and utility. The log function allows the user to log contacts (basically, a computer logbook), log time spent as net control of the Mobile Emergency and County Hunter (MECH) net, or log personal information about fellow county hunters. The edit function provides an opportunity to change any of the information entered in the logging mode. The confirm function allows the user to confirm contacts after receiving a QSL or mobile reply card (MRC). The search function provides a search routine by USA-CA number, call sign, MARAC number, or former call. The utility function has several choices, one of which tracks all the many awards and allows for award submissions and prints counties needed for a specific award.

Another facet of the *CHUBS!* program is the use of function keys to quickly supply frequently needed information such as state emergency phone numbers, date searches (radio

contacts, not evening companions) USA-CA holder lists, second-time-around holder lists, county lists (confirmed status for each county by band and mode), and home county search (to identify county hunters by their home county). That's a lot of information, literally at your fingertips.

Well, enough about all the program's attributes, what you want to know is, "Are these bits and bytes worthy of your hard-earned bucks?" The answer is a resounding *yes*. Whether you are a veteran county hunter or beginner, having *CHUBS!* track your county hunting contacts for you will make the pursuit easier and more enjoyable. I remember I used the USA-CA record book to track my county hunting progress, but I was very disorganized. I made a contact and sent an MRC but didn't add the contact to the record book until it was confirmed. If the MRC never came back, I had to research my logbook to try to find whom I had worked in that county. *CHUBS!* allows for multiple entries for each county and you can always search contacts by county.

Although the original intent of *CHUBS!* was to encourage more county hunters to volunteer as net control, *CHUBS!* has become a full-featured logging and informational tool. Typical Joe County Hunter will welcome the opportunity to keep only one computerized log, for both county hunting and DX contacts, and relax while *CHUBS!* figures out which awards to apply for. The county hunter who volunteers as net control will calmly handle emergency situations with numbers provided by *CHUBS!* and impress the net with name recollection (and spouse's name) from *CHUBS!* personal information searches.

I strongly encourage you to consider this program to fulfill your county

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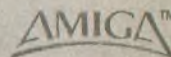
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hunting logging needs. **CHUBS** is developed by county hunters for county hunters and its creators constantly seek input to make this program even better. In the near future, the development team is planning to add mouse support, provide Graphic User Interface (GUI) screens and the capability to print MRCs.

CHUBS! costs \$60 usually, but there's a special offer available; the program costs only \$35 with proof of 200 hours spent as net control or 200 counties operated from while mobile. In other words, active county hunters are rewarded. **CHUBS!** is developed by SoftAire Enterprises and is available from T.H. Software, Inc., 11912 47th Dr. NE, Marysville, WA 98270.

Another kind of county hunter

Although this column usually focuses on county hunting achievements of Amateur Radio operators, this story is worth mentioning. Allen Zondlak, 57, of St. Clair Shores, Michigan, is not an Amateur Radio operator, but a county hunter nonetheless. He's spent a little over 36 years in his quest to visit all 3,142 counties.

Allen's fascination for county hunting began in 1955, when a geography professor at Wayne State University (MI) had a map of US counties and suggested his students color in each new county they visited. Allen was so inspired that he started collecting counties himself and became a geography teacher. Since then, he has maintained two maps; one county map for coloring counties visited and the other a route map that shows in red the various routes and flights he took. The last county was colored on 18 October 1991 when Allen walked off the *M/V Eagle* and onto Nantucket Island, Nantucket County, Massachusetts.

I first heard of Allen's accomplishment almost accidentally when Tom French, W1IMQ, a *Worldradio* reader, sent me a two-sentence blurb from the *Boston Sunday Globe*. Tom wrote on the clipping, "Here's a real county hunter!" Well, I called and wrote Allen and he sent me seven newspaper articles and a state listing showing he visited all 3,142 counties, each state capital, and the largest city in the state.

Throughout Allen's county hunting venture, he has kept a journal, collected bars of soap from inns and matchbooks from restaurants, and

Disappointment tracks the steps of hope. In other words, 10 meters wasn't open again today.

snapped over 28,000 slides. He estimates he has covered 400,000 miles on the ground and 300,000 in the air. In a 17-day whirlwind expedition through Alaska, he took three ferry boats and 23 flights. Zondlak only counted counties he physically was in; flying over them didn't count. The most unusual mode of transportation was a seaplane he used to visit Katmai National Park in Alaska.

Of interest to radio county hunters is how Allen tallied 3,142 counties—when we chase only 3,076. Instead of counting the four judicial districts of Alaska, Allen counted the 15 boroughs and 11 census areas of Alaska, a difference of 22. Allen also counted the 41 independent cities of Virginia, Carson City, Nevada, and Washington DC for another 43. That makes a total of 3,141. The 3,142nd county somehow comes from Montana; Allen counted 57 and we chase 56.

Now, Allen is doubling back through some of those counties, visiting the point of highest elevation in each state. After that, Allen may visit other countries.

How about you? What would your map look like if you colored all the counties you've visited? Maybe now is a good time to start. Until March, however you do it, happy hunting! WR

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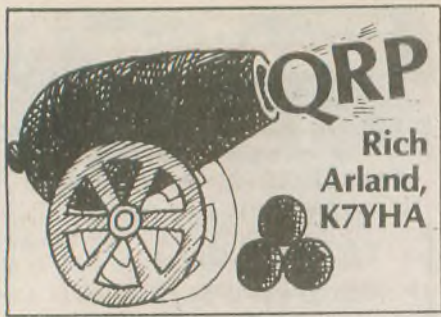
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It's time again for the annual "things to get the family ham for Christmas" column. Since this column will be in print about two to three weeks before Santa's arrival, we will showcase some accessories and books that should warm the heart of any radio amateur.

Books and magazines

The ARRL has a great selection of books that make great stocking stuffers. One of their newest offerings is *Your VHF Companion*, written by Steve Ford, WB8IMY. Steve is a technical editor for *QST*. His writing style is concise and very easy to comprehend. Steve has enlisted the aid of several *QST* staffers who add their experience to this down-to-earth guide for VHF operations.

Steve has constructed an easy-to-read text which includes chapters on FM and repeaters, packet operation, satellite communications, SSB/CW activity, contesting, various awards programs, transmitter hunting, UHF and microwave, and a resources and reference guide. This book is easy to read and well worth the \$8 price tag. *Your VHF Companion* is available directly from the ARRL, 225 Main St., Newington, CT 06111.

A new book just out is titled *Basic Packet Radio*, by Joe Kasser, W3/G3ZCZ. This is not just another book on packet radio. Joe offers a complete tour of packet radio, starting with the basics and moving right up through advanced applications. The first 152 pages of the 364-page book consists of packet basics, connections for PCs and TNCs, LANs, the ins and outs of connecting and digipeating (including NET/ROM, TheNet, G8BOQ, KA, MSYS nodes, ROSE switches, etc.), PBBs and how to use them effectively, packet clusters and other applications. The rest of the book consists of a tutorial on Joe's very popular program LAN-LINK (which is furnished with the book—please specify format when ordering).

W3/G3ZCZ's concise writing style makes this a very easy read. Fun, too! *Basic Packet Radio* is available directly from the author for \$29.95 (plus shipping). Write to: Software for Amateur

Radio, P.O. Box 3419, Silver Spring, MD 20918; or contact R. Myers Communications for a copy.

Another book that has created a stir, especially in QRP circles, is the G-QRP-Club's *Antenna Handbook*, compiled and edited by my good friend Peter Linsley, G3PDL. The book is the result of many requests by QRPers to compile antenna articles appearing in the G-QRP-Club's quarterly newsletter, *SPRAT*. Peter had a tremendous task at hand to sift through over 68 issues of *SPRAT*, extract the antenna articles, put them on a computer and edit the book.

Included in this book are not only antenna articles, but information on antenna accessories including SWR/power meters, antenna tuners and test equipment. In all, the G-QRP-Club *Antenna Handbook* will be a welcome addition to the active QRPer's library. It can be obtained from the G-QRP-Club US liaison: Luke Dodds, W5HKA, 2852 Oak Forest, Grapevine, TX 76051. Send an SASE for price and postage costs.

For those of you involved with satellite communications there are two excellent sources of information that you should exploit. First is the Radio Amateur Satellite Corporation, AMSAT. This is an international organization which represents amateur satellite experimentation to the world. Their bi-monthly newsletter, *The Journal*, edited by Drew Deskur, KA1M, is a very high quality publication that presents the news and views of the people who build, launch and control the amateur satellites.

Yearly membership in AMSAT is \$30, which covers the cost of *The Journal* and goes to support amateur

satellite projects. AMSAT also has many fine guides targeted to specific satellites and modes of operation. Prices are reasonable and will warm the heart of any active satellite operator. AMSAT also sells many kinds of tracking software for various computers including the PC and clones, the MAC, Commodore, CoCo and Atari. Contact AMSAT at 850 Silgo Ave., Silver Springs, MD 20910.

R. Myers Communications (P.O. Box 17108, Fountain Hills, AZ 85269-7108) is the second source of up-to-the-minute satellite operations information. Bob Myers, W1XT, publishes two outstanding periodicals for the satellite communicator. First is the *Oscar Satellite Report*, a bi-weekly publication that presents the views of both the satellite operators and the "techies." The *OSR* has the latest information on problems, schedule changes, news and views of the amateur satellite community. The price for a one-year subscription is \$29.

Second is a monthly publication called *Satellite Operator* which is designed to compliment the *Oscar Satellite Report* while providing more in-depth information. There is no duplication of material between the *OSR* and the *Satellite Operator*. A one-year subscription to *Satellite Operator* is \$27.

In addition to these two publications, R. Myers Publications also sell several outstanding satellite tracking programs, including the inexpensive *TrakSat* and the feature-filled *RealTrack* software. For further information write or call R. Myers Communications at 602/837-6492.

Speaking of software, I have had chance to try several outstanding satellite tracking programs and can say, with some authority, the new *RealTrack* program authored by Michael Owen, W9IP, is a real winner. Not only is this program very easy to learn to use, it is extremely flexible. *RealTrack* takes up a lot of memory but provides some very fast graphics which are extremely useful in projecting satellite orbits and access times. My favorite feature is the satellite tracking screen which displays all the data for a given satellite in real time. By hitting *shift/F1*, the program calculates the next available pass for the satellite currently being tracked, and displays this AOS time and the total time of the pass right above the UT information (in the center-right of the screen). *RealTrack* is available from R. Myers Communications for a cost of \$65 plus \$3.50 shipping.

As long as we are talking about software, I am currently reviewing a copy of K1EA's outstanding contest logging program, *CT*. This is one lightning-fast contest logger that provides

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access to DX packet nodes, CW keyer and voice recorder messages, and rig control. It covers all the popular contests like the CQWW DX and WPX, ARRL DX and 10M contests and much more.

The program provides real-time logging and duping and, after the contest is over, will write your logs, dupe sheets and various reports on the contest. While this program is learning intensive, once you get the hang of things, CT becomes a major accessory to the active contester. Price for CT (Ver. 8) is \$69.95 and is available from K1EA Software, P.O. Box 803, Hudson, MA 01749.

Another outstanding contest logging program that I have been experimenting with is K8CC's program called NA. This contest logger is geared to North American contesting but will support the CQWW DX and other DX contests. There is a lot of compatibility between the NA program and CT. This contest logger allows the contester to log, dupe, compile and print out logs, dupe sheets, QSL labels, various reports as to how QSO rates looked over the course of the contest, etc. NA is quick (it will give you whiplash!) and, once you get the hang of things, very easy to use. NA supports a CW and voice keyer and has a built-in programmable contest keyer as part of the package. Also included is packet terminal software for viewing DX Packet Cluster activity. It is operator friendly and geared to the active contester. NA (Ver. 7.0) is available for \$40 from LTA, P.O. Box 77, New Bedford, PA 16140.

Don't forget the N6RJ 2nd OP software package for real-time logging and award chasing. The N6RJ 2nd OP also provides for Packet Cluster interfacing, awards tracking, DXCC/WAZ/DBLAST on-screen record keeping, and multiple printing functions. This software is also capable of importing K1EA CT log files for a complete records keeping system. It is the only logging program which specifically accommodates the satellite operator by tracking satellite WAS and WAZ!

This is a fun-to-use program that is amazing. Various screens provide more data than most of us thought possible on DX locations, beam headings, grayline propagation, QSL bureau info, etc. The N6RJ 2nd OP is available from the ARRL bookstore, HR Bookstore, ham radio dealers or directly from GRF Computer Services, 1170 Downey Ave., Long Beach, CA 90805 at a cost of \$64.95 plus shipping.

Stuff and things

A new item caught my eye in *Electronics Servicing and Technology* magazine: PAKTEK makes an array of

tool packs that will help clean up the mess in the shack. Their Original pack is a backpack affair that will hold over 100 tools securely and allow the wearer to use both hands while walking, climbing, etc. The Fanny Pak is the one I currently have for my tools and, like the name implies, is worn around the waist leaving hands free. My Fanny Pak holds my Weller butane soldering iron, a Radio Shack DMM, a four-in-one screwdriver, several small screwdrivers, alignment tools, wire cutters, needle-nose pliers, 3 in. adjustable wrench, solder, solder wick, electrical tape and, occasionally, lots of additional stuff.

All PAKTEK tool packs are made of 1000 denier Cordura, heavy stitched, designed for comfort, portability and ease of use while standing up to some tough treatment. For a current product catalog and price list contact: PAKTEK, 7307 82nd St. Ct. S.W., Tacoma, WA 98498.

This year's "K7YHA Award for Outstanding Customer Service" is jointly shared by two antenna manufacturers. Don Newcombe of Butter-nutt Electronics (they make great HF vertical antennas that magically outperform any other vertical that I have ever used) came through in a pinch when I needed some replacement parts for an HF-6V vertical that I was rebuilding for a disabled friend. One quick phone call to Brownsville, Texas, and Don had the parts on the way the very next day! Now *that's* service.

Tom Rutland, owner of Rutland Arrays (makers of the extremely successful K1FO V/UHF antennas) came through when the chips were down. Four days before the big antenna party at K7YHA, I started assembling one of Tom's 2M beams only to find that the

element "keepers" were not in the hardware package. A phone call to Tom had the keepers on the way that afternoon, arriving in time for the assembly to be completed prior to the arrival of the herd of hams helping with the antenna installation on Saturday.

Many thanks to both Don and Tom for actions "above and beyond the call." It is people like Don and Tom who typify the adage, "Customer service is top priority." Don't forget, if you contact these people for product information or to purchase a product, tell them you saw it in *Worldradio* magazine. This helps them plan their advertising expenditures and has the added advantage of bringing extra advertising to the magazine, should these manufacturers decide to expand their advertising base. Let the people you buy from know where you read about their products.

Have a safe and happy holiday season. Don't forget the Q-QRP-Club's Winter Sport contest starting on Boxing Day (the day after Christmas) lasting 'til 1 January. 73s es CUL, Rich.

WR

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There's no question that emergency response generates stress. As the hours seem to drag on and people get tired, frustration levels rise and little things become irritating. There are often hours of inactivity and minutes of adrenaline bursts for the communications volunteer. Even those on the front lines cannot sustain a high activity rate without fatigue eventually setting in.

Emergency response stress is going to happen--however many factors can be controlled. These are often the little things such as having food, water, supplies and spare parts.

Office planners often use the word ergonomics as they design work space. Simply put, ergonomics involves making your surroundings "people friendly." A comfortable chair, subdued lighting or having a computer table that's the correct height can make surroundings more ergonomic.

This applies to emergency response as well. Having uncomfortable shoes and being a "shadow" means you'll soon

get tired and irritable. If people are too cold or too hot, tempers grow short.

An operating environment is often controllable. I look back at search missions where the communications relay was done from an AMC Gremlin or a

can keep track of race officials, highway patrol officers, water trucks and runners. Getting the colored magnets and sheet metal is something you have to do in advance, but it does make the job easier.

Pete sent me a photo of the cross-band antenna mounts he installed on his truck. Using Radio Shack antenna masts, he's built two mounts inside his truck bed. He can put up an antenna mast and be on the air in minutes. This gives him a good signal with some gain antennas.

Emergencies have a habit of happening during less-than-ideal weather. This too is a reason for pre-planning. Plan for worst-case events: severe cold or hot, heavy snow or rain, wind and long duration assignments.

Plan by category: at home, in the field, at an EOC, portable or mobile. Decide what items you need to make life easier. Focus on the "little" things



Pete Hatton, N6JBV, has rigged a nifty mount for cross-banding.

Plymouth Barracuda. I recall ground searches with wet shoes or long waits with too many sugar snacks. Some pre-planning would have made all the difference in the world!

Pete Hatton, N6JBV, has done a couple of things to make his public service assignments easier. He has taken topographical maps and fastened them to galvanized sheet metal. Using commonly available colored magnets, he



Pete's antenna mount is simple yet sturdy.

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A little planning can make a high-altitude checkpoint like this one at Scott's Peak, 10,000 feet, pretty comfortable.

That always get overlooked but make you a happy camper. To one local responder, having a disposable toothbrush brightened his outlook—he said it was important to brush his teeth often. It's a little thing but it made a big attitude difference.

During the Wasatch 100-mile Endurance Run, our outpost at 10,000 feet would have been miserable without some pre-planning. The site is on a mountain edge and the wind blows almost constantly. With rain, it gets pretty ugly. Snow and cold also create adverse attitudes.

After a site survey, we were able to get permission to use electrical power from a nearby radio site. Using a heavy-gauge 300 ft. cord, we had lights, heater, and reliable power. (Backup batteries and propane heaters were also available.)

A tent with some comfortable chairs, some warm food and hot chocolate made operating a pleasant experience. When runners had emergencies (hypothermia, dehydration, sickness, etc.) we handled them better because we weren't stressed due to our operating environment. The runners felt our confidence and appreciated the pre-planning as well.

We've also got a 12 ft. trailer available which has been designed for comfort. The seats are comfortable, the interior paint is light and cheery. There's food, light, supplies and antennas—already in place.

Another issue is keeping organized and clean. Stress increases when you can't find things or you get grubby. It's tough in some cases, but keeping as clean as you can improves your outlook.

This becomes more important as the mission goes on.

I've noticed in using the trailer that more "stuff" isn't necessarily better. Too many choices or distractions can just as easily cause discomfort. Keep things simple and, again, remember the little things. Common sense also limits the extent of your preparations. You cannot plan for every event. There will still be discomforts. Prepare what you can! Here's some ideas that may help you get ready:

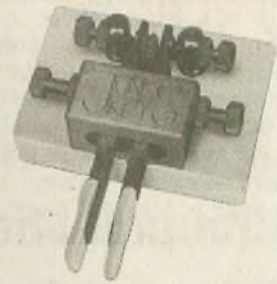
1) A small "caboose" trailer makes it easy to carry (and keep in one place) your tent, sleeping bags, folding chairs, propane stove, table and durable supplies. A used trailer may only set you back \$50. In many states no registration is needed for small trailers.

2) Canvas wall tents are better than light-weight nylon ones, if you can transport them to the operating location. Sparks won't melt holes in them and they're better built to take adverse weather conditions. Having a floor is a plus in keeping surroundings cleaner. Bring along a broom (chop off the handle) to keep the dirt out.

3) Before you build antenna mounts or grab-and-go equipment kits, see what others have already done. Amateur Radio operators are often inventive and have some pretty creative ways to make life easy. Share ideas and ask others for suggestions.

4) Keep your family in mind. Before you convert the family van into a mobile radio room, get their input. You can often install mounts or brackets that allow you to use the van with the family but quickly install tables or antenna masts when needed.

JONES KEY

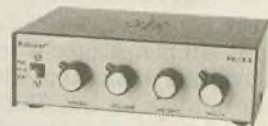


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5) I use removable pin hinges to put a shelf/table in my camper shell. With half of the hinge riveted to the shell supports and the other half attached to the edge of a sturdy sheet of plywood (cut to fit), I can slip the pins in and have a pretty sturdy table. It comes out when not needed and stores in the shed.

6) A 12 ft. trailer was found for under \$300. The outside was in good shape but there was water damage inside. It took a year to gut and paint, but the final product did not bankrupt the family.

Antenna mounts and cable runs were done carefully and *first* so the wires would be out of the way for normal camping use. Power cables were also tacked out of the way with Anderson Power Pole connectors at each end.

Several radios mounted in the trailer were put under cabinets and out of the way. They're easily accessed during a response but not in the way during normal trailer use.

Fresh interior paint, some new curtains and floor wax all made the interior pretty user friendly. If you work on an old trailer, it's worth the time (and not too much expense) to reseal the edges with silicone caulking and replace all the metal screws.

7) Keep it simple. A nice warm tent and comfortable chair do a lot to improve your outlook on life. But unless you respond daily or regularly for long periods of time, don't get carried away on fancy details. Command post vehicles for public safety agencies are often well-equipped and pretty fancy. You must realize these vehicles get used often and the large investment in surroundings is necessary.

8) Keep your eyes open for good deals. I started collecting "stuff" for a trailer many years ago. Some of the radios are not state-of-the-art but work very well for public service response. Swap meets, club meetings, junk sales, surplus auctions and trade nets are all good sources. Before you begin buying, sketch out a basic plan. Knowing what you need helps you decide what "good stuff" you'll buy.

9) Tent trailers and campers are another way to be more comfortable on a response. My choice of a trailer was primarily a financial one and I'm sure there are good buys in used campers and tent trailers. I kind of prefer the more solid walls and roof and the ability to pull a trailer with different vehicles. A camper limits you to the truck it's mounted on and a tent trailer may not be a good choice in adverse weather. Still, they're better than nothing or operating in the cramped front seat of a compact car or truck.

The best suggestions I can offer in response planning are to look at worst-



A small trailer can provide an ergonomic operations room.

case scenarios, sketch out what you want to have when you respond, set some limits (time, financial and size) and work within those limits. If someone has a response facility, try to compliment it. Amateur Radio (or any emergency group) response isn't a contest. Any more than a couple of communications trailers is probably overkill

for normal situations.

It's a good idea to have standard trailer connectors, power connectors and hitches so several people could pull your trailers. Even if you couldn't stay long-term on scene, others could use your equipment and plug into the standard connections.

Any suggestions you have concerning operating ergonomics would be appreciated. Share your ideas and experience with me. Any nifty photos you have might also be good to publish in future columns.

Until next month, 73 from Salt Lake City!

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MARS

(continued from page 44)

toys" could monitor news service TT and find out what's happening on demand.

The most interest in the unit was in the early days. While barefoot with a dipole, I had to send CW NNNØRWO, and he would pass the message to my wife on the phone. It amazed soldiers that one of the most basic forms of radio communication was the best way to communicate even with all the technology available. Hey, it worked, and that's all that matters.

There were plenty of lessons learned by everyone. Units need to have MARS stations in peacetime so they can be trained. Networking needs to be refined and a bank of radios for contingencies needs to be established. That is all being worked on or completed. In all, we took great personal joy and pride in our success and learned from our mistakes. What else could we ask for?



The Youth Forum

Travis A. Wise
KB8FOU

1421 Grace Avenue, San Jose, CA 95125
Home: (408) 267-8849; BBS: (408) 267-6396

Youth bashing

I was recently reading some messages in the Amateur Radio section of a nationwide on-line computer information service when I came across a negative message about youth in Amateur Radio. The message was in response to a young man's request for ideas to earn money to buy a radio. The negative reply, in part, said: "I can't understand why a young person would want to sit at a radio for hours on end when there is a whole world of outside activity awaiting your discovery." It went on to discourage the young person from getting involved with a hobby such as Amateur Radio.

My reply, which gathered a host of positive comments, was that I have enjoyed every second I have spent on Amateur Radio, talking with people of all ages worldwide, and I certainly wouldn't have the self esteem, communication skills, or half of the opportunities I have found, if it weren't for Amateur Radio.

Many young people are driven away from Amateur Radio because they lack the stamina and determination to ignore the people who don't appreciate youth getting involved with their hobby. When I started getting seriously involved with Amateur Radio (running nets, speaking at forums, writing for magazines), I received numerous "nasti-grams" that young people should be "seen and not heard" and, therefore, I shouldn't be quite so outspoken and active in Amateur Radio. Well, I proved them wrong, but some young people would have given up and joined another hobby that doesn't put up as much resistance to their involvement.

Granted, 99 percent of my contact with other amateurs has been positive, but it's that one percent that drives away kids who are looking for a

positive experience. So this isn't a widespread problem, and I don't make it out to be, but for each person who gets discouraged and leaves Amateur Radio, it's not just one less ham, but also all the people and enjoyment he would have brought to our hobby.

It is the responsibility of those who want to share their enjoyment of Amateur Radio with young people to provide them encouragement to counter-balance any negativity they are hearing over the airwaves about their age or even class of license.

Youth in clubs

I've received numerous requests for information about getting youth involved in existing clubs, or starting a youth-oriented club, so I've included a list of suggestions.

First of all, publicity is the biggest factor. Set up a club member as a youth contact person and coordinator (if your club has an education committee, maybe they can absorb the new job). When someone wants to find out more about Amateur Radio, he could be referred to this resource person who will have information about any upcoming license classes, where to get copies of theory and code books as well as other publications, and information on club meetings and club sponsored events such as Field Day, picnics, T-hunts, etc. Use this method rather than passing the future amateur around the membership until he finally earns his license.

Go to scouting groups and Civil Air Patrol meetings (both groups have gladly welcomed me when I have been their speaker, and one even lassoed me into teaching a few chapters out of the theory book). Hand out a flyer or business card with the telephone number of your club's youth coordinator or education committee chairperson for them to contact if they need additional information. While you're carrying those flyers around, ask if you can put some up on high-school and college bulletin boards.

Does your newspaper have a column or calendar of upcoming events or meetings? If your club is youth-oriented (a school club), contact the local media and ask if they would feature a story on what a group of kids actually do when they're talking around the world on Amateur Radio. Of course, once you do get young hams

in your club, be sure to encourage them to participate and be active (contribute to the club as a regular net control station, run for an elected office, serve as an official greeter (host) at the meetings, etc.); a *purpose* makes people feel needed and useful.

Packet pals

This idea isn't quite "brand new," but the approach is: Ray Harkins, KB6LQV, of Fresno, California, started the World Wide Packet Pals listing. This is a list which he publishes on packet to encourage more keyboard-to-keyboard friendships via packet radio. His list encompasses about 100 listings from every continent in the world and includes numerous schools. Ray updates it every three to four months and posts the updates on packet. Ray says, "I am looking for quality, not quantity, when it comes to being a packet pal." If you would like to be added to the list, send Ray your name, QTH, call and home BBS (age is optional), and hobbies or remarks via packet: KB6LQV @ N6ZGY. #NOCAL.CA.USA.NA.

Tidbits

Kat Stewart, KD4KBZ, commented to me that in the few months she has had her license, she has made many great friends and is having loads of fun on the radio. She thought that her peers may not be interested in Amateur Radio because of the difficulty of the tests (especially the math), lack of information about what Amateur Radio is, and time constraints.

By the time you are reading this, Pacificon 1992, run by the Mount Diablo Amateur Radio Club, will be history. The Mount Diablo Club scheduled a two-hour youth forum with a panel of eight young hams and a variety of speakers, organized by Rosalie White, ARRL youth and education director. Watch the March edition of this column for coverage of the forum.

Here's something interesting I found in a club's newsletter advertising their upcoming brunch meeting: "All this [food] for only \$5 per person, with kids 12 and under free (a driver's license is required for proof of age)." I know I had *my* driver's license when I was 12. I mentioned that to them... they still print it, as quoted, quarterly.



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A sense of values

(conclusion)

ALLEN R. BREINER, W3TI

Regarding the advancement of systems, units, and equipment for proof of a model of an electrical circuit, there were no great state-of-the-art introductions until 1875 when a French scientist, Arsene D'Arsonval, designed an electrical unit for recording by visual means the amount of electric current passing a given point in an electric circuit. He designed it as an ammeter, or unit that could be used to indicate and display the number of amperes current passing through the unit.

The ammeter was later given the associated name as the D'Arsonval movement which profited from the models of Galvani and Ampere. From Galvani came the association of the galvanometer needle movement by means of magnetic thrusts or pressures. And from Ampere came the fact that current passing through a coil of wire produces a separate magnetic field. The combination of these two models gave D'Arsonval the mechanism which associated the difference of both magnetic fields and indicated a proportional value on a calibrated numerical scale.

Utilizing the formula for an ohm of electrical resistance became merely a matter of changing different values of voltage through the circuit, and by the

use of Simon Ohm's mathematical model, we are able to produce a direct readout, in amperes, flowing through the electric circuit. The D'Arsonval meter movement was improved by Dr. Edward Weston in 1904, and though most of the analog meters in use today are credited to D'Arsonval, the Weston type meter movement is found in more accurate and expensive units.

Nevertheless, as in all models since time began, there is always room for improvement. Our present system of electrical measuring is still dependent upon the basic ammeter. In order to measure the electrical force in voltage, a system of resistance is built into the circuit which then accounts for the calculated current through that specific portion of the circuit and hence recorded, reproduced or transferred onto a scale that interprets the voltage drop across a given point.

It is nothing more than Ohm's Law being computerized as a method of recording the voltage drop from the amount of current flowing through that same part of the electric circuit. We could delve further in detail on how this meter measures resistance, however, it follows the same routine principles just demonstrated. This leaves us with an unjustifiable margin of error because there is no such thing as a perfectly calibrated ammeter, voltmeter, or ohmmeter. The nearest any instrument has come to being perfect is the laboratory instrument with components and resistors of precise value in its construction.

The electrical laws, as we know them today, are all dependent upon the model set forth by George Ohm, whose mathematical formula further defined an ohm as the amount of opposition that generates 0.24 calories of heat when one ampere of current flows for one second, or an equivalent when one calorie raises the temperature of one gram of water one degree centigrade.

The ampere, or electric current mentioned throughout this article is the movement of electrons and named to honor the French physicist Andre M. Ampere. The ampere is further defined as the magnitude of the current that, when flowing through each of two parallel wires separated by one metre in free space, results in a magnetic force between the two wires of 2×10^{-7} newton (one newton equals 0.22 foot-pounds), or an equivalent of about 0.0314 foot-pounds of magnetic

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force. The International System of Units assumes this to be a standard for the unit of *one ampere* of electrical current. It was accepted by the United States and the National Bureau of Standards in 1866.

Charles A. Coulomb in 1785 proved the relationship between magnetic and electric attraction with distance. The coulomb, named in his honor, is expressed as a very large number of electrons. Despite the fact that an electron is an extremely small particle, its diameter is established at about 2.5×10^{-13} . The charge of an electron is assumed to be negative and measured as 1.601×10^{-19} coulomb, or

$$\frac{1.0 \text{ electron}}{1.601 \times 10^{-19} \text{ charge}} = \text{one coulomb}$$

Or, $6.24 \div 10^{18}$ electrons are equal to one coulomb. It can be further expressed that one coulomb is then equal to one ampere of current. Hence, if 6.24 billion-billion electrons pass a given point in a circuit, in one second, it is considered one ampere.

A volt, so called in honor of Alessandro Volta, has been defined as the electrical pressure required to move one coulomb per second through an electrical conductor with an opposition or resistance value of one ohm. The volt has also been defined with respect to foot-pounds of work. If a four-pound weight is lifted a distance of three feet, then 12 foot-pounds of work has been performed. A 1V difference of potential is present between two points when 0.738 foot-pounds of work, called a joule, has been performed in order to move 6.24×10^{18} electrons between two points in an electrical circuit.

From the information gathered, one can only conclude that the basis for one ohm of resistance is a mechanical model or value which assumes that a given accumulation of the element mercury shall consist or present one ohm of resistance in an electrical cir-

cuit. And from a given value of pressure, a push or pull against the force of gravity associated to a magnetic force has been affirmed to consist of one ampere of electrical current. And from a system of weights and measures it has been designated what one volt consists of.

The mechanical model is complete, however there are still some parts which remain theoretical in the mathematical model due to the association with the electron. Electron theory, as stated, is still *theory*. In all of the foregoing, theory was made to meet the mechanical model so the theoretical and the mathematical model coincide. Order and symmetry are basic to the understanding of nature. All things in our universe must balance, including that of an electric circuit.

Our science of electronics advances frequently with makeshift or haphazard experiments rather than with strictly empirical research. The discoveries and development of today's modern science of electronics are based upon the efforts and findings of prior experimenters. Our advancements in the future will utilize and add to the concepts and discoveries of the experimenter of today. Hopefully this has been enlightening, especially to

those newly licensed who are having a hard time with Ohm's Law and other mathematical problems. Just remember, when you next take an upgrade exam, how difficult it was for those who have gone before you, who had to design those mathematical problems from scratch.

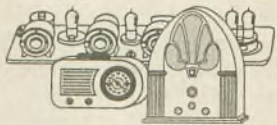
An amateur since 1950, W3TI has held an Extra Class license since 1959. Now retired, he's worked 26 years in industrial electrical maintenance and taught electronic technology for 15 years at Carbon County Area Vocational Technical School.

Further reading:

A History of the Sciences, Stephen F. Mason, 1962; *Reason Awake*, Rene Dubos, 1970; *Electrical and Electronic Fundamentals*, Philco-Ford Corporation, 1960; *Lives in Science*, Simon and Schuster, 1957; *The Common Sense of Science*, J. Bronowski; *Science and Sensibility*, James R. Newman, 1961; *How to use Meters*, J.F. Rider and Sol D. Prensky, 1960; *Basic Electronics*, A. Marcus and S.E. Gendler, 1964; *Basic Mathematics for Electricity and Electronics*, Bertrand B. Singer, 1965; *Basic Electricity for Electronics*, Richard Blitzer, 1974; *Electronics Data Handbook*, Martin Clifford, 1969.

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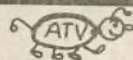
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CONSTRUCTION

Mobile noise reduction

LAWRENCE EARL, KG7DL

Did you ever put an HF rig in a car with great expectations, only to find that when the motor was running all you could hear was the motor? Well, join the crowd. The first time I did that it was in a 1969 Datsun pickup. The noise level was S9. My next was a 1972 Ford Courier pickup, the noise level in that one was S7. So I was forced to learn something about noise reduction whether I really wanted to or not. I did have the benefit of the Navy's noise training, as one of the country's leading experts on electrical noise came to the base where I was working and gave a course on noise suppression.

The average mobile installation is a VHF rig on FM. Almost all man-made noise is AM, so a good FM rig will not respond to the noise the car is putting out and you will never know it is there. But sideband is an AM mode and is susceptible to noise.

The first thing you will hear is the ignition, then the alternator whine, and the rest of the noise will generally be covered up by whatever is the loudest, usually the ignition. That's the popping you hear that is in time with the engine speed.

Noise is funny stuff in that it works somewhat like static electricity; it doesn't go anywhere. You can rub the center of a big sheet of plastic and go over it with a static voltmeter and the voltage will be in the center right where you rubbed it, not on the edges or anywhere else. Noise voltage isn't quite like that, but it is peculiar. For instance, you start the motor and listen for a while, then go out and raise the hood. If the noise doesn't increase a whole bunch it means the hood isn't doing much of a shielding job. So then you ground the hood and it gets worse! It's entirely possible.

If the hood isn't well grounded the ignition will induce circulating currents in the sheet metal of the hood, which will radiate. When you ground the hood it provides a ground return path for the noise current through a rather small ground wire. The current density in that wire can be quite high, which can result in the hood acquiring the characteristics of a knob on top of an antenna; then the hood, and particularly the ground wire, will radiate. As this radiation effect may occur on-

ly in some cases, a good rule of thumb is to ground the hood.

My favorite grounding material is half-inch braid. I bought a whole roll of the stuff one time. I use a 300W soldering iron and tin the end edge to start with. I use a soldering iron instead of a torch, as I discovered the torch I use will oxidize the metal before it gets hot enough to tin. Then I use a punch to poke a hole through the braid immediately in back of the tinning, making a hole big enough to take the screw that will be going through it. Then I tin the rest of the braid to about an inch above the hole. I make a few technical adjustments on the tinned end with a hammer to ensure it's flat. Now I have about two inches of the end of the braid tinned with a hole through it. Do this to both ends of the braid, and don't forget to make it long enough.

I use large, short sheet metal screws which can be installed with a socket wrench. Scraping the paint from around the hole I back the screw with a large washer, insert the screw through the ground strap, and add a star-washer before inserting the screw into the hole. The star-washer bites into the metal in several places and gives a much better ground. Every once in a while I give all the grounds a squirt of a rust preventive compound, such as CRC, LPS, or WD40.

First try grounding the hood on one corner near a hinge and see if it does any good. The formula, "If enough is

good, more is better, and too much is just right," doesn't always apply to grounds. Sometimes if you ground a hood in two places the noise will increase because you have created a current loop. Small ground wires are not as good as big ones; the current density in a small ground wire can be so high that it will radiate and make things worse. That's why you see a long strip of sheet copper, rather than braid, used as a ground strap on some grounded electronic work benches.

From the beginning

The first thing to do in mobile noise reduction grounding is take the ignition coil off. Scrape the paint off the contact points of the coil and mounting strap. Any arcing outside the engine can also cause a terrific amount of noise, so be sure your spark plug wires are in good shape. In the dark, observe the running motor and see if you can see any arcs. If you can, it's long past time to change the spark plug wires. If the ends of the wires fit loosely on the plugs and distributor cap connections, they will arc and cause noise. Take the wires and slide the rubber covers back so you can get at the end connectors (you may have to use some silicone grease).

Take an old spark plug and fit the end connectors onto them so they are tight. I just mash them a little with a pair of pliers. (Spark plug connectors are made with a dent in the middle that makes them snap on, but after they get there they become loose, and that's what you want to avoid.) Fit all the connectors on both ends of all the wires, and don't forget the one that goes to the coil. This will cut ignition noise a tremendous amount. If you need still more suppression, get some suppression spark plug wires; it's a coil wrapped around a magnetic plastic core. As a coil, half the noise voltage radiates inward and cancels itself. It also serves as resistance wire.

You say that's not quite right—you want it perfectly quiet? Okay, measure the distributor and coil diameter, take your ruler and head for the supermarket, it's time to shield the whole works! What you want is a can that will fit over the coil and distributor. If other shoppers look at you kind of funny, just tell them that you always buy your beans by the inch.

Then get some very thin tin or galvanized sheet metal to wrap around the spark plugs. Cut the sheet metal in a strip that's a little longer than the distance from the plug seat to the top of the plug. Then cut a piece that will wrap around the plug hex with enough overlap to solder. Cut another piece of sheet metal and wrap it around

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something like a broom handle or pipe, forming it so that it's halfway between the diameters of the outside and inside of the plug hex, and solder it up the seam. Now when you force it on the plug it will stretch to go over the hex on the plug and make a tight fit. I form the sheet metal so it is a little bigger than the plug and then put it in a vice and squeeze it to the right diameter, then solder it.

Cut the two cans to go over the coil and distributor, making holes in the tops of the cans for the wires. Make a dozen or so cuts up the side of the can so it can be squeezed tightly onto the coil and distributor with a hose clamp. Clean the paint off the coil where the can fits. Be sure to get the can far enough down over the distributor to reach the metal. You will probably have to cut it to fit around several things on the outside of the distributor, like the vacuum assembly and the low voltage wire.

The half-inch braid is formed into a hollow tube and soldered to the hole edges that were turned up on the tops of the cans. Don't forget that the wires and plug boots are going to have to go through the braid and holes, so be sure to make them big enough. When you are all finished you will have a metal octopus that will completely eliminate all ignition noise, if you've used good solid braid.

Once the ignition monster is beaten all you may hear is alternator whine, which may go out over the transmitter too! Batteries are a big capacitor, but not that big, so something must be done. The easiest thing (I always take the easy way first) is to run a separate power lead to the battery. Use a piece of coax and go directly to the battery with both sides. Connect the shield to the ground side and the center to the hot side through a fuse. I just use a big lug over the clamp nut with another nut on that to hold it.

If you have a GM car with regular battery terminal clamps, you have a problem. Get the power line as close to the battery as possible. On one car that had clamp-on battery leads I drilled the battery terminals and put the power lead on the top of the terminals with a sheet metal screw. That will cut the noise to the radio quite a bit.

The sound insulation on the inside of the fire wall is held on most cars with rubber things like a big bolt. They are pushed through the insulation from the inside of the car and can be seen in the engine compartment. They are about 3/8 inch in diameter and are hollow. They have holes in them just the size of RG-58. Just cut the end off one in the engine compartment and

fish the coax through it. Lacking that neat feature, you can usually get a line through alongside the fire wall connector. If you can't find a cooperative connector it's time to get the drill and rubber grommets out.

All that work may still leave a lot of alternator whine. Since it's an AC source that has to be rectified, the way to eliminate the AC hum is the same as with any power supply. Get a big toroid core and wind through it the wire that goes from the alternator to the battery. That should do it.

Eventually the rain will come, along with more noise when you turn on the windshield wipers! The cure for that noise is feed-through capacitors, all metal, about two inches long and an inch in diameter. Get the kind that have screw terminals on the ends and a lug on the side to fasten them down. They are usually 1/4mF or 1/2mF and the power goes through them. They will all handle 20A or so. One of these will have to be put in each power line to the wiper and probably the ground line too, if it goes back to the switch like mine did. Scrape the paint from underneath them where they are fastened to the fire wall to ensure a good ground.

About all that leaves is the voltage regulator for the instruments that go tick, tick, tick, and the stuff you can't find, unless you are unfortunate enough to have a mechanical voltage regulator—they regulate by vibrating and can set up an awful racket. Too much noise suppression on them can change the way the generator regulates. Some bypass capacitors will generally take care of them. Among sources you won't be able to find will be the exhaust system, which is about a quarter-wavelength on 10M and makes a fine antenna for noise from the ignition system. Ground it near the far end. Car bodies are rubber mounted and often are not too well grounded; you may have to run ground straps from one body part to another and from the body to the frame. Sometimes engines are not grounded either, except by accident. They always go back to the negative battery terminal, but that may not be too well grounded to the frame and body; one small wire for a DC ground for the lights, etc. doesn't always make a good noise ground.

Sometimes in dry weather you will hear static build up arcing to the ground from the tires. You can, with luck, get conical springs to put in the front wheel hubcaps to ground them to the axle, and conductive powder to put in the tires to help ground them, or you could drag a ground strap. That should do it. If it doesn't, then go bicycle mobile!

WR

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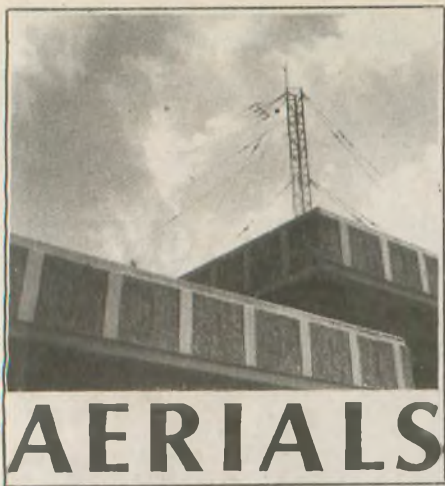
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KURT N. STERBA

It has been brought to my attention that some are disturbed by my way of approaching things. It seems my manner offends the sensibilities of the truly cultured.

I shall be more genteel. Instead of disemboweling those whose dB claims must be dBlc (gain over a lawn chair) I will seek rapprochement. I shall counsel with them and suggest that they are misguided when (as recently forwarded to me) a convoluted metallic structure claims 6dB gain.

My critics are correct. To aid me in my new-found path of tranquillity, I have been studying ballet and flower arranging. Kindly address your future letters to Mr. Kourteous.

Let us turn to some responses which have come in: the authors of each will receive the proffered prize, an MFJ noise bridge.

Dear "Kurt":

I guess I have seen it all! Your latest column with the manufacturer's gain explanation really ties the rag on the bush—forgive my cliché.

What in the heck are they talking

about? Gain increased by height? Maybe one of their engineers (?) read somewhere that some DX locations are better than others and tied it to height. But gain, *measurable* gain? Come on!

Gain of reference source? What in the heck is that? Maybe they mean the gain of their antenna over their—and I emphasize "*their*"—reference source.

You don't say, but I am assuming the antenna in question is two stacked 5/8-wave single verticals and they are speaking of omnidirectional gain. The gain of a 5/8-wave single vertical is 3.3dB over an isotropic, or slightly more than a single dB over a half-wave vertical. I would assume that the 6dB gain for two 5/8-wave would be relatively close to correct compared to an isotropic. Unfortunately for amateurs we don't use isotropics; ever try to build one? Anytime I see dBi (dB gain over an isotropic) in an advertisement I instinctively cringe because I know the manufacturer's salespeople are less than honest.

Lastly, but really firstly from that quote, for your readers, there is gain for a quarter-wave over an isotropic—very slight... less than a dB—but nonetheless there is gain. I think whoever wrote that piece more than likely got the 3dB figure (for raising an antenna) from gain achieved by doubling antenna array size, and misunderstood. Not to say he or she started with much understanding.

I remember back in the 50s when Buchanan first invented the triband trap beam. Several manufacturers got into the act, making all kinds of outlandish gain claims. I had an opportunity to get involved with actual range measurements on these beams and one, who will remain nameless, actually checked out at -2dB forward gain on 20! We figured we were in error so we tried two more of the same antenna—with the same results. That particular company was claiming 10dB gain over a dipole. This was part of the reason the

ARRL called a stop to gain advertising. Lot of good it did.

P.S. No need to send me an MFJ noise bridge—I have one. I write simply because I like what you are saying.

Lew McCoy, W1ICP
Silver City, NM

Dear Kurt,

After you read this letter you, like I, will finally know the elusive answer to the dB game.

After agonizing over the claims for 9dB, 3.4dB, 10dB, ad-nauseam for the past 10 years or longer (who knows really how long because at my age the memory is the first thing to go, they say), I have finally figured out what they are talking about. Oh, it took the help of the ecologists in California to do it, but here is the scoop.

Let's use the antenna for which you have the company figures as an example. By the way, I called them and got the same figures, so I know you aren't trying to pull the fleece over my eyes. You start with two 5/8 waves, one above the other, that sticks up in the air about, oh, maybe 94 inches. Next you raise that up 19 inches or so for your first quarter wave. Then you attach a loooong hunk of feedline; remember now, you have to keep raising this antenna up in 19 in. intervals so you can accurately calculate the gain in dBs.

Now raise that sucker up as high as ya can; according to the engineers at that antenna company that is going to add 3dB gain every quarter wave you raise it. Now, stand back and wait for your dBs to start showing up! Oh! Wait, I forgot to add the 2.7dB reference source gain. Well, we are just going to have to ignore that because the poke weed berries are all gone now and the birds are no longer eating them. That's okay though, we have the antenna up high enough to compensate for the reference source loss in our system.

By now you, as well as the rest of the readers, know the true meaning of "dB." Of course, how foolish of us, it really stands for "dead birds." The higher that you put any antenna, or any perch, the dizzier them birds are going to get, and the more will fall off and be killed. Just like the reference source sited earlier, the more poke weed berries the birds eat, the dizzier they get, and the more fall off the fence posts and get killed. I figured this all out when I read an article about how the environmentalists wanted the state of California to shut down their wind turbine generators because of the number of dead birds found around the bases of them. We all know how high those things stand in the air; wow, they must have a gain of at least 1000dBi (that's "dead birds indeed").

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You must forgive an old nut's ravings, but I did spend a few years as a chief engineer in broadcast radio and I do know that you can't get something for nothing. That is why the dB in the antenna ads has to, beyond any doubt, refer to the number of birds that you can wipe out with your antenna installation.

If you think back you will remember that the real big dB race started about when CB radio exploded into the writhing mass of noise that it is today. They only had 5W to work with so they had to make bigger and better antennas, and as everyone and their second cousins were making those antennas, they had to turn to the staff at Madison Avenue to learn how to sell more of them. Now, think about the new "no-code" ticket. It has exploded in popularity. . . get the drift?

If I were a CBER turned ham, I would hunt those suckers down and do them in for insulting my intelligence. First CB antennas, now 2M antennas; what's next?

**Fred Peerenboom, KESTQ
Dayton, OH**

Mr. Sterba,

Call me an incurable traditionalist but when someone says "gain" or dB I always wonder, "relative to what?" The dbi "bottom line" means (I guess) that we agree to refer to an isotropic radiator in free space. Apparently, your test procedure involves measuring performance against a reference antenna with a gain of 2.7dBi. I can't help but wonder what that might be or how it might have been determined, but it's your reference antenna. No doubt you got it right.

Let's also assume there is some way to arrange two 5/8-wave elements to produce gain of $6.0 + 2.7 = 8.7$ dBi (a turbocharged, ported and relieved, bored and stroked phased array with racing stripes, perhaps?).

This brings us to "system gain increased by height." What a concept! My elliptical aperture (crushed top) #10 slotted coffee can antenna might have a future after all!

Inspired by your analysis, and despite initial gain well under 1dBi, I improved the "design" dramatically by first installing it at 1mm above a reference datum (the floor of the shack, actually) and then elevating it in 11 discrete steps, each equal to the previous height, to achieve a mounting height of just over 2M. The "calculated" gain increased by 33dB! I would have actually tested this but became concerned

Cannibal: "We are having a ham for dinner."

about radiation burns. Why stop at a paltry 10.2dBi? Conservative marketing policies, I suppose.

The greatest improvement however, capitalized on the "system gain" concept. I re-engineered the elliptical aperture #10 slotted coffee can antenna so that it could be "fabricated" from two used plastic milk bottles. The "installation system" involved hanging it from the driven element of a 10-element Yagi. With careful feedline placement, your 10.2dBi was easily exceeded. It appears possible to obtain another 10.2dB by assuming the "system" to include a similar antenna at the other end of the path.

Imagine . . . avoiding the cost of buying a high-gain antenna by building one, mostly from trash, in an afternoon (or maybe that's: high-gain trash avoided, mostly, this afternoon by not buying your antenna).

**Ed Farmer, P.E., AA6ZM
Sacramento, CA**

(Sterba, wearing his saffron robe and sandals, eschews all recognition, thus his nom de plume. Those with an inner peace need not what small measure of celebrity status that would come from his modest efforts.)

WR

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AO, YOC, and NEC/Yagis require a math coprocessor; MN and YO come with both coprocessor and noncoprocessor versions. All programs include extensive documentation. Inquire about commercial licenses. Add 7.25% CA, \$5 overseas. Visa, MasterCard, U.S. check, cash, or money order. For IBM PC, 3.5" or 5.25" disk.

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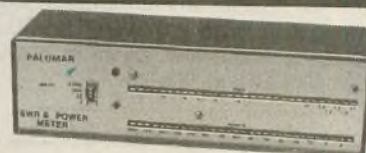
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California

THE NAVAL POSTGRADUATE SCHOOL ARC is holding the fourth annual Winterfest on 16 January from 8 a.m. to 1 p.m. at Monterey Peninsula College Armory. Features include demonstrations, commercial vendors and tailgate market. Indoor vendor space \$10, outdoor tailgate market space \$5. Talk-in on 146.97-. Contact Doug, KC3RL, 9 Glenn Ave., Prunedale, CA 93907; 408/663-6117, or Pat, KA6IRS, at 408/649-4444, ext. 20, days only.

Florida

THE SKY HIGH ARC is holding the 13th annual Citrus County Hamfest and Computer Show on 23 January from 8:30 a.m. at the National Guard Armory in Crystal River. Features include free parking, self-contained RV parking, tailgate spaces and door prizes. Admission is \$4 until 9 January and \$5 thereafter. XYLs free with OM. Indoor tables \$15 each, outdoor spaces \$8 each. Vendor set-up times 3-5 p.m. Friday and 7-8:30 a.m. Saturday. Talk-in on 146.355/955. Contact Billy, WE4C, SHARC Hamfest, 8811 Maplewood, Inverness, FL 34450; 904/726-2905 10 a.m. to 9 p.m..

Louisiana

THE SOUTHEAST LOUISIANA ARC will sponsor the 1993 Hammond Hamfest on 16 January from 9 a.m. to 4 p.m. at the SLU University Center. Features include MARS, ARRL and QCWA meetings, door prizes and VE exams. Admission is free. A limited number of free swap tables are available. Commercial vendors may set up Friday afternoon. Contact Ernest Bush, N5NIB, 331 Rock Road, Hammond, LA 70403; 504/567-1261 days, or 504/542-0034 evenings.

Missouri

THE MISSOURI VALLEY ARC, GREEN-HILLS ARC AND RAY-CLAY ARC will sponsor the third annual Northwest Missouri Winter hamfest on 16 January from 9 a.m. to 4 p.m. at the KMRN Tri-Rivers Expo Hall. Features include major exhibitors and all-indoor flea market, concessions, free parking and VE exams. Admission is \$2 each or three for \$5 in advance, or \$3 each or two for \$5 at the door. Swap tables \$9 each for the first two tables. Contact Northwest Missouri Winter Hamfest, P.O. Box 182, Cameron, MO 64429.

Michigan

THE SOUTHFIELD HIGH SCHOOL ARC is sponsoring their 27th annual Hamfest/Electronics/Computer Swap and Shop on 17 January from 8 a.m. to 3 p.m. at Southfield High School in Southfield. Admission is \$4. Eight-foot tables may be reserved in advance for \$15 each. Vendor set-up time is 6 a.m. Contact Robert Younker, Southfield Senior High School, 24675 Lahser Rd., Southfield, MI 48034; 313/746-8675.

New York

THE METRO 70cm NETWORK is sponsoring an electronic flea market on 17 January from 9 a.m. to 3 p.m. at Lincoln High School in Yonkers. Features include ham gear, computers, refreshments, hourly prizes, free coffee, free frequency checks, free parking, and VE exams. Admission is \$4, XYLs and kids free. Vendor tables \$15 for first table, \$10 each additional table. \$1.80 per foot for your table, minimum \$10. Vendor set-up time 7 a.m. Talk-in on 440.425, 445.425T, PL 156.7 MHz; 146.910R 146.310T; 223.760R/222.160T, PL 67.0. Contact Otto Supliski, WB2SLQ, 53 Hayward St., Yonkers, NY 10704; 914/969-1053.

Ohio

THE TUSCO ARC is holding a hamfest on 31 January from 8 a.m. at the Ohio National Guard Armory in Dover. Admission is free. Tables \$8 each. Vendor set-up time is 6 a.m. Talk-in on 146.730. Contact Howard Blind, KD8KF, 6288 Echo Lake Rd. NE, New Philadelphia, OH 44663; 216/364-5258.

Tennessee

THE TENN VALLEY ARN will hold its third annual Mid Tenn Hamfest and Packet Conference on 23-24 January from 8 a.m. to 4 p.m. Saturday and 8 a.m. to 2 p.m. Sunday at the Gallatin National Guard Armory. Vendor set-up times are noon to 5 p.m. Friday and 5-8 a.m. Saturday. Talk-in on 145.13-, 147.30+ and 442.600+. Contact Bill Ferrell, TVARN, 1120 Douglas Blvd., Gallatin, TN 37066; 615/452-3962.

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Contests

Vermont QSO Party

Sponsored by the Central Vermont Amateur Radio Club (W1BD), the party will be from 0000 UTC 5 Feb. until 0000 UTC 6 Feb. All licensed amateurs invited to participate. The Central Vermont ARC and the Burlington ARC (W1KOO) will be multipliers for this event.

Operation: A station may be worked twice per band; one phone contact and one other type mode per band.

Suggested frequencies: Phone-160-10M. First 25 kHz up from the beginning of General phone band privileges and Novice phone 10M privileges; CW-40 kHz up from the bottom edge of the bands and 20 kHz up from the bottom of Novice bands; other modes in usual area of all bands.

Exchange: Exchange signal report and QTH (county for VT stations; state/province/DXCC country for others); CW two-letter designators as follows: AD, BN, CL, CH, ES, FR, GI, LM, OG, OL, RT, WA, WM, WR.

Scoring: Count one point for phone QSO and two points for other mode QSOs. Multiply by number of Vermont counties, states/provinces/countries, W1BD and/or W1KOO QSO(s); other stations count one point per Vermont phone contact, two points per Vermont CW, digital or ATV contact. Multiply by number of VT counties and W1BD and/or W1KOO QSO(s).

Awards: Vermont stations submit-

ting a log will receive a special 30th Anniversary QSO Party certificate. Plaques will be awarded to the three highest scoring Vermont stations. Other stations receive special certificate for highest scoring station in each state/province/country. The WVT Award is given to stations working 13 of Vermont's 14 counties.

Logs: Send logs/facsimiles, name, address, call, whether single or multiplier, postmarked no later than 1 March 1993, to: Bob DeForge, K1HKI, RR#1 Box 271, Brookfield, VT 05036. Also send an SASE for contest results.

YL-ISSB QSO Party

Dates and times: CW-0001 UTC 6 Feb. through 2359 UTC 7 Feb. 1993. Phone-0001 UTC 13 March through 2359 UTC 14 March 1993.

Categories: Single operators, DX-W/K Partners and YL/OM teams.

Exchange: Call, name, QTH, ISSB #, DX/US Partner, YL/OM teammate. Log info same as exchange, plus date, time and band. Indicate two 6-hour rest periods.

Scoring: Three points for two-way member contacts within the same continent; six points for two-way member contacts if different continents; one point for non-member contacts.

Multipliers: Only member stations count as multipliers. One for each of the following: working both DX-W/K partners; each YL/OM team; each US state;

Canadian Province; DX country and each VK, ZL call district. Five for running barefoot (200 watts PEP or less input) throughout the party.

Frequencies: Phone-10M 28.565-28.588; 15M 21.365-21.388; 20M 14.275-14.299; 40M 7.273-7.288; 75M 3.873-3.883; check 40/75M on the hour; CW-50-60 kHz up from the bottom.

Awards: Special certificates to top scorer in each category; regular certificates to top scorer in each US call district, VE Province and DX country; certificate to top combined CW and phone score.

Logs containing contact info plus ISSB numbers must be received by 30 April 1993. Address all questions, comments and entries to: Fred Kujawa, KØETA, RR 4 Box 213-6, Stockton, MO 65785.

QSL ZF2RC

Howard Phillips, N6DEC, informed us of his plans to operate from Grand Cayman as ZF2RC on 9-16 December. His operations were to be 10M contests and SSTV. QSL via his *Callbook* address, N6DEC.

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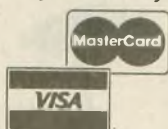
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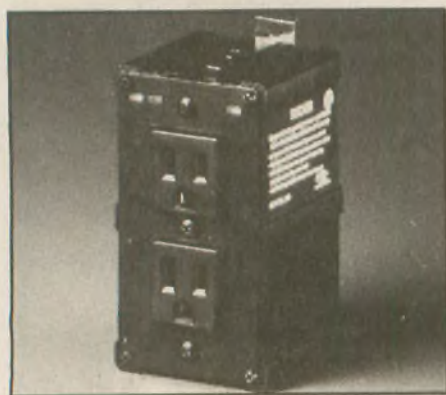
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Information in "New Products" is supplied by the manufacturers to acquaint *Worldradio* readers with new products on the market.

Tripp Lite suppressor

Tripp Lite's new TMC428 is a premium quality surge suppressor that features built-in diagnostic indicators to pinpoint power and wiring problems. The TMC428 is ideal for packet radio, protecting computers and other sensitive electronic gear.



The TMC428 has a direct plug-in design with two surge protected and noise filtered AC outlets. Sine wave tracking provides the fastest, most accurate surge suppression available.

Separate multi-color LED indicators display AC power present, power protection circuitry status and wiring faults, such as phases reversed, missing ground, or other wiring errors. The TMC428 is covered by the

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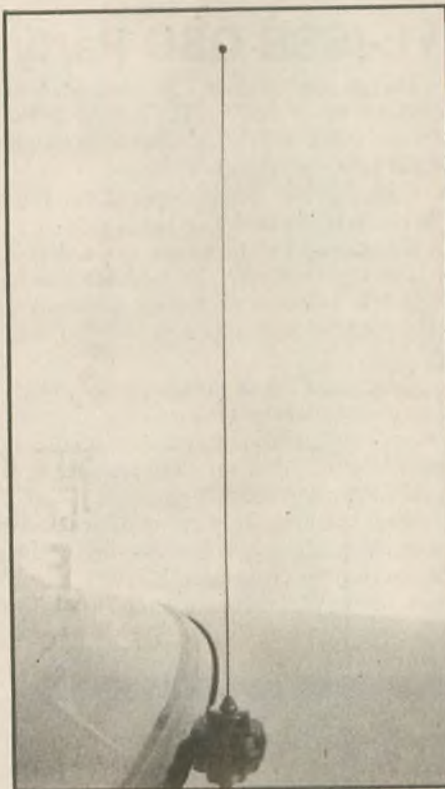
Lifetime Gold Seal Warranty. Tripp Lite will repair or replace *both* the TMC428 and connected equipment if damaged by a surge, for life.

Housed in a durable metal case, the TMC428 provides superior noise filtering with surge suppression up to 13,000A spikes. The TMC428 is UL 1449 listed for 330V let-through, UL's best rating.

The TMC428 has a suggested retail price of \$59.95. For more information, contact Tripp Lite, 500 N. Orleans, Chicago, IL 60610-4188; 312/329-1777.

Trionics mobile whip

Trionics introduces a new trunk lid antenna mount and quarter-wave whip antenna combination. Model TLM-W provides the amateur with a low-cost, good quality mobile



antenna combination that can be used on most cars.

The metal mount has a black plastic cover and rubber gasket to protect the vehicle finish. The mount is compact, measuring just slightly over 2 x 2 inches, and has 18 feet of RG 58/U feedline with your choice of PL259 type or BNC plug termination (also available in TNC and mini-UHF for cellular). The black whip has instructions to cut to length on any frequency from 118 to 512 MHz. Mounting and allen set screw wrenches are also included with the mount.

The TLM-W trunk lid mount with quarter wave whip antenna is priced at \$25. Mail or telephone orders can be placed directly with Trionics at 916/366-7408; or write to P.O. Box 1434, Rancho Cordova, CA 95741-1434 (CA residents add sales tax). Also look for this and our other products in your favorite radio store.

Microcraft Shortwave decoder

Microcraft Corporation introduces *Personal Code Explorer*, the new shortwave radio code processor for your IBM compatible computer. Powerful software and hardware combine in an exciting new product that reads Morse, RTTY, ASCII, SITOR/AMTOR, HF packet, and multi-level grayscale FAX signals to your computer screen.

Personal Code Explorer untaps all of the power of your computer to provide more features per dollar than ever before. Exclusive highlights include a real time on screen oscilloscope to observe signals, digital noise filters, Microcraft Morse code algorithms, a friendly user interface and more!

Personal Code Explorer's hardware installs easily on your serial COM port and does not need a separate power supply. No need to open your computer case either. Hookup to your radio speaker or headphone jack is easy. *Personal Code Explorer* supports CGA, EGA/VGA video and requires DOS 3.0 or above. It runs from a floppy or hard disk. Clear, comprehensive manual is included. Exploring code has never been so easy—or so much fun! Price is \$129 plus \$4 for shipping and handling. Write or call for free brochure or order factory direct: Microcraft Corporation, P.O. Box 513, Thiensville, WI 53099; 414/241-8144.

HamCall CD-ROM

The new *HamCall* CD-ROM from Buckmaster now contains international listings of Amateur Radio operators worldwide. A recently completed canvas of worldwide licensing sources has yielded the most current collection of listings available in this format. Several country listings are pending settlement of political boundaries and will be included on subsequent CD-ROM updates (October and April of each year).

The new CD-ROM also has almost 100,000 cross-references from old calls to new calls. The US alone has nearly 550,000 listings including clubs, military and RACES plus classes of US amateurs.

In addition to call sign, name, address, license class and expiration date plus birth year data, the CD-ROM has nearly 6,000 public domain program and data files. Thousands of new programs on this disc

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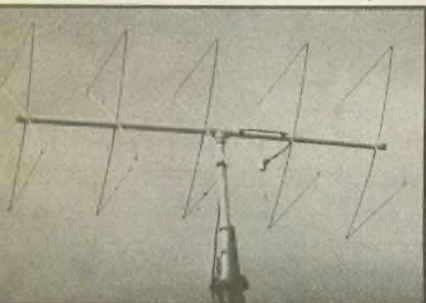
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clone! Many of these public domain items are real gems that rival the best commercial software. Both IBM PC and Apple Macintosh can access the ISO-9660, CD-ROM for call sign look up.

This new CD ROM is available from the publisher or selected dealers (\$50 plus \$5 shipping). Contact Buckmaster Publishing, "Whitehall," Route 4, Box 1630, Mineral, Virginia 23117; 703/894-5777; FAX 703/894-9141; or order toll free, 800/282-5628.

MAX System 2M Quads

MAX System Antennas announces a new line of quads for 2M SSB and FM applications. High gain beam performance is now within the reach of any amateur. The lightweight 3-element and hot five-element beams yield performances normally costing twice as much.



These two antennas are complete—no soldering or adjustments required—just a simple five-minute assembly. They're perfect for Field Day, fox-hunting, mountain topping, etc., or permanent base station installations.

The broad-banded design permits serious SB DXing and demanding FM work with a single antenna. Constructed with lightweight VC booms and stiff fiberglass spreaders supporting pre-tuned one-piece elements, these new quads are rugged and inexpensive. MAX System quads are full-satisfaction guaranteed and may be ordered from Cellular Security Group, 4 Gerring Road, Gloucester, MA 01930; 1-800/487-7539. Prices: three-element, \$39.95; five-element, \$59.95. Add \$4 for shipping in the US.

Panamax surge protector

With CMOS and microprocessors being the life in our ham gear these days we are all aware of the need to provide surge protection. I have installed surge protectors on all of my mid-state gear and IBM clone computers. I rapidly neglected to install good surge protectors on my telephone lines and was zapped! It fried my modem, my computer power supply, and my computer video card.

Don't ask why only those components were destroyed, I have no exact answer. Perhaps the lowest resistance current path to ground. I do know that fortunately I was using the only surge protectors on the market that guarantee to repair or replace (their option), and all equipment protected by their surge protectors. The brand name is Panamax. They are located in California, and for one letter, a diagram of my set-up, and a copy of the repair estimate, I received a check

to cover all damage and a newer model Panamax surge protector that would also protect my telephone lines (no charge). In my experience very few companies can boast an iron clad guarantee like this, and make good on it! I now recommend only this surge protector to my clients (I'm an electronic engineer) and ham friends.

Panamax offers many different models to protect just about any electronic device in the home or business. I recommended that they make a model that will incorporate a lightning arrestor for RG-8 (PL-259) cables and 2 kW of RF. I don't know if they'll come out with one, but it's a thought.

We amateurs spend many hundreds and thousands of dollars on the best gear we can afford. Let's not be "penny-wise and pound-foolish"—use a good quality surge protector and install lightning protection on every line coming into your shack. Could save you a bundle!

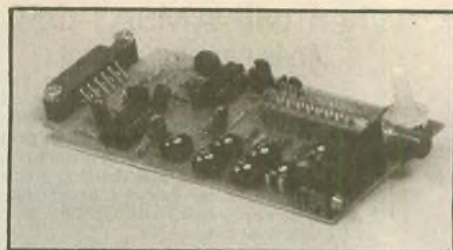
For further information contact Panamax, 150 Mitchell Blvd., San Rafael, CA 94903; 800/472-5555.

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MFJ-1271

MFJ Enterprises, Inc. announces the fastest, easiest, and least expensive way yet to join packet action: the new MFJ-1271 TNC, only \$49.95.


If you have a Commodore 64/128 computer and VHF hand-held or HF SSB transceiver, the inexpensive MFJ-1271 is the only additional item you will need for joining packet



fun. It works great, is low in cost, and it simply plugs into the Commodore's rear cassette port. It works both VHF packet at 1200 baud and HF packet at 300 baud. This is a true high performance modem/TNC with DCD circuit and adjustable threshold control to reduce noise susceptibility and increase your QSO/connect success, especially on HF bands. A DCD LED is included to indicate when you are receiving signals properly. You can't miss, even if you are a packet newcomer!

The MFJ-1271 also sports remote packet operation, mailbox-like message forwarding and Net/ROM emulation, plus much more. It uses MFJ's famous Digicom/64 public software available as MFJ-1293 for \$5. This software is also available from many shareware/public domain software companies.

Here is your ideal solution for getting started in packet action on a low budget! It comes with MFJ's one full year unconditional guarantee. For more information or to order, contact any MFJ dealer or MFJ Enterprises, Inc., P.O. Box 494, Mississippi State, MS 39762; 601/323-5869; FAX 601/323-6551; or order toll-free at 1-800/647-1800.



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VE exam schedules

As a service to our readers, Worldradio presents a feature listing those VE exams, times and locations which are sent to us. Please remember that our deadline for publication is three months in advance. For example, if your VE group is scheduling an exam for September, please have the information to us by mid June.

Worldradio, 2120 28th St., Sacramento, CA 95818.

Please mark the envelope "VE Exams."

List the location, any information examinees should have (advance registration, etc.) and the name and telephone number of a person to contact for further information.

p/r=pre-register

w/i=walk-in

Date	City	Contact	Notes	Date	City	Contact	Notes
Arizona				Nevada			
Feb. 6	Tucson	Joe, K7OPX 602/886-7217	w/i only	Feb. 13	Reno	Don, WS2Z 702/851-1176	w/i
Arkansas				New Jersey			
Feb. 13	West Memphis	Gene, AB5BL 501/739-4029	w/i OK	Feb. 13	Cranford	24-hr hotline: 201/377-4790	
California				Feb. 10	Fort Monmouth	Jerry, WB2GYS 908/532-5354	w/i OK
Feb. 13	Anderson	916/347-0373	w/i OK	New York			
Feb. 7	Chico	W6YKU 916/342-1180	p/r pref.	Feb. 3	Hamburg	Norm, KD2KK 716/824-1148	p/r only
Feb. 13	Cottonwood	Christopher, N6WMF 916/347-0373	w/i OK	Feb. 17	Lancaster	Chuck, WD2AIK 937-3592	p/r only
Feb. 20	Culver City	Walt, KM6MQ 714/373-6077	w/i only	Feb. 6	North Tonawanda	Vern, AA2AC 716/634-5276	p/r only
Feb. 27	Fairfield	Jerry, AA6NO 916/662-0801	w/i only	Feb. 7	Yonkers	Emily, AC2V 914/237-5589	w/i OK
Feb. 2	Fremont	KJ6EP 510/791-6818	w/i only	North Carolina			
Feb. 17	Grants Pass	503/476-7938	w/i OK	Feb. 21	Asheville	Hary, AA2AB 704/891-5481	w/i OK
Feb. 25	Long Beach	W6LRF 714/847-6370;		Feb. 13	Marion	Cecil, WB4UCF 704/724-4007	w/i OK
Feb. 6	Ontario	N6LUH 310/592-1713	w/i OK	Feb. 13	Spruce Pine	David, KK4PW 704/675-9044	w/i OK
Feb. 20	Sacramento	Harry, KM6LO 818/810-0442	w/i OK	Ohio			
Feb. 13	San Jose	Lyle, AA6DJ 916/483-3293		Feb. 6	Cincinnati	Herb, WA8PBW 513/891-7556	w/i OK
Feb. 13	San Pedro	AA6IY and KG6XF 408/255-9000		Oklahoma			
Feb. 20	Stockton	Elvin, N6OYZ		Feb. 19	Pawhuska	KY5J 918/337-4335, or WT5Z 918/287-3665	w/i OK
Feb. 27	Vacaville	Ed, N6XMA 209/952-5996	w/i only	Oregon			
				Feb. 10	Medford	503/488-2691	
				Pennsylvania			
				Feb. 6	Erie	W3CG 814/665-9124	w/i
				Feb. 20	Hermitage	WM3H 412/347-5960	w/i OK
				Feb. 4	Philadelphia	ND3Q 215/482-0386 or 215/879-0505	p/r pref.; w/i OK
Colorado				Rhode Island			
Feb. 8	Boulder	Barbara, N0BWS 303/530-2903	p/r pref.; w/i OK	Feb. 11	Providence	NN1U 401/231-9156 or 401/454-6848	w/i OK
Feb. 20	Westminster	AA0BZ 303/421-2795; 310/325-2965	p/r pref.; w/i ltd.	South Carolina			
				Feb. 20	Columbia	Ray, N4WR 803/345-3373	w/i OK
Connecticut				Tennessee			
Feb. 20	Gales Ferry	Linda, WM1Q 203/449-0732	w/i only	Feb. 8	Blount County	Carroll, W4PCA 615/982-5839	w/i OK
Feb. 28	Milford	NB1M 203/933-5125; WA1YQE 203/874-1014	w/i	Feb. 6	Henry County	Mackie, AA4YF 901/247-5489	w/i OK
				Feb. 14	Jasper	Charles, KD4XX 615/942-5116	p/r pref.
				Feb. 13	Johnson City	Charles, AC4QF 615/743-5144	w/i OK
				Feb. 6	Knoxville	Ray, N4BAQ 615/688-7771	p/r pref.
				Feb. 13	Memphis	Win Guin, W2GLJ 901/754-4552	w/i OK
				Feb. 13	Roane County	Richard, AA4KS 615/354-4281	w/i OK
Florida				Texas			
Feb. 20	Melbourne	WB9IVR 407/724-6183	w/i OK	Feb. 9	Houston	ND5F 713/464-9044	p/r pref.; w/i OK
				Feb. 13	Houston	Jim, KB5WAM 713/486-2032	
				Feb. 13	Midland	KT5G 915/694-9450	w/i OK
				Feb. 27	San Antonio	K5JWK 512/657-1549	w/i
Georgia				Virginia			
Feb. 27	Dalton	Bert, N4BZJ 404/673-2214	p/r only	Feb. 2	Roanoke	Fred, KZ4Y 703/366-6266	w/i OK
				Feb. 27	Vienna	Ron, WO2L 703/620-1727	w/i
Idaho				Washington			
Feb. 13	Boise	Lem Allen, W7JMH 208/343-9153	w/i OK	Feb. 27	Bremerton	Dave, AA7IA 206/698-9205	w/i
Illinois							
Feb. 20	Loves Park	Paul, WB9HGZ 815/987-6754	p/r; w/i				
Feb. 13	Oak Forest	David, NF9N 708/448-9432	w/i OK				
Indiana							
Feb. 20	New Albany	Dick, K8GVU 812/246-6377	w/i OK				
Feb. 9	New Carlisle	219/654-3007; or KK9T 219/654-8084	p/r				
Iowa							
Feb. 27	Council Bluffs	Lorraine, AA0BS 712/322-1454	w/i OK				
Maryland							
Feb. 7	Landover	Freddie, NG3G 202/546-9348 or 301/773-2898					
Feb. 19	Laurel	WB3GXW 301/572-5124 after 6 p.m.	p/r pref.				

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Interferers' psychology

ERIC HOGBERG, W4TAH

I thought that I would be able to write something about jammers and interferers and keep it light, funny and readable. The more I worked on it the more I was convinced that it's impossible to make it sound funny. It's just not a funny subject.

What makes a person interfere or start to jam? Believe it or not, some people don't need a reason to do it. Psychologists tell us that it's possible that some of these individuals are mentally ill and are seeking attention. They want someone to help them. There's nothing funny about that.

Then there is the person who gets mad at you for taking his favorite frequency. At least he has a reason. He feels that the frequency belongs to him and his buddies, because everybody knows they get on the air each day on that frequency. He turns on his station and gets ready to go on the air with his buddies and finds you on his frequency. Something snaps and instead of asking you politely to move, or listening to see how long you are going to be engaged in your QSO, he starts to boil. He turns on the carrier, and tunes up right on top of your QSO. He'll show you.

He turns it off and listens for you to move. When you don't move or quit your QSO, he starts ranting and raving right on the frequency, telling you about your ancestors. Naturally, he

doesn't sign, that's so no one will know who is doing the jamming. He's too smart to do a dumb thing like that.

You ignore him and he gets so mad that he turns his radio off, cussing under his breath. Or he hears one of his buddies ask you to move because they have a net on that frequency.

You move up five and it suddenly dawns on him, all his buddies know his voice and that he has lost his cool. He doesn't have guts enough to face the ribbing that his buddies will give him, so he closes down his station. Either way he loses his air time.

Maybe he decides to get brave and he tells his buddies how you were on the frequency and he chased you off. His bravado gradually leaves him as his buddies kid him about the big bad jammer.

You don't even realize it, but you have become his enemy. He knows your call, you don't know his and he's going to get you for making him look bad in front of his buddies. The more he thinks of it, the madder he gets.

Two weeks later he hears you, you're not even on his frequency, and he starts to harass you—snide remarks, catcalls and some choice words, a little carrier, some whistling and what have you. The sad part is that when someone tells him he is interfering, his thought is: "You asked for it."

He doesn't even feel he is doing anything wrong. He's teaching you a

lesson for getting on his frequency and making him look bad in front of his buddies.

As you continue your QSO and ignore him, as though he isn't even there, he becomes more abusive, turns the linear on, starts screaming and after 15 minutes has vented some of his anger. He checks the frequency and everything is quiet.

He doesn't know you moved your QSO 15 minutes beforehand. He has shown you and he's happy as the doorbell rings.

His buddies don't miss him at first. After a couple of weeks, one of his buddies says his wife had put him in the hospital. Something about a nervous breakdown or something.

Then there is the one who hears someone saying something with which he doesn't agree. It really doesn't matter what it is about.

Rather than tune off the frequency, he decides that he will disagree by showing the guy what his chicken-call sounds like. So his horrible chicken cackling permeates the air.

He doesn't realize that most of the QSO can be heard right through it.

The next day, the noise attracts a whistler. This one can't even carry a tune in a bushel basket. When he's trying to whistle Dixie, a southern drawl comes on saying, "Must be a Yankee, that stinks."

Next day, a carrier joins in. By this time the growing noise around the frequency has everyone joining the party. Tape players playing white noise tapes, broadcast tapes and reproductions of the QSOs on the frequency all join in.

At times the noise stops and someone says, "You're splattering down 10 kHz." As if someone should cut back on the gain.

The next evening, those individuals who were in QSO originally don't show up. Does this stop them? Heck no, everyone is having so much fun, they do it just to be doing it. They don't even care about the rest of the world.

It's as if they are forced or compelled to do their thing, without regard for anyone. Gradually, one by one, they stop showing up on that frequency. You say thank goodness, they are through with their foolishness and start to tune for some DX or a QSO.

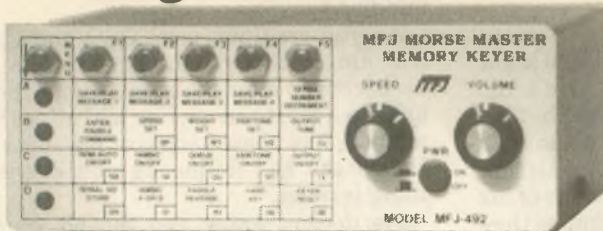
What do you find? You guessed it. No matter how I try, I can't seem to find jammers funny. —Florida Skip

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Happy New Year!

MFJ Menu Driven Memory Keyer™



MFJ-492 MFJ's new *Menu Driven* Memory Keyer™ lets you immediately enjoy your MFJ-492 without reading an instruction manual -- there's no keypad, no complex sequences, nothing to remember.

You simply select a menu by pressing a button. An LED lights to show you which menu is active. You select a feature by pressing a feature button. It's as easy as using a computer touch screen! Each menu is clearly printed on the front panel -- there's no confusion.

From the menu you can save and play messages . . . decrement serial numbers . . . set speed, weight, sidetone . . . enter iambic, semi-auto, handkey, message queue, paddle command modes . . . turn on/off sidetone, transmitter tune, keying output on/off . . . select iambic A or B, reverse paddle, Morse trainer and store starting serial number.

You can bypass the menu by keying in simple two letter commands.

When you select a feature the keyer tells you its status in CW.

Memory expandable to over 8000 characters

You can expand the MFJ-492 standard 192 characters in four soft sectored message memories to over 8000 characters in eight message memories by simply plugging in the MFJ-80, \$14.95, Memory Expansion Kit. Memories backed-up by lithium battery.

Smooth Speed Control

Matching your CW speed to a QSO is best done by ear. The MFJ-492 lets you match speed by turning a knob or by using MFJ's Analog Set™. In this mode, pressing the dot or dash paddle smoothly increases or decreases speed from 5 to 100 WPM. You can also customize the range of the speed knob for precise control.

MFJ Super Menu Driven Memory Keyer™/Keyboard



MFJ-493 You get all the features of the MFJ-492 plus these . . .
\$139.95 ★ You get 32,000 characters of memory.

★ **Plug-in** a standard IBM compatible 101 AT type keyboard and you have an extremely powerful full featured standalone keyboard keyer. All commands, functions and memories can be done through the keyboard. Plus you get additional message memories and features.

★ **Built-in** serial port lets you combine the power of your computer with the MFJ-493. Use your computer to compose, build and store a complete library of often used messages, generate custom code practice sessions and exams and download to MFJ-493, control your keyer, automatically set up keyer for different operators during contest, display, edit and save message memories and keyer settings.

Powerful Morse Code Trainer

A powerful Morse code trainer lets you practice or teach code in Farnsworth or normal mode.

You can select letters, numbers, punctuation marks or prosigns or any combination for practice. You can use standard 5

character groups, more realistic random 1 to 8 character groups or select specific six character sets to work on.

You can instant-replay a random session to check your copy.

You can store custom code practice sessions in memory for later replay.

Here's what you can do with Message Memories . . .

Message Repeat™ lets you repeat messages continuously. You can also insert pauses within a message. This lets you call

Menu Driven Memory Keyer/Bencher Paddle Combo

MFJ-490 The best of all CW worlds -- nearly all the features of the MFJ-492 *Menu Driven* Memory Keyer in a compact configuration that fits right on the Bencher iambic paddle! You can buy the combination or just the keyer for your Bencher.

\$164.95 You get message memories, Morse trainer, sidetone, automatic serial numbering -- plus more. 5x3x5½ in. Uses 9 volt battery, 12 VDC or 110 VAC with MFJ-1312B, \$12.95. MFJ-490, \$164.95, Keyer/Bencher Combo. MFJ-490X, \$109.95, Keyer only. Memory expansion kit not available.



CQ, listen for an answer and then resume calling CQ by pressing a single button. Each pause can be up to an hour -- it makes a perfect Automatic Beacon.

Message Call™ calls other messages and **Message Queue** plays messages in sequence. You can store QTH, rig, weather and other information in separate message memories and play these in any sequence you want!

Message Edit™ lets you correct mistakes while recording a message -- you don't have to start all over if you make a mistake.

While you're playing a memory message you can break-in at any time and insert comments from your paddle and then resume playing your message.

You can insert commands within a stored message. As you play it back, these commands will execute. For example, you can insert automatically incrementing serial numbers, replay messages continuously, call and play other messages, insert pauses or combine all these in one message!

When you play your messages back, automatic word and character spacing make your CW sound like perfect code. Or you can adjust the spacing for a more distinctive individual sound that DX stations will notice.

Plus more . . .

You get contest serial numbering (0-9999) with auto-increment. You can send an N for 9 and a T for 0 to save time.

MFJ's *Analog Set™* lets you adjust speed, weight and sidetone just as smoothly as a knob -- dot/dash paddles are used as an up/down control.

You get built-in sidetone, speaker, front panel volume control knob and adjustable 300-3000 Hz tone.

You can use automatic, semi-automatic bug or handkey modes, reverse dot/dash paddles, select iambic A or B or non-iambic modes.

You can adjust weight from 5 to 95% and compensate for transmitter distortion with a special transmitter compensation feature.

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You can turn off the keying output so you can practice without keying your transmitter or unplugging your keyer.

You get direct and grid block keying. Keys solid state and tube rigs.

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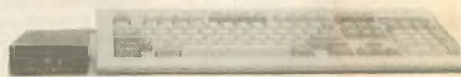
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MFJ-78, \$19.95. Full function Remote Control puts message memories and menu control at your finger tips for real convenience.

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MFJ-451 *Dedicated* CW Keyboard has 200 character type ahead buffer and two 100 character message memories with buffer and memory full indicators. Select features with *One Touch™* function keys. Use *Analog Set™* or type-in Speed (5-100 WPM), Weight (5-95%) and Sidetone (300-3300 Hz). Has speaker. 3½x1¼x3½ inches. Use 12 VDC or 110 VAC with MFJ-1312B, \$12.95. Keyboard supplied may vary from the one shown here.

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