

Worldradio

Year 21, Issue 10

April 1992 • \$1.25

FEATURES

- Adamstown, MD — Simple matching for non radial 5/8 wavelength verticals
- Andover, MA — In defense of the end-fed Zepp
- Edmonton, Alberta — Generic disaster
- Elko, NV — Worldradio predicts
- Hatboro, PA — Mission from Minsk
- Houston, TX — Delightful diversion
- Los Osos, CA — Silent packet revolution
- Midwest City, OK — Pocket forcaster
- Newington, CT — President Wilson, W4OYI
- San Diego, CA — Pioneer stations (OTR)
- San Jose, CA — Young folks and Amateur Radio



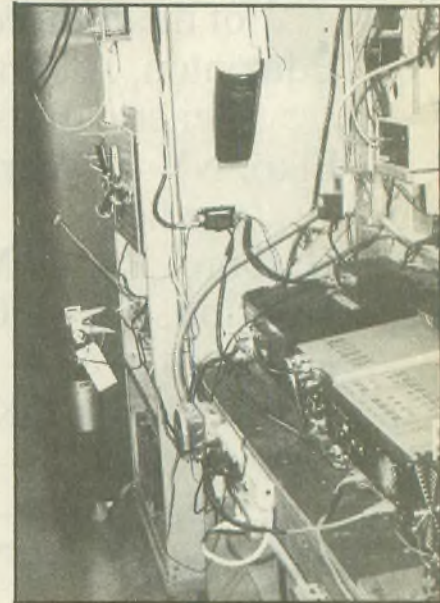
COLUMNS

- Aerials •Amateur Hi •Amsat-Oscar schedule •Amateur Radio Callsigns •Awards
- Construction •Contests •Continuous Wave •Digital Bus •DX Prediction •DX World
- FCC Highlights •Hamfests •Mobile •New Products •Off the Air
- Old Time Radio •Product review •Propagation •Publisher's Microphone •QCWA •QRP
- Search & Rescue •Special Events •Station Appearance •Ten-Ten •VE Exams
- Visit Your Local Radio Club •Visit Your Local Radio Store •YL Roundup

NEW TELEPHONE & ADDRESS FOR SUBSCRIPTIONS:

520 Calvados Ave. • Sacramento, CA 95815

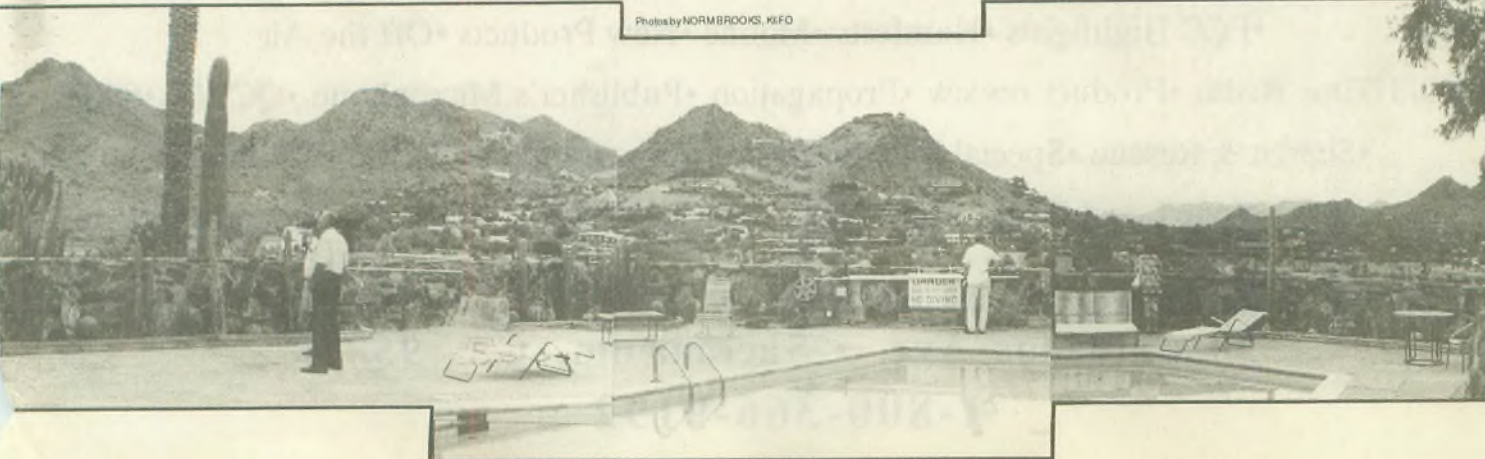
1-800-366-9192



A shack with a view

One of the high points for many attending the Southwest Division convention in Scottsdale, Arizona last October was the opportunity to tour the radio shack of Barry Goldwater, K7UGA. Outside, the panorama features a breathtaking view of famed Camelback Mountain, and inside, all the equipment one could ever need, plus memorabilia collected during Senator Goldwater's long and illustrious career.

Photos by NORM BROOKS, K1FO



Worldradio

Year 21, Issue 10

April 1992 • \$1.25

League president

New officers were elected at the ARRL Board of Directors meeting on January 17. Among one of the most important changes was the election of George Wilson, W4OYI, a civil practice attorney from Owensboro, Kentucky, who has worked through the ranks of the League, serving as vice director, director, vice president, and first vice president. His term as president will run through January 1994. 1994.

Wilson received BA and JD degrees from Washington and Lee University, both degrees awarded magna cum laude. He joined the Wilson, Wilson and Plain firm following law school in 1956 and is a senior partner in that firm. He is 59 years old.

Wilson succeeds Dr. Larry Price, W4RA, of Statesboro, Georgia, who was elected president of the League in 1984. Dr. Price declined to run for reelection to the office of president but will continue to serve as International

Affairs Vice President. "The ARRL has become the single most effective voice for Amateur Radio in the world," Wilson said. "We're a respected presence at the Federal level, among the countries in the upcoming WARC, and by hams the world over. Although President Price's shoes will be difficult to fill, I am delighted that his talent will remain available to the board, especially in the international arena."

The new president stated his goal to continue down several trails which he acknowledged were blazed by his predecessor. Specifically, he aims to continue good relations with the FCC, maintain the current sound financial position of the League, and maintain the professional management structure which the ARRL has developed in recent years.

The former chairman of the board's code-free license study committee in the mid-80s also gives top priority to



George Wilson, W4OYI, of Owensboro, Kentucky, takes office as President of the ARRL.

encouraging new code-free licensees to experience more facets of Amateur Radio. He sees the code-free license as a "way point" in one's amateur career. He proposes some innovative ideas, such as sponsoring such activities as a CW operating event for code-free licensees. "Whatever we do," Wilson said, "we must 'hang the League diamond' on it." —*Information from the ARRL* □



W3FM, UC2AAA and his wife, Lida, and K3JA display a poster depicting the aftereffects of the Chernobyl disaster.

Mission from Minsk

FLAVIUS JANKAUSKAS, K3JA

January marked the second visit of Dr. Larry Pristavko, UC2AAA, with his XYL, Lida, visiting these shores for the first time. On January 13 Harry, W3FM, and I met them at the JFK airport upon their arrival from Moscow. Larry told us that he had just received his new call, UC2AAA, several days prior to his departure and had made 17 QSOs. He was beaming with delight.

We returned to Philadelphia where the pair spent the next two days adjusting to the time lag, then enjoyed a quick trip through historic Philadelphia and a visit to the QTH of W3FM before their departure to travel further south and visit K4RKI.

Larry's mission is to relate the story of Chernobyl and its ecological after-effects for years to come, through his own personal knowledge and ex-
(please turn to page 3)

Finally. . .the amplifier every amateur has always wanted

...the 3K-ULTRA



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

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

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

Henry Radio

2050 S. BUNDY DR. LOS ANGELES, CA 90025 (213) 820-1234
Toll free order number: (800) 877-7979 FAX (310) 826-7790

Mission

(continued from page 1)

perience and through visual aids and tapes, to members of MARCO (Medical Amateur Radio Council) and the amateur fraternity and general public.

I first learned of Larry about four years ago when I was planning to visit his friend UP2BO (now LY2BO) in Lithuania, and received a plea to bring some medication for Larry's heart condition. He was spending time in a sanatorium in Minsk after having suffered a heart attack. I did indeed bring time-release nitroglycerin which eventually reached him. The doctors were so fascinated by the time-release feature that they placed the empty bottles in their museum.

During his visit, Larry explained that he had made radio contacts in the past with Snake Island, 4K5ZI, Vilnius, and Kaliningrad, but always with someone else's call sign. I often wondered why this excellent CW operator did not have a call of his own. It was only after I had a chance to talk with him at length personally that he told me the story of how he had been an active amateur since 1946, but had been blackballed all those years for political reasons; exchanging addresses with LY2BO, which began a longtime friendship, was forbidden in 1947, and QSLing via an address in Bulgaria was also prohibited.

Upon hearing something like this, one has to reflect on the totalitarian system that would prevent someone like Larry from obtaining a license for



Dr. Larry Pristavko, UC2AAA, and his XYL, Lida

46 years, then reflect on the ease with which we obtain a license here in the US. □

It's not just a code violation — it's dangerous

The following is in reference to Al Vayhinger's, W9ELR, article, "What do you mean, no antenna wires on top of the building!" on page 16 of the March issue.

Al said he solved his dilemma by putting the RG58U coax in the same conduit as the 220V power cables. This is dangerous and strictly illegal. It is a violation of the National Electrical Code. Wires and cables of different voltage classes must not be installed in the same conduit. The qualified electrician whom Al mentioned at the end of his article would

have refused to do the work.

If Al had a fire, and it was determined that it originated in the A/C, the insurance may not pay the damages. More importantly, the situation as it is presents a real danger to others in the building. Al could very well wind up with a serious lawsuit.

There may be another violation here also. Al didn't say what size conduit and the conductor size, but the addition of the coax could be an overflow of the conduit.

Amateurs who currently employ a setup like this owe it to their

neighbors to correct this violation at once! Though many amateurs are not aware of it, there is an article in the National Electrical Code which pertains specifically to Amateur Radio installations. Refer to 810C.

—John Minke, N6JM

Happy April Fool's Day!

CONTENTS

FEATURES

- Fixing HW-5400 distortion — 67
- The end-fed Zepp — 12
- Mission from Minsk — 1

- Pioneer ham stations — 66
- Pocket Forecaster — 28
- Young folks and ham radio — 16

COLUMNS

- Advertisers' Index — 83
- Aerials — 68
- Amateur Hi — 37
- Amateur Radio Call Signs — 8
- Awards — 24
- Construction — 67
- Contests — 69
- Continuous Wave — 52
- Digital Bus — 48
- DX Prediction — 45
- DX World — 39
- FCC Highlights — 8
- Hamfests — 71
- MART Classifieds — 79
- Mobile — 50
- New Products — 73
- 10-10 International News — 64
- Off the Air — 34
- Old-Time Radio — 66
- Product Review — 32
- Propagation — 56
- Publisher's Microphone — 4
- QCWA — 58
- QRP — 62
- SAR Communications — 54
- Silent Keys — 38
- Special Events — 31
- Station Appearance — 37
- Subscription. **Worldradio** — 9
- VE Exams — 78
- When will AMSAT OSCAR-13 be in range? — 77
- YL Roundup — 61

ANTENNAS

- Assembled & Ready to Use
- Full Legal Power
- No Traps
- Matches 52 Ohm Coax
- Space Limited (AP Models)
 - Use as Inverted "V"
 - Use in "U" Shape

MULTIBAND ANTENNAS

- Model AP-1 \$52.00 ppd.
 - Covers 80, 40, 20, 15 & 10 Meters
 - 102 feet long
- Model AP-2 \$46.00 ppd.
 - Covers 40, 20, 15 & 10 Meters
 - 51 feet long
- Model AP-3 \$41.00 ppd.
 - Covers 20, 15 & 10 Meters
 - 26 feet long
- Model AP-4 \$64.00 ppd.
 - Covers 160, 80 & 40 Meters
 - 204 feet long

LOOP, TRIANGLE OR QUAD LOOP Built to frequency of your choice

- Model TP-1 80 or 75 Meters \$64.00
- Model TP-2 40 Meters \$48.00
- Model TP-6 30 Meters \$46.00
- Model TP-3 20 Meters \$44.00
- Model TP-4 15 Meters \$40.00
- Model TP-5 10 Meters \$36.00

Shipped ppd. in USA. Send for FREE brochure.

RUDY PLAK — W6TIK
P.O. Box 966
San Marcos, CA 92079-0966



Worldradio

April 1992
Vol. 21, No. 10

TM

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

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

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

Worldradio (USPS 947000) is an inter-
national conversation. You are invited to
participate.

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

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

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

Worldradio is an independent newspaper
not affiliated with any other firm, group or

organization. Its pages are open to all.
Permission is hereby automatically granted
to reprint from this publication with appro-
priate source credit. If there is something
useful, we wish to share it.

Subscription rates: \$14* per year, \$27*
for two years, \$39* for three years and
\$140* for life; *for CA delivery add 7 3/4%
tax; \$10 extra per year for surface mail
delivery outside the U.S. Please remit
international postal money order. IRCs
will be accepted.

STAFF

Editor and Publisher..... Armond Noble, N6WR
Managing Editor..... Robin Wortley, KC6RUD
Associate Editor..... Norm Brooks, K6FO
Ass't Editor..... Brenda Leehe
Consulting Editor..... Lou Ann Keogh, KB6HP
Advertising Director..... Helen Noble
Advertising Mgr..... Rosalie Hernandez
Graphics Director..... Dianne Dunning
Circulation Mgr..... Dorothy Campini

PUBLISHER'S MICROPHONE

With pride we acknowledge those
who had very high SAT scores, became
captains of industry, and to really cap
their careers, became *Worldradio*
Super-Boosters (lifetime subscribers):
Choshi Itoh, Yokohama, Japan
Glenn Carella, N2GOP, Valley Cottage, NY
John Covington, WN4BBJ, Charlotte, NC
L.T. Jones, W8RLW, Trotwood, OH
Harry Deneweth, N8QPG, Eastpointe, MI
Fred Sanders, WA9KUS, Milwaukee, WI
Michael Molenhour, KB9AUJ, Salem, IL
Jack Maus, W0MBD, Cold Spring, MN
Keith Watson, WB9KHL, Santa Clara, CA

We're announcing a modification to
what (among others) George Batch-
elor, KD4FPZ, Sanford, NC, called
"the best deal in Hamland," our pro-
gram in which you, the action people,
request from *Worldradio* the names,
calls, and addresses of amateurs within
your ZIP codes, for the purpose of in-
viting the unknown ones to club
meetings, breakfast get-togethers, and
the like.

Here is the new procedure: Write to
us at 2120 28th St., Sacramento, CA
95818. Tell us which ZIP you want. In-
clude a mailing label addressed to you.
We'll send you the labels and bill you
for five cents per label.

The whole purpose of this is to draw
out those who may need a little extra
encouragement to participate in the
greatness that is Amateur Radio.

Has Field Day gotten away from us?
Has the true purpose been side-
tracked? Some club efforts resemble
the sweepstakes contest, but outdoors!
When in real life are you able to set up
your antennas 24 hours in advance of
an emergency? How often, in true
emergencies, are 60 ft. towers with
five-element Yagis put up?

Other countries also have Field
Days. Many have limits that reflect ac-

tual scenarios—for example, a height
limitation of 30 feet. There is one that
restricts wire antennas to a maximum
of 100 feet in length.

Is it a true drill when a club mobilizes
100 members, each of whom operates
for an hour or two? Why not split the
club in two and have an inter-club
competition?

Are there some possible rule changes
that would make Field Day more rele-
vant to reality? Send your comments
to your ARRL Director.

A letter came in from New Jersey
asking for "More on ways to learn CW.
I'm a Tech and have been trying to
upgrade for over a year. I know the let-
ters, numbers, etc., but can't copy a
QSO."

Answer: There are some very good
CW courses on audio cassettes. Fifteen
minutes a day, *every day*, will soon do
the trick. The best way is, no matter
how difficult, to get on the 80 and 40M
Novice bands and try to make a QSO.
Yes, hours of anguish, but when that

QUARTER CENTURY WIRELESS ASSOCIATION, INC.

25 Years a Ham?
Got A question?
Write
159 E. 16th Street
Eugene, OR 97401

breakthrough comes, and it will, it will
make all the hours spent very worth-
while.

CW will get through when an SSB
signal won't even be heard. Some of the
older, tube-type rigs make great CW
stations at very little expense, and
more companies are coming out with
low-cost CW transceivers. Their small
size makes them great for traveling
and picnic tables.

Letters are coming in from clubs
thanking us for our policy of allowing
anything from *Worldradio* to be
reprinted in club bulletins. Also, we
received thanks for the two dollars that
goes to the club treasury for each
subscription sold by the club. There are
a good number of clubs that participate
in the "Visit Your Local Radio Club"
program and get all the resulting
goodies. Others just can't figure out
the benefits.

Before we know it, Dayton will be
here—indeed, the six-ring circus of
Hamdom. There are seminars for every
interest field. One of the newer groups,
Collins Collectors Club (who put out a
great magazine) will be there. Also in
April is the International DX Conven-
tion at Visalia. Headlining the pro-
gram will be the intrepids who put
Albania on the air.

That's one of the great things about
this avocation... there's no end of
things to do and enjoy.

—Armond, N6WR

Change of address?

If you are moving, we need to know
your new address
six to eight weeks
before the address becomes effective.

FT-5200/6200 Dual Band Mobiles

- **Frequency Range:**
- FT-5200
- 2M: 140-174 MHz RX
140-150 MHz TX
- 70 cm: 430-450 MHz RX/TX
- FT-6200
- 70 cm: 430-450 MHz RX/TX
- 23 cm: 1240-1300 MHz RX/TX
- 32 Memories (16 per band)
- Odd splits on any memory
- CTCSS Encode Built-In
- Dual Receive with Balance Control
- Full Duplex Cross-Band Operation
- Built-In Antenna Duplexer
- Backlit DTMF Microphone
- Automatic 8 Level Display Dimmer
- Built-In Cross-Band Repeat
- **RF Output Power:**
- 2M: 50/5 watt (high/low)
- 70 cm: 35/5 watt (high/low)
- 23 cm: 10/1 watt (high/low)
- **Accessories:**
- FRC-4** DTMF Paging Unit
- YSK-1L** 20' Trunk Mounting Kit
- FTS-22** CTCSS Dual Decoder
- SP-7** External Speaker
- DVS-3** Digital Voice Recorder Unit
- MW-1** Wireless Microphone /Controller

"The FT-5200 is the smallest dual-band transceiver made, and I can mount it anywhere!"

"Yaesu did it again!"



What weighs 5 oz., lights up, snaps off and fits in your pocket?

Don't have the answer? Yaesu does. It's the exclusive removable front control panel of the FT-5200/6200 – the smallest, lowest priced dual-band mobile radios made.

With the use of the optional adjustable control panel bracket kit, you can conveniently mount the "smallest" control panel almost anywhere in your car and mount the transceiver body out of sight. When you leave your car, snap off the 5 oz. front control panel and take it with you. Now your rig's secure. For safer autopatch operation at night, you'll find another Yaesu exclusive – a back-lit DTMF mic. And there's also a built-in antenna duplexer and easy-to-read dual full-frequency liquid crystal display.

Now you have the answer, too. The FT-5200 – packed with features, affordably priced. Don't have one? Better contact your dealer today!

Here's another
Yaesu exclusive!
The MW-1 Wireless Mic
with Remote Control.



YAESU
Performance without compromise.SM

People's Democratic Republic of Laos, February 3

Dear Friends,

We have just concluded our operation in Laos as XW1QL. We operated from the shack of Inh, XW8KPL. We used his antennas and our transceiver. We made some 1,600 QSOs, operating phone and CW on all normal bands. We worked approximately 115 countries which should eventually assure us DX-CC certification.

Both here in Laos and in the country of Cambodia, we had difficulties with the authorities over the problem of visas. It has been difficult in these two countries and in other countries near to receive permission to stay more than one week, which is not long enough to set up a station, obtain an operating

permit, and work DXCC.

We found the temperature in Laos good—the best this time of the year. We were assisted very much by Ihn, XW8KPL, and we don't know how we

could have made it without him.

We hope to operate in at least two more countries before we conclude our six months overseas. We have tickets to return to the US. We have now visited 220 countries and worked DX-CC in most of them.—73 es 88, Lloyd, W6KG and Iris, W6QL Colvin. □

From Phnom Penh, Cambodia, January 11

We have concluded our operation as XU8KG. We were on the air for only 10 days but managed to work 105 countries. A girl, XU8DX, was very helpful in all of our activities. We operated from the PTT. The two directors of the PTT were familiar with Amateur Radio and were of great help. They permitted us also to live in the PTT hotel which was a great help as we could walk from the hotel to the radio operating room in

about three minutes. Cambodia has gone through a change of government and much fighting in the last two decades. Iris stayed up all night long the last day of our license permit, taking us from 80 countries to the 105 countries worked in the last of our operation. As is often the case, we used our own equipment and the antennas of XU8DX. 73 es 88, Lloyd, W6KG, and Iris, W6QL. □

Growing interest

Since the code-free Technician license was introduced by the FCC in February of last year, more than 32,000 new hams have earned their licenses, a 77 percent increase over the same period a year earlier. Of course, eliminating the Morse code requirement played a big part in making the Technician license the gateway of choice into Amateur Radio, but it is

thought that the renewed interest also may reflect a general shift to more traditional, home-oriented activities.

After entering Amateur Radio, many new hams go on to earn the higher class licenses which provide privileges on more frequencies and at higher power, extending the capability for international two-way radio communication with ham friends on other continents.

According to ARRL, the new Technician license also may be bringing more youngsters into the fold. The League noted that the total ranks of 7 to 17-year-olds holding licenses grew during the same seven-month period by nearly 12 percent. A spokesman

from the ARRL said that while it's still early to tell whether the new Technician Class license alone is responsible for attracting more school-age hams to the hobby, inquiries from this group indicate that youngsters are getting the message. This is particularly true among computer hobbyists intrigued by the ability of packet radio to link computers, and the potential for using orbiting satellite communication technology to reach distant parts of the world. It is apparent that the greatest interest among new Technician licensees is in reliable local voice and data communication using 2M (VHF) FM radios and repeaters. ARRL □



Interest in Amateur Radio has spread quickly through all age groups since the introduction of the no-code Technician license.

T-SHIRTS·GOLF SHIRTS·CAPS

Display your call, name & club name on a high-quality T-shirt (\$12), golf shirt (\$15.50 & \$16.50), or adjustable mesh cap (\$6.50). Add \$1.75 S&H/item + 7.25% sales tax (CA residents only).

—SASE for details to—

ANNE WRIGHT, N6BOP

2272 Kellogg Park Dr. • Pomona, CA 91768

FRESNO AMATEUR RADIO CLUB 50th HAMFEST

The ARRL San Joaquin Valley Section Convention
The Airport Holiday Inn — Fresno, CA
May 1-3, 1992

Featured Speaker
Bill Brown, WB8ELK
Managing Editor, 73 Magazine

WX Satellite**AMSAT**ATV Balloon Flight
DX Forum**Swap Tables**Commercial Exhibits
Repeater Forum**Packet**Net Meetings**Exams

HAMFEST 92, P.O. Box 783, Fresno, CA 93712-0783
Phone (209) 224-0233 FAX (209) 224-0195

Signed with honor

The names of two Amateur Radio operators who died while coordinating emergency communication during the Mt. St. Helens volcanic eruption in 1980 are among those permanently inscribed on the stone monument erected on the headquarters grounds of the ARRL in Newington, Connecticut. The monument, a gift from Amateur Radio operators in Michigan, commemorates hams who sacrificed their lives while performing emergency and public service duties.

"This monument serves as a perpetual reminder that Amateur Radio plays a vital public service function," said David Sumner, executive vice president of ARRL, at the monument's dedication during the League's board of directors meeting January 17.

"During emergencies," Sumner said, "hams stay on the air to coordinate rescue and logistics, and to bring messages of comfort to family and friends when regular channels of communication are disrupted. In its 'special events' role, Amateur Radio communication can make a marathon or other mass event safer both for spectators and for participants. But we should never forget that in providing this valuable public service, some Radio Amateurs have paid the biggest price of all."



ARRL unveils monument to Amateur Radio operators who "signed with their lives" in service to the public.

Amateur Radio operators Reid Blackburn, KA7AMF, of Washington, and Gerald O. Martin, W6TQF, of California, were killed at Mt. St. Helens. Other radio amateurs named on the monument are the late Kenneth A. Rodrigues, W7KCM, of Arizona, who died during an emergency drill; "Dan" Moffett, N5MOR, of Texas,

who died while operating as part of the Military Affiliate Radio Service (MARS); Arthur "Pete" Vela, K5YLU, of Texas, who died during an Amateur Radio fund raising event for a local school; and Charles G. Litz, WD4DFK, of Virginia, who died while coordinating Amateur Radio activities for a Boy Scout group. □

New global net

PLA/NET is a new Amateur Radio network which links environmentally conscious radio amateurs from around the world. Consisting of over 65 members so far, many of whom are environmentalists specializing in different areas, PLA/NET operates three nets: a US net, an European/Africa/Middle East net and a Pacific net.

Working closely with the ARRL and various environmental news services, PLA/NET aims to increase awareness through on-air discussions of environmental issues, promote legislation toward mandatory recycling, educate the consumer about product composition and packaging, and become an international information system for people everywhere who care about our planet.

PLA/NET meets on the first and third Saturday of each month at 1830Z (US) on 14.330 MHz on 20M. Check in to the net and share your comments. Or, for further information and the PLA/NET newsletter, write to Robert Wilderman, K3SRO, at 19 Glen Road, Lansdale, PA 19446-1405. □

TOROID CORES



- Iron Powder
- Ferrite
- Shielding Beads
- Ferrite Rods
- Split Beads

Small orders welcome. All items in stock for immediate delivery. Low cost experimenter's kits: **Iron Powder, Ferrite.** The dependable source for toroidal cores for 25 years.

Call or write for free catalog and tech data sheet.

PALOMAR ENGINEERS

Box 462222, Escondido, CA 92046
Phone: (619) 747-3343
FAX: (619) 747-3346

SHORTY ALL-BANDER



THE PERFECT MATCH FOR ANTENNA TUNERS WITH A BALANCED OUTPUT

ONLY 70 FOOT LONG OVERALL

- Completely factory assembled ready to use
- Small, lightweight, weatherproof, sealed shorteners with stainless steel eyelets
- Heavy 14 (7/22) gauge stranded copper antenna wire to survive those severe storms
- Center fed with 100 feet of low loss 450 ohm balanced transmission line
- Includes center insulator with an eye hook for center support
- Includes custom molded insulators molded of top quality material with high dielectric qualities and excellent weatherability
- Complete installation instructions included
- Overall length 70 feet, less when erected as an inverted vee or sloper
- Handles 2 kw PEP & covers 160 through 10 meters
- May be trimmed to fit small city lots

Only \$39.95 PPD

The ALL-BANDER DIPOLE, all band doublet type antenna is fully assembled. ed. overall length 135 feet with 100 feet 450 OHM feedline

Only \$29.95 PPD

G5RV ANTENNA



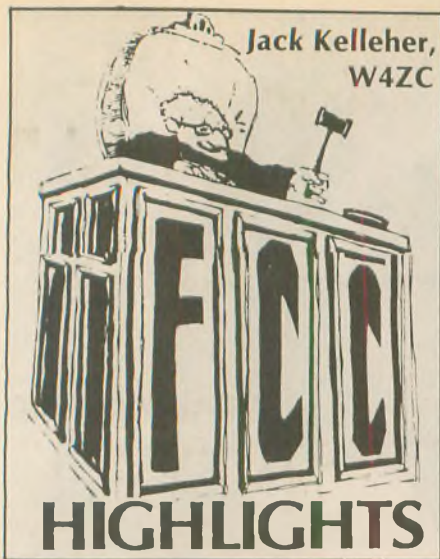
The G5RV MULTIBANDER antenna is an excellent all band (3.5-30 MHz) 102 foot dipole. On 1.8 MHz the antenna may be used as a Marconi type antenna when used with a tuner and a good earth ground. The proper combination of a 102 foot flat top and 31 feet of 300 ohm KW twinlead transmission line achieves resonance on all the amateur bands from 80 through 10 meters with only one antenna. There is no loss in traps and coils. The impedance present at the end of the 300 ohm KW twinlead transmission line is about 50-60 ohms, a good match to the 70 feet of RG8X mini foam coax. It comes completely assembled ready for installation, handles 2 KW PEP and may be used in a horizontal or inverted 'V' configuration.

MODEL	BANDS	LENGTH	PRICE
G5RV-MB	80-10	102'	\$49.95 PPD
	(model illustrated)		
G5RV	80-10	102'	\$34.95 PPD
	(no xlmr or cable, with 31' bal. feedline)		
G5RV JR	40-10	51'	\$29.95 PPD
	(no xlmr or cable, with 26' bal. feedline)		

AT YOUR DEALER, IF NOT, ORDER DIRECT

VGE

VAN GORDEN ENGINEERING
BOX 21305, S. EUCLID, OHIO 44121
PHONE (216) 481-6590 FAX (216) 481-8329



Amateur Radio business communications

A proposed restatement of §97.113 of the Amateur Radio Rules was submitted to the FCC by the ARRL in a 12-page letter dated January 6, 1992. This and related proposals may be combined into a Notice of Proposed Rule Making at some future date. The League proposal is discussed in detail in the January 14 issue of *The ARRL Letter*. Both the current and proposed versions of §97.113 are reproduced below.

Every amateur should evaluate carefully whether the proposed restatement provides adequate, unambiguous information on what amateurs are permitted to do—and, equally important, what they are *not* permitted to do. Simplification of the Rules is laudable, but what is not said usually leads to greater latitude for interpretation; and this has been one of the problems, in the past, leading to the present wording and its specific

examples of what is permitted and what is not.

One objective of the proposed restatement appears to be to facilitate a more liberal interpretation and application of the Commission's business communication rules applicable to the Amateur Radio Service. However, care is necessary lest we amateurs cause the rules to be relaxed to the point where users of other radio services seek to use ARS frequencies—or usurp them.

Existing text of §97.113.

(a) No amateur station shall transmit any communication the purpose of which is to facilitate the business or commercial affairs of any party. No station shall transmit communications as an alternative to other authorized radio services, except as necessary to providing emergency communications. A station may, however, transmit communications to: (1) Facilitate the public's safe observation of, or safe participation in, a parade, race, marathon or similar public gathering. No amateur station shall transmit communications concerning moving, supplying and quartering observers and participants for any sponsoring organization unless the principal beneficiary of such communications is the public and any benefit to the sponsoring organization is incidental; (2) Inform other amateur operators of the availability of apparatus normally used in an amateur station, including

such apparatus for sale or trade. This exception is not authorized to any person seeking to derive a profit by buying or selling such apparatus on a regular basis.

(b) No station shall transmit messages for hire or for material compensation, direct or indirect, paid or promised. The control operator of a club station, however, may accept compensation for such periods of time during which the station is transmitting telegraphy practice or information bulletins provided that: (1) The station transmits the telegraphy practice and information bulletins for at least 40 hours per week; (2) The station schedules operations on all amateur service MF and HF bands using reasonable measures to maximize coverage; (3) The schedule of normal operating times and frequencies is published at least 30 days in advance of the actual transmissions; and (4) The control operator does not accept any direct or indirect compensation for periods during which the station is transmitting any other material.

(c) No station shall transmit communications in order to engage in any form of broadcasting, nor to engage in any activity related to program production or newsgathering for broadcasting purposes. A station may, however, transmit communications to convey news information about an event for dissemination to the public when the following conditions are present: (1) The information involves the immediate safety of life of individuals

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 January 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	AA0HI	KF0WO	N0QZE	KB0JWR
1	AA1AN	KD1GQ	N1LHQ	KA1ZQK
2	AA2HZ	KF2GI	N2PJK	KB2ODH
3	WU3X	KE3BG	N3LNX	KA3SF
4	AC4ND	KO4QR		KD4JRJ
5	AB5DT	KI5XL	N5YRO	KB5QZP
6	AB6IU	KM6PF		KD6FLB
7	AA7MY	KG7YG	N7WCG	KB7OOB
8	AA8GA	KF8RY	N8RYT	KB8NLT
9	AA9CX	KF9HV	N9OAX	KB9HMF
North Mariana Is.	AH0M	AH0AI	KH0AR	WH0AAQ
Guam	KH2Y	AH2CN	KH2FW	WH2AMW
Johnston Is.	AH3D	AH3AD	KH3AG	WH3AAG
Midway Is.		AH4AA	KH4AG	WH4AAH
Hawaii		AH6LT	WH6EO	WH6COW
Kure Is.			KH7AA	
American Samoa	AH8D	AH8AE	KH8AI	WH8ABA
Wake Wilkes Peale	AH9B	AH9AD	KH9AE	WH9AAH
Alaska		AL7NW	WL7BO	WL7CDX
Virgin Is.	NP2T	KP2BZ	NP2FE	WP2AHL
Puerto Rico		KP4TK		WP4KVR

VEHICULAR CALL SIGNS
AMATEUR RADIO
W1AW

NEW HAMPS!

- Magnetic or suction mounted
- Trunk or rear window display
- Transferable from car to car
- Make great gifts

2 1/4"x8" all weather plastic! YOUR CALL + "AMATEUR RADIO" in white lettering. Select black, blue or red background. Order magnetic (for exterior use) or suction mounted (interior) version. \$9.95; 2/\$18 (includes postage).

SIGNON 1923-W Edward Lane
Merrick, NY 11566

Serving Ham Operators for 10 Years

Subscription form

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

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

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

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

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

(SOURCE)

--	--	--	--

(59-60)

Name _____

Call _____

Address _____

City _____

State _____ **Zip** _____

NEW

Renewal

Gift

	49 "free" states	CA sales tax	Price delivered in CA	Non-US ZIP
One Year	\$14.00	\$1.09	\$15.09	\$24.00
Two years	\$27.00	\$2.09	\$29.09	\$47.00
Three Years	\$39.00	\$3.02	\$42.02	\$69.00
Lifetime	\$140.00	\$10.85	\$150.85	\$240.00

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

Check enclosed

MasterCard

AmEx

VISA

Card # _____ **Exp. date** _____

Signature _____

Please clip and mail to . . .

Worldradio™

**520 Calvados Ave.
Sacramento, CA 95815**

Thank you!

**For Subscriptions
(charge cards only)**

TOLL FREE 1-800-366-9192

8 a.m. to 5 p.m. Pacific Time

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

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

or the immediate protection of property; (2) The information is directly related to the event; (3) The information cannot be transmitted by any other means because normal communication systems have been disrupted or because there are no other communication systems available at the place where the information is originated; and (4) Other means of communication could not be reasonably provided before or at the time of the event.

(d) No station shall transmit music; radiocommunications or messages for any purpose, or in connection with any activity, that is contrary to federal, state, or local law; messages in code or ciphers where the intent is to obscure the meaning (except where specifically excepted elsewhere in the part); obscene, indecent, or profane words, language, or meaning; and/or false or deceptive messages or signals.

(e) No station shall retransmit programs or signals emanating from any type of radio station other than an amateur station, except communications originating on US government frequencies between a space shuttle and its associated Earth stations. Prior approval for such retransmissions must be obtained from the National Aeronautics and Space Administration. Such retransmissions must be for the exclusive use of amateur operators.

(f) No amateur station, except an auxiliary, repeater or space station, may automatically retransmit the radio signals of other amateur stations.

ARRL's proposed restatement of §97.113

(a) An amateur station shall not transmit: (1) Communications for hire or for material compensation, direct or indirect, paid or promised, except as otherwise provided in these rules; (2) Communications in which the station licensee or control operator has a pecuniary interest, including communications on behalf of an employer. Amateur operators may, however, notify other amateurs of the availability for sale or trade of apparatus normally used in an amateur station, pro-

vided that such activity is not conducted on a regular basis; (3) Music; communications intended to facilitate a criminal act; messages in codes or ciphers intended to obscure the meaning thereof, except as otherwise provided herein; obscene, indecent or profane words or language; or false or deceptive messages, signals or identifications; (4) Communications, on a regular basis, which could reasonably be furnished alternatively through other radio services.

(b) An amateur station shall not engage in any form of broadcasting, nor may an amateur station transmit one-way communication except as specifically provided in these rules; nor shall an amateur station engage in any activity related to program production or newsgathering for broadcasting purposes, except that communications directly related to the immediate safety of human life or the protection of property may be provided by amateur stations to broadcasters for dissemination to the public where no other means of communication is reasonably available before or at the time of the event.

(c) A control operator may accept compensation as an incident of a teaching position during periods of time when an amateur station is used by that teacher as a part of classroom instruction at an educational institution.

(d) The control operator of a club station may accept compensation for the periods of time when the station is transmitting telegraphy practice or information bulletins, provided that the station transmits such telegraphy practice and bulletins for at least 40 hours per week; schedules operations on at least six amateur service MF and HF bands using reasonable measures to maximize coverage; where the schedule of normal operating times and frequencies is

published at least 30 days in advance of the actual transmissions; and where the control operator does not accept any direct or indirect compensation for any other service as a control operator.

(e) No amateur station shall retransmit programs or signals emanating from any type of radio station other than an amateur station, except propagation and weather forecast information originating from US government stations, and communications originating on US government frequencies between a space shuttle and its associated Earth stations. Prior approval for shuttle retransmission must be obtained from NASA. Such retransmissions must be for the exclusive use of amateur operators. Propagation, weather forecast, and shuttle retransmission may not be conducted on a regular basis, but only occasionally, as an incident of normal amateur radio communications.

(f) No amateur station, except in auxiliary, repeater or space operation, may automatically retransmit the radio signals of other amateur stations.

Repeater users outnumber 220 MHz weak signal fans in FCC comments

The ARRL's petition RM-7869 to set aside a small amount of the 2M band for weak signal uses elicited raucous opposition from repeater users in California. On Friday, January 24 W5YI counted approximately 20 filings in favor of the ARRL position and 40 against. Most of the comments in favor were small, one or two sentences, while opponents filed pages of detailed arguments, many of them borrowing language from each other in form-letter style. (W5YI 2/1/92)

AM stays

Double sideband full carrier amplitude modulation will stay in the Amateur Service even if some hams think it has no place there any more. So says the FCC in its decision to deny and dismiss a rules change request from Scott Schoenleben, N4UAD, of Liberty, Kentucky. In denying Schoenleben's petition, the FCC said that it had considered a similar request from another amateur back in 1981. At that time they found that deleting any emission type conflicted with the basis and purpose of the Amateur Service rules. The FCC reiterated this position in 1990. (Westlink Report, 1/14/92) □

THE SOTRON
COMPACT ANTENNAS FROM 160-10 METERS

NO TUNERS!
NO RADIALS!
NO RESISTORS!
NO COMPROMISE!

FIVE EXCELLENT REVIEWS JUST
DON'T HAPPEN BY CHANCE
CALL US FOR A FREE CATALOG.

*See review in Oct. 73, 1984 *Sept. 73, 1985 *March 73, 1986
CQ, Dec. 1988 Mar. W.R. 91

BILAL COMPANY
137 Manchester Drive
Florissant, Colorado 80818
(719) 687-0650

VISA MasterCard

Dual Band Rubber Duck Valor
Made in America!
SPECIAL PRICE \$22.90
CHECK IN ADVANCE SAVES SHIPPING CHARGES

Model 77BNC
12" Flexible Rubber Duck Antenna
with BNC Connector

SPECIFICATIONS	2 Meter	UHF
MHz Frequency	144-148	435-450
SWR	2.1 Bandwidth	
Gain	Unity	2.1 dbi
Power FM	50 Watts	50 Watts

ASA "Service is the Reason For Our Success"

Tel: (704) 358-4815 P.O. Box 30162
Watts: 1-800-722-2681 Charlotte, NC 28230

What goes rib-it rib-it rib-it?
A Morse toad!

LICENSES SMUDGE

At the 1991 Dayton Hamvention, John Johnston, W3BE, the FCC Personal Radio Branch Chief, announced the change to an entirely new form for licenses issued by the FCC in the Amateur Service. The new form is actually two licenses of equal authority, beautifully laser-printed on the same 8½ × 11 in. paper—one designed for framing, the other obviously meant for

folding to carry in pocket or purse.

Within weeks, the FCC changed the form to insert a printed warning on the margin, meant for trimming, to the effect that the laser printing involved is subject to smudging, and advising those who carry the small license on their person to protect it by lamination or otherwise.

Less than one year into the use of this form, VEs in the examination

room are encountering original licenses that are smudged beyond legibility. If you have one of the new licenses and it is not laminated or otherwise adequately protected from both moisture and abrasion, we recommend leaving the original at home and carrying a photocopy. The copy will serve as a legal document for mobile operation, and the original will surely last its ten years.—*Western Carolina ARS* □



Out of State 1-800-882-1343

(310) 390-8003 FAX 310-390-4393

HOURS M-F 9:00 - 6:00 SAT 9:00 - 5:00 SE HABLA ESPANOL
QUICK SERVICE CENTER FOR REPAIR NEEDS

5563 SEPULVEDA BLVD., CULVER CITY, CA 90230

ICOM IC-781



HF Equipment	List	Jun's
IC-781 Super Deluxe HF Rig	\$5995.00	Call \$
IC-765 New, Loaded with Features	3149.00	Call \$
IC-735 Gen. Cvg. Xcvr	1099.00	Call \$
IC-751A Gen. Cvg. Xcvr	1699.00	Call \$
IC-725 New Ultra-Compact Xcvr	949.00	Call \$
IC-726 HF/50 MHz All Mode	1299.00	Call \$
IC-2KL 500w. Amp	2079.00	Call \$
IC-4KL 1 kW Amp	7275.00	Call \$
Receivers		
IC-R9000 100 kHz to 1999.8 MHz	5459.00	Call \$
IC-R7000 25-1300 + MHz Rcvr	1199.00	Call \$
IC-R71A 100 kHz - 30 MHz Rcvr	999.00	Call \$
IC-R1 100 kHz - 1300 MHz	624.00	Call \$
IC-R72 30 kHz - 30 MHz Rcvr	972.00	Call \$
IC-R100 100 kHz - 1856 MHz Rcvr	707.00	Call \$
VHF		
IC-275A/H 50/100w All Mode Base	1299/1399.	Call \$
IC-R7000 25-1300 + MHz Rcvr	449/479	Call \$
IC-2GAT, New 7w HT	429.95	Call \$
IC-2SAT Micro Sized HT	439.00	Call \$
IC-2SRA, 2m, HT/Scanner	599.00	Call \$
IC-901 New Remote Mount Mobile	1199.00	Call \$
IC-970H Multi-Band, 45w, All Mode	3149.00	Call \$
UHF		
IC-4SAT Micro Sized HT	449.00	Call \$
IC-4SRA, 70cm w/Scanner, HT	600.00	Call \$
IC-4GAT, New 6w HT	449.95	Call \$
IC-3220A/H Dual Band Mobile	659/699.	Call \$
IC-2410A, 2m/70cm, Mobile	889.00	Call \$
IC-2500A FM, 440/1.2 GHz Mobile	999.00	Call \$
IC-24AT New 2m/440 mini HT	629.95	Call \$
IC-W2A, 2M/70cm NEW HT	629.95	Call \$
220 MHz		
IC-3SAT Micro Sized HT	449.99	Call \$
IC-12GAT Super HT	529.95	Call \$

ICOM MONTH

KENWOOD TS-950SD



HF Equipment	List	Jun's
TS-950SD New Digital Processor HF	\$4399.95	Call \$
TS-850S New, All Mode, All Band	1899.95	Call \$
TS-450S/AT New HF Xcvr	1549.95	Call \$
TS-450S New HF Xcvr	1349.95	Call \$
TS-140S Compact, Gen. Cvg. Xcvr	949.95	Call \$
TS-690S HF Plus 6m Xcvr	1549.95	Call \$
TL-922A HF Amp	1982.95	Call \$
Receivers		
R-5000 100 kHz - 30 MHz	1049.95	Call \$
R-2000 150 kHz - 30 MHz	799.95	Call \$
RZ-1 Compact Scanning Recv	599.95	Call \$
VHF		
TM-741A FM, 2M/440, Triple Receive	849.95	Call \$
TM-641A 2M/220 Triple Receiver	849.95	Call \$
TR-751A All Mode Mobile 25w	669.95	Call \$
TM-241A 50w Mobile FM	469.95	Call \$
TH-27A Compact, 2m, HT	419.95	Call \$
TM-731A 2m/70cm, FM, Mobile	749.95	Call \$
TH-77A 2m/440 HT	599.95	Call \$
UHF		
TM-941A 2M/440/1.2 GHz	1199.95	Call \$
TS-790A All Mode, 2m/70cm/1.2 GHz	1999.95	Call \$
TR-851A 25w SSB/FM	771.95	Call \$
TM-441A Compact 35w Mobile	479.95	Call \$
TH-47A Compact FM, HT	429.95	Call \$
TH-55 AT 1.2 GHz HT	524.95	Call \$
TM-541A Compact 1.2 GHz Mobile	579.95	Call \$
220 MHz		
TM-331A Compact Mobile	469.95	Call \$
TH-315A Full Featured 2.5w HT	419.95	Call \$

YAESU FT-1000D



HF Equipment	List	Jun's
FT-1000D Top Performer	\$4399.00	Call \$
FT-990 All Mode "NEW"	2399.00	Call \$
FT-747 GX Economical Performer	889.00	Call \$
FT-757 GX II Gen. Cvg Xcvr	1280.00	Call \$
FT-767 4 Band New	2299.00	Call \$
FL-7000 15m-160m Solid State Amp	2279.00	Call \$
Receivers		
FRG-8800 150 kHz - 30 MHz	784.00	Call \$
VHF		
FT-2400 50 Watt, Mobile	419.00	Call \$
FT-411 New 2m "Loaded" HT	406.00	Call \$
FT-290R All Mode Portable	610.00	Call \$
FT-26 Mini, 2 Meter HT	329.00	Call \$
FT-415, 2m, HT	409.00	Call \$
FT-23 R/17 Mini HT	351.00	Call \$
UHF		
FT-76 Mini, 440 MHz HT	359.00	Call \$
FT-815, 70cm, HT	439.00	Call \$
FT-911 Compact 1.2 GHz HT	505.00	Call \$
FT-811 Compact 70cm HT	410.00	Call \$
FT-790 R/II 70cm/25w Mobile	681.00	Call \$
FT-912 1.2 GHz, 10w Mobile	581.00	Call \$
VHF/UHF Full Duplex		
FT-736R, New All Mode, 2m/70cm	2025.00	Call \$
FT-690R MKII, 6m, All Mode, port	752.00	Call \$
Dual Bander		
FT-5200 Ultra Compact 2m/440 Mob.	749.00	Call \$
FT-6200 Ultra Compact 440/1.2 GHz Mob.	899.00	Call \$
FT-470 Compact 2m/70cm HT	576.00	Call \$
Repeaters		
FTR-2410 2m Repeaters	1154.00	Call \$
FTR-5410 70cm Repeaters	1154.00	Call \$
Rotators		
G-400RC light/med. duty 11 sq. ft.	242.00	Call \$
G-800SDX med./hvy. duty 20 sq. ft.	390.00	Call \$
G-1000 SDX Heavy Duty, 22 sq. ft.	466.00	Call \$

ALINCO



DR-590
DR-590T, New Twin Band Mobile
DR-570T, 2 Meter/70 cm Mobile
DR-112T, Value Loaded, 2M Mobile
DJ-160T, Feature Packed 2M Handy
DJ-F1T, 2M, Mini HT, 40 Mems.

STANDARD

C228A
2M/220 HT
List \$689. CALL!
C5608DA
2M/440 MOBILE
List \$1149. CALL!
C168A
2M Mini HT
List \$489. CALL!
C468A
440 Mini HT
List \$499. CALL!



COMET

NEW!
B-Series Mobile
Dual Band Antennas.
• Black Anodized
• Light Weight
• Cellular appearance
Choose either
PL-259 or NMO
style mounts!



JUN'S BARGAIN BOX

EXTRA OFF!!
SALE!!!

All HF Base Radios **\$30 Off** All VHF-UHF Mobiles **\$15 Off**
All HF Mobile Radios **\$20 Off** All Handhelds **\$10 Off**

In defense of the end-fed Zepp

**BRUCE LITTLEFIELD,
W1HGX**

For the last few years, I have used an end-fed Zepp antenna for my HF work, which is essentially 99 percent CW. During this time, I have read in various places how this old-timer's antenna either can't be recommended, or (worse) is full of problems and should be avoided at all costs, or (worse yet) doesn't work at all. My experience has definitely been to the contrary. After a very enjoyable QSO with Ann, N4MPQ, who said that she had heard about the old-fashioned end-fed Zepp but had never actually known anyone who used one, I decided it was time for someone to set the record straight about these simple yet effective multi-band antennas. So I am writing to do what I can to repair the sullied image of this much-maligned piece of wire.

My romance with end-fed Zepps started about four years ago when, after 14 years of inactivity, I decided to get back on the air. My education and jobs had taken me all around the country for those QRT years, but I had kept the embers of ham radio alive in me by buying occasional radio magazines and renewing my license when it came due. (Thankfully I had sense enough to do that!) But I never lived anywhere long enough to retrieve my old rigs (Heathkit DX-60 transmitter, HG-10 VFO, and Hallicrafters S-120 receiver) from my parents' attic in order to set up a station. Still, I dreamed of getting back on the air one day. In 1987, with my family and I finally settled in Connecticut, I decided the time had come to return to the airwaves.

I retrieved my old gear, dusted it off, and plugged it in. All of the tubes still glowed, a good sign. Sadly however, the S-120 had not weathered the years well. The "BFO" (actually regeneration) pot was shot and all I could get out of the headphones was ear-splitting static. So I bought an old used Hammarlund HQ-180 (a receiver I had coveted as a penniless teenager in the late 60s), strung a wire over a curtain rod, and heard my first CW in years. It was like riding a bicycle, and I

was amazed to see that I could still copy at about 10 wpm. Once I heard CW again, I knew I had to get back on the air. By this time, I also knew that RF from my old DX-60/HG-10 rigs could make a lightbulb dummy load glow, and that their note was steady on the HQ-180. All I needed was an antenna.

Now my wife is a good sport, but she was not at all interested in having me erect my old 14-AVQ vertical on top of our house in dignified, semi-suburban southern Connecticut. Truth was, neither was I, since I still remembered my father frantically pounding on the ceiling when my CW blasted out his favorite TV show. Fearing that I would not only wipe out my wife's TV reception, but all of the neighbors' as well, I was not about to advertise the fact I was the source of a new neighborhood-wide TVI problem. A low profile end-fed wire strung from one end of the house to the trees in back seemed to be the best solution to both my wife's aesthetic requirements as well as my desire for an inconspicuous multiband antenna. Since I didn't want to just run a longwire antenna directly into my

basement shack, I decided to try an end-fed Zepp, since the "dead-end" side of the tuned feeders, as crazy as it looked, was supposed to cancel out at least most of the feedline radiation, getting much of the RF up into the antenna itself.

On our small lot, I could only swing a halfwave wire on 40M, and I fed this with the same length of 450 ohm ladder line, feeding the whole thing through a new MFJ tuner. On May 24, 1987, with a pounding heart, I worked Lew, WA3TBA, on 40M CW, my first QSO in 14 years. I can still remember the excitement of that second "first" QSO! I have been having a blast ever since.

I soon found that I could load my end-fed Zepp to essentially 1:1 SWR on all major bands 80 through 10M (80 was a definite bonus). Not only that, but it worked fantastically well! In two years at my Connecticut QTH, I made thousands of CW QSOs worldwide. I began to like having so much success with an antenna that no one else seemed to use and that most people assumed was no good. It became a personal challenge to see how well I could do with an antenna that was supposed to be avoided at all costs. I guess I became an end-fed Zepp zealot. I even had an end-fed Zepp engraved on my QSL cards. A year and a half ago when we moved to Massachusetts, I put up the same antenna, even though our current lot could easily support a full sized 160M dipole. I now have a solid state transceiver, and with this station at 100W I work the world on CW, including routine contacts to the "other side": JA, ZL, VK, ZS, central Asia, and the Indian Ocean islands. So you see, getting out, or them getting in, is no problem. The only problem I ever had was a little RF in the shack which locked up the transceiver's VOX/keying circuitry on 80, 30 and 10M despite having what I thought was a pretty decent ground. However, this problem was easily solved by laying quarter-wave ground counterpoises for each HF band around the perimeter of the basement floor, connecting them directly to the tuner's ground connector. TVI? None. Incidentally, it works fine on 160M and all of the WARC bands, too.

End-fed Zepps are probably not balanced enough to satisfy the antenna purist, and some might be upset at the thought of a little feedline radiation. Some might even lose sleep over the dead-end side of the feedline simply *looking* like it does nothing. Who cares? These things work pretty well, folks! I can vouch for the fact that with a good tuner and ground system (including counterpoises), these are effective, cheap, simple, inconspicuous,

2 METER 5/8 WAVE + 3Db GAIN MOBILE ANTENNAS

\$2950

100%
MADE
IN
USA

Add \$3.00 For BNC Installed
Magnet, Trunk, Permanent,
and Fender Mounts Available
At the Same Price

- A TRUE 5/8 WAVE, SHUNT FED ANTENNA
- HONEST 3Db GAIN
- Pretuned to the band center
- Below 1.5 to 1 SWR over the entire band
- Can be tuned to other nearby frequencies (up to 174 MHz)
- Stiff stainless steel tapered whip
- Extra strong 3" magnet
- 15 ft. RG 58 coax PL259
- FREE VINYL MAGNET PAD
- RATED AT 150 WATTS



At Your Dealers or Send
Check, M.O., Visa or MC to:

Lakeview Company, Inc.

3620-9A Whitehall Rd.
Anderson, SC 29624

800-226-6990, ext. 10 (Orders only)
803-226-6990 (Tech. Questions)

Add \$4.00 per order for shipping/handling
Catalog Available • Dealers Welcome

U.S. AMATEUR RADIO MAIL LISTS

Labels, floppy disks, CD-ROM, mag tape.

- Newly licensed hams
- All upgrades
- Updated each week

BUCKMASTER PUBLISHING

Route 3, Box 56
Mineral, Virginia 23117
703/894-5777 visa/mc 800/282-5628

MFJ TUNERS

MFJ's world famous 3 KW Versa Tuner V

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

The MFJ-989C is not for everyone.

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

Massive Transmitting Capacitors

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

Precision Roller Inductor

A precision roller inductor lets you tune your SWR down to the absolute minimum. A 3-digit turns counter plus a spinner knob gives you exact inductance control.

Ball bearings on both the front and back shafts give you a velvet smooth vernier feel. Steel end plates and steel shafts give you lifetime durability.

You won't have arcing problems with this roller inductor. That's



MFJ-989C

\$349⁹⁵

because firm springs put considerable pressure on a plated contact wheel for excellent electrical contact.

Wide, low inductance straps are used for high current connections and a new core gives you excellent RF properties for minimum loss.

Cross-Needle Meter

You get a lighted peak and average reading Cross-Needle SWR/Wattmeter with 200 and 2000 watt ranges. Its new directional coupler gives you accurate SWR and power readings over the entire 1.8 through 30 MHz range.

Super Heavy Duty Balun

You get a super heavy duty current balun for balanced lines. It's made with two giant 2 1/2 inch powder iron toroid cores and wound with teflon wire connected to high voltage ceramic feedthru insulators. It lets you operate high power into balanced feedlines out core saturation or voltage breakdown.

Ceramic Antenna Switch

You get a two wafer 6 position ceramic antenna switch with extra large contacts for trouble free switching.

Plus much, much more

You also get a built-in 300 watt dummy load, full one year unconditional guarantee, flip stand, all aluminum cabinet, tough baked on paint, locking compound on all nuts and bolts. 3 KW PEP. Meter lamp needs 12 volts. Compact 10 3/4x4 1/2x15 inches. Made in the USA. Add \$10 s/h. Don't settle for less--get yours today!

MFJ's Deluxe 300 Watt Tuner



MFJ-949D **\$149⁹⁵** More hams use the MFJ-949D than any other antenna tuner in the world! why? Because the MFJ-949D gives you proven reliability, the ability to match just about anything and a one year unconditional guarantee.

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

The inductor switch is specially designed to withstand the extreme voltages and currents that are developed in your tuner—it's not an underrated off-the-shelf switch that can put you off-the-air.

Each MFJ-949D aluminum cabinet is chemically etched to strongly bond MFJ's tough baked-on paint. You won't find a tougher, longer lasting finish anywhere.

MFJ's New 300 Watt Tuner



MFJ-948 **\$129⁹⁵** If you don't need a dummy load but want all the other features of the MFJ-949D, choose the MFJ-948 for \$129.95.

The MFJ-948 features a peak reading lighted Cross-Needle meter with a built-in lamp switch, one year unconditional guarantee and is made here in the USA.

MFJ's smallest Versa Tuner

MFJ-901B

\$59⁹⁵

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



MFJ'S Super Value Tuner



MFJ-941E **\$109⁹⁵** The new MFJ-941E gives you a 300 watt PEP tuner that covers everything from 1.8-30 MHz -- plus you get a cross-needle meter, antenna switch and balun for an incredible \$109.95. Lamp uses 12 VDC or 110 VAC with MFJ-1312, \$12.95

Antenna switch selects 2 coax lines (direct or through tuner), random wire, balanced line or external dummy load. 4:1 balun. 1000 volt capacitors. Measures 10-5/8" x 2-7/8" x 7". **2-Knob Differential-T™ Tuner**



MFJ-986 **\$289⁹⁵** The new MFJ-986 Differential-T™ 2-knob tuner uses a differential capacitor to make tuning foolproof and easier than ever. It ends constant re-tuning with broadband coverage and gives you minimum SWR at only one best setting. Handles 3 KW PEP.

Roller inductor makes tuning smooth and easy. Turns counter lets you quickly re-tune to frequency. MFJ's peak and average reading cross-needle meter reads forward/reflected power in 200/50 and 2000/500 watt ranges. Meter lamp uses 12 VDC or 110 VAC with MFJ-1312, \$12.95. Current balun reduces feedline radiation and forces equal currents into antenna halves that are not perfectly balanced. It covers 1.8-30 MHz. Get yours today! Add \$10 s/h.

MFJ's Random Wire Tuner

MFJ-16010 **\$39⁹⁵**

Operate all bands anywhere with any transceiver with the MFJ-16010. It lets you turn a random wire into a transmitting antenna. 1.8-30 MHz. 200 watts PEP. Ultra small 2"x3"x4".



MFJ's Mobile Tuner

MFJ-945D

\$89⁹⁵



Don't leave home without this mobile tuner! Have an uninterrupted trip as the MFJ-945D extends your antenna bandwidth so you don't have to stop, go outside and adjust your mobile whip.

Small 8 x 2 x 6 inches uses little room. Lighted Cross-Needle SWR/Wattmeter makes tuning easy while in motion. Has lamp switch. 1.8-30 MHz. 300 watts PEP. Mobile mount, MFJ-20, \$4.95.

MFJ's Versatile 1.5 KW Tuner



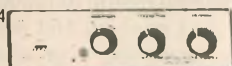
MFJ-962C **\$229⁹⁵** MFJ-962C lets you use your bare-foot rig now and have the capacity to add a 1.5 KW PEP amplifier later. It covers 1.8-30 MHz.

You get MFJ's peak and average reading Cross-needle SWR/Wattmeter. It reads forward/reflected power in 200/50 and 2000/500 watt ranges. Lamp uses 12 VDC or 110 VAC with MFJ-1312, \$12.95.

Plus . . . 6-position antenna switch and teflon wound balun with ceramic feedthru insulators for balanced lines. 10 3/4 x 4 1/2 x 14-7/8 in \$10 s/h. **MFJ's VHF or UHF Tuners**

MFJ-921 or MFJ-924

\$69⁹⁵



MFJ-921 VHF tuner covers both 2 Meters and the 220 MHz bands. MFJ-924 covers 440 MHz. Built-in SWR/Wattmeter. 8" x 2 1/2" x 3". 2-knob tuning convenient for mobile or base.

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

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

MFJ MFJ ENTERPRISES, INC.
Box 494, Miss. State, MS 39762
(601) 323-5869; TELEX: 53 4590
FAX: (601) 323-6551; Add \$6 s/h.
MFJ . . . making quality affordable

and (best of all) unusual multi-band antennas.

Finally, I may not be a historian, but my understanding is that the Zepp antenna was so named because it was hung out, in end-fed fashion, behind

Zeppelins in flight. Thus, the end-fed Zepp is the true and original Zepp antenna, unless someone can convince me that two Zeppelins flying together were used to support the more commonly used center-fed variety. □

A silent revolution in packet radio

DAVID MEDLEY, KI6QE

Amateur Radio has always been in the forefront of innovation and experimentation, and much of the technology in today's communication systems was developed from work done by amateurs and experimenters.

Today it is a little more difficult due to the extent of the technology involved and the associated cost, and there are those who claim that amateurs today are just a bunch of appliance operators. Innovation involves change, and those critics of today's Amateur Radio are usually quick to point out that any innovative steps taken will not work easily.

Few of us remember the days of spark transmitters and the resistance to change to vacuum tubes, but many of us recall the days of AM—enormous receivers with knobs all over and six ft. racks of transmitting equipment with those wonderful 866s which glowed brightly everytime you hit the key or talked into the mike. What a disappointment when SSB became vogue and the radio became a rather small box which sat on the operating table with no glowing tubes. There are still those diehards left today who build and operate AM rigs on the shortwave bands, perhaps more for nostalgia than anything else.

Packet radio was another such innovation met with much resistance. Many hams were reluctant to get involved with computers, and there were those who said, "What good is it anyway? You can only talk across town." But computers are with us today, like it or not, and the younger generation is making them part of everyday life. The expansion of packet to the HF bands has enabled the sending of packet messages all over the world, and many dedicated amateurs have

developed extensive networks to support this activity.

But we all know the vagaries of HF and its susceptibility to the whims of the ionosphere, and it is frustrating to have to wait days or even weeks to get a response to a packet message sent to a buddy on the other side of the world.

Another recent innovation is the development of the satellite as an adjunct to long-haul communications. Of course, it costs billions of dollars to design and launch a satellite and millions of dollars to build an earth station, so many considered it out of reach of Amateur Radio. Again hams proved this wrong and ways and means were found to design, build and launch amateur satellites with very modest budgets and an enormous amount of innovation and new thinking.

Most recently there appeared on the horizon, literally, a group of technological marvels called microsats—designed, built and launched by an international group of amateurs from Argentina, Brazil, the UK and this country, with launch facilities provided by the European Space Consortium in French Guiana. And would you believe it, these satellites provided packet facilities. Well, at first they just served as rather ineffective digipeaters because they were in low earth orbit and were only in view for short periods of time, insufficient to pass significant amounts of data. But it was exciting and some of us got our feet wet with satellite communications.

About a year after launch, new software was uploaded to the microsats

which provided a store and forward message system, based on packet principles, and which was able to chain packets together through successive orbits to allow passing of reasonable amounts of data. One of these microsats took off a little later at 9600 baud, and large scale data transfer became possible.

Enter now another group of innovators and experimenters. For some years a packet BBS in Anchorage, Alaska, had been in operation and was always in trouble transferring traffic from Alaska to the US domestic network via HF. (HF is notoriously unreliable in high latitudes.) Why can't we do this with the new microsats, the SYSOP asked himself. A satellite experimenter (NL7NC), he was chatting with an AMSAT official (N5BF) on Oscar-13 one evening and suggested this as something to try. It was agreed that this seemed to be a great idea but systems and procedures would have to be developed. Thus N5BF contacted another satellite experimenter in California (KI6QE) and asked him if he would take on the task of developing a workable system between Alaska and the mainland, working with NL7NC. Thus the AMSAT satellite gateway experiment was born.

Traffic began passing between Alaska and California in early February, 1991, and it was almost immediately apparent that this was going to work well. Procedures were developed to interface between the space sector and the terrestrial BBS network. It worked so well that others joined in and today this gateway system spans the world via satellite.

It is now possible from many locations to check in to a BBS and type SP VK3MJ @ VK4BBS.BNE.QLD.AUS.OC and know that your buddy VK3MJ will get it within 24 hours, and a reply should be received the next day. There are now 28 worldwide satellite gateways as of December 1, 1991.

The following table sets out the details of these gateways and the areas covered.

We are working on simplifying addressing procedures in California and many BBSs will now route directly addressed messages to international locations via the satellite gateway at KI6QE. If you have international message traffic or would like to correspond with a ham friend overseas, check with your SYSOP to see if direct addressing procedures are acceptable to him. Just be sure to put "VIA SATELLITE" as the subject of your message. If your BBS is not yet programmed for direct routing you should still use the "inside address" procedure.

As a reminder for direct addressing,

Join other Amateurs - help the physically handicapped be Licensed Amateurs



Courage HANDI-HAM System
Courage Center
3915 Golden Valley Road
Golden Valley, Minnesota 55422

5 Band Quads

\$289² ele.
Complete

3 and 4 Element Models
Also Available

UPS Shippable

For more information contact:
Lightning Bolt Antennas
RD #2, Rt. 19 • Volant, PA 16156
(412) 530-7396

Call	@BBS	Location	TABLE 1 Hier Addr.	Name	Service Area
KI6QE	AA6QD	Los Osos CA	#CENCA.CA.USA.NA	Dave	CA,OR,WA,UT, ID,NV,AZ,VE6, 7,8
VE8DX	VE8DX	Baffin Is.	#BAF.CAN.NA	Bob	Baffin Island only
WA0PTV	WA0PTV	Fredonia NY	#WNY.NY.USA.NA	John	NY,NH,RI,VT, MA,ME,VE1,2,3 NC,SC
KF4WQ LU8DYF	KF4WQ LU8DYF	Selingsgrove BA	#NCLBT.NC.USA.NA .OLIVOS.ARG.SA	Rick Norberto	CX,CP,OA,CE, PY,YV,LU/LW
ON4KVI	ON4KVI	Vielsalm Bel	.BEL.EU	Renauld	Western Europe, Scandinavia
ZS1ABM JA6FTL	ZS1ABM JA6FTL		.CP.ZAF.AF #39.JNET5.JPN.AS	Gerd Seuo	South Africa JA,DU,VS6,BV, YB
W0SL	K0PFX	St. Louis MO	.MO.USA.NA	Roy	KS,MO,IL,IA, NE,TN,SD,ND
ZL2AMD	ZL2AMD	Napier NZ	.#40.NZL.OC	Dave	New Zealand, South Pacific
EI6EH	EI6EH	Ireland	.Kells.IRE.EU	Tom	Ireland,UK, DEN,NOR
EA8RT	EA8RT	Barcelona	.EAGC.ESP.EU	Miguel	Spain, Portugal, South France
OH6KG NU9H	OH6KG WV9O	Karleby La Porte IN	.FIN.EU #NWIN.IN.USA.NA	Kenneth Dave	Finland, Sweden IN,IL,MI,KY, WI,VE4,5
WH6AMX	WH6AMX	Honolulu HI	.HI.OC	Rick	US Islands in the Pacific
FO5LQ N0GIB	FO5LQ N0GIB	Tahiti Sioux Falls SD	.TAH.OC .SD.USA.NA	Alain Russ	Polynesia SD ND MN MT WY NE
NL7NC W5ERO KG4TM	NL7NC W5ERO KG4TM	Anchorage AK Lubbock TX Guantanamo	#NAK.AK.USA.NA #WTX.TX.USA.NA .CUB.CAR.NA	John Jim Tim	AK TX,NM,OK,AR GB, Caribbean area
EA6IC SV8RV	EA6IC SV8RV	Mallorca Is. Zakynthos	.ESP.EU .GRC.EU	Jose Denis	ESP, PRT Eastern Europe, USSR
LU1ESY	LU1ESY		.ARG.SA		CX,CP,OA,CE, PY,YV,LU/LW
YB0QC	YB0QC	Jakarta	.RPA.IDN.OC	Dwi	Indonesia, SE Asia
VK5ZK NR3U	VK5ZK NR3U	Adelaide Selinsgrove	#SA.AUS.OC #NCPA.PA.USA.NA	Gary Clem	Australia PA,NJ,OH,MD, VA,GA
4X1AS LU7ABF	4X1RU LU7ABF	Tel Aviv	.ISR.MDLE .ARG.SA	Shlomo	Israel CX,CP,OA,CE, PY,YV,LU/LW

just connect to your local BBS and type:
SP G3RUG @ GB7ZZ.#30.GBR.EU
Via Satellite

For inside addressing connect to your local BBS and type:
SP KI6QE @ AA6QD.#CENCA.CA.USA.NA (or your closest gateway)
Via Satellite
SP G3RUH @ GB7ZZ.#30.GBR.EU
Greetings
(Text)

Try to get the hierarchical address correct if you can. We try to be sure that they are correct before uploading to the satellite but it makes our work a lot easier if you do that for us. A few tips: Use DEU (not GER) for Germany; use ESP (not SPAN) for Spain.

This has indeed opened new vistas to the average packet operator. No more do you have to have complex radio systems to talk with the world. Even with your Commodore 64 or Tandy 100

and a simple TNC you can reap the advantages of satellite communications in this world of advancing technology.

But like all things new and different there are the detractors and resistors to change. Some claim, "The PAC-SATS are unreliable and shortlived." Nonsense; they are a lot more reliable than HF and others are being planned all the time. One early bird launched over 10 years ago is still functioning.

Others say, "There is no backup system if a gateway goes down." Wrong again. Gateways back each other up and work as a closely knit team. They work with HF gateways to back them up and handle their backlogs when HF conditions fail.

This is a new medium and the transmission path of the future. It is hoped that all SYSOPS from present terrestrial BBS systems will join with us and help to develop this quiet packet revolution. You the packet users can also help by insisting that your traffic pass via the satellite gateway system.

Dayton Specials by mail



Find: W1UHI

Ernest Wheatley W1UHI
Box 47
Richmond, VT 05477
Born: Oct. 29, 1887
Class: General

HamBase™

database software

- Contains 540,000 US calls
- 30,000 Canadian calls
- No hard disk required
- Edit and print QSL cards & labels
- Export to ASCII
- Add your own addresses
- QSL Managers direct from DX calls

PC 1.44/1.2 M HD	\$79.95	\$59.95
Macintosh 800K/1.4M	\$79.95	\$69.95
HBPopUp (TSR)		\$19.95
WHamBase (For Windows 3.0)		\$19.95
HamBase Canada		\$19.95
Demo Disk		\$5.00

Ventriloquist™

PCB	In
Assembled	ABS
& Tested	Enclosure
\$124.95	\$149.95
\$114.95	\$139.95

- 4 variable length messages
- CT compatible computer interface
- Endless loop record/playback

Magic Notch™



- Fully automatic notch audio filter
- Installs between speaker & rig
- Work s4 SSB under 59+ carrier
- Removes carriers, CW, and computer RFI

~~\$114.95~~ **\$104.95**

UPS Ground in US Included/Foreign Orders add \$10
Show prices good April and May, 1992 only

j•Com



P.O. Box 194 W • Ben Lomond • CA 95005
(408) 335-9120 • FAX 335-9121

Young folks and ham radio

TRAVIS WISE, KB8FOU

Travis is an active 15-year-old ham who is working hard to encourage other young people to check out ham radio. He serves on the Board of Directors for the West Valley Amateur Radio Association and distributes many bulletins via the packet BBSs regarding youth involvement with ham radio. The following article has previously appeared in The Downlink.

We all know that young folks are important to the survival of Amateur Radio, and that fact has been brought out with the arrival of no-code. Since the FCC quickly dropped no-code on our doorstep, hundreds of hams rushed to their packet terminals and sent out their opinions about no-code to ALLUS. Most of the bulletins which were pro-no-code mentioned something about the importance of youth in our hobby. Whether you are pro-no-code or not, we can all be agreed on one thing: Today's young hams are the future of ham radio.

The saying, "The average age of a ham radio operator is 'dead'" is no longer true! The average age is, in fact, 51.19 (as of 1988). Richard Hoffbeck, NØLOX, has prepared a two-page report which breaks down the ages and dispels some myths about ham radio's age problem. Just how bad of a problem is it? Well, Richard thinks that in 20 years, it will be a "troublesome problem." In 1988, there were about 480,000 hams in America. Of those, three percent, or 10,345 were under the age of 20. Three out of 100! Think about your local ham club. Are there three young hams per 100? Probably. Keeping in mind that about half of all hams are active, there are about 5,000 active young hams in America. While these figures are from 1988, they are probably still accurate.

Richard also reports that it is false to assume that since the number of hams has been growing at a faster rate than the population as a whole, ham radio is at no risk of becoming a dying hobby. It is faulty to assume that society as a whole has remained at the same level of technology.

How does all of this fall in with packet? Well, you have probably seen

a few bulletins go by from teachers who use Amateur Radio in their classrooms and are looking for other hams to exchange messages with their students. I have a list of about 15 of these schools. There are also about 30 young hams on packet nationwide with whom I have come in contact in the last year. I am hoping that with the codeless Technician license these numbers will grow, and every club will have a ham radio class, and every school will have a ham radio club . . . someday.

When I first started my campaign to find other young hams in packet radio, I received one message from a grouch who didn't think packet radio was the place for a newsletter/bulletin regarding packet. He has been proven wrong by the tons (or shall I say, bytes?) of messages I have received in overwhelming support of "The Packet Racket." I now have a list of about 20 young hams I often correspond with, some of whom have their Advanced licenses!

Now that The Packet Racket is in it's 10th edition, I have received only a few comments from the HF gateway

SysOps asking me to reduce the size of the bulletin to below 3KB (the first three editions were over 5KB). I have tried my best to do that, and each message is now under 2KB. I'm doing my best to help the HF gateways be as efficient as possible.

I think packet is the future of Amateur Radio, along with satellites and perhaps even moonbounce. I'm hoping that within a few years all packet will be 9600 baud, and HF packet stations can operate automatically just like VHF stations, without the yearly "okay" by the FCC (that is ridiculous). It's obvious now that, at least in the Bay Area (California), we are going to have to increase the number of packet frequencies in the near future, as well as continue to encourage packet activity as the NCPA has.

So while we wait for our numbers to swell and for someone to totally revamp the packet system so that it can handle infinite quantities of messages, with a forwarding system such that the propagation on HF won't make a difference, we can sit back, read the mail and enjoy packet radio—and the great amount of technology that exists in the small box next to our computers. □

Enjoy NEVER CLIMBING YOUR TOWER AGAIN

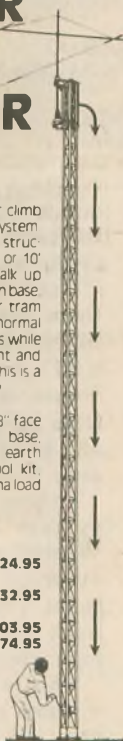
Are you too scared or too old to climb? Never climb again with this tower and elevator tram system. Voyager towers are 13 and 18 inch triangular structures stackable to any height in 7 1/2, 8 3/4 or 10' section lengths. Easy to install hinge base, walk up erection. Next plumb tower with leveling bolts in base. Mount rotor and large heavy beams on Hazer tram and with one hand winch to top of tower for normal operating position. Safety lock system operates while raising or lowering. At last a cheap, convenient and safe way to install and maintain your beam. This is a deluxe tower system that you can enjoy today.

SPECIAL TOWER PACKAGE: 50 ft. high by 18" face tower kit, concrete footing section, hinged base, HAZER kit, Phyllystran guy wires, turnbuckles, earth screw anchors, 10' mast, thrust bearing, tool kit, ground rod and clamp, rated at 15 sq. ft. antenna load @ 100 MPH. \$1974.95

HAZER KITS	
HAZER 2 for Rohn 25-hvy duty alum 12 sq ft wind load	324.95
HAZER 3 for Rohn 25-std alum 8 sq ft wind load	232.95
HAZER 4 for Rohn 25-hvy galv stl 16 sq ft wind load	303.95
TB-25 Ball thrust bearing 2 1/2" max mast dia	74.95

Satisfaction guaranteed. Call today and order by Visa, M/C or mail check - immediate delivery.

Glen Martin Engineering, Inc.
Dept. W
RR 3, Box 322,
Boonville, MO 65233
816-882-2734
FAX: 816-882-7200



Increasing CW copying speeds

There is no one set method for increasing CW skill that works for everyone. A method that is probably the best, but seems to be used less and less recently, is to get on the air and OPERATE! Make CW QSOs and lots of them and you can't help but get better.

I hear people complaining that they can't seem to make much progress toward the speed needed for the next higher class license, but I don't hear very much about them getting on the air using CW. Listening to taped QSOs is OK to a point, but there is no pressure to perform and no feeling of responsibility to copy correctly. If you miss some or most of the text, so what, just play it again. Maybe you'll get it, maybe not.

However, in a QSO there is a feeling that you GOTTA copy what's being sent. If the guy's name is Herb, you sure don't want to call him Fred. Also, since you must send CW to have that QSO, you develop a rhythm with the characters. After a while, you won't be thinking of dots and dashes at all and you will hear the characters them-

(please turn to page 20)

Fast & Fun G5RV QuickKits™

created by Antennas West P.O. Box 50663-W, Dallas, TX 75466

Fast & Easy to Build

- Full-Safe visual instructions
- No measuring or cutting
- Everything included
- Finish antenna in minutes
- Quality Components
- Presoldered Silver Finings
- Kinkproof QuietFlex wire
- Fully insulated, wax sealed, no-corrode, low noise design
- Tone All Bands Incl WARC

Want Plans, Patterns, Data? Order TechNote #124-D \$6.95 ppd USA

• Double Size G5RV	\$59.95
• 204 ft 160-10 Dipole	
• Full Size G5RV	\$35.95
• 102 ft 80-10 Dipole	
• Half Size G5RV	\$25.95
• 51 ft 40-10 Dipole	
• Quarter Size G5RV	\$21.95
• 26 ft 20-10 Dipole	
• ReadyMade 102 ft G5RV	\$50.00
• ReadyMade 51 ft G5RV/2	\$40.00
• 200' Dacron 250# line	\$11.95

Order Hot-Line: 1-800-926-7373

Alinco Affordable Technology



**AVAILABLE NOW!
FANTASTIC 2-METER H.T.'s
HIGH PERFORMANCE AT A GREAT PRICE**

- DJ-F1TH World's smallest 5 watt H.T.
- DJ-162TR Full featured 2-meter comes standard with EDC-34 rapid charger

New Model DJ-162TD

FULL FEATURES AND HIGH PERFORMANCE AT A PRICE YOU WON'T BELIEVE.

Here is a 2-Meter radio worth looking at. Without a doubt, the ALINCO DJ-162TD offers the most bang for the buck of any 2-Meter HT available today.

The unit comes standard with the EDH-1 Dry-Cell Pack, giving you the option to use your own batteries, either Ni-Cd or Alkaline, for extended operating life and High-Power output. In addition, you have the option to buy either the 5 watt or 2.5 watt Quick-Charge Batteries for fast reliable power any time.

This unit has a full size keypad for easy operation and

programming, and has excellent sensitivity. Airband receive down to 118MHz is possible with a simple modification. Other standard features include DSQ for private paging, 5 scan modes, DTMF encode and decode, dual watch functions, 2 Autodialer channels, and more.

*Check out the affordable technology of the 90's.
Check out ALINCO.*



ALINCO
ELECTRONICS INC.

ALINCO ELECTRONICS INC.
438 Amapola Avenue, Unit 130, Torrance, CA 90501
Tel. (310) 618-8616 Fax. (310) 618-8758

Two Year Limited Warranty.

Specifications and features are subject to change without notice or obligation.

Islands on the air

The following is reprinted with permission from the Port Isabel-South Padre Press, Nov. 7, 1991

DAVE HAMERLY

Harold Howard, KD7EC, is helping put South Padre Island on the map, or actually, on the air. Hal participates in Islands On The Air (IOTA), an award program for amateurs around the world.

Created over 25 years ago by Geoff Watts, a leading English radio operator, the program was taken over by the Radio Society of Great Britain (RSGB) in 1985. The RSGB maintains a list of islands, and groups of islands, by country or geographic region. At least 99 percent of the world's oceanic islands are included in the list.

The basic IOTA award is given when an amateur makes verifiable contact with 100 islands listed. These contacts are verified through QSL cards. There are 17 separate awards available in the IOTA program, including awards for up to 600 island contacts made, and additional awards for certain geographic areas containing island groups.

Since becoming an Amateur Radio operator, Hal has made contacts with others in 295 countries and has been awarded with IOTA certificates for 100 and 200 island contacts made. "Whenever I talk to someone new," says Hal, "they are always interested in where South Padre Island is located." Included in the IOTA list, South Padre Island is known as North America-92. "Sometimes, when I turn on my radio transceiver, I've got more calls than I can handle." He gets help occasionally from others such as Buck, K3KH, from Pennsylvania, who will make a list of callers who want to talk to South Padre Island and relay them to Hal. Calls have been received through Buck from many locations in Europe, the Canary Islands, and Canada.

"Sometimes I'll check in with a station in Australia and ask for other radio operators who would like to talk to South Padre Island. Calls will come in from as far away as Perth, on the west coast of Australia. One call I received recently was an operator from Australia who had another operator



Harold Howard, KD7EC, works IOTA from South Padre Island.

from India who wanted to talk to South Padre Island. Unfortunately, conditions were not right for that transmission."

Hal and wife, Ruth, have been vacationing on South Padre Island for over eight years. A year ago, they moved from Arizona to Harlingen. Although they've sold their trailer home, Hal and Ruth continue making regular trips from Harlingen to the Island and now stay in condominiums. "In a condo, we've got all the comforts of home," said the 73 year old Hal, "and I was getting tired of fussing with a trailer."

The Howard home in Harlingen includes a room reserved for Hal's certificates, including the IOTA awards. He once made daily contacts with a joint Russian-Canadian skiing expedition. "The expedition took the skiers from the Soviet Union to Canada," according to Hal, "and I was in daily contact with them during the trip. Afterwards, I received a certificate signed by the expedition leaders which

showed the Russian and Canadian flags."

While visiting with Hal, contact was made with Russ, VE6VK, another IOTA participant from Calgary, Alberta, Canada. According to Russ, "IOTA is a disease. Once you've got it in your blood there's no stopping." Russ, via the radio network, said he has learned a great deal about world geography participating in IOTA. "With 600 islands to contact, I don't think I'll ever get them all, but I'm sure going to try," Russ said.

In another radio contact made during the visit, Hal spoke with Larry, KN4UB, from Jacksonville, Florida. Larry, bass player for the music group .38 Special, said he enjoys talking with other ham operators around the world between concerts.

With a small transceiver sitting on the coffee table of his condo, or with the even smaller mobile unit mounted in the dash of his pickup truck, Hal communicates with other ham operators from as far away as Saipan or Bulgaria. "For many years, Albania was the number one sought after nation for hams," Hal said. "Just in the past year Albania has been on the airwaves, and I finally made contact with them." That's another QSL card to add to his almost 300 countries.

Hal says he enjoys talking about the weather in different places of the world and he always sends them his QSL, which features a map of South Texas.

With IOTA participants calling from all over the world, KD7EC is an ambassador of the airwaves for South Padre Island, getting the word out about this corner of Texas. And, he's learning about other interesting corners of the world at the same time. □

COMPACT - EASY !!!

Flash cards NOVICE thru EXTRA theory. Key-words underlined. QUICK and SIMPLE Over 1600 sets in use. Ideal for beginners, XYLS & children (& OMs too!)

NOVICE	\$11.95
TECHNICIAN	\$10.95
GENERAL	\$9.95
ADVANCED	\$15.95
EXTRA	\$14.45
Shipping 1 -	\$3.00
2 or more -	\$4.00
CLUB DISCOUNTS	

Order Today!
from

VIS STUDY GUIDES
P.O. Box 16646 Dept. W
Hattiesburg, MS 39404-6646

Henry Allen, WB5TYD's

TEXAS BUG CATCHER
HF MOBILE ANTENNA SYSTEM
BY G.I.A. SYSTEMS



- 3" Diameter Heavy Gauge Wire HI-Q Coils • All Parts Have Standard 3/8-24 SAE Threads • All Corrosion Resistant Materials • Easily Tuned On All HF Bands • 3 to 30 MHz Operation

Available from: VIS P.O. Box 16646, Dept. W
Hattiesburg, MS 39404 (601) 261-2601

Call or Write for Free Brochure

QQSL™ - Quick QSL's

The Ultimate QSL Label Program!

With most ham radio software, the QSL label is created as an afterthought. With QQSL, labels are the only thought! This in-depth attention to your QSL label has produced the finest QSL label program for the IBM PC (or clones) today. \$24.95 anywhere in the world, includes lifetime license (minimal media/shipping/handling charge for upgrades). More information upon request.

Bill Mullin - AA4M/6, Dept. W,
3042 Larkin Place, San Diego, CA 92123-3026

PUBLIC SERVICE

Generic disaster

JOHN MARLES, VE6BIW

Red Cross and ARES volunteers at the Red Cross House in both Calgary and Edmonton participated this past October in a generic disaster simulation.

The event was designed to improve the level of cooperation between the radio amateurs and the Red Cross emergency response teams; accurately complete the forms used by both groups to ensure minimum delay or confusion caused by differing formats; test the radio facilities and the ability of ARES to pass messages and replies with differing levels of priorities.

The exercise was planned by Pam Greer, Emergency Coordinator for the Red Cross in Calgary, and Gary Heisler, Emergency Coordinator for Edmonton, together with ARES officials and members. The exercise began about 7:45 local time after the end of the Alberta Public Service Net on 3.740 MHz. It was initiated by Randy Park, VE6CPO, at the Red Cross House Calgary using the call sign VE6RCC. He reviewed the ground rules for the event which was to last not more than two hours. Formal messages were used, all beginning with the words "Test Message, X-ray." Practice was obtained in dealing with messages according to priority. A 40M frequency was specified in case of lost propagation. Southbound traffic was to come to a tactical station and be forwarded to the Red Cross House Calgary by the VE6NRC 2M repeater. A further alternative frequency was to be SSB on VHF from VE6AFO to VE6JY. These stations operated as tactical stations together with VE6BIW on 3.726 MHz. VE6GLR and VE6MRT formed another pair of tactical stations. The VHF links in Edmonton were on 145.695 MHz simplex and on the 147.03 repeater.

Fifteen formal messages were passed from Calgary and eight replies were received. An additional six replies were received by packet the next morning. Some conclusions were reached, both positive and negative.

1. The Red Cross volunteers and staffers did an excellent job, participating willingly and enthusiastically.

2. There was a loss of contact due to powerful interference near VE6RCE. The operator at VE6RCC thought that the Edmonton operator had left his post, which was not the case. There is a need to establish a loss of contact pro-

cedure. Some work will be done on the station to prevent interference. The use of relay stations and tactical outstations will also help.

3. All traffic should be passed by tactical outstations, with the stations at the Red Cross House free to control.

4. Problems of intermod and room noise level must be addressed when there are several HF and VHF stations in close proximity.

5. Packet traffic was held up by a problem in Red Deer. Some technical problems occurred with the Red Deer BBS, increased by the Rose switch dropping connects at Miquelon Lake. Six or eight messages were left on BBS and received the next day. A means must be found to avoid packet delays.

6. Various VHF links must be placed between the Red Cross House and tactical stations, including simplex and repeater frequencies.

An excellent analysis of the exercise was prepared by Randy Park, VE6CPO, and much of the information in this article was obtained from this source. □

THIS IS IT!

...an affordable high quality masthead preamplifier

HEAR SIGNALS THAT YOU'VE NEVER HEARD BEFORE

- ★ Negligible losses on transmit, the SWR is $\leq 1.1:1$, with a 50 Ohm load at input.
- ★ Professional HF-VOX and PTT for short switching time between receive and transmit.
- ★ Because of the matched 50 Ohm output, a modern receiver with a GaAsFET-input-transistor will not oscillate.
- ★ VOX operation is possible up to 150 Watts PEP.

Now available... three models!

145MHz	220MHz	432MHz
145 MHz	144-148 MHz	430-450 MHz
F < 0.7 db	F < 0.7 db	F < 1.1 db
typ. 0.6 db	typ. 0.6 db	typ. 0.9 db
18-20 db	18-20 db	17-19 db
150 Watt	150 Watt	150 Watt
750 Watt	750 Watt	350 Watt
Type N	Type N	Type N

SPECIFICATIONS

- Frequency Range
- Noise Figure
- N GAS xxx MA
- Gain
- Maximum Switchable Power (PEP) VOX Operation
- Maximum Transfer Power (PEP) PTT Operation
- Connector

the Landwehr masthead preamplifier, available only from Henry Radio

...in fact, we have it all! We are OSCAR specialists. Henry Radio leads the way. Let us answer your questions and help you with your needs. Give us a call — ask for Jack (KK6OH).

Henry Radio

2050 S. Bundy Dr. Los Angeles, CA 90025
 (310) 820-1234
TOLL FREE ORDER NUMBER: (800) 877-7979
 For all states except California.
 Calif. residents please call collect on our regular numbers.

Delightful diversion for ill children

The following brief article by Naomi Scott Safron, is reprinted here from the Texas Medical Center News, November, 1991.

Seriously ill children and their families who stay at the Houston Ronald McDonald House have a new pastime, thanks to a local group of Amateur Radio operators.

The amateurs have formed a special society to provide worldwide communications opportunities for the children. And, more importantly, the hams offer a diversion for the children who have cancer, heart disease and other serious illnesses.

The operators often visit the Houston Ronald McDonald House. Via a high frequency transceiver, they put the children in touch with hams across the country—and also with children at the Galveston Ronald McDonald House, where there is another group of volunteer hams. From all accounts, the children love talking with each other!

"This is the first-of-its-kind program in the nation," says Jim Clarke, chairman of the Amateur Radio society. "Now these children and their families will have an opportunity to take their minds away from their problems for a little while and talk on the radio with other operators, children at other Houses, and to relatives back home."

"Watching these children's faces light up when they hear their names called out of a radio from someone far away is a real treat for us," he adds. "Nowadays, you can dial almost anyone in the world through long distance telephone service. But it still doesn't have that excitement and magic you feel when talking through ham radio."

Clark says the group is in the process of soliciting donations for specific radio equipment. Right now the amateurs bring in their own gear and set up a station. They do have permanent antennas mounted on the roof of The Ronald McDonald House which were donated by local hams.

"Many of the children staying at our Ronald McDonald Houses have never even seen a ham radio," observes Judy

Alwin, house manager at the Houston Ronald McDonald House. "The ham radio volunteers have given the children a unique opportunity—they are having fun and enjoying a new experience."

The University of Texas M.D. Anderson Cancer Center Amateur Radio Club was first organized in 1987 as one additional effort to provide for the educational, emotional and recreational needs of the patients. The station is operated by licensed amateur operators from the Houston community who have joined a special category of the hospital volunteer staff called Volunteer Amateur Radio Operators. Funding for this activity is derived, in part, from revenues generated through the sale of Christmas cards designed by pediatric patients. Station activities include the introduction of the various aspects of the hobby to young patients, the transmission of patient messages through local traffic networks and thus the promotion of Amateur Radio as a community service. Other community based activities include cancer infor-



Four-year-old Mikey Alvarez from New Mexico got a quick lesson from Charles Prochaska, KG5KV, one of the volunteers from the University of Texas MD Anderson Cancer Center ARC.

mation for Amateur Radio operators and emergency communications for the Texas Medical Center in times of disaster. More information about this organization may be obtained by writing KK5W, 1515 Holcombe Blvd., Houston, TX 77030. □

Code

(continued from page 16)

selves. And eventually you will really begin to hear words!

Give it a chance — give yourself a chance. Gosh, golly, is it possible you might even begin to enjoy CW? (Gulp)

Speaking of CW (won't I ever stop?), the limit of copying ability by decoding the actual dots and dashes is a little under 10 wpm. If you're not hearing characters by the time you hit 10 wpm, it's going to be pretty tough to get to higher speeds.

Unfortunately, most people start decoding dots and dashes and try to increase their speed by slowly moving to

slightly faster rates. This is the biggest drawback to using code practice tapes. You get into a habit and all that happens is you perform the habit (or try to) faster and faster. To break the habit you must break the pattern.

When you are pretty confident about having good copy at 10 wpm, you're ready to make the break. You definitely know the code and now it's time to go to warp speed. Get tapes of 15 wpm and just listen to them a few times without trying for solid copy — just get into the rhythm. After a while, you'll notice you're picking out a few characters just by their sound. As time goes on, you'll pick out a few more.

Try to make a written copy (almost no one can print this fast so force yourself to write). It'll seem pretty tough at first, but after a while you will get more and more correct.

Don't listen to any other speed for at least a week, then try to copy a 13 wpm tape. You'll be very surprised at how easy the 13 wpm copy will come to you.

Now that you've proven to yourself that the method is working, put away the 13 and stay with the 15 and nothing less until the day of your test.

If you are somewhat of a sadist, try some 15 wpm five-letter coded groups. This falls under the "No Pain, No Gain" concept, but works very well for picking out characters versus dots and dashes. Good Luck! — Lake County ARA, Painesville, OH □

HI-PERFORMANCE DIPOLES

Antennas that work! Custom assembled to your center freq., ea. band • Adv. via hi. of center and each end • Hang as inverted "V" • Horizontal, vert. dipole, sloping dipole • Commercial quality • Stainless hardware • Legal power • No-trap, high-efficiency design. Personal check, MO, or C.O.D. (\$3)

MPD-5*	80-40-20-15 10M max-performance dipole 87' long	.....	\$105ppd
MPD-2	80-40M max performance dipole, 85' long-362	.....	95-\$65ppd
HPD-3*	160-80-40M hi-performance dipole 113' long	.....	\$79ppd
SSD-8*	160-80-40-20-15 10M space-saver dipole 71' long	.....	\$125ppd
SSD-5*	80-40-20-15 10M space-saver dipole specify L 42' \$105.52' \$108ppd	.....
SSD-4*	80-40-20-15M space-saver dipole-specify L 46' \$93	.....	60-\$96ppd

*9-bands with wide matching range tuner

BASE for catalogue of 30 dipoles, slopers, & space-saving, unique antennas

WINN ANTENNAS
BOX 393 MT. PROSPECT, IL 60056 708-394-3414

LEARN THE SECRETS...

of copying high-speed CW. Do you know the code but still miss letters during exams or on the air? **Start copying CW as words!** Our proven methods teach you how. Novice to 22 wpm. Four 60-min cassettes & complete instructions. **ORDER TODAY!** The QSO-Master II™: \$29.95 + \$4.00 S&H. (Check, M.O., MC/VISA)

AVC INNOVATIONS, Inc. Dept. 2W,
P.O. Box 20491, Indpls, IN 46220
(IL, IN, MI, MN, OH, WI please add sales tax)

High quality courses since 1985!

KENWOOD



TS-950SD
Digital, 150W, Dual RX, Also Available w/out Digital. A Top Performer Call!



TS-860SAT
General Coverage HF XCVR, 110W, Available Without The Autotuner. Available All Mode DSP Call!



TS-450SAT
General Coverage HF XCVR, 100W, Available w/out Autotuner. A Great Mobile Performer Call!

R-5000 HF Receiver Call
TH-27 2m Tiny HT Call
TH-77 2m/440 Tiny HT Call
TH-225 2m 5W HT Call
TM-241 2m 45W Mobile Call
TM-741 2m/440 Mobile Call
TR-751 2m All Mode Call
TS-140S HF Rig Call
TS-690S HF & 6m Rig Call
TS-790 Dual Band Base Call
New! Ham Windows Software for Windows 3.0 Call!

YAESU



FT-1000D
200W HF XCVR, Dual RX, Deluxe and Standard Models Available. A Top Performer Call



FT-990
General Coverage HF XCVR, 110W, Built-in Power Supply and Auto tuner. A Great Performer Call



FT-890
General Coverage HF XCVR, 110W, Runs From 13.8V, Available With And Without Autotuner Call



FT-6200
45W 144/440 MHz Dual Band Mobile, Optional Kit Allows Remote Mounting Call



FT-2400
45W 144 MHz Mobile, Tuned Front End Eliminates Intermod, Built To Military Specifications Call



FT-470 / FT-411
Dual Band HT Call
FT-411 2m HT Call
FT-415 2m HT Call

LARGE YAESU INVENTORY - CALL FOR PRICES

ICOM



IC-765
General Coverage HF XCVR, Automatic Antenna Tuner, CW Keyer, and more Call



IC-751A
General Coverage HF XCVR, 100W, Base Performance, Great For Mobile HF Work Call



IC-735
General Coverage HF XCVR, 100W, Compact Size, Great For Mobile HF Work Call

IC-751A HF XCVR Call
IC-726 HF XCVR w/ 6m Call
IC-725 HF XCVR Call
IC-3220H 2m/440 Mobile Call
IC-229H 2m Mobile 45W Call
IC-W2A 2m/440 HT Call
IC-24AT 2m/440 HT Call
IC-2GAT 2m HT 7W Call
IC-2SAT 2m Tiny HT Call

ALINCO

DR-590T 2m/440 Mobile Call
DR-570T 2m/440 Mobile Call
DR-112T 2m 45W Mobile Call
DJ-F1T 2m Micro HT Call
DJ-120T 2m Tiny HT Call
DJ-160T 2m Small HT Call
DJ-560T 2m/440 HT Call
Alinco Accessories In Stock!

ASTRON

MODEL AMPS ICS PRICE
RS12A 12 79.00
RS20A 20 99.00
RS20M 16 119.00
RS35A 35 159.00
RS35M 35 179.00
VS-35M 35 179.00
M = Dual Meters / V = Variable.

TELEX / HYGAIN

218S Oscar Pack Call
TH7DX-S 7 El Triband Call
TH5MK2-S 5 El Triband Call
EX-14 4 El Triband Call
TH3JR-S 3 El Triband Call
V2R 2m Vertical Call
Please Call For Prices On All Hygain Antennas And Crank-up Towers.

CUSHCRAFT

A3S 3 Element Triband Beam
A3WS 4 Element Triband Beam
A4S 4 Element Triband Beam
R5 20-10m No Radial Vertical
R7 40-10m No Radial Vertical
13B2 13 Element 2m Beam
17B2 17 Element 2m Beam
26B2 26 Element 2m Beam
ARX2B 2m Vertical
AR270 2m/440 Vertical
Call For More Cushcraft Items!

MFJ

1278/1270 TNC'S 249/129
1284/1289 TNC Software 25/59
989/986 Tuners 299/25
949/948 Tuners 139/119
941/945 Tuners 99/89
901/910 Tuners 59/19
207/208 Analyzers 99/89
486/422 CW Keyers 169/119
407/401 CW Keyers 69/49
815/817 Wattmeters 79/89
We Stock Most MFJ Products!

ROTATORS

Orion OR2300 Call
Telex CD4511 (8.5 SQ) Call
Telex HAMIV (15 SQ) Call
Telex Tailtwister (20 SQ) Call
Telex HDR300 (25 SQ) Call
Yaesu G400RC Call
Yaesu G500A Call
Yaesu G800SDX Call
Yaesu G1000SDX Call
Yaesu G5400 AZ/EL Call
Please Call For Rotor Pricing!

AEA

Isoloop HF Loop Antenna Call
PK-232 All Mode TNC Call
PK-88 2m Packet TNC Call

BUTTERNUT

HF-2V 80/40 Vertical 149.95
HF-5B 5 Band Beam 259.95
HF-6V 80-10 Vertical 159.95

KANTRONICS

Hostmaster Software 64.95
KAM All Mode TNC 289.00
KPCII Packet TNC 159.95

AMERITRON

AL1500 1500W Linear Call
AL1200 1500W Linear Call
AL82 1500W Linear Call
AL80 1000W Linear Call
AL811 600W Linear Call

LARSEN

KG-144 2m On Glass 49.95
KG-270 2m/70cm On Glass 69.95
KG-440 70cm On Glass 44.95
LM-150 2m 5/8 Mag-mount 51.85
Call For Larsen Items Not Listed!

DIAMOND

X-500 / X-200 / X-50 Call
SG-7900 All Mode TNC Call
NR-770 / NR-790 Call
SX-100 / SX-1000 / SX-200 Call
Call For More Diamond Products!

U.S. TOWERS

- All Steel Construction
- Hot Dip Galvanized
- Towers All Self-Support
- Many Available Options
- Highest Quality, Best Selling Crankups Available
- Larger Models Too
- Drop Shipped Directly From The Factory To You To Save \$\$\$\$
- California Residents Add 6% Tax

Call now and let our experts design a package just for you!

MODEL	MIN.	MAX.	WINDLOAD	PRICE
MA-40	22'6"	40 FT	10 SQ FT	629
MA-550	22'1"	55 FT	10 SQ FT	999
MA-770	23'10"	71 FT	10 SQ FT	2249
MA-850	24'6"	85 FT	10 SQ FT	3489
TX-438	22'6"	38 FT	18 SQ FT	919
TX-455	21'0"	55 FT	18 SQ FT	1385
TX-472	23'8"	72 FT	18 SQ FT	2279
TX-489	24'4"	89 FT	18 SQ FT	3959
HDX-538	22'6"	38 FT	30 SQ FT	1179
HDX-555	22'0"	55 FT	30 SQ FT	2079
HDX-572	23'8"	72 FT	30 SQ FT	3559
HDX-589M	24'8"	89 FT	30 SQ FT	7119

ROHN TOWER

GUYED TOWER PACKAGES

HEIGHT	25G	45G	55G
50	849	1229	1549
60	939	1389	1939
70	999	1719	2159
80	1199	1869	2369
90	1289	2039	2579
100	1369	2199	2989
110	1449	2459	3209
120	1669	2619	3429

SELF SUPPORTING TOWERS

MODEL	HGT	LOAD	COST
HBX40	40	10 SQ	449
HBX48	48	10 SQ	589
HBX56	56	10 SQ	699
HDBX40	40	18 SQ	569
HDBX48	48	18 SQ	649

10% West of Rockies Charge.

All BX series towers include top and rotor plates, and base stubs.

Free Shipping On BX Towers!

These towers are shipped freight collect from Plano. Includes all required hardware & rotor plate.

FOLDOVER TOWERS

FREE SHIPPING ON FOLDOVER

MODEL	HEIGHT	LOAD
FK2548	48 FT	15 SQ
FK2558	58 FT	13 SQ
FK2568	68 FT	11 SQ
FK4544	44 FT	34 SQ
FK4554	54 FT	29 SQ
FK4564	64 FT	28 SQ
25G Double Guy Kit		\$ 299.00
45G Double Guy Kit		319.00

Rohn Foldover Towers Are Shipped Freight Prepaid From The Factory; State Sales Tax Due In Most States.

STACKED SECTIONS

20G	Light Duty 12'	54.50
25G	Medium Duty 12'	65.50
45G	Heavy Duty 18'	153.50
55G	Extra Heavy 18'	197.50
EF245	GINPOLE 25/45/55	375.00
EFBX	GINPOLE HBX	399.00
M200H	2" O.D. Steel Mast	39.00
TB-3	2" Thrust Bearing	75.00
AS-25G	Rotor Shelf (25G)	29.85
AS-45G	Rotor Shelf (45/55)	74.25
GA25G	Guy Assembly	56.25

Other Rohn Items In Stock Too! Please Call For A Shipping Quote On Rohn Towers And Accessories.

COAX & CABLE

ANDREW HELIAX®
LDF4-50 1/2" Copper 2.29/Ft
LDF5-50 7/8" Copper 5.69/Ft
Connectors: 1/2" 29.00 7/8" 74.00
COAX
9086-9913 Equivalent, 100% shield, air diel., solid center \$.49/Ft.
RG-213/U - Mil Spec RG-8 95% shield, non-contaminating, polyethylene Dielectric \$.39/Ft.
RG-8X - 95% Shield, Mini RG-8, Foam Dielectric \$.25/Ft.

COAX LOSS CHART (DB/100FT.)

Cable	10m	2m	70cm
7/8" Heliax	.2	.5	.9
1/2" Heliax	.4	.9	1.6
9086	.6	1.7	3.1
RG-213/U	.9	2.3	5.2
RG-8X	1.2	3.5	5.8

ROTOR CABLE
8 Conductor (2-#18, 6-#22) 25/Ft.
Heavy Duty (2-#16, 6-#18) 45/Ft.

SAFETY BELTS



Nylon safety belts are available in four sizes. S, M, L, X-L 79.95

PHILLYSTRAN

NON-CONDUCTING GUY CABLE

HPTC21001 (2100#)	..... \$ 39/Ft.
HPTC40001 (4000#)	..... 64/Ft.
HPTC6700 (6700#)	..... 84/Ft.
End Kits 2100/4000/6700	..... 4/5/6

CARBON STEEL MASTS

WALL	6'	8'	10'	12'	20'
12	39	52	65	79	119
18	59	79	99	119	189
25	...	...	129	...	249

These 2" O.D. Masts Are Galvanized To Resist Rust, Up To 8' Ship By

ORDER TOLL FREE: 1 - (800) 272 - 3467

LOCAL AND TECHNICAL HELP: 1 - (214) 422 - 7306 FAX: 1 (214) 881-0776

C.O.D.
MC / VISA

TEXAS TOWERS

M-F: 9AM-5PM
SAT.: 9AM-1PM

A Division of Texas RF Distributors, Inc., 1108 Summit Ave. Suite #4, Plano, TX 75074

Simple matching for non-radial 5/8 wavelength verticals

ROLAN O. CLARK, AA3G

I would like to share the following simple design for matching 5/8 wavelength antennas to coax. I have used this for several years and have had good success. First, let me draw a simple diagram (see Figure 1).

Connect the coaxial center conductor to the 5/8 element and the coax shield to the .2 wavelength element. The 5/8 wavelength element is isolated from ground and the .2 wavelength does not have to be grounded except for static discharge. More on that below. Adjust the spacing, A to B, for minimum VSWR which will usually go to zero and has a broad frequency range over which the VSWR is low. My experience has been that the VSWR is almost zero over the entire 10M band when the antenna is constructed for that band. The same is true when I built the antennas for 20M, 15M or 2M. My next project is to build one for 445 MHz and 40M.

Typical spacing for match that I have experienced is as follows:

2M, using 1/4 in. diameter elements, approximately 7/8 inch.

2M, using 1/2 in. diameter for the 5/8 element and 7/8 in. diameter for the .2 element, approximately two inches.

2M, using #14 copper wire, approximately 1/8 in. and very critical.

10, 15 and 20M using approximately 2-3 in. diameter tubing, 10 to 12 inches.

With the larger diameter tubing the spacing is not super sensitive and the .2 wavelength element can be varied if that helps the match.

Comments and construction ideas

1. VSWR means nothing by itself but if the VSWR is low at the antenna then there should be good power transfer between the coax and the antenna. (If VSWR is high at the antenna input, then other methods are used to match the antenna/feedline combination to the RF power source.)

2. The .2 wavelength element can be grounded or not; I keep mine at ground and connect a 100K 2W

resistor between the center conductor and shield of the coax for static discharge purposes.

3. When using the 10, 15 and 20M 5/8 antenna of this design the VSWR does not change significantly whether the antenna .2 wavelength element is grounded or the whole antenna is sitting two feet off the ground with no connection to ground. I have also set both elements on the grass with no change in VSWR. I assume that it would match the same if the antenna was sitting on concrete, as in a shopping center parking lot, although I

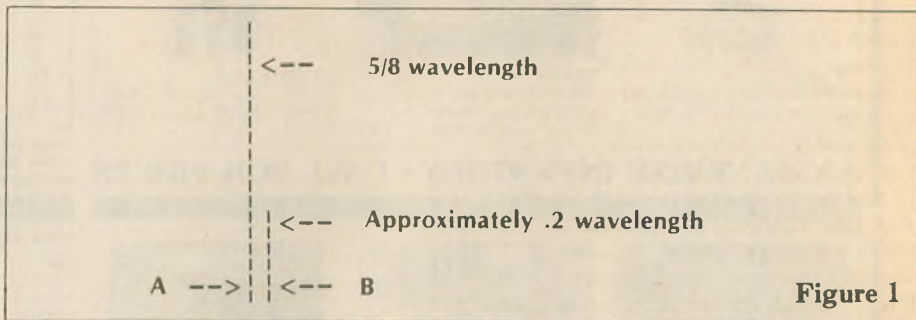


Figure 1

have not tried that yet. I suppose if the ground was wet or very conductive there would be a change. Snow two feet above the antenna did not affect the match.

4. My first design, a 2M one, had the elements set in wood and worked fine.

5. I have built several of the 2M ones as follows:

Using a 15 to 20 ft. mast, approximately 17 inches below the top of the mast, connect the coax shield to the mast using a hose clamp. Position the bottom of a 4 ft. piece of tubing (4 ft. is close enough to a 5/8 on 2M and the diameter isn't critical, but I would suggest using 1/2 in. or larger for strength), parallel to and down to a point across from where you connected the shield and connect the coax center conductor to the 5/8 section; adjust the spacing for minimum VSWR and install insulated spacers to support it; re-check VSWR, and that's it.

The top of the mast is also the .2 wavelength part of the antenna, and you only need one more piece to make a good antenna which is 15 to 20 feet off the ground.

Also consider a 10 ft. piece of thin wall conduit, cut off four feet and position it about 17 inches down on the remaining six ft. piece as above, and then you have a 5/8 vertical whose feedpoint is about 4-1/2 feet off ground and whose tip is about 8-1/2 feet off ground, or mount it anywhere you wish.

6. On 10, 15 and 20M I used approximately 12 inches of wire from the coax center conductor and the same from the shield to connect to the elements of the antenna, as this makes the match much easier to accomplish.

THE ORIGINAL WD4BUM
HAM STICK
ANTENNAS 100%
MADE
IN
USA

for
H. F. MOBILE OPERATION

\$16⁰⁰ each

- Monobanders for 75 to 6 meters
- Very rugged fiberglass and stainless steel
- Telescopes for easy adjustment
- 3/8 x 24 TPI base fits most mounts
- Low profile & low wind load
- Needs no springs or guys
- Complete tuning & matching instructions included
- Approximately 7 ft. tall
- 1,000 watts

Cat. #	Band	Cat. #	Band
9175	75 meters	9115	15 meters
9140	40 meters	9112	12 meters
9130	30 meters	9110	10 meters
9120	20 meters	9106	6 meters
9117	17 meters		

At Your Dealers or Send
Check, M.O., Visa or MC to:

Lakeview Company, Inc.
3620-9A Whitehall Rd.
Anderson, SC 29624
800-226-6990, ext. 10 (Orders only)
803-226-6990 (Tech. Questions)

Add \$4.00 per order for shipping/handling
Catalog Available • Dealers Welcome

TNT Today's No-Tune
Multiband Antenna

No pruning. No tuning. No knobs to twist.
TNT is No-Tune on 80 cw, 40, 20, 17, 12, 10. TNT/2 is No-Tune on
40, 20, 10. Work other bands w/ tuner. DX & Gain rise w/ frequency.

Ready to Use Kink-Proof No Traps or Resistors
Includes isolation Wx-Sealed Insulated to 3000 V
balun & 99 ft RG8x Low Noise Rated 500 Watts

The modern coax-fed version of the classic off-center fed windom.

Technote 126-\$6.95 ppd
AntennasWest
Box 50062W, Provo, UT 84605

TNT \$89⁹⁵ +\$6
Windom 135 ft. long PAH

TNT/2 \$79⁹⁵ +\$7
Windom 67 ft. long PAH

Circle 800-926-7373

Keep it up! Send your news, features, construction projects and commentaries to 2120 28th St., Sacramento, CA 95818. Share your experiences in Amateur Radio with hams around the world.

I assume the gradual change in spacing, from the approximate 1/4 in. coax center conductor to shield distance and then spreading to the 12 inches or so at the antenna elements, make a sort of impedance transition using this method. On 2M a length of approximately two inches for connecting to the coax seems to work fine.

The 10M 5/8 is approximately 1/2 wavelength on 15M. If the .2 wavelength element is at ground and an odd multiple of 1/4 wavelength coax is used, the antenna can be used on 15 with little matching needed. Depending on the mounting environment, you may have to experiment with coax length but it may be possible to get a match to your transmitter without using a tuner. (The length of coax is really a "tuner," but you know that.) This antenna is slightly longer than a 1/4 wavelength on 20M so most antenna tuners will allow you to match to the coax with no problem on 20M. A 5/8 on the 18 MHz band is approximately a 1/4 wave on 40M so if you build an 18 MHz 5/8, then it will probably be a close match on 40M; you can use your imagination if you want to work more on one band without using a tuner or by using the limited range tuners installed in some of the newer radios.

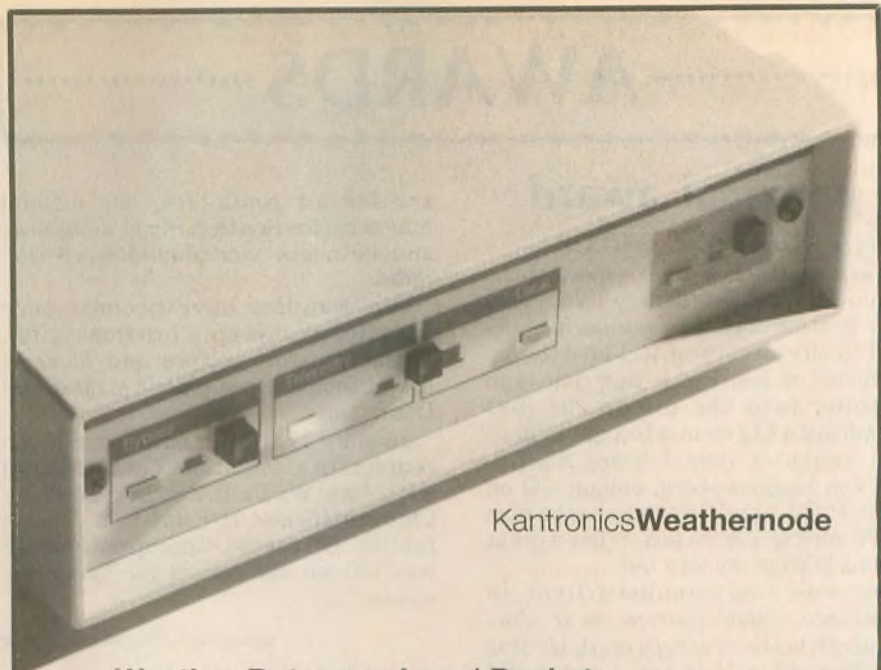
Theory

I won't display my antenna ignorance by trying to explain how this design works. I would like to see persons who live in rocky areas or deserts and the like try this design as I believe it to be fairly independent of ground conditions as far as antenna currents are concerned. The obvious advantage is no radials, and all the currents should be contained in the antenna itself.

The antenna should match at the band designed, eliminating the need for a tuner at this band. The disadvantage is a longer than normal antenna for a given band, but there is a lot more space up than out.

Please let me know if any of you build this type of antenna and the results you get. This should be a good camping antenna as you can set it up anywhere, lean it against a wood fence and the like, and you are on the air. My address is 5807 Adamstown Road, Adamstown, MD 21710; AA3G@KD30.MD.USA.

I wish to thank my good friend Cliff, K3EER, who encouraged me to write this article; and I would like to dedicate this article to my good friend Ron, KT3T, who is now a Silent Key and with whom I enjoyed many hours discussing Amateur Radio and antennas, working on radios and conducting antenna experiments. □



Kantronics Weathernode

Weather Data over Local Packet . . .

Imagine gathering tables of local weather data for several months, right at your own packet station computer. You can do this when you or a friend installs a Kantronics Weathernode.

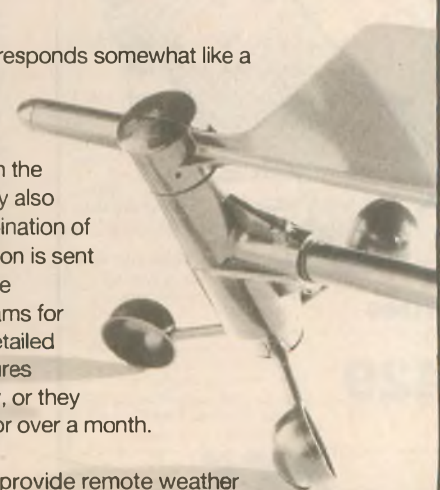
The Weathernode is not a TNC. It is a data gathering device that attaches to your TNC and station computer. The internal program is set to gather data from several types of sensors: internal and external temperature, wind speed, wind direction and rainfall. The temperature sensors come with the unit. The anemometer, for wind measurements, and the rainfall gauge are optional and are available from your favorite dealer or the factory.

If you are the SYSOP for the Weathernode, you'll have control over how often the sensors are sampled and stored, and you'll be able to change your preferences remotely, by password.

If you are a user, a Weathernode responds somewhat like a packet BBS. You may connect to the node, get a listing of commands, and then indicate what you would like dumped from the Weathernode's memory. You may also specify a range of time and combination of sensors. The requested information is sent back in tabular form which may be imported into spreadsheet programs for graphing. Users may look at a detailed record, for example, of temperatures taken every five minutes for a day, or they may wish to scan daily weather for over a month.

The Kantronics KTU, the first to provide remote weather data to a Packet LAN.

**Kantronics 1202 E. 23rd St., Lawrence, KS 66046
913.842.7745 TELCO BBS 913.842.4678 FAX 913.842.2021**



..... AWARDS

A personal award

RON FAULKNER, W6TUR

Working DX is a great aspect of the ham radio hobby. Thirty-five years after getting into this wonderful hobby, I finally discovered it. I love the excitement of hearing a new one and jumping into the pileup, or just answering a CQ from a foreign land.

In March of 1989 I heard ZS2LR, Jim van Loggerenberg, calling CQ on the 20M CW band. It was to be the first of 170 such QSOs (so far). What a great part of DXing this can be!

Jim van Loggerenberg lives in Uitenhage, South Africa, near Port Elizabeth in the southern cape. He was first licensed in 1956 and, like me, did not get interested in DX until recently. Jim is a technical training officer supervisor for Transnet in the railroad branch. He has completed 35 years of service. He is married to Marge and has two children, Donovan and Liezl. Jim's father was ZS2AN (ZT2V at one time), and his son Donovan recently became ZS2DL. Jim has written many

articles for *Radio RS*, the official magazine for South African amateurs, and he's also contributed to *World-radio*.

Our families have become very friendly. We swap Christmas gifts, birthday cards, recipes and ideas. I have become a pen-pal with Liezl and Donovan.

January 12, 1991, marked our 100th contact. In recognition, I awarded Jim with the W6TUR/ZS2LR Century Club certificate. It helps that I am a printer. Of course, appropriate space was left on the award for "endorsements."



Jim van Loggerenberg, ZS2LR, with Century Club certificate.

Over the years I have enjoyed many facets of this great hobby. The friendships and fraternity experienced are the best part of it. I look forward to QSO number 200 in the summer of '92.

DARA Scholarship

The DARA Scholarship Program is open to any FCC licensed Amateur Radio operator graduating from high school in 1992. There are no restrictions on the course of study planned by the student, nor does he or she need to be planning on a four-year baccalaureate degree. However, schools awarding associate degrees or any technical institution selected must be

accredited. The awards will be based on a combination of financial need, scholastic achievement, contributions to amateur radio and community involvement.

Applications and further information are available from DARA Scholarship Committee, 45 Cinnamon Court, Springboro, Ohio 45066. Applications must be postmarked *no later than May 15, 1992*. Award winners will be notified by telephone around June 1, 1992. □

DXCC plaque

It was really nifty to work ZA1A, Tirana, Albania. It was the last one I needed to have worked and confirmed every current active country on the ARRL list of DXCC countries. It sure has been a long time coming and cost me the loss of much sleep over the years.

Also I recently achieved earning the five-band SSB DXCC Award. It was especially nice to have Don Search, W3AZD, who heads the ARRL DXCC Award Program personally present a

plaque to me commemorating this accomplishment.

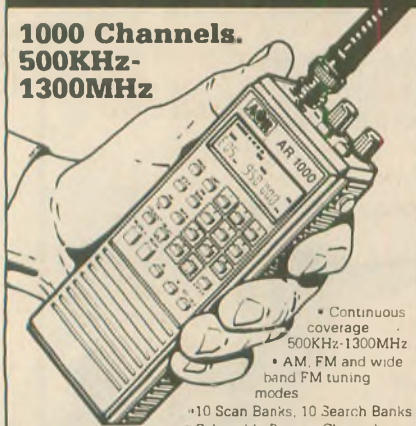
—73, Ken M. Miller, K6IR, Rockville, MD. □



Ken Miller, K6IR, receives the 5B DXCC Award from Don Search, W3AZD.

New AOR Scanner

**1000 Channels.
500KHz-
1300MHz**



AR1000

Total Price: Freight Prepaid
(Express Shipping Optional)

\$429

- Continuous coverage 500KHz-1300MHz
- AM, FM and wide band FM tuning modes
- 10 Scan Banks, 10 Search Banks
- Selectable Priority Channel
- Selectable Search Increments: 5-955KHz
- Permanent memory backup
- 25 Day Satisfaction Guarantee Full refund if not Satisfied.
- No Frequencies cut out
- All normal accessories included
- Size: 6 7/8" H x 1 3/4" D x 2 1/2" W Wt. 12 oz.

ACE
COMMUNICATIONS

10701 E. 106th St. Fishers, IN 46038
Toll Free 800-445-7717



Visa and Mastercard
(COD slightly higher)
FAX (317) 849-8794



"ONLINE" U.S. CALL DIRECTORY

Hamcall service gives you all hams via your computer & modem. Updated each month! Only \$29.95 per year. Unlimited use - you pay for phone call.

BUCKMASTER PUBLISHING

Route 3, Box 58

Mineral, Virginia 23117

703/894-5777 *visa/mc* 800/282-5828

DAYTON Hamvention

April 24, 25, 26, 1992

Early Reservation Information

• General Chairman, Ross Brown, WA8DQH

• Asst. General Chairman, Dave Grubb, KC8CF

- Giant 3 day flea market • Exhibits
- Free bus service • License exams
- Activities for the non-Ham

Flea Market Tickets

A maximum of 3 spaces per person (non-transferable). Tickets (valid all 3 days) will be sold IN ADVANCE ONLY. No spaces sold at gate. Vendors MUST order registration ticket when ordering flea market spaces.

Special Awards

Nominations are requested for "Amateur of the Year," "Special Achievement" and "Technical Excellence" awards. Refer to the Hamvention Program for nomination form or contact Hamvention Awards Chairman, Box 964, Dayton, OH 45401-0964.

License Exams

Novice thru Extra exams scheduled Saturday and Sunday by appointment only. Send FCC form 610 (Aug. 1985 or later) - with requested elements shown at top of form, copy of present license and check for \$5.40 (payable to ARRL/VEC) to: Exam Registration, 8830 Windbluff Point, Dayton, OH 45458-2855. No FAXes or Express Mail please!

1992 Deadlines

Award Nominations: March 1

License Exams: March 23

Appointments will be mailed by April 13

Advance Registration and Banquet:

USA - April 3 Canada - March 27

Flea Market Space:

Spaces will be allocated by the Hamvention committee from all orders received prior to February 1. Express Mail NOT necessary! Notification of space assignment will be mailed by March 15, 1992.

Checks will not be deposited until after the selection process is complete.

Information

General Information: (513) 454-1456

FAX: (513) 890-5464 Attn: Hamvention
or, Box 964, Dayton, OH 45401-0964

Lodging Information: (513) 223-2612

(No Reservations By Phone)

Flea Market Information: (513) 767-1107

Lodging

Please write to Lodging, Dayton Hamvention, Chamber Plaza, 5th & Main Streets, Dayton, OH 45402-2400 or refer to our 1991 Hamvention program for a listing of hotel/motels located in the Dayton area.

HAMVENTION is sponsored by the Dayton Amateur Radio Association Inc.

Advance Registration Form

Dayton Hamvention 1992

Reservation Deadline - USA-April 3, Canada-March 27

Flea Market Reservation Deadline: February 1

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

How Many

Admission (valid all 3 days)	_____	@ \$10.50*	\$ _____
Grand Banquet	_____	@ \$22.00**	\$ _____
Alt. Act. Luncheon (Saturday)	_____	@ \$8.50	\$ _____
(Sunday)	_____	@ \$8.50	\$ _____
Flea Market (Max. 3 spaces)	_____	\$30/1 space	
		\$60/2 adjacent	
Admission ticket must		\$150/3 adjacent	\$ _____
		be ordered with flea market tickets	

* \$14.00 at door

** \$24.00 at door, if available

Total \$ _____

WR

4

Name _____

Address _____

City _____ State _____ Zip+4 _____

Make checks

payable to - Dayton HAMVENTION

Mail to - Dayton Hamvention

Box 1446

Dayton, OH 45401-1446

Worldradio predicts

In the best tradition of *Midnight Rattler*, *The Globule*, *National Intruder* and other supermarket tabloids, *Worldradio* almost proudly presents this 1992 prediction special. Our prognosticator, T. Sturdley Zort, AE7K, has used every prediction device available—Tarot, yarrow stalks, runes, tea leaves, astrology, chicken guts—to bring you these astounding predictions for Amateur Radio in 1992.

1. Elvis Presley will be seen at 37 VE sessions simultaneously, taking the Novice test. He'll flunk all 37 simultaneously.

2. CW straight-key operators will be thrilled to learn of a cure for "glass arm," which provides pane relief and streak-free sending.

3. WARC-92 allocates all radio fre-

quencies from 10 cycles to gamma rays to HDTV. Amateur Radio is allocated in cans and string.

4. ARRL HQ will be disbanded, to be replaced by the Finley Corners, Utah (pop. 37) street gang, who will short out the microphone with drool.

5. Elizabeth Taylor and Madonna will continue to show absolutely no interest in Amateur Radio.

6. European amateurs will be astounded and relieved when 1957 last-place fox hunting team European-Wide Trials is discovered in Synessklogg, Indonesia, intently studying a map of Paris.

7. The FCC will propose a slightly new license class structure, introducing 10 new incentive licensing steps. Amateur Radio will now have 16 classes of licenses, requiring a series of 18 written exams and 4½ Morse code

tests, from Pre-Beginner to Imperial Majesty. Things are so complex already that no one notices any change.

8. A DXpedition operating from the Great Pyramid at Giza is slurped into a flying saucer, when its pilot gets tired of complaining about TVI.

9. There will be a terrible tragedy when 37 amateurs are missing after aiding a walkathon for the National Lemming Society.

10. N6WR becomes the world's weightiest ham, at 6,837 pounds, after confusing Worked All Grids award with Worked All Griddles. His wife nearly dies of strangulation after attempting Worked All Girdles. Half of Alabama tries for Worked All Grits, Bob Hope qualifies for Worked All Grins, and God knows how many hot-blooded young men die of exhaustion at Worked All Girls. □

Science news

Scientists discover new element: administratium (Ad)

The heaviest element ever described was discovered by physicists at the FCC last week. Tentatively named Administratium, the element has no protons or electrons. This indicates that Ad has an atomic number of 0 and falls

outside the natural patterns exhibited by other elements in the periodic table. Ad does however have one neutron, 125 assistants to the neutron, 75 vice-neutrons and 111 assistants to the vice-neutrons. This gives Ad an atomic mass of 312. The 312 particles are held together by a force involving the continuous exchange of meson-like particles

which have been termed "memos."

Because Administratium has no protons or electrons, it is inert. Nonetheless it can be detected chemically in that it impedes every reaction in which it is present. According to one of its discoverers, even a small amount of Ad makes reactions which, normally proceeded in seconds, take more than five days.

Administratium has a half-life of three years. In fact, it does not really decay but instead undergoes reorganization in which a vice-neutron, assistants to the vice-neutron, and certain assistants to the neutron change places. Studies have shown that the mass of Ad increases after each reorganization, although this increase in mass has yet to be fully explained. Another peculiar property of Ad is that the more one tries to observe the motion of vice-neutrons within the structure of Ad, the more uncertain these motions become.

Within hours of the discovery of Ad, the existence of the element was confirmed in laboratories around the world. A team of physicists at the University of Utah held a press conference to announce that they had been able to synthesize Administratium in fusion reactions conducted at room temperature. This reaction was monitored using a highly sophisticated device which measured streams of memos emitted from a FAX mounted device. This device, called FUBAR by the researchers, has indicated there may be more memos emitted by Ad at room temperature than were consumed.

More information to follow from the FCC and the Media Administration Division (MAD) at the University. SK
—*Olympia Amateur Radio Society* □

HAM RADIO CLASSIFIEDS

the bi-weekly classified newsletter for ham radio operators



HRC
HAM RADIO CLASSIFIEDS

HAM RADIO CLASSIFIEDS
Buy, Sell, Trade
Transceivers, Amplifiers, Antennas,
Computers, Tubes

VOLUME 1 NUMBER 3
MARCH 18, 1991

CLASSIFIED

SELL SERVICE PLANNING SERVICES OF
HOME BY BUYER AND MEMBER OF CLASSIC
... (text continues)

MADISON • SHOPPER
CALL FOR ORDERS. 1 (800) 557-5552

... (text continues)

BUY — SELL — TRADE
Transceivers, Amplifiers, Antennas, Computers, Tubes

CALL OR WRITE FOR YOUR FREE COPY!
813/923-9799

2103 Reynolds St., Sarasota, FL 34231
The best rates, with the best readership.

Pedaling hams

All bicycle-riding hams are invited to the third annual forum of the Bicycle Mobile Hams of America (BMHA) which meets Sunday, April 26, from 9:30 to 11 a.m., at the Dayton Hamvention. The program will feature open discussions and demonstrations on homebrewing antennas for your bicycle; CW while pedaling; and lightweight HF rigs for cyclists. In addition, a photo show, "The Wonderful World of Bicycling," will be shown.

The BMHA was founded in 1989 by Hartley Alley, NA0A, who became an Amateur Radio operator after he learned that hams had the perfect answer for providing communication on a 2,000-mile solo bike trip that he was planning from Boulder, Colorado, to his hometown of Lynn, Massachusetts. From an original group of 25, the club membership has grown to 150, with members in most of the states, Canada, and even one in Germany.

In addition to the annual meeting at the Dayton Hamvention, the members keep in contact through the club's 20M net and quarterly newsletter. The BMHA net meets every first and third Sunday of each month at 2330 UTC, on 14.253 (\pm QRM). The *BMHA Newsletter*, which includes a membership roster and packet directory, features articles on special gear and antennas for bike-hamming, cycling events, and ideas for providing

Where's Who's Who?

For many years, Lenore Jensen, W6NAZ has graced the pages of *Worldradio* with her column, Who's Who in Amateur Radio, affording us a closer look at some of our fellow amateurs.

Lenore now tells us that she will no longer be writing the column on a regular basis for us. She does not enjoy driving in the Los Angeles area any longer (a wise lady—who does?), so interviews have had to be done more and more by phone, which is not her preferred approach. She has promised, however, that if hot interviews land on her doorstep, she'll submit them on an intermittent feature column basis. We'll hold you to that promise, Lenore!

And thanks, Lenore, for all your good contributions in the past. We've thoroughly enjoyed the glimpses you have provided to us of some of Amateur Radio's more noted enthusiasts, and we'll surely miss your regular contributions, so get busy with those intermittent ones!

—Armond, N6WR



In QSO while pedaling along a quiet country road, Hartley Alley, NA0A, is pictured near Indio, CA during a recent winter vacation. Using a Larson halfwave antenna that's attached to his bicycle's rear carrier, he finds it easy to access any of the repeaters in the Coachella Valley.

bicycle-mobile communications at public events such as century (100-mile) rides, marathons, etc.

For more information and a sample

copy of the *BMHA Newsletter*, send a business sized SASE with 52¢ postage to BMHA, P.O. Box 4009, Boulder, CO 80306. □

HTs, HTs, HTs ...



FT-411 SERIES. MAXIMUM SINGLEBAND PERFORMANCE.

2-meter FT-411 and 440 MHz FT-811. 49 memories. Dual VFOs. PL encode/decode. DTMF autodialer (10 memories, 15 digits each). Auto repeater shift. Scanning features. Auto power-off. Battery saver. Extended receive. Audible command verification. Keypad and rotary-dial frequency entry. Many battery packs available, from 2.3 to 5 watts. More.

FT-411/811

YAESU

The Radio Place

5675A Power Inn Rd., Sacramento, CA 95824
(916) 387-0730



Pocket Forecaster

C.H. STEWART, KD5DL

We've mentioned before the mushrooming technology that made pocket computers possible, affordable, and powerful. Occasionally we get letters with some really useful ideas. Some of the programs and applications you've been sending us are truly outstanding.

Several weeks ago we received some interesting firmware from AF Industries, a firm known for putting its innovative "think tank" ideas into practical applications. Most of AF's efforts have little to do with Amateur Radio, so the company's name may not be familiar to you. But every now and then they come up with something truly amazing. Guaranteed!

Our mailroom goofed when they got the package. They thought the little gray box had something to do with packet operation, so they sent it off to Bill Snyder for review. Bill sent it back, saying it wasn't Commodore compatible, and suggested we try it on the office IBM.

When we read the documentation it became obvious that AF designed the cartridge for Sharp pocket computers. Our Radio Shack PC-3 was made by Sharp, and the little cartridge snapped right in place in the small computer's interface port.

Documentation was hazy (actually, Bill forgot to send all of it), but we found we really didn't need it. The usual copyright notices came up on a title screen when we switched on the computer's power, followed a few seconds later by the menu screen. The

resident program is called *Pocket Forecaster*.

The first choice on the menu was "1>MUF," so we hit the 1 key. The program then called for a date (in DD/MM/YY format), a time (HH/MM in GMT), and a distance (entered either as kilometers or statute miles). That was all! Within a few seconds the screen gave the maximum usable frequency (MUF), the lowest usable frequency for skip (LUF), and the frequency optimum transmission (FOT), all in kilohertz accuracy.

Other MUF programs we have used ask for a lot more input—things like location, sunspot numbers, solar indices, etc; *Pocket Forecaster* doesn't. We haven't had the cartridge long enough to see if its propagation forecasts will be accurate, but when we ran it against another MUF program, using known solar information, the numbers matched exactly. We suspect that the MUF algorithm is based on past data. AF doesn't say.

The next menu item is "2>GRAY LINE," a variation of the popular DXer's tool. Most "gray line" programs ask for a starting location, a date and time and, usually, an operating "window." The computer then computes the time of local twilight and, using the sun's declination, prints antenna headings and DX locations within the twilight zone. The theory is that at twilight the interaction of charged layers in the ionosphere gives maximum skip along all other points also in twilight.

Pocket Forecaster is an idiot's delight. Just select the second menu option and almost immediately two TZ

times appear, one for morning twilight and one for the evening. Next to each time is a \pm symbol, and the number of minutes the twilight window is open.

Pressing the PS-3's "EXE" key brings up two dot-matrix world maps, graphically showing the general layout of the two gray lines. General antenna headings, both in true and magnetic, are displayed next to each map. There's also a query "AM/PM?"

Hit either the A or P keys, and in less than 15 seconds the computer displays a time, a call sign prefix, and an antenna bearing to the farthest workable DX at the beginning of the twilight window. Repeatedly pressing the "EXE" key sequences chronologically through the window, displaying the time, prefix, and bearing to all possible DX throughout the window. Contest operators will undoubtedly like the program because the time is given to the nearest second. A fast DXer can rack up multipliers in record time.

The third menu is uncanny. It is marked "3>DX," and all it asks for is a date and a GMT time. Almost instantly the screen shows a DX prefix, an antenna bearing, and the actual frequency of operation! We think that this program is an extension of the gray line menu, but we still haven't figured out how it knows the frequency (although it could be in an extensive data base within the ROM).

The "DX" program is reasonably accurate. When it gives a frequency to try, you can bet your bottom dollar that it is the best frequency possible. In our brief experience with the program we've yet to get a frequency in a dead band, or even one with local traffic. Every frequency we've tried did, indeed, have a DX station calling CQ.

Menu four was hard to figure out without documentation. The only clue we had was "4>_____."

Vera Brown, our business manager, suggested typing in "STOCKS." When we did, and hit "EXE," the screen prompted "NYSE, AMEX or NASDAQ," followed by another prompt for "DD/MM/YY." The results for next week are pretty startling. We'll let you know just how accurate they are.

I'm sure there are a lot of other things *Pocket Forecaster* can do, and we'll report them in future issues. Right now Vera has the computer with her in Las Vegas where she's using some of her accrued sick leave. She said she might get her ham ticket there, and she needed the computer in case she wanted to work some DX.

AF offers the *Pocket Forecaster* at the special price of \$13 to *Worldradio* readers. Write to Avril & Fooster Industries, 2120 28th Street, Sacramento, CA 95818. The offer is

Magnificent Alinco Deals!

ALINCO 45W 2M Xcvr. YOUR CHOICE!

DR-110T DR-112T
\$299.00 \$319.00

Red LCD Readout

Black LCD



WILLIAMS & ALINCO THE WINNING COMBINATION!!

NEW!! DJ-F1T 2M MINI. . . \$289.00
DJ-560T 2/70 TWIN-BAND. . . \$389.00

We Stock ALL ALINCO Accessories!

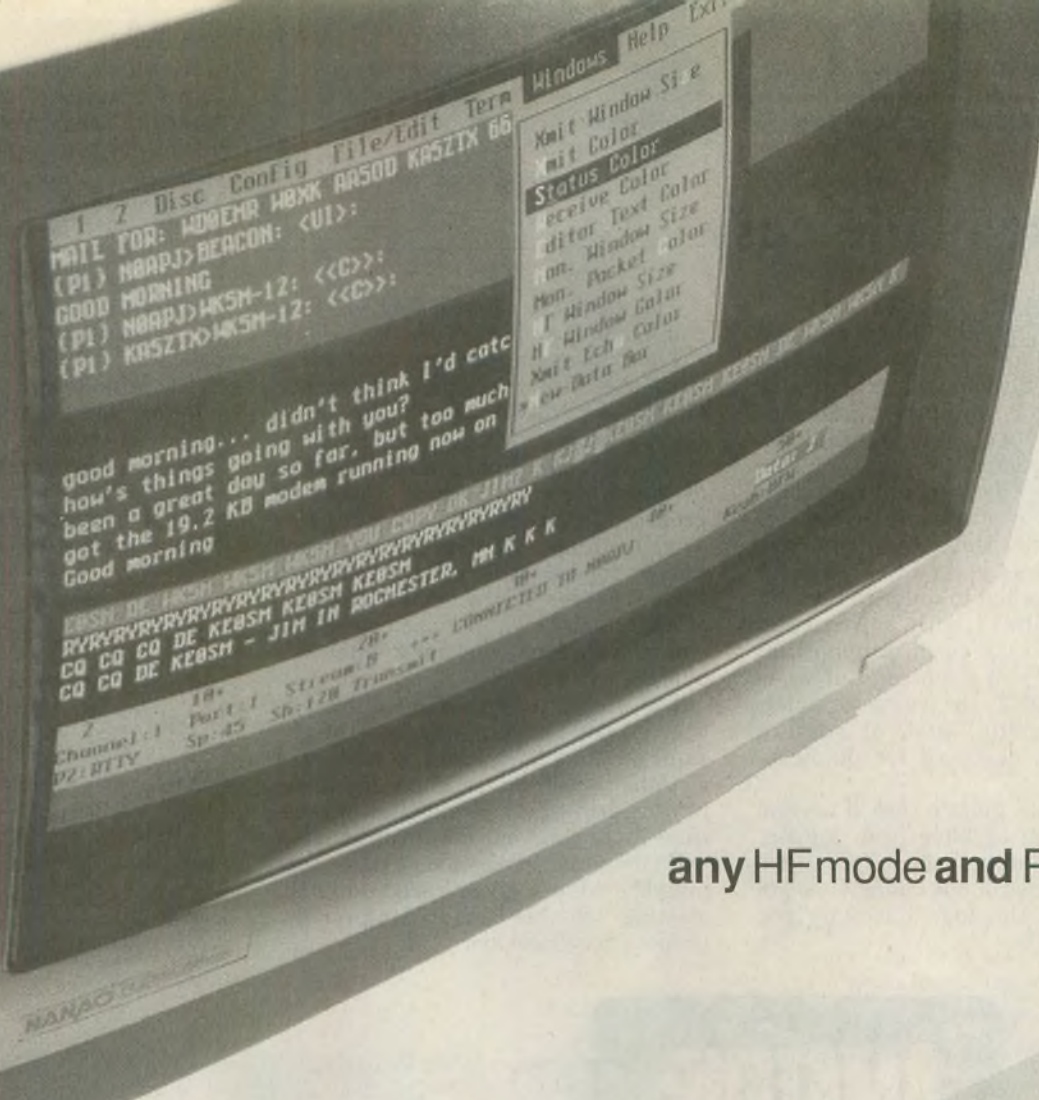
OTHER ALINCO MODELS SPECIALLY PRICED
DR-590T, Remotable 2/70 Twin-Bander, Xcvr. \$629.00
DR-570T, 2/70 Twin-Bander, Xcvr. \$549.00
DJ-160T, 2M Full Featured H/T \$265.00
DJ-460, 440 Mhz Full Featured H/T \$275.00

Please Add \$4.00 Shipping. NO CREDIT CARDS! If COD we Pay COD charges-you pay shipping. NC Res. add 5% Tax. Prices subject to change without notice or obligation.



Now 17 Years of Service To The Amateur Public!
WILLIAMS RADIO SALES
600 LAKEDALE ROAD
COLFAX, N.C. 27235

ORDERS ONLY - NOON to 5:00 PM
(919) 993-5881
ORDERS & TECHNICAL 7 to 10 PM



any HF mode and Packet...

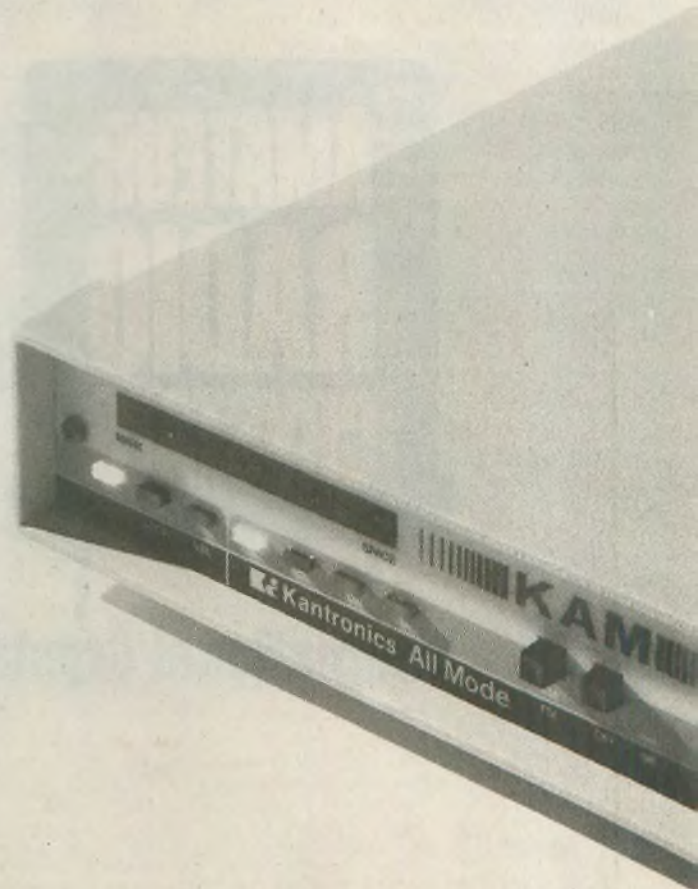
...at the same time

The new Kantronics version 5.0 firmware release, the Hostmaster II-Plus and Hostmaster 64 terminal software upgrades expand the Kantronics multi-mode single keyboard system. With a PC compatible or Commodore 64 computer, a Kantronics All Mode (KAM 5.0), your own HF/VHF transceivers and just a few keystrokes, you can work any mode on HF and packet on VHF at the same time.

Now with KAM version 5.0 firmware, you can operate CW, RTTY, ASCII, FEC, ARQ, packet or copy NAVTEX on HF and packet on VHF/UHF simultaneously. Toggle back and forth between any HF mode and packet, view monitored and connected packets and HF data at the same time, and output text to your printer.

New firmware features (terminal program independent) include AMTOR access to your personal mailbox and SEND PRIVATE, SEND BULLETIN, SEND TRAFFIC and enhanced listing mailbox commands. In HOST mode it provides a blinking mail waiting LED when used with updated Hostmaster terminal software.

The Hostmaster/KAM combination... the next step in the state of the art from Kantronics.



good through the end of April. (California residents must include the applicable sales taxes). Next month we'll

review the Radio Shack PC-12 pocket computer and its accessory 680-MB "micro-CD" laser drive. □

Duping made easy

ANDY EMARS, NX1Q

In light of recent contest activity, where many of us have worked a multitude of stations, the exhilaration of contesting is abruptly diminished when the task of checking for multiple contacts is undertaken.

We all know that only one contact is allowed with a station in most contests. To ensure this rule is enforced, the "dupe" sheet is used to keep track of stations worked in order to prevent duplicate contacts with a particular station. This may seem unimportant during the fury of a contest, but when the event is QRT, the contester is left with the residual task of sorting through logs, checking for duplicate contacts.

This becomes quite a task if several hundred contacts have been logged. Flipping the "dupe" sheet to and fro can become an arduous chore while going through the logs checking for duplicate QSOs.

There must be a better way, you may think, and there is!

I had the rare opportunity to consult with the "International Duplication Uniformity Network Organization" (I DUNO) through Mr. Kolsaw Dupchek, and have been enlightened to a method of simplifying the "dupe" checking process. This method is not commonly used, so I must ask you, the privileged reader, to share this information with other contest operators in order to simplify matters and make contesting even more fun, especially after it's over!

The secret to successful duping is this: Make all your contacts in the same order as they would be entered in a "dupe" sheet. For example, if you are participating in a US contest, work stations in the same call area in order. This will eliminate the arduous task of flipping the "dupe" sheet back and forth, wasting valuable time looking for the proper entry location.

Another adaptation to this method is to work stations with the same prefix from a call area in order. This will keep you focused on the particular area of interest on a "dupe" sheet.

This method may sound very simple at first, and it is! Another benefit in using this technique is that the number of contacts will be fewer than if you had worked stations in a haphazard "work 'em as you hear 'em" approach. Fewer contacts means fewer "dupes" to check. Simple isn't it?

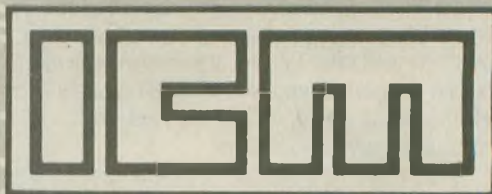
Before long, as this method gains wider acceptance, contesters will no longer be fascinated with boosting their scores by making more contacts and the bands will have less QRM to boot! — Zygo ARC, Middlefield, CT □



HE'S HOPING THAT IF HE FEEDS ENOUGH OF THAT DOWN THERE, HE'LL HAVE A GOOD GROUND FOR HIS SHACK!

AMATEUR
RADIO
CRYSTALS

International Crystal Manufacturing Co., Inc.



P.O. Box 26330, 701 W. Sheridan Oklahoma City, OK 73126-0330 Phone (405) 236-3741 Facsimile (405) 235-1904

SPECIAL EVENTS

Euro Disney opening

In commemoration of the April opening of the spectacular Euro Disney Resort, located just outside of Paris, France, the Disney Amateur Radio Clubs will operate their third international special event station on April 4 and 5. The four Disney clubs, which are located at Disneyland in Anaheim, California (N6MM), Walt Disney World in Orlando, Florida (WA4ABQ), Tokyo Disneyland (JL1YZB) and the Queen Mary and Spruce Goose Entertainment Center in Long Beach, California (W6RO), will be joined by the Radio Club de St. Maur in Paris, France (TM6MM).

Stations will be operating SSB on 14.250, 21.325 and 28.450 (±). Operating hours for the commemorative special event station will be from 0000 on April 4 to 2400 on April 5.

This is the third special event organized by the Disney radio clubs. During the inaugural event, in honor of Disneyland's 35th anniversary in 1990, more than 2,000 contacts were made with other radio operators. In September of 1991, the first international special event station which commemorated Walt Disney World's 20th anniversary resulted in 6,800 contacts from operators all over the world.

Stations contacting one of the Disney special event stations should send their SASE and QSL with QSO number to Disneyland Amateur Radio Club, Box 3232, Anaheim, CA 92803. For further information, please call the Disneyland Amateur Radio Club at 714/520-2240. □

Commemoration of General Doolittle's Raid

Hawaii Army MARS will operate WH6D on April 18 from Schofield Barracks and selected other sites on the Neighbor Islands to commemorate US Army General Jimmy Doolittle's Raid on Tokyo.

Operation will be on the lower portion of the General and Novice subbands from 1800Z and continue for 24 hours. Satellite and slowscan TV activities are planned as well as CW, voice and digital communications.

For a QSL, please send QSL and an SASE to Joe Hao, 3251 Pakanu St., Honolulu, HI 96822. □

Fordyce on the Cotton Belt

The Jefferson County ARC will operate N5RHI on April 25 from Pine Bluff and Fordyce, AR and rail mobile from aboard the refurbished Cotton Belt Railroad Steam Engine #819 to celebrate "Fordyce on the Cotton Belt" in conjunction with Project 819.

Operation will be on phone on the lower 25 kHz of the 40 and 20M subband and novice portion of the 10M subband from 1500 through 2300Z.

For a certificate, send a QSL and 9×12 SASE with two units postage to Project 819 Special Event Station, 310 West Harding, Pine Bluff, AR 71601. □

Battle of Manila Bay

The Olympia RAC will operate WA3BAT aboard the USS Olympia from 1400Z, May 2 to 2200Z, May 3 to commemorate the 94th anniversary of Admiral Dewey's triumph over the Spanish fleet at the Battle of Manila Bay.

Operation will be on CW—7.065, 2200-0200Z; phone—3.895, 7.245, 14.245, 21.365, 28.365 (± 5 kHz).

For a certificate, send a QSL with operator's number and a 9×12 SASE to Olympia RAC, P.O. Box 928, Philadelphia, PA 19105. □

Black Powder and Dutch Oven Day Celebration

The Progressive ARC in conjunction with the Mid-Iowa Council, Boy Scouts of America, will operate N0JGB on April 25 to celebrate the 10th Anniversary of Black Powder and Dutch Oven Day at Camp Mitigwa near Madrid, IA.

Operation will be on 28.350-28.400, 21.300-21.350, 14.250-14.300, 14.740 and 446.250 from 1400 to 2100Z.

For a certificate, send a QSL and SASE to David Young, N0MVC, Box 907, Marshalltown, IA 50158. □

Bay City Heritage Day Festival

The Matagorda Co. ARC will operate WA5SNL from 0000 to 2400Z on April 11 and 12 in conjunction with Bay City Heritage Day Festival.

Operation will be on all bands in all modes.

For a QSL, send an SASE to N5QWF, 4404 Doris St., Bay City, TX 77414. □

Earth Week Celebration

Willamette Valley Amateurs will operate Earth Day Station AA7FL on April 19 to celebrate Earth Week in Oregon.

Operation will be on 28.436, 21.380, 14.280 (± QRM) at 0100Z.

For a commemorative QSL, send a QSL and business sized SASE to AA7FL, P.O. Box 673, Marcola, OR 97454. □



SUPER VR85 — OSCAR Satellite Tracking Program For The Commodore 64.

Color Map—Data Display and Printout—Strong user Support. Ideal for both beginners and advanced operators. Simply the best C64 tracking program since 1985.

Send SASE for details. \$35 ppd. (CA res. add tax). RLD Research, Dept. WR, McCloud, CA 96057

Earthday

The environmental Amateur Radio network PLA/NET of Lansdale, Pennsylvania, will operate special event station K3SRO from 1400 to 2000Z on April 25 and 26 to commemorate Earthday.

Operation will be in the bottom portion of the General 20 and 15M phone subbands and Novice 10M phone subband.

For a certificate send QSL and a 9×12 or #10 envelope SASE to K3SRO, Bob Wilderman, 19 Glen Rd., Lansdale, PA 19446. □

Shakespeare Hotel Anniversary

The Stratford ARC will operate W1ORS on April 10 to celebrate the 160th anniversary of the Shakespeare Hotel of Stratford, CT.

Operation will be on 28.360 MHz and 14.240 MHz (± QRM) from 2300 to 0400Z.

For a QSL, send a QSL and SASE to Wes Quinn, KD1DC, 30 Coolridge Road, Milford, CT 06460. □

Iowa Wesleyan College Anniversary

Iowa Wesleyan College will operate N0MQA from 1400Z on April 25 to 0200Z, April 26 to celebrate the 150th anniversary of the College.

Operation will be on the Novice portion of the 40 and 15M bands. Voice operation will be in the lower 50 kHz of the 20M General phone band and on 147.39 MHz.

For a QSL, send a QSL and SASE to N0MQA, Roland Shook, Iowa Wesleyan College, Mt. Pleasant, IA 52641. □

Suburban ARC Anniversary

The Suburban ARC will operate W0DCW as a special event station on April 26 to commemorate the 35th anniversary of the club's founding.

Operation will be in the General portion of 15, 20 and 40M and the Novice portion of 10M from 1900 to 2400Z.

For a QSL, send a QSL and SASE to SARC, c/o Henry Schaper, Sr., KA0AWS, 241 Tapestry Dr., St. Louis, MO 63129. □

Mail Run

The Porterville ARA will operate K6LSB on April 18 to commemorate the 31st Annual Jackson Mail Run.

Operation will be on SSB 28,355; 14,265; 7,292 and the WA6CYN repeater, 145.31 (-600) for mobile stations in the San Joaquin Valley, from 1600 to 2400Z.

For a QSL certificate, send a #10 SASE or a 9×12 SASE to K6LSB c/o PARA, P.O. Box 2233, Porterville, CA 93258. □

Commemoration of Titanic

Tri-city ARC will operate KA1BB on April 11 and 12 from the Mystic Seaport Museum in Mystic, CT to commemorate the 80th anniversary of the sinking of the Titanic.

Operation will be in the middle of the General Class phone and CW bands 10, 15, 20 and 40M and the center of the 10M Novice phone band.

For a QSL send a QSL and SASE #10 envelope via Tri-City ARC, Box 686, Groton, CT 06340. □

KEYS

PK-100 Dual Paddle Key
\$109.95



PK-103 Single Paddle Key
\$99.95

PK-105 Hand Key
\$99.95



Machined brass by Kent of England. Assembled by Palomar in California. Rotary ball bearings. Smooth, effortless action. The greatest improvement in keys in 20 years. Add \$4 shipping. Tax in Calif.

KEYERS

PK-44 Keyer
\$119.95



Iambic keying with dot and dash memories. Monitor speaker. Fully adjustable speed, volume, weight, and pitch. Keys any rig old or new.



PK-50 Message Memory Keyer
\$189.95

New! Easy to learn and easy to use. Four memories. Monitor with variable pitch and volume. Contest serial numbering, pause, etc. **THE** contest keyer. Add \$4 shipping. Tax in Calif.



Send for free catalog. Has full details on our Keys, Keyers, Noise Bridge, SWR Meters, Preamplifiers, Loop Antennas, Toroid Cores, and more.

PALOMAR ENGINEERS

Box 462222, Escondido, CA 92046
Phone: (619) 747-3343
FAX: (619) 747-3346

Product Review

VBI-360 beam indicator

NORM BROOKS, K6FO

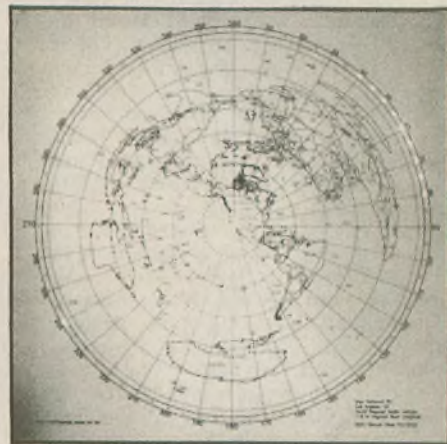
There's one sure-fire way to dress up a hamshack. Add the VBI-360 beam indicator to whatever beam direction indicator you may now have. This unit, made by Vector Control Systems (1655 N. Mountain Ave., Suite 104-45, Upland, CA 91786), is one of the nicest products to become available to the Amateur Radio community in many years.

The VBI-360 is a wall mounted great circle map of the earth. It is computer generated for your latitude and longitude. It looks like a picture frame, 16 inches square and about an inch deep; the map image itself is 14 inches in diameter. There are 36 light emitting diodes (LEDs) in the outer circle of the map, one for every 10 degrees longitude. These LEDs light up to give you a visual idea of what portion of the earth your beam antenna is covering. The number of lights used can be set by you to portray the nominal beam width of your antenna. This beam indicator works in addition to your normal beam direction indicator. But when you want to see where your beam is pointed, you'll find yourself looking at your VBI-360 instead of that meter you've been using up to now.

As I unpacked the VBI-360 my first impression was *quality*. The map is meticulously drawn and even personalized with your call sign and location. The frame is carefully fitted together, with reinforcement at the corners. This is a product that shows, just by inspection, that the manu-

facturer really cared about the excellence of his product.

Electrically, the VBS-360 easily connects to the existing wiring on the back of your present control box. It does not put a load on your present control system, so the present calibration is not changed. A telephone-type modular cord takes the signals to the picture frame on the wall. Within the picture frame there is a military-spec quality double sided circuit board with



the necessary high-tech components. These all control which of those LEDs are going to light up for you.

There are two small DIP switches to be set when installing your VBS-360. A four-gang switch lets you set the beam width mentioned above. You set the five-gang switch to make the circuit board compatible with your rotator. You can show the long path direction too, and this feature can be switched on or off as you wish. The electronics operate at 12V DC, provided by a wall transformer.

This unit will adapt to any rotator, and if your equipment is not listed in the instructions, there are directions on how to fit it to any other system, even one you built yourself. The instructions are complete, well written and easy to understand. Even then, if you should run into a snag, there is a telephone number for friendly, helpful advice.

I'm very happy with my VBS-360. It dresses up my shack, gives me a better visual picture of where my beam is pointing, and also provides a "gee whiz" conversation piece.

The VBI-360 beam indicator is available for \$189.95 (includes S/H in the continental US). Vector Control Systems is located at 1655 N. Mountain Ave., Suite 104-45, Upland, CA 91786.

MAKE LEARNING FUN with the CODEKEY 1000 Code Practice Oscillator



- Compact and Easy to carry
- Operates on 9V battery included
- Adjustable Volume
- Durable Metal Case
- Variable Sidetone

\$19.⁹⁵ TO ORDER

—CALL— (718) 983-1416

Media Mentors inc.

P.O. Box 131646
Dept. W
Staten Island, NY 10313-0008

Subscribe to Worldradio!! Call TOLL FREE 800-366-9192

STARTEK

FREQUENCY COUNTERS

SUB-COMPACT PORTABLE INSTRUMENTS FOR THE COMMUNICATIONS PROFESSIONAL, HAM OR HOBBYIST

Choose from 6 NEW MODELS
WITH ADDED FEATURES & PERFORMANCE

Our low power design yields 3 to 5 hours portable operation from the high capacity internal NI-CAD batteries. (Standard in all models).

StarCab™ top quality US made aluminum cabinets are used with machine screw assembly. No cheap extruded aluminum or steel with self-tap screws.

Convenient **POCKET SIZE**: 3.4"W, 3.8"H, 1"D.
A 2 inch RF SIGNAL BAR GRAPH, ULTRA HIGH SENSITIVITY and operation to 3.5 GHZ, all available in the **STARTEK** sub-compact models.

STANDARD FEATURES INCLUDE:

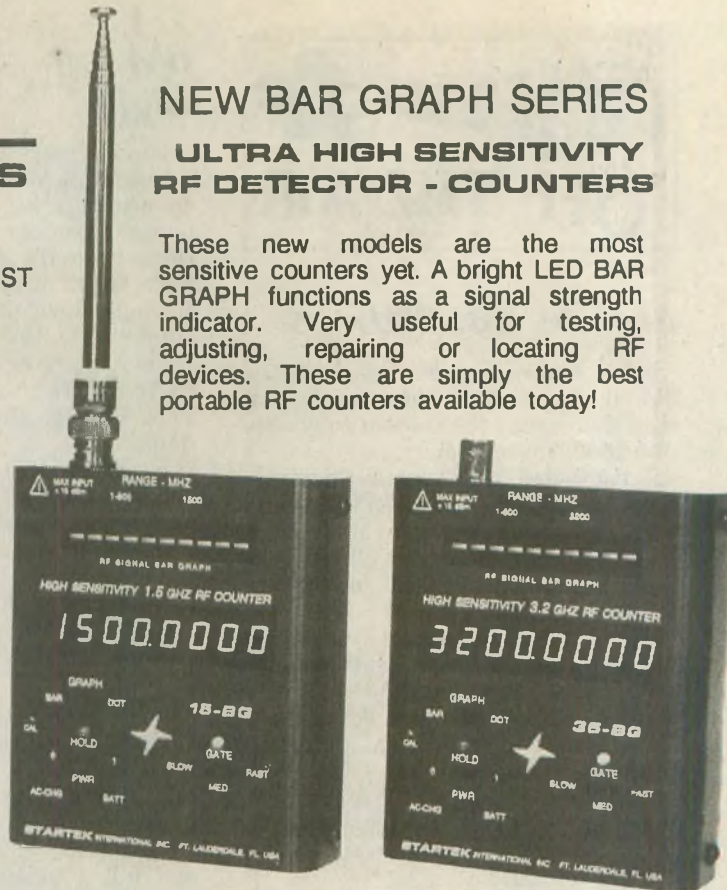
- NI-CAD BATTERIES & 110VAC ADP/CHARGER
- 1 PPM TCXO TIME BASE - FRONT PANEL ADJ
- 3 GATE TIMES • HOLD SWITCH & INDICATOR
- 9-12VDC AUTO-POLARITY POWER INPUT
- StarCab™ ALUMINUM CABINET
- COMPUTER AIDED CIRCUIT DESIGN
- TOP QUALITY COMPONENTS
- 100% ASSEMBLED IN THE USA
- 1 YEAR LIMITED WARRANTY

ORDER NOW!
SAVE UP TO
\$30
CALL FOR DETAILS

NEW BAR GRAPH SERIES

ULTRA HIGH SENSITIVITY RF DETECTOR - COUNTERS

These new models are the most sensitive counters yet. A bright LED BAR GRAPH functions as a signal strength indicator. Very useful for testing, adjusting, repairing or locating RF devices. These are simply the best portable RF counters available today!



15-BG

1 MHZ - 1500 MHZ
ULTRA HIGH SENSITIVITY
2 INCH BAR GRAPH
\$220

35-BG

1 MHZ - 3200 MHZ
ULTRA HIGH SENSITIVITY
2 INCH BAR GRAPH
\$265



1350

1 MHZ - 1300 MHZ
QUALITY & ECONOMY
(REPLACES #1500A)
\$129

15-UHS

1 MHZ - 1500 MHZ
ULTRA HIGH SENSITIVITY
(REPLACES #1500HS)
\$169

2500

10 HZ - 2400 MHZ
HI-Z INPUT - LO RANGE
HIGH SENSITIVITY
\$210

3500

10 HZ - 3500 MHZ
HI-Z INPUT - LO RANGE
HIGH SENSITIVITY
\$250

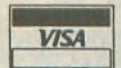
ACCESSORIES:

#CC-90	BLACK VINYL ZIPPER CASE	\$12.00
#TA-90	TELESCOPING BNC ANT	12.00
#P-110	PROBE, 200 MHZ, 1X-10X	39.00
#M207IC	CABLE FOR MFJ-207/208	10.00

**ALL MODELS
IN STOCK
WE SHIP
SAME DAY!**

ORDER FACTORY DIRECT

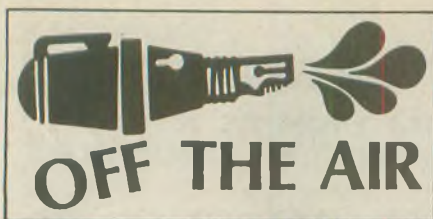
Orders & Information
305-561-2211
Orders only
800-638-8050
FAX 305-561-9133



STARTEK INTERNATIONAL INC

398 NE 38th St., Ft. Lauderdale, FL 33334

TERMS: Shipping-handling charges for Florida add \$4 + tax, US & Canada add 5% (\$4 min - \$10 max), others add 15% of total. COD fee \$4. VISA, MC or DISCOVER accepted. Prices & specifications subject to change without notice or obligation.



6M and simplex digital

Having just read the 6M band plan proposal of WK2A, I feel it a good compromise between owners of existing repeaters and the newer factions. From the standpoint of the long-term health of the amateur allocation, I would have preferred to see more simplex digital operation, such as packet intercity links (InterLAN), in 51 to 52 MHz, but perhaps with Mr. Penc's suggestion, this can still be done.

I still feel that 6M would be an excellent band for intercity packet links and voice repeater linking, and encourage packet network operators and those interested in repeater linking to explore the possibilities.

DOUG NOYES, NØBID
Minnetonka, MN

Repeater mod

The days of the need for Amateur Radio repeaters are numbered. (Oh, they will still be gathering places for gossip and fights.) The new series of mobile/base rigs with their crossband and full duplex/remote base/repeater capabilities negate the value of full blown repeaters. After all there will be

three or four on every block. As far as emergency capabilities is concerned, "cellular radio" is doing it all, faster and better.

So what is the repeater's next claim to fame going to be? There are a lot of possibilities. All of the fun things we find here and there are fine "kid" games, but there has to be more than time, temperature, storing messages, autopatches, beeps, peeps, squawks and squeaks.

Over the past 16 years I have owned five repeaters, both UHF and VHF. I have sold all of them but two, the 146.18-78 and the 146.34-94. I have removed the auto patch and opened up a real fun thing that I have been testing for the past three months: Over 25 of the .94 users have sent me a copy of their amateur license and they have been given control operator privileges. One of the most useful items is the ability to punch up a computer that sends perfect CW. It is great and since the speed runs from 5 to 20 wpm with a perfect tone, who knows—maybe some of the "I hate CW" types might change their minds. .94 in Tucson is now a great CW machine, replacing the auto patch that had been there for nearly 16 years.

BART PAINE, K7CC
Tucson, AZ

Mobile installations

I was alarmed by the article in the March issue of *Worldradio* dealing with damage to the computer system of a 1992 Toyota Camry.

I contacted the Toyota Customer Service Center (1-800/331-4331) and was flatly told that Toyota recommends against the use of all two-way radio equipment (except low power cellular phones).

This is a serious problem for mobile hams. First it was anti-scanner laws—now it's computer problems—what's next? Since Toyotas are not the only cars with computerized systems, I wonder what GM, Ford, Honda, etc. are doing? Are any car manufacturers addressing this problem, or are any readers aware of proposed solutions?

PHIL LINDSAY, KC6QBM
Pacifica, CA

Why Let Morse Code Hold You Back?

You can copy code, no matter what your experience has been. CW is easy when you use hypnosis training from PASS Publishing.

Just starting out?

Learning CW is easy when you use **CW Lite**. There's

nothing to it. Just sit back and let the cassette tape carry you to a deeply relaxed state of mind where learning is fast and easy. You learn the Morse alphabet the way it should be learned—hearing the sounds of the characters. You'll associate Morse code with relaxation instead of stress! Subliminals speed you along.

In less than 30 minutes you will be one step closer to learning code. **CW Lite** is \$14.95 ppd in US.

Hypnosis tapes are not copy-practice tapes.
Money-back guarantee (less restocking fee) when you use the tape 30 consecutive days.

Tried CW and failed?

Believe you can't do it? **CW Mental Block Buster** is for

you. Besides relaxing and re-learning the code the right way, you visualize the results that you want! Just like the olympic athletes do! **Block Buster** explodes mental blocks with a single cassette tape and a workbook with break-through exercises! It is as easy as day dreaming. But it is

the most powerful tool for personal change known to man! **CW Mental Block Buster** is \$24.95 ppd in US.

Order today! Not sure which is right for you, order both!
NY residents add 8% sales tax. Info: 516-584-8164.

March 23, 1991
Thank you for your **CW Mental Block Buster** tape. It really works. I have tried to learn CW for a period of 31 years. The best I could do was 3 wpm. I was at the point to give up a life long dream to be a ham. I saw your ad, and it seemed to offer a new approach. I faithfully used the tape twice a day and did the workbook exercises. I also began to use some slow speed practice tapes. Much to my surprise, I could copy 8 wpm with no problem! I passed my Novice and then the 13 wpm General—**KB2HTB**

PASS Publishing, Dept. WR, Box 570, Stony Brook, NY 11790

Outdated questions

Recently, a packet message circulated from a new ham in Florida. He had received his no-code Technician license and had subsequently bought an HF rig. When someone mentioned to him on a local repeater that he didn't have HF privileges, he checked the FCC Rule Book, and was shocked. I was too! How could he *not* know that he didn't have HF privileges?

The simple reason is that the Novice and Technician question pools have not been updated to reflect the no-code rule change (nor the Novice 80M band relocation). Anyone studying from the question pool (as most prospective hams do) find questions such as:

"What are the HF privileges authorized to a Technician control operator?" (answer, according to the question pool: "3700 to 3750 kHz, 7100 to 7150 kHz . . ." Not only is this the wrong answer for no-code Techs, it's wrong for Novices and code-qualified Technicians because the 80M band was relocated!)

How could someone who downloaded those questions from the ARRL bulletin board or CompuServe have any inkling that they don't have privileges for which questions exist? Now, most (why not all?) VECs have eliminated those questions from tests according to Bart Jahnke, manager of the ARRL Question Pool Committee (QPC). Bart said that the "QPC . . . is addressing the (Novice and Technician) pools simultaneously in order to bring them up-to-date over a reasonable—published—period." He also included a copy of the schedule published in the September 1991 *QST*. The schedule was approved by the National Conference of Volunteer Examiner Coordinators at a meeting on June 21. This schedule is paraphrased here:

QPC to begin work on syllabi	10/1/91
Call for public input	2/1/92 to 6/30/92
QPC to begin work on pools	7/1/92
Implementation date for new pools	7/1/93

In other words, prospective hams will be studying from outdated questions for another year and a half; it will take two and a half years for the QPC to respond to the no-code rule change; it will take the QPC more than twice the time that the FCC needed to write the NPRM, solicit public input, solicit response, and implement the new rule!

This schedule is ludicrous. There is something seriously wrong with the current system if a sweeping rule change takes years to get into the question pool.

Many potential (and upgrading) hams do indeed study solely from the question pool. Whether the QPC wants to believe it or not, the vast majority of people studying for ham exams memorize the question pool; they do not *learn* the material. For most, the question pool is exactly "the complete compendium of knowledge." To ignore this is negligent.

The question pools *must* be constantly kept up-to-date. Bart says, "Question pools are not updated overnight—in fact, the input of the entire amateur community is solicited each time a pool is updated." Is the input of the "entire amateur community" really necessary? Why can't the question pool be "edited" to correct questions when a rule change occurs? For example, why would public input be necessary to update the above question to read: "What are the HF privileges authorized to a *code-qualified* Technician control operator?" Answer, according to the question pool: "3675-3725 kHz, 7100 to 7150 kHz . . ." (changes in italics).

A system needs to be implemented whereby questions affected by rules changes can be updated in minutes and the revised questions distributed within weeks, not years. It's hard to

believe, but it's very possible that a new Novice licensee in June 1993 will be unaware that the Novice band was changed in the fall of 1991; or that a no-code Technician examinee that same month a year-and-a-half from now will be certain that he (or she) has HF privileges since the official question pool says so.

MARK FORBES, KC9C
Rocklin, CA

Blackballing

The guest editorial by K9MX in the January issue hit a nerve in me. I have four young grandsons and I'm not at all sure that I want to introduce them to ham radio when I hear some of what is going on on our ham bands.

I agree that direct pressure from voters to their congressmen on such matters might be more effective. The ARRL seems to have its hands full with the present FCC run by lawyers bent on the narrowest version of any rule. When my wife, K2BRC, can't call me on 2M and ask me to bring home a loaf of bread then there is something wrong in Washington. We seem to have opposites in effect here: can't be told to get the bread but a string of profanity is okay.

JAN Crystals

Your reliable source for a world of crystal clear communication



**AMATEUR
UHF BAND**

HIGH STABILITY

\$11.00 EACH

INCLUDES CAP AND MARS
 TRANSMIT OR RECEIVE

VHF BAND

\$7.00 EACH





MULTI-BAND SSB

\$11.00 EACH

*Expedited Order
Service Available*

PRICES SUBJECT TO CHANGE WITHOUT NOTICE

Order Toll Free 1-800-JAN-XTAL

FAX ORDERS: 1-813-936-3750



CALL OR WRITE FOR FREE CATALOG
P.O. Box 06017
Ft. Myers, FL 33906



I realize that enforcement is particularly difficult these days, therefore I would advise radio clubs and repeater operators to urge others not to talk to such people. Blackballing may not solve the problem, but it certainly would let the offender know what his fellow hams think of him. The FCC takes a dim view of QRMing such people, but I'm not above closing down my repeater if I consider the language or usage offensive.

VAN R. FIELD, W2OQI
Center Moriches, NY

In another letter applauding K9MX's guest editorial regarding profanity on the airwaves, the writer expressed disappointment at our disclaimer stating that "the opinions and views expressed within are those of the author and do not necessarily reflect the views of Worldradio." This reader interpreted the disclaimer as a "cop-out," or lack of support. It should be noted, however, that this editorial was featured in Worldradio as an up-front, headlining commentary. □

12V connector

I think a standard 12V connector is a good idea. (See January *Worldradio*, p.7) I've been using a four-pin Jones connector. It won't pull apart in useage as easily as a two-pin Jones, but is a lot easier to pull apart than the two-pin Molex connector. The pins are soldered instead of crimped, and it has a cable strain relief.

The pins are 10 amps each; tying one and three together for minus, then two and four together for plus yields a 20 amp connector. Additionally, I have mounted six chassis-mount connectors in a long rectangular box, making a power outlet strip. I run all my equipment from a 30 amp supply with a 55A/HR battery backup. Radio Shack part number is 274-204 (male) and 274-205 (female), although I've bought them at hamfests for 25¢ each.

MIKE STEIN, WB9NOO
Ft. Wayne, IN

Fill the void

In my observations of the activities of our local chapter of "hamdom," it is apparent that not only is our hobby

1992 U.S. CALL DIRECTORY (on microfiche)

Call Directory - by call sign\$10
Name Index - by last name\$10
Geographic Index - by state/city\$10
All three - \$25

\$3 shipping per order

BUCKMASTER PUBLISHING

Route 3, Box 58
Mineral, Virginia 23117

703/894-5777 *visa/mc* 800/282-5628

very diversified technically, but the people involved are of all ages and from all walks of life. The one thing that they all have in common is the desire to learn and communicate. One would hope that this diversity of people would be an asset and not a hindrance to the hobby, but it seems to be getting harder and harder to make that connection between the new hams' questions and the older hams' answers and expertise.

I realize that many new hams have contempt towards and little appreciation for the Morse code, which happens to be a sacred subject to those licensed before no-code regulatory changes took effect. On the other hand, ask some old-timers about packet radio, nodes, etc., and you will be amused by their blank stares and mumbblings under the breath of "packet racket."

Why is this scenario occurring? Why is this attitude of indifference so pervasive within a group of hobbyists whose main interest is, of all things, to communicate? Unfortunately, amid complaints of lowered standards of testing, sloppy operating procedures, CB type mentalities, etc., etc., some veteran hams have just walked away from the mainstream, taking with them years of experience, much exper-

tise and many many pleasant, rewarding memories of their exploits. After all, they may feel that the advent of new state-of-the-art equipment, instead of the old unstable tube receivers and crystal controlled CW/AM transmitters will somehow produce a level of enjoyment doomed to be inherently of lesser quality than their own old recollections.

I can't help but wonder. Do they think that those fond old memories of their "rustic adventures" will stay alive and fresh forever, while they are being held captive in their minds? Will those memories become more valuable if they are saved like a collection of coins or stamps, hoarded, catalogued, opened for view only at certain opportune times?

When intelligent, experienced people just walk away, the void which they create is there and it is very real. But we know that any void does not remain a void very long. It is always filled, eventually, with something. By our consistent thoughts and thoughtful actions, we hold in our hands the ability to fill that void with whatever we choose, be it good or bad, positive or negative, worthwhile or worthless. This void could overflow with continued complaints, or the complaints could be displaced with encouragement, instruction and positive plans of action taken toward all the newly licensed hams.

To those who have walked away, this message is simple and direct. We need you back! The new hams may never get the opportunity to appreciate CW, proper operating procedures, etc., unless they are explained and demonstrated by those of us who are not afraid to share a bit of our knowledge with them. We need to continue to provide a well educated human interface between cold, hard technology and the meeting of people's real needs. It is this human element which makes the existence of a local club necessary. People, not radios, have a need for fellowship, encouragement, enrichment, and a lot of inspiration!

Hams cannot afford to merely be collectors, even of fond memories of yesteryear, at the expense of wasted opportunities to share. Things are changing much too rapidly to "sit this one out." I believe our strength lies in the fact that our hobby serves people, not just itself. When you become actively involved in your local club with the intent to serve others you will most certainly receive the added fulfillment that this, the Amateur Radio Service, can provide. Your unique qualities and expertise can make this hobby the best. Only you can fill the void.

DAVID I. BRANDT, WA3GPM
Lebanon, PA

New Volume #4

Easy to follow modifications for all the popular Ham Radios, Scanners and CB's.

- Now with Alignment controls shown.
- Over 150 Modifications.
- Easy to follow Instructions.
- Picture diagrams showing modification points. **\$19.95**
- Frequency expansion mods.
- MARS & CAP.
- Over 95 revised modifications.

Available in the finest Radio Stores or directly from:

artsci (818) 843-4080
Artsci Publications
P.O. Box 1848 (818) 846-2298 FAX
Burbank, CA 91507 *visa, m/c, American Express*
Discover, Checks, COD



Nelson Moyer, KU0A STATION APPEARANCE

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

Winners will also receive a top quality, Laserjet-printed copy of the DXCC and WAS BeamHeadings list (a \$15.95 value) compliments of Jack Hurray, W8JBU.

Today's KU0A station started out as a simple "card table station" in 1981.

KA5KCX first called CQ in April 1981 using a Yaesu FT-707 with the FP-707 power supply, FC-707 antenna tuner and FV-707DM external VFO which were set up on a card table in the bedroom. By June 1982, Nelson had upgraded to Extra Class and acquired the Alpha 78 which was placed on a sturdy wooden chair beside the card table. The Mirage MP-1 was added at this time to monitor station output, and serves as a convenient pedestal for the MFJ-108 station clock. The operation desk was added in 1987 and the ICOM IC228H was purchased to monitor the local DX club repeater in 1989. The Astron RS-20M supplies 13.5VDC to the MFJ-1112 outlet box to power station accessories. The Nye-Viking MB-V-A transmatch was added in 1990 to facilitate antenna tuning on 80M and for experimenting with kite and balloon longwire antennas.

Acquisition of the Macintosh computer made the desktop crowded so



the shelves were fabricated of solid oak to facilitate stacking of the equipment. A copper pipe in an oak frame attached to the wall behind the desk serves as the ground base and the Heath HD-1481 remote coax switch allows selection of the Butternut HF5B, HF6V or HF2V antennas. A Cushcraft Ringo Ranger sits atop the mast for 2M, with a Diamond SX-600 in line to monitor output. Antenna and ground connections go through the basement wall at a small utility box hidden behind the curtain to the left of the station, a concession to the XYL and a means of disconnecting all incoming lines from the station for lightning protection.

Keying is provided by either the Ham Key, a hand key, or the AEA MM-1 memory keyer, the latter being reserved for contests and chasing rare DX. The AEA PK-232MBX was added in 1991 to spot DX on the local packet cluster. The Super Scaf audio filter helps KU0A to hear the weak ones and fight the QRM. Cabinets to

the right hold 10 years of QSL cards and various ham information, all neatly filed for ready access. KU0A has worked 271 countries and is closing in on 5BDXCC, needing only 49 more countries on 80M. Who says little pistols can't work DX! The last vestige of the card table days remains: the chair.

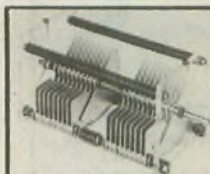
Amateur "Hi"

Fritz O. Maass, WB6VGY, discovers a new brand of "TVI."

One afternoon while chasing a little DX, my XYL came into the shack to tell me that every time I talked on the radio the pipes in the house rattled. I thought she was imagining it, but I decided to check it out.

It seemed I had changed some wiring on my automatic sprinkler system, and every time I keyed down all my sprinklers turned on. The more I got on

the air the greener my lawn got. I am still trying to get the wiring back where it was so that I can operate at high power again.



HV Variable Capacitors

for Antenna Tuners/
RF Amplifiers

- Roller inductors
- Counter dials
- Antenna tuners & Kits. Reasonable prices!

KILO-TEC

P.O. Box 10 • Oakview, CA 93022
To order call: (805) 646-9645

New
WD4BUM
DUAL BAND

MADE IN USA **ONLY \$27⁹⁵**

- 2 meters 70 cm.
- Only 21" high.
- 3 DB gain on 70 cm.
- 15' RG-58 coax and PL-259 connector installed.
- Very strong black powder coated magnet
- Free magnet pad included.
- Pretuned to 146 MHz and 447 MHz.
- Rated at 150 watts.
- Available in black or bright chrome finish.
- Add \$3.00 for BNC installed.

Order Direct From
Lakeview Company, Inc.
3620-9A Whitehall Rd.
Anderson, SC 29624
800-226-6990 (Orders Only)
803-226-6990 (Tech. Questions)

Add \$4.00 S&H per order Continental U.S.
Catalog Available • Dealers Welcome




Silent Keys

David Leonard Marks, W2APF

The following article by Bob Gardinier is reprinted with permission from the Times Union, Jan. 12, 1992.

David Leonard "Uncle Dave" Marks, W2APF, dubbed the "Angel of the Airwaves" for using his radio to help people around the world, died on January 11 in Albany, New York, after a long illness. He was 88.

Most recently, he obtained information via the airwaves for people who had friends or family in the Persian Gulf during the war against Iraq. He performed a similar service for those with loved ones in California after the 1989 earthquake. Whenever phone lines were jammed, down or non-existent, W2APF's radio could get through in times of disaster.

For more than 40 years he headed Operation Goodwill, an operators' emergency network associated with the Rotary Club. The network received many awards over the years for humanitarian efforts following hurricanes, earthquakes, floods and other crises.

Mr. Marks was born in London, but he came to the US at age three. He graduated from Albany High School. His first business in 1920 was called Uncle Dave's Radio Shack, located on Madison Avenue in Albany.

He was the first person in the nation to own a mobile radio van, according to a friend, and he played a big role in the early days of radio station WROW and Capital Cities. He became well known to Capital District residents for his help in times of disaster.

Mr. Marks talked about his humanitarianism after helping to raise and delivering thousands of dollars for Mexican earthquake victims in 1985: "It's my way of life. It's the only hobby I know that I can enjoy and do good with. It's a double blessing."

Some of his other good deeds included: sending recorded messages from families to soldiers overseas during the Vietnam War. In 1972, he received

a letter of appreciation from President Nixon; helping reunite a Bolivian child with her parents in Albany. He went to the country himself to pick up the child; arranging for a shipment of medicine to a sick woman in France, which saved her life; helping Capital District residents contact family and friends during Hurricane Gloria.

Mr. Marks loved to travel. In 1959, *The Knickerbocker News* ran a photograph of him with a 41 ft.-long series of airline tickets just before he took off for a four-month tour of the world. "He was pretty involved in Amateur Radio, and international heads of state even knew him. He was known for his goodness to mankind. he even met Pope John XXIII personally," said his son, Dalton Marks of Westbrook, Connecticut. He received many recognitions from other politicians and civic leaders here and abroad. He received the Paul Harris Fellow Award from the Rotary Club, of which he was a member.

Mr. Marks was the founder and former chairman of the board of Fort Orange Radio and Distributing Co. in Albany. He retired from the business in 1972. He was involved with the import and export of electronics equipment for many years. He was an expediter for the Army Signal Corps as a civilian many years ago.

He sponsored radio classes in Albany, aiding many in getting their licenses. For this work, he was awarded a Special Commendation from General Electric Co.

He was a member of the QCWA, the Elks, the Albany Variety Club-Actors Guild and received the Four Chaplains Award. Mr. Marks was a member of the Albany and the Schenectady Amateur Radio Association, as well as the Old Timers Club, and more than 25 different Amateur Radio groups around the world.

He was the widower of Elizabeth M. Marks. In addition to his son, he is survived by a daughter, Sylvia



"Angel of the Airwaves" W2APF at his ham radio in 1956.

Driscoll of Ogonquit, Maine; a brother, Dr. Benjamin Markowitz of Albany; five grandchildren; and five great-grandchildren.

Contributions may be made to the Albany Rotary Club Foundation, 706 River Road, Schodack Landing, NY 12156. —Information submitted by Henry Schultz, W13U, who knew W2APF for 50 years. □

Louis Reichert Huber, W7UU

Reichert Huber, W7UU, died at the age of 83 on November 19, 1991, in Seattle, Washington. Huber was born in Tipton, Iowa. After receiving a degree in journalism he worked as a reporter and writer for various media organizations including the Associated Press, the Christian Science Monitor and the Seattle Post-Intelligencer. He later founded a Northwest film company.

Huber's interest in Amateur Radio began in childhood and became more than a hobby interest when he was assigned in WWII as a chief Radio Operator for the US Merchant Marine. He was one of the first members of the ARRL, and the national QCWA recently presented him with a 70-year service award.

One of the Phinney Ridge Community Council's founding members, Huber was active in public service activities of many sorts in addition to Amateur Radio. Memorial donations may be sent to the Chief Seattle Club (165 S. Washington St., Seattle, WA 98111), a non-profit organization which helps American Indians with job training and employment—Information from the Seattle Post-Intelligencer, November 30, 1991. □

K2AW'S FAMOUS HI-VOLTAGE MODULES			
20,000 IN USE IN OVER 50 COUNTRIES		SAME DAY SHIPPING MADE IN U.S.A.	
HV14-1	14KV-1A	250A. SURGE	\$15.00
HV10-1	10KV-1A	250A. SURGE	12.00
HV 8-1	8KV-1A	250A. SURGE	10.00
HV 6-1	6KV-1A	150A. SURGE	5.00
PLUS \$2.00 SHIPPING—N.Y. RESIDENTS ADD 8% TAX			
K2AW'S "SILICON ALLEY"			
175 FRIENDS LANE WESTBURY, NY 11590 516-334-7024			

QUALITY GROUNDING KITS	
These quality kits are designed and manufactured for amateur use by Harger Lightning Protection Incorporated exclusively for M. Bohnhoff Incorporated using the IG2 type installation. Both kits use soft-drawn, stranded concentric lay bare copper conductors, lined bronze lower leg clamps and a solid copper SPG type ground bus bar with insulators and brackets. Why spend \$1,500 on a low band radio without proper grounding equipment at your shack? Order today!	
	Quality Kit # 1010 \$89.95
	Deluxe Kit # 2010 \$119.95
M. Bohnhoff, Inc. P.O. Box 6373 Libertyville, IL 60048-6373 708-918-7330	Illinois res. add 6.5%, \$6.50 COD or \$2.75 shipping/handling.
Write for free product catalog	M BOHNHOFF



DX WORLD

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

Activities Calendar

- Mar. 13-15 59 Japan International DX Contest (CW)
 - Mar. 15-16 Bermuda Contest
 - Mar. 28-29 CQ Worldwide WPX Contest (SSB)
 - Apr. 10-12 International DX Convention (Visalia)
 - Apr. 18-19 Scottish Activity Weekend
- Refer to your favorite contest section in *QST* or *CQ* for details on the above contest activities.

W100N

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

- 418) Eugene P. Neill, WA3KKO; Feb. 1, 1992.
- 419) Russ Mason, KG6IP; Feb. 6, 1992.
- 420) William D. Price, WA4MCZ; Feb. 6, 1992.
- 421) W.S. "Bill" Bramer, N8JOA; Feb. 8, 1992.

The application by William Price, WA4MCZ, included 163 nations, of which 104 were worked via RTTY. We have taken the liberty to endorse the certificate as "All RTTY" as there were at least 100 nations worked. Likewise, the certificate for Bill Bramer, N8JOA, was endorsed "All 10M SSB." Bill made all of the contacts in the Novice portion of the band.

Normally there are no endorsements for this award but we will do so upon request. However, we will not issue an "All SSB" endorsement unless it was all on a single mode.

Again, we must remind applicants that the W100N is not a duplicate of ARRL's DXCC. Only nations count. One applicant sent us a list of 211 DXCC countries. Fortunately, there were enough nations in that count to qualify for the award. A list of the rules and nations list is available from *Worldradio*. When applying for this award, please list the contacts in normal prefix order, one line per nation.

Easter Island (CE0)

Henry, CE0FFD, has been on often giving the deserving DXer a contact

with Easter Island. However, he seems to prefer 10M CW, as the only reports we have are for the low end of that band. Listen around on or about 28.010 MHz after 1500 UTC.

Philippine Islands (DU)

During the month of February 4G2VOA was active in celebrating the 50th Anniversary of Voice of America (VOA). Ten meters is probably the best band to look for this one. Reports on this band include the following:

DU1PX	28.440 MHz	0130 UTC
DU3GY	28.495 MHz	1100 UTC
DU6BG	28.568 MHz	0030 UTC
DU6BKD	28.466 MHz	0200 UTC
DU9RG	28.508 MHz	2300 UTC

On 15M you might look for DU1EBN who was worked in California at 0300 UTC on 21.030 MHz, or Francis, DU3HF, who was found near 21.010 MHz around 2345 UTC.

On the WARC bands we have only one call, DU1AK. This one was found on 17M near 18.139 MHz at 1430 UTC and on 12M around 0130 UTC near 24.960 MHz.

For 40M only two calls were reported: DU1EIB on 7.069 MHz at 2115 UTC working Europeans; and DU1IES on 7.007 MHz at 1230 UTC working into Texas.

Thailand (HS)

Activity from Thailand is increasing. Duffy has been busy operating from HS0AC and has been worked on 10M at 0200 UTC on 28.520 MHz, and 20M at 1945 UTC near 14.250 MHz.

Also handing out Thailand to the deserving is Ruang, HS1EHY, who was working into southern California the end of December on 14.005 MHz at 1615 UTC. This one was worked by Ron, W6TUR, who is an early riser! Other calls reported from Thailand include the following:

HS1BV	14.185 MHz	1500 UTC
HS1CDX	14.011 MHz	1630 UTC
HS1ZYY	21.004 MHz	1615 UTC
HS0AT	28.402 MHz	1000 UTC
HS0ZAA	7.009 MHz	1130 UTC

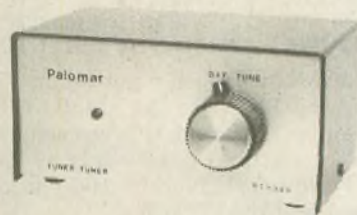
PITCAIRN ISLAND

Located in the South Pacific
Home of the Bounty mutineers,
VR6 Land, VHS Tape

Filmed & narrated
on the island by
Kari & Brian Young, VR6KY
72 minutes —
the hams, the people,
the island.

\$29.96 includes shipping.
TIBI PRODUCTIONS
P.O. Box 129
Medinah, IL 60157

TUNER-TUNER™



- Tune your tuner without transmitting.
- Save those finals!
- Operate easier, faster.

Do you use an antenna tuner? Then you need the new Palomar Tuner-Tuner to tune up your tuner without turning on your transmitter. The Tuner-Tuner connects between your tuner and your rig.

Here's how it works:

1. Turn on the Tuner-Tuner. You'll hear a loud S9+ noise.
2. Tune your tuner until the noise drops out completely.
3. Turn off the Tuner-Tuner.
4. Start transmitting. SWR will be 1:1.

What could be simpler? You can tune up while listening to the other station call CQ. No need to move off frequency to tune up. No need to cause interference while tuning. No need to operate your rig into anything but 1:1 SWR.

Users say:

"My new PT-340 Tuner-Tuner is **fabulous!**"—W9DXP (Illinois)

"The Tuner-Tuner is really a nice piece of equipment. It does everything you said it would do. FB OM."—K5JDF (Texas)

"This is a record as far as speed in deliveries go, and I have been extremely happy with the Tuner-Tuner's performance."—9V1XH (Singapore)

"I have to make a comment on your Tuner-Tuner - one word only - FANTASTIC."—W3IOT (Pennsylvania)

Order yours today! If you use a tuner you need a Tuner-Tuner.



Model PT-340 Tuner-Tuner only \$99.95
+ \$4 shipping in U.S. & Canada. Calif. residents add sales tax. FREE catalog on request.

PALOMAR ENGINEERS

Box 462222, Escondido, CA 92046
Phone: (619) 747-3343
FAX: (619) 747-3346

Sardinia (IS0)

The only DX newsletter to report this one was *Inside DX*, from which we have listed the following:

IS0IBY	24.941 MHz	1500 UTC
IS0QDV	3.790 MHz	0515 UTC
IS0OMH	7.008 MHz	0130 UTC
IS0UWX	14.017 MHz	1615 UTC

IS0OMH was also reported on 17M near 18.073 MHz at 1430 UTC. Remember, although this is a separate DXCC country, it counts only as Italy for *Worldradio's* Worked 100 Nations Award and the DXathon.

Mongolia (JT)

According to *QRZ DX*, Buyandelgar Gorjav, JT7AA, is a middle school teacher in Muren City, located in the north-central part of Mongolia. In addition to operating with his own call he is involved with 24 students at club station JT7KAA. The club members built the 1000W rig. JT7AA has been reported on 20M near 14.253 MHz around 0200 UTC.

There have been several other calls reported during the month of January, many of them very active. Some of these calls included Bator, JT1BG; Purev, JT1BS; and Bat, JT1CS. If you are looking for a 20M CW call look for these:

JT1AA	14.010 MHz	0145 UTC
JT1BS	14.022 MHz	0230 UTC
JT1CS	14.029 MHz	0300 UTC
JT5AA	14.006 MHz	0700 UTC
JT7AB	14.004 MHz	0345 UTC

Then on SSB the following have been reported:

JT1BG	14.193 MHz	0200 UTC
JT1BS	21.222 MHz	0130 UTC
JT1BV	14.200 MHz	0315 UTC
JT5AA	14.226 MHz	0030 UTC

On the WARC bands JT1CO has been reported several times. Listen



Meet Joe Chang, V85FC, of Brunei. Joe says his QTH is extremely poor because of the surrounding hills (200 to 600 ft. elevation). He uses an inverted V which performs better than his Japanese 6-band ground plane that he bought in Singapore for \$260 US. Joe spends most of his operating time on 20M because of TVI. His XYL is a stamp collector and appreciates such items, used and unused. (Photo courtesy of W6TUR)

about 18.115 MHz at 0200 UTC and 24.963 MHz at 1030 UTC.

Turkey (TA)

According to *Inside DX*, Rudi, who had signed TA4/DK7PE the latter part of January, had made some 3,000 contacts on all bands. On 160M he made use of 180 ft. high antennas including a halfwave sloper. During the January 160M contest he collected 488 contacts, several of them with North America. Other activity from Turkey includes the following calls:

TA1AL	24.952 MHz	1030 UTC
TA1AZ	14.191 MHz	0115 UTC

TA1D	3.799 MHz	2030 UTC
TA2BU	7.004 MHz	2200 UTC
TA2EC	28.525 MHz	1500 UTC
TA2KT	14.010 MHz	1330 UTC
TA2ZA	24.953 MHz	1500 UTC
TA4A	7.011 MHz	0030 UTC
TA5C	14.183 MHz	0230 UTC

Some of the above times may not be workable for you, depending what part of the world you're in. The calls TA1AL, TA1D, TA2BU, TA2EC and TA2ZA were all European reports.

Antarctica (VK0)

Jim Smith, VK9NS, reports in his DX Column, a monthly feature in *Amateur Radio Action*, that Graham McDiarmid, VK0NS, is now on Davis Station, Antarctica, and plans to be fairly active during his tour of duty there.

Also active from Antarctica is Kåre, LA2GV, who is signing with 3Y2GV from Berkner Island (AN-014) at Antarctica. This is the same call Kåre used during the Peter I Island DX-pedition a few years back.

El Salvador (YS)

Tom Beaudry, K8LA, reports that as far as he knows, he is the only active station on CW in El Salvador. He is presently out of the country and expects to return soon after the Hamvention in Dayton this April. Look for Tom signing YS1/K8LA.

Albania (ZA)

The DXCC desk will now accept for credit QSL cards from ZA1DX, ZA1HA and ZA1QA. Licenses for these operations were issued by the

LOGic™

New version!

The best got better!

Many hams have selected LOGic for its many unique features, such as ease of data entry and recall, superb reporting and QSL management, awards tracking, DXing aids, and freeform notes for nets and ragchewing. Thanks to input from our growing customer base and a year's programming effort, we announce version 2.1. New features include *on line* progress displays for nearly *any* award, *any* band/mode! Table of 3800+ prefixes automatically logs oblasts, provinces, etc. Even more flexible and streamlined screen, user-defined fields, and freeform notes. And much more. LOGic Jr. is still only \$39.00. LOGic II, which features contesting, interface to most rigs, custom report writer, a QSL manager database facility, and more, is only \$79. For IBM, Amiga, and ST. Coming for Mac. Ask for free 10-page info pak.

Personal Database Applications

Hours:

2616 Meadow Ridge Dr., dept WR

8 AM - 6 PM M - Th

Duluth, GA 30136-6037

8 AM - Noon Fri

☎ 404-242-0887 Fax 404-449-6687

Ministry of Culture, Youth and Sport in Tirana.

There has been some confusion in Tirana over what a radio amateur is and who has the authority to issue amateur licenses. The Ministry of Culture, Youth and Sport and the Albanian Radio Sport Federation support a number of unlicensed radio enthusiasts. The PTT publicly announced the beginning of an Amateur Radio service in Albania. Further, the PTT has had contacts with ITU and IARU and arranged for training of Albanians in the technical, operating and regulatory aspects of Amateur Radio. In the future, the ARRL DXCC Desk will only accredit those operations approved by the Albanian PTT.

Inside DX reports that operator Dali at ZA1TAJ has been quite active on 30 and 40M. Art Hubert's publication also states that there is an informal net of Albanian stations that meets on 14.240 MHz daily at 1400 UTC. So, there you are—the easy way to work Albania. We wonder how you say, "That's a good contact" in Albanian?

According to the DX bulletins the Albanian nationals are on in full force. Soon a ZA will be considered as garden variety DX. Therefore, as there was considerable activity these past few months we will attempt to specialize a bit. If you need Albania on 40M take a look at the following reports:

ZA1TAA	7.003 MHz	2315 UTC
ZA1TAC	7.000 MHz	2145 UTC
ZA1TAE	7.007 MHz	2130 UTC
ZA1TAJ	7.001 MHz	0130 UTC
ZA2DB	7.012 MHz	2200 UTC

There has been activity on the WARC bands, which includes the following on 30M:

ZA1TAE	10.109 MHz	2300 UTC
ZA1TAJ	10.102 MHz	0700 UTC

And on 12M these calls were reported:

ZA1TAE	24.892 MHz	1015 UTC
ZA1TAH	24.899 MHz	1300 UTC
ZA1TAJ	24.940 MHz	1345 UTC

ZA1TAE and ZA1TAH were also reported on 17M, the former working CW on 18.081 MHz at 1030 UTC and the latter working SSB on 18.133 MHz around 1115 UTC. Other calls worked during January included ZA1BM, ZA1HA, ZA1TAF, ZA1TAG, ZA1TAI and ZA1TAL. Most of these were 20M reports.

A new one?

According to *QRZ DX*, H5AM recently operated from a nudist camp and rumor has it this one could be a new one for 1992. However, DXpeditions operating from there should operate carefully and watch out for RF burns!

IOTA

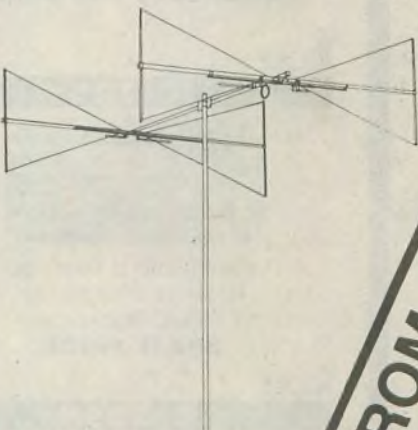
Here are a few more IOTA credits that have shown on the bands recently:

AN-014	Berkner Island	3Y2GV	
	14.184 MHz	0100 UTC	
AS-005	Dickson Island	4K4BEU	
	21.308 MHz	1515 UTC	
AS-027	Wrangel Island	UA0KG	
	14.020 MHz	0330 UTC	
AS-060	Soruk Island	HL4KZW	
	28.507 MHz	1000 UTC	
AS-065	Kolyuchinskaya Bay Is.	4K4POL	
	14.020 MHz	0600 UTC	
AS-082	Dunay Island	UA0QFC/A	
	21.242 MHz	0200 UTC	
AS-096	St. Mary Islands	VU2PTT	
	14.004 MHz	1630 UTC	

EU-025	Sicily Island	IT9MAB	
	14.175 MHz	0630 UTC	
EU-097	Uusimaa District group	ES4RY/A	
	21.259 MHz	1500 UTC	
EU-130	Grado Island	IV3BLQ	
	21.256 MHz	1515 UTC	
EU-133	Kotlin Island	RE1A/RZ4HXX	
	14.190 MHz	1715 UTC	
NA-050	Barter Island	NL7BE	
	14.009 MHz	2045 UTC	
NA-054	Berry Islands	C6A/G4AML	
	21.260 MHz	1915 UTC	
NA-073	Ambergris Cay	V31QC	
	28.319 MHz	1915 UTC	
NA-147	Carriacou Island	J37P/I5DCE	
	21.260 MHz	1800 UTC	
OC-121	Mamanuca group	3D2CC	
	21.158 MHz	1830 UTC	

The HF5B "Butterfly"™

**A Compact Two Element Beam
for 20-15-12-10 Meters.
Operates as a dipole
on 17 meters.**



Butternut Verticals

Butternut's HF verticals use highest-Q tuning circuits (not lossy traps!) to outperform all multiband designs of comparable size!

Model HF6V

- 80, 40, 30, 20 15 and 10 meters automatic bandswitching.
- Add-on kit for 17 and 12 meters available now.
- 26 ft. tall

Model HF2V

- Designed for the low-band DXer
- Automatic bandswitching on 80 and 40 meters
- Add-on units for 160 and 30 or 20 meters
- 32 feet tall - may be top loaded for additional bandwidth.

For more information see your dealer or write for a free brochure

BUTTERNUT ELECTRONICS CO.

P.O. Box 1234 • Olmito, TX 78575
(512) 398-7117

BUTTERNUT
FROM
HF ANTENNAS



HAM RADIO OUTLET

WORLDWIDE DISTRIBUTION

COAST TO COAST



FREE SHIPMENT
UPS - Most items over \$100

RAPID DELIVERIES FROM
THE STORE NEAREST TO YOU!

-NEW ADDRESS-

ANAHEIM, CA 92801

933 N. Euclid St.
(714) 533-7373
(800) 854-6046

Jim Rafferty, N6RJ, VP
Near Disneyland

OAKLAND, CA 94606

2210 Livingston St.
(510) 534-5757
(800) 854-6046

Rich, WA9WYB, Mgr.
I-880 at 23rd Ave. ramp

SAN DIEGO, CA 92123

5375 Kearny Villa Rd
(619) 560-4900
(800) 854-6046

Tom, KM6K, Mgr.
Hwy 163 &
Claremont Mesa

-NEW ADDRESS-

SUNNYVALE, CA 94086

510 Lawrence Expwy #102
(408) 736-9496
(800) 854-6046

Tom, KB6LUC, Mgr.
Lawrence Expwy
So. from Hwy 101

VAN NUYS, CA 91411

6265 Sepulveda Blvd.
(818) 988-2212
(800) 854-6046

Jon, KB6ZBI, Mgr.
San Diego Fwy
at Victory Blvd.

Bob Ferrero W6RJ

President/Owner

Jim Rafferty N6RJ

Vice President

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

-NEW STORE-

PORTLAND, OR 97223

11705 S.W. Pacific Hwy
(503) 598-0555
(800) 854-6046

Earl, KE7DA, Mgr.
Tigard-99W exit
from Hwy 5 & 217

DENVER, CO 80231

8400 E. Iliff Ave. #9
(303) 745-7373
(800) 444-9476

George, K0DRW, Mgr.

PHOENIX, AZ 85015

1702 W. Camelback Rd
(602) 242-3515
(800) 444-9476

Gary, WB7SLY, Mgr.
East of Highway 17

ATLANTA, GA 30340

6071 Buford Highway
(404) 263-0700
(800) 444-7927

Mark, KJ4VO, Mgr.
Doraville, 1 mi
no. of I-285

WOODBRIDGE, VA 22191

14803 Build America Dr.
(703) 643-1063
(800) 444-4799

Curtis, WB4KZL, Mgr.
Exit 54, I-95, South to US 1

SALEM, NH 03079

224 N. Broadway
(603) 898-3750
(800) 444-0047

Jim, K3QIO, Mgr.
Exit 1, I-93
28 mi. No. of Boston

ICOM

IC-765



100W HF Transceiver
General Coverage Receiver
Maximum Operation Flexibility
SALE! CALL FOR PRICE

ICOM

IC-735



100W 12 volt • 12 channel memory
General Coverage • IF Notch & QSK
CALL FOR LOW PRICE

ICOM

IC-725



100W General Coverage
Receiver, HF All Band
Compact Transceiver
GREAT PRICE

ICOM

IC-781



The Ultimate 150W,
All Band HF Receiver
SPECIAL PRICE!
\$4999.95

ICOM

IC-229H

2 Meter Mobile



50 W • 20 Memories • Small Size
Extended RX Coverage, 118-174 MHz
GREAT PRICE

ICOM

IC-2410H/3220

Compact 2m/440 Duo-Bander



IC-2410H
Shown

45W 2M/35W 440 • Backlit LCD
Microphone controllable (w/optional UT-55)
36 mems • Crossband repeat
Simultaneous receive on *same* band
SPECIAL PRICE

ICOM

HANDHELDS



IC-2GAT
2 Meter HT • 7 Watt
IC-4GAT
440 MHz • 5 Watt
IC-W2A
Deluxe Duo-Band
Wide RX Band HT
IC-2SAT, 2 Meter
IC-3SAT, 220 MHz
IC-4SAT, 440 MHz
IC-24AT, Duo Band
IC-2SRA, 2M + Wide Rx

ICOM

IC-901

Fiber Optic Multi-
Band Transceiver



2 Meter and 440 MHz
Extra Large Multi-Color LCD
HM 14 Touch Tone Microphone
CALL FOR PRICE



HAM RADIO OUTLET

WORLDWIDE DISTRIBUTION



MA-40

40' Tubular Tower
REG. \$809 **SALE \$629**

MA-550

55' Tubular Tower
Handles 10 sq. ft. at 50 mph
Pleases neighbors with
tubular streamlined look
REG. \$1369 **SALE \$999**

TX-455 Sale \$1389

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

Towers Rated to EIA Specifications
Other Models at Great Prices!



SHOWN WITH
OPTIONAL
ROTOR BASE



MFJ-949 D

300 Watt Tuner



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

All MFJ Packets Stocked!

KANTRONICS/KAM



True Dual Port Simultaneous HF/VHF Operation

Personal Bulletin board
RTTY/ASCII/AMTOR/CW/Weather Fax
Programmable MARK and SPACE tones
Terminal programs for PC compatibles
and Commodore available
WEFAX programs for PC, Commodore,
and Macintosh available

One Year Warranty
CALL FOR SPECIAL PRICE



MFJ-1278 Multi Mode



All 9 digital modes
Easy Mail™ Personal Mailbox
20 LED Precision Tuning Indicator
Includes free power supply
Includes free eprom upgrade

One Year Unconditional Guarantee

Call now for all MFJ products...

Wattmeters, dummy loads, coax switches, keyers, clocks, speaker and mics, software, books and more!

Phone Hours:
9:30 AM
to 5:30 PM

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

NOW TOLL FREE
IN CALIFORNIA!

CALL TOLL FREE:
West
1-800-854-6046

Mountain
1-800-444-9476

Southeast
1-800-444-7927

Mid-Atlantic
1-800-444-4799

New England
1-800-444-0047

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

Call or write
for our 88 page
Communications
Equipment
Catalog



PK-232 Multi-mode Data Controller

Now with PakMail function



NEW IBM Fax Screen Display Program Available
Transmit/Receive in Six Modes:
CW/RTTY/ASCII/AMTOR/Packet/FAX
IBM, Commodore, Macintosh terminal programs
available. Radio Ports for HF and VHF



VHF/UHF

Solid State Amplifiers



Contemporary design, quality
and a 5 year warranty on parts
and labor. 6 months on the RF
Final transistors.
All amplifiers have GaAsFET receive
pre-amps and high SWR shutdown protection



Global Time Indicator



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

Reg \$1295 **SALE \$1159.95**

OC-129 Panay Island DU6BKD
 28.466 MHz 0200 UTC
 OC-137 Bribie Island VK4YF
 14.217 MHz 0845 UTC

With the warmer weather coming, look for several IOTA DXpeditions. Most of this activity seems to come about during the summer months.

DX nets

An advantage of being a DX editor is the opportunity to spout off without being censored. This regards the numerous DX nets that have taken over the bands. But before I babble, I must say that I will use the DX net if there is one that I just happen to need, as was the case when 9N1MM came on the 14.256 net recently and I had the rig at that frequency.

One of the most frustrating parts of this system of DXing is that one has to make *two* contacts to get credit for one. The first contact is to be heard by the listmaster, which often is more difficult to work than the DX station. They say that DX nets help the little guy with the indoor dipole or low power. That's untrue! You will never get on the list with a setup like that. You may be able to work the DX station, but you will not get on the list as the listmaster will never hear you in the pileup.



Remember the 4J1FS operation from M-V Island last year? Here is one of the operators, Jukka, OH2BR, in an unusual operating position. Jukka has pen and paper in hand along with the headsets. *DX News Sheet* reports that some 27,000 QSOs were made during that DXpedition and 85 percent of the direct cards have been answered. (Photo courtesy of OH2BU)

Unfortunately, this has even found its way into the IOTA ranks. There is one East Coast type that has appointed himself as listmaster anytime an IOTA DXpedition station shows on the IOTA frequencies. Note that I did not say IOTA net. One particular Saturday morning KB5KYO was on giving out contacts for Grand Isle (NA-168) and doing a very fine job of it. It seems that it wasn't good enough for the listmaster, who took over. From then on, anyone who wanted to work KB5KYO had to be recognized by the listmaster first. However, if the DX station isn't aware of a weaker station calling him, there wouldn't necessarily be anything wrong with alerting the DX station to him. Sometimes help is needed, but surely not when the conditions are good.

In all reality working DX via lists or DX nets is a real drag. Notice that ZA1A didn't get sucked into that mess and they did very well. I bet many a listmaster was extremely irritated that ZA1A didn't join their net.

During the recent CQ Worldwide DX Contest I managed, with my modest station of 100W, to work 69 different DXCC countries. Though there were many others that I missed, this amount could never be matched via the list or DX net system. Oh yes, I didn't take advantage of packet radio or a DX spotting net during the contest, which would have alerted me to the possibility of several more.

I'm sure there are several of you out there who see DX nets differently. Perhaps you may have a good reason, and if so, let's hear about it.

Pitcairn Island award

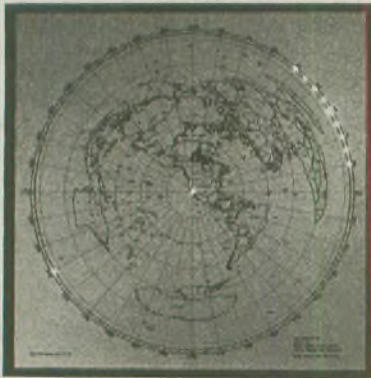
We received another letter regarding the Pitcairn delay dilemma. John Sturek, K6OZV, writes that he too applied for this award and didn't receive it, though his check was cashed.

As of this writing we have heard nothing from Gary O'Toole, KB6ISL, the manager. Do we have a case of fraud here? Or is it just a delay in the printing?

DX News Sheet — 30 years!

During the month of January *DX News Sheet*, published by Radio Society of Great Britain, printed issue number 1500! Created by SWL Geoff Watts about 30 years ago, this weekly publication is still referred to by many as "Geoff Watts' DX News Sheet," even though he retired and turned the publication over to RSGB nearly 10 years ago. There is no other weekly DX news bulletin that we know of that has a longevity such as this one.

BEAM INDICATOR



See your beam's coverage on a custom Great Circle Map with a simple rotator connection.

- BRIGHT LED INDICATORS WITH 5° RESOLUTION
- ADJUSTABLE BEAM WIDTH AND LONG PATH INDICATION
- CUSTOM GREAT CIRCLE MAP ON YOUR QTH
- DECORATIVE 16" x 16" x 1" FRAME

\$189.95*

GREAT CIRCLE MAPS

Four color maps centered on your QTH

Laminated 22" or 16"	\$35.00*
Framed 16"	\$59.95*
Framed 21"	\$74.95*

*S & H included (continental U.S.)

CA Residents please add 7.25% sales tax

Call or write for more information.

VECTOR CONTROL SYSTEMS

1655 N. Mountain Ave., Suite 104-45
 Upland, CA 91786 • (714) 985-6250

Speak
 To
 The
 World

Amateur Radio Language Guide

• Written especially for the ham radio operator • Hundreds of phrases • Vol. 1—incl. French, Spanish, German, Japanese, Polish • Vol. 2—incl. Swedish, Italian, Portuguese, Croatian, Norwegian • Vol. 3—incl. Russian, Danish, Czechoslovakian, Korean, Hawaiian. **ONLY \$10**

Send \$10 per vol. in U.S. (Outside U.S. \$12.50)

ROSE, P.O. Box 796, Mundelein, IL 60060-0796

New DX club

The Blackhawk DX and Contest Club has recently been organized in Rockford, Illinois. All radio amateurs in northern Illinois and southern Wisconsin who share interests in DX or contests are invited to attend BDX-CC meetings. Meetings are held the first Thursday of each month at 7 p.m. at the Swedish American Health Care Center, 1358 Fourth Avenue, in Rockford. For more information on this new group please contact Jim Miller, W4JR, BDXCC secretary, 5581 Einor Avenue, Rockford, IL 61108; 815/397-4602.

Affiliated with the ARRL, this new DX and contest group is congratulated by the staff of *Worldradio!*

DXCC backlog

As of January 23 the ARRL DXCC desk was starting the processing of new applications and endorsements received on November 18, 1991. Endorsements require additional processing time because permanent paper records are being converted to computer records.

The heavy September volume added to the backlog, and illnesses among employees further slowed processing. Beginning October 1, every DXCC endorsement has been done on the IBM System 38 computer, which required approximately three million country credits to be converted from paper to computer. Now, once a card has been processed at the DXCC desk, it will never have to be submitted again, regardless of mode or band credit.

Antique QSLs

Don Simpson, W3EYF, was interested in the U9AV QSL card that we ran recently. Don too had worked U9AV. Unfortunately, all of his cards from 1934 through the beginning of World War II got lost.

DX Prediction — April 1992

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

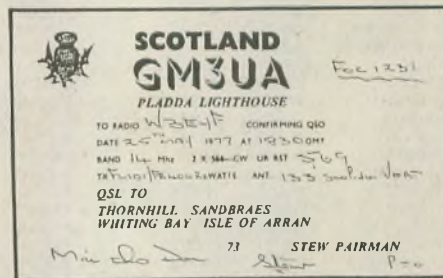
UTC	AFRI	ASIA	OCEA	EURO	SO AM
8	21	15	*26	14	*20
10	(26)	*14	*23	(14)	*21
12	35	*19	*20	22	25
14	40	22	20	26	*32
16	40	19	(19)	27	*37
18	*40	(15)	(18)	25	*41
20	*33	26	33	21	*42
22	27	29	40	15	*43
24	*24	27	43	14	*35
2	*21	24	40	*12	*29
4	*21	21	*38	*19	*25
6	24	18	31	16	*22

WEST COAST

UTC	AFRI	ASIA	OCEA	EURO	SO AM
10	(16)	*20	*26	14	*22
12	(23)	*18	*23	(14)	(19)
14	(29)	*21	*19	22	29
16	33	19	(19)	26	36
18	34	(15)	(18)	24	*40
20	33	25	33	22	*42
22	27	*31	40	(14)	*41
24	24	*34	43	(13)	*39
2	*21	*35	43	(12)	*32
4	*21	*31	41	*21	*27
6	21	*29	*38	19	*23
8	(18)	*24	*31	16	*21

EAST COAST

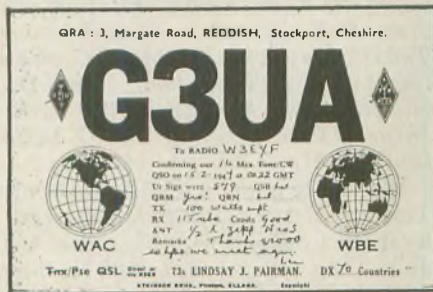
UTC	AFRI	ASIA	OCEA	EURO	SO AM
7	22	(15)	*26	14	*21
9	24	*13	*23	18	*21
11	34	*20	*21	*24	24
13	*39	18	(21)	*27	*32
15	*41	(16)	(19)	*28	*37
17	*40	(14)	(18)	*26	*40
19	*36	(18)	(27)	*23	*42
21	*30	24	38	17	*41
23	*25	27	42	*15	*39
1	*22	24	40	*13	*32
3	*18	21	38	*12	*27
5	*25	17	31	*16	*23



have his QSL. When I located the card, I told him I indeed did have a card but for another amateur whose name was not quite the same. We both

were shocked to discover that the original GM3UA that I had was actually his father. Not only that, his dad, ex-G3UA, later became GM4CMO and was still living in 1977. The son, the new GM3UA, had held another GM3 call before he was assigned his father's old call."

It is also unusual for the licensing authorities to re-issue a call when the former assignee is still living. And, upon the assigning of calls in the United Kingdom there is only one suffix. Thus, when a G3 moves from England to Scotland he will become a



Don provided us this month with these two cards and has an interesting story about them. Back in 1946 Don worked G3UA, who was formerly GM3UA, and later worked him again on February 15, 1947, on 20M CW.

Almost 31 years later on May 25, 1977, he worked GM3UA, also on 20M CW. Don says, "During the QSO, I remarked that his call seemed familiar to me and explained that I might even

"Where Do We Go Next?"

New book by OH2BH, now a DX author!



Following a one-year stint in the United States, Martti Laine is introducing his first work in the field of DX literature. Tentatively entitled "Where Do We Go Next?", this new publication comes in response to public demand for a presentation in book form of the author's spectacular DXploits over the past quarter-century.

Running to almost 300 pages, the book is richly illustrated with pictures from the author's personal archives and it tells you the story of what it is like to be a super-DXer, why anyone should want to become one and how a globetrotting DXer finds life in moments of triumph and everyday toil. Everything told the way only OH2BH can relate it to the amateur fraternity.

Read all about how these DX countries were born and embark on an armchair trip for an all-

time first or major DXpedition to exclusive places such as *Annobon Island, Western Sahara, Market Reef, Southern Sudan, Revillagigedo and M-V Island* — the island that brought East and West together for their first-ever joint DX operation.

Sense the heat and excitement of being at the production end of that pileup that you once worked for a new one. Go to *Jarvis Island and Conway Reef* with today's prominent DXers and examine the profile of "a complete DXpeditioner" as Martti depicts the people with whom he was traveling to all those rare spots.

Maybe the author is also able to pinpoint the real causes of malicious interference always experienced on the DXpedition frequencies as was the case with the 3Y5X operation, and much more. "Where Do We Go Next?" is a must on the bookshelf of every deserving DXer and anyone who would like to become one.

Price: US\$ \$22.95 plus postage. USA add \$3; Canada add \$5; others, add \$7. CA residents, add sales tax.

KTE Publications

2301 Canehill Ave., Long Beach, CA 90815
Phone: (213) 421-0519 — 24 hours

GM3, but will retain his original suffix.

County hunters may recognize Don's call. He has participated in many state QSO parties handing out contacts to the deserving county hunter. Our records show that we have several counties in Maryland, Pennsylvania and Virginia confirmed due to the efforts of W3EYF in county DXpeditions.

CIS mail

The postal problems with the newly created Commonwealth of Independent States is not good, by the various reports we have seen. Your chances of a direct QSL card getting through are slim and we suggest you wait to see what develops before sending any mail to the CIS. However, if you must send your QSL card, Ed Kritsky, NT2X, suggests the following: 1) Avoid flashy envelopes and stamps, including airmail envelopes. Use plain opaque ones instead; 2) If available, use Russian made envelopes with the address on the top right. Put your address on the back or omit it altogether; 3) No call signs on the envelope. Address the envelope by hand and avoid the words "radio" or "club"; 4) Seal the envelope with synthetic glue that cannot be steamed open, and seal the seams with tape; 5) Avoid green stamps—use IRCs and place these in an inner envelope. Remember a US dollar bill can go a long way for extra income for postal workers; 6) Use registered mail.

The above is not a guarantee that your mail will be delivered. Long before the USSR folded, we had sent a non-radio package to the Ukraine via registered mail, including a return receipt request. We also had the address written in Russian. We never heard anything again and it seemed to be untraceable.

QSL help

A few months ago we listed the QSL manager for KH6ABH to be WA6TTS. This is not correct. In fact, Darrell, WA6TTS, never was such. What he had done was run phone-patches for KH6ABH over a period of four to five years for them. KH6ABH used to be a LORAN station on French Frigate Shoals. Therefore, we are still looking for a route for this one. The operator at the time we

worked KH6ABH was Ski back in 1978.

QSL Routes

A81AD	-WB2DND	VK0NE	-VK9NS
AA4VK/KP1	-N0TG	VP2MLD	-KC4DWI
BV2FA	-DJ9ZB	VP2M/G4KTP	-G4JFS
	(see note 1)	VP25FBN	-KA3EBN
C56/G4GZG	-G4GZG	VP5P	-WN5A
C56/OH3XR	-OH3XR	VQ9JY	-KB7CDA
C9RDM	-W8GIO	VY2SS	-VE7ARS
C9RTT	-1V3GTY	XQ0X	-CE3ESS
CM8EN	-CM2ED	XT2BW	-WB2YQH
CQ5EEB	-CT1EEB	XV7TH	-SK7AX
CQ0A	-CT1CLR	XW1QL	-YASME
	(see note 2)	XX9AS	-N6LVY
CQ0W	-CT1EEB	YB2ARO	-N7STU
CS5A	-CT1AUO		(see note 4)
CZ2SS	-VE7ARS	YX0A1	(see note 5)
DJ1WM/KH8	-DJ1WM	YY7C	-YV7AJ
DX2VOA	-W7KNT	ZAI7AG	-IK2HTW
EL2J	-G0AKX	ZAI2DB	-J11EDB
FJ5BL	-F6AJA	ZAI2GV	-JR6GV
F00BAG	-N6VAW	ZAI2J	-JA1HGY
F00CRI	-WB6UDS	ZAI2LZ	-J11DLZ
FS/JE2HCJ	-JA2JFS	ZAI2PL	-JK1OPL
HS0POL	-SP9DWT	ZAI2ST	-JF11ST
	(see note 3)	ZF21HM	-K9QVB
HZ1ZS	-ON6BY	ZF2KE	-K9QVB
J37M	-W9VW	ZF2NJ	-K0BJ
JW1MFA	-LA1MFA	ZK1XV	-K7PXV
JW5NM	-LA5NM		(see note 6)
JW7FD	-LA5NM	ZS500A	-WA3HUP
JW0C	-UB5MUJ	ZW2W	-PY2RRG
K2BS/GY5	-W2G1K	ZX2F	-PY2RRG
K5MK/C6A	-K5MK	ZY0FX	-W9VA
KB1TX/KC4	-N1DUZ	3A1K4CIE	-DL1SEM
KP2A	-W3HNK	3D2KS	-DL1SDN
N6BFM/4U	-W8CNL	3D2HH	-DJ1WM
N0TG/KP1	-N0TG	3D2KA	-JA1CMS
P29UV	-LA5NM	3D2UU	-DF2UU
P30JE	-5B4JE	3X0HNU	-F6FNU
P40M	-K5GO	3Y2GV	-LA6ZH
P40PI	-K4PI	4I1IDBT	-DX1DBT
P43A	-YU4YA	4J4GC	-UG6GAW
PT2TF	-W5ILR	4K2CC	-UV3CC
PY0FF	-W9VA	4K3BB	-RB5CB
RE1/RZ411XX	-UY5XE	5B4ADA	-K2VHW
R14U/UB4JLF	-KZIL		(see note 7)
S42U	-ZS2U	5B4ADR	-YU2AJ
S7BA	-JA1ELY	5I3YT	-JK1HSQ
SU5BQ	-W4HFQ	5N0ETP	-W6LQ
SV0IG/9	-1K0EPR	5T5CJ	-W4BAA
T30NAD	-JO1CRA	5U7A	-WF4A
T30RE	-HA8XX	5U7M	-JARL
TA/LA6WEA	-LA5NM	5X5WR	-DJ5RT
TU2YH	-F611M	7P8EN	-ZS4TX
TU4SR	-OH8SR	7S8AAA	-SK0MT
TY/F1JJDG	-F1JJDG	8P9CP	-K06WW
TZ6NU	-F6FNU	8P9CT	-K9JJR
UI5U/RB3JA	-KZIL	8Q7XX	-DJ8MT
V2/JH1ROJ	-JH1ROJ	9I4KD	-G4KDV
V31QC	-K9LZJ	9J2FR	-I2ZZU
V63JW	-DF6FK	9J2HN	-JH8BKL
V63NW	-DF6FK	9K2HA	-ON6BY
VK9XM	-W5BOS	9Q5LN	-W7LN
VK9XN	-W5KNE	9V1XQ	-K2QBV

AP2KAH	-Aziz, P.O. Box 537, Peshawar, PAKISTAN
CU1AC	-Gene Nadolny, W2FUXA, P.O. Box 421, Elma, NY 14059
D2ABC	-Ivo Costa (Projeto Luzambra), P.O. Box 829, 20001 Rio de Janeiro, RJ, BRAZIL
D2AXYK	-Eng. Francisco Juca, Rua Companhia de Jesus 6, Projeto Luzamba, Bairro Miramar, Luanda, ANGOLA
D6BKD	-P.O. Box 89, Hiloilo City, PHILIPPINES
EA9PB	-Francisco Garcia Gonzalez, P.O. Box 2190, Ceuta, SPAIN
H44BN	-P.O. Box 411, Horiara, SOLOMON ISLANDS
HR2JEP	-P.O. Box 200, El Progreso, HONDURAS
J37ZA	-P.O. Box 182, St. Georges, GRENADA
KH2T	-Cdr. Brian D. Robertson, 17 Aldrich Road, Santa Rita, GU 96915
UA0KG	-P.O. Box 225, Magadan 665030, RUSSIA
VH150SYD	-WVIA Special Events, P.O. Box 1066, Parramatta, NSW 2124, AUSTRALIA
Y11AB	-P.O. Box 6100, Baghdad, IRAQ
Y11AFC	-P.O. Box 7441, Baghdad, IRAQ
Y11Y	-P.O. Box 7482, Baghdad, IRAQ
Y11MH	-P.O. Box 5864, Baghdad, IRAQ
Y11RJ	-P.O. Box 7147, Baghdad, IRAQ
Y11RM	-P.O. Box 7583, Baghdad, IRAQ
ZAI7AA	-Dajlan Omeri, Lagja 25, Rruga Niko Avrami, Pallati 42, Shkalla 2/11, Tirana, ALBANIA

ZAI7AB	-Marenglen Mema, Lagja 17, Rruga Gogo Nushi, Pallati 16, Shkalla 3/10, Tirana, ALBANIA
ZAI7AC	-Engjellush Allikaj, Lahja 26, Rruga Brigada 8 S, Pallati Agimi, Shkalla 2/36, Tirana, ALBANIA
ZAI7AD	-Nikolla Dedi, Lagja 14, Rruga Sitki Cico, Pallati 8, Apartamenti 10, Tirana, ALBANIA
ZAI7AE	-Dali Prenci, Lagja 54, Rruga Zenel Baboci No. 13, Tirana, ALBANIA
ZAI7AF	-Teodor Madhi, Lagja 8, Rruga Mihal Grameno, Pallati 7/4, Shkalla 3/29, Tirana, ALBANIA
ZAI7AH	-Bengjellush Allikaj, Lagja 26, Rruga Brigada B.S., Pallati Agimi, Shkalla 26/400, Tirana, ALBANIA
ZAI7AI	-Ylber Berzhita, Lagja 15, Rruga Arkitekt Sinani, Pallati 226, Tirana, ALBANIA
ZAI7AJ	-Dali Prenci, Lagja 25, Rruga Niko Avrami, Pallati 75, Shkalla 1/10, Tirana, ALBANIA
ZAI7AK	-Arben Goxhaj, Lagja 45, Rruga Thanasziko, Pallati 65/2, Apartamenti 7, Tirana, ALBANIA
ZAI7AL	-Dali Prenci, Lagja 62, Rruga Lord Bajroni, Pallati 3, Shkalla 1/11, Tirana, ALBANIA
4K2/UA3ADR	-P.O. Box 73, Moscow 103051, RUSSIA
4K2/UV3AAC	-P.O. Box 73, Moscow 103051, RUSSIA
4K4BAT	-Alex V. Klyukin, P.O. Box 2, Dickson Island 663241, RUSSIA
5Z4FM	-P.O. Box 34168, Nairobi, KENYA
9K2TC	-Canadian Embassy, P.O. Box 25281, Kuwait City, KUWAIT
9L1MR	-Lebanese International School, Freetown, SIERRA LEONE
9X5PN	-Protais Nsengimana, P.O. Box 2279, Kigali, RWANDA

- Notes:
- For direct QSLs use P.O. Box 3-167, Yungho 23498, Taiwan.
 - Contacts made with CQ0A on October 26 and 27, 1991 go via CT1EEB.
 - This QSL route applies for the new operator at HF0POL. Zbig's XYL will handle his QSL chores
 - The direct QSL route for this one is Robert W. Brown, Jr., P.O. Box 200, Yogya, Indonesia
 - There are two routes for contacts with YX0A1. SSB contacts go via ARV, P.O. Box 3636, Caracas, Venezuela; CW contacts to YV DX Club, P.O. Box 75458, Caracas 1070-A.
 - This route applies for contacts made since January 1992. Contacts prior to that date go to VK2BCH.
 - This route applies for US contacts only. All others via YU4YA.

Many thanks to the following contributors: GM3MTH, OH2BU, UV3AAC, K2CYX, W2FXA, W3BBL, W3EYF, KR3J, W4JR, N6AW, N6IC, WA6TTS, W6TUR, KA0IAR, The American Radio Relay League, Salt City DX Association (KB2G), Northern Arizona DX Association (W7YS), Western Washington DX Club (K7WA), Long Skip (VE3IPR), CQ Ham Radio, Amateur Radio Action, The DX Magazine (VP2ML), DX News Sheet (G4DYO), The Long Island DX Bulletin (W2IYX), QRZ DX (W5KNE), Inside DX (N2AU), and The DX Bulletin (VP2ML).

We finally put the IC-735 on the air. This was the grand prize at the Northwest DX Convention in Richmond last July. Then we had to get a 500 Hz filter for CW (I was having a heck of a time during the CQ 160M contest in January without the filter). Obviously, we were out of the bandpass for many of the attempted contacts. We also have been playing around with the WARC bands. Using our 40M dipole with an MFJ antenna tuner works very nicely. No great signal, but it works! Nice thing too, is that there are no listmasters there! Good DXing! de John, N6JM.

MULTI-BAND SLOPERS
 ALSO DIPOLES & LIMITED-SPACE ANTENNAS

Outstanding performance of W9INN antennas is well known. Now enjoy multiband BIG-SIGNAL reports! Automatic bandswitching. Very low SWR. Coax feed. 3kw power. Compact. FULLY ASSEMBLED to your specified center frequency each band. Easy to install. Very low profile. Complete instructions. Your personal check accepted.

4 BAND SLOPER - 160, 80, 40, 30, or 20M	60 ft. long	\$549.00
.. .. 160, 80, 40M	60 ft. ..	\$480.00
.. .. 80, 40M	40 ft. ..	\$390.00
.. .. NO-TRAP DIPOLE - 160, 80, 40M	113 ft. long	\$790.00
.. 80, 40M	85 ft. ..	\$620.00
.. .. BAND SPACE SAVER DIPOLE - 160 thru 10M*	48 ft. long	\$930.00

* Requires wide-range tuner (80, 40, 20, 15M without tuner)

SEND SASE for complete details of these and other unique antennas

W9INN ANTENNAS 706 394-3314
 BOX 393 MT. PROSPECT, IL 60056

SGC**SG-230**

SMARTUNER

HF ANTENNA COUPLER
SSB, AM, CW & DATA
FAST - INTELLIGENT - ACCURATE
OPERATES WITH ANY HF TRANSCEIVER

The *Smartuner* high technology *universal* coupler intelligently tunes any length antenna (8 to 80 ft) in the HF band. The unit will operate with any HF transceiver within its' specifications. The *Smartuner* switches 64 input and 32 output capacitance combinations plus 256 inductance combinations in a "pi" network resulting in over a half-million different ways to ensure a perfect match for the transceiver. And, *it remembers the frequency and the tuning values* and will re-select these values in less than 10 ms next time you transmit on that frequency.

US\$595.00



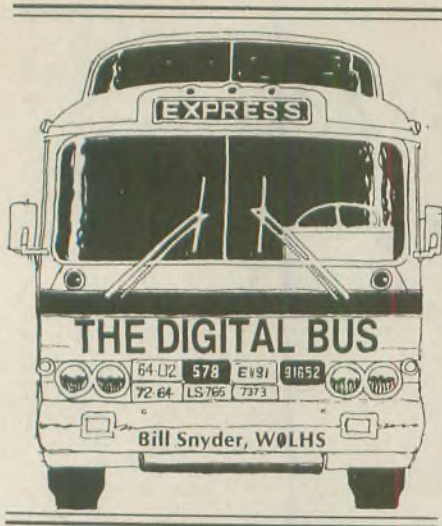
- MICROPROCESSOR CONTROLLED
- NON-VOLATILE MEMORY
- WATERPROOF
- B.I.T.E. INDICATOR
- 1.8 TO 30 MHZ RANGE
- 10 TO 150 WATTS INPUT POWER
- 10 mS RETUNING TIME
- 8 TO 80 FT. ANTENNA (All Types)
- FOR MARINE, AVIATION, HAM AND PARA-MILITARY APPLICATIONS

The Smartuner is available from:

Henry Radio, CA. 800-877-7979
Amateur Electronic Supply, 800-558-0411
Ham Radio Outlet, 800-854-6046 (West US)
800-444-0047 (East US)

Surplus Sales of Nebraska, NE. 402-346-4750
Eli's Amateur Radio, FL. 800-780-0103
Jun's Electronics, CA. 800-882-1343
Gordon West Co., CA. 714-434-0666

SGC Inc. SGC Building, 13737 S.E. 26th St. Bellevue, WA. 98005 USA
P.O. Box 3526, 98009. Telex: 328834. Fax: 206-746-6384 Tel: (206) 746-6310



At a recent ham club meeting the conversation turned to "lost messages" on the packet network. Because I've asked readers to send me packet messages, I think I can safely say that the system does lose some person-to-person mail. This morning, for example, I had a message from an Oregon ham who had sent me packet mail that I never received. I checked back and I had no record of hearing from him before today's packetgram.

I've concluded that our packet system is about as reliable as the "bottle paper" method used in the maritime world. "Bottle paper" means putting a message (with the latitude, longitude and date) in an empty bottle and then tossing it into the ocean to float. If and when the bottle washes up on shore, the data is relayed to government map makers and they sometimes include it on ocean current charts. Ship captains have done it for years.

I, a free-spirited young man, once supplied the world with bottle paper, only I was unaware of the serious use of the method. I just thought it would be fun. It happened in 1947 when I was on board the SS *African Pilgrim* with the

Gatti-Hallicrafters African expedition. As a going away present for Bob Leo, W7LR, and myself Hallicrafters, the US sponsoring company that manufactured military and ham radio transmitters and receivers, sent Bob and me four cases of non-radio jugs to smooth the waters of our 48-day ocean voyage to Mombasa, Kenya. Of course we shared our goodies with the other three working members of the expedition—"Sahib" Attilio Gatti, the expedition leader, had his own private supply of gin and Canadian Club, for advertising pictures, which he shared mainly with the "memsahib" (his wife). The "well-stocked" cabin Bob and I occupied was a very popular meeting place just prior to evening chow. One could call roll there any evening and not miss a soul.

We sailed from New York with all the expedition's vehicles, house trailers and ham radio gear aboard the ship. After 18 days at sea we stopped at Capetown, South Africa. There, while the crew off-loaded cargo destined for that port, Bob and I were entertained by South African ham operators. They took us on tours of the area and to club meetings.

In return, Bob and I invited our ZS hosts aboard the ship for a treat of Kentucky's best export. Our guests spent a happy hour with us and then left just before the gangplank was raised to sail. It was a nice friendly party.

As the African Pilgrim left the Capetown harbor, something told me to put a message in a bottle and toss it into the ocean. I'd heard of pirate maps and all kinds of strange things being put in bottles; so, with my tongue in my cheek, I wrote the following message: "This bottle was thrown into the Mississippi River near New Orleans, Louisiana by Kenneth Christenson, Moorhead, Minnesota." I then went on to put Ken's address and a fictitious date on the message. I ended it with "Please communicate."

I tucked the little message into a well-drained empty and corked it in. Then I went up on the bridge where the navigator was on watch. "What are the sea currents like right here?" I asked.

He dragged out some tide and current books and we looked up the information. I'd been to piloting and navigation schools when I was a member of the Army Amphibian Engineers during World War II, so I knew something about the information I was looking for. We decided that the ocean current was moving toward a wide bathing beach that we could see off the port side of the ship. Without mentioning to the navigator what I intended to do, I walked to the fan tail of the vessel and tossed the bottle into the sea. I watched it bob up and down until it was out of sight and then forgot about it.

Ken Christenson, KC0UI (then W0GHN), was one of my ham radio buddies in the Fargo area. Ken is an excellent CW operator. In those days he and I would pull the weights back on our bugs and play "smoke." I had thought the bottle would be found on the bathing beach and thus be a big joke on Ken. I'd completely forgotten about it until a couple months after we were on safari in Kenya, where the mail brought me a letter from Ken.

"You SOB," he began, "did you toss a bottle into the ocean with the following message in it?" And then he went on to copy the message I had put in the jug.

According to Ken, a school teacher named J.C. Wolfaardt of Paarl, South Africa, had found the bottle, not on the beach where I believed it would wash up, but 90 miles north of the city of Capetown. To share his find, the teacher told his story to a Capetown newspaper columnist who printed it. Reuters news agency picked it up and sent it all over the world. In the US it wound up in the local Fargo newspaper. A reporter contacted Ken, who was completely dumbfounded. He denied being in New Orleans on the message date.

A Fargo geography professor speculated on the path the bottle had taken: down the Mississippi, around Florida into the Gulf stream, north to Ireland, and south by the Canary stream to the equator. There it might have been borne by the equatorial current down the coast of Brazil to the Argentine, and then east to the African coast. The entire voyage was estimated at 20,000 nautical miles.



I guess my prank had set bottle paper back a few hundred years. And today I still wonder what happened to the other 47 message carrying bottles we tossed into the ocean on that 48-day trip.

DigiCom > 64 Modem
Low Cost Packet for the Commodore

Features: Software-based PACKET that makes your computer emulate a TNC. Modem connects from cassette port to RIG. Watchdog timer & reed relay PTT standard. Power derived from Computer. Uses crystal controlled 7910 chip, VHF and HF. Lock, TX & RX LEDs. Free copy of Version 2.03 software included.

Complete Kit Only \$49.95
Assembled & Tested \$79.95

CA Residents add 7.75% sales tax. S&H: \$5.00 (insured) Foreign orders add 20%. For more info or price list; send legal size SASE (52c) to:

A&A Engineering  



2521 W. LaPalma #K • Anaheim, CA 92801 • 714-952-2114

BayCom Compatible
Low Cost Packet for PC / Clones

Features: Software-based PACKET that makes your computer emulate a TNC. Modem connects from serial port to RIG. Watchdog timer & reed relay PTT standard. Operates from 12VDC @ 100ma, wall power supply included. Uses crystal controlled 7910 chip, VHF and HF. Lock & TX LED indicators. Free copy of Version 1.40 English software included.

Complete Kit Only \$59.95
Assembled & Tested \$89.95

CA Residents add 7.75% sales tax. S&H: \$5.00 (insured) Foreign orders add 20%. For more info or catalog; send legal size SASE (52c) to:

A&A Engineering  

2521 W. LaPalma #K • Anaheim, CA 92801 • 714-952-2114

Packet traffic

"I'm getting a pretty good load of packet mail as a result of your column," packets Marty Mullican, G0NJJ, the displaced cornhusker in England. "It is truly exciting getting mail from hams who until now have never sent a message past their own home BBS. If this international packet stuff is ever discovered by the everyday Joe Ham, and they find out how easy and cheap it is to message folks around the world, I fear we'll suffer a network melt-down!"

Marty again asks that you put your complete home BBS address in each message you send to him. G0NJJ @ GB7ZPU.#21.GBG.EU is Marty's address in England. Give it a try. Just put the message in your local BBS and let the system do the rest.

WA6PGA/HB9CDP packets this comment: "I think the FCC should hold store-forward MBX SYSOPS blameless for anything that travels through their stations. There are some SYSOPS who generate a lot of ill-will by killing any message they are incapable of reading when it's not in English. Their excuse is the recent FCC decision to hold responsible every single one in the chain of MBX SYSOPS for one allegedly tainted message that was routed through them."

WB9YXY packets this information: "I sent a message to Marty and he did respond! The answer passed through 11 stations and took only two days to find Wisconsin!"

N7HXV says this about junk mail: "I have taken it upon myself to never look at a '4SALE' message addressed to 'ALLUSA.' If everyone would do the same, maybe we could stop the misuse of our system."

N1KIO @ WA1WOK.NH.USA.NA has started packet county hunting. "It is a blast," says Tom.

AF4I sent a packet message to Marty on Sunday morning and had the

answer back Tuesday afternoon.

KK5TQ is a "TV DXer." If you are interested in that hobby, write the WTFDXA, P.O. Box 514, Buffalo, NY 14305-0514.

WB0VUQ says this: "I would like to exchange a message or two with Marty as I have an Amateur Radio class in the school where I teach."

W5SYT @ N5LJF.#AUS.TX.USA.NA says about packet messages: "If you don't send 'em, you don't get 'em."

W1TTQ writes: "Thanks for the opportunity to work some DX on packet."

Eavesdroppings


"NOW THAT THE COLD WAR HAS COOLED WHAT ARE YOU GOING TO DO WITH YOUR FALLOUT SHELTER? ... I HAVE A TELLY SAVALAS HAIRCUT SO I HAVE TO SHAVE IT EVERYDAY TO KEEP IT SHINY ... THE WATER HERE IS SO BAD I HAD TO SPEND 600 BUCKS ON A REVERSE OSMOSIS FILTER SO WE COULD MAKE COFFEE ... MY KEYBOARD CAUSES ALL MY TYPING MISTAKES, IT NEEDS CLEANING OR SOMETHING ... IT'S THE SUN SPOTS THAT CAUSE THE HAM BAND TO BE SPOTTY, I THINK ... I'VE BEEN A HAM SINCE BEFORE THE BIG WAR AND A BUNCH OF LITTLE ONES ... FOR MY BIRTHDAY MY WIFE GAVE ME A NEW CUSPIDOR AND A LARGE RUBBER DOILY TO PUT BY MY OPERATING POSITION IN THE HAM SHACK ... FORMICATION AIN'T WHAT YOU THINK, IT MEANS THAT YOU HAVE THE SENSATION OF BUGS CRAWLING ALL OVER YOUR BODY ... MY COMPUTER HAS 125 MEG HARD DISK BUT ONLY 5 MEGS ARE STILL FREE ... MY WIFE GOT A NEW 386 COMPUTER SO I INHERITED HER OLD C-64 ... I ENJOY WORKING

ON OSCAR 13 BUT THE LOW ORBIT SATELLITES ARE FOR THE BIRDS ... MULTIMEDIA COMPUTING WILL PROBABLY BE THE NEXT ELECTRONIC THING I WASTE MY INHERITANCE ON ... THE ARRL RTTY ROUNDUP WAS A LOT OF FUN BUT I FORGOT TO SEND MY SCORE IN ... I BOUGHT A NEW 101 KEY KEYBOARD BUT I ONLY HAVE 10 FINGERS AND THEY FEEL LIKE I NEED 7 ON ONE HAND AND 3 ON THE OTHER ... MY FAVORITE MODE IS RTTY BUT I WORK MORE CW THAN RTTY OR SSB ... EMPTY TREE IS THE WAY HE SAYS 73."

Thanks to W4DPH, W0MBD, K2PGB, WA6PGA, W7VFR, WB9YXY, N7HXV, KB0GUV, K0TG, N2IHQ, AA7AJ, KE8TQ, N7TKO, K9ZZ, WA6VJY, N1KIO, AF4I, KK5TQ, N6LAW, KB2LUM, K2PGB, K6KZF, WB0VUQ, and W5SYT for help. My packet address is W0LHS @ W0LHS.ND.USA.NA and mail reaches me at 1514 South 12th St., Fargo, ND 58103. 73 and DIT DIT. □



I GOT THE XYL TO GET HER TICKET, BUT I CAN'T GET THE AUDIO GAIN LOW ENOUGH



IMRA

People Helping People

Service to Missioners (all denominations)

Missionary Net • 14.280 MHz, Mon. thru Sat.
 1:00-3:00 Eastern Time
 (1700-1900 Z DT, 1800-2000 Z ST)
 Annually 20,000 check-ins, 11,000 traffic

Membership • 1,000 amateurs in 40 countries • Directory & bi-monthly newsletter

If monitoring the net, please come in and join us. You will be cordially received.

For further information, write:

Sr. Noreen Perelli, KE2LT
 Fletcher Street
 Goshen, NY 10924

The Scanner Listener's Handbook

How to Hear More on Your Scanner Radio, by Ed Soomre, N1BFF
 Your guide to exploring 25 - 2000 MHz. Includes a detailed breakdown of band allocations and users, plus chapters on scanners, antennas, accessories, 2-way radio systems, listening laws, equipment and information sources.
 \$14.95 + \$2 s/h (\$3 foreign)

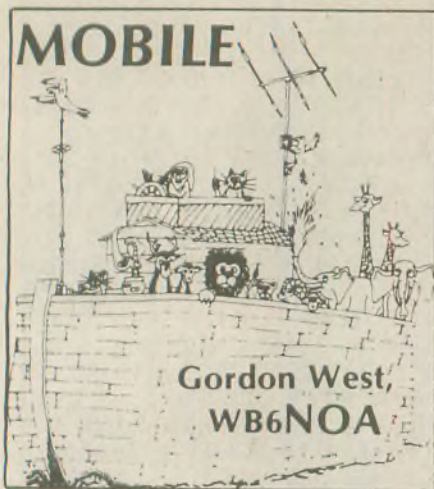
<p style="margin: 0;">Crisis Communications A Handbook for Emergency and Survival Radio Monitoring. Hurricane, earthquake, oil spill, - will you and your radio be ready when the next disaster strikes? "Five stars..." \$10.95 + \$2 s/h (\$3 foreign)</p>	<p style="margin: 0;">Coast Guard Radio A Guide to Using and Monitoring US Coast Guard Communications Full listings of USCG vessels, aircraft, installations, Frequencies, calls, addresses, weather, Notices to Mariners broadcasts, much more. \$12.95 + \$2 s/h (\$3 foreign)</p>
---	--

Order now from your radio book dealer or



Tiare Publications
 PO Box 493W
 Lake Geneva, WI 53147

Catalog \$1, free with order
 Visa/MasterCard



Remote controlled rigs

The remote controlled transceiver features a detachable head that may be mounted almost anywhere on the dash, at eye level. The lightweight head is attached to approximately 15 feet of small control line that goes to the main body of your high-frequency or VHF/UHF transceiver. Sometimes the control line is a shielded multi-conductor cable, or it may be micro-coax where everything goes up and down the line digitally. The latest technology is fiber optics as the link between the tiny control head and the main body of the transceiver.

When you see the ads for a remote control system, they typically show the body of the transceiver in the trunk of your vehicle. While this may initially seem like a great idea, especially in a high-crime area, it's an electrically poor idea. Putting the transceiver in the trunk of your vehicle now requires an extremely long two-conductor run to your battery under the hood. Running 30 feet of #6 gauge duplex wire hooked directly to your battery is difficult, and also hazardous. If something gets shorted out, it's either going to blow a fuse or start a fire in your vehicle.

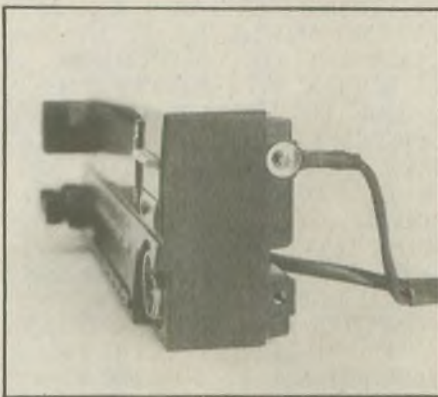
If you really want to put your transceiver in the trunk, make sure that you use a minimum of #6 duplex wire for a 50W VHF/UHF transceiver, or a minimum of #4 gauge duplex wire for a 100W high-frequency transceiver. Make absolutely sure that you install 20 amp fuses on both the red wire and black wire power leads within one inch

of the positive and negative posts of that battery under the hood.

Many times you can save yourself a lot of problems by mounting the remote controlled transceiver underneath the driver or passenger seats, making sure you have good ventilation

It's essential to bond the transceiver body to the metal frame of your vehicle with a ground strap.

and no electronic seats that might be moved and cause a short of any components. Or, if you rarely or never carry passengers in the back seat, you could mount the transceiver there, out of the way, in an area with adequate ventilation. *Important:* Make absolutely sure you tie in a ground strap directly to your vehicle frame interconnecting the transceiver body to your vehicle chassis. If you don't, things could quickly go up in smoke, especially if you are using a no-ground, on-the-glass antenna system.



The ground must be attached to the vehicle frame too.

The remote-control head is so small, it can go just about anywhere. Play around with it, with the radio turned on, on receive. This lets you find a spot for the remote-control head where you

can easily see the LCD or LED/gas discharge display without losing sight of the roadway ahead. On receive, the remote-control head may be energized for a "live" placement decision. And if you really can't make up your mind, you might purchase Velcro strips to

temporarily attach the mobile head to your padded dashboard or plastic fancy work by the steering wheel.

It is an absolute necessity that the control head be physically grounded to your metal chassis! An ungrounded head may many times "lock up" on



The ICOM IC-900 remote head, held in place with hook and loop pads on the dash.

transmit, causing your unit to permanently stay on transmit, even though you have released the mike button. This is especially true with on-the-glass antenna installations where everything is "floating" above the metal chassis. Unless you bond the remote head to your vehicle's frame, as well as bond the transceiver body to the vehicle's frame, you could end up with distorted transmit audio, RF hot mikes, and a devastating transmit lock-up that you might not discover until your radio burns up or your car goes up in smoke.

There are some interesting remote-control transceivers available today for both high frequency as well as VHF/UHF work.

High frequency

The Yaesu 747 has a head that may be detached and remote controlled from the high frequency transceiver's body. It takes a rather hefty computer-type interconnect cable to marry both together, but nonetheless, remote control of this popular HF rig is indeed practical and possible.

The new SGC 2000 high frequency ham and marine single sideband rig is specifically designed for remote control. It's one of the easiest high frequency transceivers to set up for

TigerTail™

Range Extender for 2 meter Handhelds

- Easy to Use
- Line of Sidelobe
- Easily Concealed
- Snaps on Handheld
- Weighs only 1.3 oz.
- Adds No Bulk or Height

- Boosts Signal from Flex & 1/4 wave Antennas
- Lowers Radiation Angle
- Improves both Receive and Transmit
- Raises Low Power Performance
- Saves your Battery Pack

Antennas West
Box 80023-W Provo, UT 84603-1
Order Hotline
800-926-7373

See and Hear the Difference **7.95**

GO MOBILE WITH YOUR H.T.!

* A unique battery eliminator * HANDI-TEK Regulator allows constant hand-held operation from auto DC or base supply with no NiCd drain and WITHOUT RADIO MODIFICATION! FULLY GUARANTEED \$29.95 PPD in USA. Calif. add \$2.30 Tax. BATTERY PACK CONVERSIONS - Regulator installed in your old, dead battery pack case: \$24.95 PPD (CA add \$1.90 Tax).

KENWOOD - Order Model L for TH-21/31/41AT, Model KI for TR-2500, 3500, 2600 series. Slides in bottom of radio. Model K for TR-2400. Through battery plug.

YAESU - Order Model Y for FT-207R, Wilson. Fits in battery compartment. Model N for FT-203R, 208R, 209R, 727 Powered through plug on radio bottom. Model B for FT-23/33/73/41E/811/470/911 (slide on).

ICOM - Order Model I for all ICOM (2AT/02AT) slide on.

Others - Write for info.

HANDI-TEK
P.O. BOX 720357 • PINON HILLS, CA 92372

remote-control capabilities. It can also take more than one remote head—ideal for a motorhome installation: one transceiver with a remote head up by the driver, a second head for remote control in the livingroom, and a third remote head in the back by the bed for listening to some late night BBC or VOA.

The ICOM M800 marine and ham SSB transceiver also has full remote-control capabilities. This rig uses fiberoptics for the remote-control datastream, eliminating the need for that huge cable that interconnects the head to the transceiver's body.

VHF/UHF

For VHF and UHF multiband operation, the ICOM 900 and 901 series can run up to seven different VHF and UHF bands, plus 10M, from the tiny remote head. The remote head is fed with a miniscule data line cable that also carries the 12 volts. For safekeeping, pull out the tiny plug, stuff the remote controller in your pocket, and no one knows you have a six-band radio in your vehicle!

The Alinco 590, and *new* Alinco 599, also feature a small remote-control head. The Alinco product is unique because it quickly turns into a cross-band repeater in case you plan to separate from your mobile unit with just a little hand-held, and your hand-held remote controls the vehicle high-power, VHF/UHF, dualband station



The ICOM 901 remote transceiver with 2M multi-mode SSB capabilities added.

consider the remote controlled, high-frequency or VHF/UHF dualband, single-band or multiband transceivers. See what it takes to put them into remote-head operation. The cable kit is usually extra. Some remote-control units are a simple plug-in affair, yet

others require extensive rewiring and soldering tiny connectors. Find this out ahead of time before you walk out of the store with what you think is a complete remote-control package.

Above all, be sure to bond both the remote head and the transceiver body

An ungrounded head may "lock up" on transmit even though you've released the mike button. Your radio or even your car could go up in smoke.

for extended range. Alinco was first with this feature, and it's a popular one where a little hand-held can give you full access to your vehicle-mounted, VHF/UHF, dualband transceiver.

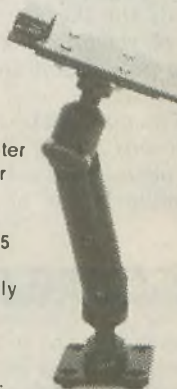
Kenwood has the remote controlled 741 and 941 series, Yaesu has the remote controlled 5200 series, ICOM offers the 2410 dualband transceiver, and now Standard presents their dualband, remote controlled 5608 transceiver with double dual controls in the microphone, too.

Many single-band mobile VHF/UHF transceivers might also be remote controlled, if the head is advertised as "detachable." More and more mobile equipment is now being designed with the detachable head, specifically for easier installation in those vehicles with little or no space for a permanently mounted transceiver.

So if you're cramped for space under the dash, or don't even have a dash,

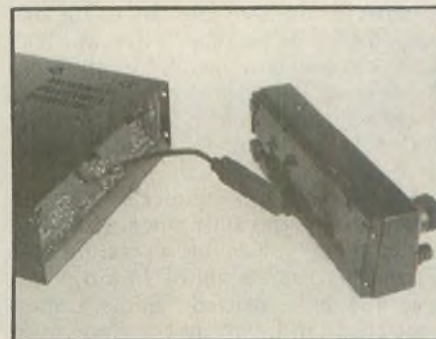
Townsend Electronics "RIG SAVER"

- Allows you to safely mount your hand-held or mobile radio where you can see the controls.
- Vinyl coated adapter plate protects your radio.
- SlimLine \$24.95. Heavy Duty \$29.95 + \$3.00 S & H.
- Adaptable to nearly any vehicle or station use.
- Mounts on ANY single flat surface.



1-219-839-5203

P.O. Box 415 W
Pierceton, IN 46562



Dualband remote control will require the optional extension cable.

to your vehicle chassis, and you'll have smooth-sounding audio and a great signal from a tiny little head that you can easily detach for safekeeping. □

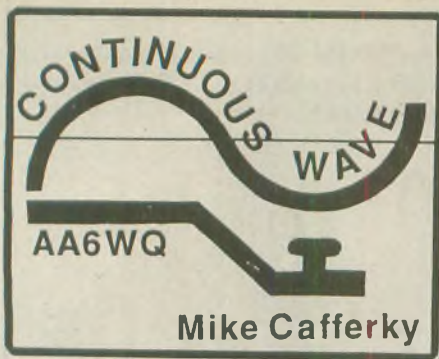
THE STATION SURVIVAL BACK BY POPULAR DEMAND

SOLAR PANEL \$99.95

Power your HF Station up to 30 hrs/month! You can charge batteries, power repeaters, handhelds, and other equipment. The high-quality panel is factory built for severe environments: strong aluminum frame for easy mounting, portable, and 90 day warranty. Add \$10 S&H. Quantities limited. No Dealers please.



Jeff's Electronics, 1106 South State, Orem, UT 84058
SAVES (801) 224-4388 Visa, M.C., Am. Exp. \$1 Info SAVES



A history lesson

After interviewing Harry Lewis, world champion Morse code operator, my interest in high-speed code began to increase. Harry mentioned the role that Mr. Walter Candler had played in his own success, so I set about to find more information about this Walter Candler and his teaching methods.

Like most of the readers of this column, I do not aspire to become a world champion radio operator in the CW mode. However I have to admit that, for me, as speed increased the enjoyment of CW increased. The fact that Candler trained people who came to be considered the world's best (not just the fastest) operators intrigues me. Walter Candler trained the famous Theodore McElroy, who was winning speed contests as early as the 1920s. In a 1936 issue of *QST*, Candler paid for an advertisement in which he boasted that a nine-year-old girl, Jean, W3BAK, had attained 30 words per minute in just two months using this approach. Who was this Walter Candler and how could his students become so successful so quickly? Is there anything we can learn from him today to make code learning more productive?

My interest in Candler's teaching methods was partially rewarded when I found an article he wrote for the February, 1933 issue of *Radio News* (pp. 468-469) entitled "Some Important Hints in Learning the Code." I'd like to summarize here what I found in that article. You may not agree with everything Candler teaches. However, it is difficult to ignore his student's dramatic results in the 1920s and 1930s.

By the time Candler wrote his article in 1933 the popular aspiration for most CW operators was to be able to copy code in a relaxed manner three to six words behind the transmission. Ted McElroy could copy between four and ten words behind. Evidently this was the sign of an accomplished operator—perhaps a status symbol in Amateur Radio. It meant that the operator's mind was working automatically. Candler taught that the

"sub-conscious mind does it (copying code) without the persistent direction of the conscious mind." This was the goal; how did Candler suggest we get there?

Number one on Candler's list would have to be the definition of operating *skill*. For Candler, "skill is not an accident" nor is it a gift. "No human ever was born with skill to perform any task whatsoever. Whatever they have accomplished 20 years after their entrance to human society is due to their training in these particular accomplishments." Skill, then, is "the result of properly directed training."

Proper training for Candler involved the correct formation of dits and dahs. Listen to what he says on this: "A dit is short—as short as you can possibly make it. It always is made the same way. There is no other way to make it. There are no slow and fast dits any more than there are long, short and medium dahs." Candler was a firm believer in maintaining a high but uniform character speed even if the spacing between characters was at a much slower speed. He taught his students to send high-speed characters right from the first. To operate at a slower speed he had them keep the dits very short and spaced tightly (you don't want an "s" to sound like three "e" letters). By increasing the amount of space between letters a slower overall speed was achieved. What is important in this method for Candler is learning to regulate the spacing uniformly and consistently between characters and words—the "timing sense," as he puts it.

Candler believed there was only one length of dah: exactly three times as long as a dit "regardless of speed." He would be mortified to hear some bug operators these days using excessively long dahs mixed with high-speed machine-gun dits. This type of improper operating along with inconsistent lengths of dahs makes it very difficult for the one copying because it keeps the mind continually off balance and prevents it from copying in a relaxed way.

You may see by now that *uniformity* and *consistency* in code characters was an obsession for Candler. He set high standards for his students and ex-

pected excellence of them. Through repetition of proper spacing and character formation, Candler taught, an operator will develop skill. Once the sense of timing is achieved at slower speeds the operator can gradually decrease the amount of space between letters and words while maintaining uniformity in the spacing.

The close connection between body, mind and spirit was important for Walter Candler; being able to operate in a relaxed manner when copying becomes second nature. This is just one of the "effects" of proper training. What is more important than the effects in the Candler system is dealing "directly with the fundamental causes. To overlook or ignore the functioning of the brain in telegraphing is a grave error. You telegraph with your brain. The hand that sends and writes is merely a servant of your mind; it does as the mind directs."

He taught that the interdependent relationship between muscles, nerves and brain cells is so important that the very best operators will not interfere with the close balance between the three. "Your hand," he says, "is passive—it does not think, hence it does not worry. It can be trained to coordinate with the brain and carry out its commands, but until it has been so trained its capabilities are extremely limited." Thus, the physical position while sending and receiving is important. The mental attitude while practicing is also important. The third important element is practicing correct spacing right from the first.

Sending and copying Morse code is meant to be an enjoyable experience. Proper training will reduce the amount of nervousness and anxiety when copying higher speeds of code. Proper training will make it easier for others to copy your code. Finally, proper training involves copying the best (defined by uniformity and consistency) code you can find. I doubt Candler would recommend spending much time on the air before the habits are firmly established through proper training.

There is probably someone reading this who has or who knows someone who has a copy of the Walter Candler System or one of his books (for example the book, *Candler High Speed Book of Facts for Radio Operators*, published in 1936). If you have information about Walter H. Candler and his system, I would very much enjoy hearing from you by mail. □

Work Rare CW DX - CW Contests

Contest Code is the answer! This powerful hypnosis cassette tape teaches you to copy High Speed (30/40 wpm) or Ultra High Speed (50/60 wpm). Subliminals speed you along! Only 20 min/day for 30 consecutive days yields results. Info: 516-584-8164. Each tape \$14.95 (specify which program you want) or both for \$27.95 ppd in US (NY residents add 8% sales tax). Order Today!

PASS Publishing, Dept WR, Box 570, Stony Brook, NY 11790

One great virtue we'd all like to have is patience. If only we could find the time for it! —Florida Skip



R&L ELECTRONICS HAMILTON! OHIO

1315 Maple Ave.

45011

Store Hours:
Mon. - Fri. 10 a.m. to 6 p.m.
Sat. 10 a.m. to 3 p.m.

(513) 868-6399
Local & Technical

800-221-7735
ORDER LINE ONLY

Large Stock . . .
Call or write for
our **FREE** catalog
FAX (513) 868-6574

YAESU

ICOM

KENWOOD



FT-1000/D



IC-781



TS-950SD/TS-850SAT



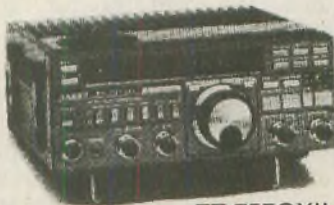
FT-767GX



IC-765



TM-241A



FT-757GXII



IC-725/726/735



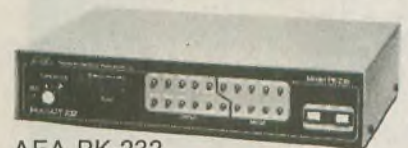
ALINCO DR-590T



FT-5200



IC-2410



AEA PK-232



FT-2400



FT-411E



IC-2SAT/W2A



TH-27/77



MFJ-949D



TEN-TEC OMNI V Paragon

We stock all major lines of Amateur Radio equipment, antennas, tower, and radio accessories.

Why Buy a MAXCOM® Automatic Antenna Matcher? CHECK IT OUT.


- ✓ No Moving Parts
- ✓ 5 Year Warranty
- ✓ Instant Matching
- ✓ 50 OHM Input
- ✓ Low Noise
- ✓ Dipole
- ✓ Marine
- ✓ Amateur
- ✓ 100% Solid State
- ✓ No Control Leads
- ✓ Lightweight
- ✓ High Efficiency
- ✓ 150W to 2KW P.E.P.
- ✓ Long Wire
- ✓ Military
- ✓ Avionics

OVER 7000 MAXCOM®
STATIONS WORLDWIDE.

For more information
Call or Write:

MAXCOM®

Box 502 • Ft. Lauderdale • FL 33302
Phone: (305) 523-6369
Fax: (305) 522-8159



**Search
And
Rescue
Communications**

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

Listening to a public safety response during a hazardous materials traffic accident got me thinking a little about maps. Maps become a necessary part of Amateur Radio and emergency services when you need to find your way or coordinate with another agency.

Some maps you should be sure to have include a state highway map and a street map of your immediate area (city or county). You just can't get by without these two. Some other maps you might consider are Forest Service or Bureau of Land Management maps, and maybe a local hiking map (if you're going to work communications, for example, on a missing person search). The USGS has published a 1/100,000 metric map for most areas of the US and you'll find these a good addition, although it may take quite a few to cover your state (for example 46 of these maps cover the state of Utah).

Another helpful map will be the aeronautical sectional if you're working on an aviation search and especially if you're working with Civil Air Patrol folk. If you use aero maps (available from fixed base operators at airports), you'll need to add the search and rescue grids and numbers. This gets kind of tedious (one of three maps covering Utah is the Salt Lake sectional which has 576 SAR grids). Air sectionals are updated regularly, which means to keep current you're going to have to grid maps at least once a year.

A suggestion on gridding aero maps is to obtain (perhaps as a group) a

"numbering machine." You get these from rubber stamp outlets; they're small stampers that increment numbers as you stamp. Rather than writing each grid number, you just stamp along. I've found the "machine" easier to read, especially toward the end of a three-map numbering project.

As with anything you collect for your Amateur Radio response, evaluate which maps you'll need and find out what maps others in your group have. Using the same map will cut coordination time in getting people from point A to point B.

Boy Scout materials

Another great source for emergency response is from the folks whose motto is "Be prepared." Not only do their handbooks and field manuals provide some great meeting night instruction, I find the annual Scout-O-Rama to be a treasure-trove for learning how to be prepared.

Last year I got several handouts on how to build a Scout patrol food chest. While I don't plan on using it for my cooking, it'll make a great field operations station for my tent during marathons or search missions. It's a simple one-night project. The handouts are in great detail and show the "secrets" of making it right.

Among the how-tos I've learned were 72-hour kit contents, building first aid kits, survival tips, hiking and camping tips as well as hundreds of outdoor demonstrations, each with super ideas for Field Day or "out back" missions.

Direction finding

Spring's coming—time to dust off your bunny hunting gear. Quite a few competent SAR-DF folk, those that track air crash ELTs (emergency locator transmitters), got started sniffing for hidden Amateur Radio operators. There are several good places to find instructional hints including *L-Tronics*, *Radio Engineers* and the CAP's new ELT-DF pamphlet.

Several quick tips concerning direction finding: First, it takes practice. There are many different ways to track a signal and the best way to learn is by doing. It may seem obvious, but you cannot track anything you cannot hear. If you're tracking an ELT, the starting point is anywhere you can hear the signal. This may involve getting to an elevated location (hilltops, in an aircraft or the top of a tall building) and/or using a yagi or directional beam antenna. If you're using a left/right antenna array, be sure your antennas (front and back) are oriented correctly so that the left antenna and left meter indicator are

PORTA-LINK™ for all ICOM® Handhelds

The PORTA-LINK can easily be plugged into an ICOM Handheld. Simple VOX design uses only the speaker jack and microphone input without modification.

- Use SINGLE as low power hamfest or emergency repeater
- Use DUAL as two-way crosslink or one side as a repeater

PORTA-LINK SINGLE - \$29 DUAL - \$65
IL delivers, 6.5% tax. SH-\$2.75 or C.O.D. \$6.90
M BOHNHOFF



Use as a one-way crosslink or repeater. Handle Talkies not included. ICOM reg. ICOM U.S.A. not M. Bohnhoff, Inc.
Write for free product catalog.

P.O. Box 6373, Libertyville, IL 60048-6373
708-918-7330

correct. It's embarrassing to be headed the wrong way!

As you get close to the signal source it's helpful to be able to attenuate the signal (i.e. decrease the incoming signal strength) or detune your radio. For example, ELTs operate on 121.5 MHz. When tracking a false alarm signal on an airport ramp among maybe 100 aircraft, it's easier to DF on 121.6 MHz or even 122.0 MHz if your radio will change frequency.

I've even disconnected the antenna from the receiver and then held the unit up to ELT antennas until I have found the correct plane. Just isolating the signal to an airport is helpful, but if you need to have airport security or the police help you shut down the signal, you've got to be sure of which plane is the culprit. If you're doing a bunny hunt or searching for an ELT, make sure you let the local police know. Amateur Radio operators driving around with strange antenna arrays seem to draw attention!

Finally, a safety comment: If you're going to do DF ELTs, get started with someone experienced, someone who will not do things like leaning on an aircraft propeller or driving across an active runway. I've had some spine-chilling experiences with out-of-the-box DF people. Also, if the ELT is in the back country, it could take some

hiking stamina (not to mention on-site rescue know-how). Work with your established ground rescue folk and consider some joint training experiences.

Reader comments

Carl, WB6AWU, wrote to say he has been collecting information for years and he doesn't think many responders have an overview of what the demands and requirements are in order to give credible service to those counting on us to do a job "they" can't do.

I agree with Carl! The reason Amateur Radio operators get called is because we're needed to do a job that the requesting agency cannot do (or cannot do economically).

Carl also mentions the unenjoyable job of suggesting to volunteer responders that they are not properly equipped (especially those with only hand-helds and no spare batteries or adapters). He also points out the physical considerations. There are many situations that require strenuous involvement that, quite frankly, some Amateur Radio operators would be unable to handle.

Carl points out that there are some who cannot afford all the equipment on a group's response list or who would not be able to sleep in a tent, cook meals or even respond to high

elevations. He suggests six classifications for radio duty: 1) EOC (including net control); 2) Portable (shelters, mobile command); 3) Fixed mobile (would stay close to vehicle); 4) Pedestrian mobile (on foot at the scene, a "shadow" assignment, or a key field assignment); 5) Home station (folks who would remain at home stations for support or similar duties); 6) Remote location operator (ready to be transported to a remote location and then be self-sufficient).

Part of Carl's reasoning for operator classification is to assist with making assignments. Many ARES groups have ways to identify responders. I agree with Carl that it's important to know who you are sending and know that person is able to handle the situation. It's not doing Amateur Radio any good to have a "send anywhere" type of person staying home while your "least prepared" person is assigned the front lines. Keep in mind that we shouldn't discourage participation but we should be realistic in describing what the assignment is going to involve.

I appreciated reading Carl's comments. What is your group doing to "certify" volunteers and make assignments? Let me know so I can share your ideas with others who are or might be facing this dilemma. □

TNR - YOUR BATTERY STORE

ICOM BATTERY INSERTS

BP-2	7.2v	500mah	\$14.00
BP-3	8.4v	270mah	\$15.00
BP-5	10.8v	500mah	\$21.00
BP-7	13.2v	500mah	\$23.00
BP-8	8.4v	800mah	\$21.00
BP-22	8.4v	270mah	\$22.00

KENWOOD BATTERY INSERTS

PB-21	7.2v	200mah	\$12.00
PB-21H	7.2v	600mah	\$15.00
PB24 Tabs	9.6v	600mah	\$15.00
PB-25/26	8.4v	500mah	\$18.00

YAESU BATTERY INSERTS

FNB-3/3A	10.8v	500mah	\$28.00
FNB-4/4A	12v	500mah	\$27.50
FNB-10	7.2v	600mah	\$15.00
FNB-11	12v	600mah	\$30.00
FNB-12	12v	500mah	\$30.00
FNB-17	7.2v	600mah	\$18.00

MORE BATTERY INSERTS

Tempo S1 Early	270 mah	\$19.95
Tempo S2/4/5 Late	500mah	\$21.00
Standard BP-1	270 mah	\$19.95
Ten-Tec BP1	500mah	\$19.95
San-Tec #142#144 Tabs	600mah	\$22.00
Azden 300 Tabs	600mah	\$15.00
Bearcat	600mah	\$20.00
Regency MT1000 Tabs	600mah	\$15.00

ICOM

Replaceable AA battery holder

BP-BH	\$20.00
BP-BH with 8 NiCad cells	\$26.00



**SANYO 600MAH
"AA" 1.50 each**

ICOM complete packs

BP-3	8.4v	270mah	\$33.00
BP-5	10.8v	500mah	\$42.00
BP-7	13.2v	500mah	\$60.00
BP-8	8.4v	800mah	\$60.00
BP-7S	13.2v	1200mah	\$59.00
BP-8S	9.6v	1200mah	\$59.00

Super Packs For ICOM 2SAT, 4SAT, AND 24AT

BP83	7.2V	600mah	\$33.50
BP83-S	7.2v	750mah	\$38.00
BP84	7.2v	1000mah	\$50.00
BP84-S	7.2v	1400mah	\$60.00
BP85-S	12.0v	800mah	\$60.00

YAESU complete packs

FNB-10	7.2v	600mah	\$34.00
FNB-11	12.0v	600mah	\$52.00
FNB-12	12.0v	500mah	\$45.00
FNB-12S	12.0v	600mah	\$48.00
FNB-14	7.2v	1000mah	\$48.00
FNB-14S	7.2v	1400mah	\$59.00
FNB-17	7.2v	600mah	\$35.00

***FNB-2 10.8v 500mah
\$19.00**

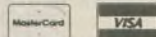


TNR

YOUR BATTERY STORE

279 Douglas Ave.

Altamonte Springs, FL 32717



Shipping & Handling \$3.00
Florida residents must add 7% sales tax

FREE CATALOG-DEALER INQUIRES WELCOME

ORDER TOLL FREE 800-346-0601

FAX 407-682-4469



Everyone likes to say "I told you so!" and I am no different. So what am I gloating about? I thought you'd never ask.

It all goes back to some earlier remarks I made in this column, in October 1990 to be exact. If you dig out your old issue of *Worldradio* (you do keep them, don't you?) you'll note that I had some words of praise for the format of propagation predictions in the German amateur magazine, *CQ-DL*. There, they report signal strengths and signal/noise ratios on a number of paths, even giving signal strengths in S-units.

I made some further remarks along that line again in July '91, now telling you I'd been working on the problem and was hoping for some progress on the American scene in the near future. What I didn't tell you was that I had been in correspondence for some time with Jerry Hall, K1TD, associate technical editor of *QST*, suggesting that the *CQ-DL* format replace the MUF curves in the propagation prediction section of *QST*.

So just for the 1992 ARRL DX contest in February, *QST* published a tabular propagation prediction covering 16 paths from six different locations in the US. The format was a bit different than what the Germans use, the predictions being a two-digit number for each hour, the first digit (1-9) for signal-to-noise ratio and the other (1-9) for signal strength. The

HAM RADIO REPAIR
Maximum Labor Per
Repair Unit — \$80

Telo Technology

(Dan Rupe, W7HBF)
1302 S. Uplands Dr.
Camano Islands, WA 98292
(206) 387-3558

digits represent 6dB steps and the best hourly prediction would be a "99," the worst an "11;" that's simple enough and should make the reader feel at ease in a short time.

The predictions are based on the propagation program, IONCAP, that NOAA uses. Even though it offers 23 different options, it has been "down-sized" from mainframe proportions to the point where it can fit on a PC. So by writing a bit of special computer code, Jerry Hall was able to get IONCAP predictions in the new format to his printer without too much fuss.

Now the question will be the reader's reaction to this change. Certainly, some feedback from readers is needed as the predictions covered six full pages of *QST* rather than just the one that is usually there, full of MUF curves. Personally, I think they were worth the extra space but there's always "the bottom line" to consider in putting together any publication and that is a *big* change, no doubt about it.

I expect that the format may be used again, at least for the big DX contests as they come along. But now that they're out in public, as it were, it would be worth a little space to dwell on them. I say that, as you can see in those tables not only the new format and the advantages that follow from it but also what I've been haranguing the readership about all this time.

So get out your February *QST* and let's look around, seeing what we can learn from the article. First, if you look at Table 2 on page 50, you'll see the station setup used in the IONCAP calculations. You might want to see how your station compares to that one. Mine is certainly less formidable when it comes to RF power and antennas. But I have a couple secret weapons — my QTH is a low-noise site and has a good view in some directions over salt water. That helps me make contacts off to the south, say for longpath DXing, but to the north I have a hill about five degrees above the horizon. Win some, lose some.

Those readers on the West Coast can look at the predictions from QTHs in

the Northwest US (Portland, OR) and the Southwest US (Los Angeles, CA). The predictions are to 16 different DX locations for the month from mid-February to mid-March. That tells you something about the times for sunrise (around 1530 UTC) and sunset (around 0200 UTC) at that time of year; but these figures are for ground level, and we should think of sunrise at ionospheric heights as almost an hour earlier and sunset almost an hour later.

Now the first lesson to be learned is from the large, blank areas in the tabular format. On the highest frequencies, those are the times where there is just not enough ionization to support propagation due to either darkness on the path or the decay of ionization after sunset. By the same token, when propagation picks up again on one of the higher bands, that results from ionization created after sunrise. Further, if you look at openings on the highest bands, say 28 MHz on the path to Berlin, you see that the openings on the same path start earlier and last longer on lower bands, say down to 14 MHz. That is an MUF effect—less ionization being required to support propagation on the lower frequencies and available sooner following sunrise.

Speaking of propagation, better known as "openings" to DXers, if you look around those tables for the NW (northwest) US and SW US, you'll see that the DXers in the SW generally enjoy earlier openings than we do here in the NW. A wise old DXer once told me that was the origin of the term "suffering sevens." But I'd add another dimension to that: The sixes get there earlier and wear down the stamina of many DX stations so when the band really opens up here in the NW, the DX is exhausted and we're frequently greeted with "QRT now." I know it has happened to me more than once.

Having discussed the large, blank areas in the upper part of the tabular format, let's go to those in the lower part of the tables. They're generally at lower frequencies due to ionospheric absorption in the D-region. Those areas are influenced by noise considerations and for this particular tabulation, man-made noise found in residential areas is considered the limiting factor. Of course, noise can vary, say from isolated areas like my QTH to industrial areas found near large cities. But you get the idea.

Now Jerry Hall gave a quick run-down on how to adjust the signal strength figures for different power levels and antenna arrangements, say height and gain. His discussion was quite complete, making it something that you can follow once for your setup and keep the numbers handy until you

Personalized Skywave Propagation Programs

- Skywave Hourly Predicts
SKYCOM 1.1 . . . \$39.95
Apple Macintosh or IBM-PC's and
compatibles
 - World day/night Maps
DX WINDOW . . . \$39.95
Apple Macintosh
- For more info call (703) 255-6600
or SASE to:

ENGINEERING SYSTEMS INC.

P.O. Box 939
Vienna, VA 22183

make a significant change in your antenna system. So if this format appears again, you can make the adjustments either mentally or on paper and go on from there.

There was also a discussion of bandwidth considerations and various speeds of CW as compared to SSB. Like all good things in radio, that is treated in the *ARRL Handbook* and all you have to do is work it out and file it away for the day when this format appears again, perhaps for next year's ARRL DX contests.

I hope you were able to make use of the tabular predictions during the DX Contest as well as from mid-February to mid-March. As I indicated above, the ARRL needs some feedback on this matter. But before responding, I would suggest that you get out either the previous or next month's MUF curves in *QST* and make some comparisons.

Of particular importance to the discussion is how the two formats serve your own operating. Only you can answer that one. Beyond that, the next question is whether this format should be continued but on a more modest scale, say the same number of paths as in the MUF format (from the West Coast, Midwest and East Coast to eight to 10 different DX areas). That would reduce the page requirements by a factor of four. In any case, I'm satisfied to have raised the question; from here on, it's up to you and others out there in DX circles.

By my support of this format, don't think that I've given up on the idea of DX operations using what I call "full-service" propagation programs, MUF's and signal strengths available for paths of your choice. The idea of having that support should be attractive to the "eight to five" group of DXers who get most of their DXing in on weekends. With DX bulletins listing all the DXpeditions in the coming months, you really have to do your homework before it comes time to turn on the rig.

So look at the computer scene and programs to match. I hate to say it but your old Commodore 64 won't make it these days when it comes to propagation programs using color graphics and such. It can still be dedicated to RTTY, AMTOR or packet, but heavy artillery is called for when it comes to DXing. That is clearly shown by the article in *QST*. And don't forget to write, glowingly in praise or faintly in condemnation but, in any event, constructively. □

Parents should learn to laugh at themselves a little . . .
After all, their kids do.

—Florida Skip



rfconceptsAMPS

VHF & UHF Power!

When you need extra power, select from this growing list of rfconcepts' power amplifiers for 144, 220, 440 MHz and dual band applications.

Features including automatic keying from your HT or transceiver, diode protected GaAsFet preamplifiers, and all-component PC board mount design for reliable performance and serviceability, make any rfconcepts power amp ideal for both mobile and ham shack use.

144 MHz Amps

rfc 2-23	2w in = 30w out
rfc 2-217	2w in = 170w out
rfc 2-117	10w in = 170w out
rfc 2-317	30w in = 170w out
rfc 2-417	45w in = 170w out

220 MHz Amps

rfc 3-22	2w in = 20w out
rfc 3-211	2w in = 110w out
rfc 3-112	10w in = 120w out
rfc 3-312	30w in = 120w out

440 MHz Amps

rfc 4-32	3w in = 20w out
rfc 4-110	10w in = 100w out
rfc 4-310	30w in = 100w out

Dual Band Amp

rfc 2/70G	
144-148 MHz	3w in = 30w out
430-450 MHz	5w in = 20w out

The rfconcepts amplifiers, extra power for single or dual band applications, automatically.

rfconcepts P.O. Box 11039, Reno, NV 89510 - 702.324.3290
a division of Kantronics, Inc.
service/factory: 1202 E. 23rd St., Lawrence, KS 66046
913.842.4476 TELCO BBS 913.842.4678 FAX 913.842.2021

See you at the
Dayton Hamvention
April 24, 25 & 26



QSO parties

We hope you participated in the QCWA QSO parties the last couple of months and have already sent in your logs. Remember the deadline for logs is April 10 and they go to Harold Chase, W1EES, 75 Chestnut Circle, West Suffield, CT 06093. Please do send in your logs whether you made a big score or not. They can be very important to the log checkers in confirming the scores of the top winners.

Remember that these contacts count toward several QCWA operating awards. There are awards for working 100 QCWA members, working QCWA members in 50 states, working 60 QCWA chapters, and working 500 QCWA members. How many of these did you qualify for during the contests? The certificates are very attractive and well worth hanging on your hamshack wall. Just remember they aren't issued automatically. You have to apply for each award and identify the contacts that apply. (If you have already earned an award, please do not ask for a second one.)

Elections

Election time is coming up again. Information on all candidates will be carried in the spring issue of the *Journal* and ballots will be coming out in May. There are seven candidates running for five positions on the board. These are incumbents Milton Chaffee, W1EFW; El Charlton, W5MD; Robert Rickey, NF6P; John Weber, KA2IXW; and challengers "Arch" Doty, K8CFU; Lawrence Higgins, W5QMU; and Jack Troster, W6ISQ. Carefully consider the choices and vote for the ones you consider to be the very best candidates. Remember these are people who will be

your representatives for the next two years.

Board meeting

There are only a few days left for you to submit comments to the QCWA board before its spring meeting. The meeting will be held the first week of April in Eugene, Oregon. If there is anything you would like to have them consider, now is the time to speak up. They are anxious to hear from the membership. The secretary is John Swafford, W4HU, but you may contact any officer or director of your choice.

Flying the flag

QCWA board members will be "flying the flag" at the QCWA booth at the Dayton Hamvention again this year. If you are going to be there (April 24 through 26) be sure to stop by the QCWA booth and sign the register. Meet our president, Harry Dannals, W2HD, and our new general manager, Jim Walsh, W7LVN, as well as several other board members and the great crew from the SW Ohio Chapter #9. There will be plenty of membership application blanks available at the booth.

Remember, too, there will be a QCWA banquet on Friday evening preceding the Hamvention. This has been a tradition for a number of years and always attracts a good attendance. Reservations are definitely required in advance. This year's main speaker will be the new president of ARRL, George Wilson, W4OYI. For information or reservations, call Bob Dingle, KA4LAU at 513/299-7114 or drop him a note at 1117 Big Hill Road, Dayton, OH 45429.

Board members are making a conscientious effort to represent QCWA at all major hamfests and conventions where a QCWA booth is maintained. QCWA is eager to participate in these activities but must depend on local chapters to make the local contacts and arrangements. If your chapter is going to have a booth at such an affair, be sure to let your nearest QCWA board member know about it. Headquarters can provide an attractive display booth for your use, complete with a kit full of supplies and display items.

There was a good contingent at the Miami Hamboree in February and the board will be well represented at the SeaPac convention in Seaside, Oregon in June.

75 Year Award

This year QCWA is honoring five members who were first licensed in 1917. They will be presented with 75 Year Award plaques bearing an inscription commemorating the occasion.

No licenses were issued during the war years 1918 through 1919, so no awards will be due in the next two years. Last year there were eight recipients. Records indicate there were nearly 11,000 amateurs licensed in 1917. Only a few are still with us and they certainly deserve special recognition. The award is a beautiful wooden plaque suitable for wall hanging. They are issued anytime during the year in which the recipient reaches the 75th year since his first amateur operator license. If you know of anyone who qualifies, check with headquarters and make sure he or she gets a plaque. □



The pioneers in aluminum towers bring you higher heights and wind loads than ever before.

- Self-supporting up to 144 feet at 75 mph winds.
- Complete tapered and telescoping models.
- Easy to assemble and erect.
- Full range of manually and electrically operated Fold-Over-Kits

Heights offers you unmatched versatility, value and quality in a tower system that has been proved and improved for over 30 years.

For our new brochure giving dozens of combinations of height, weight and wind load, contact:

HEIGHTS TOWER SYSTEMS, LTD.

1721 Indian Rd. · Lapeer, MI 48446

(313) 667-1700

EXTERNAL FERRITE BEAD BALUN

- True current-type, 1:1
- Low loss, epoxy-potted
- Rugged—antenna tuner o.k.
- S.S. hardware, teflon conn.

DXB-1 (wires), DXB-2 (Yagis). Order today!
 Guaranteed! \$49.95 + \$4 S.H. AZTEC RF,
 Box 1625, Valley Center, CA 92082
 Tel. (619) 751-8610

Big Island Amateur Radio Club, P.O. Box 1938, Hilo, HI 96721-1938. Meets: 2nd Tue./month, 7:00 p.m. Helco Auditorium, (exc. June, July, Aug.). Mps. Red Cross, 11 Dell Place, Mps. 7:30 p.m. Making waves 146,760(+), 146,880(+), and 147,040(+).

HAWAII

Amateur Cross Link Repeater Club, 29,680 Liberty, MO 64688. Meets last Tue./month, 7 p.m. Gladstone Comm. Bldg. (816) 781-7313. Volunteer Examiner Coordinator.

MINNESOTA

Joplin Amateur Radio Club. Meets 2nd and 4th Tue./month, 7:30 p.m. at Joplin Municipal Bldg. (basement), 303 E. 3rd, Joplin, MO. PHD Amateur Radio Assn. Inc. P.O. Box 11, Liberty, MO 64688. Meets last Tue./month, 7 p.m. Gladstone Comm. Bldg. (816) 781-7313. Volunteer Examiner Coordinator.

MISSOURI

Hamleters Radio Club, W9AA, P.O. Box 42792, Chicago, IL 60642. Meets 1st Fri./month, 8 p.m. Crestwood Civ. Ctr., 139th & Kostner, Crestwood, IL. Meets Sun. (local) 0100 UTC, 28,410 MHz; Mon. 9 p.m. (145.43 S.; Packet Mailbox 145,07; info: (708) K80HEC (402) 721-1326.

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 Sun-day night 0200Z on 146,94R.

NEVADA

Sierra Intermountain Emergency Radio Assn. (SIERA), P.O. Box 2348, Minden, NV 89423 (702) 882-0451. Meets: 2nd Tue./month, 7:30 p.m.; Douglas County Lib., Minden, NV. Talk-in: 147,330.

NEW HAMPSHIRE

Great Bay Radio Assn., W71CA, P.O. Box 911, Dover, NH 03820 (603) 332-9137/332-7343. Meets 2nd Sun./month, 7 p.m.; Rochester Court House/City Hall. Talk-in: 147,57.

NEW JERSEY

Bayonne Emergency Mgt. ARC (BEMARC), 16th St. & Ave. A Firehouse, Bayonne, NJ 07002. Meets 2nd Tue./month, 7:30 p.m. Tr-Band linked repeaters: 145-430/224-280/445-575 MHz.

LOUISIANA

Southwest LA Amateur Rptr. Club, Inc. (SWLAR), Meets 4th Tue./month, 7 p.m. in the Parish EOC Rm., W5B11R 146,073/146,013. Net MWF, 7:30.

MARYLAND

Peninsula Radio Operators Society, Inc. (P.R.O.S.) Salisbury, MD. Quarterly dinner migs & VE Test sessions. Spring & fall classes. Rptr. K3SVA 146,325/146,925. KC3UV 449,05/444,05. Info: (301) 749-7444.

MASSACHUSETTS

Mohawk Amateur Radio Club, P.O. Box 532, Athol, MA 01331. Meets: 4th Wed./month, 7:30 p.m.; at the Athol American Legion Hall, Exchange Street, Athol, MA.

MICHIGAN

Hazel Park Amateur Radio Club. Hoover Elementary School-Hazel Park, P.O. Box 368, Hazel Park, MI 48030. 2nd Wed./month, 7:30 p.m. Sept. thru May, 147,51 Simplex Calif., W8JXU Club Call.

Oak Park Amateur Radio Club, Oak Park Community Center, 14300 Oak Park Blvd. (same as 9/4 Mile Rd., west of Coolidge), Oak Park, MI 48237. 2nd Mon./month, 7:45 p.m. Talk-in on our 224,336 MHz or 146,64 MHz.

Oak Park Amateur Radio Club, P.O. Box 145,270 - WA2DOL, Rd. Adition, NY 14411, 4th Wed./month, 7:30 p.m., 145,270 - WA2DOL. Meets: 1st Wed./month (except July/Aug.) P.R.O.S. Pioneer Radio Operators Society.

Village, NY. Other Wed., 8 p.m., 145,170/144,57. Repeater KC2JY.

Orleans County Amateur Radio Club (WA2DOL). Meets: Office of Disaster Preparedness (CD), West County House 4th Tue./month, 7:30 p.m., Am. Red Cross. Info: Rodney Myers, K8BWW, (513) 399-1022.

Springsfield Independent Radio Assoc., 745-2573. W8DPMR 147,99/39 rptr. For info call (216) 495-2573.

Silverscreek Amateur Radio Assn. (SARA) Meets 3rd Thu./month, 7:30 p.m., Doylesstown Village Hall, Doylesstown OH. Info: (610) 343-0172. WB2YXB, (718) 343-0172.

Hall of Science Amateur Radio Club, P.O. Box 131, Jamaica, NY 11415. HOSARC, 2nd Tue./month, Hall of Science Bldg., 47-01 111 St., Flushing Meadow Park at 7:30 p.m.

Genesee Radio Amateurs (GRAM), N.Y.S. Civil Defense Center, State St., Batavia, NY 14020. Meets: 3rd Fri./month, 7:30 p.m., 147,285 + W2RCX.

Hall of Science Amateur Radio Club, P.O. Box 131, Jamaica, NY 11415. HOSARC, 2nd Tue./month, Hall of Science Bldg., 47-01 111 St., Flushing Meadow Park at 7:30 p.m.

Genesee Radio Amateurs (GRAM), N.Y.S. Civil Defense Center, State St., Batavia, NY 14020. Meets: 3rd Fri./month, 7:30 p.m., 147,285 + W2RCX.

Hall of Science Amateur Radio Club, P.O. Box 131, Jamaica, NY 11415. HOSARC, 2nd Tue./month, Hall of Science Bldg., 47-01 111 St., Flushing Meadow Park at 7:30 p.m.

Genesee Radio Amateurs (GRAM), N.Y.S. Civil Defense Center, State St., Batavia, NY 14020. Meets: 3rd Fri./month, 7:30 p.m., 147,285 + W2RCX.

Hall of Science Amateur Radio Club, P.O. Box 131, Jamaica, NY 11415. HOSARC, 2nd Tue./month, Hall of Science Bldg., 47-01 111 St., Flushing Meadow Park at 7:30 p.m.

Genesee Radio Amateurs (GRAM), N.Y.S. Civil Defense Center, State St., Batavia, NY 14020. Meets: 3rd Fri./month, 7:30 p.m., 147,285 + W2RCX.

Genesee Radio Amateurs (GRAM), N.Y.S. Civil Defense Center, State St., Batavia, NY 14020. Meets: 3rd Fri./month, 7:30 p.m., 147,285 + W2RCX.

Hall of Science Amateur Radio Club, P.O. Box 131, Jamaica, NY 11415. HOSARC, 2nd Tue./month, Hall of Science Bldg., 47-01 111 St., Flushing Meadow Park at 7:30 p.m.

Genesee Radio Amateurs (GRAM), N.Y.S. Civil Defense Center, State St., Batavia, NY 14020. Meets: 3rd Fri./month, 7:30 p.m., 147,285 + W2RCX.

Hall of Science Amateur Radio Club, P.O. Box 131, Jamaica, NY 11415. HOSARC, 2nd Tue./month, Hall of Science Bldg., 47-01 111 St., Flushing Meadow Park at 7:30 p.m.

Genesee Radio Amateurs (GRAM), N.Y.S. Civil Defense Center, State St., Batavia, NY 14020. Meets: 3rd Fri./month, 7:30 p.m., 147,285 + W2RCX.

Hall of Science Amateur Radio Club, P.O. Box 131, Jamaica, NY 11415. HOSARC, 2nd Tue./month, Hall of Science Bldg., 47-01 111 St., Flushing Meadow Park at 7:30 p.m.

Genesee Radio Amateurs (GRAM), N.Y.S. Civil Defense Center, State St., Batavia, NY 14020. Meets: 3rd Fri./month, 7:30 p.m., 147,285 + W2RCX.

Hall of Science Amateur Radio Club, P.O. Box 131, Jamaica, NY 11415. HOSARC, 2nd Tue./month, Hall of Science Bldg., 47-01 111 St., Flushing Meadow Park at 7:30 p.m.

Genesee Radio Amateurs (GRAM), N.Y.S. Civil Defense Center, State St., Batavia, NY 14020. Meets: 3rd Fri./month, 7:30 p.m., 147,285 + W2RCX.

Hall of Science Amateur Radio Club, P.O. Box 131, Jamaica, NY 11415. HOSARC, 2nd Tue./month, Hall of Science Bldg., 47-01 111 St., Flushing Meadow Park at 7:30 p.m.

Genesee Radio Amateurs (GRAM), N.Y.S. Civil Defense Center, State St., Batavia, NY 14020. Meets: 3rd Fri./month, 7:30 p.m., 147,285 + W2RCX.

Hall of Science Amateur Radio Club, P.O. Box 131, Jamaica, NY 11415. HOSARC, 2nd Tue./month, Hall of Science Bldg., 47-01 111 St., Flushing Meadow Park at 7:30 p.m.

Genesee Radio Amateurs (GRAM), N.Y.S. Civil Defense Center, State St., Batavia, NY 14020. Meets: 3rd Fri./month, 7:30 p.m., 147,285 + W2RCX.

Hall of Science Amateur Radio Club, P.O. Box 131, Jamaica, NY 11415. HOSARC, 2nd Tue./month, Hall of Science Bldg., 47-01 111 St., Flushing Meadow Park at 7:30 p.m.

Central Oregon Radio Amateurs, (CORA), P.O. Box 723, Bend, OR 97709. Meets last Thu./month, 7 p.m., Bend Senior Ctr., 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 678, Keno, OR 97627. Meets 3rd Thu./month, 7 p.m., Keno Fire Station, Rptr., 147,32 + W7UFM. Info: Tom Hamilton, W06EAW, (503) 883-2736.

Umpqua Valley Amateur Radio Club. Meets 3rd Thu./month, 7:30 p.m., Douglas County Courthouse, Rm. 311, Douglas St., Roseburg, OR. Info W5P11R 146,90/30.

Butler County Amateur Radio Assn. P.O. Box 1787, Butler, PA 16003-1787. Meets 1st Tue./month, 7:30 p.m., Boy Scout Ctr., 850 Morton Ave., Butler, PA. Call-in W3UDX 147,96/36. Net 10:10 p.m. nightly.

Mercer County Amateur Radio Club, Meets 4th Tue./month at 7:30 p.m., Shenango Valley Med. Center, Farrell, PA. Net, Thur. 9 p.m. on 147,75/15 W3LIF. Digl. 145,010.

Warminster Amateur Radio Club, W3JDFU, P.O. Box 113, Warminster, PA 18974 (215) 672-9985. Meets 1st Thu./month, 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.

Brazos Valley Amateur Radio Club (BVARC), P.O. Box 1630, Missouri City, TX 77459. Meets 2nd Thu./month, 7:30 p.m. Sugar Land Community Ctr., 226 Mallage Way, 3 bks SW of Imperial Hwy. C.O. 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./month, 7:30 p.m., 3709 Wichita Ave., El Paso, TX. K5WPH 147,240, 443,4 with remote operation on 6M and 10M.

Freiands Area Repeater Assoc. Inc. Meets 3rd Sat./month at First Federal Savings of Toledo, Huron, OH. Freq. of Rptr. 146,805/205. Info: Eugene Hutchins, A4BDL, 45 Weldon Ave., Norwalk, OH 44857.

Lancaster & Fairfield County A.R.C. Meets 1st Thu./month, 7:30 p.m., City Hall, Army Community Bldg., Hampton, VA. (SPARRK) Meets: 1st and 3rd Tue., salvation rptrs. 146,13/73 & 449,55(-5) - VE Exam in-fo: (804) 898-8031, W4RTZ.

Virginia Beach Amateur Radio Club, Inc. (VBARC), Open Door Chapel, 3177 Virginia Beach Blvd., Va. Beach, VA. Meets First Thu./month, 7:30 p.m. Info on W4KXV rptr, 146,97/37.

The Mike & Key Amateur Radio Club. Meets 3rd Sat./month, 10 a.m., United Good Neighbors Ctr., 305 S. 43rd, Renton, WA. Talk-in on 146,82 rptr.

North Seattle Amateur Radio Club, (NSARC) Meets 3rd Tue./month (except July, Aug., Dec.) at First Interstate Bank, Haverwood, WV 26164. Meets 1st Stewart, W8TN, Pres., 104 Henrietta St., Jackson County Amateur Radio Club, Clark 146,67/07 WD8XNU/R.

Tri-State Amateur Radio Assn. Meets: 3rd Tue./month, 7 p.m., Green Valley Vol. Fire Dept., Norwood Rd. & 16th Street Rd., Hunt-ington, WV. ARES net Thur. 9 p.m. on 146,76(-) W8WVR. Info Bud Cyr, K8BKMH (304) 522-1294.

WEST VIRGINIA

Jackson County Amateur Radio Club, Clark 146,67/07 WD8XNU/R.

Tri-State Amateur Radio Assn. Meets: 3rd Tue./month, 7 p.m., Green Valley Vol. Fire Dept., Norwood Rd. & 16th Street Rd., Hunt-ington, WV. ARES net Thur. 9 p.m. on 146,76(-) W8WVR. Info Bud Cyr, K8BKMH (304) 522-1294.

Tri-State Amateur Radio Assn. Meets: 3rd Tue./month, 7 p.m., Green Valley Vol. Fire Dept., Norwood Rd. & 16th Street Rd., Hunt-ington, WV. ARES net Thur. 9 p.m. on 146,76(-) W8WVR. Info Bud Cyr, K8BKMH (304) 522-1294.

Tri-State Amateur Radio Assn. Meets: 3rd Tue./month, 7 p.m., Green Valley Vol. Fire Dept., Norwood Rd. & 16th Street Rd., Hunt-ington, WV. ARES net Thur. 9 p.m. on 146,76(-) W8WVR. Info Bud Cyr, K8BKMH (304) 522-1294.

Tri-State Amateur Radio Assn. Meets: 3rd Tue./month, 7 p.m., Green Valley Vol. Fire Dept., Norwood Rd. & 16th Street Rd., Hunt-ington, WV. ARES net Thur. 9 p.m. on 146,76(-) W8WVR. Info Bud Cyr, K8BKMH (304) 522-1294.

Tri-State Amateur Radio Assn. Meets: 3rd Tue./month, 7 p.m., Green Valley Vol. Fire Dept., Norwood Rd. & 16th Street Rd., Hunt-ington, WV. ARES net Thur. 9 p.m. on 146,76(-) W8WVR. Info Bud Cyr, K8BKMH (304) 522-1294.

Tri-State Amateur Radio Assn. Meets: 3rd Tue./month, 7 p.m., Green Valley Vol. Fire Dept., Norwood Rd. & 16th Street Rd., Hunt-ington, WV. ARES net Thur. 9 p.m. on 146,76(-) W8WVR. Info Bud Cyr, K8BKMH (304) 522-1294.

Tri-State Amateur Radio Assn. Meets: 3rd Tue./month, 7 p.m., Green Valley Vol. Fire Dept., Norwood Rd. & 16th Street Rd., Hunt-ington, WV. ARES net Thur. 9 p.m. on 146,76(-) W8WVR. Info Bud Cyr, K8BKMH (304) 522-1294.

Tri-State Amateur Radio Assn. Meets: 3rd Tue./month, 7 p.m., Green Valley Vol. Fire Dept., Norwood Rd. & 16th Street Rd., Hunt-ington, WV. ARES net Thur. 9 p.m. on 146,76(-) W8WVR. Info Bud Cyr, K8BKMH (304) 522-1294.

Tri-State Amateur Radio Assn. Meets: 3rd Tue./month, 7 p.m., Green Valley Vol. Fire Dept., Norwood Rd. & 16th Street Rd., Hunt-ington, WV. ARES net Thur. 9 p.m. on 146,76(-) W8WVR. Info Bud Cyr, K8BKMH (304) 522-1294.

Tri-State Amateur Radio Assn. Meets: 3rd Tue./month, 7 p.m., Green Valley Vol. Fire Dept., Norwood Rd. & 16th Street Rd., Hunt-ington, WV. ARES net Thur. 9 p.m. on 146,76(-) W8WVR. Info Bud Cyr, K8BKMH (304) 522-1294.

Tri-State Amateur Radio Assn. Meets: 3rd Tue./month, 7 p.m., Green Valley Vol. Fire Dept., Norwood Rd. & 16th Street Rd., Hunt-ington, WV. ARES net Thur. 9 p.m. on 146,76(-) W8WVR. Info Bud Cyr, K8BKMH (304) 522-1294.

Tri-State Amateur Radio Assn. Meets: 3rd Tue./month, 7 p.m., Green Valley Vol. Fire Dept., Norwood Rd. & 16th Street Rd., Hunt-ington, WV. ARES net Thur. 9 p.m. on 146,76(-) W8WVR. Info Bud Cyr, K8BKMH (304) 522-1294.

WASHINGTON

The Mike & Key Amateur Radio Club. Meets 3rd Sat./month, 10 a.m., United Good Neighbors Ctr., 305 S. 43rd, Renton, WA. Talk-in on 146,82 rptr.

North Seattle Amateur Radio Club, (NSARC) Meets 3rd Tue./month (except July, Aug., Dec.) at First Interstate Bank, Haverwood, WV 26164. Meets 1st Stewart, W8TN, Pres., 104 Henrietta St., Jackson County Amateur Radio Club, Clark 146,67/07 WD8XNU/R.

Tri-State Amateur Radio Assn. Meets: 3rd Tue./month, 7 p.m., Green Valley Vol. Fire Dept., Norwood Rd. & 16th Street Rd., Hunt-ington, WV. ARES net Thur. 9 p.m. on 146,76(-) W8WVR. Info Bud Cyr, K8BKMH (304) 522-1294.

Tri-State Amateur Radio Assn. Meets: 3rd Tue./month, 7 p.m., Green Valley Vol. Fire Dept., Norwood Rd. & 16th Street Rd., Hunt-ington, WV. ARES net Thur. 9 p.m. on 146,76(-) W8WVR. Info Bud Cyr, K8BKMH (304) 522-1294.

Tri-State Amateur Radio Assn. Meets: 3rd Tue./month, 7 p.m., Green Valley Vol. Fire Dept., Norwood Rd. & 16th Street Rd., Hunt-ington, WV. ARES net Thur. 9 p.m. on 146,76(-) W8WVR. Info Bud Cyr, K8BKMH (304) 522-1294.

Tri-State Amateur Radio Assn. Meets: 3rd Tue./month, 7 p.m., Green Valley Vol. Fire Dept., Norwood Rd. & 16th Street Rd., Hunt-ington, WV. ARES net Thur. 9 p.m. on 146,76(-) W8WVR. Info Bud Cyr, K8BKMH (304) 522-1294.

Tri-State Amateur Radio Assn. Meets: 3rd Tue./month, 7 p.m., Green Valley Vol. Fire Dept., Norwood Rd. & 16th Street Rd., Hunt-ington, WV. ARES net Thur. 9 p.m. on 146,76(-) W8WVR. Info Bud Cyr, K8BKMH (304) 522-1294.

Tri-State Amateur Radio Assn. Meets: 3rd Tue./month, 7 p.m., Green Valley Vol. Fire Dept., Norwood Rd. & 16th Street Rd., Hunt-ington, WV. ARES net Thur. 9 p.m. on 146,76(-) W8WVR. Info Bud Cyr, K8BKMH (304) 522-1294.

Tri-State Amateur Radio Assn. Meets: 3rd Tue./month, 7 p.m., Green Valley Vol. Fire Dept., Norwood Rd. & 16th Street Rd., Hunt-ington, WV. ARES net Thur. 9 p.m. on 146,76(-) W8WVR. Info Bud Cyr, K8BKMH (304) 522-1294.

Tri-State Amateur Radio Assn. Meets: 3rd Tue./month, 7 p.m., Green Valley Vol. Fire Dept., Norwood Rd. & 16th Street Rd., Hunt-ington, WV. ARES net Thur. 9 p.m. on 146,76(-) W8WVR. Info Bud Cyr, K8BKMH (304) 522-1294.

Tri-State Amateur Radio Assn. Meets: 3rd Tue./month, 7 p.m., Green Valley Vol. Fire Dept., Norwood Rd. & 16th Street Rd., Hunt-ington, WV. ARES net Thur. 9 p.m. on 146,76(-) W8WVR. Info Bud Cyr, K8BKMH (304) 522-1294.

Tri-State Amateur Radio Assn. Meets: 3rd Tue./month, 7 p.m., Green Valley Vol. Fire Dept., Norwood Rd. & 16th Street Rd., Hunt-ington, WV. ARES net Thur. 9 p.m. on 146,76(-) W8WVR. Info Bud Cyr, K8BKMH (304) 522-1294.

Tri-State Amateur Radio Assn. Meets: 3rd Tue./month, 7 p.m., Green Valley Vol. Fire Dept., Norwood Rd. & 16th Street Rd., Hunt-ington, WV. ARES net Thur. 9 p.m. on 146,76(-) W8WVR. Info Bud Cyr, K8BKMH (304) 522-1294.

TEXAS

Brazos Valley Amateur Radio Club (BVARC), P.O. Box 1630, Missouri City, TX 77459. Meets 2nd Thu./month, 7:30 p.m. Sugar Land Community Ctr., 226 Mallage Way, 3 bks SW of Imperial Hwy. C.O. 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./month, 7:30 p.m., 3709 Wichita Ave., El Paso, TX. K5WPH 147,240, 443,4 with remote operation on 6M and 10M.

Freiands Area Repeater Assoc. Inc. Meets 3rd Sat./month at First Federal Savings of Toledo, Huron, OH. Freq. of Rptr. 146,805/205. Info: Eugene Hutchins, A4BDL, 45 Weldon Ave., Norwalk, OH 44857.

Lancaster & Fairfield County A.R.C. Meets 1st Thu./month, 7:30 p.m., City Hall, Army Community Bldg., Hampton, VA. (SPARRK) Meets: 1st and 3rd Tue., salvation rptrs. 146,13/73 & 449,55(-5) - VE Exam in-fo: (804) 898-8031, W4RTZ.

Virginia Beach Amateur Radio Club, Inc. (VBARC), Open Door Chapel, 3177 Virginia Beach Blvd., Va. Beach, VA. Meets First Thu./month, 7:30 p.m. Info on W4KXV rptr, 146,97/37.

The Mike & Key Amateur Radio Club. Meets 3rd Sat./month, 10 a.m., United Good Neighbors Ctr., 305 S. 43rd, Renton, WA. Talk-in on 146,82 rptr.

North Seattle Amateur Radio Club, (NSARC) Meets 3rd Tue./month (except July, Aug., Dec.) at First Interstate Bank, Haverwood, WV 26164. Meets 1st Stewart, W8TN, Pres., 104 Henrietta St., Jackson County Amateur Radio Club, Clark 146,67/07 WD8XNU/R.

Tri-State Amateur Radio Assn. Meets: 3rd Tue./month, 7 p.m., Green Valley Vol. Fire Dept., Norwood Rd. & 16th Street Rd., Hunt-ington, WV. ARES net Thur. 9 p.m. on 146,76(-) W8WVR. Info Bud Cyr, K8BKMH (304) 522-1294.

Tri-State Amateur Radio Assn. Meets: 3rd Tue./month, 7 p.m., Green Valley Vol. Fire Dept., Norwood Rd. & 16th Street Rd., Hunt-ington, WV. ARES net Thur. 9 p.m. on 146,76(-) W8WVR. Info Bud Cyr, K8BKMH (304) 522-1294.

Tri-State Amateur Radio Assn. Meets: 3rd Tue./month, 7 p.m., Green Valley Vol. Fire Dept., Norwood Rd. & 16th Street Rd., Hunt-ington, WV. ARES net Thur. 9 p.m. on 146,76(-) W8WVR. Info Bud Cyr, K8BKMH (304) 522-1294.

Tri-State Amateur Radio Assn. Meets: 3rd Tue./month, 7 p.m., Green Valley Vol. Fire Dept., Norwood Rd. & 16th Street Rd., Hunt-ington, WV. ARES net Thur. 9 p.m. on 146,76(-) W8WVR. Info Bud Cyr, K8BKMH (304) 522-1294.

Tri-State Amateur Radio Assn. Meets: 3rd Tue./month, 7 p.m., Green Valley Vol. Fire Dept., Norwood Rd. & 16th Street Rd., Hunt-ington, WV. ARES net Thur. 9 p.m. on 146,76(-) W8WVR. Info Bud Cyr, K8BKMH (304) 522-1294.

Tri-State Amateur Radio Assn. Meets: 3rd Tue./month, 7 p.m., Green Valley Vol. Fire Dept., Norwood Rd. & 16th Street Rd., Hunt-ington, WV. ARES net Thur. 9 p.m. on 146,76(-) W8WVR. Info Bud Cyr, K8BKMH (304) 522-1294.

VIRGINIA

The Mike & Key Amateur Radio Club. Meets 3rd Sat./month, 10 a.m., United Good Neighbors Ctr., 305 S. 43rd, Renton, WA. Talk-in on 146,82 rptr.

North Seattle Amateur Radio Club, (NSARC) Meets 3rd Tue./month (except July, Aug., Dec.) at First Interstate Bank, Haverwood, WV 26164. Meets 1st Stewart, W8TN, Pres., 104 Henrietta St., Jackson County Amateur Radio Club, Clark 146,67/07 WD8XNU/R.

Tri-State Amateur Radio Assn. Meets: 3rd Tue./month, 7 p.m., Green Valley Vol. Fire Dept., Norwood Rd. & 16th Street Rd., Hunt-ington, WV. ARES net Thur. 9 p.m. on 146,76(-) W8WVR. Info Bud Cyr, K8BKMH (304) 522-1294.

Tri-State Amateur Radio Assn. Meets: 3rd Tue./month, 7 p.m., Green Valley Vol. Fire Dept., Norwood Rd. & 16th Street Rd., Hunt-ington, WV. ARES net Thur. 9 p.m. on 146,76(-) W8WVR. Info Bud Cyr, K8BKMH (304) 522-1294.

Tri-State Amateur Radio Assn. Meets: 3rd Tue./month, 7 p.m., Green Valley Vol. Fire Dept., Norwood Rd. & 16th Street Rd., Hunt-ington, WV. ARES net Thur. 9 p.m. on 146,76(-) W8WVR. Info Bud Cyr, K8BKMH (304) 522-1294.

Tri-State Amateur Radio Assn. Meets: 3rd Tue./month, 7 p.m., Green Valley Vol. Fire Dept., Norwood Rd. & 16th Street Rd., Hunt-ington, WV. ARES net Thur. 9 p.m. on 146,76(-) W8WVR. Info Bud Cyr, K8BKMH (304) 522-1294.

Tri-State Amateur Radio Assn. Meets: 3rd Tue./month, 7 p.m., Green Valley Vol. Fire Dept., Norwood Rd. & 16th Street Rd., Hunt-ington, WV. ARES net Thur. 9 p.m. on 146,76(-) W8WVR. Info Bud Cyr, K8BKMH (304) 522-1294.

Tri-State Amateur Radio Assn. Meets: 3rd Tue./month, 7 p.m., Green Valley Vol. Fire Dept., Norwood

YL Roundup



One of the most remarkable and unique aspects of the Amateur Radio hobby is the freedom to meet people all over the world. Linda Kukuk, AA5GS, of Oklahoma City, OK, discovered that shortly after getting her license in 1988.

While working her rig one evening, she answered a CQ from UA3DEA, Valerie, a Russian OM. "At the time," she explained, "I was working mostly CW, but this was phone."

The QSO was routine and very brief, Linda recalls. "He said he was late to work and couldn't talk. He asked for a QSL to be sent direct." Usually, QSL cards are sent through the bureaus. In the US, members of the American Radio Relay League (ARRL) can send their QSL cards to Newington, CT, where they are sent to the various countries' bureaus and distributed—and vice versa.

After Linda sent her card, she received a letter from Valerie asking her to set up a schedule with him. "It took six months for us to find each other on the air again due to letters crossing in the mail and propagation conditions. But we've been talking back and forth ever since," she says.

UA3DEA kept asking Linda and her OM, Rick, KG5GD, to come to Russia. Rick told Linda that if she could get all the arrangements made, they would go. "First, we had to get an invitation from Val," she notes. "Then we applied to the Russian Consulate and got visas. Three weeks before we were to go, they had a coup. I thought we wouldn't get to go."

But the coup didn't stop the Kukuks. By the time they were to go, all had been settled. Last September, they spent two weeks in Russia.

"He (UA3DEA) met us in Moscow. Val lives with his wife in Zagorsk,

about 40 miles north of Moscow. We stayed with them in their apartment," Linda says.

"Before we went, I studied Russian. I wanted to talk with Val's wife. She doesn't speak English," Linda adds. "She and I would go out shopping together. With my little bit of Russian and her few words of English, we did just fine." Linda says the saying "keep smiling" in English translates to a Russian phrase that means: "Don't put your nose down."

The Kukuks found their reception to be warm and generous. They attended many parties in homes of the local citizens. They also went to St. Petersburg (formerly Leningrad) where they visited museums, musicals, art galleries and the UZ1AYX club station. The latter excursion was one of the trip's high points. "We got to work the UZ1AYX club station and meet some of the club members!" Linda exclaims.

This year, the Kukuks are planning a different vacation. UA3DEA and his wife are coming to the United States to visit them. Linda says, "We want them to meet other hams. And we hope to take them to Yellowstone and the Rocky Mountain National Park in Colorado."

In the last few years, many things have changed in Russia. Under the Soviet regime, Russian amateurs were allowed to discuss very few topics on Amateur Radio. But Linda got her license, she says, "after things had loosened a bit. I just thought most Russians were able to ragchew," she says.

When she got into Amateur Radio, Linda went from no call to Extra Class after just four months of studying. She is a proficient CW operator and enjoys HF. She is a member of the Oklahoma DX Association, Oklahoma City Autopatch Club and YLRL (Young Ladies Radio League). Linda can be found on the air on: 10M at 2330Z on or about 28.560; 15M at 0130Z on or about 21.330; and on 20M at 0330Z on or about 14.302 (where she keeps a schedule with UA3DEA).

"We try to keep a daily sked. If I don't talk to him, I talk with ZL3AFT, Chris, in New Zealand or any number of other hams I've met," Linda says. "Val already had friends who met on that frequency, so everyone started talking with everyone else."

The group that meets regularly on the 20M frequency has done much more than just chat. One Russian amateur, UA9CDC, Igor, told them that his son, Eugene, had leukemia, but the medicine he needed was not available.

"We helped," Linda says. "A man in Atlanta, Georgia—K4EWG, Pete



Valery Karklit, UA3DEA, stands for a toast to friendship with his wife, Helen, and Linda Kukuk, AA5GS (right). (Photo by Rick Kukuk, KG5GD)

—was going to Russia, so he hand-carried the medicine. There were lots of hams on the frequency. I could hear everyone, so I did a lot of relaying. Now the boy is better. Although he's not totally in remission, he is better.

"I get so much out of Amateur Radio," Linda says, "I felt I was able to put something back." □

DISCOVER LOW PRICES

PL-259 Nickel-Tellon, U.S.A. 69¢ ea. or \$15/25
 PL-259 Silver-Tellon, U.S.A. \$1.29 ea. or \$25/25
 PL-259 Gold-Tellon, U.S.A. \$1.49 ea. or \$30/25
 N Connector for 9913, 9086, CO-Flexi \$3.15

9086 International (like 9913, but better) 46¢
 CO-Flexi New! Flexible 9913-type, low loss
 for crank-up towers, rotators, HF-UHF 62¢
 CO-RG-8X MM 95% Solid, Type IIA Cover 23¢
 RG-8X 95% Braid, Premium Quality 16¢
 RG-213 Mil-Type Premium Coax 34¢

300 Ohm Poly Ladder-Line 13¢
 450 Ohm Poly Ladder-Line 13¢
 300 Ohm Heavy Twin 13¢
 72 Ohm Super Twin 29¢
 #14 Antenna Wire 8¢

Wire & cable
 Sale prices
 on 100' incr
 only.

RADIO WORKS

Current BALUNS

Laboratory Developed
 Unequaled Specifications
 14 models for every application
 Superior Construction, Stainless hardware

B1-2K 1:1 2KW 'Current-Balun' \$17.95
 B4-1.5K 4:1 Low loss 1.5KW 80-10M \$19.95
 Y1-4K Current-type Beam Balun 1:1 4KW \$24.95
 RemotaBalun 4:1 Open-wire to coax Current-Balun \$28.95

(804) 484-0140

Free 80-page Discount Catalog. Everything for wire antennas, connectors, coax. Allow 4-6 weeks for Bulk mail delivery of Catalog or send \$2 for Catalog by Priority Mail. Mention ad for these prices. Prices are subject to change. ADD SHIPPING - Call for COD. Visa & MC welcome. Give card #, exp. date, signature. VA residents add 4.5% Sales Tax. See Ad in QST and CO. DEALER INQUIRIES INVITED.

Box 6159 • Portsmouth, VA 23703



for the QRP shack. A couple of 100 ohm, 2W carbon film resistors placed in parallel will yield a non-inductive 50 ohm load to match most transmitter outputs. Solder these two resistors onto a connector that matches your rig's output jack (SO-239, BNC or phono jack) and you have an instant dummy load that will be indispensable when tuning up your transmitter.

The SWR/power meter is a little more complicated. Many magazine articles exist on how to build a Brune-style SWR bridge that is not frequency sensitive. Unfortunately, these types of bridges are sometimes very difficult to adjust for proper null. Kanga Products of the UK has a novel approach to the problem. Their SWR/power meter kit is extremely simple to construct, is non-frequency sensitive and allows you to read forward and reverse power via a dual meter system. Power output levels in the milliwatts can be accurately measured using this circuit design. I have been testing their SWR/power meter for several months and am happy to report that it is an outstanding value for the money. Accuracy is extremely good and the convenience of dual meters is very nice. This is a stand-alone unit, not integrated into an antenna tuner, although this job should not prove to be difficult if you have a homebrew tuner to which you wanted to add SWR metering. Priced at around \$30, the Kanga SWR/power meter is available from Dick Pascoe, G0BPS, at Kanga Products, 30 Limes Road, Folkestone, Kent, CT19 4AU or from the stateside Kanga distributor, Bill Kelsey, N8ET, 3521 Spring Lake Dr., Findlay, OH 45840.

Antenna tuners are another handy accessory to have. MFJ Enterprises (P.O. Box 494, Mississippi State, MS

39762,) manufactures and markets many different designs. Their models 949D and 941E are two outstanding examples of low cost tuners that offer antenna switching, cross-needle SWR/power measurement, coaxial, balanced transmission line, and end-fed wire antenna inputs with antenna switching all in the same box. I have used both these tuners at K7YHA and think that they are a good value for the money. The 949D is priced at \$149.95 and the 941E sells for \$99.95 (lower prices are available at selected dealers).

An antenna tuner is an easy construction project for anyone who wants to try his hand at homebrewing a piece of amateur gear. Nose around the hamfest flea markets and pick up a couple 300pF variable capacitors, a 10 or 12-position non-shorting rotary, switch and an 8 in. length of B&W coil stock (1½ in. diameter, 10 or 12 turns per inch) and you have the basics for the project. Ten-Tec offers a full line of really sharp looking cabinets to match most any shack's decor. So many circuits exist for a basic antenna tuner that I won't get into that in this column. Check out the *ARRL handbook*, Doug DeMaw's, W1FB, *QRP Notebook* and Lew McCoy's articles in *CQ* magazine for schematics and building information.

A rig, SWR/power meter, antenna tuner and coax are not any good without an antenna. The ARRL antenna handbook has all the information you'll need to make virtually any type of antenna you can dream up. DeMaw also has a couple books out about simple antennas. Likewise, Bill Orr, W6SAI, has his outstanding series of antenna books, the best of which is *Simple, Low Cost Wire Antennas* (available at your local ham store or from the CQ Bookshop).

Jim Thompson, W4THU, from the Radio Works (P.O. Box 6159, Portsmouth, VA 23703) offers a complete line of ready-made HF antennas (several of which I have reviewed in *Worldradio*. Jim also offers many products (baluns, center and end insulators, coax, wire, feedline, etc.) for those who want to build their own antennas. Recently I built a 40M dipole antenna for portable work using The Radio Works HQ-1 center and HQ-2 end insulators, #14 hard-drawn, stranded wire and RG-8X coax. This antenna (with feedline) when rolled up occupies only a small space in the camping equipment box. I support it with a novel item call Kevlar rope, sold exclusively by The Radio Works. This rope is actually stranded Kevlar material that is about 1/3 the diameter of the mil-spec rope that is commonly used for antenna installations. Its rated tensile strength is in excess of 500 pounds. The rope's small diameter,

It has often been said that obtaining an HF transceiver is a relatively small expenditure compared to the options, additions and "stuff" you have to purchase or acquire in order to make things work. Here we'll look at some accessories and products that will enhance your station, provide some creature comforts and not break the bank.

Unless your transceiver has a built-in SWR/power meter, one very essential piece of equipment you *must* have is some means to measure your transmitter's output power and the standing wave ratio (SWR) on your antenna feedline. In addition to the SWR/power meter, a dummy load is another piece of essential test equipment that is indispensable around the shack. Fortunately, both of these devices are relatively easy to construct

NOW YOU CAN AFFORD THE BEST!

Engineered for the Ham, the finest in Crank-Up, Free-Standing or Guyed Towers is from Tri-Ex. For over 30 years, the INDUSTRY standard-backed with Defense and Aerospace technology.

MW SERIES
Self-supporting when attached at first section - will hold normal Tri-Band beam; 25', 33', 50', and 65' heights.

W SERIES
Aerodynamic tower designed to hold 9 sq. ft. in a 50 MPH wind at 36' and 51' heights.

67' tower rated for 6 sq. ft.

LM SERIES
"W" brace motorized tower. Holds large antenna loads. Models at 37', 54', and 70' heights.

TM SERIES
Tubular construction for larger antenna loads at 70', 90' and 100' heights. Free standing, with motorized operation.

To order call
800-328-2393

Tech support
209-651-7859

FAX
209-651-5157



QRP CW TRANSCEIVER KIT

- Available on 20M or 40M band
- Superior superhet design
- Single-signal receiver
- CW crystal ladder filter
- VFO tuning with vernier dial
- RIT w/center detent control
- Very effective AGC
- Selectable audio filter
- Sidetone oscillator
- 2-3 watts of RF output
- Semi break-in
- 12VDC operation
- Custom pre-painted, punched & silkscreened cabinet
- 100% complete kit with instructions
- Measures (HWD): 2¼" X 6¼" X 6"
- Weight: 24 oz.
- \$149.95 + \$4.00 shipping & handling. Michigan residents add 4% sales tax.

• All coils are pre-wound.



For free catalog call or write

OAK HILLS RESEARCH
QRP HEADQUARTERS
20879 MADISON STREET
BIG RAPIDS, MI 49307
(616) 796-0920
24 HR. FAX—(616) 796-6633



ultra light weight and extreme strength make it very useful in supporting antennas. I currently have it holding up a Carolina Windom dipole at my QTH. Additionally, there is a partial roll of the Kevlar rope in the camping box for use on the 40M dipole. The total cost of the 40M portable antenna (75 feet of #14 hard-drawn wire, insulators, 50 feet of coax, connectors and 200 feet of Kevlar rope) is under \$40.

W9INN Antennas, (P.O. Box 393, Mt. Prospect, IL 60056) also markets a selection of high quality, restricted space, high performance dipole antennas. Currently one of W9INN's 80 through 10M space-saver dipoles is undergoing testing by Bob Folmar, KB3VS, and myself. A product review will be forthcoming, but initial testing suggests that it works well for a short, trapless HF antenna.

Since most QRPers work a lot of CW, some form of audio filtering is almost mandatory. I have personally used many active audio filters over the last few years. The most impressive is the Datong FL-3. It is the Cadillac of audio filters with a price tag to match (about \$250). Although expensive, it works extremely well. Ten-Tec marketed their model 206 and 208 audio filters for the Argonaut series QRP rigs. There are many other active audio filters available on today's market, ranging from the simple to the exotic in design.

Recently Autek Research (P.O. Box 302, Dept. J., Odessa, FL 33556) sent me a model QF-1A active audio filter for product review. Priced at only \$99 (direct from Autek) I am happy to relate that it is a steal of a deal! The QF-1A is a superb filter. The nice thing is that it plugs directly into your rig's headphone jack. This precludes having to modify the rig to place the filter in the audio or AGC line. Your favorite headphones are plugged into the back of the QF-1A and installation is complete. Plug the 110V cord into the AC jack and get ready for a treat. This filter is absolutely the best filter I have ever used for the price. It does not have all the bells and whistles of the FL-3 but the price is almost two thirds less. The filter will act as a peak, notch, lowpass and highpass filter at a flip of the controls. The selectivity is variable from 2500 Hz to 20 Hz. Center frequency is variable from 250 to 2500 Hz so you can move about the audio passband at will, selecting signals of interest. The filter features a second notch filter which will work independently of the other control settings. On initial trial, I was using the QF-1A on the low end of 20M, picking out CW stations. One station was clearly readable through the filter but when I placed the filter in the bypass mode and listened to the un-

tailored audio, I could not hear that particular station. My target station was sitting between two other CW stations and the QRM from these two stations was masking the target station completely until I turned on the QF-1A. I was so impressed by this performance, I spent the next hour roving about the 20 and 40M CW bands trying out the filter. After extensive use during the 1991 ARRL 10M Contest last December, I can truthfully say that the Autek QF-1A is an excellent outboard audio active filter. Performance and price add up to an outstanding value.

Straight keys are a real scarce item on today's Amateur Radio shopping list. The trend is for a keyer and set of paddles or a CW keyboard. In the November '90 QST an article appeared showing how to construct a Super CMOS II keyer. This keyer, with some improvements, is now being marketed by Logikey Division of Idiom Press, P.O. Box 583, Deerfield, IL 60015. The wired and tested unit is available for \$119.95 and will provide the user with an outstanding memory keyer that is loaded with features, including four soft-sectored message memories, the ability of messages to import other messages or go into a loop mode, 6-60 wpm, full weight range, ultra-speed mode (70-700 wpm) for meteor scatter work, auto serial number plus

decrements and much more. I obtained a kit version of this keyer (no longer available from Logikey) and had it up and working in a couple hours. I have used the Super CMOS II keyer for over a year in the shack, on Field Days and camping trips and it is an outstanding piece of equipment. This key, coupled with a set of the superb Bencher paddles, makes CW a lot of fun.

We have covered a lot of territory dealing with accessories necessary to put your station on the air. There are a lot of products available at widely varying costs. It has been my intention to present selected products that would fill basic needs, enhance the operation in the shack and not cost a bundle. My recommendations on various accessories and products are based upon actual hands-on experience with the items and not manufacturers' hype. I don't own stock nor am I on the payroll of any of these companies. Since I am as stingy as the next ham, I feel that if I find a good product at a reasonable cost, I'll pass the info along to the readers. All items detailed in my columns or product reviews have been thoroughly tested at K7YHA; some have not only undergone extensive field testing by myself but, on occasion, by other QRPers to whom I have loaned the equipment in order to obtain a second opinion. □



UNADILLA ANTENNA
MANUFACTURING CO.

PO Box 4215 BV-Andover-MA-01810

(508)
474-8949
24 Hour FAX

THE BIG™ SIGNAL
Amateur Antenna Kit

40/80 Meter Antenna Kit
For "Perfect Dipole" SWR

Quick Installation—Nothing Else to Buy



(508)
475-7831
9-5 EST M-F

Suggested
list price
\$75.00

A complete kit includes:

- W2AU 1:1 Balun (all stainless steel Hardware)
- W2VS KW-40 Traps (pair)
- End-sulators™ (pair)
- #14-7 Copper Wire (125')
- Installation & Pruning Instructions

Get "perfect dipole" (low SWR) operation on both bands, plus "second resonance" operation on 10, 15 and 20 meters. Complete instructions results in a quick, accurate installation and pruning to low operating SWR.

Every component in the 40/80 meter kit is an old line, reliable UNADILLA product, time tested with hams for over 20 years.

Contact Your Local Ham Dealer Today!!!

To order direct call (508) 475-7831 or write
for our informational brochure on our other fine products
Baluns-Antenna Kits-Filters-Center Insulators-ENDsulators™-Coaxial Relays
All products come with a 30 Day Warranty

-NOTICE-
We are the **NEW** manufacturers of the original
JAMES MILLEN™ Products
(508) 975-2711 9am-5pm EST M-F

10-10 INTERNATIONAL News

Chuck Imsande, W6YLJ
10-10 19636

Among the missing

If you missed the column last month, that's because we were not here! The 10-10 International News column will appear bimonthly (even months) from now on. This will accommodate a greater diversity of material to appeal to the many interests reflected in *Worldradio's* recent reader survey.

In one sense, this may be a blessing, as it takes considerable time to search out stories, prepare the write-up and get it off to the editor. There have been many months when I was at the computer on the deadline day, scratching my head and wondering what to write about. Many times I have asked for information about readers, their other hobbies, family members with in-

teresting jobs, chapter special events, etc., but few have come forward. A column like this is based on gathering information and passing it along in an interesting fashion. Your help is again solicited. Send whatever you have, along with pictures, to me at the address listed below.

It WAS fun!

The Winter Phone QSO Party was recently held, and I did something I had never done before. I used my computer for real-time logging of the contest. It was fun and saved a sore wrist and hand from the tiring experience of scribbling with a pencil.

I used the contest program developed by one of our 10-10 members, Jim Hardy, K4HAV, #17605. Jim has put a great deal of effort into developing a program specifically for 10-10 contesting. In addition to Jim's contest program, he has also developed a 10-10 county hunter program that not only keeps track of all 3,076 counties, but most all other 10-10 awards. You can track progress toward BARS, Worked all States, Countries, VP numbers, and the program will be able to keep track of prefixes when the new 10-10 WPX Award is ready for release.

My experience was with the contest portion of the program, so that's the area that I will report on. First, the program is well written with good screen colors if you have a color monitor. There are adequate text files on the disk, which can be printed out for study prior to the contest. This is necessary; like any computer program, learning the program commands is required for successful operation.

The contest screen is simple and easy to use. Entering a call and hitting either the space bar or *enter* key does one important thing. It starts a search

of almost 6,000 records of previous 10-10 contest stations to determine if the call being worked is in the contest database. If the call is there, the program immediately fills in the name, state and 10-10 number of the station being worked. No input by the contest operator is required! That alone is worth its weight in gold. If the station being worked is not in the database, then the contest operator must fill the required data fields, i.e., name, state (or QTH) and 10-10 number. At this point again hitting the *enter* key stores all of the information including the date and time. Storing the time requires that you set your computer clock to UTC time. Each call entered is checked against all of the previously worked calls and if the station has been worked in the contest a dupe message pops up to alert you to cancel the current contact. The dupe feature is great if you are searching up and down the band for stations. Before you call the station, enter his call and the program will alert you if it is a dupe contact.

Some, but not all, of the additional features include "hot" keys to find or check a 10-10 number or call, to determine if you have worked the call earlier in the contest, check the states you have not worked in the contest. There is also a "county input" option that allows you to enter the county of the station being worked. I used this option during the contest and found it to be very beneficial in collecting about 200 new counties.

The printout feature is another excellent part of the program. After the contest I printed out my log of 540 contacts in nine minutes and 30 seconds. This was the total elapsed time from turning on the computer to completion of the log printout, ready to send to the scoring chapter. In an additional three

RESUMES for HAMS

JOB HUNTING?

- 10 laser printed resumes.
- 10 matching letterheads.
- 10 matching envelopes.

\$24.95 (Postpaid.)

NEED HELP?

Send for our Special Resume Kit with samples that will help you develop your resume strategy.

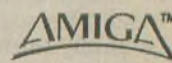
\$4.95 (VISA and MC accepted.)

LANCE JOHNSON DIGITAL GRAPHICS

P.O. Box 1047
Elizabeth, CO 80107
(303) 646-4630



COMMODORE/AMIGA Replacement Chips, Parts, Upgrades



AMIGA CHIPS

8520A CIA	\$11.95
1.3 ROM Kick Start	\$29.95
8372A Fat Agnus/puller	\$59.95
8373 Super Denise	\$42.95
8364 Paula	\$24.95
5719 Gary	\$12.95
2.0 Upgrade Kit	\$87.50
1x4/80 SC Zip for A3000	\$22.95
1.8 Amp. C64 Repairable Power Supply	\$24.95
4.3 Amp. C64 Repairable Power Supply	\$37.95
4.3 Amp. C128 Repairable Power Supply	\$39.95
Burdny PLCC Chip Puller. List \$29.95	\$14.95
Electronic ROM selector switch (1,3/2,0)	\$44.50

COMMODORE CHIPS

6510 CPU	\$9.95
6526A CIA	\$9.95
PLA/906114	\$9.95
8562 VIC	\$21.50
6567 VIC	\$9.95
6581 SID	\$9.95
All 901 ROMS	\$9.95
310654 1571 Upgrade	\$9.95
6510/8500 CPU	\$9.95
4164 (C64/RAM)	\$.60
C64 Keyboard	\$19.95
Computer Saver II	\$17.95

We carry a complete line of Commodore/Amiga chips, upgrades, power supplies and motherboards.



THE GRAPEVINE GROUP, INC.

3 Chestnut Street, Suffern, NY 10901
1-800-292-7445 • 914-357-2424 • Fax 914-357-6243

We Ship Worldwide

Hours: 9-8 EST M-F

Prices Subject to Change

minutes I had two dupe sheets printed out—one by call and the other by 10-10 number. If you have ever sat down and manually compiled a dupe sheet for 540 contacts, you know what a time-consuming job it is. But this was a "piece of cake."

There are too many additional features of both the contest portion and the county hunter portion of the program to list here, but a couple additional features that I found interesting are the DX prefix data base, which has approximately 600 DX prefixes. Entering a DX call automatically pops up the DX country. The program also includes the entire 10-10 database that Gerry Gross, WA6POZ, has published.

One interesting feature is the Silent Key (SK) notation. I worked a station, K8NKB, in the contest and when Dick gave me his 10-10 number of 421 the screen popped up with a flag that said, "This station is a SK." When I questioned Dick he told me that he was listed as a SK in error, that he was very much alive and had requested the 10-10 records be corrected. A later check with Grace Dunlap, K5MRU, our SK record keeper, indicated that her records were so noted and that Lee Pasewalk, WB6MGM, records manager, had been notified but the database had not yet been updated.

I have yet to get involved with the county hunter portion, but my limited checking of that part of the program leads me to believe that it is as user friendly as the contest portion. For more information on this 10-10 program called *10-10 Contest Logging Program*, contact Jim Hardy, K4HAV, P.O. Box 7304, Tifton, GA 31793. The program is inexpensive and you will enjoy contest logging on your computer.

Two new awards

There are two new awards in the works. The first is the 10-10 Worked All State Capitals Award. This will require contact with 10-10 members in each of the 50 state capitals. Most likely QSL confirmation *will* be required,

so check your logs and get QSL confirmations started for this new 10-10 award. Watch the next issue of the *10-10 International News* for more information.

The second new award will be the 10-10 WPX Award, where each new prefix worked with a 10-10 number will count. This award is being planned to operate on the BAR system, where 100 prefixes will qualify for the certificate and each additional 100 prefixes will qualify for a seal. It is currently planned that this award will *not* require QSL confirmation, but will be on the honor system like the BARS and counties awards.

Finally

If you are interested in obtaining an information pack and application form to learn more about the 10-10 organization and how you can get your own 10-10 number, send me a buck (\$1), two first-class stamps and an address label. You will receive the 10-10 Information Manual and the latest issue of the *10-10 International News*. My address is 18130 Bromley Street, Tarzana, CA 91356-1701.

If you have lost your 10-10 number or do not know who to send your dues to, an SASE to the above address will get you that information. If you are looking for your lost 10-10 number, please enclose a list of *all* of your previous calls as well as your current call. Previous address information is not required.

73, es cu in the June issue. □

R-X NOISE BRIDGE



• Learn the truth about your antenna.

The Palomar R-X Noise Bridge tells you if your antenna is resonant or not, and, if it is not, whether it is too long or too short. It gives resistance and reactance readings on dipoles, inverted Vees, quads, beams, multiband trap dipoles and verticals from 1 to 100 MHz.

Why work in the dark? Get the instrument that really works, the Palomar R-X Noise Bridge. Model RX-100 \$79.95 + \$4 shipping/handling in U.S. and Canada. California residents add sales tax.

SC FILTER



- New switched capacitor audio filter.
- Twice as sharp as transceiver IF filters.
- For SSB, CW, Packet, all digital modes.

16 pole filter! Lowpass for SSB. Bandpass for CW and digital modes. Lowpass cutoff and bandpass frequency continuously variable from 300 to 3000 Hz. Extremely sharp skirt selectivity cuts interference dramatically. Selectable bandpass 250, 100, or 45 Hz. Bass switch cuts out hum and rumble. Connect between receiver and speaker or 'phones. 5 watts audio drive.

Model PF-300 \$159.95 + \$4 shipping U.S. & Canada. For 13.8v DC. Model PS-95 AC adapter \$15. Calif. residents add sales tax.



Send for FREE catalog that shows our complete line of noise bridges, SWR meters, preamplifiers, loop antennas, VLF converters, baluns, SWL equipment, toroids and more.

PALOMAR ENGINEERS
 BOX 482222, ESCONDIDO, CA 92046
 Phone: (619) 747-3343
 FAX: (619) 747-3346

CUSTOM EMBROIDERED QUALITY HAM HAT

SUMMER
\$7.95 ea.

CORDUROY
\$9.25 ea.



Display your NAME, CALL and HOMETOWN on a RED or ROYAL BLUE summer mesh back cap with matching bill and white foam front. Emb. matches cap color.

FULL CORDUROY available in RED or NAVY with GOLD ltrs.

Note — NAME (max. 14 ltrs. & spaces); CALL (max. 6 ltrs.); HOMETOWN (max. 14 ltrs. & spaces). Send CK or M.O., plus \$2.75 S&H; add 25¢ ea. add'l cap. MD residents add 5% tax. Del. 3-5 wks.

Scrambled Eggs for bill of cap, in WHITE or GOLD. Add \$1.50 per cap.

EMBROIDERY WAREHOUSE
 P.O. BOX 1476
 SEVERNA PARK, MD 21146



WORST CASE OF METAL FATIGUE I'VE EVER SEEN



Pioneer stations

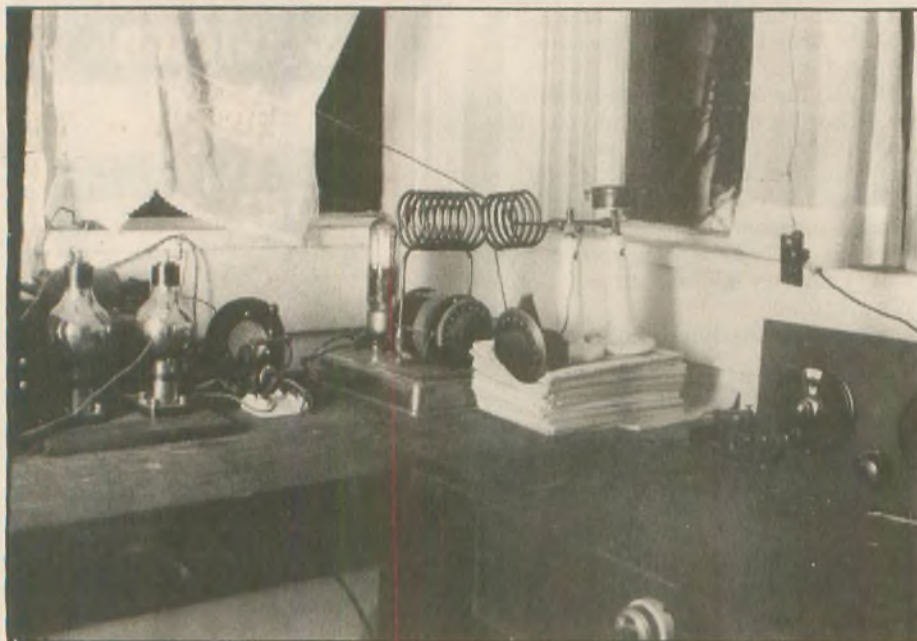
MICK McDANIEL, W6FGE

This is a brief display of old-time ham station setups and how these station arrangements may have reflected the station owners' personalities.

These photos are from a most interesting album which I acquired recently at the estate sale of a pioneer



Station 6OE (now W6OE) in 1927.



Station 6BGO in 1927.

ham from the Los Angeles and San Diego area. Filled with pictures of ham stations from the mid-1920s, prior to the assignment of the W prefix, the collection of pictures contain many excellent examples of ham station arrangements, antennas, mobile setups and so on, from spark-gap to fast scan TV. The photos are historical (and some even hysterical) treasures. Some of these early-day hams were very innovative!

Shown here are two of my favorite photos from the old album, showing two station arrangements. The first photo shows clearly that the station owner was a heads-up thinking person—who else would assemble his rig on the ceiling of his shack? My Dept. of Commerce callbook for June, 1927 identifies this station owner as Seymour F. Johnson, 6OE, in Altadena, CA; RF power 100W. The current *Callbook* lists this amateur as W6OE in Santa Barbara.

The second photo, showing the details of the precision requirements for adjusting the RF coupler from the tank coil to the transmission line, illustrates the application of the basic ham ground rule: When in doubt, use the manual—in this case the periodicals, a stack of *QST* magazines. This amateur was listed in the 1927 callbook as 6BGO, Lloyd Russell, of Pasadena, CA; RF power 100W. □

Identify yourself

with our custom engraved call pins

1 line 1" x 3" .. \$1.25
2 lines 1" x 3" .. \$1.50
3 lines 1½" x 3" \$2.00

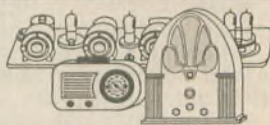
DAVE W2CFP
TOMPKINS CO. A R C

Any color • (Add 29¢ per tag for postage.)

Logos for MARS, ARRL, CD, most Lodges, OH, IN, IL, MI, PA, SMIRK, can be engraved on badges for \$.75 extra per badge. Special logos can be made at a reasonable cost; write for quotations.

FALLERT'S ENGRAVING
27 Verlynn Ave. • Hamilton, OH 45013

FREE
SAMPLE
COPY!



ANTIQUE RADIO CLASSIFIED

Antique Radio's Largest-Circulation Monthly Magazine

Articles - Classifieds - Ads for Parts & Services
Also: Early TV, Ham Equip., Books, Telegraph, 40's & 50's Radios & more...

Free 20-word ad each month. Don't miss out!

1-Year: \$27 (\$40 by 1st Class)
6-Month Trial - \$15. Foreign - Write.

A.R.C., P.O. Box 802-N7, Carlisle, MA 01741

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

CONSTRUCTION

Fixing Heath HW-5400 distortion

KENNETH PIERPONT,
KF4OW

Ever since I built my HW-5400 in the spring of '86, it had shown high sensitivity to transmit distortion. However, only after several personal friends who know my voice well complained of distortion was the decision made to do something! The receive audio also had always seemed to have some distortion on familiar voices.

Therefore, the entire audio input circuit, up through the modulator and IF buffer (Q904) were breadboarded and a lab quality signal generator was used for the carrier input. Several microphones in use at this QTH were measured for their inputs over the full frequency spectrum, i.e. to 3000 Hz. Then an audio frequency generator was used for controlled inputs. Scope patterns on a dual trace scope were examined and compared at every stage.

The first stage, an op-amp (U-901A), behaved well, but both succeeding stages, Q902 and Q903, were prone to severe distortion accompanied by non-symmetrical clipping. Changing the feedback resistor, R922, from 10K to 3.3K eliminated the problem and still the input to the balanced modulator was adequate.

The balanced modulator circuit uses an ordinary Motorola IC, MC1496G, U902. The supply voltages at pins 6 and 9 are supposed to be balanced according to the Motorola bulletin, but are not in this application. Therefore a 2700 ohm resistor was added between pin 6 of U902 and the supply rail. Also, when the BFO level was adjusted according to the Heath manual, the carrier input on SSB was well below the Motorola recommended value. Increasing C921 to 0.1mfd brought this input up to approximately the recommended value at the carrier frequency used to obtain maximum carrier suppression.

FIRST RULE OF NEGATIVE ANTICIPATION: *You will save yourself a lot of needless worry if you don't burn your bridges until you come to them. — The Microvolt*

Results of the breadboarding showed the transmit problem should be resolved. The same Motorola IC is used for the product detector, and Heath again used unbalanced voltages. Based on the modulator tests, the decision was made to add a second 2700 ohm resistor at pin 6 of the product detector, U904.

After incorporating these four simple component changes, test results proved the transmit audio distortion eliminated. For these a Shure 444D microphone (recommended by the Heath catalogue then) was used and fed audio from a speaker connected to the sine wave generator. The HW-5400 was terminated into an oil filled 50 ohm dummy load. A Kenwood TS 430S with no antenna and the attenuator on was used as the receiver. Its output was terminated in a resistor with a scope connected across. This setup became the final "proof" test of the received signal! The mike input wave shape and the receive output wave shape were monitored and found completely clean of any distortion across the measured audio passband, which was very sharp from about 525 Hz to 2650 Hz. Even sound level inputs about 25 percent above normal voice peaks produced no distortion. These tests were made at several power levels up to the maximum of 100W.

Receive audio now is similarly free from distortion, and I enjoy listening. Thus, HW-5400 owners having these distortion problems can easily correct them and be told as I have: "You sound great!" □

ONV SAFETY BELT CO.

P.O. Box 404 • Ramsey, NJ 07446

800-345-5634

Phone & FAX 201-327-2462

ONV Safety Belt With Seat Harness

\$89.95



OSHA

We Ship
Worldwide
Order Desk Open
7 Days/Week

ONV Tool Pouch \$15.95

Add \$4.00 For Handling VISA/M/C CHECK

ONV Belt W/O Seat Harness

\$74.95

PREAMPLIFIER



Can't hear the weak ones when conditions are bad? Receiver lacks sensitivity on 20, 15 or 10? Get the world famous Palomar preamplifier. Tunes from 160 to 6 meters. Gives 20 db extra gain and a low noise figure to bring out those weak signals. Reduces image and spurious responses too.

An RF sensing circuit bypasses the preamplifier during transmit. The bypass handles 350 watts.

Model P-410X (for 115-v AC) or Model P-412-X (for 12-v DC) \$179.95. Model P-408 (SWL receive only for 115-v AC) \$159.95.

Add \$4 shipping/handling in U.S. & Canada. California residents add sales tax.

LOOP ANTENNA



Loops pick up far less noise than other antennas. And they can null out interference. Palomar brings you these features and more in a compact desktop package. The wideband amplifier with tuning control gives 20 dB gain. Plug-in loops have exclusive tilt feature for deep nulls. Loops are available for 10-40 kHz, 40-150 kHz, 150-550 kHz, 550-1600 kHz, 1600-5000 kHz and for 5-16 MHz.

Model LA-1 Loop Amplifier \$99.95. Plug-in Loops (specify range) \$89.95 each.

Add \$4 shipping/handling in U.S. and Canada. California residents add sales tax.



Send for **FREE** catalog that shows our complete line: Noise Bridge, SWR Meters, Preamplifiers, Loop Antennas, Baluns, VLF Converters, Keyers, Toroids and more.

PALOMAR ENGINEERS

Box 462222, Escondido, CA 92046

Phone: (619) 747-3343

FAX: (619) 747-3346



AERIALS

KURT N. STERBA

Some of the stuff I see can really give me the pip. I'm looking at a recent article about the so-called Double Bazooka. The claim is made that "the gain is something like 2 dB."

To put this in perspective: 2 dB is not an inconsiderable amount of gain. With a beam antenna you have to double the number of parasitic elements (and the boom length) to pick up about 3 dB. Lo and behold, just by building a dipole from coax (instead of wire) this 2 dB (as if by magic) appears.

Would I be a party pooper if I asked the article's author *how*?

Gain (in the real world) can only come from one method, and that is directivity. What happens is, you take the power that would be going off in some other direction and channel it to go in your chosen direction.

The more you rob from various directions and aim in a preferred direc-

tion, the more gain you have. The narrower the radiation pattern, the more gain in that direction. This is accomplished in beam antennas by adding a reflector and directors. (Less and less power goes in the unwanted directions.)

In wire antennas, the longer the wire the higher the gain in the particular direction, and it takes approximately twice the wire length to pick up another 3 dB. Whatever monstrosity you have up, it takes a doubling of that to increase your signal by 3 dB.

After you have extended your boom to a length that makes any more length a mechanical impossibility, the only solution is to stack another similar antenna (the proper distance) above the existing one. For all that effort and expense, the realized gain will be about 3 dB.

For another example: You have a longwire antenna, say 10 wavelengths long—big signal. You now put up another wire, also 10 wavelengths long as in a V beam. This other 10 wavelengths of wire (about 668 feet of wire on 20M) will increase your signal by (yes, you are correct) 3 dB. That was accomplished, of course, by narrowing even further the power pattern of the antenna.

So, as you can see, when "gains of 2 dB" are thrown about like so much

confetti, I find it very painful. Remember, a dipole is a dipole is a dipole. There is *no gain* (without pain?) unless you hang a reflector behind it and/or a director in front of it, of the proper lengths and spacings. Then, it is no longer a dipole.

A letter forwarded to me asked for "information on inconspicuous antennas for mobile home in retirement park—am restricted in space and height."

Okay, here's inconspicuous. Assuming the mobile home is metal, let *that* be your antenna! Run a wire from your tuner, out the window and fasten it to the roof. Next, run a wire about 65 feet long from the ground lug on the tuner, out the window, and lay that along the ground running the length of the mobile home. Bend around a corner if need be. That's your counterpoise.

Don't judge the results on one night or one week; it depends on the sunspots. Possibly a second counterpoise, running in the opposite direction, would improve things. Make sure you use insulated wire and put a piece of tape over the end so it could never touch any metal.

What can be accomplished with these less-than-10-wavelength wires? Quite a bit. On December 14 and 15 was the ARRL 10-M Contest, and a good time was had by all.

I put a 10M dipole along one of the rafters in the garage. In my best hour of answering other station's CQs I made 36 QSOs, including four continents.

In getting another "Worked All Continents," I spanned the globe from the former USSR (or whatever) to Argentina, Oceania to Netherlands, Japan to Africa. I got almost every single state except the few that nobody lives in.

On eleven occasions I made two contacts within the same clock minute (running 100W). Once I made nine contacts in 10 minutes—it was too easy. So I ran about eight feet of wire out the back of the tuner and worked Florida, and followed with Alaska.

Ten meters can be very exciting. My dipole had to be the closest-to-the-ground antenna in the whole contest, but UA, PA, IK, HE, HK, VK, CE and more are in my log.

I do this, and tell about it, only to give hope to those who must operate sub rosa. I made about 250 QSOs. You could do much better than that because you're younger! Next month, a challenge for the real experimenters.

(KNS himself writes sub rosa so he may sit in peace at the club meeting when the member sitting next to him says, "My dipole gets 2 dB more gain than a dipole." Kurt then puts on his Alfred E. Neuman smile and says, "Isn't that nice! Tell me more.") □

HIGH-ACCURACY ANTENNA SOFTWARE

MN 4.0 is the fastest, most powerful, and most accurate MININEC antenna-analysis program available. MN corrects fundamental problems in the MININEC algorithm for improved accuracy. MN features 3-D views of antenna geometry and wire currents, presentation-quality polar and rectangular plots, automatic wire segmentation, automatic frequency sweep, symbolic dimensions, skin-effect modeling, near-field calculation for TVI and RF-hazard analysis, up to 254 pulses for complex models, simple definition of sources and loads, and pop-up menus. MN 4.0, \$85. MNC 4.0 (1.6-2.4 times faster, coprocessor required), \$110. MNH 4.0 (huge-model option), \$25.

YO 4.0 automatically optimizes Yagi antennas for maximum forward gain, best pattern, and minimum SWR. YO handles designs from HF to microwave. YO models stacked Yagis, Yagis over ground, skin-effect, dual driven elements, element tapering, mounting plates, and matching networks. YO runs hundreds of times faster than MININEC. YO is calibrated to NEC for high accuracy and has been extensively validated against real antennas. YO is intuitive, highly graphical, and fun to use. YO 4.0, \$100. YOC 4.0 (1.7-2.7 times faster, coprocessor required), \$130.

NEC For Yagis 1.0 provides highest-accuracy analysis of Yagi designs with the professional-standard Numerical Electromagnetics Code. NEC For Yagis 1.0, \$50. Coprocessor, hard disk, and 640K memory required.

MN and YO come with comprehensive antenna-design libraries and include both coprocessor and extra-fast no-coprocessor versions. All programs include extensive documentation and an easy-to-use, full-screen text editor. Add 7 1/4% CA, \$5 overseas. VISA, MasterCard, U.S. check, cash, or money order. For IBM PC, 3.5" or 5.25" disk.

Brian Beezley, K6STI, 507-1/2 Taylor, Vista, CA 92084
(619) 945-9824, 0700-1800 Pacific Time

Marine Grade Coax!

Introductory PRICE
100 ft RG-213/U
\$84.95
+tax/shipping

For uncompromising performance, new marine grade coaxial cable features:

Super Tough White PVC Jacket for excellent abrasion and ultra violet protection. RG-213/U and RG58C/U have non-contaminating jacket. RG-8X also available.

100% Tinned copper braid and center conductor for extra long life.

Weather Tight Antenna Connection with exclusive adhesive lined heat-shrink tube.

96% Braid Coverage for maximum shielding, minimum signal loss while maintaining flexibility.

Pre-Cut Lengths of 100, 75, 50 and 25 feet. Bulk quantities too.

Soldered silver plated/teflon insulated PL-259 connectors.

Made in U.S.A. to marine grade standards and U.L. ratings.

1-(800) 634-9903

Amateur Radio Specialties
P.O. Box 7086, Newport Beach, CA 92658

CONTESTS

The Holyland DX Contest

The Israel ARC will sponsor the Holyland DX Contest with the aim to promote contacts between radio amateurs around the globe and Israeli hams, to aid amateurs to achieve the different Israeli Awards and to introduce the new Holyland Award.

Eligibility: All licensed amateurs and SWLs worldwide. The goal is to contact as many different Israeli Amateur Radio stations on as many bands, and from as many "Areas," as possible in both modes, CW and SSB.

Contest period: Saturday, April 18, 1992, 1800 UTC, to Sunday, April 19, 1992, 1800 UTC.

Categories: Single operator—all bands; multi-operator, single transmitter—all bands; shortwave listeners.

Bands: 1.8, 3.5, 7, 14, 21, 28 MHz. According to the IARU Region-I recommendations: 3.5-3.56, 3.60-3.65, 3.70-3.80, 14.00-14.06, 14.125-14.300, 21.00-21.08, 21.20-21.40, 28.00-28.10, 28.50-28.80 MHz.

Exchange: Worldwide stations send RS(T) and QSO number starting with 001. Israeli stations give RS(T) and Area. The same station may be contacted both on CW and SSB on each band. Neither cross-mode nor cross-band contacts are permitted.

Scoring: Two points for each QSO on 1.8, 3.5, 7 MHz; one point for each QSO on 14, 21, 28 MHz. One multiplier for each Area per band worked. Multiply total number of QSO points by number of multipliers.

Logsheets: Submit separate logs for each band and mode. Each entry shall report time, call sign, RS(T) and QSO number sent, RS(T) Area received and points. SWLs shall report on Israeli stations only: time, call sign, stations worked, RS(T), Area sent and points. A summary sheet shall list number of multiplier and points scored from each band worked, total multipliers and points plus the computation of total score. Include declaration of compliance with rules of contest and copy of own radio amateur license. Entries must be postmarked no later than May 31, 1992, and sent to: Contest Manager, Israel Amateur Radio Club, Box 4099, Tel Aviv 61040.

Awards: A trophy will be awarded for the overall winner in each category, a plaque for each continental winner in each category, and certificates will be awarded to the top scorers in each country, provided a minimum of 50 valid QSO points have been reached.

Special operation: Israeli mobile or portable stations may move and change their location during the contest into five different Areas, restricted to an operating time of at least one full hour per Area. The operation from each Area gives that station the status of a different station with another call, thus giving additional contest points and multipliers. To identify its different location/Area those stations will change their call signs by adding a number after their prefix. For example 4X4JU will use 4X41JU, 4X42JU, etc.

For further information or more detailed information on the Areas and other geographic divisions of Israel, write to the Contest Committee, P.O. Box 4099, Tel Aviv, 61 040.

DX YL to North American YL Contest

Sponsored by the Young Ladies Radio League, this contest is open to all licensed women operators throughout the world.

Hours of operation: CW—1400 UTC Wednesday, April 8 to 1700 UTC Thursday, April 9. **Phone**—1400 UTC Wednesday, April 22 to 1700 UTC Thursday, April 23.

Procedure: DX YLs call "CQ North American YL" and North American YLs call "CQ DX YL."

Operation: All bands may be used. No cross-band operation. Net contacts, repeater contacts and contacts with OMs do not count. Stations may be worked and counted once on each band and mode. Participants may work only 24 hours of the 36 hour contest. Operating breaks must be indicated in the log.

Exchange: Station worked, QSO number, RS(T) and state/province/country. Entries in log must also show time, band, date and transmitter power.

Scoring: A. Phone and CW will be scored as separate contests. Submit separate logs for each contest. B. DX YLs, including Hawaii and Alaska, may contact all the North American continent, which includes the 48 contiguous states and Canadian provinces. C. Contestants on the North American continent (including the 48 contiguous states and Canadian provinces) may contact DX YL stations, including Hawaii and Alaska. D. A station may be counted once on each band for credit and one point is earned for each station worked once on each band. E. Multiply the number of QSOs by the number of different states/provinces/countries worked. A multiplier is counted only once in the contest. F. Contestants running 150W or less on CW and 300W PEP or less on SSB at all times may multiply the results of E by 1.5 (low power multiplier).

Logs: All logs must show your state/province/country to qualify for awards. For each QSO logs must show the station worked, QSO

number given and received, RS(T) given and received, country/province/state of station worked, time, band and date. Logs must also state the power output used and the operating breaks taken. If you have 200 or more QSOs, submit a separate log for each band and submit a "dupe" sheet.

Do not send carbon copies of logs. Please print or type. Logs must be signed by the operator and no logs will be returned. Remember to file separate logs for each contest. Logs must show claimed score and must be postmarked by May 23 or they will be disqualified.

Mail logs to Carla Watson, WO6X, 473 Palo Verde Dr., Sunnyvale, CA 94086.

Awards: Cup to first place DX phone; cup to first place North American phone; cup to first place DX CW; cup to first place North American CW. Plaque to highest combined CW and phone North American score; plaque to highest CW and phone DX score. The second and third place DX and North American winners in each contest will receive certificates.

Suggested frequencies: CW—80M—3.540 to 3.570; 40M—7.040 to 7.070; 20M—14.040 to 14.070; 15M—21.120 to 21.150; 10M—28.180 to 28.210. SSB—80M—3.940 to 3.970; 40M—7.240 to 7.290; 20M—14.250 to 14.280; 15M—21.380 to 21.410; 10M—28.280 to 28.410 MHz.

Note: Since band allocations in other countries are often different than the United States, North American YLs should look for DX YLs in other parts of the bands, especially on 40 and 80M. □

MARAC County Hunters CW Contest

The Mobile Amateur Radio Awards Club is sponsoring the 24th annual County Hunters CW Contest from 0000Z Saturday, May 2 to 2400Z Sunday, May 3. Mobile and fixed operation from every county in the United States is welcome and operation from less active counties is encouraged.

Rules: Fixed stations may only be worked once on each band. Mobiles may be worked each time they change counties. Mobiles operating on a county line give and receive one QSO number. Mobiles must identify by signing /M after their call. To be eligible for an award, a station must not operate more than one transmitter at any one time.

Exchange: QSO #: category (Mobile only); signal report; county and state for United States, province (Canada) or country for others. Sample mobile report: 023M 579 MODOC CA.

Scoring: QSOs with fixed US/Canadian stations are worth one point; mobiles are worth three points. US/Canadian contacts with DX stations are worth three points. Contacts with stations operating under "Net Control" are invalid. Final score equals total QSO points times the total number of US counties worked.

Frequencies: 3.575, 7.055, 14.060, 21.060 and 28.060. Fixed stations should CQ or QRZ above the suggested frequencies and mobiles operate below them.

Awards: Certificates to winning stations as follows:

F—First Place Fixed in each state, province and county with 1,000 points or more.

M—First Place Mobile in each state operating from three or more counties with a minimum of 10 QSOs from each county.

SCARED OF THE CODE?

IT'S A SNAP WITH THE ELEGANTLY SIMPLE MORSE TUTOR ADVANCED EDITION FOR BEGINNERS TO EXPERTS—AND BEYOND

Morse Code teaching software from GGTE is the most popular in the world—and for good reason.

You'll learn quickest with the most modern teaching methods—including Farnsworth or standard code, on-screen flashcards, random characters, words and billions of conversations guaranteed to contain every required character every time—in 12 easy lessons.

Sneak through bothersome plateaus in one tenth of a word per minute steps. Or, create your own drills and play them, print them and save them to disk. Import, analyze and convert text to code for additional drills.

Get the software the ARRL sells and uses to create their practice and test tapes. Morse Tutor Advanced Edition is approved for VE exams at all levels. Morse Tutor is great—Morse Tutor Advanced Edition is even better—and it's in user selectable color. Order yours today.

For all MS-DOS computers (including laptops). Available at dealers, through QST or 73 or send \$29.95 + \$3 S&H (CA residents add 7 1/2% Tax) to:

GGTE, P.O. Box 3405, Dept. MW, Newport Beach, CA 92659

Specify 5/4 or 3 1/2 inch disk (Price includes 1 year of free upgrades)

MARAC Plaques to the highest and second highest scoring mobile and fixed stations in North America, and to the highest scoring DX station. For purposes of this contest DX is any country except the US, Canada or Mexico.

Mobiles who change states should calculate their scores 1) for individual state certificates and 2) for total score for the overall plaque. Total overall score must not count a county as a multiplier more than once, regardless of the state from which it was worked.

Sample log and summary sheets are available for an SASE to the address below. A check list of counties is required for entries with 100 or more counties worked. Completed logs, summary sheets and county lists must be received by June 3. Send to: Jerry Burkhead, N6QA, 7525 Baltic St., San Diego, CA 92111 (Include a business size SASE for personal copy of contest results). □

Connecticut QSO Party

The Connecticut QSO Party, sponsored by the Candlewood ARA, will be held from 2000Z April 4 until 0400Z April 5, resuming at 1200Z April 5 until 2400Z April 5, on phone, CW, RTTY, Amtor, and packet.

Categories: Single operator and multi-operator. Work stations once per mode on each band and again as they cross county lines. No repeater QSOs except OSCAR contacts.

Exchange: RS(T) and QTH (county for CT stations; ARRL section/province/country for others.)

Suggested frequencies: Phone—1.86, 3.927, 7.280, 14.280, 21.370, 28.370, 50.150 and 146.550; CW—40 kHz up from lower band edges, Novices 25 kHz up from low end.

Scoring: Count one point per phone contact; 1.5 points per CW/RTTY/Amtor/packet/two-way ATV contact; five points per OSCAR contact. CARA club station W1QI and ARRL HQ station W1AW count 10 points per contact. CT stations multiply QSO points by sections (DX only one multiplier). Others multiply by CT counties worked.

Awards: Special award for working all eight CT counties. Engraved plaques and certificates. 100-point score minimum for awards.

Mail logs by May 6, 1992 to CARA, P.O. Box 271, Danbury, CT 06813-0271. □

Oregon QSO Party

The Oregon QSO Party, sponsored by the Central Oregon Radio Amateurs ARC and the Central Oregon DX Club, will be held from 0000Z May 2 to 2400Z May 3, 1992.

Procedure: Work stations once per band, mobiles as they cross county lines. No repeater QSOs. Oregon stations may contact other Oregon stations for QSO and multiplier credit. Oregon stations give serial number and county. Other stations exchange serial number and state/province/DX country.

Frequencies: (± 10 kHz) CW—1.810, 3.540, 7.040, 14.040, 21.040, 28.040; phone—1.860, 3.850, 7.230, 14.250, 21.300, 28.400.

Scoring: Two points per phone QSO, four points per CW QSO. Oregon stations multiply QSO points by states/provinces/DX countries worked; others multiply points by number of Oregon counties worked (total 36).

Awards: Mail logs, summary sheet, and SASE by August 1 to: (for phone) Bill Sawders, K7ZM, 19821 Ponderosa St., Bend, OR 97702; (for CW) Mahlon Hale, WA7ZBL, 22840 Tumbleweed Ct., Bend, OR 97701. □

Scottish Activity Weekend

The Scottish Tourist Board (Radio Amateur) Expedition Group will sponsor their first annual Scottish Activity Weekend on April 18 and 19.

Frequencies: CW—3.510, 7.010, 10.140, 14.010, 21.010, 24.905, 28.010 MHz; SSB—3.765, 7.065, 14.140, 14.240, 18.130, 21.250, 24.950, 28.400 to 28.600 MHz (14 and 21 MHz band frequencies ± 35 kHz). The CW 10.140 will be dedicated mainly for the UK Novice license holders.

Operating Times: Normally, Saturdays 0800 to 2200 UTC; Sundays 0900 to approximately 1500 UTC. Times of operation are subject to change. Please check bands for any activity.

Scoring: Requirements for all outside less Scotland as follows: A mandatory contact with GB2STB—plus 100 points; contact with a regional station is worth eight points; contact with a GS prefix station counts as two points; contact with a GM prefix station counts as one point; contact with a 2M prefix station counts as one point. Requirements for Scottish stations only—100 points required; contact with each overseas station counts as

five points to a maximum of 75 points; a contact with a station in UK or Ireland (less Scotland) counts as one point; there are no points for contacting another Scottish station.

Awards: A trophy will be awarded to the highest scoring in each of the following categories: GS/GM/UK and Ireland; overseas; 2M; UK Novice; SWL overseas; SWL UK and Ireland; regional representative station. Closing date for Trophy Claims is Sunday, May 31. Requirements for UK Novice licensed holders for certificate is 50 points.

All claims for Scottish Century Award and trophies should go to; Awards Manager, Robbie, GM4UQG, P.O. Box 59, Hamilton, Scotland, ML3 6QB.

Logs: To claim log extracts only (QSL cards via the bureau) send \$4 or equivalent (checks/postal orders payable to STB(RA) EG).

In all matters the decisions of the committee of the STB(RA)EG will be final. The Scottish Tourist Board Radio Group are not eligible for any awards or trophies.

Handi-Ham Jubilee

The Handi-Ham Silver Jubilee will run throughout the year 1992 in celebration of 25 years of Handi-Hams. All contacts made from 0000Z Jan. 1, 1991 through 0000Z Jan. 1, 1993 will be valid. Special operating times are scheduled from 2000Z April 25 to 2000Z April 26, and from 2000Z May 23 to 2000Z May 24 on 28.397 or 28.317 MHz.

Eligibility: All licensed operators are invited to participate. Handi-Ham members will affix Jubilee seals to their QSL cards; these seals are only available to Handi-Ham members.

Procedure: Handi-Ham members call, "Anyone wishing to work a Handi-Ham member and receive a Jubilee seal, please call (your call)." All others call, "CQ Handi-Ham Jubilee."

Frequencies: There are no set frequencies or modes of operation. Some suggested frequencies are: CW—3.757, 7.127, 14.037 MHz; phone—3.952, 7.237, 14.297, 21.327, 28.317, 28.397 MHz; 2M simplex. It is not necessary to use these frequencies; contacts are fine wherever you find them. However, do not use net frequencies.

Awards: A handsome commemorative certificate will be issued for working 25 Handi-Ham members. Submit 25 QSLs with Jubilee seals with \$1 and SASE to Handi-Hams, Courage Center, 3915 Golden Valley Rd., Golden Valley, MN 55422. Your cards will be returned along with the certificate. More information about becoming a Handi-Ham member may be obtained from this address as well. □

"CHOICE OF THE DX KINGS"

2 ELEMENT— ONLY
3 BAND KIT SPECIAL \$289⁹⁵
 (Boom and Wire not included) **FOB Calif.**

NEW FROM CUBEX

The World's First **5 Band** (20-17-15-12-10M) **Beam Antenna** With Separate **Full Wave Driven** And **Parasitic Elements** On Each Band! Half The Width Required By A Full Size 20M Yagi!!! Write For Details.

MK III 2EL COMPLETE "PRE-TUNED" QUAD ONLY \$329.95

2-3-4 or more element Quads available. Send 50¢ (cash or stamps) for complete set of catalog sheets, specs & prices

CUBEX COMPANY
 P.O. Box 732, Dept. W • Altadena, CA 91001
 Phone: (818) 798-8106 or 449-5925
 (CA residents include 8.25% sales tax.)

YOU CAN'T SAY "QUAD" BETTER THAN "CUBEX"



HAMFESTS



Arkansas

THE DELTA DIVISION will hold a hamfest and convention on April 4 at the North Little Rock Community Center. Doors open at 8:00 a.m. and admission is \$5 for adults; children under 12 enter free with adult. Parking is free and food, snacks and soft drinks will be available. Outside flea market tables are \$10 each, and dealer tables are \$20 each. Features include VE exams, ham radio forums, lots of prizes and a banquet Saturday night. Contact James Warlick, AA5ZI, at 501/835-1728; 8807 Willhite Rd., Sherwood, AR 72120. □

California

THE KINGS ARC will hold their Hams and Hackers Swap and T-Hunt on April 4 from 8 a.m. to 3 p.m. at the Hanford Fraternal Hall in Hanford. Features include electronic items, computers, ham gear, door prizes and refreshments. Free RV parking will be available. Vendor fee is \$5. Talk-in on 145.11 147.33, 224.82 (PL 100 Hz), 441.9 (PL 88.5). For RV reservations or further information contact Rick, WB6VFZ, at 209/583-9377 (home) or 945-2266 (work); Doug Silveira, KC6BGQ at 209/584-5514 or 582-0949; or Carleton Reed, AA6GZ, at 209/924-4221. □

THE SOUTHERN CALIFORNIA DX CLUB will host the 1992 International DX Convention on April 10, 11 and 12 at the Holiday Inn Plaza Park in Visalia. Features include a banquet, breakfast buffet, guest speakers and a pre-registration drawing for a prize (for those registering by March 15 only). Preregistration is \$45 (deadline is March 15), after the deadline \$50. Meal ticket or convention only tickets are available by contacting Don Bostrom at 818/784-2590 (home), or 310/334-8717 (work). Students under 25 can receive a free convention only ticket with I.D. Raffle ticket will be sold during the convention for major prizes. For late registration, make all checks payable to the International DX Convention, and send them to Don Bostrom, N6IC, 4447 Atoll Ave., Sherman Oaks, CA 91423. □

Colorado

The WESTERN COLORADO AMATEUR RADIO CLUB will hold its annual hamfest on

May 2 in Liff Auditorium at Mesa State College in Grand Junction. This hamfest will offer both seminars and VE testing and will run from 9:00 a.m. until 2:00 p.m. Talk-in frequency is 146.94. For more information call Ernie, N0OEQ, at 303/242-6035 or Bob, N0OKL, at 303/434-8604. □

Illinois

LIBERTYVILLE AND MUNDELEIN ARS will sponsor LAMARSFEST 1992 on March 24 from 8 a.m. to 2 p.m. at the Lake County Fairgrounds in Grayslake. Features include a large indoor electronic and radio swapfest, commercial exhibitors and a public cafeteria. Parking is free. Admission is \$3 in advance March 18 or \$4 at the door. Swapfest tables are \$7; commercial tables are \$20 by advance reservation only. Vendor set-up is at 6 a.m. Advance commercial set-up is by reservation. Talk-in on 147.945/345 NSRC repeater, 146.52 simplex. Contact Frank Avellone, W9GLO, c/o LAMARS, P.O. Box 751, Libertyville, IL 60048; 708/234-4124 until 10 p.m. □

THE MOULTRIE AMATEUR RADIO CLUB will hold its 29th annual Sullivan hamfest on May 3 at the Moultrie County 4-H Fairgrounds, five miles east of Sullivan. Features include VE exams, given from 9 a.m. to 12 p.m. on a pre-registration basis. (Send proper documents and a check or money order for \$5.40 paid to the order of ARRL VEC to WC9V, Ralph Zancha, 502 E. State St., Lovington, IL 61937.) Admission is \$4 per person over 14 years of age. A limited amount of tables are available indoors at \$8 per table. Talk-in on 146.055/146.655 and 449.275/444.275. For information on tables or on the hamfest call Ralph at 217/543-2178, daytime or 217/873-5287, evenings; or write to MARK, P.O. Box 91, Lovington, IL 61937. □

KISHWAUKEE ARC will hold the DeKALB Hamfest on May 3 from 8 a.m. to 1 p.m. at the Sandwich Fairgrounds in Sandwich. Features include overnight camping (no RV hook-ups), free outside tailgating and prizes. Admission is \$4 in advance, \$5 at the gate. Reserved tables are \$10 in advance. Talk-in on 146.13/73 and 146.52. For information, send a SASE to Howard Newquist, WA9TXW, Box 264, Sycamore, IL 60178. □

Kentucky

KENTUCKY COLONEL'S ARC will hold a hamfest on April 18 from 8 a.m. to 4 p.m. at

the Bowling Green Mall. Features include VE exams, camping nearby, forums and refreshments. Admission is \$4 for adults, children under 12 free with paid adult. Tables are \$10 (reservations preferred). Talk-in on 146.25/146.85. Contact Denver Eadens, N4WWA, at 502/777-3681. □

Louisiana

BATON ROUGE ARC's annual hamfest will be held on May 2 and 3 at the Baton Rouge Hilton. Features include forums, displays and prizes including two IC735s and five ICOM HTs. Special VIP guests include Astronaut Col. Steve Nagle. Admission is \$4 at the door (a portion to be donated to the Courage Handi-Ham System). Call Herb, KB5AQ, at 504/346-0000 days, or 504/654-6087 evens., or write 4079 Florida Blvd., Baton Rouge, LA 70806. □

Massachusetts

THE MIT ELECTRONICS RESEARCH SOCIETY, THE MIT RADIO SOCIETY AND THE HARVARD WIRELESS CLUB will hold a computer and Amateur Radio flea market on April 19 from 9 a.m. to 2 p.m. in Cambridge. Free off-street parking will be available. Admission is \$2. Vendor fee is \$8 per space at the gate, \$5 in advance including one admission. Vendor set-up is at 7 a.m. Talk-in on 146.52 and 449.725/444.725 (PL 2A)W1XM/R. For space reservations or further information, call 617/253-3776. Mail advance reservations before the 5th to W1GSL, P.O. Box 82, MIT Br., Cambridge, MA 02139. □

WELLESLEY ARS will hold a hamfest on April 26 from 9 a.m. to 2 p.m. at Wellesley Senior High School. Refreshments will be available. Handicap accessibility. Admission is \$2. Talk-in on 147.03/63, Wellesley repeater. Contact Gerry Driscoll, NV1T, at 617/444-2686. □

Minnesota

THE LAKE REGION ARC will sponsor their 5th annual hamfest on April 11 from 8 a.m. to 3 p.m. at the Otter Tail County Fairgrounds Hockey Arena in Fergus Falls. Features include VE testing at 9 a.m., an ARRL forum, Army MARS meeting, packet meeting, flea market and concession stand. Registration is \$3 in advance, \$4 at the door. Tables (6 ft.) are \$4. Vendor set-up will be on Friday at 4 p.m. For more information call 218/826-6274 or write to Keith McKay, N0FKF, Rt. 1 Box 46, Battle Lake, MN 56515. □

THE PAUL BUNYAN ARC will hold its annual hamfest on May 3 from 8 a.m. to 3:30 p.m. at the Bemidji Moose Lodge in Bemidji. Features include exams, door prizes and a flea market. To register for testing, contact John Simmons, N10K, at 218/243-2720. Talk-in on 146.13/73. Contact Vern Skretvedt, KA0KWM, at 218/751-5514 or Curt Johnson, WB0HUJ, at 218/751-7920. □

THE ROCHESTER ARC will hold the 15th Annual Rochester Area Hamfest and Computer and Electronics Show on April 4 at 8:30 a.m. at John Adams Junior High School. Features include VE exams, speakers and pro-

HUGE 100 PAGE CATALOG WITH PRICES!

- Communications Receivers
- Portable Receivers
- Amateur Transceivers
- HT's & Mobile Transceivers
- Amateur & SWL Antennas
- Scanners
- RTTY and FAX Equipment
- Books, Manuals & Accessories

Send \$1 to

Universal Radio
6830 Americana Pkwy. WR
Reynoldsburg, OH 43068
Tel. 614 866-4267



HamCall / CD-ROM
500,000 HAMS plus
1,000's of Public Domain
Amateur Radio Programs and Data

CD-ROM Disc.....\$50
Shipping (per order).....\$5

SUCKMASTER Publishing
Rt. 3, Box 58 - Mineral, Virginia 23117
703/894-5777 - 800/282-5828

grams. VE exams will be given on April 3, advance registration requested. For information call 507/280-8345. Admission is \$4 in advance, \$5 at the door. Children 12 and under are admitted free. Tables are \$8 in advance, \$9 at the door. Selling space is \$4. Bring 6 ft. tables. Vendor set-up will be on April 3, from 4:30 p.m. to 7:30 p.m. and April 4, from 6:30 a.m. to 8 a.m. Talk-in on 146.22/82 MHz (W0MXW repeater). For information and tickets, contact the Rochester Amateur Radio Club, Attn: N6VB, 6982 Indigo Ct. N.W., Rochester, MN 55901. □

Mississippi

OLD NATCHEZ ARC will hold a hamfest on April 11 and 12 from 8 a.m. to 5 p.m. at the Natchez Convention Center in Natchez. Features include VE exams, concessions and 200 RV spaces available for \$8 a night. Admission is \$3 which includes a ticket for generator drawing. Tables are \$15; contact K5SVC at 601/442-0973. Talk-in on 146.31/91. Contact N5YCY, P.O. Box 604, Natchez, MS 39121. □

Missouri

JOPLIN ARC will hold a hamfest on April 18 from 8 a.m. to 3 p.m. at the National Guard Armory in Joplin. Features include VE exams, a flea market and an auction. Tickets are \$5 each or three for \$12.50. Tables (including admission) are \$10; additional tables are \$5 each. Talk-in on 147.210. Send an SASE and check to Joplin ARC, P.O. Box 2983, Joplin, MO 64803. □

New York

THE AUBURN ARA will hold its annual hamfest on April 11 from 8 a.m. to 4 p.m. at the Auburn High School Gymnasium. Features include refreshments and a flea market. Tables are available for \$5 each. Tailgaters will be charged \$2. Admission is \$4. Talk-in will be on 146.40/147.00. Contact John J. Casano, N2DXY, at 94 Dunning Ave., Auburn, NY 13021; 315/253-0163. □

METRO 70 cm NETWORK will sponsor the Giant Electronic Fleamarket on May 3 from 9 a.m. to 3 p.m. at Lincoln High School in Yonkers. Features include VE exams, amateur gear, computers and refreshments. Parking is free. Admission is \$4; XYL and children under 12 are free. Tables are \$15 for the first, \$10 for additional tables, or bring your own (space \$1.80 per ft.); min. \$10 full payment in advance. All tables will be \$20 at the door, or \$2.50 per space ft. Talk-in on 440.425, PL 146.7 Hz, 146.91, 223.76, PL 67.0 Hz. Contact Otto Supliski, WB2SLQ, 53 Hayward St., Yonkers, NY 10704; 914/969-1053. □

THE SOUTHERN TIER ARC will sponsor the Southern Tier Hamfest on May 2 from 8 a.m. to 4 p.m. at Marvin Park Fairgrounds in Owego. Features include the 33rd annual banquet, VE testing, seminars, ARRL forum, vendor exhibits, flea markets, refreshments and tailgating. Admission is \$3 in advance, \$4 at the gate; tailgating is \$2 extra; banquet (including general admission) is \$18 per person in advance. Tables are \$15. Talk-in on 146.16/76 or 146.52/52. Contact Southern Tier ARC, P.O. Box 7082, Endicott, NY 13760. □

THE SUFFOLK COUNTY RADIO CLUB will hold its indoor hamfest on April 5, from 9

a.m. to 3 p.m. at the St. James Lutheran School in St. James. VE testing will be available. Parking is free. Handicapped accessible. Admission is \$5; children under 12 are admitted free. Talk-in on 145.210/144.610. Contact Jim Heacock, KA2LCC, at 516/473-7529. □

North Carolina

RALEIGH ARS will hold RARSfest '92 on April 12 from 8 a.m. to 4 p.m. at the Jim Graham Building, NC State Fairgrounds. Features include VE exams, special interest meetings, RARSfest social, indoor fleamarket and hamfest prizes. VE exams by pre-registration only (deadline April 4). Tickets are \$5 in advance, \$6 at the door. Parking is free. Full hookup or overnight camper/RV parking is available for \$15. Tables with chairs, are \$9 each (five or more tables are \$8 each). 120V AC power is \$10 per drop (bring your own extension cords). Vendor set-up is from 12 noon to 10 p.m. April 11 and from 6 a.m. to 7:30 a.m. on April 12. Talk-in on 146.04/64 and 146.28/88 on April 11 and 12. Contact Rollin Ransom, NF4P, 1421 Parks Village Road, Zebulon, NC 27597. □

Ohio

THE TRIANGLE ARC is holding their first hamfest on May 2 at the Calcutta Fire Hall in East Liverpool. Talk-in on 146.10/70R. Contact Dick Sisley, K8JKB, Secretary, 1218 Northside Ave., East Liverpool, OH 43920. □

THE SOUTHWEST OHIO CHAPTER OF THE QUARTER CENTURY WIRELESS ASSOCIATION will hold the 1992 Annual QCWA Banquet on April 24, the first evening of the Dayton Hamvention. Cocktails at 6:30, and the banquet starts at 7:30 p.m. at Neil's Heritage House. Tickets are \$16 each, reservations are required. QCWA membership is not a requirement to attend. For tickets or information contact Bob Dingle, KA4LAU, 1117 Big Hill Road, Kettering, OH 45429-1201; 513/299-7114. Please make all checks payable to Robert L. Dingle, Treas., Chapter 9. □

Oklahoma

THE LAYTON-FORT SILL ARC will hold its 45th annual hamfest on April 11 from 8 a.m. to 5 p.m. at the County Fairgrounds in Lawton. No pre-registration necessary except for table space. Admission is \$4. Tables are \$8 including admission. Talk-in on 146.91/31. Contact Bob Morford, 1415 NW 33rd St., Lawton, OK 73505; 405/355-6120. □

First & Still The Best
The Mobil Mark™ HW-3 Tri Band Mobile Antenna

- Up to 4 bands
- Automatic switching
- No traps
- Any 4 bands (80—10 meters)
- 10, 15 & 20 meters—only \$69.95

Also available: "On Window" VHF/UHF & dual band mobile antennas. Write or call for spec sheets.






AXM INCORPORATED
11791 Loara St., Suite B
Garden Grove, CA 92640-2321
CALL 714-638-8807 or
FAX 714-638-9556 for immediate attention



South Carolina

THE BLUE RIDGE ARS is sponsoring the Greenville Hamfest and Electronic Flea Market on May 2 from 8 a.m. to 5 p.m. and May 3 from 8 a.m. to 3 p.m. at the Anderson County Fairgrounds in Anderson. Features include VE exams, food and camping. Parking is free. Admission is \$4 in advance, \$5 at the gate. Early dealer/flea market set-ups are available with advance registration. For advance tickets or additional information, please send an SASE to Blue Ridge ARS, P.O. Box 6751, Greenville, SC 29606. □

Utah

WIMU '92 AND THE ROCKY MOUNTAIN DIVISION CONVENTION will be held on August 14, 15 and 16 at the Olympia Hotel in Park City. Features include VE exams, seminars and an ARRL Forum. VE exams will be given on August 14 at 6 p.m.; contact NV7V at 801/465-3983. UARC is sponsoring a steak fry on August 14 at 6 p.m. for \$12 per person. Swapmeet starts August 15 at 8 a.m. No charge for tables. All you can eat buffet for \$6.95 per person on August 16. Admission with pre-registration (before August 1) is \$10; after August 1 or at the door, \$15. Children under 12 may register for \$4 at any time. You must be registered to attend any of the events, including the swapmeet. Contact WIMU '92, P.O. Box 67, Bountiful, UT 84011-0067. □

Washington

THE STANWOOD-CAMANO ARC will hold an electronic flea market and swapmeet on April 25 from 9 a.m. to 4 p.m. at the Stanwood-Camano Fairgrounds. Features include food, prizes and free parking. Admission is \$3 in advance, \$5 at the gate. Tables (includes one admission) are \$15 in advance, \$20 at the gate. Vendor set-up is at 7:30 a.m. Send check, name and request to SCARC, P.O. Box 941, Stanwood, WA 98292. For information call Mark, WA7UGB, at 206/387-1097 or Vic, N7KRE, at 206/387-7705. □

West Virginia

THE CHARLESTON AREA HAMFEST AND COMPUTER SHOW will be held on April 12 from 9 a.m. to 3 p.m. at the Charleston Civic Center. Features include VE exams and an all-indoor flea market. To pre-register for VE exams, contact AC8K, Jim Lingan, at 304/343-7251. Admission is \$5. Talk-in on 144.83/145.43 and 147.75/147.15. For computer dealer information, contact WV8V, Terry Sanner, at 304/744-8065; amateur dealer information, KB8HWI, Ron Haynes, 304/757-8014 or contact Hamfest Chairman Jimmie Hewlett, WD8MKS, P.O. Box 8364, South Charleston, WV 25303; 304/768-1142. □

Wisconsin

THE OZAUKEE RADIO CLUB will sponsor its Fourteenth Annual Cedarburg Swapfest on May 2 from 8 a.m. to 1 p.m. at the Circle-B Recreation Center in Cedarburg. Features include VE exams and refreshments. VE exams start at 9 a.m. Admission is \$2 in advance, \$3 at the door. Four ft. tables are \$3. Vendor set-up is at 6:30 a.m. Talk-in on 146.37/97 and 146.52. For admission tickets, table reservations, maps, or information, send an SASE to ORC Swapfest, 11448 Laguna Dr., Mequon, WI 53092; 414/242-4995. □



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

Gamber-Johnson radio mount

Super Slide radio mount helps you put a stop to mobile radio break-ins, vandalism and theft. Installation is quick and easy, because each kit comes complete with dash bracket, radio mount and simple-to-follow wiring instructions.

Once installed in your vehicle, Super Slide allows you to take your valuable mobile radio with you when you leave your vehicle unattended . . . or quickly put it out of sight under the seat or in your trunk. Amateurs can conveniently move radios between cars, to keep mobile rigs with them wherever they are. When a radio malfunctions, it can quickly be replaced in the field.

The vehicle part and radio part of the Super Slide mount are one-piece units molded of ABS, a tough, space-age thermoplastic material also used for football helmets and other applications requiring high strength and toughness.

When the radio is slipped into place, the antenna connection is made through a Teflon® filled coaxial connector with gold contacts. Power, ground and accessory connections are through pin-and-socket connectors, which assure tight contact and maximum contact surface. These rugged connectors are captivated in the mainbody of the mount, not riveted on, to assure perfect alignment and long life.

The Super Slide™ can be mounted either above or below the radio, using the radio's own mounting screws. Brackets adjust to the width and height of nearly all dash-mount mobiles and marine transceivers. Correct antenna connectors are installed at the factory.

Removing the radio automatically disconnects all wiring to it. Replacing it automatically reconnects it . . . in one second!

Three models are available. Series SS-100 mounts are used for frequencies up to 512 MHz. They are equipped with Type UHF connectors to mate with radio's antenna receptacle and the antenna cable.

Series SS-500 mounts are used with UHF radios equipped with Type UHF connectors. The mounts have a Teflon® filled, soldered PL-259 connector to the radio and a female Type N connector to the antenna lead.

Series SS-800 mounts have Type N antenna connectors and a greater input current capaci-

ty. We recommend using the SS-800 Series mounts for frequencies above 512 MHz.

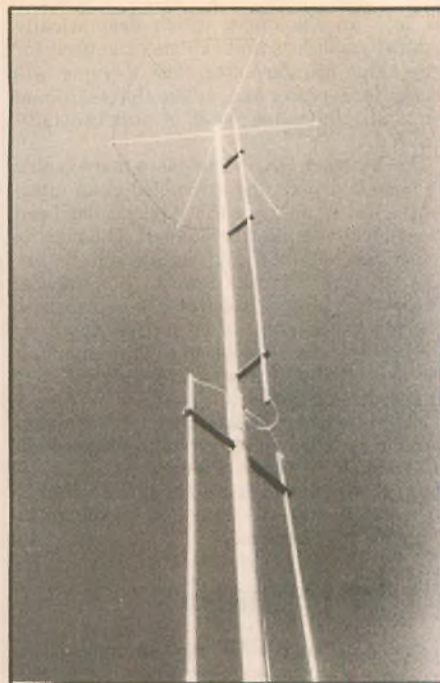
Accessories available include angled mounting plate (Model SS-106), which provides 20-degree radio mounting angle and replaces the flat plate furnished with Super Slide; a key lock (Model SS-105), which fits all Super Slide mounts made after 1980 and provides an extra security option; and an accessory contact kit (Model SS-102), which includes two pins and sockets with wiring to increase the number of unshielded contacts from four to six (for series SS-100 only).

For further information contact Gamber-Johnson at 801 Francis Street, Stevens Point, WI 54481; 715/344-3482; FAX 715/344-5209; or call 800/456-6868. □

GAP multiband vertical

GAP announces the introduction of its new Voyager DX-IV. A unique multiband vertical antenna that utilizes the same GAP technology found in the Challenger DX-VI. The Voyager DX-IV is the first vertical designed primarily for low band operation. It covers all of 20M, 40M, and 80M with a VSWR under 2:1! On 160M the bandwidth is 90 kHz under 2:1.

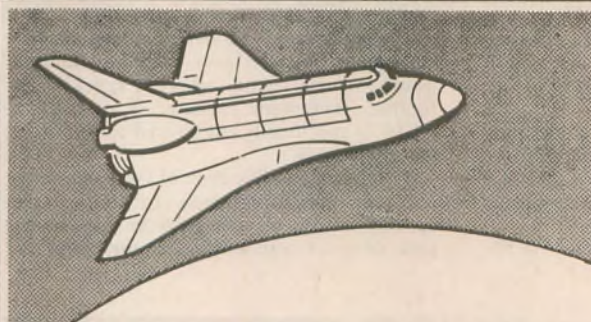
The Voyager is 45 feet tall with an 80 in. diameter capacity hat at the top, giving the antenna an effective electrical height of 66 feet. The antenna comes with a hinged base which simplifies installation. The Voyager requires two sets of guys which are attached to



furnished guy clamps. The only other item required for operation is three 57 ft. counterpoise wires attached at the base of the antenna. These can be displayed in any fashion which lends itself nicely to tight locations.

As with the Challenger DX-VI, there are no traps, coils, baluns or resistors used in the design. The RF is not released at the base but

AMATEUR TELEVISION



SEE THE SPACE SHUTTLE VIDEO

Many ATV repeaters and individuals are retransmitting Space Shuttle Video & Audio from their TVRO's tuned to Satcom F2-R transponder 13. Others may be retransmitting weather radar during significant storms. If it is being done in your area on 70 CM - check page 413 in the 91-92 ARRL Repeater Directory or call us, ATV repeaters are springing up all over - all you need is one of the TVC-4G ATV 420-450 MHz downconverters, add any TV set to ch 2, 3 or 4 and a 70 CM antenna. We also have downconverters and antennas for the 900 (33CM) & 1200 MHz (23CM) bands. In fact we are your one stop for all your ATV needs and info. Hams, call for our complete ATV catalog - antennas, transceivers, transmitters, amplifiers, etc. We ship most items within 24 hours after you call.

CALL (818) 447-4565 M-F 8AM - 5:30 PM PST.

P. C. ELECTRONICS

2522 - WR PAXSON LN ARCADIA CA 91007



**Model TVC-4G
ATV Downconverter
only \$89**

TVC-9G 33 CM - \$99
TVC-12G 23 CM - \$109



**TC70-1d ATV
TRANSCIVER
only \$329**

w/50 Watt amp \$539
Value + Quality from
over 25 years in ATV.

VISA, MC, UPS COD
Tom (W6ORG)
MaryAnn (WB6YSS)

29 feet up the mast, which dramatically reduces earth loss and explains the need for only three counterpoises. The Voyager will handle legal power and, unlike the traditional vertical, the noise level is substantially reduced.

The Voyager DX-IV weighs a manageable 30 pounds and can be assembled in an afternoon. Best of all, once the Voyager has been assembled, no tuning is required. The mast is comprised of 6063 high grade aluminum, tapering from 2 inches down to 1-3/8 inches. The top half is separated from the bottom by a fiberglass insulator. It is at this point, or GAP, where the RF is released. The remaining hardware and attachments are stainless steel or schedule 80 PVC.

The antenna is available through the manufacturer for \$389 and is generally shipped via UPS. GAP Antenna Products, Inc., 6010 Bldg. B, North Old Dixie Hwy, Vero Beach, FL 32967; 407/778-3728. A brochure is available upon request. □

Icom repeaters

The IC-RP4020 UHF repeater meets the demands of operators everywhere for an advanced commercial-grade quality repeater on the 440 MHz band. Now the IC-RP4020 comes in two versions, 25W and 50W.

User programmable functions can be remotely controlled using DTMF codes. The codes include a four-digit password to prevent undesired remote control. Also, the CTCSS frequency can be remotely changed. No need to go all the way to the repeater site to make simple changes!

The CW call sign identification is user programmable in speeds from four to 30 words per minute.

The transmitter and receiver are built into RF shielded boxes, ensuring low IMD.

A compact yet highly efficient cooling system with internal fan ensures that power amplifier temperatures remain steady in the repeater at all times.

Continuous operation is ensured at all times with the IC-RP4020 back-up battery terminals. Even if AC power is interrupted, the IC-RP4020 will automatically go on operating using an external battery.

With all these features it's obvious the IC-

RP4020 is the UHF superstar of repeaters. The IC-RP4020 (25W) list price is \$2,299. The IC-RP4020 (50W) list price is \$2,499. Also, the IC-RP1520 VHF repeater, designed to meet today's operating demands on the 2M band, is available for a list price of \$2,229.

For more information on these repeaters, ideal for individual or club use, please contact your local authorized Icom dealer. □

Electron Processing repeater interface

The phrase "KISS" (Keep It Simple, Stupid) has been bantered around in electronic circles for many years and somehow has eluded ham radio operators when it comes to setting up FM repeaters.

Many hams get bogged down with unnecessary complexities when setting up their repeaters, often getting hopelessly confused and never finishing the project.



Electron Processing's new Personal Repeater Interface is designed to provide the bare necessities needed to interface a receiver and transmitter as a repeater, without lots of confusing extras. The BRI-2 is also ideal for emergency preparedness field kits and for public service events where a quickly configured, temporary repeater is useful. The BRI-2 is specifically engineered to be easy to install and use.

No internal modification of your equipment is needed as it connects to the external speaker output of your receiver and the mic jack of your transmitter. Enjoy great HT

coverage into the local repeater by using the BRI-2 and your base transceiver (and scanner) to relay your HT signal to the repeater for "cordless" hamming from home!

All the basic necessities of repeater or relay operation are provided. Audio isolation and PTT transmitter keying using a VOX circuit makes connection to your equipment simple; just wire your microphone plug! A five second pause, and a three minute timeout are both provided (and can be disabled). Powered by a 9V battery (12VDC available) the BRI-2 is also ideal for emergency communications and temporary relays.

The BRI-2 sells for \$50. There is a \$5 shipping and handling charge. To order or for additional information, contact Electron Processing, Inc. at P.O. Box 68, Cedar, MI 49621; 616/228-7020. □

New net directory

Tiare Publications has released a new, third edition of the popular *World Ham Net Directory*, by Mike Witkowski. Completely revised and updated, the new third edition lists over 900 special interest ham nets, a 50 percent increase over the second edition.

The Directory lists nets by name as well as by operating frequency and day/time. Ham networks listed in the *Directory* cover a wide range of interests: air force fliers, amateur satellite groups, shortwave listeners, DX, Coast Guard, Bible study, experimental aircraft, railroading, Pearl Harbor survivors, weather, technical forums, UFOs and dozens more.

The third edition of the *World Ham Net Directory* is priced at \$9.95 plus \$2 shipping and handling and is available from Tiare Publications, P.O. Box 493, Lake Geneva, WI 53147, or through amateur and shortwave radio dealers. □

ICM interdigital filter

International Crystal Manufacturing is now shipping the FL407 Vestigial Sideband Filter designed specifically for amateur television use in the 70cm band. The filter is available in frequencies between 420 and 440 MHz.

LOCAL RADIO STORE

VISIT YOUR

ARIZONA

Ham Radio Outlet
1702 W. Camelback
Phoenix, AZ 85015
(602) 242-3515 • (800) 444-9476

CALIFORNIA

A Tach Electronics
2210 Magnolia
Burbank, CA 91506
(818) 845-9203

Ham Radio Outlet

933 N. Euclid Street
Anaheim, CA 92801
(714) 533-7373 • (800) 854-6046

Ham Radio Outlet

510 Lawrence Expwy. #102
Sunnyvale, CA 94086
(408) 736-9496 • (800) 854-6046

Ham Radio Outlet

2210 Livingston St.
Oakland, CA 94606
(510) 534-5757 • (800) 854-6046

Ham Radio Outlet

5375 Kearny Villa Rd.
San Diego, CA 92123
(619) 560-4900 • (800) 854-6046

Ham Radio Outlet

6265 Sepulveda Blvd.
Van Nuys, CA 91411
(818) 988-2212 • (800) 854-6046

Henry Radio

2050 S. Bundy Dr.
Los Angeles, CA 90025
(213) 820-1234

Jun's Electronics

5563 Sepulveda Blvd.
Culver City, CA 90230
(213) 390-8003 • (800) 882-1343

The Radio Place

5675A Power Inn Rd.
Sacramento, CA 95824
(916) 387-0730

COLORADO

Ham Radio Outlet
8400 E. Iliff Ave., #9
Denver, CO 80231
(303) 745-7373 • (800) 444-9476

FLORIDA

Eli's Amateur Radio
2513 S.W. 9th Ave.
Fort Lauderdale, FL 33315
(305) 525-0103 • (800) 780-0103

Mike's Electronics

1001 N.W. 52nd St.
Fort Lauderdale, FL 33309
(305) 491-7110 • (800) 427-3066

GEORGIA

Ham Radio Outlet
6071 Buford Hwy.
Atlanta, GA 30340
(404) 263-0700 • (800) 444-7927

NEVADA

Radio World
1656 Nevada Hwy.
Boulder City, NV 89005
(702) 294-2666

NEW HAMPSHIRE

Ham Radio Outlet
224 N. Broadway
Salem, NH 03079
(603) 898-3750 • (800) 444-0047

NEW YORK

Hirsch Sales Co.
219 California Dr.
Williamsville, (Buffalo) NY 14221
(716) 632-1189

OREGON

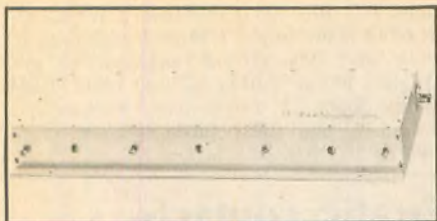
Ham Radio Outlet
11705 S.W. Pacific Hwy.
Portland, OR 97223
(503) 598-0555 • (800) 854-6046

VIRGINIA

Electronic Equipment Bank
323 Mill St., N.E.
Vienna, VA 22180
(703) 938-3350

Ham Radio Outlet

14803 Build America Dr.
Woodbridge, VA 22191
(703) 643-1063 • (800) 444-4799

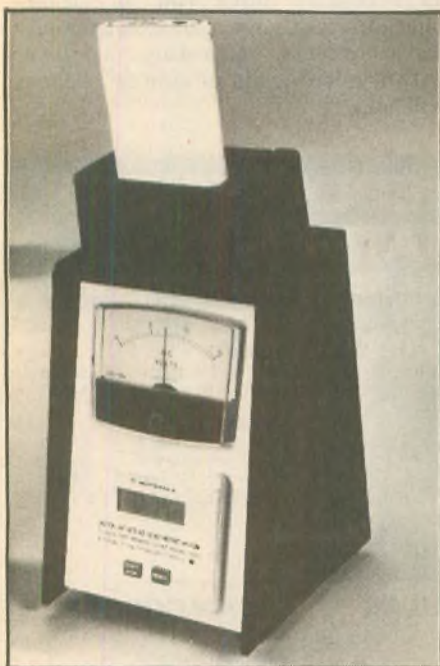


The 7-pole interdigital design provides excellent sideband suppression and filtering when used alone or in pairs for repeater applications. Heavy duty construction ensures stable operation and long life. N connectors are standard. Filter dimensions are 2-1/8 x 8-13/16 x 20-5/8 inches. Delivery is stock to two weeks.

For spec. sheet or ordering call or write International Crystal Mfg. Co., Inc., P.O. Box 26330, Oklahoma City, OK 73126; 1-800/426-9825; FAX 1-800/322-9426. □

Motorola cordless battery tester

Motorola introduces a cordless battery tester which calculates mA rating of rechargeable batteries. The battery tester determines the remaining capacity of a battery by discharging it. The unit will indicate the elapsed discharge time and a simple formula is used to calculate the mA capacity percentage.



This unit consists of a voltmeter, a digital timer and electronics to control the discharge of a fully charged battery. By testing the battery voltage under load, it can detect a non-functioning cell, a battery that is not fully charged, or indicate a battery that no longer is capable of achieving recommended minimum capacity.

This unit can be wall-mounted for limited work space and can be expanded, allowing it to be a multi-unit console. It also has a full line of adapters and adapter cables available to test almost any battery.

More specifications can be obtained from Motorola Worldwide System and After-

market Products Division, Market Promotions Department, 1313 E. Algonquin Rd., Schaumburg, IL 60196; 800/543-9191. □

ARRL's Radio Frequency Interference

The ARRL has announced the availability of its new revised publication, *Radio Frequency Interference: How to Find It and Fix It*. At 256 pages, this book explains the mechanisms of EMI (electromagnetic interference) and provides cures. Equipment covered includes televisions, CATV, VCRs, stereo and audio equipment, automobiles, computers, telephones, power lines and home appliances.

Chapters provide background information about EMI fundamentals, dealing with neighbors, troubleshooting, filter performance and direction finding.

The book is available from the ARRL, 225 Main Street, Newington, CT 06111 for \$15 plus \$3 shipping and handling (\$4 UPS). □

All Electronics catalog

All Electronics Corporation has been around since 1967 selling surplus electronic parts to amateur and professional electronic enthusiasts. All Electronics Corporation is one of the largest, and perhaps the oldest company, specializing in the sale of surplus electronic parts directly to the end user. Our customers cover the entire spectrum of electronics parts users ranging from inventors, students and repairmen to small manufacturers, R&D labs, large corporations and government organizations. They buy from us because we carry unusual items at unusually low prices, and our service is fast and reliable. In addition, we carry many of the common "bread and butter" items required in most

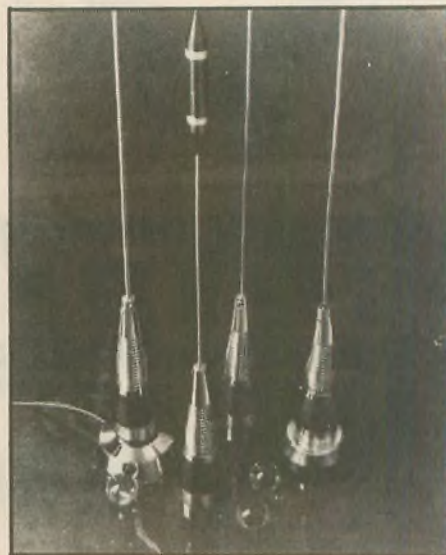
products, so that it's possible to get most parts in one location.

Our latest 64-page catalog, which is revised and published five times a year, is available free of charge inside the US by calling our toll free 800 number. Much of our merchandise is "one of a kind" one-time items, manufacturer over-runs, discontinued items or new items that never got off the ground.

Look through the All Electronics Catalog and you will see exceptional prices on all kinds of common and uncommon electronic parts. For further information, samples or catalogs call 800/826-5432 or write to All Electronics Corp., 15004 Oxnard St., Van Nuys, CA 91411. □

Antenna Specialists mobile series

A new professional line of high-durability VHF and UHF mobile antennas has been introduced by The Antenna Specialists Co. The PRO-5000 series of competitively priced antennas feature three O-rings for absolute moisture integrity. Twenty-two models encompass all mounting applications and all the various frequency splits in both the 138-174 MHz and 406-512 MHz bands.



Each includes a 100 percent hand tuned-and-tested conical coil with stable soldered connections for noise-free operation. The PRO-5000 VHF antennas are rated for 3dB gain; the UHF antennas include both 3dB and 5dB gain models. All have maximum VSWR of 1.5:1.

Separately packaged connectors are available to assure immediate radio compatibility, whether PL-259, TNC or mini-UHF. The three O-rings in the exclusive coil design include internal upper and lower rings and one at the coil/mounting surface interface. A plunger contact pin is used for reliable electrical and mechanical connections.

For more information about the new PRO-5000 line of conversion, magnet mount, trunk lid and roof mount VHF and UHF mobile antennas, contact The Antenna Specialists Co., 30500 Bruce Industrial Parkway, Cleveland, OH 44139-3996; 216/349-8400; FAX 216/349-8407. □

ESTABLISH A HAM TESTING CENTER IN YOUR AREA

As of 1984, all ham radio license testing is handled by the amateur radio community itself. Teams of three Extra Class volunteer examiners (VE's) can now conduct all ham license upgrade examinations.

W5YI-VEC, the initial national VE Coordinator approved by the FCC, oversees the largest alternative (to the ARRL) testing program in the U.S. You can be a part of it by following the simple testing instructions provided.

Administering Technician through Extra Class examinations is no harder than administering Novice examinations — which VE's have done for decades. We offer...fastest VE accreditation, complete instructions, immediate testing...with testing fees (expense reimbursement) shared with the VE team.

Send an SASE today for a VE application if you are an Extra Class amateur and serious about conducting periodic amateur radio examination sessions in your area so that others may upgrade.



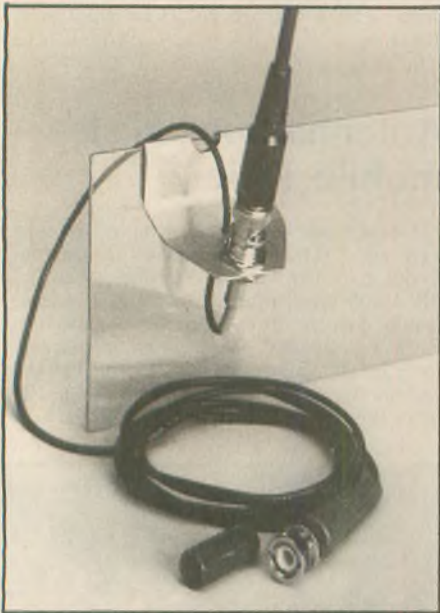
W5YI-VEC
P.O. Box #10101
Dallas, TX 75207
(817) 461-6443

Let's get Amateur Radio growing again!

Oak Bay Window mount

Oak Bay Technologies' Rubber Duck Window Mount is a convenient, easy-to-use antenna that frees radio frequency from the shielding confines within a car. The rust-resistant, stainless steel antenna mount dramatically improves mobile hand-held performance and is ideal for emergencies.

Its portable, lightweight design makes the Rubber Duck Window Mount the perfect



traveling companion for rental cars. It is specified at 50 ohms, handles 15W of power, and works with either single-band or dual-band antennas. The model AM-101B includes six feet of RG-174U coax, custom strain relief, and a custom BNC protector. It fits most vehicle windows and is available through your local Amateur Radio dealers for a suggested list price of \$24.95.

This high performance, high value antenna mount is manufactured by Oak Bay Technologies of Redmond, Washington. For further information call 206/881-1088 or contact Evelyn Garrison and Associates, 21704 S.E. 35th St., Issaquah, WA 98077; 206/557-9611.

Easy Shortwave antennas

Shortwave listeners who aren't satisfied with the "skywire" they're now using and those who like to experiment with antennas will find a wealth of possibilities in this new book by Frank P. Hughes, VE3DQB.

Hughes discusses more than 50 antennas and variations for shortwave listening use including longwires, balanced and unbalanced, slopers, verticals, grounded, beams, 8JKs, squares, cubical quads, apartment antennas, magnetic loops and indoor antennas.

The book also contains a wealth of practical information on antenna patterns, interference, the nuts and bolts of putting up an antenna, the ionosphere, etc. It includes diagrams on each antenna showing layout or construction points.

Priced at \$9.95, the book is available from SWL dealers or direct from Tiare Publica-

tions, P.O. Box 493, Lake Geneva, WI 53147; 414/248-4845. Add \$2 S/H (\$3 foreign orders). Visa and MasterCard welcome. (Frank Hughes is the author of two other Tiare books: *Radio-TV Interference: Sources and Solutions*; and the popular *Limited Space Shortwave Antenna Solutions*.)

Erratic contacts

KEN JOHNSON, W6NKE

There are occasions when your keying may become erratic, dots and dashes missing, or your keying may sound scratchy.

When rotary switches were in general use in telephone systems, open relays common in radio gear, along with straight keys and bugs, most hams had an indispensable gadget called a burnishing tool. This was the solution to problems of dirty contacts. However, in this day and age, they seem hard to find.

Should such a tool be unavailable, a piece of course note paper will work very well. Fold and trim the paper to a size to accommodate the spacing and location of the contacts to be cleaned. Rub them briskly with the paper until all traces of carbon or deposits are eliminated. Change the paper as often as necessary until this is accomplished. In the event of exceptionally dirty contacts, saturating the paper with a good grade of contact cleaner will help.

BATTERIES

REPLACEMENT BATTERIES (ALL NEW—MADE IN USA)

<p>NEW</p> <p>ICOM 9.6v 12v 1000 mah \$55.00 9.6v 12v 1000 mah \$55.00 13.8v 12v 1000 mah \$55.00 8.4v 12v 1000 mah \$55.00</p> <p>SA/SAT BP82, BP83 \$40.00 BP83A 7.2v 750 mah \$40.00 BP84 7.2v 1000 mah 3" \$69.00 BP85A 9.6v 600 mah 3" \$69.00 BP85B 12v 600 mah 3" \$69.00</p>	<p>KENWOOD</p> <p>PB1 12v 1000 mah \$59.00 KNB4 7.2v 2200 mah \$59.00 PB6 7.2v 750 mah \$46.00 PB7 7.2v 1500 mah \$49.00 PB8 7.2v 800 mah \$49.00</p>	<p>MOTOROLA</p> <p>HT300 7.2v 1600 mah \$45.00 HT90 12v 600 mah \$34.00 HT440 12v 600 mah \$39.00 MT500 15v 500 mah \$39.00</p> <p>RADIUS P-10 500 mah \$28.00</p> <p>SABER 7.2v 1000 mah \$59.00</p>	<p>SPECIALS</p> <p>Camcorder and Cellular Batteries</p>	<p>NEW</p> <p>ALINCO 10N 7.2v 700 mah \$32.00 12N 12v 700 mah \$47.00</p> <p>YAESU FNB4 12v 750 mah 4" \$41.00 FNB4A 12v 1000 mah 4" \$55.00* FNB3A 9.6v 1200 mah 4" \$45.00 *BASE CHARGE ONLY</p>
<p>YAESU</p> <p>FNB-2 v 500 mah \$45.00 FNB-2 v 600 mah \$45.00 FNB-4A 12V 1000mah \$55.00 FNB-17 7.2V 600mah \$30.00 FNB-10S 7.2v 1000 mah \$42.00</p> <p>FNB-12S 12v 600 mah \$45.00 290 charger \$65.00 (For FNB 17,10S, 12S)</p>	<p>ICOM</p> <p>AA Holder 8 NiCad or ALK AA \$19.00 Side top or base charge with 8AA Sanyo 600 NiCads \$25.00</p> <p>YAESU</p> <p>FNB-2 10 BV 600 mah \$19.00</p> <p>SANYO</p> <p>AA 600 mah \$ 1.35</p>	<p>CALL FOR LOWEST PRICES</p> <p>ALINCO 10N, 12N AZDEN 3000, 4000 ICOM BP-2, 3, 5, 7, 8, 7S, 8S KENWOOD PB-21, 21H, 25, 26 REGENCY MT1000, HX1200 SANTEC 142, 144 STANDARD BP-1 TEMPO S-1, 2, 4, 5, BP-1S, S-15 TEN TEC 2991, 2591 UNIDEN (BEARCAT)</p>	<p>CELLULAR</p> <p>MITSUBISHI \$50.00 NEC \$45.00 NOVATEL \$45.00 SONY \$45.00 MOTOROLA "FLIP" \$60.00</p>	<p>CAMCORDER</p> <p>JVC PANASONIC PVBPB0/88 12v 2.3 amps* \$36.00 RCA/HITACHI SONY NP22 NP57 2400 mah \$39.00 ALL BRANDS AVAILABLE *original Panasonic</p>

* ALL BATTERY PACKS—GUARANTEED TO HAVE THE ADVERTISED CAPACITY

SEND FOR FREE CATALOG

DEALER INQUIRIES WELCOME

BATTERY-TECH, INC.

28-25 215 PLACE, BAYSIDE, N.Y. 11360 FAX 718-461-1978

800-442-4275 — N.Y.S. 718-631-4275



VISA MASTER CARD



DISCOVER

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

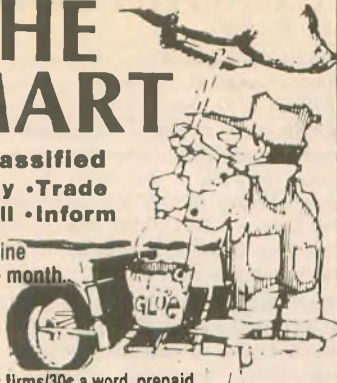
w/i=walk-in

Date	City	Contact	Notes	Date	City	Contact	Notes
Alabama							
May 16	Tuscaloosa	Kelly Bruce, WD4DAT 205/339-7882	w/i OK	May 9	Bloomington	NX9M 309/662-3910	w/i OK
Arizona				May 16	Bolingbrook	NM9J 708/442-7100	
May 2	Tucson	K7OPX 602/886-7217	w/i only	May 16	Chicago	312/929-8500, ext. 2221	w/i
May 16	Tucson	Robert Olson, WV7P 602/577-1050	w/i OK	May 23	Chicago	KE9X 312/233-0605	w/i
Arkansas				May 9	Dixon	W9LDU 815/284-6380	w/i
May 9	West Memphis	Gene Bagley, AB5BL 501/739-4029	w/i OK	May 15	Elmhurst	WK9U 708/833-7371	p/r
California				May 16	Godfrey	KF9F 618/466-2306	w/i OK
May 16	Berkeley	Gary N6YBD 510/530-0544	w/i only	May 2	Hoffman Estates	NO9A 708/593-8658	w/i
May 2	Burbank	KE6AR 818/349-0927	w/i OK	May 16	Joliet	Bob Stevens, WR9M 708/739-6015	w/i OK
May 2	Cupertino	408/243-8349	w/i OK	May 28	Lombard	KD9I 708/495-0498	w/i
May 30	Fairfield	Jerry 916/662-0801	w/i only	May 9	Mt. Prospect	WA9DLI 708/437-1464	w/i
May 5	Fremont	KJ6EP 510/791-6818	w/i only	May 7	Mundelein	K9IW 708/367-6303	w/i
May 24	Fresno	Kelsey, KK6AW 209/855-8558	w/i only	May 9	Oak Forest	KA9HDN 312/247-0650	w/i OK
May 17	Hercules	415/467-2467		May 30	Oak Forest	WG9R 708/687-0511	w/i
May 9	Hesperia	NF6I 619/241-4732; K6BET 619/244-6080	w/i OK	Indiana			
May 2	Los Angeles	Ali Hassan, AA6WC 213/778-6226	w/i OK	May 9	Hammond	WO9H 219/738-2728	w/i
May 23	Monterey	408/243-8349		May 2	Portage	KE9I 219/762-0580	w/i
May 2	Ontario	Harry J. Kozlowski, KM6LO 818/810-0442	w/i OK	May 2	South Bend	NI9Y 219/259-9445	w/i OK
May 16	Porterville	Pat, KG6WG 209/539-2429	w/i	Iowa			
May 9	Redding	916/243-6339		May 17	Des Moines	NA0R 515/964-0900 or 515/967-3890	w/i
May 16	Redwood City	Dudley, WB6WAU 408/245-4801	w/i only	May 1	Sioux City	NF0I 402/494-2673	w/i OK
May 9	San Pedro	N6DYZ 213/325-2965	w/i OK	Kansas			
May 16	Signal Hill	NN6Q, 213/420-9480	p/r pref.; w/i	May 26	Emporia	K0JDB 913/343-2158	w/i OK
May 16	Stockton	N6XMA 209/952-5996	w/i only	May 29	Kansas City	NC0M 913/262-0631	w/i OK
May 9	Sunnyvale	AA6IY, KG6XF 408/255-9000	w/i only	May 2	Parsons	Mort Wilmoth, WS0R 913/421-1822	w/i OK
May 9	Turlock	W6XK 209/883-2968	Novice-Tech only; w/i OK	Kentucky			
May 16	Westminster	Michelle Harsa, N6ZUM 714/283-2571	p/r pref.; w/i OK	May 7	Middlesboro	Andrew A. Pitt, WB8WEZ 606/248-0046	w/i OK
Colorado				Maine			
May 7	Denver	Glenn Schultz, W0IJR 303/360-7293, 24-hr. voicemail 719/948-2291	w/i OK w/i OK	May 15	Augusta	N1BCF 207/623-4249	w/i OK
May 16	Pueblo	N0BLU 303/650-6826;		May 24	Topsham	KY1J 207/725-2359	w/i OK
May 16	Westminster	N0HNR 303/278-4280	p/r or w/i	May 16	Yarmouth	W3EZ 207/846-7734	w/i OK
Connecticut				Maryland			
May 30	Gales Ferry	KY1F, 203/536-0187	w/i	May 9	Laurel	NT3Z 410/761-7115; WC3I 301/262-5083	w/i
May 31	Milford	NB1M 203/933-5125; WA1YQE 203/874-1014	w/i	May 16	Laurel	WB3GXW 301/572-5124	p/r pref
May 27	Shelton	WJ1T 203/736-0488	w/i pref	Michigan			
May 17	West Hartford	Larry, K1IED 203/644-2356	p/r pref	May 28	Hazel Park	John, WD8R 791-4289; Mike, WD8S 399-7970	w/i OK
Florida				Mississippi			
May 23	Ft. Pierce	Fred Newmann, W2EUX 407/340-1069	w/i OK	May 9	Laurel	Steve Grantham, N5DWU 601/763-3559	w/i OK
May 28	Hallandale	Norm, K4RBR 305/823-5437; Howard, N4EBT 305/935-5214	w/i only	Missouri			
May 16	Melbourne	WB9IVR 407/724-6183	w/i OK	May 2	Hillsboro	WD0GDY 314/671-4243	p/r only
Georgia				May 2	Independence	K0IXC 816/373-8976	w/i OK
May 9	Augusta	Jim Abercrombie, N4JA, 404/790-7802	w/i	May 9	Sullivan	N0GLN 314/764-2777	p/r only
Hawaii				Montana			
May 13	Kailua-Kona	NH6N, 808/325-5475	w/i	May 16	Billings	WB7H 406/656-6987	w/i OK
Idaho				Nebraska			
May 9	Boise	W7JMH 208/343-9153	w/i	May 26	Omaha	KM0Y 402/553-2610	w/i only
Illinois				Nevada			
May 19	Aurora	N9AKE 708/892-1252	w/i pref	May 16	Minden	W7QO 702/265-3430	w/i
May 9	Belleville	John Sundstrom, WA0LIS 618/397-7235	w/i	New Jersey			
				May 16	Bayonne	John, WA2QYX 201/451-9471	w/i
				May 21	Bellmawr	WA2VQG 609/546-7710	w/i
				May 9	Cranford	24-hr. hotline: 201/377-4790; 201/635-7686	
				May 13	Fort Monmouth	WB2GYS 908/532-5354	w/i
				May 16	Pennington	AA2F 609/737-1723	p/r pref.; w/i OK

THE MART

Classified
• Buy • Trade
• Sell • Inform

Mart deadline
20th of the month.



Business firms/30¢ a word, prepaid.
Private individuals/15¢ a word, prepaid.

THE MART Worldradio
2120 28th St., Sacramento, CA 95818

WORLDRADIO ON CASSETTES for the blind. For information, contact TOM CARTEN, K1PZU, 1602-Y King's College, Wilkes-Barre, PA 18711.

AMATEUR RADIO REPAIR: FCC licensed, 17 years experience, lab quality test equipment, reasonable rates, G.B. COMMUNICATIONS, INC., 963 Birch Bay Lynden Road, Lynden, WA 98264. 206/354-5884.

CLEANING OUT—RIDERS MANUALS (1-14) and other old ones, Sam's Photofact magazines, etc, old tubes and radios. Best price offered. JEROME, KE5UP, 504/395-2326.

QSLs & RUBBER STAMPS—TOP QUALITY! States, world maps, USA, key, shuttle, globe QSLs. Report form rubber stamps. More! Samples \$1.00 (refundable with order). EBBERT GRAPHICS D-1, Box 70, Westerville, OH 43081.

ROSS'S\$\$\$ NEW APRIL (ONLY): Kenwood TS-850S—\$1439.90, TM-411A—\$339.99, SM-220—\$329.90; Henry Radio 2002A—\$1300.00, VBC-3000—\$200.00, S5—\$219.90, S4—\$239.99; Atlas RX-110—\$239.90, TX-110H—\$249.90, DMKXL—\$59.90; ICOM 245—\$269.99, 725—\$699.99, 290H—\$434.99, 471H—\$889.99, 900—\$419.99; Shure 444D—\$60.00, 526T—\$74.90, CB42—\$20.00; Telex Hygain 330—\$149.90, CD-4511—\$205.90. All limited time offer call or send two stamps for used list and more specials. Looking for something not listed or hard to find, call or write. Over 9,000 ham-related items in stock for immediate shipment. Mention ad. Prices cash, FOB Preston. Hours Tuesday-Friday 9:00 to 6:00, 9:00-2:00 p.m. Mondays. Closed Saturday & Sunday. ROSS DISTRIBUTING COMPANY, 78 South State, Preston, ID 83263; 208/852-0830.

WANTED REPLY COUPONS of all types, IRCs & others. Buy, sell, trade. JIM NOLL, P.O. Box 3410, Escondido, CA 92033.

THE 15th ANNUAL TSRAC WHEELING HAMFEST/COMPUTER FAIR, Sunday, May 17, Wheeling Park, 8 am to 3 pm. WV's largest hamfest. Dealers welcome, 36,000+ square feet under roof, 6+ acres free flea market space, admission only. Family hamfest—women free; children 17 & under free. Reduced admissions: \$2 in advance; \$3 door. Two restaurants. Contact: TSRAC, Box 240, RD1, Adena OH 43901; 614/546-3930.

MACINTOSH SOFTWARE! Marathon contesting program. Full-feature demo with manual \$8.00 (refundable), or write for details. KEVIN KRUEGER, 1780 Ruth St., North Saint Paul, MN 55109.

ELECTRON TUBES! Transmitting, receiving, military obsolete. . . all types. Large inventory. Fast delivery. DAILY ELECTRONICS, P.O. Box 5029, Compton, CA 90224. 213/774-1255, outside CA 800-346-6667.

VERTICAL PHASING, COMTEK NETWORKS! DAVIS RF Co., P.O. Box 230-W, Carlisle, MA 01741. Voice or FAX: 508/369-1738.

ROTOR BRAKE DELAY—The D-LAY-5 is a fully assembled circuit board that inserts a five second delay into your HAM II, III, IV, or TAILTWISTER's control box. Installs in minutes. \$29.95 postage paid worldwide. MasterCard and VISA accepted. LANCE JOHNSON ENGINEERING, P.O. Box 1047, Elizabeth, CO 80107. (303) 646-4630.

New York

May 9	Greenvale	WA2BGE 516/921-0085	w/i OK
May 20	Lancaster	Stan, N2IAE 716/887-6608	
May 21	Lower Westchester County	WK6R 914/834-2322	w/i OK
May 9	North Tonawanda	Vern, AA2AC 716/693-5977	
		days; 716/634-5276 nights	p/r only
May 20	Ogdensburg	Ted, N4TW 315/322-4133	w/i OK
May 2	Tupper Lake	Ted, N4TW 315/322-4133	w/i OK
May 3	Yonkers	AC2V 914/237-5589	w/i OK

North Carolina

May 9	Marion	John Garrou II, KC4PGN	
		704/724-4083	w/i OK
May 10	Salisbury	Isabelle, AB4UX 704/284-2414	w/i OK

Ohio

May 2	Cincinnati	Herb, WA8PBW 513/891-7556	p/r pref;
			w/i OK
May 21	Youngstown	Lou 216/788-1618	w/i limited

Oregon

May 13	Glide	AA7GC 503/672-7564;	
		W6OFF 503/673-0558	w/i OK
May 16	Klamath Falls	KB7DWX 503/882-1300;	
		NN7K 503/883-2472	w/i OK
May 7	Medford	503/488-2691	

Pennsylvania

May 9	Butler Co.	W3DMB 412/282-6777	w/i ltd.
May 2	Erie	W3CG 814/665-9124	w/i
May 7	Philadelphia	ND3Q 215/482-0386 or	
		215/879-0505	w/i
May 27	Warminster	WA3TQJ 215/343-3494	

Rhode Island

May 14	Providence	NN1U 401/231-9156 or	
		401/454-6848	w/i OK
May 23	Slatersville	W1YRC 401/333-2129;	
		401/333-2373	w/i OK

Wrong number!

The Cranford, NJ, April 11 exam listing in the March issue incorrectly gave a "24 hour hotline" number, 201/377-4970. Please do not call this number. The correct number for the hotline is 201/377-4790, or you may refer directly to the contact person, Carl Felt, N2XJ, at 201/635-7686.

South Carolina

May 16	Charleston	Pat Foster, AC4IH	
		803/553-3871	w/i
May 2	Greenville	John E. Chism, ND4N	
		803/288-0136	w/i OK
May 16	Sumter	Dan Mask, WB5SGH	
		803/775-9106	w/i

Tennessee

May 22	Carter County	Joe Hopkins, K4BK1	
		615/543-4022	w/i
May 4	Chattanooga	Alan Painter, WA4QCH	
		404/866-1200	w/i
May 23	Greeneville	Jack Creed, K4EPC	
		615/638-7056	w/i OK
May 10	Jasper	Charles Wooten, KD4XX	
		615/942-5116	p/r pref
May 16	Knoxville	Ray Adams, N4BAQ	
		615/688-7771	w/i OK
May 11	McMinn County	Evan Ray, WA4PNI	
		615/263-9300	w/i OK
May 9	Morgan County	Paul Seavers, AA4UP	
		615/435-0080	w/i OK
May 7	Morristown	Roy Zeigler, KF4CB	
		615/586-3491	w/i OK

Texas

May 12	Houston	ND5F 713/464-9044	p/r pref;
			w/i OK
May 9	McGregor	AB5BA 817/859-5374	w/i OK
May 9	Midland	KT5G 915/694-9450	w/i OK
May 30	San Antonio	K5JWK 512/657-1549	w/i

Vermont

May 16	Montpelier	WB1AJG 802/433-6172	p/r pref.;
			w/i OK

Wisconsin

May 2	Racine	NW9P 414/658-8390	w/i
-------	--------	-------------------	-----

More MART

WANTED: HAM EQUIPMENT AND OTHER PROPERTY. The Radio Club of Junior High School 22 NYC, Inc. is a non-profit organization, granted 501(C)(3) status by the IRS, incorporated with the goal of using the theme of Amateur Radio to further and enhance the education of young people nationwide. Your property donation or financial support would be greatly appreciated and acknowledged with a receipt for your tax deductible contribution. Please look over whatever unwanted equipment you may have, and call us. We will pick up or arrange shipping. You will receive the tax deduction, but most important, the privilege of knowing that your gift really made a difference in the education and upbringing of a child. You are invited to check into the WB2JKJ CLASSROOM NET, 1200 UTC on 7.238 MHz. or on 21.395 throughout the day. Hope to meet all of our friends at the DAYTOM HAMVENTION, where we will be monitoring 144.30 MHz. simplex, daily. Write us at: THE RC OF JHS 22 NYC, INC., P.O. Box 1052, New York, NY 10002. 'Round-the-clock HOTLINES: Voice 516/674-4072, FAX 516/674-9600.

1992 CALLBOOKS: North American—\$25.95; International—\$25.95; Both—\$49.95. 1992 ARRL Handbook—\$23.95. Postpaid. California residents: add 7%. DUANE HEISE, AA6EE, 16832 Whirlwind-W4, Ramona, CA 92065. 619/789-3674.

"THE RCI HANDBOOK": RCI2950, RCI2900, Sommerkamp 789, Galaxy Uranus, \$20; "The Uniden Cookbook", \$20, "Uniden Updates" Supplements, \$12: HR2600, HR2510, HR2830, Lincoln, HTX-100. Coming soon: AR3300/AR3500 book. Inquiries: LSASE!! Money orders to BUD, KC4HGH, P.O. Box 907, Satsuma, AL 36572.

QSL CARDS—Look good with top quality printing. Choose standard designs or fully customized cards. Request free brochure, samples, (stamps appreciated) from CHESTER QSL's, 310 Commercial, Dept. D, Emporia, KS 66801. FAX 316/342-4705.

RTTY JOURNAL published 10 times per year for those interested in digital communications. Read about RTTY, AMTOR, MSO'S, PACKET, RTTY DX and Contesting. Plus technical articles concerning the digital modes. \$15.00 per year (foreign higher). RTTY JOURNAL, 9085 La Casita Ave., Fountain Valley, CA 92708.

EDITING A CLUB PAPER? Need one for your club? Interested in Amateur Radio public relations? Need some help? Amateur Radio News Service would like to hear from you. For info write PAM MYERS, N8IAK, 510 W. Harrison, Alliance, OH 44601.

PICTURE QSL CARDS of your shack, etc., from your photo or black ink artwork. 500 \$26.00. 1000 \$40.50. Also non-picture cards. Custom printed cards, send specifications for estimate. Send 2 stamps for illustrated literature. Generous sample kit \$2.00, half pound of samples \$3.00. RAUM'S, RD 2, Orchard Road, Coopersburg, PA 18036. Phone 1-215/679-7238.

CERTIFICATE FOR PROVEN TWO-way radio contacts with amateurs in all 10 USA call area. Award suitable to frame and proven achievements added on request. Send \$2 (USA) or \$3 (DX) to cover certificate cost. W6LS, 45527 3rd Street East, Lancaster CA 93535-1802.

CODE PRACTICE. 3 thru 40 wpm. 7:30, 9:30 a.m. on 7085. 7:30, 9:30 p.m. on 3675. Mountain Time. No cost. No memorized tapes. No gimmicks. K7HLR.

CHASSIS & CABINET KITS, SASE, K31WK, 5120 Harmony Grove Rd. Dover, PA 17315.

PERSONALIZED HOURLY HF SKYWAVE PREDICTIONS from your city or town: SKYCOM 1.1 floppy disk for Apple Macintosh or IBM PC and compatible personal computers. Includes complete mathematical description of theory (\$39.95). DX WINDOW floppy disk circular projection world radio map centered on your QTH shows sunrise-sunset gray line for any time of interest. Includes feature which displays any of 400 prefixes on world map instantly. For all Apple Macintosh machines (\$39.95). SASE for more info: ATTN: DX; ENGINEERING SYSTEMS INC., P.O. Box 939, Vienna, VA 22183. Ph 703/255-6600.

AUTO-CALL MAGAZINE, official journal of the Foundation For Amateur Radio, a federation of over 50 clubs in the greater Washington, D.C. area. Great coverage of FCC, ARRL, VEC, Public Service and club activities in the area. A must for those even passing through the area. For sample copy write FOUNDATION FOR AMATEUR RADIO, P.O. Box 7612, Falls Church, VA 22046-1452. \$1.00 for overseas requests.

C64/128 P.D. HAM, UTILITY, BUSINESS PROGRAMS. SASE for list. WB1FOL, 77 Wentworth St., Malden, MA 02148.

FREE ham gospel tracts, SASE, N3FTT, 5133 Gramercy, Clifton Heights, PA 19018.

WE BUY ELECTRON TUBES, DIODES, transistors, integrated circuits, semiconductors. ASTRAL ELECTRONICS, P.O. Box 707M, Linden, NJ 07036. Call toll-free 800/666-8467.

PYRAMID PHASE III power supplies, 3 amp to 50 amps, PILOT ELECTRIC CO INC, 1300 Hwy #35, Neptune, NJ 07753. 1-800/331-5308, FAX 908/775-3635.

CUSHCRAFT ANTENNAS, B&W Antennas PILOT ELECTRIC CO INC, 1300 Hwy #35, Neptune, NJ 07753. 1-800/331-5308, FAX 1-908/775-3635.

FREQUENCY DIRECTORIES: Large selection, SWL and scanner books, frequency guides: SWBC, mediumwave, Utes, Spy, Press, Weather, FAX, RTTY, Military, Federal Agencies, Marine, Aero, Police, Fire, etc. Big FREE catalog! CRB RESEARCH, Box 56-WR, Com-mack, NY 11725.

TELEX HY-GAIN ANTENNA SYSTEMS, rotators, towers. Full line sales. PILOT ELECTRIC CO INC, 1300 Hwy #35, Neptune, NJ 07753. 1-800/331-5308, FAX 908/775-3635.

ATTENTION AMATEURS!! Military type ID dog tags, stainless steel, customized, name, call, QTH, etc. Five seventeen-space lines—\$4.29 postpaid, neck chain included. JPW ENTERPRISES, P.O. Box 353, Logan, UT 84321.

N4ZDU SHAREWARE and BBS. Great software for IBM compatibles. Great prices too! Average \$2.00 each! Ham, utilities, business, misc. Order our catalog on a disk only \$2.00 pp. Our BBS is now free! Modem only 904/542-3028. 24 hrs. N4ZDU SHAREWARE, Rt. 3, Box 1151, Oldtown, FL 32680.

STAMP COLLECTORS—SASE brings my price list of worldwide stamps honoring Ham Radio. New Indonesia, Bolivia and Norfolk Islands issues available. PHIL SAGER, WB4FDT, 411 S. Sparta, Ruston, LA 71270.

AAIA SIDEKICK ANTENNAS. 1-800/874-2880.

POST CARD QSL KIT—Converts post cards, photos to QSLs! Stamp brings circular. K-K LABELS, P.O. Box 412, Troy, NY 12181-0412.

LEARN THE CODE—A course for family members and friends who don't know the difference between a dot or a dash. Monday through Friday, 0630-0700 California local time, 3760 KHz ± A2/A3/LSB, March, April, May, September, October, November, K6RAU. Starts first Monday of each month.

TRANSMITTING TUBES WANTED FOR MUSEUM. Amateur or commercial. Tubes purchased, traded or donations welcome. All correspondence answered. Visitors welcome. K6DIA. YE OLDE TRANSMITTING TUBE MUSEUM, P.O. Box 97, Crescent City, CA 95531 707/464-6470.

THE SPEC-COM JOURNAL is published bimonthly, 6 times per year. Dedicated to Fast Scan Television but committed to covering slow scan television, facsimile, RTTY, ASCII, AMTOR, packet radio, satellites, TVRO and all other specialized modes of communication. Now with thicker, color enhanced issues. Back issues and sample copies \$3.50 ppd. Annual subscriptions: USA \$20, Canada/Mexico \$25, foreign surface \$30. MC/VISA add 5% and Iowa residents add 4% for tax. KA0JAW has now joined WB0QCD to co-publish the SPEC-COM Journal for specialized amateur enthusiasts. Contact: MEMBERSHIP SERVICES, P.O. Box 1002, Dubuque, IA 52004-1002 or call 319/557-8791.

COMMODORE 64 PACKET RADIO MODEM. Use with the public domain Digidom 64 program. Assembled and tested PCB—\$45.95, kit—\$29.95 + \$3.50 shipping and handling. K & S ELECTRONICS, 3118 S. 217 E. Ave., Broken Arrow, OK 74014.

GET THE INDEX YOU NEED FOR THE ARTICLES YOU READ. Information on antennas, propagation, DXpeditions, product reviews, packet, satellites OP and much much more. References to all articles published in QST, CQ, HR, 73 and RADCOM. Individual Ham magazine indices \$10-\$20 (book) \$20 (software). *The World's Largest* (60,000 references) and *most comprehensive Amateur Radio Index 1909-1990* (software \$85). Write: DIDAH PUBLISHING, POB 7368, Nashua, NH 03060-7368. 603/878-3628.

LOW PRICES: CONNECTORS—VHF, UHF, TNC, BNC. \$2 now for catalog, \$4 refundable with 1st order. SATELLITE HEADQUARTERS, 9310 Timberlake Rd., Lynchburg, VA 24502. 804/239-7585.

FOR SALE: "Sparks", lone radio officer on ships is fading away with 20th century. Book—QTC (I have a message for you)—is nostalgic salute to him. His SOSs saved a million lives. Fellow-Sparks applaud enthusiastically. "Outstanding" (Kemp Richter/K7UQH). "Complaint—can't put book down!" (Ken Johnson/W6NKE), "Best book ever written about marine operator" (Doug Stivison/NR1A). Reviewers too: "Nostalgic spirit surrounds tales told" (Popular Electronics), "Fascinating book" (Radio Bygones, UK), "You just have to see QTC" (Amateur Radio Action, Australia). Sorry, hardcovers sold out, but paperbacks still available from: SEQUOIA/KA5HCX, 2502 Cockburn, Austin, TX 78745 . . . or call 512/442-1311. \$11.00 (postage included). "HAMS"—want a personal inscription? Give your call sign!

COMMODORE 64 HAM PROGRAMS—8 disk sides, over 200 Ham programs—\$16.95. 29¢ stamp gets software catalog. **HOME-SPUN SOFTWARE**, Box 1064-W, Estero, FL 33928.

IONSOUND VER 4 BY WIFM—1.8 TO 54 MHz skywave propagation prediction software for amateur, professional and military users. Menu-driven program for IBM PCs/compatibles. Comprehensive tabular summary includes signal-to-noise and path availabilities. Color-coded LUF/MUF ionograms. Built-in DXCC latitude/longitude database. CGA/EGA/VGA/Hercules Graphics. \$35.00 for 5.25" or 3.5" DSDD w/ASCII manual. (Optional printed/bound manual \$15.00). Free postage. Information: 617/862-6742, evenings. **JACOB HANDWERKER**, WIFM, 17 Pine Knoll, Lexington, MA 02173.

LET THE GOVERNMENT finance your Amateur Radio-related small business. Grants/loans to \$500,000. Free recorded message: 707/449-8600. (LH3).

WEEKLY HAM TRADER. Mailed First Class every Friday. Subscriptions \$13.00 for six months (26 issues) or \$25.00 for full year (52 issues) U.S.A. Canada/Mexico/International inquire. Now free ads with subscriptions. Ad rate 20 cents per word. Prepaid ads and subscriptions to: **WEEKLY HAM TRADER**, P.O. Box 1159, Arnold, MO 63010.

LIMITED-SPACE Dipoles by G5RV and WIJC. SASE. **TOM EVANS**, 113 Stratton Brook, Simsbury, CT 06070.

C-64 VIC-20 Morse code and RTTY program disk—\$5, tape—\$6. RTTY interface unit kit—\$25. Morse code interface kit—\$11. EPROM programmer—\$23. Also TRS-80 color information—\$1, **COLORBURST**, BOX 3091, Nashua, NH 03061; phone 603/891-1588.

IBM PC AND LAPTOPS VIDEO DIGITIZER, connects between printer port and camcorder, 640 by 480 resolution. 256 gray levels—\$89.98. Demo disk—\$3. Information—\$1, **COLORBURST**, Box 3091, Nashua, NH 03061; phone 603/891-1588.

INEXPENSIVE HAM GEAR: Send stamp for list. **WA4DSO**, 3037 Audrey Dr., Gastonia, NC 28054.

MODIFICATION INSTRUCTIONS for over 100 models, that will allow for cross band and/or out of band operation. \$5.00 each. Send SASE to order or for a list. **HAM-MODS**, P.O. Box 101W, Hudsonville, MI 49426.

MAIL YOUR USA QSL CARDS for 10 cents each! We look up address. Send SASE for complete details. Our second year. **QSL POST OFFICE**, 767 South Xenon Ct., #117, Lakewood, CO 80228.

QSL INFO AVAILABLE ON DISK C-64 & IBM. For details send SASE to: **MIKE WITKOWSKI**, 4206 Nebel St., Stevens Point, WI 54481.

MAUI, HAWAII—B&B with a ham, KH6SQ. For brochure, send 75 cents for postage to: P.O. Box 351, Pukalani, HI 96788.

DRAKE OWNERS: Factory fresh GE 6JB6A matched pairs w/12BY7A driver—\$46. Set of (3) w/driver—\$64. Shipping/handling any size order \$3 anywhere USA. VISA-MasterCard accepted. Other combinations/types of matched tube packs also available. **PAR ELECTRONICS**, 8980 J Rt. 108, Columbia, MD 21045 or toll free 800/447-9008.

NEXT DAY QSLs—Order 1-800/926-7373 we ship next day. Sample \$1. **ANTENNASWEST**, P.O. Box 50062W, Provo, UT 84605.

GET YOUR "FCC COMMERCIAL GENERAL RADIOTELEPHONE LICENSE". Electronics Home Study. Fast, inexpensive! "Free" details. **COMMAND PRODUCTIONS**, D-173, Box 2824, San Francisco, CA 94126.

QSL SAMPLES—25¢. **SAMCARDS**, 48 Monte Carlo Dr., Pittsburgh, PA 15239.

ROSS'S\$\$\$ USED APRIL SPECIALS: Kenwood AT-250—\$259.90, TS-180S—\$549.90, TS-930S—\$1,199.90, VOX-3—\$35.00; ICOM IC—7511—\$999.90, 2KL—\$1399.90, IC-2AT—\$199.90, IC—701PS—\$109.90; YAesu FT-ONE—\$1099.90, NC-3A—\$39.90, S72—\$39.00; ALINCO DJ-200T—\$199.90, EPL-322M—\$129.90; HEATH KIT HO-5404—\$200.00, HP-23B—\$59.90, HX-1681—\$200.00, IG-5257—\$150.00, SB-630—\$129.90; HALLICRAFTERS HT-37—\$399.90, HT-41—\$595.90. Looking for something not listed?? Call or send two stamps. We have over 140 used items in stock. Mention ad. Prices cash, FOB Prston. Hours Tuesday-Friday 9:00 to 6:00, 9:00-2:00 p.m. Mondays. Closed Saturday & Sunday. **ROSS DISTRIBUTING COMPANY**, 78 South State, Preston, ID 83263; 208/852-0830.

COLLINS OP./MAINTENANCE MANUALS FOR: KWM-2A + 30L1 + 30S1. Set \$30. Receivers R-390A, 51S1. \$19 ea. Postpd.—all schematics included—manual copies). Need a specific manual, schematic? Send wants—SASE; **D. TESTA**, P.O. Box 9064-WR, Newark, NJ 07104.

WANTED: Ham International Callbook, (1989 to 1991). Call J.L. COURTNEY, phone 605/374-5944.

COAX, GROUND RADIAL WIRE, lowest cost, top quality, MilSpec RC213 \$.38/ft; RG8X .19; RG58 .18; low loss Belden equiv. RG 9913 .39; any lengths. Radial Wire #16 \$39.50/1000 ft., includes shipping cont. US! Immediate shipment. Catalog: \$1.00. **DAVIS RF Co.**, P.O. Box 230-W, Carlisle, MA 01741. Radial orders only: 1-800/484-4002 code 1356. Info: 508/369-1738.

1000's OF IBM PUBLIC DOMAIN AND SHAREWARE PROGRAMS. Hundreds of Amateur Radio programs. Call (305) 572-5229 9600, 8,N,1. For Auto-downloads read Bulletin #3. For printed catalog send \$2 to: **C.C. TODD, INC.**, P.O. Box 26870-A, Tamarac, FL 33320-6870.

QSL SALE! 100 cards \$8, 200/\$11, 300/\$14, 500/\$20, 1000/\$33. Many designs! Free shipping! Rubber stamps \$5. Phone or write today for samples or ordering. **SHELL PRINTING**, KD9KW, Box 50, Rockton, IL 61072. 815/629-2193.

BROWNIE'S QSLs since 1939. Catalog & Samples \$1.00. 3035 Lehigh St. (REAR), Allentown, PA 18103.

GET YOUR POLITICIANS MOVING on the "Amateur Radio Spectrum Protection Act of 1991." Three quality, signature-ready, computer-generated letters (and envelopes) urging support of H.R. 73/S. 1372, only \$3.00. Satisfaction guaranteed! Touch tone 1-303/297-8859 (listen) 1 (listen) 426 (speak at prompt). Dial phones leave name, address, callsign, phone, specify Ham Radio Letters. **G. ROACH KBØIMM**, P.O. Box 2153, Denver, CO 80201.

SALE: PK-64 WITH COMMODORE COMPUTER, disk drive, colored monitor and printer. All you need for Packet, RTTY, AMTOR and CW to go with your transceiver. All for \$350. Call 209/255-0869 after 5 p.m.

ICOM SUPER BP-8 PACK. Drop-in charge, 1400 mAh—\$45.00. ICOM AA battery case, holds 8 AA NiCads or alkalines, drop-in or wall charge—\$15.00. ICOM clone packs, drop-in charge: BP-7 700mAh 12V—\$39.00; BP-8 825mAh 8.4V—\$38.00, drop-in or wall charge: BP-5 500mAh 10.8V—\$35.00, BP-8—\$40.00, BP-7 500mAh 13.2V—\$43.00. Empty BP-7-8 cases, drop-in charge, w/hardware and instructions—\$12.95. Slide-on charge board—\$7.00, w/wall xformer—\$12.00. Yaesu packs: super FNB-4 800mAh at 12V—\$43.00, FNB-12—\$43.00, FNB-17/10—\$32.00, FNB-14 1000mAh at 7.2V—\$47.00, FNB-2—\$19.00. Alinco: for the 160 and 560 series HTs 7.2V 700mAh—\$35.00, 12V 700mAh—\$47.00. New ICOM: BP-83 600mAh 7.2V—\$33.00, BP-84 1000mAh 7.2v—\$39.00, BP-85B 600mAh 12v—\$69.00. Inserts: BP-3—\$14.50, BP-5—\$20.00, BP-8—\$21.00, BP-7—\$23.00, Tempo Early S-1—\$19.95, Tempo S15—\$21.00, Santec flat AA pack w/connector—\$25.00, FNB-17—\$19.00. FNB-12 600mAh—\$29.00, FNB-4—\$26.00, Kenwood 25/2600—\$18.00, 2400—\$19.00, PB-21—\$12.00. We will rebuild your battery pack for the cost of the insert, no additional charge! Send thru the US mail, please. All orders add \$3.00 shipping, Illinois add 6.5% tax. Free catalog upon request. Need something not listed? Give us a call, we would love to be of service to you. Send to: **DC ACE ELECTRONICS, INC.**, P.O. Box 364, Lincolnshire, IL 60069. 708/634-3337 or 708/587-2291. Good checks ok. VISA/MC. 1 last special: ICOM BC-35 clone drop-in rapid charger—\$39.95!! ICOM clone packs and accessories fit the Radio Shack HT. Save! See you in Dayton under the tent!

WANTED pre 1980 microcomputers for museum collection. **KK4WW**, 703/231-6478, 703/763-3311.

DAYTON SPECIALS: DISCOUNTS on B&W line, JPS DSP AF & NF filters, Bencher, Vibroplex, 25% off Startek portable frequency counters!! Antenna parts. Catalog: \$1.00. Authorized dealer: **DAVIS RF Co.**, P.O. Box 230-W, Carlisle, MA 01741. Info: 508/369-1738.

HERE, HERE

Subscribe Now!

One year	\$14*
Two years	\$27*
Three years	\$39*

*For CA delivery add 7%% tax.

Name _____

Address _____

City _____

State/Zip _____

Worldradio

P.O. Box 189490

Sacramento, CA 95818

More MART

INSTANT MOBILE—No holes HF. Info \$1. ANTENNASWEST, P.O. Box 50062W, Provo, UT 84605.

VHF-UHF-SHF Large SASE. VHFer, P.O. Box #685, Holbrook, AZ 86025.

WANTED Yaesu FT23R and Henry 5K or 8K linear amplifier. KK4WW, 703/763-3311; 703/231-6478.

JOIN FAIRS — The Foundation for Amateur International Radio Service. Hams who are dedicated to building international friendships by providing technical assistance, training, exchange visits and equipment donations on a global basis. Free information toll free 1-800-FB-KKYWW or 703/763-3311, P.O. Box 341, Floyd, VA 24091.

DISCOUNT PRICES AT RT ELECTRONICS. Radios, scanners, antennas and more. Free flyer. RT ELECTRONICS, P.O. Box 2123, Warren, OH 44484.

GROUND RADIAL MANAGEMENT—The GP-1 is a 24-point bus that greatly simplifies the use of radials with your HF vertical antenna. Cast construction only \$30.95 postage paid worldwide. VISA and MasterCard accepted. LANCE JOHNSON ENGINEERING, P.O. Box 1047, Elizabeth, CO 80107. (303) 646-4630.

ROTOR-PARTS, rotor-service, rotor-accessories: brak-d-lays, quik-connects, pre-set mods. New models for sale. Free catalog. C.A.T.S., 7368 SR 105, Pemberville, OH 43450.

HAM RADIO REPAIR CENTER quality workmanship. Solid state or tube, all makes and models. Also repair HF amplifiers. A-Z ELECTRONIC REPAIR, 3638 E. Indian School Rd., Phoenix, AZ 85018. 602/956-3024.

PL259 TOP GRADE, 59¢. Reducer (175)(176), 20¢. N Rite Angle, \$1.50. VHF+, \$2.00. Silver plate N, \$3.00. Intro special: 25 PL259 silver/Teflon, \$19.99. SATELLITE HDQ., 9310 Timberlake Rd., Lynchburg, VA 24502; 804/239-7585.

PLAN TO ATTEND the 1992 Yellowstone Radio Club Hamfair, July 11-12. Dealers and manufacturers inquiries welcome. Write to: YELLOWSTONE RADIO CLUB, 1544 Foothill Drive, Billings, MT 59105.

EPROM PROGRAMMING SERVICE. Send me your legally owned software or shareware and I will program any EPROM OR EEPROM up to 512k. I will supply you with everything you need including the chip. Please write for an order form and rate sheet. M. BOHNHOFF, INC., P.O. Box 6373, Libertyville, IL 60048-6373 for order form and prices.

CLEANING SHACK—Send for list. LEWALSKI, 3512 Moraga Blvd. #4102, Lafayette, CA 94549.

ICOM, KENWOOD, YAESU, Drake, Collins, & Heath Owners: International Radio & Computer, Inc. & Fox Tango 8 Pole & 10 Pole Crystal Filters. Monthly ICOM, Kenwood, & Yaesu separate newsletters. Years of back issues. Repair service for ICOM (Dealer), Kenwood (authorized service center), Yaesu, Ten-Tec, Azden, & Atlas. Fast turn-around! Our 13th year. Send \$.52 SASE for free 22 page catalog to INTERNATIONAL RADIO & COMPUTER, INC., 3804 S. US #1, Fort Pierce, FL 34982; 1-407/489-5609.

LOW COST HAM EQUIPMENT: Send stamp for list. WA4DSO, 3037 Audrey Dr., Gastonia, NC 28054.

17 METER BEAM—Build fast, easy. Technote—\$7. Info. \$1. ANTENNASWEST, P.O. Box 50062W, Provo, UT 84605.

CW OPERATORS—The "Kansas City Keyer" model KC-1 is now available postage paid worldwide for \$219.95. MasterCard and VISA accepted. Send \$1.00 for our 24-page catalog and receive a \$2.00 discount coupon. LANCE JOHNSON ENGINEERING, P.O. Box 1047, Elizabeth, CO 80107. (303) 646-4630.

ONLY NINE RADIO SHACK PARTS build a 30/40 meter QRP transmitter! Complete plans only \$5!! DWM ENTERPRISES, 1709 N. West, #103, Jackson, MI 49202.

USED TECHNICAL BOOKS: Radio, electronics, military, handbooks, magazines, mathematics, catalogs, etc. List \$1.00 (stamps ok): SOFTWARE, Dept. WR, 1515 Sashabaw, Ortonville, MI 48462.

WANTED: Heathkit-HW7 or 8. WB2EUF, P.O. Box 708, East Hampton, NY 11937.

COMMUNICATION SPEAKERS—add extra audio to your H.T., base, mobile, C.B., or your cellular phone. Speco CBS-1000 (\$10.00), Speco AES-4 (amplified, \$29.00), Colt CLT-290 (\$8.00), Colt CLT-160 (\$6.00). SWR meters—Colt SWR1 (\$15.00), SWR2 (\$20.00), SWR3 (\$25.00). Regulated power supplies—3 amp (\$25.00), 7 amp (\$35.00), 12 amp (\$45.00), 17 amp (\$85.00), 22 amp (\$110.00), 31 amp (\$145.00). Power conditioners, 120 VAC-1.2 KVA (\$500.00). Free catalog available. IL res. add 6.5% sales tax. All orders add \$3.00 for shipping. C.O.D.s welcome. Make all checks payable to MIKEV ENTERPRISES. Send to Foxfire Car Audio Systems, P.O. Box 1028, Lake Zurich, IL 60047-1028; 708/587-2291.

KENWOOD R1000 COMM RECEIVER and manual. Mint condition—\$325.00. Call 310/927-0243, WA6SCA.

GSRV SECRETS—Technote—\$7. Info \$1. ANTENNAS WEST, P.O. Box 50062W, Provo, UT 84605.

FINALLY HEAR THOSE UNREADABLE SIGNALS buried in noise, heterodynes, tuners. The revolutionary new JPS Audio Filter, NIR-10, Digital Signal Processing. Simple hookup to speaker jack, deep discounted: \$379 delivered cont. US! (Elsewhere \$400). Also, JPS NF-60, DSP auto notching of multiple tones, discounted: \$139.50 delivered cont. US (elsewhere \$150). Authorized dealer: DAVIS RF Co., P.O. Box 230-W, Carlisle, MA 01741. 24 hour orders only: 1-800/484-4002 code 1356. Info: 508/369-1738.

JUST IMAGINE your own 25 to 50 acre cool, green, mountain top QTH in The Blue Ridge Mountains on \$995 per acre. Wild game, great views ideal for hamming, retirement or summer home. KK4WW, Floyd, VA; 703/763-3311.

RADIO REPAIR: Kenwood, Uniden, Yaesu, amplifiers etc. Over 10 years experience quality work, fast turnaround. FRED FISHER, WF9O, 6866 W. River Rd., South Whitley, IN 46787, 219/723-4435.

WANTED: LATCHING COAX RELAYS, ICOM-22-U. KE6RL, 805/466-0912.

MORSE CODE COMPUTER INTERFACES with software for IBM or COCO—\$49.95. Ham License study programs—\$14.95. Free public domain and ham catalog for IBM or COCO. DYNAMIC ELECTRONICS, Box 896, Hartselle, AL 35640, 205/773-2758.

LAFAYETTE COLLECTOR looking for Amateur & Citizens Band equipment manufactured by Lafayette Electronics which is in excellent-to-mint condition. Also interested in receivers, meters, catalogs, etc. Write with what you have and price to: BARRY SCHOOLS, KA3B, 1606 South Newkirk St., Philadelphia, PA 19145. All letters will be answered. Thank you!

MAKE \$\$\$! Become an American Electronics Dealer! Profit opportunities since 1965. Call NICK DELLEN, 1-800-872-1373.

DREAM HOME FOR AMATEUR OPERATOR AND FAMILY—Owner must sell due to heart/health problems. 5 bedroom, 3.5 bath, 4 levels, 2-room indoor carpeted shop w/workbench, 115/220 VAC. Home fully insulated, AEK, 2-car finished garage. 60 Ft. HD tower, new HAM-M rotor, TA33/40 & 9 element 2 MTR beams. Two blocks from beach, ocean and Monterey Bay. Two parks, schools—K-12 and college within two miles. Many extra features—must see to appreciate. Reduced \$50,000 from \$399,500 to only \$349,500! For pictures, floor plan or further details, write to EDDY POLLOCK, W6LC, P.O. Box 97, Capitola, CA 95010 or call and leave message at 408/476-9652.

PK88/232/2232 KAM KPC OWNERS: Conferencing, file transfers, robot CQs, logging, more advanced features and easier to use. PkGOLD enhanced for any AEA, KaGOLD DualPort for Kantronics w/1992 ROMS. Includes manual, online help system, quick reference guide, technical support, BBS access, and GoldTD with sound tutor all for only \$79.95, or both for \$129.95. Include \$5 s&h. CA add 7.75%. For IBM PC. INTERFLEX SYSTEMS DESIGN, Box 6418, Laguna Niguel, CA 92607-6418. Order by mail, phone: 714/496-6639, FAX: 714/496-8041, InterFlex BBS: 714/497-5860, or CompuServe 72540.75. VISA/MasterCard welcome.

U.S. NAVY FLAMEPROOF KEYS, NEW, 1955. Sealed packages; \$59.00 shipped USA. Telegraph items, parts, memorabilia; SASE and \$1.00, 7 page illustrated list (refunded with order). J. JACOBS, 60 Seaview Terrace, Northport, NY 11768.

FOR SALE: Turns counter, surplus like new. \$30.00. Will ship. 912/228-1034. After 6 p.m. EST.

"CQ FIELD DAY" VIDEO: See how the top Field Day team scored 23,500 points—\$22.95 postpaid. DANIEL FORT, AA6LM, P.O. Box 11324, Costa Mesa, CA 92626.

WANTED: Ham and other programs for Commodore CBM model 8032. Reasonable. KE0TU, P.O. Box 17, Adolph, MN 55701; 218/624-5130.

BUILD YOUR OWN WIRE ANTENNAS, parts, ground radial wire, feedlines, various wire, insulators, vertical phasing (COMTEK), coax, Dacron rope, baluns. Lowest prices. Catalog: \$1.00. DAVIS RF Co., P.O. Box 230-W, Carlisle, MA 01741. Voice or FAX: 508/369-1738.

RADIO RUBBER STAMPS. 10-10, CW stamp, etc. Free brochure. REID ASSOCIATES, 6680 Mellow Wood, West Bloomfield, MI 48322.

Give a gift that will be
enjoyed all year long . . .
Worldradio

AMATEUR TELEVISION QUARTERLY (ATVQ) We tell you what other magazines don't! Complete coverage of Ham TV. Discover fun and excitement of ATV DX, mobile, portable, space shuttle, R/C, public service, construction. Sample \$4. Subscriptions: US \$18, Canada \$22, DX \$35. Just starting? ATV SECRETS for Aspiring ATV'ers. Completely new book, no reprints of obsolete articles. Over 110 pictures, diagrams, 20,000+ words. Everything you wanted to know about ham TV but didn't know whom to ask. \$11.50 post paid \$12.50 (Canada). V/MC. ATVQ, 1545 Lee Des Plaines, IL 60018, 708/298-2269, FAX 708/803-8994.

PACKETEERS: COMPUTER UPGRADE PARTS. IBM compatible motherboards, drives, expansion cards, monitors, and much more. New and used. Call for prices. STEWART & ASSOCIATES, 314/995-1900.

"DON C. WALLACE, W6AM—AMATEUR RADIO'S PIONEER." The history of Amateur Radio. By Jan Perkins, N6AW. Hardbound, 320 pages, 200 photos (24 in color). \$29.95 + s&h (\$3 US, \$5 foreign). WALLACE & WALLACE, 11823 E. Slauson Ave., Suite 38, Santa Fe Springs, CA 90670.

MAKE \$\$\$! Become an American Electronics Dealer! Profit opportunities since 1965. Call NICK DELLEN, 1-800-872-1373.

AMATEUR RADIO REPAIR—Professional, reliable service. ROBERT HALL ELECTRONICS, 1660 McKee Road, Ste. A, San Jose, CA 95116, 408/729-8200.

"HOME BREWED KEYS!" How would you like to build one? Works excellently without or with a keyboard, Morse Machine 3, etc. No special materials, special tools or electronic theory required! Find everything you will need right there in your home! Send \$10.00 in cash/money order for plans and step-by-step instructions from A "SPARKS" with 55 years of Morse code. L. JOHN WESTVEER, RMC US Navy Ret., 1D9EUH/WOMLD, P.O. Box 20, Lipari Island (ME), Italy 98055.

F.C.C. LICENSE PREPARATION. Radio-telephone radiotelegraph, radar, avionics, Amateur. Top jobs. Fast, easy, home study. Books audio or video. Free details. WPT PUBLICATIONS 7015 N.E. 62st Ave., Vancouver, WA 98661. 1-800/800-7588.

ATTN: SKYWARN & WX WATCHERS— Severe storm and tornado research equipment for advance warning of severe storms! (Not a radio.) Free information: 205/859-8729. STORMWISE, P.O. Box 17721, Huntsville, AL 35810.

PERSONALIZED: NAME & CALL — hats, ladies badges, cups. For info SASE: HAN-DICAPABLE AMATEUR RADIO TRAINING SOCIETY, 7045 N. 15 Ave., Phoenix, AZ 85021.

LEARN CODE THE EASY W6PHA WAY! Former USAF code champ's unique, simple system allows all ages to learn quickly. No tapes, etc. Revised booklet \$6.00 ppd. Guaranteed. Letters answered. GLOBALMAN PRODUCTS, Box 400WR, El Toro, CA 92630.

USE AIRMAIL POSTAGE for successful QSL-ing! Many countries, monthly bargains. Plus European airmail envelopes! Samples, prices: BILL PLUM, 12 Glenn Road, Flemington, NJ 08822. FAX 908/782-2612.

NEED MONEY FOR HAM RADIO? Sell me your Martin guitar. BILL, WA3VFM. 215/674-3255.

WINDOW SECRETS—Technote—\$7. Info \$1. ANTENNASWEST, P.O. Box 50062W, Provo, UT 84605.

ALL ABOUT CRYSTAL SETS. Theory and construction of crystal set radios. \$7.95, ppd USA. ALLABOUT BOOKS, Dept. W, Box 14155, Fremont, CA 94539.

WANTED: TENTEC ARGOSY II transceiver, model 525D with or without Model 225 power supply, and manuals. DICK ROSE, 2050 Ramsey Dr., Decatur, IL 62526.

DIGITAL AUTOMATIC DISPLAYS. Kenwood, Yaesu, Collins, Drake, Atlas, etc. No bandswitching required. Business 52¢ SASE Specify radio. GRAND SYSTEMS, Dep't B, P.O. Box 3377, Blaine, WA 98230. Phone/FAX 604/530-4551.

SLACK ENTERPRISES QUALITY HD Ant. insulators: 1/2"—\$2.95, 3/4"—\$3.95, 1"—\$5.95. Superior center conductor: 52 ohm—\$15.95, 1"—\$13.95, 3/4"—\$11.95, 1/2" diameters. Much more, catalog \$2.00. c/o G. SLACK, 101 Royal Park Dr., Apt. 2H, Oakland Park, FL 33309.

TRI-EX LM-354 CRANK-UP/tilt-over tower with TM-30C, Telrex 6 el tri-band beam—including Ham-M rotor, control unit and mast. Total \$750 firm, buyer removes. JACK, W6VVM, Vista, CA. 619/724-5525.

CODE PROFICIENCY DRILLS are transmitted from WB3IVO Brass Pounders ARC, each Saturday, Sunday, Monday and Thursday on 7060 kHz, starting 2000Z. Each Tuesday and Friday on 14060 kHz, starting 2000Z. Speeds range from 20 to 60 wpm.

WATTMETERS URM-120, 2 to 1000 MHz, RF 10-1000W using three plug-in couplers. TS-1285 meter, couplers, metal case, manual, used, 20 lbs. \$115. Meter and one coupler only, 10 lbs. \$70. Select 2-30 MHz, 25-250 MHz, or 200-1000 MHz. TARTAN ELECTRONICS, Inc., Box 36841, Tucson, AZ 85740-6841. 602/577-1022.

REVOLUTIONARY HYBRID AERIAL WIRE: 168 strand copper "Flex-Weave"™, #14, strong, ultra flexible, ties in knots, non-stretch, won't rust/kink like copper weld, \$34 first 275' (minimum), \$.12/ft. thereafter, includes shipping! Catalog \$1.00. DAVIS RF Co., P.O. Box 230-W, Carlisle, MA 01741. 508/369-1738 or orders only: 1-800/484-4002 code 1356.

CLASSIFIED ADS FOR JOBS WANTED OR POSITIONS OFFERED will be run free of charge in Worldradio's MART.

REGISTERED PROFESSIONAL ENGINEER wanted to manage new FCC Part 68 test facility in N. Calif. on profit-share basis. Must have solid knowledge of Part 68 and the testing required for FCC registration. List full experience, education, references, address and phone number in first reply to JWR ASSOCIATES, Agent, 2899 Hyannis Way, Sacramento, CA 95827-1344.

ADVERTISER'S INDEX

- | | | |
|--|-------------------------------------|--------------------------------------|
| A & A Engineering — 48 | Grapevine Group, Inc. — 64 | QCWA — 4 |
| Ace Communications — 24 | Ham Radio Classifieds — 26 | R & L Electronics — 53 |
| Alinco — 17 | Ham Radio Outlet — 42, 43 | Radio Engineers — 77 |
| Amateur Radio Specialties — 68 | Handi-Tek — 50 | Radio Place — 27 |
| Ameritron — 84 | Heights Tower Systems — 58 | Radio Works — 61 |
| Anne Wright, N6BOP — 6 | Henry Radio — 2, 19 | RAI Enterprises — 77 |
| Antennas West — 16, 22, 50 | ICM — 30 | RF Concepts — 57 |
| Antennas, Rudy Plak — 3 | IMRA — 49 | RLD Research — 31 |
| Antique Radio Classified — 66 | J-Com — 15 | Rose — 44 |
| Artsai Publications — 36 | Jan Crystals — 35 | SGC Inc. — 47 |
| ASA — 10 | Jeff's Electronics — 51 | Sign on — 8 |
| AVC Innovations, Inc. — 20 | Jun's Electronics — 11 | Startek International, Inc. — 33 |
| AXM Inc. — 72 | K2AW's "Silicon Alley" — 38 | Synthetic Textiles, Inc. — 77 |
| Aztec RF — 58 | Kantronics — 23, 29 | Telo Technology — 56 |
| Battery Tech — 76 | Kilo-Tec — 37 | Texas Towers — 21 |
| Bilal Company — 10 | KTE Publications — 45 | Tiara Publications — 49 |
| Bill Mullin, AA4M/6 — 18 | Lakeview Co. — 12, 22, 37 | Tibi Productions — 39 |
| Brian Beezley, K6STI — 68 | Lance Johnson Digital Graphics — 64 | TNR Technical, Inc. — 55 |
| Buckmaster Publishing — 12, 24, 36, 71 | Lightning Bolt Antennas — 14 | Townsend Electronics — 51 |
| Butternut Electronics Co. — 41 | M. Bohnhoff, Inc. — 38, 54 | Tri-Ex Towers — 51 |
| Courage Center — 14 | Maxcom — 54 | Unadilla — 63 |
| Cubex Co. — 70 | Media Mentors — 32 | Universal Radio — 71 |
| Dayton Hamvention — 25 | MFJ — 13, 37 | Van Gorden Engineering — 7 |
| Embroidery Warehouse — 65 | Mike Foreman — 83 | Vector Control Systems — 44 |
| Engineering Systems — 56 | Oak Hills Research — 62 | VIS — 18 |
| Fallert's Engraving — 66 | ONV Safety Belt Co. — 67 | Visit Your Local Radio Club — 59, 60 |
| Fresno Hamfest — 6 | P.C. Electronics — 73 | Visit Your Local Radio Store — 74 |
| GGTE Morse Code — 69 | Palomar Engineers — 32, 39, 65, 67 | W5YI-VEC — 75 |
| Glen Martin Engineering — 16 | Pass Publishing — 34, 52 | W9INN Antennas — 20, 46 |
| | Personal Database — 40 | Williams Radio Sales — 28 |
| | | Yaesu — 5 |

Wanted: TUBES

I pay cash or trade for all types of transmitting or special purpose Tubes.

MIKE FORMAN
1472 MacArthur Blvd.
Oakland, CA 94602
(510) 530-8840

Ameritron gives you . . .

a full kilowatt OUTPUT from a quiet desktop linear . . . for \$1095

Ameritron gives you a full kilowatt output (nearly the input of some linears) of peak envelope power for only \$1095 -- from a whisper quiet linear that's perfect for your operating desk because it measures just 8 1/4" H x 14" D x 14 1/4" W. You also get 850 watts output CW and 500 watts RTTY.

The AL-80A covers 160-15 meters (10 meters with license), including MARS and WARC. You could spend over twice the money for a legal limit amplifier twice the size -- and all you'll get is an additional 1/3 S-unit -- a difference you won't ever notice.

Tuned Input lets your rig deliver full output

The Ameritron AL-80A uses a direct switched, 100% shielded pi-network tuned input circuit so even the fussiest solid state transmitter works flawlessly with it.

Pi-L Output Network

A carefully designed Pi-L output network using the optimum Q for each band gives you exceptionally smooth tuning, extremely wide range load impedance matching and full band coverage. Ball bearing vernier reduction drives on both the plate and load control make tuning precise and easy.

Eimac 3-500Z in shielded RF tank gives you nearly 70% efficiency

You get the Eimac® 3-500Z transmitting tube with an estimated life of 20,000 hours ICAS. The AL-80A 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.

A superb RF design and layout, a Hi-Q tank circuit and commercially rated power components gives you nearly 70% plate efficiency over the entire operating range. This puts the power into your antenna instead of heating up your amplifier.



Ameritron AL-80A **\$1095** Suggested Retail

result is a clean signal without flat-topping.

Gutsy Heavy-Duty Power Supply

The guts of the AL-80A is its heavy heavy duty power supply. A 22 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. Some amplifiers using two 3-500Zs use a light power supply so they can't give much more power output than the AL-80A.

Step-Start Inrush Protection™

The AL-80A special 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 Primary

Too high line voltage stresses components and causes them to wear out. Too low line voltage causes a "soft-tube" effect -- low output and signal distortion.

The Multi-Voltage Primary in the AL-80A lets you compensate for too high or too low line voltage so you get the longest component life and peak operating efficiency -- regardless of line voltage.

Dual Illuminated Meters

Grid current of the 3-500Z is monitored continuously by one meter. Grid current gives the best indication of overall performance.

Multi-meter measures plate voltage, plate current, peak RF output power and drive power/ALC detector voltage.

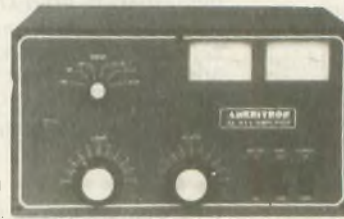
600 WATTS OUT . . . \$649

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 desktop 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



AL-811 **\$649** Suggested Retail



plug it into your nearest 120 VAC outlet. You get three tough 811A transmitting tubes. Plus you get extra heavy duty power supply, all HF band coverage, pressurized ventilation, tuned input, dual illuminated meters, adjustable ALC, operate/standby switch, transmit LED, UPS shippable and much more . . . for an incredible \$649. Call your dealer for yours today!

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

Built-in adjustable ALC circuit makes sure your exciter never overdrives your AL-80A. The

Call your dealer for your best price today!

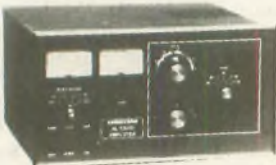
Bust through QRM with a full kilowatt -- right out of the box. Call your dealer for your best price and order today. Two year limited warranty.

AMERITRON offers the best selection of legal limit linears!

These 3 rugged linears all use a super heavy duty hipersil® power supply capable of 2500 watts!

Ameritron's most powerful amplifier

AL-1500 **\$2625** Suggested Retail

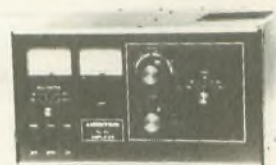


Ameritron super power amplifier uses the herculean 8877 ceramic tube.

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.

Ameritron's Dual 3-500Z linear

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.

Ameritron's 3CX1200A7 linear

AL-1200 **\$2045** 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

ATR-15 **\$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. 5 1/4 x 13 1/4 x 13 1/2 inches. Meter lamps uses 12 VDC.

Remote Coax Switches

RCS-8V **\$149** Suggested Retail

RCS-8V, DC-UHF 5 KW Coax Switch.

Replace 5 coax feedlines with one with this Ameritron 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-4, 134.50. 4 position HF switch.

Similar to RCS-8V. Requires no control cable. Handles 2500 watts PEP.

RCS-4 **\$134.50** Suggested Retail



Legal Limit Dummy Load

Oil cooled so you can run the maximum legal limit of 1500 watts for 5 minutes. High quality industrial grade transformer oil included (no PCB). 50 ohms. SWR under 1.2:1 to 30 MHz. Low SWR to 400 MHz. 7 1/2" H x 6-5/8" Diameter.



ADL-1500 **\$5995** Suggested Retail

AMERITRON®

. . . the high power specialist

921 Louisville Rd. • Starkville, MS 39759

Phone: (601) 323-8211 • FAX: (601) 323-6551

Call for a catalog or your nearest dealer!

Made in U.S.A.

© 1991 Ameritron

The Eimac® 3-500Z Tube
Ameritron uses genuine Eimac® 3-500Z tubes -- not the cheaper 3-500Zs imported by some competitors. We're proud to say "Quality Made in USA!"

*Give your Amateur Radio friends (or yourself)
a gift that lasts all year*



...for what's going on in the
world of Amateur Radio

Please enter (or renew) my own subscription

Name _____ Call _____

Address _____

City _____

State _____ ZIP _____

- 12 issues: \$14 *
- 24 issues: \$27 *
- 36 issues: \$39 *
- Lifetime: \$140 *

- New Renewal
- Check enclosed
- VISA MC American Express

*For delivery to non-US ZIP please add \$10/yr.
For delivery to CA please add 7.75% sales tax.

Card# _____ Exp. date _____ Signature _____



Please enter (or renew) a gift subscription to

Name _____ Call _____

Address _____

City _____

State _____ ZIP _____

- 12 issues: \$14 *
- 24 issues: \$27 *
- 36 issues: \$39 *
- Lifetime: \$140 *

- New Renewal

Sign the gift card _____

I wish (do not wish) to be billed for the renewal of this gift.

*For delivery to non-US ZIP please add \$10/yr.
For delivery to CA please add 7.75% sales tax.



*Please enclose in an envelope and mail to the address below.
Mailing to the 28th Street address or P.O. Box may delay the start of your subscription.*

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

If you received this issue and you are not yet a paid subscriber, this is your free sample copy, and you are invited to subscribe. Subscription blanks can be found on page 9 and scattered throughout the magazine.

Sample copies can be identified by the label.

Sample copy-Please subscribe

W5QSO

R.Dent Amateur

PO Box 720

Plano, TX 75025

Labels similar to the one below are from our regular mailing list. The number in the upper right hand corner designates the last issue of your subscription term.

WR 00-0000000 04/92

R.Dent Amateur, W5QSO

PO Box 720

Plano, TX 75025



Second-class
postage paid
Sacramento, California
and additional
mailing offices

(USPS 947000)
PO Box 189490
Sacramento, CA 95818

**POSTMASTER: Send
changes of address to above
(Please include mailing label.)**