

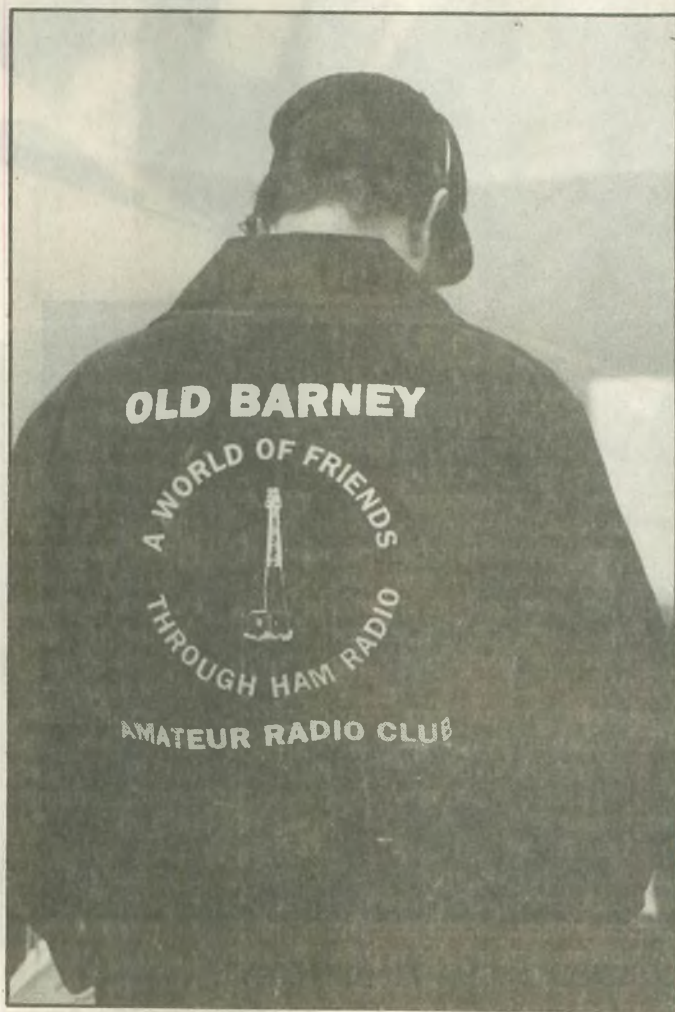
Worldradi

Year 22, Issue 1

July 1992 • \$1.25

NEWS & FEATURES

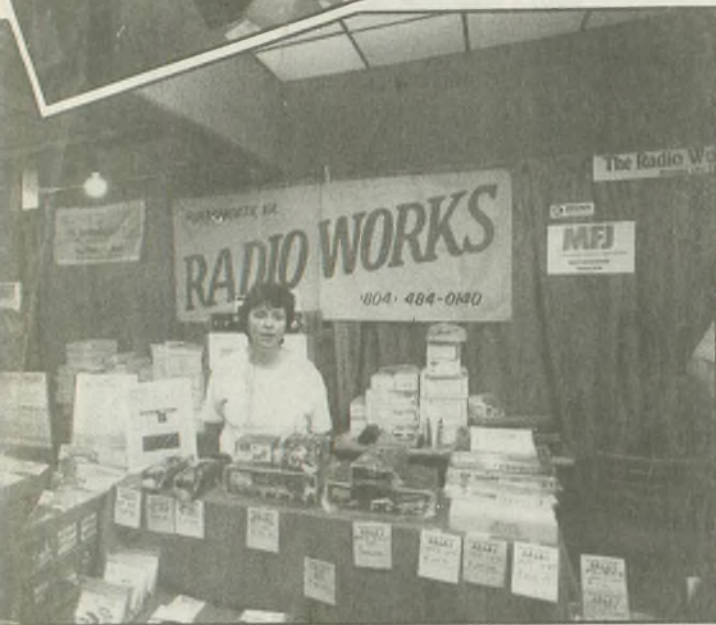
Dayton, OH — HamVention
1992; AMSAT forum;
MARS forum; Angela
Fischer, KB0HXY,
Young Ham of the Year
El Lago, TX; Maynard, MA;
Orangeburg, SC; San
Diego, CA — SAREX
Eureka, CA — Earthquake
and Amateur Radio
Sacramento, CA — 1991
Worldradio DXathon
winners
Xenia, OH — Firefighter's
use of Amateur Radio



COLUMNS

Aerials • Amateur Hi • AMSAT-Oscar schedule • Construction • Contests
County Hunter • Digital Bus • DX Prediction • DX World • FCC Highlights
Hamfests • MARS • Mobile • New Products • Off the Air • Product review
Propagation • Publisher's Microphone • QCWA • QRP • Search & Rescue
Special Events • Station Appearance • Traffic • VE Exams • Youth Forum

To subscribe, call 1-800-366-9192 (credit card orders only)



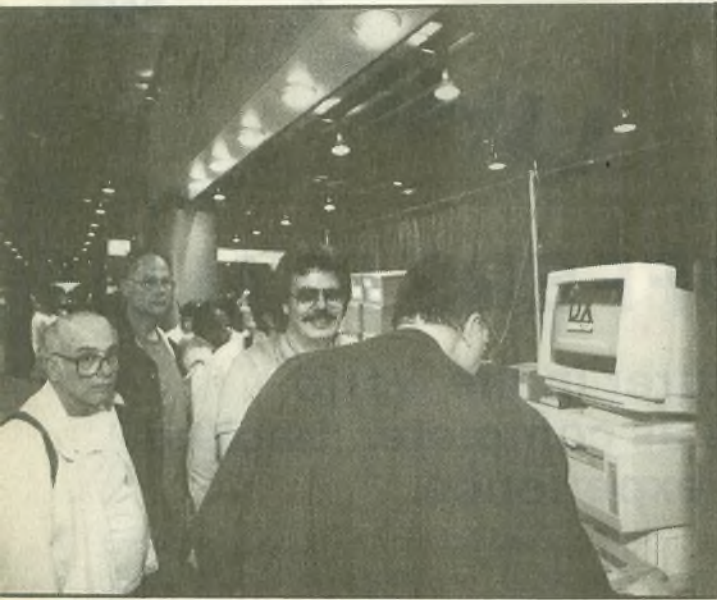
*Dayton HamVention 1992—
they came from far corners of the globe*



Worldradio

Year 22, Issue 1

July 1992 • \$1.25



LOW BAND

HIGH BAND

HIGH POWER

RELIABLE

AMATEUR

SCIENTIFIC

INDUSTRIAL

MILITARY

VHF

RUGGED

COMMERCIAL

UHF

DEPENDABLE

HENRY RADIO OFFERS IT ALL!!

No other manufacturer in the world offers a line of amplifiers as complete...backed by 60 years of experience.

There has never before been such a complete family of VHF and UHF amplifiers offered for amateur, scientific, industrial, military or commercial communications. Hundreds upon hundreds of units are in use in base station, point-to-point, EME, meteor burst, remote base, repeater and translator situations.

Choose a frequency between 30 and 500 MHz and you have a choice of amplifiers to meet your required output power. All of the models are available for the standard amateur 6 meter (50-54 MHz), 2 meter (144-148 MHz), and 70 cm (420-450 MHz) bands. Special versions are readily available for other frequency ranges. All of the amplifiers are biased for linear operation so that they operate for CW,

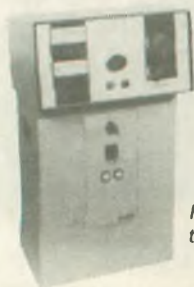
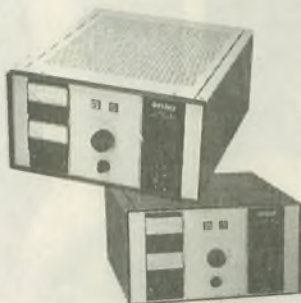
FM, SSB, AM, Packet, ATV, NMR or pulse applications.

The 2006A, 2002A, and 2004A use a single Eimac 3CX800A7 ceramic triode offering up to 2000 watts for pulse operation, up to 1200 watts for SSB operation, and up to 400 watts for continuous applications.

The 3006A, 3002A, and 3004A use a single Eimac 8877 ceramic triode mated to a heavy duty power supply offering up to 4000 watts for pulse operation, 2000 watts for SSB operation, and 1000 watts for continuous applications.

All of the amplifiers above 100 MHz employ simple, reliable and elegant strip-line tank circuits which give unexcelled performance with a minimum number of components.

A complete line of lower power solid state amplifiers are also available.



Our present HF amplifier line includes the following models:

- | | | | |
|------------------------------|-----------------------------|------------------------------|--|
| 2KD STANDARD | Single 3-500Z Desk SSB Amp | 3K CLASSIC MKII | Domestic Console |
| 2KD CLASSIC | Desk Model Linear Amplifier | 3K CLASSIC MKII | Export Console |
| 2K CLASSIC | Console Amplifier | 3K CLASSIC RF | RF Deck only |
| 2K CLASSIC X | Domestic Console | 5K CLASSIC | Export Console |
| 2K CLASSIC X | Export Console | 5K CLASSIC RF | RF Deck only |
| 2K CLASSIC X RF | RF Deck only | 3K PREMIER | Console Amp. with 160 meters |
| 3KD CLASSIC | Single 3CX1200A7 Desk Amp | 3KD PREMIER | Desk Amp. with 160 meters |
| | | 3K ULTRA | The ultimate console with remote control |

Henry Radio...
the amplifier specialists

Henry Radio

2050 S. BUNDY DR. • LOS ANGELES, CA 90025 • (310) 820-1234

Toll free order number: (800) 877-7979 FAX (310) 826-7790

Dayton does it again!

NORM BROOKS, K6FO

The Dayton Amateur Radio Association has been putting them on since 1952, so that makes this the 41st Dayton Hamvention. Amateurs from all over the world were there, 32,000 of them. Three hundred exhibitors showed their wares in the exhibition halls while thousands of flea market vendors plied their trade outside. Many overnighters commuted from motels up to 45 miles away. They are the ones who will make reservations earlier for 1993.

Mother Nature was not kind to Hamvention goers this year. Rain showers hit intermittently on Friday

and Saturday, and the nights were cold. Yet in spite of this the Hamvention was immensely successful.

Awards

Dayton Hamvention's Amateur of the Year Award was granted to Richard Baldwin, W1RU. He was the driving force behind the 1979 World Administrative Radio Conference, at which we won our new 12, 17 and 30M bands.

The Special Achievement Award was won by Ned Raub, W1RAN. Ned was deeply involved with the reuniting of a Cambodian war refugee with his family. The entire story of this effort is



Dick Baldwin, W1RU, Amateur of the Year

in an article, "Rescue by Radio" in the March 1992 Reader's Digest, page 65. (please turn to page 24)

A firefighter's use for Amateur Radio

Present at the Hamvention in Dayton with many thousands of other amateurs was a very new ham, Michael Kalter. A firefighter at Xenia, Ohio, Michael became interested in Amateur Radio as a result of a frustrating experience he had on assignment last Christmas night.

He and other firefighters had responded to a small plane crash. A surviving woman had pulled her children from the wreckage, but she was disoriented and didn't know the location of the plane, where two other passengers were.

Search and rescue efforts were made, but Kalter and his team needed the helicopter to hover and illuminate the area with its light. Kalter could not relay his request to the communications dispatcher with his small firefighter's hand-held. Later he said that only Amateur Radio communication would have had the power to make the contact.

With this realization, Kalter directly entered a no-code Novice/Tech Amateur Radio class at the Xenia Weather Amateur Radio Network. In fact, the class had been engaged for

two weeks, but Kalter caught on quickly. Just as immediately, he became interested in and learned the Morse code requirement as well.

After only three months, Kalter has just completed qualification for an Extra Class license. He enjoys a much higher degree of communications capability, and he says that pursuing Amateur Radio helped him to resolve the helplessness he felt that Christmas night.—*Information from the XWARN and the Dayton Daily News, Dayton, Ohio.* □

CONTENTS

FEATURES

| | |
|--------------------------------------|--------------------------|
| Amateurs come through in Eureka — 32 | '91 DXathon — 12 |
| AMSAT Forum — 26 | Portable 300 — 73 |
| Dayton MARS Forum — 27 | SAREX across the US — 14 |

COLUMNS

| | |
|------------------------------|--|
| Advertisers' Index — 83 | Off the Air — 40 |
| Aerials — 74 | Product Review — 55 |
| Amateur Radio Call Signs — 8 | Propagation — 70 |
| Construction — 73 | Publisher's Microphone — 4 |
| Contests — 76 | QCWA — 52 |
| County Hunter — 68 | QRP — 64 |
| Digital Bus — 58 | SAR Communications — 66 |
| DX Prediction — 49 | Special Events — 37 |
| DX World — 44 | Station Appearance — 39 |
| FCC Highlights — 8 | Subscription, Worldradio — 9 |
| Hamfests — 75 | Traffic — 62 |
| MARS — 60 | VE Exams — 80 |
| MART Classifieds — 81 | When will AMSAT OSCAR-13 be in range? — 79 |
| Mobile — 50 | Youth Forum — 72 |
| New Products — 77 | |

Rudy Plak antennas

Rudy Plak, W6TIK, who has advertised in this space in *Worldradio* for many years, has notified us that because of his recent illness he is unable to fill new orders at this time. Back orders are being filled as quickly as possible. There is a limited supply of some models of antennas on hand, so check with him for availability. He will let us know when he is able to resume his antenna production.

Our best wishes for your speedy recovery, Rudy. □

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



Worldradio

July 1992
Vol. 22, No. 1

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 communi-
cations 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 1/2%
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.....Laura Ashworth

PUBLISHER'S MICROPHONE

We acknowledge the paragons of
Amateur Radio—those who have
climbed to the very zenith. The latest
to join the *Worldradio* Super-Boosters
(lifetime subscribers) are:

Patrick McPartland, WS2A, Huntington Sta-
tion, NY
Kenneth Norton, WB4HKZ, Greenville, SC
Paul Matthews, KB6APQ, Long Beach, SC
James Johnson, WW7N, Nashville, TN
Francis Swope, N8GIO, Beavercreek, OH
Dan, KF9DI, and Kim, KB9GQI, Nelson,
Pekin, IL
John Peterson, N7SEC, Reno, NV
John Daugherty, KG7IQ, Henderson, NV
Jim Roebuck, W4AXO, Birmingham, AL
Dewey Meyer, WA6APQ, Long Beach, CA
Stanley Cichy, W6GGL, San Diego, CA
Walter Wilson, N6VYB, Fullerton, CA
Doug Reinhardt, W6BKP, San Mateo, CA
David Pugatch, KI6WF, Berkeley, CA
Patricia Chaddock, KB7TW, Blaine, WA
Darren Stimmel, N7XWO, Walla Walla, WA
Robert Kelly, ex-WA5ODS, doing good things
for us at an APO

Another fine APOer, David Taylor,
KO4S, who you can also find as
KL7FBI, was a victim of the gremlins
and his listing was not included earlier.

Periodically the grumbles come as to
how expensive the equipment is. How
expensive is it? First, let's take a trip to
yesteryear, 40 years to be exact.

A Gonset Communicator was priced
at \$200. This 2M rig had about the out-
put of a hand-held today. It weighed 16
pounds and you needed a crystal for
every transmit frequency, and the
microphone cost extra.

Forty years ago, \$200 was *big*
money. When you compare how long
people had to work then (in hours) to to-
day to buy their gear, the "good old
days" really weren't so good after all.

There are some nice short films about
Amateur Radio getting the play on TV
and cable channels. Should they whet
the appetite of a prospective amateur,

how does such find us? True, some end
with an announcement such as, "Write
to Connecticut for more information,"
but how many people keep a pen and
pad nearby when watching TV?

How much more productive would
an announcement like this be: "Look in
your telephone directory's white pages
under Amateur Radio." Why, even the
average person could remember that
for a month or so.

It wouldn't cost very much at all to
have a listing in every phone book. The
number could be that of the ARRL
Section Manager. There might be a
great number of prospective amateurs
who have no idea where to seek out
Amateur Radio, and it's more our
fault than theirs.

As I predicted, contrary to the
forecast of the doom and gloomers, the
WARC conference came out just fine
for Amateur Radio.

We get letters from advertisers tell-
ing us about the results they get here:
"We have received more business per

advertising dollar than with any other
ham radio magazine by far!"

Others who spend five times as much
on their ad elsewhere get the same
number of orders from the other
magazine as from *Worldradio*.

We pass those words on to the folks
who don't advertise here. They just
look at our notes. Duhhhhh. By not be-
ing here they lose a lot more than we do.

William Jansen, K2HVN, of Linden-
hurst, New York, tells us he has
worked DXCC mobile.

Did you get a QSL card from Al-
bania? Can you imagine what an effort
went into making cards available for
that DXpedition?

Well, it was yet another spectacular
project of the Northern California DX
Foundation—not to be confused with
the Northern California DX Club—
although many of the hard workers in
the Club also toil and burn the mid-
night oil for the Foundation (which
usually seems to be the case. How come
all the "I don't have time" folks do
very little and the doers do a *lot*?)

Anyway, the NCDXF helps make a
lot of the DX happenings happen. If
you'd like to help also, drop a line to
P.O. Box 2368, Stanford, CA 94309-
2368 and the information will be on its
way to you.

CQ Field Day. If you've never been,
you've really missed something.

If the ARRL did nothing else at all
but sponsor Field Day it would be
worth the annual dues. Sure, I'd pay a
dollar an hour to participate. And, I
think that all the other real Field
Dayers would think the same.

What a bargain: When the cost of go-
ing to a dolt movie is \$7 for an hour and
a half, Field Day is cheap entertain-
ment.

Look for November Six Whiskey
Romeo. Say Hello. —Armond

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 plus TO ORDER

\$3.00 postage —CALL—

(718) 983-1416

P.O. Box 131646

Dept. W

Staten Island

NY 10313-0006



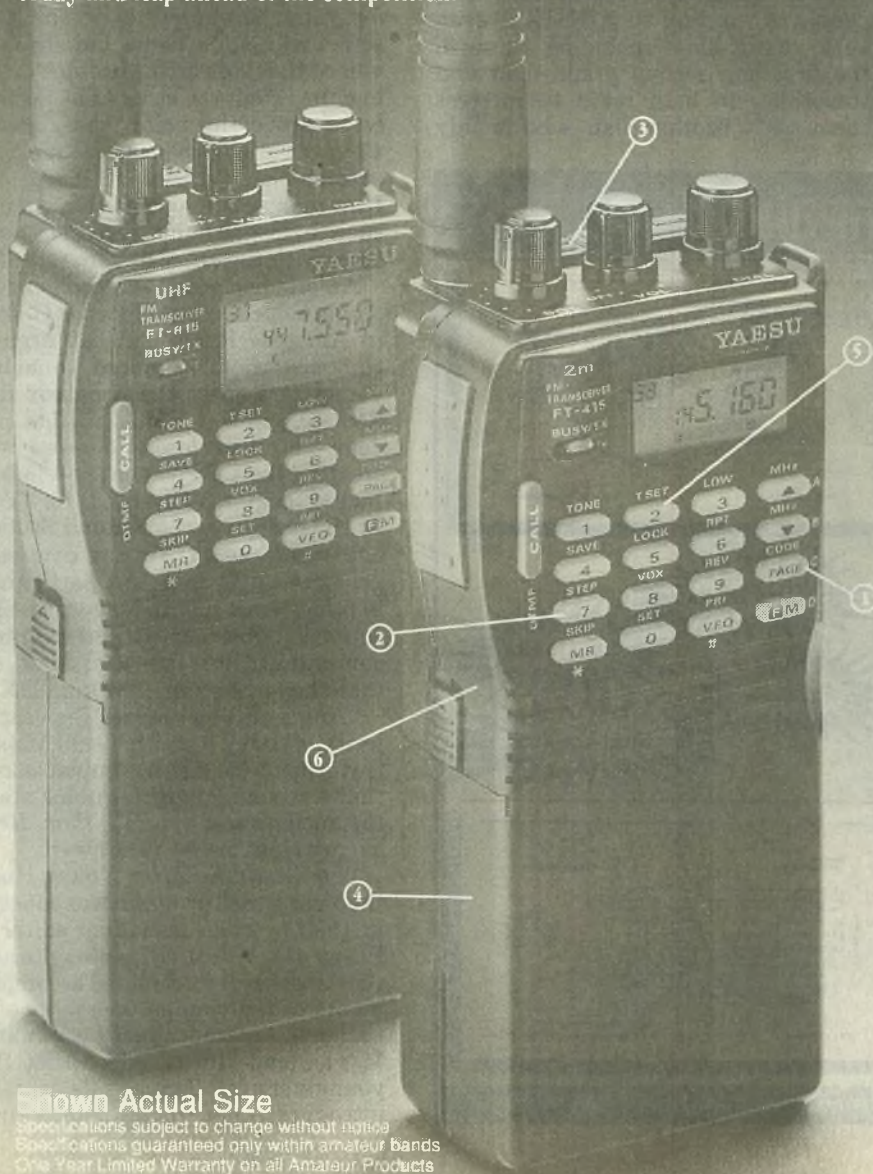
Ahead of the Competition...

...Again.

Let Yaesu give you what the competition can only dream about: powerful features, simple operation and streamlined styling in one amazing package.

The new compact FT-415/815 handheld radios deliver more than a dozen new features, including backlit keypad and display, louder audio output and large, easy-access buttons. Both the FT-415 and FT-815 offer 41 memories, built-in DTMF calling and paging, and four power levels via the FNB-27 battery. As if that's not enough, you can customize your FT-415/815 handhelds with an array of optional accessories.

The competition is still working on a radio that's as powerful and easy to use as the FT-415/815 handhelds. But why wait? Visit your Yaesu dealer today and leap ahead of the competition.



FT-415/815

2M/UHF Handheld Transceivers

FT-415: 130-174 MHz Rx 140-150 MHz Tx

FT-815: 430-450 MHz Rx/Tx

41 Memories (All memories store separate transmit and receive frequencies for "odd splits")

2 VFOS

- ① DTMF Calling and paging built-in
Built-in VOX
- ② Back-lit Keypad and Display (with time delay)
- ③ DC Direct Operation (Automatically Charges Battery with 12 Volts, FNB-25 only)
- ④ Four Power Levels (With FNB-27 Battery)
Direct Keyboard Entry for All Functions
Programmable and Automatic Battery Saver (ABS)
- ⑤ CTCSS Encode/Decode Built-In
5 Watts Output With FNB-27 or DC Direct
- ⑥ Rugged Case Construction

Automatic Power-Off (APO) Turns Radio Off Automatically After 30 Minutes

DTMF 10 Memory Autodialer, Built-In

Selectable Frequency Steps (5, 10, 12.5, 15, 20 or 25 KHz)

Four Ways to Scan (Band Scan, Memory Scan, Memory Skip, Programmable Scan)

Optional Accessories:

NC-42 1-Hour SMART Desk Charger

E-DC-5 DC Adapter With Noise Filter

MMB-49 Mobile Mounting Bracket

YH-2 Headset for VOX Operation

FBA-12 AA 6-Cell Holder

Some accessories and options are standard in certain areas. Check with your Yaesu Dealer for details.

YAESU

Performance without compromise.

©1992 YAESU . 17210 Edwards Road, Cerritos, CA 90701

Shown Actual Size

Specifications subject to change without notice.
Specifications guaranteed only within amateur bands.
One Year Limited Warranty on all Amateur Products

Angela Fischer, KBØHXY, *Westlink* Young Ham of the Year

For the second year in a row, the city of St. Louis has provided *Westlink Report* with a winner for its annual Young Ham of the Year award. On her 13th birthday, Angela Fischer, KBØHXY, was notified that she would be honored at the 1992 Dayton Ham-vention Youth Forum. Angie, as she prefers to be called, was selected from among a wide field of nominees, nearly all of whom were outstanding candidates.

"This award is not only a reflection of what I have done, but it also represents what the other fellow hams have done for me and for others," Angie said.

Ham radio needs both youth and maturity, Angie said. "Without those elms at one end of the dial and kids at the other end of the dial, this hobby would not be possible. That's because if there were just adults there would be no future for ham radio, and if there were just kids, how would we learn?"

Angie also thanked her parents, Mr. and Mrs. Tony Fischer, her school teachers, her mentor and parish priest, Father Dave Novak, NØDN, *Westlink*

and Yaesu USA, which presented her with a major Amateur Radio equipment gift.

She is the sixth youngster and the second St. Louisan to receive the award. Sammy Garrett, AAØCR, received the award last year.

First licensed at age 10, it did not take long for her to upgrade to Technician and then General. She is a seventh grade student at Sacred Heart School in Valley Park, Missouri and an excellent student, maintaining an A+ average in all subjects.

Her passion for the hobby has led her to recruit many fellow schoolmates and friends into the service. She happily teaches them what they need to know to get licensed and then encourages them to get upgraded.

Even though Angie prefers voice to Morse operation, she maintains that the code is an important and attractive facet of the hobby in recruiting young people. According to KBØHXY, even very young kids—including those in the first and second grade—can find something in ham radio to interest them. "My brother Dan, who is only



Angela Fischer, KBØHXY, *Westlink* Young Ham of the Year.

seven years old, likes to watch me talk on my radio to people all over. He has asked for help in getting his own license but thinks he may be too young."

KBØHXY knows that it is important for young licensees to be able to interact with adult hams, but she is convinced that kids do the best job of "selling" ham radio to other kids. Seemingly to prove the point, the attractive 13-year-old co-produced a "rap" song extolling the virtues of Morse code! How many adults would think of using such a medium for reaching youngsters with the story of ham radio?

Among her many accomplishments, Angie helped to establish the Gateway to Amateur Radio club, an organization specifically geared to helping youngsters enter the Amateur Radio Service, and was elected its first president. This was closely followed by her creating the YES Net on the 146.94 St. Louis repeater. YES stands for "Youth Enthusiastic Newcomer and Student" and meets every Sunday evening to promote upgrading and participation in other Amateur Radio events. She is active in public service and emergency communication activities, but says that she most enjoys working DX.

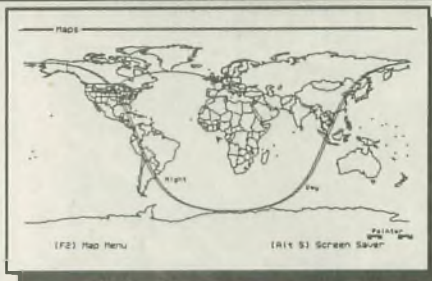
"Angie also epitomizes the vast majority of today's youth," said Missouri Governor John Ashcroft upon learning that a second youngster in his state is the recipient of the *Westlink Report* Young Ham of the Year award.

The *Westlink Report* Young Ham of the Year award program was conceived in 1985 by then managing editor Bill Pasternak, WA6ITF, as a way to honor the Amateur Radio related accomplishments of the younger members of the nation's Amateur Radio community. It was, and still is, hoped that these youngsters will become role models to introduce other young people to the

Ham Companion™

Features:

- Over 5,000 Locations Worldwide
- World Maps with:
 - "Real Time" Grayline
 - Great Circle
- Current MUF/FOT/LUF Graphs
- Local Day, Date & Time
- Sunrise & Sunset Times
- U.S. Military Bases Worldwide
- Short & Long Path True Bearings
- Short Path Distance



| Locations | Map | Graph | Quick Reference | Utilization | Exit |
|----------------------------|---------|------------|------------------|------------------------|------|
| Your Location | | | | | |
| County Seat & St. Capital | 20000 | City | 5000 | Capital of U.S. | |
| Denver | 8 | Region | 17 | Greater London | |
| California | US | Nation | UK | United Kingdom-England | |
| United States | 38°00'N | Lat./Long. | 51°30'W | 60°00'W | |
| Target Location | | | | | |
| How/Who/When/1127 | 8721 | 29°-28P | 1056/111°-211° | 1056/111°-211° | |
| How/Who/When/1127 | 8721 | 29°-28P | 1056/111°-211° | 1056/111°-211° | |
| How/Who/When/1127 | 8721 | 29°-28P | 1056/111°-211° | 1056/111°-211° | |
| True Bearing | | | | | |
| - 41° | | | Short Path | | |
| 321° | | | Long Path | | |
| Short Path Distance | | | | | |
| 4,700 Statute Miles | 13.1 | 11.7 | 10.3 | | |
| 7,570 Nautical Miles | 12.5 | 11.0 | 9.4 | | |
| 4,882 Metric Miles | 10.6 | 9.8 | 8.5 | | |
| How | 100 | 100 | 100 | | |
| Your Name - Your Call Sign | | | | | |



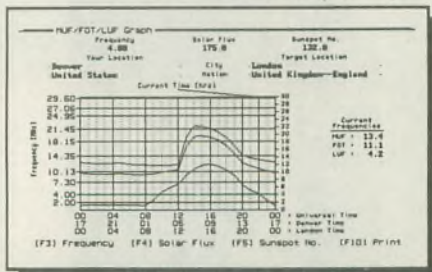
Only 79.95
IBM & Compatibles
CGA, EGA or VGA

1-800-874-0771

Shipping/Handling
USA Foreign

\$5 Ground \$10 Ship
\$15 Overnight \$25 Air

TX Res. add 8% Tax



BRINSON MICROWARE CORPORATION • 507 Asheboro Drive • Katy, TX 77450

hobby and lead them into careers in the sciences and technologies.

The *Westlink Report* Young Ham of the Year Award exists in great part because of the ongoing support of Yaesu USA Corporation which has underwritten this program since its inception. On learning of the selection of Angie Fischer as this year's winner, Kevin Karamanos, WD6DIH, Yaesu's national sales manager, released a statement congratulating KB0HXY. Karamanos said: "Yaesu is proud to see so many fine young people becoming deeply involved with Amateur Radio. This is the primary reason that we support this award program. To us,

Angie Fischer, KB0HXY, is an excellent example of today's American youth and we join with all of the nation's radio amateurs—young and old—in commending Angie on her fantastic achievements at such a young age."

Thanks to Yaesu's generosity, Angie Fischer received an expense-paid trip to the 1992 Dayton Hamvention, where she received a plaque from *Westlink Report* along with a major Amateur Radio equipment gift provided by Yaesu USA. Presentation of the award was made at the Hamvention Youth Forum on Saturday, April 25, hosted by educator Carole Perry,

WB2MGP. The presentation was made by *Westlink Report* publisher Sanford H. "Burt" Hicks, WB6MQV, and Yaesu USA national sales manager Kevin Karamanos, WD6DIH. Later that evening, Angie and her family were the guests of the Dayton Amateur Radio Association at its Hamvention Banquet.

Westlink Report and Yaesu USA Corporation know that the entire world of Amateur Radio join with them in offering congratulations to Angie Fischer, KB0HXY, for her selection as the 1992 *Westlink Report* Young Ham of the Year! □

New MARCO president

Dr. Robin J. Staebler, NN3L, has been elected president of The Medical Amateur Radio Council Ltd. Staebler, a family physician engaged in private practice in Reading, Pennsylvania, is a long-time member of various Amateur Radio related organizations. Dr. Staebler was elevated to the post during MARCO's annual meeting held in conjunction with the Dayton Hamvention. An active radio operator for more than 10 years, Dr. Staebler has been a member of MARCO since obtaining his license in 1981.

MARCO is an organization of physicians, dentists, veterinarians and health-care professionals who have an interest in personal communications and Amateur Radio. Its main purpose is to establish communications among its members and colleagues for dissemination of factual medical, electronic and technical information.

The organization also serves as a conduit for emergency medical relief supplies to missionaries and organizations operating in several Third World countries. MARCO most recently has been engaged in projects assisting doc-

tors and health-care professionals in the former Soviet Union where a project aiding children affected by the nuclear accident in Chernobyl is underway.

Through its Medical Resources Commission, the organization and its members procure diagnostic equipment, medical and hospital supplies, life-saving drugs and vitamins for physicians outside the United States who request assistance. In addition, a corps of MARCO members is available for medical consultation via Amateur Radio in the event of a catastrophe or life-threatening development anywhere in the world.

MARCO has established links and regularly provides assistance through the International Radio Missionary Alliance (IRMA) and the Salvation Army Team Emergency Response Network (SATERN), as well as many other emergency-response organizations.

At present, MARCO has more than 500 active members, of whom more than 15 percent are international or foreign members. For the past 25 years, the organization has assisted

hundreds of missionaries and Amateur Radio operators worldwide in obtaining needed assistance or supplies.

MARCO operates daily nets on the amateur bands and welcomes participation of radio operators. Its most popular Grand Rounds net each Sunday at 10:15 a.m. EDT on 14.308 MHz. For more information about MARCO write to Dr. Robin J. Staebler, Antietam Family Practice, 2948 St. Lawrence Ave., Reading, Pennsylvania 19606 or to the general secretary of the organization, Dr. William L. Sprague, 8028 San Lucas Drive, Whittier, CA 90605. □

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

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

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 led 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 overall length 135 feet with 100 feet 450 OHM feedline

Only \$29.95 PPD

G5RV ANTENNA

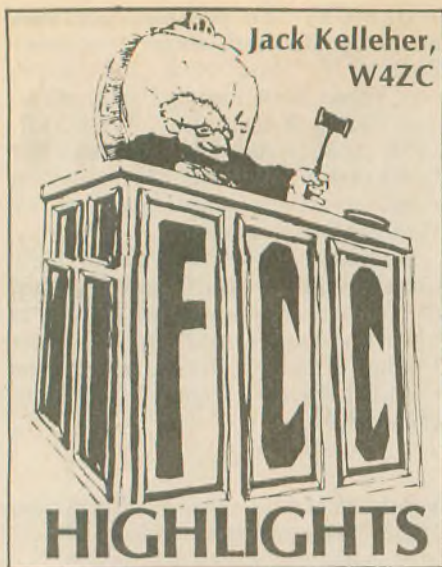


The G5RV MULTIBANDER antenna is an excellent all band (3.5-30 MHz) 102 foot dipole. On 1.8 MHz the antenna may be used as a Marconi type antenna when used with a tuner and a good earth ground. The proper combination of a 102 foot flat top and 31 feet of 300 ohm KW twinlead transmission line achieves 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 xtrm or cable, with 31' bal feedline) | | |
| G5RV-JR | 40-10 | 51' | \$29.95 PPD |
| | (no xtrm or cable, with 26' bal feedline) | | |

AT YOUR DEALER, IF NOT, ORDER DIRECT

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



as saying: "There is a very organized group of unlicensed stations operating around the upper portion of 27 MHz. We run periodic surveys to see if the level is dropping off or staying at a high level. Our monitoring network intercepted the transmissions—did a lot of DFing on them—and examined some of the content of the communications. From this we know certain groups that are very well organized and are very consistent in coming on day after day. Many of the individuals were very active. We identified a lot of the nets and their frequencies. On a couple of days we asked all of our field offices to work on the project and go in and do some close-in monitoring of these stations. They made positive identification on 66, and most of the major, organized groups and active stations were identified." Other comments in the *W5YI Report* indicate that there were some licensed ham operators involved, which one staff engineer found "a little unnerving."

Last year during a similar type of enforcement effort the fines were \$1,000. Since that time there is a new fee schedule which could bring the fine to as much as \$8,000 for each station.

The *W5YI* writeup indicates that this information is preliminary and unofficial. Notices of Apparent Liability for Monetary Forfeiture (NALs) have not yet been issued. A report on the operation is still being prepared, and there is no decision yet on distribution of the final report. (*W5YI Report*, 5/1/92)

More on RFI and TVI

In our April column we referred to a statement from an FCC field operations bureau (FOB) source which implied that the FOBs would no longer be involved in local cases of RFI/TVI, and that amateurs must necessarily deal directly with their neighbors. Fortunately this is not the full story, according to the feature article in the April 15 issue of the *W5YI Report*, which indicates that the Commission will shift its attention to the production of consumer products that are more immune to interference.

Ana Curtis, attorney/advisor to the FOB's public service division, noted that the Communications Act of 1934 was amended several years ago to give the FCC authority to establish standards for RFI immunity for home electronic products. She said: "The Commission has not done so, because the industry said it would look out for itself and that market forces would operate so that consumers would prefer products that don't have these problems. What we've said is that the marketplace would take care of it."

W5YI asked if there was any chance that the FCC would decide to use the legal authority it has to require RFI-immune products. Curtis replied, "We have asked the Private Radio Bureau and the Office of Engineering and Technology to look at the issues; for example, the impact of filters pre-installed in products."

New European regulations, to be in force throughout the European Com-

Freebanders busted (again)

For years there has been widespread illegal activity in the spectral region between the highest CB channel (27.405 MHz) and the low end of the 10M band (28.0 MHz). In the US this portion of the spectrum is allocated to the fixed and mobile services; furthermore, the Communications Act of 1934 requires a license to transmit unless specifically exempted.

According to *W5YI*, on March 12 and 13 engineers from all FCC Field Operations Bureau (FOB) offices across the nation knocked on the doors of suspected illegal freeband operations. Some 66 freebanders were identified and are in the process of being issued citations. Each could be assessed fines which could run into thousands of dollars. Formal action by the Commission is dependent on results of analysis of the data collected.

The *W5YI Report* quotes John Hudak (manager of the FCC's long-range direction finding [DF] network)

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 May 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 | AA0IK | KF0YK | N0SIH | KB0KFP |
| 1 | AA1BV | KD1IJ | N1MGN | KA1ZZI |
| 2 | AA2JA | KF2HT | N2QQG | KB2OUG |
| 3 | WY3Z | KE3CO | N3MBO | KB3AAS |
| 4 | AC4QC | KO4WV | | KD4NSL |
| 5 | AB5FO | KJ5AE | | KB5SBJ |
| 6 | AB6KY | KM6UA | | KD6IYZ |
| 7 | AA7OW | KI7CQ | N7YDL | KB7OYT |
| 8 | AA8HF | KF8UK | N8TMB | KB8NXO |
| 9 | AA9DY | KF9JF | N9PEK | KB9HTV |
| North Mariana Is. | AH00 | AH0AJ | KH0AT | WH0AAR |
| Guam | KH2Y | AH2CO | KH2FY | WH2AMW |
| Johnston Is. | AH3D | AH3AD | KH3AG | WH3AAG |
| Midway Is. | | AH4AA | KH4AG | WH4AAH |
| Hawaii | | AH6LW | WH6GE | WH6CPJ |
| Kure Is. | | | KH7AA | |
| American Samoa | AH8A | AH8AE | KH8AI | WH8ABA |
| Wake Wilkes Peale | AH9B | AH9AD | KH9AE | WH9AAI |
| Alaska | | AL7OE | WL7CZ | WL7CFA |
| Virgin Is. | NP2T | KP2BZ | NP2FJ | WP2AHQ |
| Puerto Rico | | KP4TO | | WP4LCK |

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

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.

munity, require that electronic products have an adequate level of intrinsic electromagnetic immunity from outside interference. In the US the Electronics Industries Association (EIA) and the American National Standards Institute (ANSI) are reportedly developing standards to reduce equipment susceptibility to interference. However, Terry Mahn, a private attorney specializing in communications, writing in the latest issue of *EMC Test and Design* magazine, said: "Voluntary efforts by EIA and ANSI continue at a snail's pace and federal agencies, other than the military, profess little interest in regulating in this area." He predicted that US manufacturers may find RFI immunity taking on added importance; if they want to market products overseas they will have to comply with Europe's regulations.

We think that there is a ray of hope, here, that immunity standards will finally be developed and enforced for products marketed in the US. This applies particularly to telephones; the more solid-state, low-voltage electronics they contain, the more susceptible they seem to be, with rare exceptions. And speaking of TVI, we amateurs have for decades used low-pass filters to minimize interference to TV. Another side of TVI is to reduce the TV receiver's intrinsic vulnerability to HF interference by using a high-pass filter at the input to the TV. A good high-pass filter (described by Bill Orr, W6SAI, in May's *CQ*, p.100) is available from Radio Shack for \$4.29, model RS #15-579. (*W5YI Report*, 4/15/92)

Repeaters

February 29, 1992, was the first meeting of the ad hoc committee appointed by ARRL President Wilson to examine ways to more fully incorporate input from volunteer repeater coordinating groups and repeater users into the ARRL's board of directors' decision making process.

Though initial recommendations were made, there has been misunderstanding that a change in League policy has been adopted. Neither the board nor the executive committee has taken action or has even formally

considered the recommendations made thus far.

The broadest possible discussion is sought before the July 17 and 18 meeting of the board. Further explanation is scheduled to appear in the July *QST*, or write to the ARRL (225 Main Street, Newington, CT 06111) for details about recommendations to date.

VE irregularities

In our January issue we briefed a *Westlink* report on alleged irregularities in volunteer examiner testing in the Los Angeles area. It was indicated that the FCC had initiated its own investigation of VE testing for the California Amateur Radio School.

Evidently there was fire behind the smoke in that case. On April 23 the Commission adopted an "Order to Show Cause and Suspension Order," proposing to revoke the Amateur Service station licenses and suspend the amateur operator licenses of two

amateurs who were apparently "the operators of the California Amateur Radio School in Los Angeles, California, at all times pertinent to this proceeding." The order was addressed to Sandra V. Crane, N6TFO, and Charles P. Pascal, WB6CIY.

The orders allege that the respondents, prior to the administration of Amateur Service license examinations, had information that they used to tailor the content of their instruction at the school to include answers to all or most of the questions that would later be part of the examinations, while excluding from instruction the answers to most questions that would not be part of the examinations. "This last-described action by respondents constitutes an apparent willful and repeated violation of Section 97.17(e) of the Commission's Rules."

The revocation/suspension orders will go into effect 30 days after delivery of the orders unless the respondents request a hearing or submit a written statement in the matter.

Illegal operations

Donald W. Bishop, N0EA, was issued an NAL on March 20, 1992, in the amount of \$10,000 for illegal pirate operation last fall. Bishop is charged with playing the taped transmissions of a long-active pirate known as "The Voice of Laryngitis" over his ham radio. The illegal operation allegedly took place on 15.050 and 7.420 kHz for several hours while Bishop was driving to Colorado. The FCC's long-range direction finding network pinpointed the pirate broadcasts and had Bishop stopped by the Colorado State Patrol on October 6, 1991.


The FCC fined Richard E. Matice of Zion, Illinois, \$16,000 for the June 1991 transmissions of fake MAYDAY signals using an unlicensed radio station aboard the vessel *It'l Do*. The operator had radioed that the boat was in trouble on Lake Michigan and taking on water. Aided by radio direction finding equipment, the Lake County Sheriff's Marine Unit and Coast Guard concluded that Matice was the operator who transmitted the distress signal, when in reality an emergency situation had not existed.

The FCC ordered Gerald A. Kawalec of Fulton, Texas, to pay \$750 for transmitting on an incorrect frequency after failing to submit evidence alleging he could not pay the fine. Kawalec had earlier said he did not know that the frequency was not available for marine use and that he was told by other radio operators to use the frequency, or perhaps remembered an incorrect frequency.

Portable Power/Charger


Only \$ 79.95*

- Multi Output at 3, 6, 9 or 12VDC
- Charge from AC or 12vdc source
- Automatic shutoff at full charge (12v recharge less than 3 hrs)
- Built-in Voltage - Charge Meter
- Sealed lead acid 6.5 AH battery
- Supplied with 12 VDC cigarette plug and UL listed AC adapter
- Weight: 8 lbs, LWH: 7" x 4" x 8"
- Great power for Field Day, Contests, Mobile, HTs, TV, RV, cellular, camcorder, 12v vehicle/ boat starter, and all of your indoor/ outdoor portable power needs!



Window Mount BWM-1

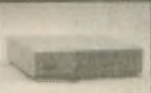
Only \$ 13.95*



Get your rubber duck outside with the BWM-1 Window Mount. This handy mount clips over your car's window and lets your antenna get out and above the car roof giving you better range into your local or distant repeater. High quality BNC to BNC connector can be used on your own coax or with optional 6' 50 ohm, Model BC 6-174 Cable, priced at only \$ 10.95* You can buy both the mount and the 6' cable for \$ 23.00* (cable and antenna shown in photo are extra cost options)

CD- ROM Drives (scsi/ int)

From Only \$ 394.95*



CD-ROM for SCSI in internal and external models for PC and Macintosh. Get in on the rush to CD-Technology. These drives play your favorite audio tool. Call now to order your CD-ROM and ask for our pricelist of CD-ROM titles

* prices do not include CA sales tax or shipping & handling Add \$2.50 S&H per order • Master Card & Visa welcome Send for our monthly flyer on radio and computer specials

Trionics

PO Box 1434
Rancho Cordova, CA 95741
Phone/ fax: (916) 366-7408

HI-PERFORMANCE DIPOLES

MFD-5

Antennas that work! Custom assembled to your center freq. ea. band • Advise ht. 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)

| | | | | |
|--------|---------------------|--|-------|----------|
| MFD-5* | 80-40-20-15-10M | max. performance dipole 87' long | | \$105ppd |
| MFD-2 | 80-40M | max. performance dipole, 85' long | | \$65ppd |
| HPD-3* | 160-80 | 40M hi-performance dipole 113' long | | \$75ppd |
| SSD-4* | 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'x105' | | \$108ppd |
| SSD-4* | 80-40-20-15M | space-saver dipole specify L, 48'x93' | | \$96ppd |

*8 bands with wide-matching range tuner.

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

W91NN ANTENNAS 708-394-3414
BOX 393 MT. PROSPECT, IL 60056

The FCC said Kawalec was knowledgeable regarding radio transmitters and used the frequency at prearranged times over a period of time.

David Plourde, N1IZR, of Lewiston, Maine, was fined \$10,000 for operating a CB radio station on 27.215 MHz using a non-approved transmitter and linear amplifier. The FCC said, "Use of non-type-accepted transmitting apparatus voided Plourde's authorization to operate a CB station." Plourde had been the subject of several complaints since moving to his present address and "has not been cooperative in addressing these complaints." (*W5YI Report* and the *ARRL Letter*)

Beating the system (occasionally)

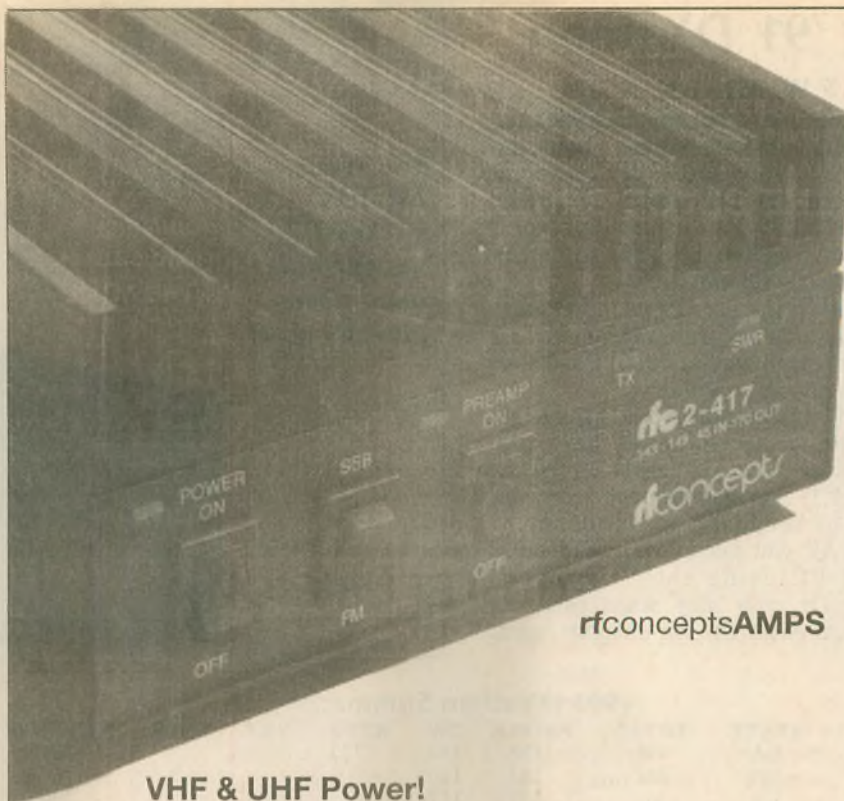
Despite its announced desire not to become a "national zoning board," the FCC has preempted a town ordinance against satellite antennas in Deerfield, New York. It is a victory for owners of home satellite dishes or other antenna facilities used in personal communications by private citizens.

Deerfield resident Joseph A. Carino installed a 10 ft. satellite dish at his home, despite a local law against dish antennas and against any "tower type" antennas weighing more than 100 pounds on any lot less than one-half acre in size. No neighbors objected to Carino's antenna, but the town ticketed him for violation of the zoning code and denied him a variance for failure to show a "necessary hardship."

Unsuccessful appeals through the state and federal courts led him to request the FCC to preempt the local regulation. The FCC found quite a few defects in the Deerfield ordinance, especially that without explanation it discriminated against certain kinds of satellite dish and tower structures but not others. Even very small dishes, considerably smaller than Mr. Carino's could have been banned by the town. The FCC ordered the ordinance preempted and the antenna is apparently free from danger of being seized or disassembled by the town.

An unusual RFI case

Next door neighbors of ham operator Joseph Michaels, W4DDV, have lost their case in Federal Court to have Michaels, of Tucson, Arizona, ruled a common law "nuisance." An Arizona court found that the FCC had exclusive jurisdiction over radio frequency interference matters and that state courts were precluded from remedying any alleged private nuisance caused by interference from the operations of a ham radio. The decision was upheld by the Appellate Court. (*W5YI Report*, 5/1/92) □



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

The '91 DXathon

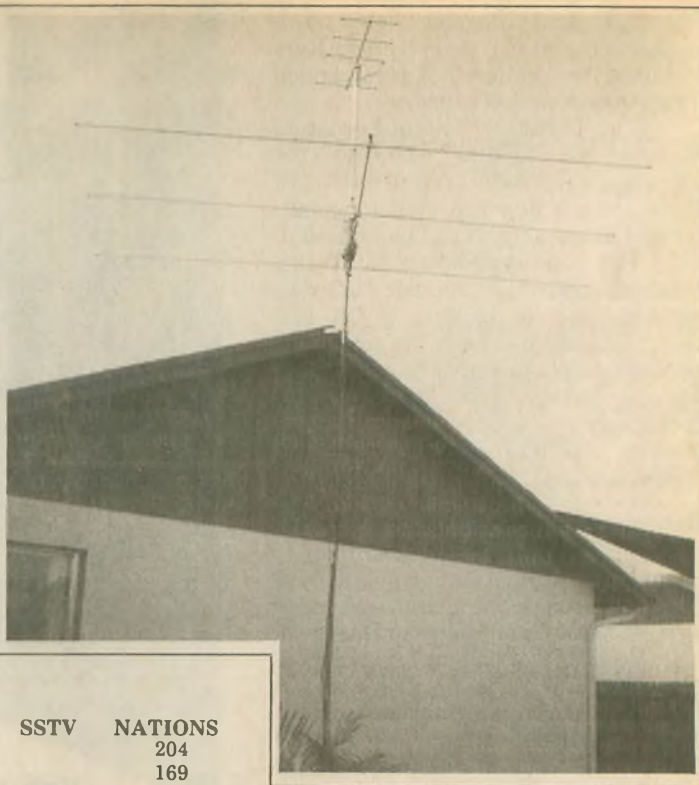
JOHN F.W. MINKE, N6JM

The number of entries this year for *Worldradio's* DXathon was about the same as last year, with six DXers coming back for another chance at it. Peter Meyer, N0AFW, after placing second last year, decided this year to be the top gun with 496 points.

Several of the entries included East Germany as a separate nation, but as the unification was in 1990, East Germany is no longer valid.

The 1992 DXathon should have a few more nations to work. We have prepared some new log forms on WordPerfect 5.1. You may request a copy on-to disk by sending a 5 1/4 in. floppy to N6JM. All you need is an IBM compatible PC using the "typeover" feature. Or, you may want just the forms and enter the log data by hand.

Ted Mach,
N4FBY,
worked 112
nations with
his garden
antenna array.



1991 DXathon Summary

| CALL | STATE | TOTAL | PHONE | CW | RTTY | SAT. | SSTV | NATIONS |
|-------|-------|-------|-------|-----|------|------|------|---------|
| N0AFW | CA | 496 | 203 | 182 | 111 | | | 204 |
| W8ILC | OH | 267 | 141 | 126 | | | | 169 |
| N4MM | VA | 254 | 137 | 117 | | | | 160 |
| KK6XN | CA | 233 | 119 | 112 | 2 | | | 136 |
| KF9FY | IN | 226 | 142 | 62 | 22 | | | 147 |
| K17Y | OR | 195 | 70 | 122 | 3 | | | 130 |
| N6JM* | CA | 193 | 112 | 81 | | | | 126 |
| K6FO* | CA | 177 | 72 | 76 | | 29 | | 115 |
| N4FBY | FL | 170 | 102 | 68 | | | | 112 |
| KF7RU | OR | 166 | 160 | 6 | | | | 160 |
| W5LLU | TX | 162 | 162 | | | | | 162 |
| K0HQW | NM | 125 | 88 | 37 | | | | 52 |
| KI6PG | CA | 110 | 90 | 20 | | | | 92 |

**Worldradio's* N6JM and K6FO are not eligible for winning in the DXathon; they participate just for fun.

Either may be requested from *Worldradio* or from N6JM, 6230 Rio Bonita Dr., Carmichael, CA 95608. Include SASE with sufficient postage.

As the ARRL is using the WARC bands as endorsements to the 5BDX-CC, we will now allow the use of the WARC bands. We are also considering deleting some of the less popular modes and leaving it to just CW and SSB. Any thoughts on this?

For some reason the interest in this event is still low. We at the N6JM shack keep a running tally as the year progresses; it's fun to see how many we can work in a single year. We received one suggestion that we issue certificates to all who work at least 100 nations. Perhaps that could be an incentive for more entries in the DXathon.

Now for the sour grapes. We have received a complaint that one of our entries is a "convicted" ARRL DXCC cheater. We know nothing of that, and we feel that it has nothing to do with the DXathon. The DXathon is strictly an honor system which does not require QSL cards. If you worked it, we take your word for it. Anyone who cheats his way through the DXathon is only kidding himself. We assume that cheaters have a poor opinion of themselves and must cheat to impress their fellow DXers. Let's hope there is no cheating in the DXathon.

In the spirit of good faith as the basis for this contest we congratulate the top scorers (awards will be shipped as soon as the engravers finish them) and we extend an appreciation and kudos to all those who participated!

SOLD OUT AT DAYTON! SOLD OUT AT DALLAS!

— IF YOU SAW OUR DEMONSTRATION YOU KNOW WHY —

SOLDER PL259s: A SNAP - REPAIR ALUMINUM ANTENNAS



**Solder any two metals together without soldering experience.
Stronger & more conductive than regular solder.
Small jobs soldered with a match or lighter.**

Kit Includes:

- * 1 Silver Bearing Solder Paste Syringe (For all electrical - 2% silver content)
- * 1 Copper Bearing Solder Paste Syringe (For copper pipes and heavy duty)
- * 1 Aluminum Solder Paste Syringe (For aluminum and most other metals)
- * 1 Pot Metal Solder Paste Syringe (For zinc diecast, pewter, etc.)
- * 1 Refillable Butane Pencil Torch (Brushed aluminum, precision professional tool)
- * 1 Vinyl Storage Pouch
- * Instructions and warranty

Solder-It Kit \$59.00. Pastes \$6.00 each. Torch \$39.95

Add \$2.00 S&H (Ohio add 6.5% tax) and send check or money order to:

SOLDER-IT CO. P.O. BOX 20100 CLEVELAND, OH 44120 We ship in 48 hrs.

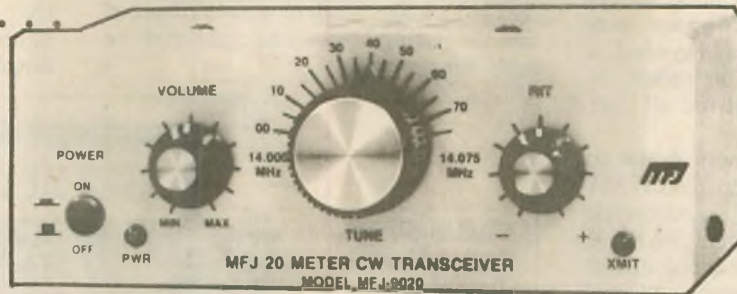
MFJ 20 Meter CW Transceiver

... throw this *tiny* CW rig in a corner of your briefcase and enjoy DXing and ragchewing wherever you go ... you get a high performance superhet receiver, crystal filter, RIT, AGC, vernier tuning, sidetone, speaker, up to 5 watts output, semi-break-in, more .

MFJ-9020

\$179⁹⁵

- 15 Meter and other bands available soon
- Free MFJ-9020 manual
- Unconditional Guarantee for one full year



knob set. Machine screws and pressed-in PEM nuts are used — not sheet metal screws.

Has power-on LED, transmit LED and SO-239 coax connector for antenna.

Designed by Rick Littlefield, K1BQT
The MFJ-9020 was designed by Rick Littlefield, K1BQT. He's known worldwide for his

Throw this tiny CW rig in a corner of your briefcase and enjoy DXing and ragchewing wherever you go.

You'll turn lonely nights into exciting adventures as you contact fellow amateurs around the world.

20 Meters is open day and night so you can operate whenever you have a free moment.

With 5 watts you'll have plenty of power to work the world even with a makeshift antenna.

At home with a good dipole, vertical or beam, you'll be able to work almost anyone you hear — can you imagine earning DXCC with 5 watts?

Big gun DX'ers: Try a new DX challenge for the price of a simple station accessory.

It's good enough to be your only rig — you get a high performance superhet receiver, razor sharp 8-pole crystal filter, RIT, AGC, vernier tuning, sinewave sidetone, built-in speaker, headphone jack, adjustable semi-break-in, up to 5 watts output plus much more.

Covers lower 20 Meter CW band, 14.000 to 14.075 MHz. 6x6½x2½ inches. Weighs 1-3/4 lb. Uses 12-15 VDC. Optional plug-in Curtis chip keyer, narrow audio filter, antenna tuner, power pack and antenna.

High Performance Superhet Receiver

You get a high performance superhet receiver with a selective double tuned front end and double-balance mixer. It's sensitive enough to copy weak DX signals down to the noise floor yet resist overload when a strong local comes on.

What you hear is what you get — images and birdies are eliminated with this single conversion design and a high 10 MHz IF.

A ball bearing reduction drive and linear frequency readout gives you smooth precise tuning.

Half watt of audio gives you plenty of volume from headphones and built-in speaker.

Razor Sharp Selectivity

You'll slice through QRM and pull weak ones out of the mud with an 8-pole crystal filter that gives you razor sharp selectivity with steep sided skirts.

Instant Recovery AGC Circuit™

Weak DX signals are just as loud as strong local ones because the MFJ-9020 *graceful* Automatic Gain Control (AGC) keeps your

audio level constant.

You get smooth break-in operation because MFJ's exclusive *Instant Recovery AGC Circuit™* gives you *instantaneous* transmit recovery.

True Receiver Incremental Tuning (RIT)

True Receiver Incremental Tuning (RIT) lets you dodge QRM and compensate for other's drift without moving your transmit frequency.

reliable high-performance transceiver designs and countless articles.

K1BQT has given careful attention to board layout, heatsinking, mechanical rigidity, voltage regulation and component selection to ensure stable operation and long-term reliability.

It meets or exceeds all FCC requirements.

Comes fully assembled, tested and guaranteed to work

Your factory built MFJ-9020 is ready to work DX right out of the box. It's not a kit of parts you have to put together and hope you can get to work.

Free MFJ-9020 Manual

Manual includes operating instructions, setting up your station, DX techniques, antenna suggestions, trouble shooting guide, theory of operation, alignment procedures, parts placement, schematic, parts list and more.

For free MFJ-9020 manual write or call MFJ.

Plug-in Keyer and Narrow Filter (Optional)

MFJ-412 Curtis chip iambic keyer, \$39.95. MFJ-726 narrow audio filter, \$29.95. Has In/Out switch.

Each plugs into MFJ-9020. Controls on rear panel. No soldering or modifications needed.

No Matter What™ Guarantee

You get MFJ's famous one year *No Matter What™* unconditional guarantee. That means we will repair or replace your MFJ-9020 (at our option) *no matter what* for a full year.

Continuing Service

MFJ Customer Service Technicians will help you keep your MFJ-9020 performing flawlessly — no matter how long you own it. Just call our toll-free help line 800-647-TECH(8324) — an MFJ exclusive.

Made in USA

The MFJ-9020 is made in the USA. Help our fellow Americans by keeping our money here — buy Made in USA.

Call Your Favorite Dealer Today

Enjoy DXing and ragchewing wherever you go. Call your favorite dealer today and get your MFJ-9020. Don't leave home without it!

Other Bands Available Soon

MFJ CW Transceivers for 15 Meters and other bands available soon. Watch for them.

MFJ Integrated CW Station

Transceiver, tuner, power pack fastens together to form *tiny* 6x6½x8½ inch integrated CW station.

SAVE \$40

MFJ-9120B

\$329⁸⁰

Save \$40! \$329⁸⁰

buys complete MFJ CW Station. Includes MFJ-9020 transceiver, MFJ-971 tuner, MFJ-4114 power pack, MFJ-1760 antenna . . . order MFJ-9120B. \$369.80 if purchased separately (keyer and filter not included.)



Enough Power to Work the World

With 5 watts you'll have plenty of power to work the world even with a makeshift antenna.

You can use any antenna with an SWR up to 3:1. The MFJ-9020 is rugged enough to withstand momentary antenna opens or shorts without damage.

If you're really into QRP you can reduce your power down to milliwatts.

A pleasing *sinewave* sidetone lets you monitor your sending.

You also get quiet adjustable semi-break-in and adjustable automatic transmit offset.

You'll get hours of battery operation — draws only 50 ma. receive, 1 amp transmit.

Looks Great!

The MFJ-9020 is housed in an attractive matte-black aluminum enclosure with a deluxe brushed-aluminum front panel and matched

MFJ Portable Antenna Tuner



MFJ-971 **Has** Cross-Needle SWR/Wattmeter, covers 1.8-30 MHz, balun for balanced lines, 200 watts PEP. Tunes coax, balanced lines, random wire. Wattmeter has two switchable ranges: 30, 300 or user selectable 6 watt ranges. Tiny 6x6½x2½ inches matches MFJ-9020. Fastens to MFJ-9020 and/or MFJ-4112 Power Pack to form single unit.

MFJ Portable Power Pack



MFJ-4112 **Portable** Battery/AC Power Pack for MFJ-9020 or other low power transceiver. Provides 12 VDC from eight D cells (not included) or from 110 VAC. 6x6½x2½ inches matches MFJ-9020. Fastens to MFJ-9020, MFJ-971. MFJ-4114, \$69.95. Same as MFJ-4112 but includes charging circuit for Ni-cad D cells (not included). 6x6½x3½ inches.

MFJ Portable Antenna



MFJ-1760 **Efficient** 20 Meter dipole. **\$29⁹⁵** Lightweight, easy to carry, easy to put up. Perfect for portable operation with MFJ-9020.

Nearest Dealer/Orders: 800-647-1800

Technical Help: 800-647-TECH(8324)

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

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

MFJ . . . making quality affordable

Prices and specifications subject to change © 1992 MFJ Enterprises, Inc.

SAREX in Massachusetts

JUDITH JOHNSON, KA1WZM

The intent of SAREX (Shuttle Amateur Radio Experiment) is to encourage an interest in the sciences, Amateur Radio and the space program. For the students in Maynard, a small community 20 miles west of Boston, Massachusetts, it did all that and more!

The Green Meadow School, home to the Amateur Radio station KA1WZM and made up of 625 eager students, took their involvement in the SAREX program seriously. The school focused its attention on the theme, "Communications, past, present and future." The classrooms and hallways were beautifully decorated with a tribute to technological advancements through the ages.

Art teacher Sharon Santillo generated student enthusiasm with a space art exhibit. Futuristic space craft floated in the school and storefronts downtown. Third grader Olivia Robinson, winner of the space art design contest, was honored by having her handiwork featured on the new Green Meadow Amateur Radio station 1992 QSL card commemorating the *Atlantis* contact.

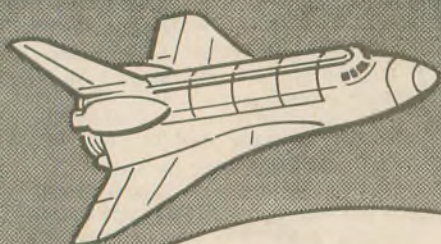
Debbie Cranson, our librarian, held a space trivia contest. Her efforts "to stump the kids" sent student interest in the space program soaring. She was thrilled to see student effort directed toward using reference material to seek out answers.

Suzie Kulevich, a second grader, said, "I learned many interesting facts about space, as well as how to do research in the library. It was fun to bring your answers down to a special box shaped like a space shuttle. When it was announced over the intercom that I had won, I was so excited I almost took off into space on my way down to collect my prize."

**Cliff Sullivan,
Jamie Bretz,
Jeannine
Madow, Heather
Zahn and Kelly
Richardson** participated in the SAREX project.



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.



**Model TVC-4G
ATV Downconverter
only \$89**

TVC-9G 33 CM - \$99
TVC-12G 23 CM - \$109



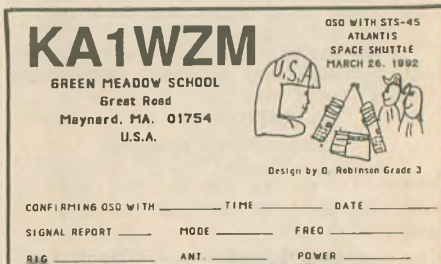
**TC70-1d ATV
TRANSCIVER
only \$329
w/50 Watt amp \$539
Value + Quality from
over 25 years in ATV.**

CALL (818) 447-4565 M-F 8AM - 5:30 PM PST.
P. C. ELECTRONICS
2522 - WR PAXSON LN ARCADIA CA 91007

VISA, MC, UPS COD
Tom (W6ORG)
MaryAnn (WB6YSS)

After weeks of anticipation, four lucky students, Jeannine Madow, Cliff Sullivan, Kelly Richardson, and Jamie Bretz made contact with Brian Duffy on the space shuttle *Atlantis*. Kelly noted that "to be chosen to talk, we wrote essays and gave speeches. I was one of the lucky ones."

Cliff thought, "The experience was unbelievable. I felt so proud."



Green Meadow QSL card, designed by Olivia Robinson, grade three. Astronaut Brian Duffy was the first to receive the new card.

Heather Zahn, who did not get a chance to speak to Astronaut Duffy, said however, "I had an important role in tracking them on the computer. Everyone kept asking me if they were in or near our range to CQ to them."

Jeannine said of the contact, "I was super excited. Brian Duffy had a great sense of humor. He joked around with

us a lot, and it made us feel less nervous. At the end of the contact, when we said "73," all the people in the room were clapping."

And applaud they did! The event was highly publicized. It received terrific coverage from WAVM, the

Maynard High School student run television, Cablevision and all of the Boston networks and newspapers, as well as the *Weekly Reader*. Students participated in broadcasts on WBZ Radio's *Kid's Company* and Channel 27's *KPOV, Kids Point of View*.

Judith Johnson, KA1WZM, fourth grade teacher at Green Meadow School, prepared this article with contributing authors Kelly Richardson, age 10; Heather Zahn, age 10; Jeannine Madow, age 10; Suzie Kulevich, age 7; and Cliff Sullivan, age 10. □

SAREX in South Carolina

JIM BROWN, WM3O

As director of the Stanback Planetarium at South Carolina State University in Orangeburg, South Carolina, and as an Amateur Radio operator, I felt that the connection with SAREX was a logical one.

I applied to the ARRL for permission to participate in an upcoming SAREX flight in the summer of 1991, and on December 20, 1991, I was notified that there would be a good chance that we could be chosen to participate in the upcoming STS-45 SAREX flight.

With this in mind, I approached Mr. Heyward Bozard, N4VFK, computer analyst for the Orangeburg County School District, and presented the information. Together with Ms. Anne Neeley, public relations officer for the district, we set up a theme contest to select 10 students from within the district's middle schools.

While this process was underway, I approached the Edisto Amateur Radio Society (EARS) and solicited the help of a number of club members. Boby Mixson, N4WPJ; Marty Diggins, KO4BR; Gary Blankenship, N4MCF; George Cone, WB4TGK; Mike Cone, KB4REI; and Harry Shroat, N4XMY, all volunteered to help with the project. Marty, KO4BR, and George, WB4TGK, are both members of the Southern Bell Telephone Pioneer Amateur Radio Society and suggested that perhaps the Pioneers would be able to help.

A few weeks later, Marty, KO4BR, came back from a meeting with Mr. Jim Reeves, WX4M, of the Pioneers, with the promise of a complete OSCAR satellite station, including a brand new Kenwood TS-790A, a brand new Hygain 218S complete OSCAR antenna system, a brand new Yaesu G-5400B Azimuth elevation rotor, hardline, power supply, amplifier and pre-amplifier—in short, the works!

When the day of the contact was upon us, the students had been selected, rehearsals completed, and the media informed. We all listened in to the orbit before ours to check for signal strength and to practice tracking the orbiter with our OSCAR system. We heard N5WQC contact a school somewhere in New England and we had perfect reception. Their signal was

S9 +10, and audio was clear and solid. Our tracking was made simple as we had *STS-Plus* software running on a PC-clone that I use to run the Planetarium. Its output can be given in

altitude and azimuth as well as a graphic display of the orbiter in relation to our ground location.

About 4 p.m. EST, 24 minutes before the contact, everyone began to show up. TV crews, newspaper reporters and photographers, radio crews and, of course, the students, family members, representatives from Orangeburg

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!

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

TOLL FREE ORDER NUMBER: (800) 877-7979

For all states except California, Calif. residents please call collect on our regular numbers. (310) 820-1234

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



SAREX participants— Adults, back row (L to R): Bobby Mixson, N4WPJ; Jim Brown, WM3O; Mike Cone, KB4REI; George Cone, WB4TGG. **Students, back row (L to R):** Imari Wright, Jamie Danford, James Williams, Jason Stone, Yasha Kdadkodayan; **front row:** Samantha Horner, Jennifer James, Beth Crawford, Tasha Wheeler, Tina Middleton.

School District, university staff, and club members.

About 15 minutes before the contact the Johnson Spaceflight Center called to make sure everything was on track and to tell us that they would stay on the phone throughout the pass. The kids were anxious and the atmosphere in the theater was tense. As we counted down from T-30 seconds, I opened up the squelch on the radio and, on the directions from JSC, began calling them. "N5WQC, N5WQC, N5WQC this is WM3O at South Carolina State University, over ..." Nothing, no answer, only static. Again, "N5WQC, N5WQC, N5WQC this is WM3O at South Carolina State University, over ..." Nothing, no answer, only static. By now we were fully two minutes into our pass, and still nothing.

Finally, out of the static, "WM3O, this is N5WQC." But what had happened to the beautiful signal that we had heard on the previous orbit? No time to ponder this—I had to hope that the people manning the antenna controls had us on track. Quickly, I confirmed contact and got the first student up for his question. The answer came back, but while the signal was strong, the audio was so weak that it was difficult to understand. Another student and another answer. As the third student finished his question, the signal had dropped noticeably and I had the volume of the TS-790A wide open. The noise was overpowering the audio from the shuttle and it finally faded into nothing.

Then it was over. TV interviewers swarmed in quickly to get their interviews. I kept hearing questions being asked to the kids, "... were you disappointed?" And to my surprise, most of the answers were to the effect of yes, but it was exciting just to be a part of the project. They did, after all, get to hear the astronaut live and in person, something that they had never done before.

The six o'clock news was mixed, one station praising our efforts and another playing up the static and poor reception. The newspapers were kinder and also praised our efforts.

We were in the right place with the right equipment. We had the best equipment that money could buy and it didn't help. What happened? I placed a call to JSC and spoke with Roy Neal, K6DUE. He told me that they had

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 IGZ type installation. Both kits use soft-drawn, stranded concentric lay bare copper conductors, tinned bronze tower 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!

M. Bohnhoff, Inc.
P.O. Box 6373
Libertyville, IL
60048-6373
708-918-7330

Write for free product catalog



Quality Kit # 1010
\$89.95



Deluxe Kit # 2010
\$119.95

Illinois res. add 6.5%,
\$6.50 COD
or \$2.75 shipping/handling.

M. BOHNHOFF



So compact, so sophisticated.

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-580T

RATED # 1 IN JAPAN, NOW AVAILABLE IN THE U.S.

A super-compact handheld, the tiny DJ-580T is a powerful, feature-packed twin bander. This super-compact HT is the smallest you'll find, and literally fits in the palm of your hand.

Ergonomic design, combined with excellent sensitivity and unbelievable great sound, sets a new standard for miniature HT's.

New MCF function allows you to set the 40 memory channels regardless of which channels you want for VHF or UHF. Any combination is possible.

Alinco's DJ-580T has Full-Duplex Cross Band Operation and Cross Band Repeater Functions with real world power and excellent sensitivity. Airband

receive with simple modification.

If the battery is depleted to less than 5 volts, Alinco's Patented Super Low Battery Consumption Function is automatically activated. You can continue to operate the radio all the way down to 3.5 volts. This feature is effective with dry cell batteries only.

This unit has built in DSQ for paging, CTCSS encode and decode standard, various scanning functions, 3 power level selections for each band, bell function, and an illuminated keypad.

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



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.

monitored with amateur gear every SAREX pass of the mission to that point and had not had any trouble hearing the astronauts—until our pass. They heard nothing from the shuttle. Whether it was a faulty connection between the mike plug and the SAREX transmitter or whether it was the orientation of the orbiter, I have not been

able to find out.

All in all, many people put many hours into this project. We would not have been as successful as we were without the help and support of the Southern Bell Telephone Pioneer Amateur Radio Society, the Edisto Amateur Radio Society, Orangeburg County School District and South

Carolina State University. Was it a success? In our opinion, yes. Were the kids excited? Yes. We even planted the idea of an Amateur Radio class being taught. Did we promote Amateur Radio to the public? Yes, and more so, since it made statewide coverage in newspapers, TV and radio. Would we do it over? Surely! □

SAREX in Texas

KAREN NICKEL, WD5EEU

Lieutenant Colonel Brian Duffy, the pilot aboard STS45, must have seen the movie *E.T.*, because one of the first things he mentioned after getting his Amateur Radio license was that he wanted to “phone home” to his children at Ed White Elementary School in El Lago, Texas, during STS45 using the Shuttle Amateur Radio Experiment (SAREX). Brian had no idea what an experience he was going to provide for a lot of students, parents and teachers, and in particular the eight young people who were able to communicate directly with him.

It started quite simply. Shaun and Shannon Duffy would speak to him and in addition one child would be selected from each of the third, fourth and fifth grade classes to ask a question. Of course, every good plan has a contingency, so three backup children were selected as well. The children were given information about the experiments that would be carried onboard the shuttle and were to decide

what questions they might like to ask. The excitement began to build.

Karen and John Nickel, WD5EEU and WD5EEV, contacted the science teacher, Carolyn Judy, to determine where and how the contact would take place. To overcome the difficulty of a tracking antenna, it was decided to use a beam and a simplex 440 frequency to the JSC Amateur Radio Club ham shack and patch to the 2M frequency there to utilize the tracking antenna.

The antenna still posed a problem due to trees, but that was overcome by mounting the beam to an extension ladder which was lashed to a support of an arbor behind the school. A tracking program was loaded on the one computer that would support it.

In the meantime Shaun decided that

he would try his best to get his Amateur Radio license, unbeknownst to his dad. Once Brian was in quarantine, Shaun took element 2 and passed. If worse came to worse, Shaun could tell his dad that he was a “half baked ham.”



Brian Duffy with Shannon and Shaun, upon return to Houston.

Meanwhile, a get-acquainted-with-Amateur-Radio session was held with the students to get them used to the microphone and to see what adjustments might be necessary. Even though it was supposed to be a dry run of the questions only, volunteer Amateur Radio operator Lance Gordon, W5VNY, not only listened to the questions, he did an admirable job of answering them. When finished, the elapsed time was 18 minutes but we were to have, at most, nine.

By this time it was also apparent that we must try to let every child ask one question. Mrs. Judy asked each child to look over his questions one more time and to select the briefest one. Shaun and Shannon had returned from the launch and Shaun had studied during the launch activities. He was ready to take element 3A.

The night before the contact, every television station in Houston had called and would be represented. Radio talk shows did on-the-air interviews with the teacher and some of the Amateur Radio operators. Roy Neal, K6DUE, advised that CBS was com-

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.

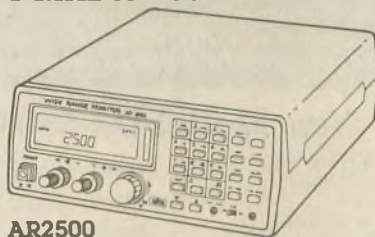
NEC For Yagis 1.0 provides highest-accuracy analysis of Yagi designs with the professional-standard Numerical Electromagnetics Code. NEC For Yagis 1.0, \$50. Coprocessor, hard disk, and 640K memory required.

MN and YO come with comprehensive antenna-design libraries and include both coprocessor and extra-fast non-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

New AOR Receiver

2016 Channels.
1 MHz to 1500 MHz



AR2500

Total Price, Freight Prepaid (Express Shipping Optional)

\$429

- Continuous coverage
- AM, FM, wide band FM, & BFO for SSB, CW
- 64 Scan Banks
- 16 Search Banks
- RS232 port built in.
- 25 Day Satisfaction Guarantee.
- Full refund if not Satisfied.
- Includes AC/DC power cord, Antenna, and Mounting Bracket.
- Size: 2 1/4"H x 5 5/8"W x 6 1/2"D Wt. 1lb.

ACE
COMMUNICATIONS

10707 E. 106th St. Fishers, IN 46038

Toll Free 800-445-7717



Visa and MasterCard
(COD slightly higher)



In Indiana 317-849-2570 Collect FAX (317)849-8794

ing from New York to do a live interview with some of the students on the morning following the contact. Shaun had passed element 3A.

On the big day, the school was alive with media. The kids were wearing mission T-shirts and looked great, but they were very nervous. The PTA was passing out cookies and soft drinks. What a zoo! The children were cautioned that because it was an experiment, it may not work.

"N5WQC, this is WD5EEU calling." The tracking program showed the shuttle well within range.

"WD5 ... this is N5WQC." The questions came fast and furious, and even if the answers were sometimes muffled, everybody got to ask one before the shuttle was gone. Those nine minutes flashed by in an instant; the experience for those eight children will last a lifetime.

But the highlight had to be when

Talking to my dad

What a joy to talk to your dad,
Especially when he's in space.
17,500 miles per hour he flies,
Isn't that a fast pace?

I was nervous at the launch and
nervous at the landing.
I was nervous for every part.
I know I wasn't in space with my
dad,
But I was there, within his heart.

I knew my dad was in space,
But I didn't quite know where.
I looked on a computer with the
earth and a shuttle,
And it showed me my dad was ...
there!

It was time to talk to my dad,
My knees were trembling like so.
I was as nervous as anything,
I was nervous from head to toe.

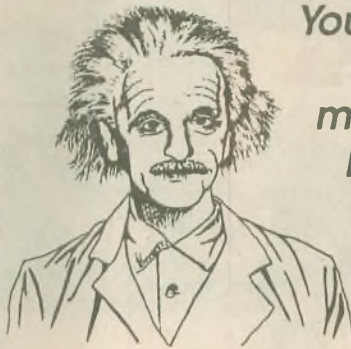
It was over with and I was being
interviewed,
It made me crazy but I didn't show
it.
Some people knew and some people
didn't
That I want to be a poet.

SAREX is terrific! SAREX is great!

SAREX is neat for everyone!
So people of all ages, young and old,
Get your ham radio and have some
fun!

—Shaun P. Duffy

CW IS SOOOOOO EASY!



You can copy code—You can
pass the theory test—no
matter what your experience
has been! **PASSing exams is
EASY** when you use
hypnosis training from
PASS Publishing.
Unleash the genius within.

Is CW a Problem? CW Mental Block Buster is for you. CW Mental Block Buster explodes mental blocks about CW. Hypnosis conditioning, visualization (mental movies), affirmations. Based on 40 yrs research. Includes tape and workbook. Only 25.95 ppd in US.

Now!

Almost there? Just want an extra edge? If you are *within* 1 or 2 WPM of passing the exam, **SpeedCode** is your ticket! Three different tapes. One for each exam level (use SpeedCode 13 for Fahrnsworth 5 WPM exams). Hypnosis conditioning and visualization (mental movies). Use *with* CW Mental Block Buster. **SpeedCode 5/13/20**—\$16.95 each ppd in US.

Never tried CW? CW Lite is the easiest Morse code training method in the world, *bar none!* And it is the fastest, too. Just close your eyes and relax. CW Lite does the rest! Learn CW the way it should be learned. Subliminals *speed* you along. \$15.95 ppd in US.

Work DX & Contests? Contest Code is the answer. Powerful hypnosis cassette teaches you to copy **High Speed** (30/40 WPM) or **Ultra High Speed** (50/60 WPM). Subliminals *speed* you along. **High Speed** and **Ultra High Speed**—\$15.95 each ppd in US.

Now!

Theory got you down? No Problem! Theory Mental Block Buster explodes mental blocks about theory and rules. Hypnosis conditioning, visualization (mental movies), affirmations. Includes tape and special workbook. Only \$26.95 ppd in US.

PASS Publishing CW tapes are *not* copy practice tapes. Theory Mental Block Buster teaches you *how* to study and pass the exam—it does *not* cover theory questions. Money back guarantee (less restocking fee) when you use the tape 30 consecutive days.

Order today! NY residents add 8% tax. Visa, MC fax/mail orders must include signature.
Phone 516-584-8164
Fax 516-584-9409



**PASS Publishing, Dept WR2, PO Box 570
Stony Brook, NY 11790**



Sarah Evans and Shaun Duffy share Shannon Duffy's thrill as she talks to her dad.

Shaun asked his dad how he would react if he knew that Shaun had passed his Amateur Radio Novice and Technician tests. Next year when Brian Duffy flies, Shaun will be using his own Amateur Radio call. And Shannon Duffy, you're next! □

I was chosen to be an alternate to talk to the astronauts aboard the Atlantis. We only had nine minutes to ask our questions so I was worried that I might not have enough time to ask mine.

When my time came I felt nervous. I couldn't wait to speak into the ham radio. I couldn't believe there was enough time for my turn.

My question was, "How did the oil well fires in Kuwait affect the atmosphere?"

Col. Duffy replied, "Good question, Scott," and then we lost contact. I still felt happy that I had a chance to be a part of SAREX. —Scott Gigler

SAREX in California

PAM STEVENS

For students at two schools in San Diego, California, Challenger Junior High in Mira Mesa and Jerabek Elementary in Scripps Ranch, participating in the SAREX project (Shuttle Amateur Radio Experiment) to make contact with the astronauts aboard STS-45 in March was a way to discover Amateur Radio.

At 6:40 a.m. on Wednesday, March 25, 1992, an assortment of students, parents, amateur volunteers and news media gathered around the rig in the Challenger Junior High School lab of

As I prepared to talk to my father, Brian Duffy, I felt nervous. Inside, knowing my father is up in space and I am down here, it made me feel funny. Actually, I felt prepared, but emotionally I was nervous.

During it, I saw cameramen taping me. I said: "Hi daddy, you probably know me. This is Shannon Duffy you are talking to. I miss you, over." I listened to him a minute and then asked my question: "About how high above the earth are you?" Then I listened to my answer and gave the ham radio to the next person.

Afterward we were interviewed on television and asked for autographs. I felt famous! When I got home I watched myself on TV. People were calling us and saying what a good job we did. The next morning I was in the newspaper. Everybody is famous for fifteen minutes. —Shannon Duffy

science teacher Frank Forrester, KI6YG. Forrester is the sponsor of Challenger Junior High's Amateur Radio Club. He also leads an after-school Technology Club.

Forrester, students and volunteers had operated KI6YG as a special event station on January 28, 1992, in commemoration of the sixth anniversary of the Challenger space shuttle tragedy, logging over 75 contacts during the eight hours they were on the air. Now the atmosphere in the lab was charged with anticipation as the assembled group waited for radio contact with the space shuttle Atlantis.

"Jessica, what's your question?" Forrester asked Jessica Neff, an eighth grader selected as an "alternate" to ask the astronauts questions during the two-way radio communication. All eighth grade science students had submitted questions for the astronauts, and each of the three teachers had selected one questioner and one alternate, since there was just a brief time window when the shuttle was above the horizon for San Diego and the antenna on the science lab roof could be accurately pointed at the quickly-moving shuttle.

"Do you ever think about the dangers involved in space travel?" Jessica practiced.

"Do it one more time, real slow, and at the end, say 'over'," Forrester coached.

On one side of the room, a computer screen showed a map of the world with the location of the space shuttle superimposed, changing position rapidly with time as it orbited the earth.

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.

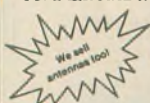


W5YI-VEC
P.O. Box #10101
Dallas, TX 75207
(817) 461-6443

Let's get Amateur Radio growing again!

WHEN DOES ONE EQUAL TWO?

WHEN IT'S A TAD M8 FM TRANSCEIVER
COMMERCIAL & AMATEUR BANDS IN ONE UNIT



- Ideal for MARS, Vol. Fire, EMT, B'cast RPU, Police, etc.
- Fully Field Programmable
- 99 Channels
- True 40 Watt Power
- Extremely Rugged
- Shipped Complete w/Mike, Mobile Slide Mount & Power Cable
- Base Station P.S. Mobile Antennas etc. in stock
- Multi Function LCD display
- Frequency Range 138-174 or 430-480 MHz
- FCC & DOC type accept.
- Low Cost DTMF mike avail.
- Overnight Shipping Available

Dealer Inquiries Invited

AXM Incorporated

11791 Loara St.

Garden Grove, CA 92640-2321

Write or Call 714-638-8807 for immediate information

KENWOOD



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



TS-850SAT
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



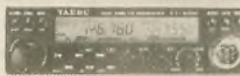
FT-980
General Coverage HF XCVR, 110W, Built-in Power Supply and Auto tuner. A Great Performer Call



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



FT-5200
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
FT-470 Dual Band HT Call
FT-411 2m HT Call
FT-415 2m HT Call

LARGE YAESU INVENTORY - CALL FOR PRICES

ICOM



IC-705
General Coverage HF XCVR, Automatic Antenna Tuner, CW Keyer, and more Call



IC-761A
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 20 119.00
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 WARC 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

127R/1270 TNC'S 249/129
1284/1289 TNC Software 25/59
989/986 Tuners 289/25
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

BÜTTERNUT

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
KPCIII Packet TNC 159.95

AMERITRON

AL1500 1500W Linear Call
AL1200 1500W Linear Call
AL82 1500W Linear Call
AL80 1000W Linear Call
AL81I 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 / SG7500 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' | 689 |
| 10% West of Rockies Charge. | | | |

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

Free Shipping On BX Towers!

FOLDOVER TOWERS

FREE SHIPPING ON FOLDOVERS

| 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

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

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.

TUNER-TUNER™



- Tune your tuner without transmitting!
- Save that rig!

Do you use an antenna tuner? Then you need the new Palomar Tuner-Tuner to tune it to your operating frequency without transmitting. Just listen to the Tuner-Tuner's noise with your receiver. Adjust your tuner for a null and presto! You have 1:1 SWR. It's as simple as that.

Easy to install. Works with all rigs. Eliminates tuneup damage. Your rig will love it!

Model PT-340 \$99.95 + \$4 shipping/handling in U.S. & Canada. California 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 462222, Escondido, CA 92046
Phone: (619) 747-3343
FAX: (619) 747-3346

UCSD student Paul Jacobs was on the roof, ready to manually adjust the antenna so it pointed the right direction to communicate with the shuttle. Dave Duimont, WB6LLO, provided advice on tracking and how to point the antenna to make contact, and was standing by at home on the telephone in case a phone radio relay was needed.

Suddenly the radio crackled and the space shuttle was heard. The first transmission was from the students at Jerabek Elementary School. A Jerabek fourth grade class, taught by Mrs. Carla Latimer, led the way for their school's involvement with SAREX.

With the assistance of Ron Earl, W6TXK, a parent with a daughter in Mrs. Latimer's class, and other volunteers, radio equipment had been set up in the auditorium and an antenna put up on the roof for the two-way communication. Earl and a friend, Del Partridge, WV6Z, had spent several weekends building the rotary antenna, which could be controlled from inside the building so that it would stay in line of the shuttle.

Earl had been volunteering his time since last fall to help the students in Mrs. Latimer's class—and their teacher, too—acquire skills in Amateur Radio as a class hobby. Both his daughter, Jeanine, KC6WRI, a fourth grader in the class, and her brother, Scott, KC6WRK, a second grader at Jerabek, already have their no-code Technician Class licenses.

Challenger and Jerabek shared the same window of time to talk with the astronauts. A Jerabek student, Ross Demner, asked a question about the biggest adjustment the astronauts had to make in space. His question came in loud and clear at Challenger,

but the astronauts' answer—something about it being easy to drift in the spaceship—was lost in static. Mrs. Latimer explained that although weightless in space, one's mass is the same so it hurts just as much to bump into a wall. Then it was Challenger's turn.

"This is Nick, I spell November-India-Charlie-Kilo. My question is, how the explosion of the *Challenger* affected your continuing in the space program?" asked eighth grader Nick Pirolo.

The answer came, but the static grew and grew. A second student at Jerabek asked a question, which could also be heard at Challenger, about what experiments the astronauts were working on in space, but nothing of the answer could be heard at all. Anxious looks turned to bittersweet smiles when the assembled group, hoping for just a little more communication, realized the contact was over and stopped to realize what had been accomplished.

"We did make contact. They did hear the first question," Forrester announced.

Later that morning at Jerabek, the students in Mrs. Latimer's fourth grade class wrote essays in their daily journals about the shuttle contact experience. "Today we did it. We made contact with the space shuttle astronauts. It was incredible..." began the topic sentence written on the blackboard.

Although the radio in the auditorium for the shuttle contact was loaned equipment, Latimer's class now has a secondhand rig in their classroom which was donated by the FFA (Family Faculty Association, Jerabek's equivalent of PTA).



Science teacher Frank Forrester and Challenger Junior High School students in Mira Mesa, a suburban community of San Diego, successfully made contact with astronauts aboard STS-45. (Photo: Jill Allen)

Amateur Jean Jensen, N6TIG, comes into the class as a volunteer twice a week on Tuesday and Thursday mornings and assists the students in linking up with the CQ All Schools Net (1630 UTC Tuesdays and Thursdays on 28.303 MHz).

Several students are now studying for their own Amateur Radio licenses. So is Mrs. Latimer. Until she gets her own license, the class has Jensen as its official station operator, so the station can operate under her call sign. The entire class has Morse code practice keys that Ron Earl helped them assemble.

Latimer feels especially happy that she has been able to learn along with her students and show them that education is something that continues throughout life. "For me, it's a feeling of helping children realize we are lifetime learners. This is all new to me. It's been a wonderful experience to learn along with the children."

At Challenger, the fleeting nature of their first communication with the space shuttle left the group hoping for more. The following afternoon, on Thursday, March 26, at 4:30 p.m. Challenger made a second try. This time, UCSD student Paul Jacobs was not alone on the roof to position the antenna, but had an antenna crew to

Challenger Junior High School students manually rotated the antenna on top of the science lab roof—in the rain!—to assist in the group's successful contact with astronauts aboard STS-45. (Photo: Jill Allen/Frank Forrester)



assist him, consisting of Challenger students Claude Olguin and Joshua Ridge, as well as Josh's younger sister.

The rain that had threatened all day was just beginning to come down in force, but the antenna crew was determined. In the lab, many of the same

group that had been there the day before was reassembled for the effort. Challenger student Kristopher Leger manned the computer. Dr. Craig Rocha, Challenger's vice principal, was on the HT to the antenna crew on the roof. (please turn to page 61)

BATTERIES

REPLACEMENT BATTERIES (ALL NEW—MADE IN USA)

ICOM

| | |
|----------------|---------|
| 13.5v 1200 mah | \$55.00 |
| 9.6v 2000 mah | \$55.00 |
| 13.5v 1200 mah | \$55.00 |
| 8.4v 1200 mah | \$55.00 |

SA/SAT
BP82, BP83
BP83A 7.2v 750 mah
BP84 7.2v 1000 mah 3" \$40.00
BP85A 9.6v 600 mah 3" \$69.00
BP85B 12v 600 mah 3" \$69.00

KENWOOD



| | |
|--------------------|---------|
| 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 | \$59.00 |
| PB8 7.2v 800 mah | \$46.00 |

MOTOROLA

| | |
|---------------------|---------|
| 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 |

RADIUS
P-10 500 mah \$28.00

SABER
7.2v 1000 mah \$59.00

SPECIALS

10% off all Camcorder and Cellular Batteries

NEW

| | |
|-------------------------------------|----------|
| ALINCO 10N 7.2v 700 mah | \$32.00 |
| 12N 12v 700 mah | \$47.00 |
| 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

YAESU

| | |
|-----------------------|---------|
| FNB-2 v 500 mah | |
| FNB-2 v 600 mah | |
| FNB-4A 12V 1000mah | \$55.00 |
| FNB-17 7.2V 600mah | \$30.00 |
| FNB-10S 7.2v 1000 mah | \$42.00 |
| FNB-12S 12v 600 mah | \$45.00 |
| 290 charger | \$65.00 |

(For FNB 17, 10S, 12S)

ICOM

AA Holder 8 NiCad or ALK AA Side, top or base charge with BAA Sanyo 600 NiCads \$19.00 \$25.00

YAESU
FNB-2 10.8V 600 mah \$19.00

SANYO
AA 600 mah \$ 1.35

CALL FOR LOWEST PRICES

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-15, S-15
TEN TEC 2991, 2591
UNIDEN (BEARCAT)

CELLULAR

| | |
|-----------------|---------|
| MITSUBISHI | \$50.00 |
| NEC | \$45.00 |
| NOVATEL | \$45.00 |
| PHILIPS | \$45.00 |
| MOTOROLA "FLIP" | \$60.00 |

CAMCORDER

| | |
|-----------------------------------|---------|
| JVC | |
| PANASONIC PVBP80/88 12v 2.3 amps* | \$36.00 |
| RCA/HITACHI | |
| SONY NP22 | |
| PHILIPS 2400mAh | |

ALL BRANDS AVAILABLE
*original Panasonic

* 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



Dayton

(continued from page 3)

A special treat was the presence of "Seth" Keo, XU2SS, the former refugee who now lives in Seattle with his family.

The Technical Excellence Award went to Gerald Cromer, K4NHN. Gerald spent over three years developing the Rib Cage Slot antenna, which has enhanced the television aspect of Amateur Radio.



Ned Raub, W1RAN

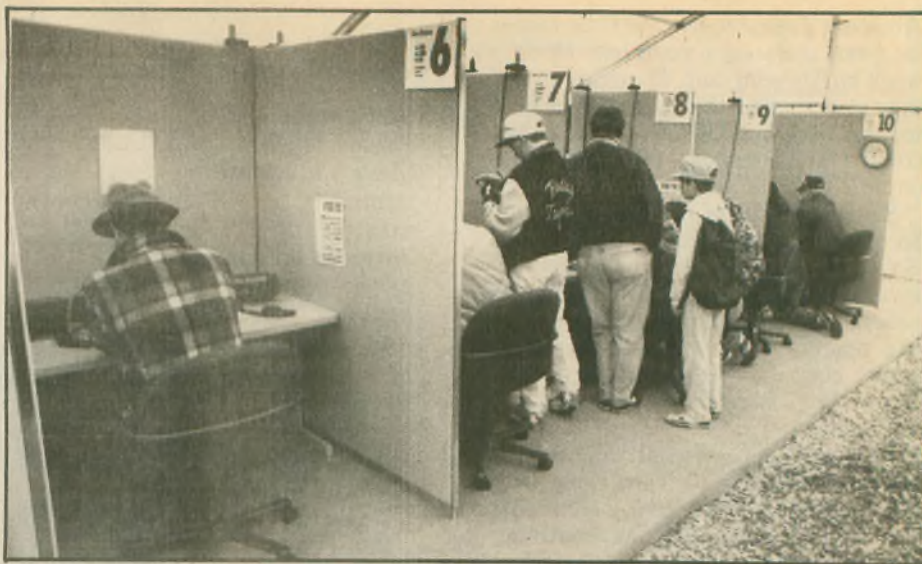
Prizes

Prizes! \$138,000 in prizes were given away. As prize tickets were drawn, the state or country of the visitor was announced, and they came from *everywhere*. There were several tables of amateurs from Italy at the Saturday evening banquet. Twelve major prizes were awarded at the banquet and two of them were won by Italians. (I wonder how they fared with customs officers.)



"Seth" Keo, XU2SS

There was one thing about some of the prizes that your reporter considered "tacky." Some of the "prizes" were a dollar amount discount if you bought the item—sort of like the coupons they hand out at your supermarket so that you will buy the prod-



Icom set up a test-operating and special seminar tent.

uct. They were not redeemable for cash. It became an in-house joke to comment, "Hey the Rolls Royce dealer is giving away a \$5,000 coupon toward your purchase of a Silver Cloud."

Flea market

This past year, the parking lot dedicated to the flea market was expanded, providing not only more flea market space, but room for tent and mobile exhibit areas by manufacturers. Flea market vendors we talked to said business was brisk. They told of a nostalgia phenomenon that pervades. Long-time hams will inspect an antique piece of amateur gear as though

they want to buy it. When approached by the seller, they'll relate at great length tales about experiences they've had with gear just like that!

Growth and rumors

Hara Arena, where the Hamvention is held, has been expanding. A few years ago they added a large new exposition hall. Adjacent to Hara Arena property a new nine-hole golf course has been completed. Developers applied for permission to build a motel too, but they were denied a building permit by the planning commission after protest by nearby homeowners. All this building activity created rumors that the Hamvention would come to an end. This is *not* so! There will be a Hamvention in 1993!

Parking

The flea market expansion has eliminated all the free parking for Hamvention visitors. To offset this, parking is provided in nearby shopping malls, with frequent shuttle bus service added. Enterprising owners of nearby open areas were also providing parking for a fee.

The Dayton Hamvention could not be put on without the services of over 500 volunteers. They are amateurs

**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**

Send your news to Worldradio at the same time you send it to other amateur publications and see who prints it first. We get the news out before anyone else.

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:

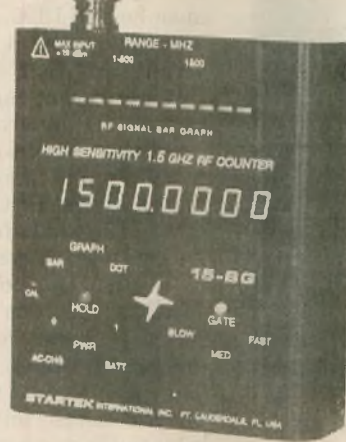
- NI-CAD BATTERIES & 110VAC ADP/CHARGER
- 1 PPM TCXO TIME BASE - FRONT PANEL ADJ
- 3 GATE TIMES • HOLD SWITCH & INDICATOR
- 9-12VDC AUTO-POLARITY POWER INPUT
- StarCab™ ALUMINUM CABINET
- COMPUTER AIDED CIRCUIT DESIGN
- TOP QUALITY COMPONENTS
- 100% ASSEMBLED IN THE USA
- 1 YEAR LIMITED WARRANTY

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



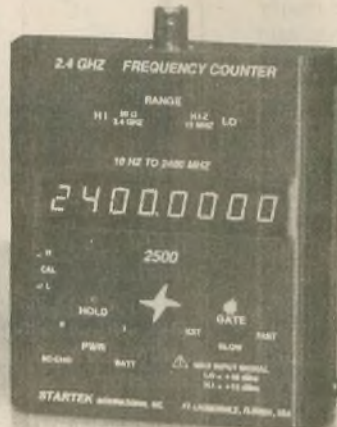
1350

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



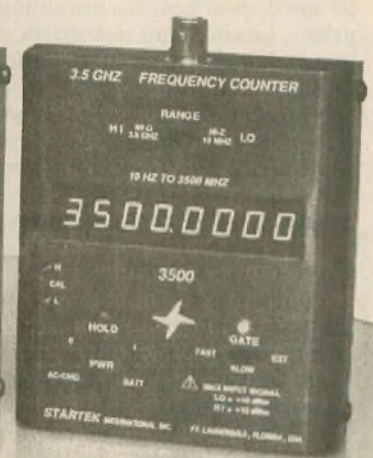
15-UHS

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:

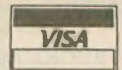
| | | |
|---------|-------------------------|---------|
| #CC-90 | BLACK VINYL ZIPPER CASE | \$12.00 |
| #TA-90 | TELESCOPING BNC ANT | 12.00 |
| #P-110 | PROBE, 200 MHZ, 1X-10X | 39.00 |
| #M207IC | CABLE FOR MFJ-207/208 | 10.00 |

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.

from the DARA and other nearby clubs. My hat is off to them. They did a fantastic job!

Sales

Your reporter won zilch, not even a certificate for \$1,000 off an amplifier, but I did spend over \$2,000 on things I really wanted. Others must have brought their piggy banks with them, too, because every dealer we talked with reported better sales than last year. All this in spite of a weak economy and lousy weather.



Gerald Cromer, K4NHN, received the 1992 Technical Excellence Award.

The secret of success

We found general agreement that the Dayton Hamvention has been a success for 41 years for this reason: The big ham gear manufacturers play to the convention by providing major prizes, announcing new products, and just being there; the convention plays to the vendors by providing services and a great deal of respect (if you wear an exhibitor button, you get royal treatment); and the exhibitors play to the hams by providing the smaller prizes, discounts and bargains.

Once in a lifetime

Your reporter has now been to Dayton eight times, and it is still exciting every year. If you have never been to the Dayton Hamvention, I strongly urge you to go at least once. You simply cannot get the feel of all that ham humanity and all that ham gear without witnessing it for yourself!

1992 U.S. CALL DIRECTORY (on microfiche)

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

\$3 shipping per order

BUCKMASTER PUBLISHING

Rt. 4, Box 1630

Mineral, VA 23117

703/894-5777 VISA/MC 800/282-5628

AMSAT Forum — here Here comes Phase 3B!

NORM BROOKS, K6FO

OSCAR 13 is going to crash! This is not an April fool's article. At the AMSAT Forum in Dayton on April 24, 1992, Dr. Tom Clark, W3IWI, confirmed that the orbit of OSCAR 13 is deteriorating at a rate that will lead to a fiery plunge into the earth's atmosphere in 1996, and there is nothing we can do about it. We must helplessly accept this fact because there is no thruster rocket fuel left aboard to correct the failing orbit.

It behooves the amateur community to get a replacement satellite into orbit before we lose OSCAR 13. First, let me clarify the kinds of satellites we have. As orbits go, there are two kinds: high level and low level. The low level satellites, such as the space shuttle or the MIR space station, orbit a few hundred miles above the earth's surface. They are in radio range of every point on the earth for no more than 20 minutes at any one time. These are *not* the type of satellites we are interested in here.

We are concerned with satellites in a large elliptical orbit (called a Molniya orbit) that takes them as far as 25,000 km from the earth. These Phase 3 satellites are the ones you work DX on. They are so far from the earth during most of their orbit that they "see" a full half of the earth. The first of these was OSCAR 10, which is still in orbit, but whose "brain" has been damaged by radiation in space. Now we have OSCAR 13, which is performing well as far as its radios go, but whose days in space are numbered.

We are *not* talking about a geostationary satellite. Such satellites are above the earth's equator in an orbit that makes them appear to be standing still in space. In our OSCAR efforts, these are Phase 4 satellites, still many years away.

Dr. Clark, who is a member of the Phase 3B design committee, admitted that all of the satellites we now have are inconvenient to use. He said that replacing OSCAR 13 will give us an opportunity to apply what we have learned from the shortcomings of previous satellites. Technology has come a long way since we built OSCAR 13, and microwaves are easier for people to use. What should we change? What should be different in the new Phase 3B?

Fortunately, a unique opportunity has come our way. The European Space Agency is flight testing their new Ariane 5 launch vehicle, and we can be on board. This will be equivalent to the rocket the US uses to launch the shuttle. We can capitalize on the fact that nobody else wants to take a chance on this new launch vehicle in its first flight. So, our new satellite could be bigger and heavier.

The first obvious change is to have enough rocket fuel aboard to be able to correct the satellite's orbit for many years, so we don't have another OSCAR 13 problem. Clark suggested additional improvements:

Since the Phase 3B bird will be much bigger in physical size, more equipment of higher power can be placed aboard. With higher power, VHF and UHF FM could be accommodated. The received signals will be stronger, possibly eliminating the need for pre-amplifiers. Amateurs will be able to operate it from within their apartments.

Active attitude control will make the satellite beam antennas always point toward the earth. This will also im-

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

prove the downlink signals, and lessen the uplink power required.

The satellite will be in a bigger orbit than OSCAR 13. Its ellipse will be locked to the clock so that it will make three orbits every two days. Thus, every other day it will do exactly the same thing. At any spot in the Northern Hemisphere, you will see about two and a half of those orbits, pretty good coverage.

I must clarify the term "mode." Usually, in Amateur Radio, we think of mode as the CW mode, SSB mode, FM mode, RTTY mode, etc. In satellite work, an additional meaning has come about. It refers to the uplink frequency and its companion downlink frequency. Thus, mode B means 435 MHz up and 145 MHz down; mode J means the reverse in frequencies—145 MHz up and 435 MHz down; mode L is 1.2 GHz up and 435 MHz down; mode S is 435 MHz up and 2.4 GHz down, etc. For example, you can have the CW mode on mode B. Confusing?

There has been some controversy as to which modes (in frequency) should be built into this new satellite. Since most present OSCAR 13 users have equipment for mode B (435/145 MHz), they don't want it left off the new Phase 3B. The space gurus, however, are saying that modes S and higher give such superior performance as compared to mode B that mode B should be left off the new bird.

So, to make everyone happy, they are planning several transmitters, each with its own phased array antenna, and several receivers with a matrix connecting it all together so that a large combination of uplinks and downlinks could be employed. The satellite will be equipped to operate on all bands on which amateur satellites are permitted, from 10M to 10 GHz. Dr. Clark envisions the "ultimate 10-10 award" from using a 10 GHz uplink and a 10M downlink! I can describe the Phase 3B satellite in one word: huge. Overall it is approximately 8 x 2 x 25 feet.

Here comes the commercial pitch! We won't have anything to launch unless we raise some money. This is an international project, and fundraising will take place all over the world. Also, fundraising will not be confined to the present satellite users. All amateurs will benefit, as it will be the first long-range satellite that an average amateur will be able to use. For example, the 10M transmitter will be in the range of 100 to 200W. The 10M antenna will be the full width of the spacecraft. It is interesting to note that Voice of America once proposed a satellite with a 26 MHz transmitter for global broadcasting. Phase 3B will be the nearest thing yet to approach that. Amateurs with antenna restrictions

will find Phase 3B a godsend.

How long will Phase 3B last? Dr. Clark stated the causes of failure of previous satellites: OSCAR 6 and 7, battery failure; OSCAR 10, brain damage; OSCAR 13, lack of rocket fuel to fire orbital corrections. Commercial satellites fail ultimately for the latter reason, so it is reasonable to expect this fate. However, we will plan enough fuel so it will last a long, long time.

You are urged to contribute to the Phase 3B fund at AMSAT. Remember that AMSAT is a tax deductible Section 501(c)(3) non-profit organization. Contributions may be sent to AMSAT NA, P.O. Box 27, Washington, DC 20014. □

Dayton MARS Forum

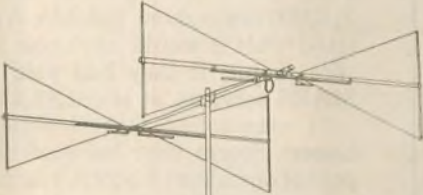
NORM BROOKS, K6FO/AAR9NI

The Dayton Hamvention on April 25, 1992, was honored by a visit from Lt. Gen. Peter Kind, commander of the US Army Information Systems Command. He spoke to a packed room of MARS members from all the services, plus others interested in MARS. The following are excerpts from the general's speech:

"The Army MARS program is especially rewarding to work with because it is composed almost entirely

The HF5B "Butterfly"SM

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



HF ANTENNAS FROM BUTTERNUT

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

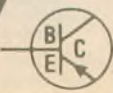
Model HF2V

- 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.

BUTTERNUT

- Unique design reduces size but **not** performance.
- No lossy traps; full element radiates on all bands.
- Only 19 lbs.

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



BUTTERNUT ELECTRONICS CO.

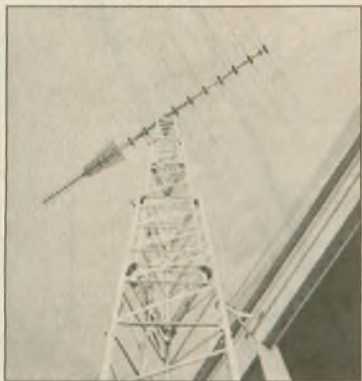
P.O. Box 1234 • Olmito, TX 78575
(512) 398-7117

of volunteers. You see fit to donate your time, energy and resources. You volunteer members can take a lot of pride in what you do in supporting MARS.

"During our 67 years of existence, MARS has been most widely known for the morale and welfare support it provides. But actually, handling morale and welfare traffic is a secondary mission of MARS, the primary mission being to provide emergency communications.

"The operation of the MARS program was one of the most visible and appreciated efforts undertaken by any

HEIGHTS TOWER SYSTEMS



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

group associated with Desert Shield and Desert Storm. MARS was on the air in Saudi Arabia and operational within three days of the beginning. The MARS program enabled our soldiers, sailors, Marines, airmen and civilians over there supporting us to be able to send hard-copy messages, called MARS-grams, back to the States. They also had telephonic contact by radio phone patch. We established the gateway station in Rhyad in November and deployed 16 1 kW stations to provide MARS phone patch capability. We also licensed a total of 53 tactical radio systems. This service to the troops in the field, where they were doing their job, gave them the opportunity to make phone patches and send messages home.

"The accomplishments achieved by MARS overshadowed any previous MARS performance. In five months of operation, we had processed over 145,000 MARS-grams and more than 20,000 phone patches. The total reported traffic count in support of Desert Storm for all three service MARS programs was in excess of 525,000 MARS-grams and over 210,000 radio phone patches. We translated what it would have cost the service people, if they had paid for the MARS services, at about \$2.4 million.

"I mentioned Desert Shield and Desert Storm first because they are part of our recent history, which we can remember well and can relate to more easily. But actually the history of Army MARS goes back to WWI, when the concept was conceived. You could say that WWI was the father of MARS, and the American Radio Relay League (ARRL) was its mother. Following that war, the Army leadership recognized that if another world conflict should occur, skilled radio operators and technicians would be a key factor to victory. So it was that in 1921 Signal Corps officers approached Mr. Hiram Percy Maxim, W1AW, then

the head of the ARRL, about forming a reserve of volunteer Amateur Radio operators. At that time, in 1925, there were less than 25 officers and about 400 enlisted men in the entire Army Signal Corps.

"In August 1925, the Army Amateur Radio Service (AARS), the forerunner of MARS, was organized with the help of the ARRL. Army Captain Tom C. Rives, who later became a General officer and the chief of the Army Signal Corps, has been credited as being the key figure in that development. The headline in *QST* magazine during that time read 'The Army Links Up With the Amateurs.' A strong bond was formed that makes MARS the unique organization that it is today.

"On December 7, 1941, we had a sudden and critical need for trained radio operators to serve on a global scale. There was no time to train good radio operators, and radio communications were essential to accomplish the job we had at hand. Approximately 8,000 civilians, trained as AARS members, went into active duty during WWII.

"Military history books are full of stories concerning the importance of radio communications during that period. Gen. Omar N. Bradley summed it up most eloquently when he stated that although Congress can make a general, it takes *communications* to make him a commander.

"The value of MARS was also recognized by the other military departments, and by 1962 the Air Force and Navy/Marine Corps had joined the program. MARS truly became a tri-service radio system.

"I would venture to say that every individual who has been a part of the United States armed services for some time has had some experience with MARS. I can tell you that I first learned that I was a father by MARS-gram when I was in Viet-Nam. Within 12 hours, again with the support of MARS, I was talking with my wife in her hospital room and learned all the details about my new son.

"I first started with MARS in Germany in Defense Special Forces and learned the benefits of this program, and it was nice to pick it up again when I got to Delta. When we were in Korea, we put in our first packet system which more than doubled the traffic capacity. We made it easy for the people to utilize the program by putting boxes in the PX so they could conveniently write out their MARS-grams.

"You have been a significant factor in Viet-Nam and in Saudi Arabia, and today you are a significant factor in how we support the world. I wouldn't worry about the reduction in traffic volume. Don't let that dampen your enthusiasm or your aggressiveness in sup-

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.L.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



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.

Large Stock ...
Call or write for
our FREE catalog

800-221-7735

ORDER LINE ONLY

(513) 868-6399 Local & Technical
FAX (513) 868-6574

Also located at: 8524 E. Washington
Indianapolis, IN 46219 • (800) 524-4889
(317) 897-7362 • FAX (317) 898-3027

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.

traditional modes. I would answer that by saying MARS now has a wide variety of modes—CW, voice, RTTY, AMTOR, and packet switching. Each one of them lends benefits and unique opportunities to learn and we can put them all together and make things happen. Packet switching has had a significant impact on worldwide communications. I can tell you that last year I authorized use of terminal node controllers that are commercially available for use in some Army tests, so we draw benefits in this way as well.

“Let me talk about the HF role. The principal thing that makes HF a mainstay for now and the long-term future is that it is reliable, it goes to places where satellite coverage doesn't exist and it is the only means by which you can communicate independent of a bird or somebody doing the accessing to get to it. HF is the best insurance you can buy for your satellite system.

“In the long-term future, how well we make MARS is a function of how well we work together to make it happen. Ten thousand strong within the military services today, we have deployed in the way of official stations 756 on land and 426 at sea, with a total of about 11,000 stations that the military operates to help support MARS.

“If you are not now a MARS member, we invite you to join us. We value your expertise, we need your ideas and would like to have you as part of our system. Over a period of time we need to grow, or we lose all that we have accomplished before. We have some exciting things to do, and good people to work with, which I think is the best part of the program.”

For information on joining MARS, write to one of the following: Chief Army MARS, HQ, US Army Information Systems Command, ATTN:AS-OPS-OA, Fort Huachuca, AZ 85613-5000; Chief Navy/Marine Corps MARS, Naval Communications Unit, Washington, DC 20390-5290; or Chief Air Force MARS, HQ, AFCC/DOOCC, Scott AFB, IL 62225-6001. □



I DON'T USE A HANDHELD RADIO--- BODY CAPACITY DE-TUNES THE RUBBER DUCK



KantronicsWeathernode

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.

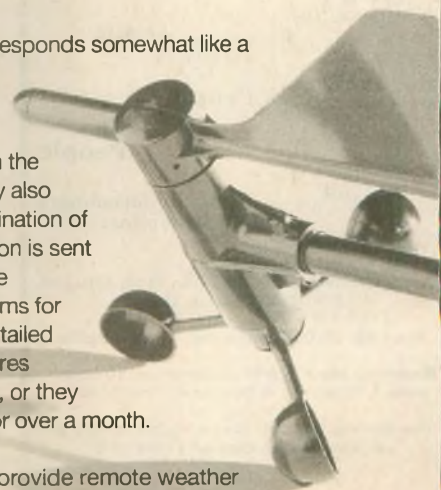
The Weathernode is not a TNC. It is a data gathering device that attaches to your TNC and station computer. The internal program is set to gather data from several types of sensors: internal and external temperature, wind speed, wind direction and rainfall. The temperature sensors come with the unit. 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**



Amateurs come through in Eureka

**SANNA, KC6UUX, and
DICK, WB6HII, VAN HOOSE**

On the morning of April 25, 1992, at 1106 PDT, the California Northcoast communities of Eureka, Ferndale, Fortuna, Rio Dell, Scotia, Petrolia, as well as areas south, east and north, were jolted by a massive earthquake measuring 6.9 on the Richter scale.

The actual epicenter of the quake was approximately 35 miles southwest of Eureka. Ferndale, Fortuna, and Petrolia were among the hardest hit areas, with major structural damage to homes and businesses but, fortunately, relatively few injuries and no fatalities.

As is usual with disasters, the amateurs were immediately on the move to coordinate health and welfare traffic, relay information on damage assessments, and help mobilize emergency support to those areas.

Sanna, KC6UXX, was mobile in Eureka when the earthquake hit. As she and her daughter escaped from an older building to the street, she noticed another amateur, Dusty, KB6FIW, across the street attempting to contact the 146.76 emergency repeater with his hand-held.

With the activity on the repeater, as well as a poor location to access it, he was unable to break in to begin any emergency coordination. KC6UUX immediately introduced herself and offered her mobile rig which allowed Dusty more efficient access to the repeater. The emergency coordination had begun.

Once Dusty was able to transfer his

operations to the Office of Emergency Services, Sanna went straight to the Eureka Police Department to assist in relaying information to them, since other modes of communication were affected by the quake.

By later afternoon, the confusion of the earthquake had settled down, and net control was handling the placement of emergency communicators ef-

fectively. Amateurs were sent to all of the outlying areas hit hardest and assisted in the set-up of the emergency aid stations where needed.

Sanna's husband, Dick, WB6HII, was one of the many sent out to the field. He also spent many hours helping with net control during the next week. This area was hit by two additional earthquakes measuring 6.5 and 6.4 within the next 24 hours, as well as "thousands" of aftershocks continuing on for the next couple of weeks.



Dick VanHoose, WB6HII, uses his XYL Sanna's, KC6UUX, mobile rig to help with emergency coordination.

"CHOICE OF THE DX KINGS"



2 ELEMENT— ONLY
3 BAND
KIT SPECIAL \$289⁹⁵
(Boom and Wire not included) **FOB Call.**

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 • Alladena, CA 91001
Phone: (818) 798-8108 or 449-5925
(CA residents include 8.25% sales tax.)
YOU CAN'T SAY "QUAD" BETTER THAN "CUBEX"

Having spent some intense radio time during the aftermath of the disaster, we have come to some conclusions regarding the entire emergency net operations.

We were very fortunate that we had the amateur help that we did and that the severity of the quakes was not even more intense or in a more populated area. We taxed the available resources to the limit. We had hams from the outlying areas of Del Norte, Sonoma and Mendocino counties offer assistance, which was very gladly accepted.

As it was, a number of our local hams spent many days on end in the field. After a full week of operation, and fewer aftershocks jolting the area, the amateur communications network wound down and finally was dissolved on Sunday, May 3.

Fortunately, many of the public officials in the area were aware and very appreciative of the amateur support during this time. Captain Bill Honsal of the Eureka Police Department was aware of Amateur Radio operations but never knew what full impact they could have during a disaster such as this. While other modes of communication were down, through KC6UUX the 2M hand-held became his link to gaining information about the affected areas. We have since heard many times from city officials

International Mission
Radio Association Inc.



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

AZIMUTH ANNOUNCES

The New Generation II WeatherSTARS™ Stand-Alone Computerized Weather Stations!

Everything You Ever Wanted to Monitor & Forecast Weather Right From Your Own Shack!
SPECIAL INTRODUCTORY PRICING — BUY BEFORE JULY 1 AND SAVE BIG!

Gives You Wind, Temp, Rain... Plus All New Features! Barometric Trend, Humidity, Dew Point, Alarms, Download & Graph Data on Your PC, Remote with Modem Interface, Central Junction Box for Easy Hook Up. Modular Design. Value at Affordable Prices! Perfect for NOAA WX Monitoring Stations!

WeatherSTAR™ Wizard II

Plus S&H
\$199.95
After July 1
\$259.95

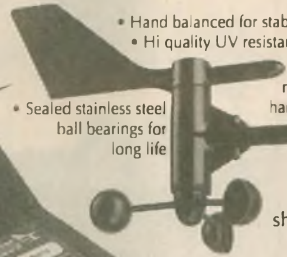
Easy-to-read LCD display 3/4" x 3-1/4"

Quick connect for PC optional Weather* LINK

UNITS key allows instant conversion to metric or U.S. units of measure

ALARM key for temp, wind speed, wind chill, & time

Automatic SCAN displays the functions you select for 4 sec each



WeatherSTAR™ Monitor II

Satisfaction Guaranteed!
1 Year Standard Limited Manufacturers Warranty.

Easy-to-read, giant, illuminated LCD DISPLAY 1-7/8"x 4-3/8"

Continuous reading WIND SPEED

COMPASS ROSE shows wind direction at a glance

BAROMETRIC TREND arrow shows, at a glance, if pressure is increasing, decreasing or stable

DEW POINT key for optional External Humidity & Temperature Sensor

RECALL key displays highs & lows, along with time and date occurred

Plus S&H
\$299.95
After July 1
\$399.95

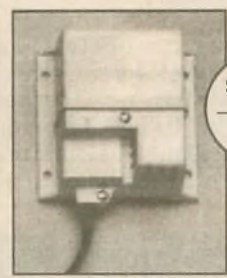
Automatic SCAN displays all readings for 4 sec. each. May be customized by user

UNITS key instantly converts metric or U.S. units of measure

ALARM key for temp, wind speed, wind chill, barometric trend, humidity, dew point, and time

WeatherSTAR™ Wizard II Station

- TEMPERATURE**
- Inside temp from 32° F to 140° F (0° C to 60° C)
 - Outside temp from -50° F to 140° F (-45° C to 60° C)
 - Hi & low temps with time & date
 - Alarms for high & low temps
- WIND SPEED & DIRECTION**
- Wind direction in 1° or 10° increments
 - Wind speed to 126 mph (203kph, 109 knots, or 56.0 m/s)
 - High wind gust with time & date
 - Alarm for hi wind speed
- WIND CHILL FACTOR**
- Wind chill to -134° F (-92° C)
 - Low wind chill with time & date
 - Alarm for low wind chill
- TIME & DATE**
- 12-hour or 24-hour format
 - Time alarm
 - Date
- OPTIONS**
- Rain collector RG4 self-dumping, monitors rainfall—daily & accumulated in 0.1 in.
 - Extension control cables for anemometer or junction box for max flexibility
 - WeatherSTAR Link IBM-PC interface for WX DataBase, Graphs & Charts



Plus S&H
\$69.95
After July 1
\$79.95

EXTERNAL HUMIDITY / TEMPERATURE SENSOR
Allows you to measure Outside Humidity & Dew Point in addition to temp. For Monitor II only with 40 ft cable.

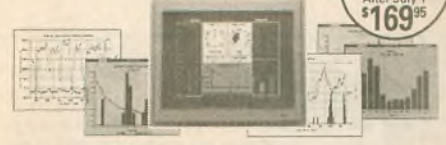
WeatherSTAR™ Monitor II (Specifications)

- TEMPERATURE, WIND SPEED & DIRECTION, WIND CHILL FACTOR, TIME & DATE, IBM-PC INTERFACE** See Wizard II Specs.
- BAROMETRIC PRESSURE**
- Barometric pressure from 26.00 to 32.00 in. of mercury (660.0 to 812.0 mm or 880.0 to 1084 mb)
 - Trend arrow shows, at a glance, if pressure is stable or increasing or decreasing
 - Alarm for change greater than .02, .04, or .06 inches of mercury in an hour
- HUMIDITY**
- Inside humidity from 10% to 90%
 - Outside humidity available as an option (See External Humidity / Temp Sensor)
 - Hi & low humidity readings with time & date
 - Alarms for high & low humidities

WeatherSTAR™ Link II

Store and Display Your Weather Station Data on Your IBM PC with WeatherSTAR Link II

Plus S&H
\$149.95
After July 1
\$169.95



Optional Rain Collector (RG4) Self-dumping w/ 40' cable.

Connect your IBM-PC to your WeatherSTAR weather station with WeatherSTAR Link II interface. Gives an instant WX bulletin. Creates instant graphs, charts and detailed database. Plus you can track weather info remotely thru telephone modem RS232 port. Great for repeater & packet sites. Complete with software, cable, and serial port adaptors. Requires IBM compatible computer with 512K memory & a serial port. Supports most video graphics, most dot matrix and laser jet printers.

AZIMUTH WeatherSTAR™ 3612 Alta Vista Ave., Santa Rosa, CA 95409 USA

CALL TOLL FREE 1-800-882-7388 TODAY!

ORDER YOUR WEATHERSTAR PERSONAL HOME WEATHER STATION TODAY
Send check or money order to:

AZIMUTH WeatherSTAR™
3612 Alta Vista Ave., Santa Rosa, CA 95409 USA

YES! Please send me the following:

| | Intro Price | After July 1 | Amount |
|--|-------------|--------------|--------|
| - WXSTAR Monitor II (7440) | \$299.95 | \$399.95 | |
| - WXSTAR Wizard II (7420) | \$199.95 | \$259.95 | |
| - WXSTAR LINK PC (7862) | \$149.95 | \$169.95 | |
| - Rain Collector RG4 (7851) | \$49.95 | \$49.95 | |
| - Ext. Humidity/Temp Sensor (7858) | \$69.95 | \$79.95 | |
| - Control Cable (4C-40 ft) (7876) | \$15.95 | \$17.95 | |
| - Control Cable (6C-40 ft) (7878) for Ext. Humidity Sensor | \$17.95 | \$22.95 | |
| - Junction Bx. Cables (BC-25 ft) (7880) | \$15.95 | \$15.95 | |

Subtotal
Sales Tax (CA Res. only)
S&H add
TOTAL

Shipping & Handling Charges

| USA Order Total | Surface UPS | Orders over \$600 OR to Canada and Foreign destinations, please call, FAX or write Customer Service for quote. |
|-----------------|-------------|--|
| Up to \$29 | \$2.90 | |
| \$30 - \$59 | \$5.50 | |
| \$60 - \$600 | \$8.50 | |

2nd day Air Freight — \$16.95

CHARGE ORDERS ONLY PLEASE
CALL TOLL-FREE 1-800-882-7388
or FAX your order to (707) 573-1482
Customer Service / Questions (707) 577-8007

OR charge my VISA MASTERCARD

Card # _____
Expiration Date ____/____/____

SIGNATURE _____

Send To: _____

(Day) Phone (____) _____

Address _____ Apt. _____

City _____ State _____ Zip _____

Satisfaction Guaranteed! Come See Us At Dayton!
©MCMXCII Azimuth Communications Corporation

Order YOUR Personal WeatherSTAR™ TODAY!

how vital our communicators were when Sheriff's repeaters and phone services were out. Amateurs were the only reliable means of communication at these times.

How could the operations have been improved? Hopefully this event will remind the ham community that we need to be even more prepared. As stated, Humboldt County really was quite fortunate things weren't worse than they were. Immediately following the first shock, the one repeater became extremely active with confusion and chaos. It took KB6FIW to get in there and organize.

But what about the other local repeaters? Could they have been utilized? And perhaps there should be a 2M antenna installed or at least stored at our local Red Cross facility, as well as at other strategic locations. As it was, they were forced to use a 5/8 mag-mount on a cookie sheet! Well, it worked.

Perhaps, too, we could have utilized HF in the outlying areas to back up the 2M activity. It also became apparent that our local hams need to take ARES seriously and start really committing themselves to the project. Most likely these problems would have been lessened, had an efficient ARES system been in place.



Petrolia communications van housed a 2M station.

A few of the local packet enthusiasts were disturbed that digital communications were not utilized during the disaster. One of the comments made regarding packet was, "It's too slow."

According to Pete Vanderklis, WB6LYE, and local BBS SYSOP, anyone familiar with packet knows that even in the best of conditions, in an area as remote as ours packet can be slow over a long distance. However,

with our four packet networks and a full-service BBS, packet could have provided fast and efficient communications on a local basis between support agencies. It could have provided "hardcopy" support of the emergency activities as well, maintaining inventory and records of disbursement of food, blankets and other emergency supplies.

In summary, this was a disaster to remember and a valuable experience to all amateurs and agencies involved; it showed us both the strengths and weaknesses of our emergency preparedness. Overall, amateur communications provided vital support to all the agencies and communities struck by these quakes when conventional methods of communication failed. One more time, "hams come through."

Thanks for information gathered for this article go to: Dave Cook, KK6ZY, Bayside, California; Pete Vanderklis, WB6LYE, Eureka, California; and L. David "Shally" Shallenberger, K6VHP, Eureka, California. □

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, Phillystran 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



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 1/4% Tax) to:

GGTE, P.O. Box 3405, Dept. MW, Newport Beach, CA 92659

Specify 5 1/4" or 3 1/2" inch disk (Price includes 1 year of free upgrades)

THE ISOTRON
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
CA, Dec. 1988 Mar. W.R. 91

BILAL COMPANY
137 Manchester Drive
Florissant, Colorado 80816
(719) 687-0650

From the log

DUSTY SMITH, KB6FIW

I served as Humboldt County's chief RACES officer for six years. I retired a year ago because I was frustrated with the lack of cooperation among government agencies and the amateur community here. Following are some highlights from my log of the recent earthquake in the Eureka area.

April 25, 11:06 a.m. PST, quake #1—severe shaking, horizontal and vertical forces, structural damage imminent.

Retrieved Icom 2AT from truck, monitored 146.76 N6VA repeater: chaos. Mass confusion of call signs, a disgusting display of "amateur preparedness." Tried to break, with limited power 2.5W. Took numerous tries to get in and establish net control—emergency stations only, all call signs stand by.

Pete helped to hold net together. Booked to the EOC, bank of 20 emergency telephones silent. Emergency radio console also silent—double trouble. Activated Azden 3000 and Kenwood T-130S (took two years just to get second power supply and an antenna on the roof), checked in with Pete to update, started logging.

Director of OES hovering nearby, wanted me to dispatch amateurs to various officials and get damage reports. I pasted a map on the wall and used yellow note stickies to identify stations and locations.

I put an operator on the HF rig, 7.230 MHz, but the QRN was deafening. Radio positions in EOC all changed from the way I had them set up—gear hooked to the wrong antennas, power supplies not set up correctly, HF rigs too close together . . . VHF rig failed, no time to repair. Bill held the antenna PL-259 against the BNC connector of his HT. Mac pulled the transceiver out of his mobile—no compatible connectors. Grabbed the pocket knife and electrical tape, cut and spliced, and we were back on the air.

About 3 p.m. Telephones and sheriffs' radios once again in operation. Amateurs checking in with information on road closures and station coordination . . . organizing continued as I called for stations to assist. Too much time was being wasted exchanging call signs—tried to establish tactical calls to simplify communication and help the staff at OES.

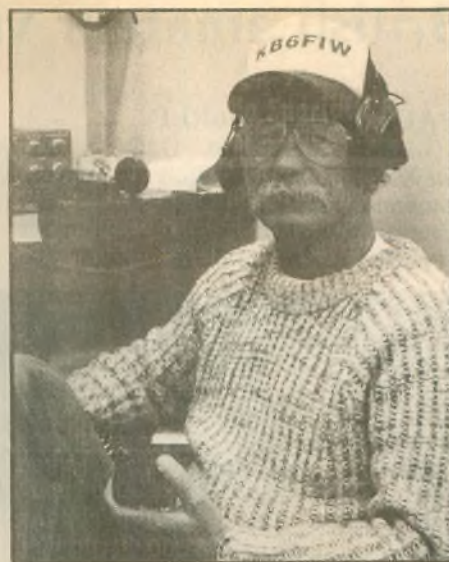
Found an empty picture frame with glass in it, grabbed a felt-tip marker and set it up near the EOC operating position to serve as status board. Incoming traffic slowed and I took a

break. Had just hit the sack when quake #2 hit, about 11:30 p.m. Back to the EOC.

April 26, updating status boards in the EOC briefing room when quake #3 hit, 4:18 a.m. Began the process again, checking most remote areas first. Discovered that the same operator had been manning station in Petrolia for 20 hours without relief; he'd rigged a system using odd-split frequencies for two separate non-linked repeaters in order to copy from deep within the canyon.

April 27. Operators getting tired. Needed more help; the boring but necessary task of continuing relief effort was still ahead. Placed a call on 7.230 for assistance. Soon they were enroute, trained and ready . . . from Del Norte, Mendocino, Sonoma, Santa Clara . . . They took time away from their incomes to help. Swung into high gear again, coordinating communications for various service agencies. Auditors from CDF acting for the state collected all our logs.

Humboldt County just kissed a speeding bullet. Everything that I had predicted happened, and the "paper" organizations crumbled and blew away with the winds of reality. Only a valiant few responded to the need for Amateur Service communications.

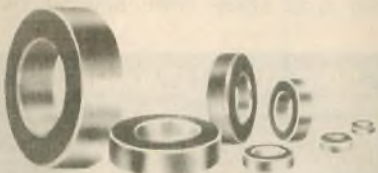


Dusty Smith, KB6FIW, at OES headquarters in Eureka.

Few understand that with the privilege of our license comes a responsibility to serve the public that grants those privileges.

Though Humboldt County was relatively fortunate in its ability to maintain communications throughout this disaster, there is much work to be done toward the achievement of true amateur preparedness. □

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

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

British amateur visits Sacramento

PAUL WOLF, W6RLP

William Moorwood, G3CAQ, and his wife Edna, from Wolverhampton, England, took an opportunity to visit Sacramento, California, on September 10 and 11, 1991, and were given the

"royal treatment" by some of the local Amateur Radio operators.

Bill had previously QSOed from his English QTH several amateurs in the Sacramento area, including John Canaris, WY6O. He indicated that he



Bill Moorwood, G3CAQ, and his wife Edna, received a warm welcome.



Left to right: Dick Frame, K6KYU; Bill Hendrick, NS6D; Bill Moorwood, G3CAQ; and Tony Borgia, K6DR.

clubs in the Sacramento area and asked if he could visit them. Of course, he was cordially invited to come.

Upon his arrival, he and his wife were met at the bus depot, taken to their hotel, and given a tour of the city including Old Sacramento and the famous *Delta King* paddlewheel river boat.

They were hosted for dinner and breakfast at two of the local restaurants by about 50 members of the Elk's Lodge Carmichael 2103 Amateur Radio Club, the Sacramento Old Timers Amateur Radio Society, and the QCWA Sacramento Valley Chapter #169. They were also welcome guests in Sacramento amateurs' homes.

After a two-day visit, during which everyone had a jolly good time, the Moorwoods left Sacramento for Sunnyvale, and eventually back to England, after having received a genuine showing of international Amateur Radio friendship. □

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

would soon be coming to California to visit his son Andrew, an engineer who lives in Sunnyvale, California. He said that he had read in the Visit Your Local Radio Club section of *Worldradio* that there were several radio

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 tower, 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.

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
Remote Balun 4:1 Open wire to coax Current Balun \$28.95

(804) 484-0140

Free 48 page Discount Catalog. Everything for wire antennas, connectors, coax. Allow 4 to 6 weeks for Bulk mail delivery of Catalog or send \$4 for huge Reference Catalog by Priority Mail. Mention ad for these prices. Prices are subject to change. ADD SHIPPING. VISA & MC welcome. Give card #, exp. date, signature. VA residents add 4.5%. Sales tax. See ads in QST and CQ. DEALER INQUIRIES INVITED.

Box 6159 • Portsmouth, VA 23703



THIS ONE WAS KEPT IN A HAM SHACK TOO LONG

U.S. AMATEUR RADIO MAIL LISTS

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

- Newly licensed hams
- All upgrades
- Updated each week

BUCKMASTER PUBLISHING

Rt. 4, Box 1630
Mineral, VA 23117
703/894-5777 VISA/MC 800/282-5628

Special Events...

EAA Fly-In

The Fox Cities ARC will operate W9ZL July 31 through August 2 from Pioneer Airport for the Experimental Aircraft Association Fly-In and Convention.

Operation will be in the General portion of 10, 15, 20 and 40M bands during daylight hours.

For certificate, send QSL with contact numbers and SASE to Wayne Pennings, WD9FLJ, 913 N.Mason St., Appleton, WI 54914.

Deltaville's 4th

The Middlesex Amateur Radio Group will operate AC4OG on July 4 to commemorate Deltaville's 4th of July Celebration.

Operation will be in the General portion of the 80, 40 and 20M bands from 1230 to 2030 UTC.

For certificate, send QSL and SASE to Pat Muller, AC4OG, MARG, P.O. Box 148, Locust Hill, VA 23092.

OCVRS railroad commemoration

The Oil Creek Valley Radio Society will operate KA3NSX on July 18 and 19 from the Perry Street railroad station to commemorate the sixth year of operation of the Oil Creek and Titusville Railroad.

Operation for CW will be in the Novice portion of 15 and 40M; for SSB, operation will be in the Novice portion of 10M and the General portion of 15, 20 and 40M from 1300 to 2100 UTC Saturday and 1300 to 1700 UTC Sunday.

For photo QSL, canceled from the only operating railway post office car in the country, send QSL and #10 SASE to Mike Dziubkowski, N3GCY, P.O. Box 22, Titusville, PA 16354.

International Ham Fest

Special event station VE4IHF/Ø will be operated on July 10 and 11 from the International Peace Garden to commemorate the 29th annual International Ham Fest.

Operation will be on 3.937, 7.255, 14.255, 21.355 and 28.355 (+/-) from 9 a.m. to 5 p.m.

For further information, contact John Swanke, KAØSLI, P.O. Box 304, Lakota, ND 58344.

Bix Biederbecke Jazz Festival

The Davenport Radio Amateur Club will operate WØBXR from July 24 to 26 to commemorate the 1992 Bix Biederbecke Memorial Jazz Festival.

Operation will be on phone and CW, 80 through 10M, 10 kHz up from the lower end of the General Class band edges throughout the day.

For certificate, send QSL and SASE to Davenport RAC, 2131 Myrtle, Davenport, IA 52804.

Football celebration

The Canton ARC will operate W8AL from July 27 through August 2 to celebrate the Pro Football Hall of Fame Greatest Weekend.

Operation will be: SSB — 28.350, 21.350, 14.270 and 7.270 MHz; and CW — 28.150, 21.060, 14.060 and 7.060 MHz from 2200 to 0200 UTC July 27 through 31 and 1700 to 2300 UTC on August 1 and 2. There will also be RTTY, packet, AMTOR and 2M FM operation.

For certificate, send QSL and 9X12 SASE with two units of first-class postage to Randy Phelps, KD8JN, 1226 Delverne Ave. SW, Canton, OH 44710-1306.

Yacht race

The Eastern Michigan ARC will operate K8EPV from July 18 through 20 to commemorate the 67th Port Huron to Macinac Island Yacht Race.

Operation will be on CW 3.710, 7.110, 21.110; SSB 3.910, 7.210, 14.210, 21.310 and 28.393 from 1400Z July 18 to 0200Z July 19 and 1400Z July 19 to 0200Z July 20.

For certificate, send QSL and 9X12 SASE to K8EPV, 1640 Henry St., Port Huron, MI 48060.

International air show

The Oswego County ARES will operate KY2F July 11 and 12 from the Oswego County Airport to celebrate the Central New York International Air Show.

Operation will be in the middle of the General 80, 40, 20, 15 and 10M phone bands, the Novice portion of 10M, 147.75/15 MHz and packet on 145.05 MHz from 1200 to 2100Z.

For certificate, send QSL and large SASE to Fred Swiatlowski, KY2F, P.O. Box 5227, Oswego, NY 13126.

Dr. Mahlon Loomis

The Fulton County Historical Society will operate W2ZZJ on July 18 and 19 to celebrate the 166th anniversary of the birth of Dr. Mahlon Loomis, the true inventor of wireless telegraphy.

Operation will be in the General Cclass phone portion of 40, 20 and 15M and in the Novice 10M phone band from 1400 to 2000Z.

For certificate, send QSL, contact number and a #10 SASE to W2ZZJ, HC Box 80, Route 29A, Stratford, NY 13470.

Veterans memorial

The Driven Elements Amateur Radio Group will operate on July 4 to celebrate the dedication of the Crittenden County Veterans Memorial.

Operation will be on 28.475 and 14.270 SSB and 7.120 CW from 1500 to 2200Z.

For certificate and QSL, send QSL and 9X12 inch SASE to DEARG, 1023 Lehr St., West Memphis, AR 72301.

Festival of Flight

The Reservoir ARA will operate K8QYL on July 18 at the Festival of Flight marking the 23rd anniversary of mankind's first walk on the moon.

Operation will be on 80, 40 and 20M General phone subbands.

For certificate, send QSL and 9X12 SASE to K8QYL, 18 S. Main, New Bremen, OH 45869.

ALINCO FROM WILLIAMS



DJ-F1T
2M FM H/T
w/AM Act
40 Mem, DSQ
7.2V 700 ma
Batt. - 3W.
HI-POWER
F1TH Model
12V 600 ma
Batt - 5W
4.3" Tall

Presenting Our Best Seller From Alinco. The Incomparable DJ-F1T. It's Little! It's Loaded! It's Great!

DJ-F1T
\$279.00
HI-PWR 5W - \$299

We Stock ALL ALINCOS and Accessories!

OTHER ALINCOS SPECIALLY CASH PRICED

| | |
|---|----------|
| DR-110T, 2M 45W Mobile Xcvr (Red LCD) | \$299.00 |
| DR-112T, 2M 45W Mobile Xcvr (Blk LCD) | \$329.00 |
| DR-119T, 2M 45W Mobile Xcvr COMING SOON! Est. Pr. | \$349.00 |
| DR-1200T, 2M 25W Digital Xcvr (Mod to 9600 Baud) | \$249.00 |
| DR-590T, Remotable 2/70 Twin-Bander, Xcvr | \$559.00 |
| DR-599T, NEW!! Remotable 2/70 Twin-Bander, Xcvr | \$629.00 |
| DR-570T, 2/70 20 Mem. Twin-Bander, Xcvr. (Loaded) | \$529.00 |
| DJ-560TA, 2/70 Twin Band 20 Mem. H/T (With Tab Batt) | \$369.00 |
| DJ-580T, 2/70 Mini Twin Band H/TSpec. Introd. lill 4/30 | \$399.00 |
| DJ-160T, 2M 20 Mem. Full Featured H/T | \$249.00 |
| DJ-162TD, 2M Full Fea. H/T (Act. AM - w/Alk Batt Case) | \$229.00 |
| DJ-S1T, 2M 40 Mem/Act. AM (No TT, w/Alk Batt Case) | \$199.00 |

Please Add \$4.00 Shipping. PRICES QUOTED ARE CASH! If COD we Pay COD charges-you pay shipping. NO Personal Checks. NC Res. add 6% Tax. Call for VISA/MASTERCARD CREDIT CARD PRICES. Prices subject to change without notice or obligation. We supply all Alinco Mod. sheets and guarantee your Alinco 100%!

NO ONE CAN BEAT THAT GREAT WILLIAMS RADIO / ALINCO DEAL!



Now! 18 Years Service to The Amateur Public!
Daily - Monday thru Friday and Most Weekends

WILLIAMS RADIO SALES
600 LAKEDALE ROAD, COLFAX, N.C. 27235

ORDERS ONLY - NOON TO 5 PM

(919) 993-5881

ORDERS & TECHNICAL 7 TO 10 PM

BALUNS



For beams 3-30 MHz, 6 Kw PEP 1:1 or 4:1 ratio. Model BA-2000 \$89.95



For rhombics, etc. 6 Kw PEP 2-30 MHz, ratios from 1:1 to 12:1. Model MB \$165.00



For dipoles 3-30 MHz, 6 Kw PEP 1:1 or 4:1 ratio. Model 2K \$84.95



1.7-30 MHz, 3 Kw PEP, 1:1 or 4:1 ratio. Model 1K \$49.95



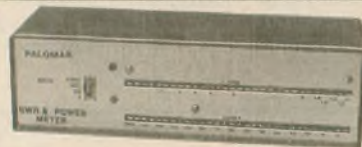
1.7-30 MHz, 350w PEP, ratios from 1:1 to 16:1. Model PB \$26.95. Model UU \$26.95



For high SWR applications-tuners, multiband dipoles. 2 Kw CCS @ 10:1 SWR, 1.7-30 MHz, 1:1 or 4:1 ratio. Model SB \$79.95

Add \$4 shipping/handling in U.S. & Canada. California residents add sales tax.

SWR & POWER METER



- Shows PEP output directly, accurately, instantly.
- No "Cal." control. It's automatic.
- Shows SWR while transmitting — even on SSB.
- Exclusive patented circuit.

Shows power and SWR on two 30 element light bars. 3% resolution. The bright red 6" indicators can be seen clear across the room. Four power ranges: 2, 20, 200, 2000 watts. 1.7-30 MHz. If you've been looking at slow moving panel meters see what an improvement an instant display makes.

Model M-835 SWR & Power Meter \$199.95 + \$4 to ship U.S./Canada. For 12v DC. Model PS-95 AC adapter \$15. California residents add sales tax.



Send for **FREE** catalog that shows our complete line: Noise Bridge, SWR Meters, Preampifiers, Loop Antennas, Baluns, VLF Converters, Keyers, Toroids and more.

PALOMAR ENGINEERS

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

100th Battalion anniversary

Hawaii Army MARS will operate WH6F on July 4 to commemorate the 50th anniversary of the 100th Battalion, one of the most highly decorated and respected units to serve in World War II.

Operation will be in the Novice portion of the CW subbands and the General portion of the phone subbands for 24 hours beginning 1900Z July 4. Digital and ATV operations are also planned.

For commemorative QSL, send QSL and SASE to Joe Hao, WH6F, 3251 Pakanu St., Honolulu, HI 96822.

Great Bicycle Ride

The Mount Pleasant Iowa ARC will operate W0MME on July 24 and 25 as the 20th Register's Annual Great Bicycle Ride Across Iowa (RAGBRAI) camps overnight in Mount Pleasant.

Operation will be on 3.970, 7.263 and 14.271 MHz in the Novice portion of the 80 and 40M bands from 1400Z July 24 to 0300Z July 25. 146.52 MHz and repeaters on 147.39 and 444.95 will be monitored for the many amateurs participating on the ride.

For certificate, send 9X12 SASE to Dave Schneider, WD0ENR, RR3 Box 307A, Mount Pleasant, IA 52641-9803.

OARDC celebration

The Wayne Amateur Radio Technical Society will operate N8CEY from July 11 to 12 and July 17 to 19 from Wooster to celebrate the Ohio Agricultural Research and Development Center.

Operation will be on CW 3.550, 7.050, 10.125, 14.050, 21.050, 24.920 and 28.150; phone 3.900, 7.275, 14.275, 21.350, 24.960, 28.350 for 15 hours beginning 1200Z.

For certificate, send QSL and SASE to OARDC, Mike Brugger, N8CEY, 1680 Madison Ave., Wooster, OH 44691.

Norwood Regatta

The St. Lawrence County 10M Association will operate WN2R on July 11 and 12 from Norwood, New York, to celebrate the annual Norwood Regatta.

Operation will be in the General portion of the 40 and 20M bands and the Novice portion of 10M from 12 noon to 7 p.m. EDT.

For QSL, send QSL and SASE to Regatta, General Delivery, Norwood, NY 13668.

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

La Grange Park

The Six Meter Club of Chicago will operate K9ONA on July 12 to commemorate the centennial of La Grange Park.

Operation will be in the lower 25 kHz of the General phone bands, Novice portion of 10M and on K9ONA/R, 146.37/97, from 1400 to 2359Z.

For QSL, send SASE; for certificate send 9X12 SASE to K9ONA, Karl Weisschappel, 802 Barnsdale Rd., La Grange Park, IL 60525.

NØFVG balloon

The Rocky Mountain Radio League will launch a high altitude balloon at 1400Z on July 18 which should be in flight for four hours.

The balloon will carry a cross-band repeater; ID NØFVG balloon repeater. The input frequency will be 446.000 with the output of 147.555. There will be an organized net and stations checking in will be sent a commemorative QSL card upon receipt of an SASE. Altitude will be approximately 100,000 feet, which should allow checkins from a 500-mile radius from Denver.

For QSL, send QSL and SASE to NØFVG, Warren Gretz, 3664 E. Lake Dr., Littleton, CO 80121.

Staten Island ARA anniversary

The Staten Island ARA will operate W2CWW on July 18 and 19 to celebrate their 70th anniversary.

Operation will be in the lower 25 kHz of the General 80, 40, 20 and 15M phone subbands and Novice portion of the 10M phone subband from 1200Z July 18 to 1500Z July 19. Also look on 445.325 (-5) 156.7PL club repeater.

For certificate, send QSL and 9X12 SASE to Staten Island ARA, P.O. Box 140495, Staten Island, NY 10314-0018.

Memorial visit

The Clark County ARES will operate N9MCH on July 4 from the Highground Veterans Memorial Park. Extended QSOs will be encouraged to allow visitors to the Memorial to have the opportunity to speak, if even briefly, with amateur radio operators in other parts of the country as well as with other countries, thereby making their visit to the Memorial an even more significant experience and serving as a way of expressing the oneness of all people around the world.

Operation will be in the bottom portion of the General Class 80, 40, 15 and 10M subbands from 1700Z to 0500Z.

For certificate, send QSL and 9X12 SASE to The Highground, P.O. Box 457, Neillsville, WI 54456.

TigerTail™

Range Extender for 2 meter Handhelds

- Boosts Signal from Flex & 1.4 wave Antennas
- Lowers Radiation Angle
- Improves both Receive and Transmit
- Raises Low Power Performance
- Saves your Battery Pack

Order Hotline
800-926-7373

Antennas West
Box 50022-W, Provo, UT 84608

See and Hear the Difference **7⁹⁵**



**M.A. Henriques,
HC2HX
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.



That's a lot of equipment . . .

I am very proud of my ham shack and the rig I operate. I am 73 years old and a radio ham since 1973; I've worked over 110 countries only from 0400 to 0700 UTC, weekends.

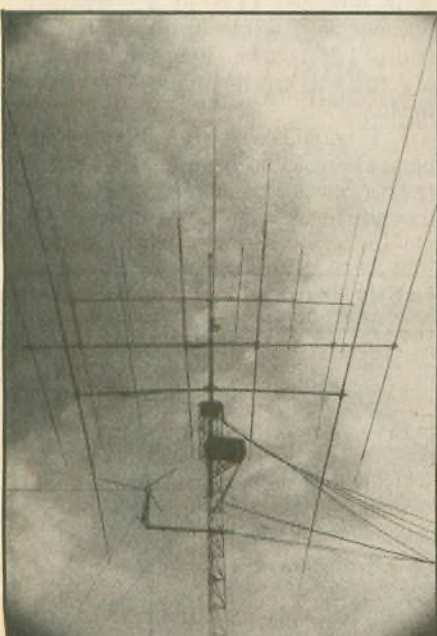
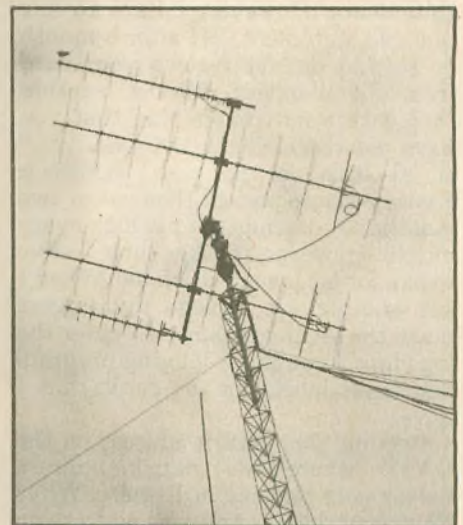
I work all bands phone only and find it a great pastime. I present here pictures of the shack and the antenna array, along with a list of the equipment I operate.

The station: Kenwood TS-940S transceiver, PC-1-A phonepatch, SP-940 speaker, MC-60 microphone, R-1000 all-band receiver, SW-2000 SWR power meter, SM-220 station monitor, TR-2600 2M HT, ST-2 console battery charger, HC-10 universal

amplifier with power pack; Miracle amplifier D-1010 100W for IC-451A; KLM amplifier 160W for IC-251A, KLM 400 elevation rotor, KLM 500 azimuth rotor; Miller antenna tuner AT-2100; Bearcat 20/20 scanner; Astron RS-0250 35A. 13.8V power-pack; Telrex BA/2345 console for antenna rotor; Microlog AVR2 with monitor CW converter, Microlog AKB/1 typing deck CW; Pakratt 232 interface (packet); Kempco console rotor for antennas; Lambda voice telephone P/T; Commodore 64/128 computer with color monitor, Commodore disk drive, Commodore cassette deck; Okidata printer.

The Antenna system: Telrex TH7 7-element Hy-Gain 10/15/20M, Telrex 402 2-element Hy-Gain 40M; Cushcraft A50 6-element for 6M, two sets A144 VHF 40-element, two sets 416TB UHF 40-element, D3W 1-element HF 17M; KLM 160V vertical 80-160M; ASP 636 vertical 10M;

Mirage 44LBX 1.2 GHz; Monitor base station antenna scanner 25-52 kHz horizontal V for HF; Heathkit weather station. □



clock; ICOM IC-251A 2M transceiver, IC-451A 70 cm transceiver, IC-120 1.2 GHz transceiver; Sony Micro TV-720U (7"); Swan Linear Mark II

Now shows Counties!

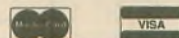
**HamBase™
Data Retrieval Software**



HamBase Retrieval System
Find: W8GJX
Helen Schmock W8GJX
273 6th Ave
Manistee MI 49660
Born: Mar 17 1909
Class: Advanced
County: Manistee

Search and export by name, city, or zip. Does not require hard disk for operation. Automatic retrieval from supplementary databases: DX, Old Calls, Home BBS.

HamBase data retrieval software will instantly retrieve the name, address, birthday and county of any US amateur.



DOS 3.5" or 5.25" HD disks \$49.95
Plus \$5.00 shipping and handling.
Please specify media size.

Macintosh 800K disks \$79.95
Summer Supplement \$19.95
WHamBase for Windows \$19.95
HBPopUp TSR \$19.95
HamBase Canada \$19.95
DX QSL Routes \$11.95
Old Call Database \$9.95
Packet Home BBS Addresses \$9.95
Demo/Upgrade disk \$5.95
Plus \$3.00 shipping and handling.

j-Com · P O Box 194 W · Ben Lomond CA 95005 · (408) 335-9120 (fax) 335-9121



QSL managers and QSLing

After reading the article by Tim Garrity, WD9DZV, in the January issue of *Worldradio*, I felt that I had to add some input. I too am a QSL manager. The DX station I help out is YJ8RN, Rod Newell, Port Vila, Vanuatu. I have had the privilege of helping Rod since October, 1990. A privilege? Yes, I feel proud that I am helping a fellow amateur operator stay on the air. Since I started Rod's paperwork in October, 1990, I have answered 1,400 plus QSLs. I even had Rod send me any logs before October, 1990, because I have received QSLs from 1989. Some of the cards before 1990 I am able to answer, some I cannot.

Tim was mostly correct with his statements. However, I have to say that his statement, "If after a month or so you do not receive your card from the manager, fill out another card with a note explaining that you have not received the DX QSL yet," is, at least in my case, incorrect. Please be more patient than one or two months. Rod sends me his logs every month. However, it takes three to five weeks for his logs to reach me. When I get another set of logs my fingers make the keyboard sing as I enter the logs into a computer logging program and make labels for the cards that I have.

Putting *your* return address on the SASE where the return address belongs is a blessing in disguise. Why? That way there is only one address on the envelope. Another trick I have picked up that is not only handy but time conserving is that when you put your SASE in the envelope, *put the folded side in first* so it will be at the bottom of the envelope and your SASE will not be sliced in half by a letter opener.

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 handset or emergency repeater.

Use DUAL as two-way crosslink or one side as a repeater.

PORTA-LINK SINGLE - \$29 DUAL - \$65

Il. deliveries, 6.5% tax. SH-\$2.75 or C.O.D. \$8.50

M. BOHNHOFF

P.O. Box 6373, Libertyville, IL 60048-6373

708-918-7330



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

I have been asked by others, "Why are you a QSL manager?" The answer is simple. I enjoy doing it and the little thank-you notes with the cards I receive are more rewarding than anyone will know. Rod has told me that he could not do the paperwork and stay on the air; he is a very sought after DX station. Before I became a ham I never knew where half of the places were that I have had QSOs with myself. I had never heard of Vanuatu but thanks to Amateur Radio, I now have a friend there. I find that most of us are here to enjoy the hobby and being a QSL manager I have come to enjoy another aspect of a great hobby I became involved with in 1983.

So, to everyone who sends cards to a QSL manager, please be patient and give us a break. We are not holding your cards back; you will get your QSLs ASAP. Many, many thanks to those who send SASEs and IRCs and a special thanks to those gems who send extra postage—it helps make up for those who do not send an SASE, or those who send their QSLs post card style.

DEBBIE BURTON, N9DRU
Marseilles, IL

QSLs in bulk

Earlier this year on the Prodigy Interactive Personal Service bulletin board, a KY1 Amateur Radio operator began offering to give away "by the ounce, or by the pound" DX QSL cards to anyone sending SASEs to him at "ARRL HQ, 225 Main St. Newington, CT 06111." He writes that he gets them "from the W1 QSL bureau, Springfield, MA." Immediately, amateurs reading the Prodigy bulletin condemned his action.

The ARRL should take steps to put an end to the KY1's offer and should instruct all ARRL QSL bureaus to avoid this questionable activity unless the addressee of the QSL card approves.

I have advised the ARRL that any QSL cards accumulating in any QSL bureau addressed to me directly or by way of any of the DX calls I hold or by way of any of the stations for which I am a QSL manager may be sent to me or destroyed, and that they are not to be disposed of in any other manner whatsoever, particularly by distribution in any way to someone other than the intended recipient.

J. BRUCE SIFF, W2GBX
Jensen Beach, FL

Much ado

I'm a bit puzzled concerning the "bum dope" that seems to surround the 144.200 MHz programmed into the Radio Shack HTX-202 (May *Worldradio*). It can be changed.

I had not had my rig an hour before 146.520 was in the calling-frequency memory and a local repeater in the #1 standard memory:

1. The rig comes programmed with 144.200 as the calling frequency memory and as the #1 standard memory, however, the user has the option of changing them.

2. Manual, page 24, Clearing Memories—see note: "You cannot clear standard memory #1 or the calling-frequency memory. You can only change the memory settings for these memories." So change them.

3. Manual, page 20, following the steps outlined, program 146.520 or frequency of choice into the calling-frequency memory. Now 144.200 remains only in standard memory #1.

4. Manual, page 23, following the steps outlined write in any frequency you desire. I wrote in a local repeater and 144.200 was no longer in any memory and will not be unless I reprogram for it.

5. When these two memories have been changed to frequencies of choice the rig powers up on the channel it was last tuned to when it was turned off.

GEM QUAD PRODUCTS (1987) LTD.

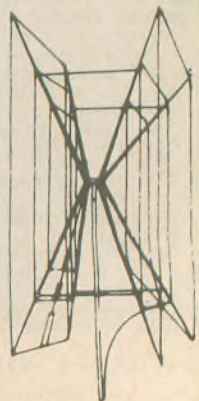
Chosen By Amateurs For Over 15 Years.
Winner of the Manitoba Design Institute
Award of Excellence.
Will Accommodate New Bands From
2 To 20 Meters.

2 Element \$289.95
3 Element \$454.95
4 Element \$599.95

Price is F.O.B. Boissevain.
Includes U.S. Customs Duty.

Kit Includes: Spider, Arms, Wire, Balun
Kit and Boom Where Needed

Gem Quad Products, Ltd. • P.O. Box 291, Dept. W
Boissevain, Manitoba, Canada R0K 0E0 • (204) 534-6184



It seems there is much ado about nothing. WB6NOA is correct on all other counts; it is a fantastic buy!

R. E. HICKMAN, AA5WE

Copperas Cove, TX



Silly measures

You can do nothing but harm to Amateur Radio by printing stories such as "Is Amateur Radio Safe?" in the August '91 issue. Young squirts, who don't know any better, are scared half to death by it and old-timers like me become alienated because we know it has little or no basis in fact.

Since being printed in *QST* nearly two years ago the quoted 16 "preventive measures" have been widely (and unthinkingly) circulated by most of the radio club bulletins around the country, so they hardly need any more exposure.

Those who believe the allegations don't think of the strong magnetic fields generated by the solder guns they hold right in their hands, the automobile starters or the alternators whizzing away only a foot or two from their feet for long periods of time, or the food blenders, vacuum sweepers, garbage disposals, electric can openers, etc. that their XYLs use constantly. All these things also generate magnetic fields, some stronger than others, but if there is a harmful effect it must also be accumulative—nobody gets cancer overnight.

So we old-timers who have worked in electronics and ham radio all of our long lives in total violation of all of the 16 rules, with no ill effects whatever, do nothing but laugh and laugh when we read them.

And we laugh all the harder when we see on your front cover a photo of a radio ham with two hand-held antennas clipped to his hatband. I expect to

see him listed in Silent Keys next month because Rule #10 reads "Handhelds should be kept as far from the head as possible when operating."

BOB KUEHN, W0HKF

Eagan, MN



GM's radio installation

I read with interest the problem associated with the Amateur Radio installation in the Toyota. I bought a GM product—you know, made in Indiana, USA, Maybe a little bit in Canada.

General Motors will send to any interested party a 1991 paper entitled "Radio Telephone/Mobile Radio Installation Guidelines." The four-page paper delineates the precise way to install a rig from the antenna up to the microphone. How to route the wiring, how to troubleshoot and where to locate the transmitter. Very few hams will follow the instructions, especially in regards to running the ground and the hot lead all the way from the battery.

The modern automobile has one or more computers that are sensitive to RF or other electrical interruption. The sheetmetal or frame is no longer a ground return as in the older cars.

An examination of the wiring diagram will show that there are both plus and minus leads to each electrical component—no sheetmetal or frame returns. In some cases several items, such as instruments under the dash, have their ground return leads all tied to a common point. GM supplies a battery terminal connection, package 1846855, to provide a simple tight corrosion resistant connection to the battery.

BART PAINE, K7CC

Tucson, AZ



SC FILTER



- New switched capacitor audio filter.
- Outstanding performance.
- Twice as sharp as the filters in your transceiver.
- For SSB, CW, HF Packet, all digital modes.

How it works: For SSB and other wideband modes Palomar's new PF-300 filter has a 16th order lowpass filter. It cuts off at 3000 Hz with amazing sharpness. With the frequency control knob you can smoothly lower the cutoff all the way to 300 Hz. No thumb-wheel switches to confuse you; just adjust the tuning knob for best reception. Interference disappears like magic!

Hum & rumble a problem? Just press the highpass filter switch to cut it all out.

For CW and other narrowband modes PF-300 has a 16th order bandpass filter. Extremely steep skirt selectivity. Choose from three filter bandwidths: Broad 250 Hz, Medium 100 Hz, Narrow 45 Hz selected by panel switch. Panel knob adjusts passband frequency from 300 to 3000 Hz.

Easy to use. Connect to phone jack or speaker terminal. Full 5 watt drive for speaker or phones. Improves all rigs old and new.

Order yours today! **Model PF-300 audio filter \$159.95 + \$4 shipping/handling in U.S. & Canada.** For 15-v DC. Model PS-95 AC adapter \$14.95. Calif. residents add 8 1/4 % sales tax.



Send for **FREE** catalog that shows our complete line: Noise Bridge, SWR meters, Preamplifiers, Loop Antennas, Baluns, Toroids and more.

PALOMAR ENGINEERS

Box 462222, Escondido, CA 92046

Phone: (619) 747-3343

FAX: (619) 747-3346



COMMODORE/AMIGA

Replacement Chips, Parts, Upgrades



AMIGA CHIPS

| | |
|---|---------|
| 8520A CIA..... | \$10.50 |
| 1.3 ROM Kick Start..... | \$24.95 |
| 8372A Fat Agnus/puller..... | \$49.95 |
| 8373 Super Denise..... | \$35.95 |
| 8364 Paula..... | \$23.95 |
| 5719 Gary..... | \$12.95 |
| 2.0 Upgrade Kit..... | \$87.50 |
| 2.0 ROM only (NTSC/PAL)..... | \$39.95 |
| 1x4/80 SC Zip for A3000..... | \$19.95 |
| McCoy Agnus Chip Puller. List \$29.95..... | \$14.95 |
| Electronic ROM selector switch (1.3/2.0)..... | \$38.50 |
| A500 Keyboard..... | \$59.95 |
| A2000 Keyboard..... | \$79.95 |

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 |
| 4164 (C64/RAM)..... | \$.60 |
| C64 Keyboard..... | \$19.95 |
| Computer Saver II..... | \$17.95 |
| 1.8 Amp. C64 Repairable Power Supply..... | \$24.95 |
| 4.3 Amp. C64 Repairable Power Supply..... | \$37.95 |

We carry a complete line of Commodore/Amiga chips, upgrades, power supplies and motherboards.

THE GRAPEVINE GROUP, INC.

3 Chestnut St., Suffern, NY 10901 • Order Line: 1-800-292-7445

Intn'l Order Line: 914-357-2424 • FAX: 914-357-8243 • Customer Service Line: 914-368-4242

We Ship Worldwide • Hours: 9-6 ET M-F • Prices Subject to Change • 15% Restocking Chg.



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, V.P.
Near Disneyland

OAKLAND, CA 94606

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

Rich, W4SWVB, 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, KE7OA, Mgr.
Tigard-99W exit
from Hwy. 5 & 217

DENVER, CO 80231

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

George, KDØRW, 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

WOODBRIIDGE, 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

HANDHELD

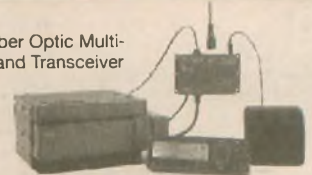


IC-2GAT
2 Meter HT • 7 Watt
IC-4GAT
440 MHz • 5 Watt
IC-W2A
Deluxe Duo-Band
Wide RX Band HT
IC-P2AT, 2 Meter
IC-P3AT, 220 MHz
IC-P4AT, 440 MHz
IC-24AT, Duo Band
IC-2SRA, 2M + Wide Rx

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**

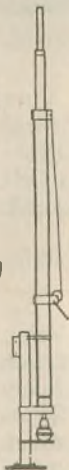
MA-550

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!

Call now for all MFJ products...

Wattmeters, dummy loads, coax switches, keyers, clocks, speaker and mics, software, books and more!



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 1 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**

KANTRONICS/KAM



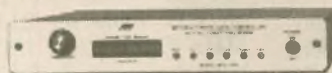
True Dual Port Simultaneous HF/VHF Operation

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

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

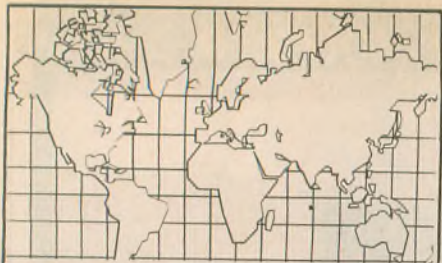
Southeast
1-800-444-7927

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 92 page
Communications
Equipment
Catalog



DX WORLD

John F.W. Minke III, N6JM

6230 Rio Bonito Drive Carmichael, CA 95608

Activities Calendar

June 20-21 JARL All Asian DX Contest (CW)

June 27-28 ARRL Field Day

July 11-12 IARU HF World Championships

July 24-26 Northwest DX Convention

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:

425) Neal H. Swenor, KA1SAW (all 10M SSB); 4/13/92

426) Dave Reynolds, KA6WRF; 4/13/92

427) William J. Sawders, K7ZM; 4/20/92

428) Alyston E. Campbell, W0AGX; 5/7/92

429) Richard M. Headrich, WA7QCC; 5/7/92

430) Frank C. Westphal, KF6E; 5/7/92

It has been some time since we have processed that many awards in a single month. We thank you for your interest in our awards program.

Oman (A4)

On 20M SSB A41KJ has been reported often. Look for him between 14.175 and 14.199 after 1300 UTC. Also on that band three other calls were reported during the month of April: A41KL on 14.180 MHz at 1400 UTC, A41KR at 14.243 MHz at 0200 UTC and A45ZX on 14.091 MHz at 0200 UTC running RTTY.

The new bands (WARC) have been busy with A45ZZ, who can be found between 18.127 and 18.150 MHz around 0300 and 1300 UTC, and near 24.970 MHz around 1400 UTC.

A47RS prefers 15M and can be found between 21.260 and 21.280 MHz after 2030 UTC. Also on this band is A45ZY, found on 21.211 MHz at 1200 UTC.

San Andreas Island (HK0)

Also reported from San Andreas Island, according to *The Long Island DX Bulletin*, is HK0EFU on 75M near 3.790 MHz at 0500 UTC. With the coming of the summer months, working this band will not be favorable. We found no other reports for this one.



Don Nutt, 9K2WR, in his "closet."

This gentleman is Don Nutt, 9K2WR, who has handed out Kuwait to many of the deserving DXers. Amy, N6UXB, Don's XYL and QSL manager, sent us this photo and calls it "Don's Closet."

Amy reports that they are looking

for a departure date for Don sometime between June 4 and August 22. Unfortunately, the US Army would like to keep him longer. Don will try to operate right up to his departure date.

Don also operated during the last ARRL DX International Contest and did fairly well, according to Amy.

For many years, Francisco Velez, HK0BKX, was the only active station on San Andreas Island and gave many a deserving DXer their first QSOs with San Andreas Island. Not much from him recently—only one report of him on 12M around 0015 UTC, on April 9, near 24.902 MHz.

Very active from this island recently has been HK0NAF. Look for this one on CW between 21.020 and 21.023 MHz from 2200 UTC. He has also been reported on 7.010 MHz at 0230 UTC, 14.020 MHz at 0015 UTC and 28.020 MHz at 2200 UTC.

We also have some activity for HK0ER, who was active the latter part of April on 14.018 MHz at 0115 UTC and 21.014 MHz at 0000 UTC.

The early part of May HK0TCN was reported on 10M near 28.495 MHz at 2100 UTC with 6M represented by HK0/W6JKV on 50.110 MHz at 2145 UTC.

Djibouti (J28)

According to *Long Skip*, edited by John Sklepkowycz, VE3IPR, for The Canadian DX Association, several calls from Djibouti were added to the

"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



Tom Clark, 9K2WC/VE3OMC; Bob Walsh, 9K2ZR/WA8MOA; Don Nutt, 9K2WR/KJ6TC; and 9K2ZW received awards for participating in Kuwait National and Liberation Day 1992. (Photos courtesy of Amy Nutt, N6UXB)

logbooks from our good neighbors to the north. The following were reported in eastern Canada:

| | | |
|-------|------------|----------|
| J28FO | 14.009 MHz | 0300 UTC |
| J28FO | 14.246 MHz | 0115 UTC |
| J28GG | 21.298 MHz | 1845 UTC |
| J28RQ | 28.510 MHz | 1415 UTC |

Of course, those signals stray into our side of the border according to the following reports:

| | | |
|-------|------------|----------|
| J28AQ | 24.946 MHz | 1500 UTC |
| J28FO | 28.470 MHz | 1315 UTC |
| J28GG | 14.226 MHz | 1530 UTC |
| J28YC | 21.345 MHz | 1815 UTC |

Egypt (SU)

SU1HV has been the most active DXer from Egypt recently, according to the reports gleaned from the various DX newsletters. This station has been found on 10.102 MHz after 0600 UTC; 14.003 MHz at 0000 UTC; 18.074 MHz around 1700 UTC; 21.004 MHz at 1845 UTC; and 24.898 MHz at 1500 UTC. Activity from other calls in Egypt include the following:

| | | |
|-------|------------|----------|
| SU1ER | 14.243 MHz | 1900 UTC |
| SU1HN | 14.226 MHz | 0030 UTC |
| SU1HT | 21.002 MHz | 1400 UTC |
| SU1JG | 24.932 MHz | 1800 UTC |
| SU2AJ | 21.013 MHz | 1308 UTC |

San Marino (T7)

San Marino is not one of our largest nations of the world, and the activity is sparse too. For this period we found activity for three calls.

The first was Tony Ceccoli, T77C, who is an active DXer with 5BDXCC, 160M DXCC, and is on the DXCC honor roll. Tony was reported on 15M on May 1 near 21.272 MHz at 1530 UTC. And, one Sunday he was on 160M working fellow Europeans on 1.830 MHz after 1900 UTC.

Our other active DXer from San Marino is Pier Paolo Taddei, T77T. However, Paolo is more known to his countrymen as a member of their Olympic team rather than a DXer. Paolo participated in the 1984 Olympics in Los Angeles with their rifle team. He entered in the small-bore class, English match. This was Paolo's second Olympiad and he was 35 years of age at the time. He does find time for DXing and was reported on 28.473 MHz after 1430 UTC the early part of April. On 17M, T77T was worked on 18.135 MHz at 1615 UTC one Friday afternoon.

The third call reported was T77GM, who had a signal into Georgia in early April on 14.023 MHz at 2045 UTC.

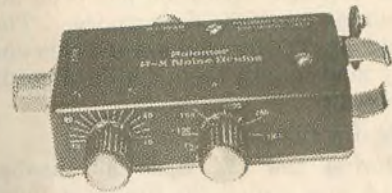
Belize (V31)

Right after our column went to press last month we received information that the Belize QSL bureau is back in operation. Bill Leonard, WB5IEQ/V31HK, informs us that he is now the QSL manager for the Belize bureau. Cards may be sent to him via P.O. Box 168, Belmopan, Belize.

Bill also informs us that there are no single-letter Belize calls. However, this is not correct, being that V31X is the call of the Belize DX Club, which was active in the October Worldwide DX Contest.

Bill reports that those wishing to travel in Belize and desiring to operate should forward a photocopy of their license at least six weeks in advance to the Office of Telecommunications, Belize City, Belize. Paul Garvin, KF6TC/V31DN, adds that the P.O. Box number is 310, and the fee is \$10,

R-X Noise Bridge



- Learn the truth about your antenna.
- Find its resonant frequency.
- Adjust it to your operating frequency quickly and easily.

If there is one place in your station where you cannot risk uncertain results it is in your antenna

The Palomar Engineers 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. All this in one measurement reading. And it works just as well with ham-band-only receivers as with general coverage equipment because it gives perfect null readings even when the antenna is not resonant. It gives resistance and reactance readings on dipoles, inverted Vees, quads, beams, multiband trap dipoles and verticals. No station is complete without this up-to-date instrument.

Why work in the dark? Your SWR meter or your resistance noise bridge tells only half the story. Get the instrument that really works, the Palomar Engineers R-X Noise Bridge. Use it to check your antennas from 1 to 100 MHz. And use it in your shack to adjust resonant frequencies of both series and parallel tuned circuits. Works better than a dip meter and costs a lot less.

The price is \$79.95 in the U.S. and Canada. Add \$4.00 shipping/handling. California residents add sales tax.



Send for FREE catalog describing the R-X Noise Bridge and our complete line of SWR Meters, Preamplifiers, Toroids, Baluns, VLF Converters, and Loop Antennas.

Palomar Engineers

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

| | | |
|--------|-------------------------|----------|
| EU-040 | Baleal Island | CT1CBI/P |
| | 18.126 MHz | 1730 UTC |
| EU-047 | Borkum Island | DA0IMD |
| | 21.261 MHz | 1630 UTC |
| EU-032 | Oleron Island | FD1OQK/P |
| | 14.264 MHz | 0930 UTC |
| EU-033 | Hinnoya Island | LA6DEA |
| | 14.230 MHz | 0535 UTC |
| EU-042 | Sylt Island | DF3XZ/P |
| | 14.263 MHz | 1645 UTC |
| EU-061 | | LA1VFA/P |
| | 14.255 MHz | 0645 UTC |
| EU-127 | Helgoland Island | DA0HEL |
| | 14.028 MHz | 0615 UTC |
| EU-135 | Holman Island | SM3JBE/2 |
| | 14.258 MHz | 1430 UTC |
| EU-151 | Peneta del Moro | EA5RKX |
| | 14.279 MHz | 0615 UTC |
| NA-001 | Island of Spanish Wells | |
| | KC1WJ/C6A 21.330 MHz | 1945 UTC |
| NA-010 | Cape Breton Island | VE1CWA |
| | 14.227 MHz | 0245 UTC |
| NA-019 | Kodiak Island | KL7CYL |
| | 18.075 MHz | 0015 UTC |
| NA-038 | La Madeleine Island | VE2FZZ |
| | 21.260 MHz | 1500 UTC |
| NA-050 | Barter Island | NL7BE |
| | 14.262 MHz | 0545 UTC |
| NA-052 | Marco Island (FL) | N1DL |
| | 28.450 MHz | 1800 UTC |
| NA-062 | Pine Island (FL) | NH6U |
| | 21.260 MHz | 1445 UTC |
| NA-076 | Cedar Key | KE4VU |
| | 14.258 MHz | 0230 UTC |
| NA-080 | Abaco Island | N4FD/C6A |
| | 14.020 MHz | 2315 UTC |
| NA-085 | St George Island | K1RH/1G2 |
| | 14.025 MHz | 0245 UTC |
| NA-092 | South Padre Island | KD7EC |
| | 21.260 MHz | 1900 UTC |
| OC-008 | Duke of York Island | P29FS |
| | 14.260 MHz | 2015 UTC |
| OC-011 | Moen Island | V63BW |
| | 14.025 MHz | 0615 UTC |
| OC-029 | Majuro Atoll | V73EU |
| | 14.260 MHz | 0600 UTC |
| OC-066 | Nengonengo Atoll | FO5BI/P |
| | 14.022 MHz | 0630 UTC |
| OC-129 | Visayan Island | DU1CHD/6 |
| | 21.260 MHz | 1545 UTC |
| SA-044 | La Tortuga Island | YV5DTA |
| | 21.020 MHz | 1615 UTC |
| SA-046 | Itamaraca Island | PY7XC/7 |
| | 14.260 MHz | 0715 UTC |
| SA-055 | Martin Garcia Island | LU3CQ/D |
| | 21.259 MHz | 0045 UTC |

Hal, KD7EC, recently retired from Arizona, has been busy handing out contacts from South Padre Island (NA-092) in South Texas. Hal's operating location is on the sixth floor of what appears to be a resort (Gulfview II). As he spends about six days a week on the island, he now has a local address. For faster turnaround you may send your cards to KD7EC at P.O. Box 2353, South Padre Island, TX 78597. Hal enjoys the IOTA program, both as the hunter and the hunted!

Northwest DX Convention

The Western Washington DX Club is right on schedule with the planning for this year's Northwest DX Convention. This will be the 40th time that this northwest bash will meet—this

Kantronics Technical Seminars

Presents

"Packet/Digital Communications"

Kantronics invites you to attend a free technical seminar "Packet/Digital Communications" presented by Karl Medcalf (WK5M), Kantronics Customer Service Manager. Karl will focus on how to make packet work for you. Seminar attendees have a chance to win a Kantronics KPC-2, D4-10, DE, KTU, KAM or other similar hardware at prize drawings at the end of each session. Check the schedule below for city and date.

1 Overview of Packet Radio - 9:00am-10:30am

This session introduces Packet Radio, explains how packet works and defines what is required to set up and operate your own packet station.

2 Connecting your Equipment - 11:00am-12:30pm

The mysteries of connecting your computer to your TNC and your TNC to your radio are revealed. Detailed examples using state of the art computer and radio equipment, make it easy for you to get your station up and running fast.

3 Getting on the Air - 1:30pm-3:00pm

Included here are the basics of your first connect, digipeating and the meaning of the indicators on your packet TNC. Additional topics such as gateway operation, networks and packet bulletin boards will be discussed.

4 Open Forum - 3:30pm-5:00pm

The signaling techniques and operating practices of the "other" modes of operation including WEFAX, RTTY, ASCII, AMTOR, NAVTEX/AMTEX and CW are discussed.

Kantronics Technical Seminar Schedule

| | | |
|---------------|---------|---------|
| Gaithersburg | MD | Sep 91 |
| Los Angeles | CA | Oct 91 |
| Oklahoma City | OK | Dec 91 |
| Orlando | FL | Jan 92 |
| Minneapolis | MN | Mar 92 |
| Denver | CO | May 92 |
| Birmingham | England | May 92 |
| Louisville | KY | Jul 92 |
| Columbus | OH | Sept 92 |

please call for exact date & location 30 days prior to the scheduled seminar date shown above.

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

year at the Renton Holiday Inn in the Seattle area.

The DX programs include the KP5 Expedition by K0PP, the J37YL Expedition by NM7M and others. In addition to the DX programs there will be technical programs running concurrently in the next room. For the non-ham family members who tag along, there is a tour of Puget Sound which includes Snoqualmie Falls and the Seattle Space Needle. The complete package is \$49, which includes the banquet and breakfast. The tour costs \$16.50. Less than complete packages are available. The deadline for pre-registration is July 17. Please register to WWDXC, P.O. Box 224, Mercer Island, WA 98040. Make checks payable to the Western Washington DX Club, and include one of your QSL cards.

Room reservations may be made directly with the hotel at 206/226-7700. A double is \$75 per night. Reservations must be made by July 3 to guarantee a room.

A true story

Jules Wenglar, W6YO, sends this little item regarding the recent Visalia bash.

It seems that Michael Pellock, NA6J, the day prior to the DX convention in Visalia, was looking at the full-page ad in the March '92 issue of QST for Yaesu's FT-1000. He remarked to his XYL, Alice, that someday he would like to buy one.

Of course, her reply was, "How much does it cost?"

Mike said, "Around \$4,500."

Her surprised answer: "Wow, that's a lot of money!"

"Well, maybe I will be lucky and win one at the DX Convention!"

Guess who won the FT-1000? Not only that, NA6J won a 40 ft. tubular crank-up tower to keep the FT-1000 on the trip home to Cathey's Valley.

Pitcairn Island Award

We received a note from Michael Edelson, KA2SPH, a blind operator who presently reads *Worldradio* on tape through the services of Fr. Tom Carten. This gentleman, too, applied for the award and has received nothing. A registered letter was even sent to Dr. O'Toole and was refused delivery.

Russ Wilson, VE6VK, also complains that he has received nothing. Not only that, Russ applied for two different calls. He has received no response to his inquiries. Perhaps some communication with the Canadian postal authorities might start an international investigation.

The excuse given is the artwork. The original artist is reported to have,

at the last minute, refused permission for its use. The new artwork must be approved by all the government agencies involved with Pitcairn Island. What government agencies? This little nation has less than 100 people on the island!

Antique QSLs

Here is one QSL card that dates back to the late 1940s. Clarence Zornes, W9TAL, now retired and living in Florida, worked VQ3HGE back on March 14, 1948.



This was the Gatt-Hallicrafters Expedition to the Mountains of the Moon. Clarence was living in Chicago at that time and reports that the DX-pedition brought much excitement to the bands.

As you can see, DXpeditions are nothing new. The card was even mailed from the Base Camp at Tanganyika in Kenya-Uganda. The equipment was exclusively Hallicrafters. Believe it or not, in those days Amateur Radio gear was made in the US, not Japan. Hallicrafters, Hammerlund, National Radio, Collins, Elmac, Harvey-Wells, etc.—they are all gone now. Yes, I know. There was E.F. Johnson too. Our first rig was a Viking Ranger!

Regarding our VQ8AS card in the May '92 issue, we received the follow-

ing comment from James E. Sackey, N9ESM, editor for the Simi Valley Settlers Amateur Radio Club: "The Solomon Islands are in the western Pacific, the Chagos Archipelago is in the Indian Ocean, about 2,500 miles south of India. Geography lesson please? 73 (ex) VQ9SM."

We did not say Solomon, but Salomon! These words, Salomon Islands, are also printed on the VQ8AS QSL card. However, there was a typo in the sentence, "Note that this notes H44 in the South Pacific," "notes" should be replaced with "is not." The Salomon Islands are about 175 miles north of Diego Garcia. The IOTA reference for this island group is AF-058.

QSL information

Last month we listed a QSL route for JT1JA in error. The route is not via W6REC. Duane, although aware of the problem, has no logs or QSL cards for this station.

QSL Routes

| | | | |
|------------|---------|-------------|---------|
| A22MN | -WA8JOC | KH8/LA4LN | -LA4LN |
| A41JR | -Y03DAD | KP2AL | -W3HNK |
| A61AC | -JH1GZV | L8H | -LU4HH |
| A71AZ | -SP9UO | LU1PHC | -JG1BSB |
| AA6K/KH8 | -JA3JM | LU3CQ/D | -LU3AJW |
| AH3C | -K9UIY | LX0RL | -LX1JX |
| AM1AX | -EA1AX | LY7A | -LY2ZO |
| CE250TA | -CE4TA | OD5/SP1MHV | -SP1MHV |
| CQ1A | -WA1ECA | OD5/SP7LSE | -SP7EJS |
| CQ9A | -G3PFS | ON4AVO/5N0 | -ON7LX |
| CR7EEN | -CT1CUM | P29WK | -N3ART |
| CR8EDX | -CT1AHU | PW0W | -PP5JR |
| CS1DSG | -CT1DSG | PY9/PW8QN | -PY1AJK |
| CT3EU | -G3PFS | PY0FZ | -PY7ZZ |
| CT3M | -CT3EE | R1Z | -UA1ZX |
| CU35MB | -CU3AN | R3K | -RA3DUR |
| CY2C | -VE7EME | R7RG | -UL7RE |
| CY0SAB | -VE1CBK | R8RG | -UL8LWR |
| CZ1Z | -VE7ZZZ | RA2FJ | -DK4JF |
| ED1ONS | -EA1MC | RE5Q | -RB5QF |
| ED3STC | -EA3MM | RH0E | -RH8EA |
| ED6EU | -EA5GHC | RH2E/RA30AK | -DF9LJ |
| EG4MC | -EA4CP | RJ7JYZ | -IK3HIX |
| EH1CL | -EA1EVE | RT4UA | -DK1RV |
| EH4MC | -EA4CP | RW73WA | -RW9WA |
| EL2PP | -15CZE | RY7W | -UY5XE |
| EM3ALS | -UA3LJQ | S79CK/D | -14LCK |
| EO1A2M | -UZ1ZWA | S79DEQ | -GM3UWO |
| ES5Q | -ES5RY | S9AGD | -SM0AGD |
| EX9X | -UA9XC | S92AA | -F6AXX |
| F05B1/P | -F6HSI | SN60 | -SP6PAZ |
| F00PT | -OE6BVG | S09XX | -DL4OK |
| G4SMC/8R1 | -G4CCZ | SU1HN | -WA5RNL |
| GU5LP | -G5LP | SV0HS/SX5 | -DJ8MT |
| GU0AGE | -G5LP | T32LN | -VK4CRR |
| GU0EKD | -G5LP | T11C | -TI2CF |
| GU0HBA | -G5LP | TK5C | -F6AJA |
| GU0ING | -G5LP | TL8NG | -WA1ECA |
| HB0/DL2SCJ | -DL2SCJ | TLFC10MZ | -F2BJ |
| HC8A | -WV7Y | TM4DEC | -PI4DEC |
| HD0T | -HC1OT | TM5CHA | -F6BFH |
| H18AX | -JA2PLT | TM5IDP | -F1PJA |
| HS1BV | -W3HCW | TM5MM | -F5LP |
| HT1T | -SM0KCR | TM5RDL | -FF6KQW |
| HU7FT | -DL7FT | TM5TRS | -FF3RM |
| IA5C | -15JHW | TU45R | -OH8SR |
| IF1RFS | -11SQN | TX4B | -F6A0J |
| IL71A | -101A | TZ6FIC | -F6CRS |
| IL7PXD | -101A | UC860 | -K4RK1 |
| IL7RVK | -101A | UL0A | -K20VS |
| IL7TWA | -101A | U1RC | -KA1DWX |
| IR4T | -IK4IEE | UJ8KAC/RU9U | -UJ8JMG |
| IY1TTM | -11TKB | UL0A | -K20VS |
| IY0GA | -IS0JMA | UL8PC | -W3HNK |
| J28YC | -FD10NC | UX1A | -UW1AE |
| J47MAC | -SV7Q1 | UX9C | -U29CXE |
| JW0C | -UB5MUJ | UZ73WO | -U9WZ |
| JY9ZK | -KA6ZMK | V47GW | -JL3UIX |
| KC4USV | -KG5GH | V47YO | -JL3UIX |
| KG4DD | -N5FRT | V51JM | -NK2T |
| KG7XL/KH0 | -JH4WEE | V63W | -W6EW |
| KH8/JA3JA | -JA3JM | V63CW | -JA7HMZ |

BLACK DACRON® POLYESTER ANTENNA ROPE

- UV-PROTECTED
- HIGH ABRASION RESISTANCE
- REQUIRES NO EXPENSIVE POTTING HEADS
- EASY TO TIE & UNTIE KNOTS
- EASY TO CUT WITH OUR HOT KNIFE
- SIZES: 3/32" 3/16" 5/16"
- SATISFIED CUSTOMERS DECLARE EXCELLENCE THROUGHOUT U.S.A.

LET US INTRODUCE OUR DACRON® ROPE TO YOU • SEND YOUR NAME AND ADDRESS AND WE'LL SEND YOU FREE SAMPLES OF EACH SIZE AND COMPLETE ORDERING INFORMATION.

In Australia contact
ATN Antennas, Birchip, Victoria

MANUFACTURED BY
synthetic
textiles, inc. 2472 Eastman Ave. Bld. 21
Ventura, CA 93003
(805) 858-7903



DACRON® IS A DUPONT REGISTERED TRADEMARK

DX Prediction — July 1992

| | | | |
|------------|---------|----------|--------------|
| V63DX | -JA7HMZ | ZV8A | -PY5EG |
| V63MS | -JK1GXU | ZW8AA | -PT7AA |
| V73EU | -KB6CC | ZW0M1 | -PS7AB |
| V85KX | -G3JKX | ZE0AAX | -G30IL |
| VG2EOH | -VE2DCK | 3D2CC | -VE6AKV |
| VI2RC | -VK2DEJ | 3D2KA | -JA1CMS |
| VK9LV | -K1JB | 4A3NMP | -XE1MX |
| VP2EC | -NSAU | | (see note 1) |
| VP2EOH | -K8BL | 4D1P | -10WDX |
| VP2EXX/H17 | -K8JE | 4E0DBT | -DX1DBT |
| VP5/WB5VNT | -WB5VNT | 411X | -DV1PX |
| VP8CBA | -W6MKB | 4J4JJ | -UG6JJ |
| VP8CBG | -KJ9I | 4K1YAR | -UA3YAR |
| VP8CEH | -G0NWX | 4K4BEU | -UL7BJ |
| VP8CFM | -GM4KLO | 4K4BVI | -UY5XE |
| VP8CKB | -K11ED | 4L4UPA | -UA4LEW |
| VP9MM | -WB2YQH | 4L6HMC | -OH7AB |
| VU2K0J | -RA9UA | 4N2AJ | -YU2AJ |
| VU/VK2DXI | -VK2DXI | 4T4ANR | -OA4ANR |
| XT2BW | -WB2YQH | 4U7ITU | -11RBJ |
| XU0XCE | -7M1XCE | | (see note 2) |
| XV7TH | -SK7AX | 4X4DIG | -DJ8VC |
| XW2A | -JA2EZD | 4X/AA4KD | -NK4U |
| YC0XIM | -YB0HZL | 4Z70UR | -4Z4UR |
| YZ4Z | -YU4EXA | 5H3OH | -OH2BAA |
| ZD8JIM | -GM4FIW | 5H3YT | -JK1HSQ |
| ZD8MS | -G4SOH | 5R8GW | -F6FNU |
| ZD8SM | -G3ZQL | 5T5EV | -WB8LFO |
| ZF2NE/9 | -W5ASP | 6P2ZA | -AP2ZA |
| ZF2QP | -W8BLA | 6T2YD/SA | -F6AJA |
| ZF2SD | -KB0EBH | 7Q7RK | -JH4LGA |
| ZF8DX/9 | -VE7AGC | 8P9CW | (see note 3) |
| ZF9JE | -VE7FJE | 8Q7PJ | -PA0CRA |
| ZK1TB | -W7TB | 8Q7PW | -JH1PWA |
| ZK1XZ | -DL4AAZ | 8Q7WP | -JA1WPX |
| ZP2AA | -ZP5YV | 8Q7XR | -JA3VXH |
| ZP7RR | -ZP7FR | 8Q7YF | -14FYF |
| ZP0Y | -ZP5JCY | 9H1HMB | -JR7LVK |
| ZS500A | -WA3HUP | 9M2FB | -9V1OK |
| ZS70SAN | -ZS4XJ | 9N1HNB | -JR7LVK |

| | |
|-------------|--|
| A45ZX | -P.O. Box 123, Muscat, OMAN |
| EM0CWN | -P.O. Box 48, Novopolotak 211440, RUSSIA |
| EO8BED | -P.O. Box 1334, Dnepro 320027, UKRAINE |
| EX0FWR | -P.O. Box 97, Tbilisi 38004, GEORGIA (CIS) |
| J28GG | -P.O. Box 1076, Djibouti, DJIBOUTI |
| R1ASP | -P.O. Box 300, Kronstadt 189610, RUSSIA |
| RH7E/UA9SER | -Dick Khlebnikov, P.O. Box 1434, Orenburg 460026, RUSSIA |
| S2/HA5BUS | -Globex Foundation, P.O. Box 49, 1311 Budapest, HUNGARY |
| UH7E/UA9SMG | -Sergei Blinov, P.O. Box 1307, Orenburg 460026, RUSSIA |
| UH8EAU | -Sergei A. Semeikin, P.O. Box 1312, Orenburg 460026, RUSSIA |
| VP5VER | -Julio E. Henriquez, 2500 W. 56th St. Apt. 1207, Hialeah, FL 33016 |
| XQ0YAF | -Henry, P.O. Box 4, Easter Island, CHILE |
| YL2MR | -P.O. Box 122, Riga 226080, LATVIA |
| ZS25NSR | -P.O. Box 1139, Westville, 3630 REPUBLIC OF SOUTH AFRICA |
| 5K3CR | -P.O. Box 1110, Bogota, COLOMBIA |
| 6W1QW | -P.O. Box 471, Dakar, SENEGAL |
| 9N1RN | -P.O. Box 6034, Kathmandu, NEPAL |
| 9V1YU | -P.O. Box 561, Holland Drive, SINGAPORE 1027 |

- Notes:
- Use 1992 Callbook address.
 - This route applies for the period May 1-4. 4U7ITU was to have been active on CW during the period May 9-10. The route for this operation is via 11YRL. This call is the same as 4U1ITU.
 - According to QRZ DX, 8P9CW is a reissued call. Contacts made between 1987 and 1991 should go via VE3CPU. Cards for recent activity from 8P9CW should be sent via OH3UU.

Many thanks to the following contributors: RB5IJ, UH8EAU, UM8MIR, V31HK, VE6VK, KA2SPH, W4BAA, N4SU, W6TUR, N6UXB, W6YO, N7NZ, N9ESM, W9NN, W9TAL, Western Washington DX Club (K7WA), Western New York DX Association (KD2YP), Salt City DX Association (KB2G), Northern Arizona DX Association (W7YS), American Radio Relay League, Long Skip (VE3IPR), The DX

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 | (26) | 22 | *25 | 20 | *21 |
| 10 | 30 | *18 | *22 | 19 | *23 |
| 12 | 37 | *22 | *21 | 25 | 28 |
| 14 | 42 | 26 | (20) | 28 | *35 |
| 16 | 45 | 25 | (19) | *30 | *40 |
| 18 | *46 | (22) | (18) | *30 | *43 |
| 20 | *37 | 29 | 36 | 27 | *45 |
| 22 | 31 | 32 | 43 | 22 | *42 |
| 24 | 27 | 32 | 46 | 20 | *35 |
| 2 | *24 | 31 | 46 | *16 | *29 |
| 4 | *25 | 29 | *43 | *22 | *25 |
| 6 | 33 | *27 | *37 | *24 | *23 |

WEST COAST

| UTC | AFRI | ASIA | OCEA | EURO | SO AM |
|-----|------|------|------|------|-------|
| 10 | 24 | *28 | *24 | (18) | *26 |
| 12 | (23) | *21 | *22 | 20 | 24 |
| 14 | (29) | *25 | *20 | 25 | 32 |
| 16 | 33 | *25 | (19) | 28 | *38 |
| 18 | 36 | 21 | (19) | 29 | *42 |
| 20 | *38 | 28 | (27) | 26 | *44 |
| 22 | 31 | *33 | 41 | 22 | *41 |
| 24 | 27 | *36 | 45 | 19 | *37 |
| 2 | 24 | *38 | *46 | 16 | *31 |
| 4 | *25 | *39 | 45 | 22 | *26 |
| 6 | 33 | *36 | *41 | 27 | *23 |
| 8 | 29 | *33 | *30 | *24 | *21 |

EAST COAST

| UTC | AFRI | ASIA | OCEA | EURO | SO AM |
|-----|------|------|------|------|-------|
| 7 | 25 | 22 | *29 | 18 | *22 |
| 9 | 28 | (19) | *23 | 22 | *22 |
| 11 | 36 | (23) | *21 | *26 | 28 |
| 13 | *41 | 27 | (20) | *29 | *34 |
| 15 | *44 | 22 | (19) | *31 | *39 |
| 17 | *45 | (18) | (19) | *31 | *43 |
| 19 | *41 | (21) | (26) | *29 | *45 |
| 21 | *34 | 26 | 40 | *26 | *43 |
| 23 | *29 | 29 | 44 | *24 | *39 |
| 1 | *25 | 31 | 46 | *20 | *32 |
| 3 | *20 | 28 | *45 | *19 | *28 |
| 5 | *30 | 27 | 38 | *22 | *24 |

Magazine (VP2ML), CQ Ham Radio (JA3BG), DX News Sheet (G4DYO), The Long Island DX Bulletin (W2IYX), QRZ DX (W5KNE), Inside DX (N2AU), and The DX Bulletin (VP2ML).

I mentioned in the antique QSL department that my first rig was a Vik-

ing Ranger. However, my receivers were much less sophisticated. How about ARC-5s? We sure wouldn't want to have to use one of those today regardless of the nostalgia of using one. Hope your selection of DX this month is as broad as an ARC-5! Very 73 and good DXing de John, N6JM. □

LOGic™

New version!

Now more than ever!

Many hams have selected LOGIC for its many unique features, high quality, reliability, reasonable price, and superb support.

LOGIC version 2.12 features easy *online* tracking for *any* award, including 1010, WPX, and grid-squares. Multitasks under Windows 3 or DesqView. LOGIC II now features: optional QSL route database with automatic cross-reference integration with HamBase and SAM "call book" databases automatic county logging from the J-Com county database.

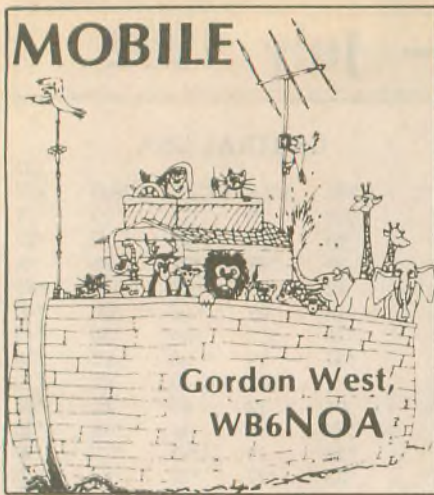
LOGIC Jr. is still only \$39.00. LOGIC II, which features contesting, interface to most rigs, custom report writer, and more, is only \$79. For IBM, Amiga, and ST. Coming for Mac. Ask for free 10-page info pak.

Personal Database Applications

Hours:

2616 Meadow Ridge Dr., dept WR
Duluth, GA 30136-6037
☎ 404-242-0887 Fax 404-449-6687

8 AM - 6 PM M - Th
8 AM - Noon Fri



the SWR is slightly elevated on your favorite bands. Here again, the automatic antenna tuner built into the rig will do a nice job of resolving down the SWR for a perfect match.

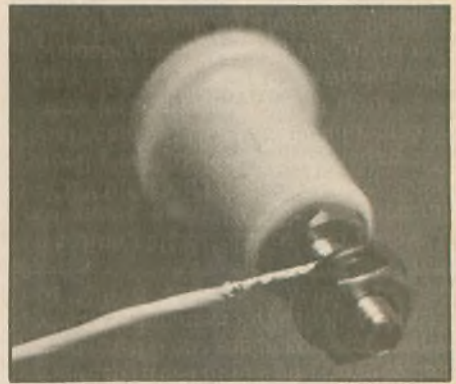
What the mobile automatic antenna tuner does is tell the final transistors that everything is hunky-dory on the output of the SO-239 antenna jack. What the built-in tuner will do is present a perfect match for your transceiver to look into. If your antenna system is in pretty good shape, most of the energy goes up to the antenna and out on the airwaves. The remaining energy circulates back and forth along the coaxial cable, and the tuner lets your transistorized finals think they are working into a perfect load.

Most built-in automatic antenna tuners won't find a match if the SWR is 4:1 or worse. They will simply hunt and hunt and ultimately turn off, indicating a no-match situation. This will occur if you try to tune a non-resonant longwire when you have just poked the wire in the back of your rig's antenna socket. The built-in antenna tuner—really a trimmer—is not designed to tune a non-resonant antenna system. It might try to tune a CB whip to 10M and 15M, but you won't get much performance down on 20M, 40M, or 75M on that same 96 in. radiator.

The built-in antenna tuner found in many amateur rigs may not work as well as a remote-mounted longwire antenna tuner specifically designed for random-wire, high-frequency use. Kenwood, Yaesu, Icom, and SGC all have remote-mounted automatic antenna "couplers" specifically designed for non-resonant antenna systems. The remote-mounted antenna couplers work great in the following applications: insulated sailboat backstays; attic longwire antenna installations; building-top, non-resonant loop antenna systems; and tower-mounted sloper installations.

The automatic antenna coupler

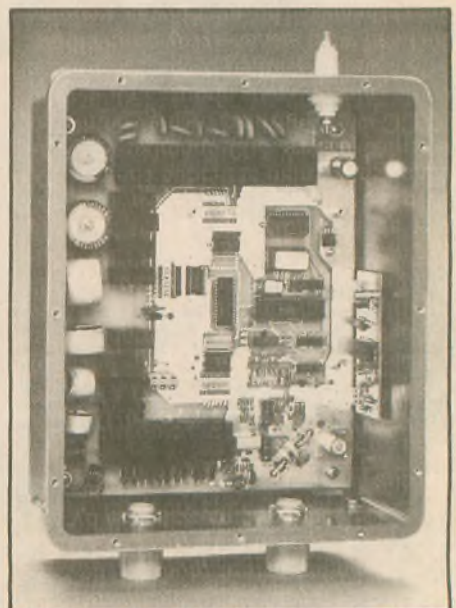
perfectly matches your transceiver's output to a wide variety of longwire antenna systems. Hundreds of different amounts of inductance and capacitance are relay-switched up at the antenna coupler to perfectly



Only the remote mounted coupler offers automatic longwire tuning.

resonate most types of longwire antenna systems more than 30 feet in length. All of the resonating is done up at the antenna feedpoint, not down inside your rig. This means that the coaxial cable feedline is perfectly matched up and out of your mobile unit or home to minimize any hot spots found on the outside of the cable.

In some applications, the remote-mounted coupler is terminated to a good surface area ground, and a longwire antenna starts off at the high voltage output terminal on the coupler. In attic or building-top installations where there may not be a good ground,



An inside look at the fully automatic longwire auto-coupler.

the coupler can match itself as a loop, and it works very well in this configuration. When the coupler is not grounded, you must take extra steps to well-

Mobile automatic tuners

Many high frequency mobile SSB transceivers are available with a built-in antenna tuner. Since an antenna tuner may be required to tune anything from a sailboat insulated backstay to an attic 140 ft. longwire, it sounds like it may be the answer to every mobiler's dream—band switching without having to go back and change whips!

But there is a big difference between the built-in automatic antenna "tuners" and those fully automatic remote-mounted antenna couplers that are specifically designed for longwire applications.

The built-in, high-frequency, automatic antenna tuner found in many HF transceivers is designed to improve the performance of an already tuned mobile antenna system. For instance, say your mobile whip is set to 3950 kHz, but you want to operate at 3895 kHz; your pre-tuned mobile whip doesn't offer that kind of bandsread, so the automatic antenna tuner built into your HF rig works nicely in this application.

Or maybe you have a G5RV up in the attic, and it's relatively resonant on most of the popular amateur bands but

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 on 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-23/33/73/411E/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

Identify yourself

with our custom engraved call pins

- 1 line 1" x 3" ..\$1.25
- 2 lines 1" x 3" ..\$1.50
- 3 lines 1 1/2" 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 Logos, 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

ground your rig to insure there is no RF floating around on your equipment.

But the remote-mounted coupler won't work well in the trunk of your vehicle on a stainless steel whip! In numerous comparison tests, a pre-tuned whip—or a whip with multiple resonators on it, such as the Spider—will put out *more* signal than a comparative length stainless steel whip. But take the remote-mounted coupler, and get at least 35 feet or more of wire

on it, and you will have a super base for mobile installation.

So next time you see a rig that features "a built-in automatic antenna tuner," keep in mind that it is best used as a *trimmer* for an almost resonant antenna system. Even though you might, by chance, get it to tune out a hunk of coax that is split apart with a random length of wire off the braid and the center conductor, chances are it's also tuning the coax itself as part of the

antenna system. And this is not good; for home installations it could lead to TVI, and in mobile installations it could lead to a "hot mike" and severe distortion. The built-in mobile automatic antenna tuners are specifically designed to *fine-tune* out an almost perfect antenna system and do *not* take the place of fully automatic remote-mounted antenna *couplers* where the wire is absolutely non-resonant and requires major remote tuning steps. □



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

From LAX 2.5 Miles
North 405 Freeway

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-728 New HF Transceiver | 1099.95 | 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-229A/H, 25/50w, 2 Meter Mobile | 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-P2AT, 2m HT | \$424.00 | 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-P4AT, 70cm HT | \$467.00 | 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 \$ |
| 1.2 GHz | | |
| IC-12GAT Super HT | 529.95 | Call \$ |

KENWOOD TS-950SD



| HF Equipment | List | Jun's |
|------------------------------------|-----------|---------|
| TS-950SD New Digital Processor HF | \$4499.95 | 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 Rcvr. | 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-77A 2m/440 HT | 599.95 | Call \$ |
| TH-28A 2m HT | \$329.95 | Call \$ |
| TH-48A 70cm HT | \$419.95 | Call \$ |
| TH-78A 2/70cm 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-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-590T
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 \$889. CALL I

C5808DA
2M/440 MOBILE
List \$1149. CALL I

C168A
2M Mini HT
List \$489 CALL I

C468A
440 Mini HT
List \$499. CALL I

New C628A
440/1200 HT
List \$727.95 CALL I

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

| Item | SALE | LIST |
|------------------------------------|----------|----------|
| ICOM IC-03AT HT (Close-Out) ... | \$269.95 | \$319.95 |
| IC-02AT 2m/5w HT ... | \$289.95 | \$333.95 |
| KENWOOD | | |
| TH-77A HT (Close-Out) ... | \$399.95 | \$599.95 |
| YAESU | | |
| FT-23R HT ... | \$225.95 | \$290.95 |
| FT-470 HT ... | \$399.95 | \$499.95 |
| ALINCO | | |
| DR-590T Mobile 2/70 cm (Close-Out) | \$499.95 | \$799.95 |



Nearly 300 people signed the QCWA booth register at the Dayton Hamvention, and untold numbers stopped by to chat but never got around to signing in. Fifty new members joined, including two life members, and we were again heartened by the comments of so many who were counting the days until they will be eligible to join.

The booth was under the direction of Southwest Ohio Chapter #9 and was supervised continuously by chapter members. QCWA President Harry Dannals, W2HD, and General Manager Jim Walsh, W7LVN, were at the booth almost constantly. Additional assistance was provided by board members K8LBZ, W3WPY, and W1ICP. It was a very productive effort.

QCWA is planning to have a display at all major hamfests from now on. Get in touch with General Manager W7LVN to see about arranging a booth in your area. Membership supplies and materials are available to assist you.

We were delighted to see QCWA member Dick Baldwin, W1RU, honored as Dayton Hamvention Ham of the Year. Dick has devoted his life to Amateur Radio and as president of the IARU for the past 10 years he has provided a great influence in the recognition and promotion of Amateur Radio throughout the world.

He was a driving force at the 1979 international WARC convention when we obtained our "WARC Bands." Baldwin has also held a number of important positions in the ARRL, including that of general manager from 1975 to 1982. Last fall the QCWA named him to its Hall of Fame. This latest recognition is certainly well deserved.

Barry Goldwater, from Arizona Chapter #16, reports a good response to the national convention coming up October 9 and 10 in Scottsdale, Arizona. If you are down that way in the meantime, the Prescott area group gets together for lunch on the second Tuesday of each month. Contact W7ER for details. Fifty members attended last month's meeting. A



Amateurs representing 580 years of experience were awarded service certificates at the Houston chapter of the QCWA. Seated, from the left, are D.C. Larson, W5CQI, 60 years; Carleton N. Hughs, W5JT, 70 years; G.D. Sears, W5AIR, 65 years; and J.A. Edinborough, W5BKK, 60 years. Standing are Ken Perron, W5JYM, 50 years; Frank C. Neal, Jr., W5KLI, 55 years; and L. Ruetz, WA5ROO, 50 years. Those not in attendance were J.F. Blair, W5BWG, 60 years; J. Newell Royall, W5HU, 60 years; and C.C. White, W5FEM, 55 years.

60-year certificate and a Century Club award were presented to W7YU. W7JZA and AC7E received Century Club certificates.

Locations have been confirmed for the QCWA national conventions through 1994. The 1993 convention will be in St. Petersburg, Florida, and the 1994 convention in El Paso, Texas.

The Spring meeting of the QCWA board of directors was very productive. Plans are under way for closer contact with the FCC and ARRL and for greater participation in special activities important to Amateur Radio. There was considerable interest expressed in the upcoming Phase 3D SAREX mission, and QCWA members are being encouraged to lend support. See the summer issue of *The Journal* for more details.

Honor awards were voted by the board to recognize outstanding service of several QCWA members. Distinguished Service plaques were awarded to Stuart Meyer, W2GHK; Ted Heithecker, W5EJ; and Art Monsees, W4BK. If you would like to see someone honored by the board, send nomi-

nations to Awards Chairman Bob Rickey, NF6P.

New chapters of QCWA continue to spring up all over the country. "Foot-hills of the Ozarks" Chapter #180 is now active in the vicinity of Bolivar, Missouri. Hudson Valley (NY) Chapter is now #181, and Northeast Tennessee Chapter is awaiting charter as Chapter #182.

It has often been said that chapter activity is the life blood of QCWA. The fellowship of local meetings is a very important factor and we would like to see a chapter within reasonable commuting distance of every member. Remember it only takes 10 members to start a chapter, and applications for eligible new memberships can be counted in that 10. Nearly 50 percent of QCWA members are listed "at large." We would like to see a much higher percentage affiliated with a local chapter. Join a chapter or start one of your own!

Hopes for any re-issue of old call signs seems to have been dashed by the FCC, at least for the foreseeable future. Some club calls may be issued, but it appears that the present computers will not accommodate the restoration of any old original call signs. Many QCWA members are disappointed to hear this report, but we're not giving up all hope yet.

For more information about QCWA, write to Headquarters at 159 E 16th Avenue, Eugene, OR 97401-4017; 503/688-0987. Tell them *Worldradio* sent you! □

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. \$19.95 anywhere in the world for a lifetime license. More information upon request, or send payment to:

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

Visit Your Local RADIO CLUB

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

ALABAMA

Montgomery Amateur Radio Club (W4AP). P.O. Box 3141, Montgomery, AL 36109. Meets 3rd Mon./monthly, 7 p.m., State Trooper Dist. Office, Coliseum Blvd. & Federal Dr. Nets Sun. 8:30 p.m. 146.84- and Thurs. 8:15 p.m. 147.18+. Info: Fred, K8AJX, (205) 270-0909.

ALASKA

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

ARIZONA

Cochise Amateur Radio Assn. (CARA). Meets 1st Mon./monthly, 7:30 p.m. at club facility on Moson Rd., Sierra Vista, AZ. WA7KYT/R 146.16/76 rpt.

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

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

ARKANSAS

Central Arkansas Radio Emergency Net, (CAREN). Meets 1st Thurs./monthly, 7 p.m., 1111 West Capitol Ave., Little Rock, AR. Thurs. night net, 8 p.m., 146.940, swap net afterward. Severe WX net anytime 146.940. Code 8 theory classes continuously. Info, KB5IDB, Bob Hancock, (501) 771-2617.

CALIFORNIA

Amador County Amateur Radio Club. P.O. Box 1094, Pine Grove, CA 95665. Meets 1st Tues./monthly, 8 p.m., Jackson Sr. Cntr., 229 New York Ranch Rd., Jackson, CA. Info: call 146.835.

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

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

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

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

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

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

Escondido Amateur Radio Society (E.A.R.S.). Meets 4th Mon./monthly, 7:30 p.m., North County Blind Activities Center, 157 E. Valley Pkwy., Ste. 1B, Escondido, CA 92025. Info Net Sundays, 8 p.m. 146.88(-) or 743-4212.

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

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

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

Hercules Amateur Radio Club. P.O. Box 5043 Hercules, CA 94547. Meets 3rd Sun./monthly, 6 p.m. at Ohlone Community Center, 190 Turquoise Dr., Hercules, CA. Info: Noel, AB6AC, (510) 799-4458.

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

Livermore Amateur Radio Klub, (LARK). Meets 3rd Sat./monthly, 9:30 a.m., City Council Chamber, 3575 Pacific Ave., Livermore, CA. Net Mon. 1900 on 147.12+. For info: Rosalie Powers, KC6RKU, c/o LARK, P.O. Box 3190, Livermore, CA 94551-3190. (510) 447-3815.

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

Moreno Valley Amateur Radio Assoc. P.O. Box 7642 Moreno Valley, CA 92303. Meets 4th Mon./monthly, 7 p.m., City Council Chambers—City Hall, corner of Cottonwood & Frederick Sts. Net Tues. 8 p.m. 146.655- (PL 1A). Info, Larry Marcum, K6AGND, (714) 656-1643.

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

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

Orange County Amateur Radio Club. Meets 3rd Fri./monthly, 7:30 p.m. at Republic Fed. Savings Bldg.—corner of Seventeenth St. and I-55 Freeway in Tustin. Call in on 146.55 simplex. Contact Ken Koehechy W6HHC at (714) 541-6249.

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

Sacramento Amateur Radio Club. Contact: Gary Bryant, KB6KZZ, (916) 646-1171. Meets Sacramento Blood Bank, 32nd St. & Stockton Blvd., Sacramento, CA. 2nd Wednesday/monthly, 7 p.m. Info net every noon on Rptr. W6AK/R 146.910.

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

San Fernando Valley ARC. Meets 3rd Fri./monthly, 7:30 p.m., Red Cross, 14717 Sherman Wy., Van Nuys, CA. Net every Thur., 8:00 p.m. KB6C/R 147.735(-).

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

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

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

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

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

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

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

Southern Humboldt Amateur Radio Club. P.O. Box 701, Redway, CA 95560-0701. Meets 4th Wed./monthly, 7 p.m., SHARC Clubhouse, Garberville, CA. Rptr. 146.19/79. Info: (707) 923-2373.

Stanislaus Amateur Radio Assoc. (SARA). P.O. Box 4601, Modesto, CA 95352. Stanislaus Co. Administration Bldg., 12th & H Streets, 3rd Tues./monthly, 7:30 p.m. 145.39 MHz W6EJF, 224.14 MHz.

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

Tri-County Amateur Radio Assoc. P.O. Box 142, Pomona, CA 91769. Meets: 2nd Mon./monthly, 7:30 p.m., 703 N. College Way, "The Faculty House," (lower level), Claremont, CA.

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

Vaca Valley Radio Club. Meets 2nd Wed./monthly, 7 p.m., Vaca Fire Dist. Stn. on Vine St. in Vacaville, CA. Repeater: WX6F 147.475 (-1 Meg) PL 127.3. Ph: (707) 447-2680.

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

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

COLORADO

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

CONNECTICUT

Middlesex Amateur Radio Society, (MARS). 5 North Rd., Cromwell, CT 06416. Meets Tues./weekly 7 p.m., Portland Methodist Church, Main St., Portland, CT. Novice classes, VE sessions monthly. Contact Jack, WA1K, (203) 347-8745. Rptr. 147.090+. **Tri-City Amateur Radio Club.** P.O. Box 686, Groton, CT 06340. Meets 2nd Tue./monthly, 7:30 p.m. St. Lukes Lutheran Church at Rt. 12. Novice classes. Info, contact Bob, KA1BB, (203) 739-8016.

DELAWARE/PENNSYLVANIA

Penn-Del Amateur Radio Club. P.O. Box 1964, Boothwyn, PA 19061. Sponsor of KA3TWG/Rptr. on 224.220 covering Delaware & Tri-state area. Info/net Thurs/wkly, 20:00 hrs. or call Hal Frantz, (302) 798-7270.

FLORIDA

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

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

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

South Brevard Amateur Radio Club. P.O. Box 2205, Melbourne, FL 32902. Meets 1st Tue./monthly, 7 p.m., Melbourne Public Library, 540 Fee Ave., Melbourne, FL **Suncoast Amateur Radio Club.** P.O. Box 7373, Hudson, FL 34676. Meets 2nd Mon./monthly, 7:30 p.m., First Lutheran Church, corner of Polk & Delaware, New Port Richey, FL. Sponsor of WC2G/Rptr. on 145.35, serving west Pasco County.

GEORGIA

Dalton Amateur Radio Club, Inc. (DARC). Meets 4th Mon./monthly, 7:30 p.m., Old City Park Sch. Bldg., corner of Waugh St. and Thornton Ave., Dalton, GA. Info, Bill Jourdain, N4XOG, (404) 226-3793.

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

HAWAII

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

ILLINOIS

Amateur Cross Link Repeater Club. 29.680, 52.825, 147.225, 224.840, 921.225, 1292.10 and ATV on 916.25. Meets 1st Fri./monthly, 7:30 p.m. For info call (312) 594-1628. KD9FA Repeater/Chicago.

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

Fox River Radio League. Old Bank Bldg., 900 No. Lake St., lower level, Northgate Shopping Ctr. & Rt. 31, Aurora, IL. Meets 2nd Tue./monthly, 7:30 p.m. VEC Xams 3rd Tue./monthly, 7:30 p.m.

Hamfesters Radio Club, W9AA. P.O. Box 42792, Chicago, IL 60642. Meets 1st Fri./monthly, 8 p.m. Crestwood Civ. Ctr., 139th & Kosner, Crestwood, IL. Nets: Sun. (local) 0100 UTC, 28.410 MHz; Mon. 9 p.m. 146.43 S.; Packet Mailbox 145.07. Info: (708) 535-3496.

Peoria Area Amateur Radio Club, (W9UVI). P.O. Box 3508, Peoria, IL 61612-3508. Meets 2nd Fri./monthly, 7 p.m., Red Cross Annex, 1401 N. Knoxville Ave., Peoria, IL. 147.075 (+600), 146.850 (-600) open rpters. w/autopatch & 911 access.

Schaumburg ARC (SARC). Meets: 3rd Thurs./monthly, 7:30 p.m., Schaumburg Park Dist. Community Rec. Cntr. at Bode & Springinguth Rds., Schaumburg, IL. Net 145.23, 8 p.m. Thurs. Info (708) 213-0910.

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

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

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

IOWA

Central Iowa Radio Amateur Society (CIRAS). Marshalltown, IA. Meets 3rd Sun./monthly, 6:30 p.m., Community College, Rm. 612, (except July & Aug.) Sun. Net 8 p.m. local 146.88. For more info: WB2ZKG, (515) 484-4837.

LOUISIANA

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

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

MICHIGAN

Hazel Park Amateur Radio Club. Hoover Elementary School-Hazel Park, P.O. Box 368, Hazel Park, MI 48030. 2nd Wed./monthly, 7:30 p.m. Sept. thru May. 147.51 Simplex Call-In. W8XJU Club Call.

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

MINNESOTA

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

MISSOURI

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

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

NEBRASKA

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

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

NEVADA

Sierra Intermountain Emergency Radio Assoc. (SIERA). P.O. Box 2348, Minden, NV 89423. (702) 882-0451. Meets: 2nd Tue./monthly, 7:30 p.m., Douglas County Lib., Minden, NV. Talk-in: 147.330.

NEW HAMPSHIRE

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

NEW JERSEY

Bayonne Emergency Mgt. ARC (BEMARC). 16th St. & Ave. A Firehouse, Bayonne, NJ 07002. Meets 2nd Tue./monthly, 7:30 p.m. Tri-Band linked repeaters: 145-430/224.280/445.575 MHz.

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

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

NEW YORK

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

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

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

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

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

Suffolk County Radio Club. 3rd Tue./monthly, 7:30 p.m. Bohemia Rec. Ctr., Ruzicka Wy. W2DQ/R 144.610/145.210, 223.080/224.680, 441.625/446.625 rpters. Info call Jim Heacock (516) 473-7529.

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

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

NORTH CAROLINA

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

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

OHIO

Amateur Radio Fellowship, (ARF). Peggie Hough, Sec., 3888 Stow Rd., Stow, OH 44224. Meets 1st Sat./monthly, 10 a.m., Country Manor Restaurant, 1225 W. Main St., Kent. K8YKT rptr., 147.075.

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

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

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

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

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

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

Silvercreek Amateur Radio Assn. (SARA). Meets 3rd Thur./monthly, 7:30 p.m., Doylestown Village Hall, Doylestown OH. WDBPNF/R 147.99/39 rptr. For info call (216) 745-2573.

Springfield Independent Radio Assoc., (SIRA). Call-in 145.45—224.26. Meets 2nd Tues./monthly, 7:30 p.m., Mercy Hosp. and 4th Tues./monthly, 7:30 p.m., Am. Red Cross. Info: Rodney Myers, K88WV, (513) 399-1022.

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

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

OREGON

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

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

Umpqua Valley Amateur Radio Club, Inc. 450 S.E. Leland St., Roseburg, OR 97470. Meets 3rd Thurs./monthly, 7:30 p.m., Douglas County Courthouse, Rm. 311, Douglas St., Roseburg, OR. Info: W5PII/R 146.90/30.

PENNSYLVANIA

Butler County Amateur Radio Assn. P.O. Box 1787, Butler, PA 16003-1787. Meets 1st Tue./monthly, 7:30 p.m., Boy Scout Cntr., 850 Morton Ave., Butler, PA. Call-in W3UDX 147.96/36. Net 10:10 p.m. nightly.

Mercer County Amateur Radio Club W3LIF. P.O. Box 996, Sharon, PA 16146. Meets 4th Tue./monthly at 7:30 p.m., Shenango Valley Med. Center, Farrell, PA. Net, Thur. 9 p.m. on 147.75/15 W3LIF, Digi. 145.010.

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

TENNESSEE

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

TEXAS

Brazos Valley Amateur Radio Club (B-VARC). P.O. Box 1630, Missouri City, TX 77459. Meets 2nd Thur./monthly, 7:30 p.m., Sugar Land Community Cntr., 226 Matlage Wy., 3 bks SW of Imperial Sugar Co. at HWY US-90A & Brooks St. (HWY 58) in Sugar Land, TX. Talk-in 145.47, 442.5 rpters. Sun City Amateur Radio Club. Meets 1st & 3rd Fri./monthly, 7:30 p.m., 3709 Wickham Ave., El Paso, TX. K5WPH 147.240, 443.4 with remote operation on 6M and 10M.

VIRGINIA

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

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

WASHINGTON

The Mike & Key Amateur Radio Club. Meets 3rd Sat./monthly, 10 a.m. United Good Neighbors Cntr., 305 S. 43rd, Renton, WA. Talk-in on 146.82 rptr.

North Seattle Amateur Radio Club, (NSARC). Meets 3rd Tues./monthly (except July, Aug., Dec.) at First Interstate Bank, 2825 N.E. 125th St.

WEST VIRGINIA

Jackson County Amateur Radio Club. Clark Stewart, WB8TN, Pres., 104 Henrietta St., Ravenswood, WV 26164. Meets 1st Thur./monthly, 7:30 p.m., United National Bank of Ripley. Net Mon. 9 p.m. on 146.67/07 WDBJNU/R.

Tri-state Amateur Radio Assn. Meets: 3rd Tue./monthly, 7 p.m., Green Valley Vol. Fire Dept., Norwood Rd. & 16th Street Rd., Huntington, WV. ARES net Thur. 9 p.m. on 146.76(-) W8VA/R. Info Bud Cyr, K88KMH (304) 522-1294.

WYOMING

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

PUERTO RICO

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

Product Review

Palomar contest keyers

NORM BROOKS, K6FO

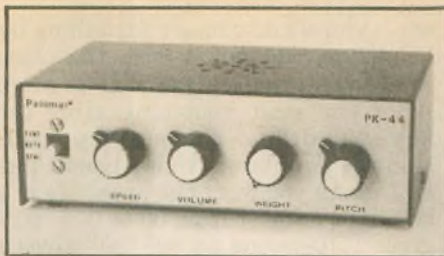
I just finished working in the ARRL CW DX Contest. It was a fascinating weekend! I worked 449 contacts, which compute to 290K points. I managed to work 89 different countries. DX-wise I am not a big gun by any means. They are the fellows who score millions of points in the contest. However, it was a pleasureable weekend, mainly because I was using a new Palomar electronic memory keyer.

For those of you who do not use an electronic keyer, I want to tell you what you're missing. I'll describe the Palomar PK-44 electronic keyer and then tell about the additional features on the Palomar PK-50 message memory keyer.

The Palomar PK-44 electronic keyer

First, you need a set of keyer paddles (such as Palomar's PK-100 Kent Key). Connect it to the keyer with a three-wire cord. One of the three wires connects to the left paddle of the keyer and controls the dots. The right paddle wire controls dashes. The third wire is the common lead. When you press the left paddle, the keyer sends dots automatically. When you press the right paddle, the keyer sends dashes automatically. If you hold both paddles, the keyer sends alternate dots and dashes. This is called iambic keying. You can hold the dots paddle and then touch the dash paddle. The dash will be inserted into the string of dots to make an F or an L. Similarly, if you hold the dash paddle for a string of dashes and touch the dots paddle the keyer will insert a dot to make a Y or a Q. You can actually send a little ahead of the keyer, as it remembers one character (either dot or a dash) ahead. This is necessary to get perfect timing on the dots and dashes.

Once a dot or dash is started, it is self-completing to its exact proper length. What I am saying is that the keyer will not let you send lousy code. It will not let you send dashes that are too long, as is usual with a straight key. It will not let you send dots that are too short, as is usual with a "bug" mechanical keyer. You also have complete control of the dot-to-dash timing ratio, called "weight." You can adjust the weight to suit your liking, from 25 to 75 percent. Most people like to hear code at 50 percent, which is considered normal.



Other adjustments you can make with the Palomar PK-44 electronic keyer are the sending speed and the volume and pitch of the monitor speaker, which is built-in. Thus, you can practice sending to yourself

without your transceiver connected.

Complete instructions are given for connecting the keyer to your transceiver. Usually this is nothing more than inserting a plug (supplied by Palomar) into the key jack on the back of your transceiver. After the keyer is connected to your transceiver, you can tune your transceiver by using the TUNE setting on the keyer. There is also a SEMIAUTO mode, which makes the keyer behave like an old-fashioned bug, if that's what you prefer.

All of this operates on an ordinary 9V battery. There is no ON/OFF switch, as

DJ2UT - Multiband Beam

Series XP70 - 6 m / 20-Foot Boom

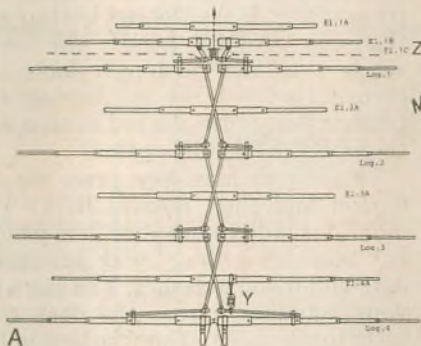
10 - 12 - 15 - 17 - 20 - 30 - 40 m

Basic-Kit: 4-Band: 10 - 12 - 15 - 20 m = XP704

Add on Kit: 17 - 30 and 40 m up to XP707

SOMMER

Sommer Antennas 395 W. Osceola Rd.
P.O. Box 710 • Geneva, FL 32732
Phone: (407) 349-9114 • FAX: (407) 349-2485

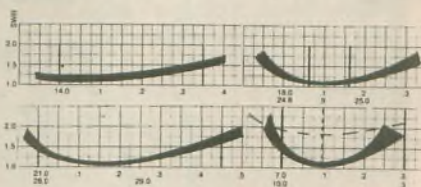


Made in U.S.A.



| Band | 10 | 12 | 15 | 17 | 20 | 30 | 40 |
|---------------------|--|-----|----|--|----|--------|-----|
| Gain dB/d* | 9.5 | 7.5 | 9 | 9 | 9 | 0.3 | 0-2 |
| f/b-r.** | 15 | ... | to | ... | 30 | 0-10 | 0 |
| Power-r. | 2 kW out cont | | | | | | |
| Impedance | 50 Ohm Coax + Balun 1 : 1 | | | | | | |
| Physical Dimensions | 704 + 30 m + 40 m | | | | | + 17 m | |
| Net weight*** | 37 kg - 82 lbs | | | 40 kg - 90 lbs | | | |
| Wind load*** | 124 dm ² - 13 ft ² | | | 134 dm ² - 14 ft ² | | | |
| max. El. length | 11.6 m - 38 ft | | | | | | |
| Turning radius | 6.6 m - 21.5 ft | | | | | | |

Remember, a 3 el. monoband beam has 4 to 6 dB/D (see ARRL Antenna Book)



Beam Series Available:

- XP 40 8 ft. boom 3-6 bands
- XP 50 15 ft. boom 4-7 bands
- XP 70 20 ft. boom 4-7 bands
- XP 80 26 ft. boom 4-7 bands

The XP 70 series beams are designed for the amateur with all-out performance in mind. Although the boom-length is only 20 feet, XP 70s have easily outspaced much larger, conventional antennas in careful testing. The key is the TOTAL elimination of traps, which rob performance from even the largest of multiband antennas. Because of their high efficiency, XP 70 series antennas suitably replace 4- and 5-element antennas of conventional design.

The model XP 704 antenna is shown in figure A. In this configuration the 20 m band is using 4 actively driven fullsize elements and turns out a solid 9 dB/D forward gain.

For the 15 m (and 17 m) bands, 4 directly fed 5/8 elements in conjunction with elements 1B/4A form a typical band gain of 9 dB/D as well. The operation on 17 meters requires an optional 8.2 m (26 ft) element at boom location 'Z' which does not influence the 10 - 20 m settings but has the same properties as in 15 meters.

It should be stressed that ALL elements are working in the 10 and 12 m bands and contribute to a 9.5 dB/D gain.

Moreover, a coaxial stub which is housed in a plastic box, enables the operation on the 30 m band without any mechanical extension. By this, the typical gain is about 2 dB/D. The 40 m band is activated by use of an individual power-coil being mounted at location 'Y' and which yields a 0 to 2 dB/D gain on this band.

* Gain determined in the main lobe as described in the ARRL Antenna Book, 14th ed pg. 15-23. Measurement accuracy acc. to CCIR ± 2dB

** f/b ratio and SWR varies according to conditions such as e, g. electrical height above ground

*** ± 10 %

the keyer uses energy only during the manufacture of a dot or a dash. When you are not sending, there is no battery current flowing, so the battery will last its approximate shelf life.

The Palomar PK-50 message memory keyer

Now we come to the unit I used in the ARRL CW DX Contest. The PK-50 keyer has all of the features listed above for the PK-44, plus microprocessor controlled message memories that allow you to do amazing things.



There are four buttons which control four message memories. Putting a message in a memory is very simple. You push the 1, 2, 3 or 4 button and the keyer responds with "K" to tell you it is ready to record. Release the button and key in the message. If you make a mistake, just send a series of seven or more dots, and the keyer will erase the last word, play the word before it and then wait for you to continue the message. You can repeat this process to move back as far as you want. To hear the message, press the same button briefly. To erase the message, hold the button down until you hear "K."

The PK-50 will provide serial numbers for contest operation. Thus, a serial number can be inserted any place in any of the four messages you pre-record. You do this by inserting "N" in the place where you want the serial number to appear. The serial number can be decremented by one if you press the red button (function key) and send D. To check the serial number, press the red button and send D. The keyer will send the stored serial number. To change the serial number press the red button, then send N and the new serial number, any number from 1 to 9999.

When recording contest messages,

when you want to insert something by hand, you can put a B in the place where you want the message to stop. After you send something using the keyer paddles, the message will resume. To insert a timed pause, put P## where you want the pause (## is a two-digit number from 00 to 99); "01" gives a .10-second pause; "99" gives a 9.9-second pause.

To make a message repeat over and over, at the end of the message send /N, where "N" is the message number button you are using. Similarly, you can insert a message within another message by typing /N where you want the second message to start ("N" is the button number where the first message is stored).

To stop any message in progress of being sent, just tap either key paddle. To tune your transmitter (key-down), press the red button. The keyer will send "F." The keyer tone and the transmitter will come on. To turn them off just tap either key paddle.

To stop the keyer from keying the transmitter, press the red button and then the ON/OFF LINE. The keyer sends a Q and no longer keys the transmitter. To resume keying the transmitter, press the red button and then ON/OFF LINE again.

To use your hand-key, press the red button and then HAND KEY. The monitor sends H and your dual-paddle key becomes a "bug" with automatic dots and manual dashes. You can wire your hand-key across the dash contacts to use it. To go back to the iambic keying process press the red and HAND KEY buttons again.

To reverse the paddle operation for left-handed operators, press the red button and send R. To reverse them back for right-handed operators, press the red button and send R again. To set the monitor tone pitch, press the red button and send O. Then turn the speed control to set the pitch. When you reach the desired pitch, tap either

key paddle. The PK-50 is powered with 12VDC. A Palomar PS-90 wall-type power supply will provide this if you do not already have 12V equipment in your shack.

Here is how you use the keyer memories in a contest. The ARRL Sweepstakes would be best to demonstrate, as you use messages and serial numbers. Let's say your call sign is WG8ABC, you were first licensed in 1960 and you are in the Ohio Section. You are using 100W power.

Put the following messages in your PK-50:

Button 1: CQ SS CQ SS DE WG8ABC
WG8ABC K

Button 2: NR /N A WG8ABC CK60
OH K

Button 3: WG8ABC

Button 4: QSL

You hear N6WR calling CQ SS. You press button 3. Your transmitter sends WG8ABC.

N6WR comes back with WG8ABC NR 25 A N6WR CK75 SV K

You answer by pressing button 4, then button 2.

Your transmitter sends QSL NR 39 A WG8ABC OH K

He sends QSL CQ SS, and so on.

All this means he sent you his message number 25, you acknowledged it with QSL and sent him your message number 39. He responded with QSL and went on his way sending CQ for another sweepstakes contact.

You find that conditions are pretty good and you seem to have a clear frequency. This is when you should call CQ SS. Push button 1. Your transmitter sends out message 1. After K, listen carefully for responses. Try to get the call sign the first time if you can.

W1ZZ calls you. Send W1ZZ with the keyer paddles and push button 2. He will respond with QSL or R and send you his message. You respond by pushing button 4, then button 1. Just as in the first scenario, you exchanged sweepstakes messages, except that since you called CQ SS, you sent your message first.

You need not worry about the serial numbers. The microprocessor will add one to the number each time. If someone asks for a repeat of the message, you quickly press the red button, send a D, then press button 2 again. The serial number will be the same as the last time you sent it.

If you're now only lukewarm about CW operation, get yourself a Palomar keyer and get into a CW contest. You do not have to be a speed demon. Adjust the speed so you are comfortable with it. After a CW contest weekend, you too will be a CW enthusiast! □

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

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. W/F
Reynoldsburg, OH 43068
Tel. 614 866-4267

A smile is contagious

600 WATTS OUT . . . \$649

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 in to your operating position - you'll hardly know it's there . . . until QRM sets in. And you can conveniently plug it into your nearest 120 VAC outlet - no special wiring needed.

You get three tough 811A transmitting tubes, extra heavy duty power supply, all HF band coverage, pressurized ventilation, tuned input, dual illuminated meters, adjustable ALC and much more . . . for an incredible \$649 . . .

The first 600 watts makes the most difference

The AL-811 gives you 600 watts PEP output - that's nearly 2 full S-units over your barefoot rig.

That could mean the difference between hearing, "You're Q-5 armchair copy" and, "Sorry can't copy you, too much QRM."

Now you won't have to stand aside while the "big guns" steal your DX. You'll be able to log some of those stations first.

Going from 600 watts to the full legal limit gives you less than one S-unit increase. But is that fraction of an S-unit worth the 3 to 4 times more money it'll cost you?

The AL-811 gives you a powerful punch at a price that's easy on your wallet.

All band, all mode coverage

The AL-811 covers all HF bands (10/12 meters with easy user mod). There's no compromise on WARC and most MARS bands - you get a 100% rated output.

You can operate the AL-811 on all modes. You get 600 watts output PEP SSB and 500 watts output CW. You even get 400 watts on demanding continuous carrier modes like RTTY, SSTV, FM and AM.

How the low cost 811A tube resists premature failure - even when your amplifier is mistuned

811A tubes resist premature failure in two ways.

First, they're constructed with widely spaced elements that minimize the chance of elements touching and causing a short - even if the plate gets hot enough to melt.

Second, they use a directly heated thoriated tungsten filament cathode that prevents the electron emitting layer from instantly stripping off - even if mistuning causes a sudden, severe current overload.

Indirectly heated oxide cathode tubes (like the \$400 3CX800A7) can be rendered instantly useless if their electron emitting layer is stripped off because of a severe current overload due to mistuning.

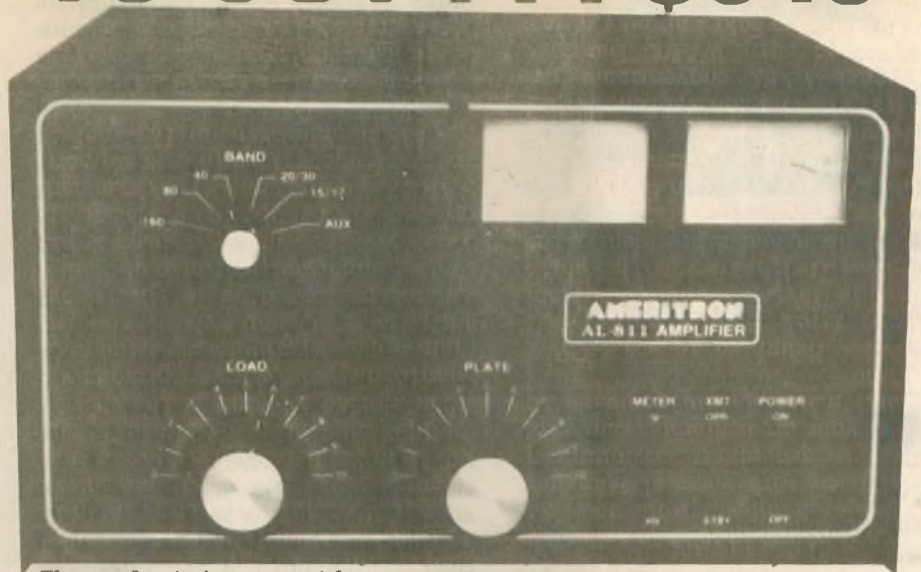
The Ameritron AL-811 is excellent for the newcomer because it's tough enough to withstand momentary mistuning. And the tubes are so inexpensive that you can replace one for mere pocket change.

The Ameritron advantage: extra heavy duty power supply that gives you peak performance year after year

The heart of the AL-811 power supply is its heavy duty power transformer with a high silicon steel core weighing a hefty 17 pounds.

A full wave bridge using 52.5 ufd of total capacitance (four 210 ufd, 470 volt capacitors) produces 1500 volts under full load and 1700 volts no load. That's excellent high voltage regulation!

Full height computer grade filter capacitors with screw terminals are used - not short stubby, light duty soldered-in "high technology" capacitors that can't dissipate the heat generated by high current.



The rectifier diodes are rated for a massive surge current of 200 amps. They won't blow even if you accidentally short the high voltage supply.

Wire wound, 7 watt, 50 K ohm equalizing resistors safely protect each filter capacitor - not 2 watt, 100 K ohm carbon composition resistors that can open and cause your filter capacitors to explode or fail.

The Ameritron AL-811 power supply is built tough so you get peak performance year after year.

Tuned input provides excellent load for any rig

A Pi-Network tuned input provides a 50 ohm load for your rig. Even fussy solid state rigs can deliver their full drive to AL-811.

Low loss slug tuned coils - tunable from the rear panel - let you optimize performance. High quality low drift silver mica capacitors maintain proper tuning.

Two illuminated meters

Two illuminated meters give you a clear picture of your AL-811 operating conditions so you can tell right away if something is wrong.

The Grid Current meter continuously checks for improper loading. The other meter switches between high voltage and plate current to warn of abnormal conditions.

Ameritron exclusive Adapt-A-Volt™ power transformer

Too high line voltage stresses components and causes them to wear out and fail. Too low line voltage causes a "soft-tube" effect - low output and signal distortion.

Ameritron's exclusive Adapt-A-Volt™ power transformer has a special buck-boost winding that lets you compensate for stressful high line voltage and performance robbing low line voltage.

This makes your components last longer and gives you peak performance - regardless of your line voltage.

Plus more . . .

An Operate/Standby switch lets you run barefoot, but you can instantly switch to full power if you need it.

A transmit LED tells you when your rig is keying your AL-811.

A 12 VDC keying relay makes it compatible with all solid state and tube rigs. A built-in back-pulse cancelling diode protects your rig's keying circuit.

Shielded RF compartment. One year limited warranty. Compact 16" D x 13 3/4" W x 8" H. 30 pounds. UPS shippable. Shipped with transformer installed and wired for 120 VAC. Draws 8 amps at 120 VAC. Export model AL-811X wired for 240 VAC and includes 10 and 12 meters.

Made in USA

Made in USA. You're keeping your money here at home and helping fellow Americans. If you buy a foreign made product, how do you get service? Are you willing to pay expensive freight and duties to a foreign country for service?

Call your dealer for your best price

Get 600 watts of real power and the most for your money. Call your favorite dealer for your best price and order your AL-811 today.

850 WATTS OUT . . . \$795

from FOUR fully neutralized 811A tubes

Only the Ameritron AL-811H gives you four fully neutralized 811A transmitting tubes. You get absolute stability and superb performance on higher bands that can't be matched by un-neutralized tubes.

Ameritron mounts the 811A tubes vertically - not horizontally - to prevent hot tube elements from sagging and shorting out. Others, using potentially damaging horizontal mounting, require special 811A tubes to retard sagging and shorting.

A powerful 20 CFM computer grade blower - not an open frame phonograph motor - draws in cool air to pressurize the cabinet and efficiently cool your 811A tubes for extra long life.

You also get efficient full size heavy duty tank coils, full height computer grade capacitors, heavy duty high silicon core power transformer, slug tuned input coils, operate/standby switch, transmit LED, ALC indicator, dual meters, QSK compatibility with QSK-5 plus much more.

Output tank: optimum Q on each band

The low loss pi-network output tank of the AL-811 has been carefully designed for optimum Q on each band and built with quality RF components.

The result is peak performance over each band, wide impedance matching range and exceptionally smooth tuning with efficiencies close to 70%. Even a 3:1 SWR load won't damage the tubes or tank components.

A ball bearing vernier reduction drive makes plate tuning precise and easy.

Quiet pressurized ventilation keeps your tubes safely cooled

A quiet fan pressurizes the cabinet with over 20 cubic feet per minute of cool air.

This large volume of air flow keeps the 811A tube temperature safely below the tube manufacturer's rating - even with a key down carrier at 500 watts output.



AMERITRON

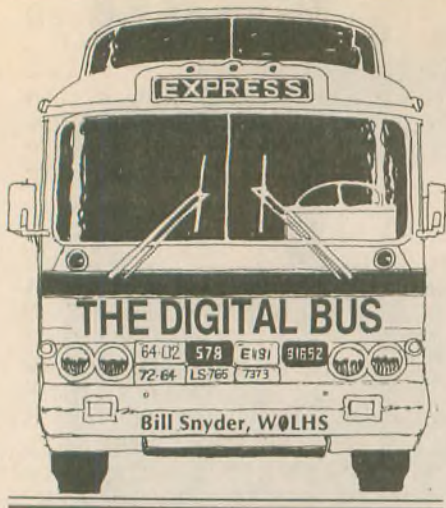
. . . the high power specialist

921 Louisville Rd. • Starkville, MS 39759

(601) 323-8211 • FAX: (601) 323-6551

Free Catalog/Nearest Dealer: 800-647-1800

Prices and specifications subject to change. © 1992 Ameritron



In the 10 years that I have been writing this column, I have read and reported a number of stories about the genesis of the International Morse code. As most amateurs know, the Amateur Radio code is different from the American Morse used on sounder telegraph instruments. Now, through the courtesy of Bill Pierpont, N0HFF, of Wichita, Kansas, I have the real explanation of the difference. Bill's research was originally printed in *Dots and Dashes*, the newsletter of the Morse Telegraph Club, a non-profit group of old railroad, press, postal and Western Union brass-pounders, including amateurs. Here is an abridgement of the N0HFF explanation:

The International (or Continental) Morse code is only a few years younger than the original American code. It originated in Germany in the year 1852 under interesting circumstances.

Without any authorization from Samuel F.B. Morse, a Mr. William Robinson went to Europe to attempt to introduce the Morse system there. He met no success in England, but found a lively interest in Germany in 1847.

There existed at that time an optical telegraph system in use between Cuxhaven and Hamburg. It was called the Marine Dispatch Service, and it had been operating since 1838. Because its use was restricted to daylight and favorable visibility conditions, the idea of using electrical transmission appealed to the company. Electrical transmission would allow 24-hour service, day in and day out.

The Electromagnetic Telegraph Company was organized to replace the older system. Frederick Clemens Gerke, who had six years' experience with the older system, took over a key position in the technology development of the new company.

Mr. Gerke immediately translated and published Vail's book on Morse telegraphy. Because the American Morse code had internally spaced dots for certain characters, Gerke simplified the code but retained the long dash (L) only for the cipher zero. He retained Morse's A, B, D, E, G, H, I, K, M, N, P, S, T, U and V, but did not use the letter J, substituting I for it, because I and J are used much the same in German.

This revised code was used on the new company's system, and the Prussian Post and Telegraph Service also adopted it about the same time. Other German and Austrian states each had their own modified Morse codes. The result was confusion whenever a telegram had to pass over state borders. There were also complex tariff problems between the various states. In 1850 this led to the formation of the German-Austrian Telegraph Union. Two years later, the Union, using Gerke's code as the base, simplified the code for all its members.

Only two elements were to be used—the dot and the dash. Letters were limited to four elements, numbers to five and punctuation to six. Of the letters, only O, P, X, Y and Z were changed from what Gerke had. The numbers were systematized as they are now. This revised Morse alphabet became effective throughout the German-Austrian states on July 1, 1852.

Other European countries soon adopted it as standard. Of course, a number of additional character codes, following the basic new plan, were developed to take care of the differences between the various language alphabets. Later, the letter J took its

present form. In 1865, at the Paris International Telegraph Convention, this German-developed code was adapted as the official European telegraph code, and it began to be referred to as the "Continental code."

So the Continental Morse code was developed 50 years before the invention of practical wireless telegraphy. It was for European inventor Guglielmo Marconi the natural code to be used for radio transmission. However, in those early wireless days other codes were also in use. American Morse was employed by US operators, and the US Navy had developed its own code; however, the War Department abandoned it prior to World War I.

As has been observed by several technical writers, this "new" international code worked better for radio communication in periods of atmospheric disturbances. This was even more the case in the days of spark transmitters, when the signals often sounded more like static than actual transmissions.

The above is based on: Th. Karrass, Geschichte der Telegraphie, 1909; and V. Aschoff, Geschichte der Nachrichtentechnik, Vol. 2., 1987—N0HFF.

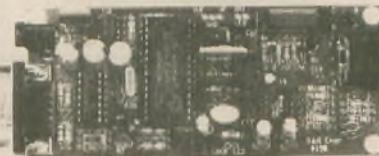
DX comments

The following is from the OP-DX/BARF80 Bulletin, Editor's Soapbox Report.

"Why is it when a group of DXers travels to a rare place (on their own free time), spend thousands of dollars, and go through extremely dangerous and hazardous conditions, they have their operation become a target of deliberate and malicious interference? I get the feeling these guys who deliberately QRM DXpeditions must have their own secret club (QNDA, QRM Next DXpeditions Anonymous). Who are these guys? No one knows. They're anonymous and it seems they must be funded as much as the DXpeditioners. They operate 24 hours around the

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 & read 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 (\$2) to:



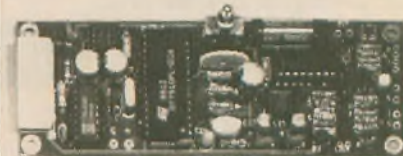
A&A Engineering



2521 W. LaPalma #K • Anaheim, CA 92801 • 714-952-2114

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 & read 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 (\$2) to:



A&A Engineering



2521 W. LaPalma #K • Anaheim, CA 92801 • 714-952-2114

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

clock, all bands and modes. The main thing a QRMer wants is attention, and it seems they get it every time people make comments to try to stop the QRM. QRMs will continue to do what he or she wants to do no matter what. If everyone would learn to ignore the person who causes the QRM they, in time, will leave. Remember, they want an audience; do not give it to them."

I would like to add to this editor's comments. On RTTY we seem to always collect one or two RYRYRY-RYR experts who add to the pileup problem. I have suggested the manufacturers drop the RY bit from all software, hardware, firmware and "any other ware." It has long been obsolete because computers do not need to set the "range" like the teletype printers of the old RTTY days. Thank goodness most DXpedition RTTY operators are using the split mode so the RYRY guys can QRM their own discrete frequency.

While on the subject of DXpeditions, here is another thought: Why do many DXpeditioners wait until the last day to try RTTY? True, RTTY is slower, but it is still an important mode in the DXCC chase program, and we RTTY fans have been sighted many times by the rare ones.

Dayton doings

I had an enjoyable trip to Dayton this year. Bob Stanek, W0HAH, and Jules Freundlich, W2JGR, both of Minneapolis, were my companions to the big Hamvention. As usual, we spent most of our time in pursuit of RTTY activities. The annual RTTY banquet at the Radisson Inn was the high point of the convention for us, although we also attended the big DX banquet where 500 members of the DXCC were jammed into a room that would nicely seat about 350. Every time a waiter walked by me I got hit in the head with either a tray or an elbow. Nevertheless, the event was genuine fun.

Meeting Jose Cyntje, PJ2MI, and John Gagen, S2/WA2WYR, at the DX banquet was a great thrill for me. Jose and I have traded RTTY bits for many years, and John and I had spent 20 minutes RTTY ragchewing from his Pakistan station two weeks prior to Dayton, so shaking hands with these two guys was a distinct pleasure.

As usual, Dale Sinner, W6IWO, publisher of the *RTTY Digital Journal*, presided over the RTTY banquet activities as well as the Digital Forum in the Hara Arena. Both were well-attended and informative. I would like to see all hamfests and conventions hold each seminar twice so a person could have a better opportunity to take them all in. Many times there are two

concurrent seminars that I would like to attend. (Program managers for hamfests take note.) In particular, I am always interested in AMSAT, packet, and anything digital in addition to the DX lectures.

At the DX banquet, the annual country-worked poll was a surprise. Every member of the DXCC was asked to stand up, then sit down as their country total was announced. Three guys were still standing when the number hit 374. Of course, this total includes mixed modes. Everyone left standing looked old enough to have worked Marconi. If they tried that game with all the RTTY DXers in the world, there would be only a couple left after they hit 300. But the number of RTTY operators passing that mark is climbing. It's hard to find new countries on the digital mode.

Cornhusker news

Marty Mullican, G0NJJ, the displaced cornhusker in England, is off the packet air for a few months. He should be back on in August. Marty is moving to a new home and taking a vacation. So stop traffic to Marty until this fall. He'll be back on then and will answer all packet mail and packet QSLing.

PicoTMJ

Pico-J rolls up and hides in his 4-ounce pocket-sized holder, waiting like the Genie in a bottle till you need full-quieting signal punch.

Call him forth and his glistening black weather-sealed lines reveal a sleek tough end-fed halfwave antenna ready to hang anywhere. Attach Pico-J to window glass or curtain rod. Suspend in the apartment closet or patio doorway.

Typical Broadband Pico-J VSWR

When you're on the road, hang Pico-J in the motel window or from a light fixture. Carry Pico-J with you for emergencies. His extra reach can save life. Pico-J needs no radicals for broadband low-angle omnidirectional halfwave gain. He improves received signals, stretches simplex range, reaches far away repeaters, saves your battery pack.

Pico-J comes ready for work with 72" isolated coaxial feedline and gold pin BNC.

Hand-Crafted in the U.S.A.

Models
2 meters
220 MHz
440 MHz

AntennasWest
Order Hotline
800-926-7373

19.⁹⁵
ppd

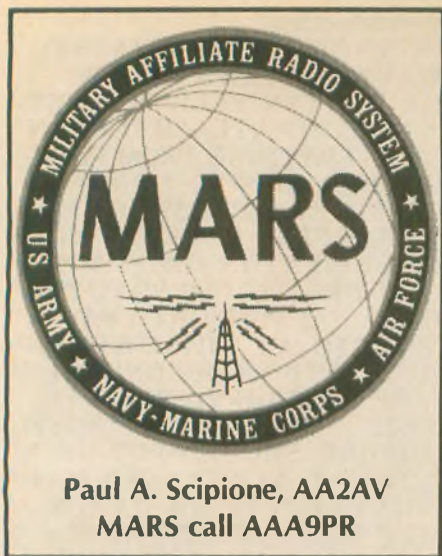
Eavesdroppings

"GRACE HOPPER PASSED AWAY NEW YEAR'S DAY, 1992... THE DAYTON FLEA MARKET HAS BECOME A PLACE YOU CAN BUY EVERYTHING FROM FLEA-POWERED RIGS TO DINOSAUR TUBES... I GOT LOST IN THE DAYTON FLEA MARKET UNTIL IT RAINED AND THEN I SIMPLY FOLLOWED THE CROWD TO THE SHEDS... I THOUGHT I SAW A NEW RIG AT THE DAYTON SHOW, BUT I COULDN'T GET CLOSE ENOUGH TO READ THE LABEL... NEXT YEAR I THINK SOMEONE SHOULD PUT UP A BOOTH AT DAYTON AND SELL COUNTERFEIT DX CARDS—THEY SELL EVERYTHING ELSE... A LIGHT YEAR IS LIKE A REGULAR YEAR, EXCEPT LESS CALORIES... IT'LL SOON BE TIME AGAIN FOR MY TOMATO PLANTS TO GET THE BLIGHT... THE REASON YOUR PACKET MESSAGE TOOK SO LONG TO GET HERE WAS THE SYSOP OF THE MOUNTAIN NODE USUALLY TAKES A MONTH TO GET IT BACK ON THE AIR WHEN IT GOES OFF... MY FIRST POLITICAL MEMORY IS OF AN 'I LIKE IKE' BUTTON WHEN I WAS ABOUT THREE YEARS OLD... I HAVE NEVER BEEN ON PACKET OR RTTY, BUT WILL GET THERE AS SOON AS MY FOUR-YEAR-OLD SON GROWS UP... I REMEMBER WORKING VQ4FCA ON 20 CW IN 1948 WHEN HE WAS USING ONLY THREE WATTS, I WONDER IF ANYONE KNOWS HIS WHEREABOUTS TODAY?... 7333 FROM MY SSTUTTERINGG KEYYS."

Thanks to N9IFG, W0HAH, KD4IPJ and NQ7Q for help this month. Write me: Bill Snyder, W0LHS, 1514 South 12th Street, Fargo, ND 58103. My packet address is: W0LHS @ W0LHS.#FARGO. ND.USA.NA.73 and DIT DIT. □

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!**



Part 2: MARS during WWII

This is the second in a three-part series on the history of MARS. Part 1 in the May *Worldradio* covered the birth of MARS as the Army Amateur Radio Service (AARS). Part 3 will appear in the September *Worldradio* and will cover MARS from 1945 through the start of the Vietnam War in 1965. All three articles are excerpts from my forthcoming book, *MARS: Calling Back To The World From Vietnam*.

Tora, Tora, Tora

During the early daylight hours of Sunday, December 7, 1941, more than 300 Japanese bombers and fighter planes attacked Pearl Harbor and other US military installations in Hawaii with a vengeance that immediately dragged the US into World War II. We Americans were suddenly shocked out of our cocky innocence following the Allied victory in World War I and our pre-occupation with the Great Depression during the 1930s.

As news bulletins about the Japanese sneak attack on commercial radio had an immediate impact on American civilians, so too did this event send shock waves among the fewer than 50,000 Americans who were licensed radio amateurs. The January 1942 issue of *QST* carried the full text of the FCC's Order No. 87 that had immediately taken us off the air.

"War comes: We take our posts in the country's defense. In time of emergency, Amateur Radio steps forward and applies its specialized knowledge to the task of replacing and restoring and supplementing the normal communications system . . . War is the gravest emergency of all . . ."

FCC Order No. 87: All amateur licensees are hereby notified that the Commission has ordered the immediate suspension of all Amateur

Radio operation in the continental United States, its territories and possessions . . . and is prohibited until further notice. In any instance where Amateur Radio operation is deemed to be required in connection with the national defense, appropriate authorization to engage in such operation will be issued but only upon application by a duly authorized federal, state, or local official made to the Defense Communications Board.

Initially only W1AW, the official ARRL station in Newington, CT, was authorized to stay on the ham bands in order to provide 24-hour-a-day communication of the latest radio regulations and developments. So American hams were off the air and there were only two ways they could get back on: either (1) volunteer as a communications officer or enlisted man in one of the uniformed services or (2) volunteer as a wartime member of the AARS. Among AARS operators, there would be no more code speed contests or summer training camps at Fort Monmouth. This was the real thing—world war—and skilled radio operators were among the most elite and needed groups in the country.

Uncle Sam needs you!

On December 8, 1941, urgent traffic in the form of an emergency bulletin went out from WLM, the net control station for the AARS in Washington, urging all Amateur Radio operators between the ages of 18 and 35, who had no physical defects or problems, to immediately enlist in the armed force of their choice. It further urged other amateurs to serve in a civilian capacity through the AARS, thereby freeing up one or more uniformed communications specialists.

There is ample evidence from the next few issues of the Amateur Radio magazines that it did not take hams long to step forward. Licensed amateurs who also held college degrees in electrical engineering were offered a direct commission as an Army second lieutenant. By June, 1942, scarcely six months after the Japanese Imperial Navy attacked Pearl Harbor, more than 15,000 licensed Americans (30 percent of all US hams) had joined the military and several thousand additional hams had

volunteered for various civilian-based communications services. Still other hams volunteered to either give or sell their amateur rigs to the military, although several articles in *QST* advised hams that it would not be economically or operationally sound to use diverse rigs, since it would be either impractical or impossible to stock a full range of replacement tubes and other components. (Both *QST* and *CQ* Magazines continued to be published throughout WWII. Complete series of wartime issues are available at: the Library of Congress, the ARRL headquarters in Newington, CT, *CQ* Communications, Inc. in Hicksville, NY, and at the CECOM Library at Fort Monmouth, NJ.)

Those hams who remained at home still got their monthly *QST* and *CQ*, although these magazines dropped their thick covers for the remainder of the war in order to save heavier printing stock and ink for the war effort. Hams started reading very different columns and special features such as "Deferment for Radio Students," "Radio In The Army," "Civilian Defense" and "In the Service." I was shocked to discover that the Pentagon actually let the ham magazines publish the names, call signs and QTHs of hams who had recently volunteered for active duty in the military. There were also articles that described the proper form and methods for passing military traffic in CW as well as a monthly "Gold Star" column whose lists grew far longer than the usual civilian "Silent Key" lists.

Even the ads in ham magazines took on a decidedly wartime look with companies like RCA, Eimac, Hammarlund and Collins explaining how their employees were aiding the war effort. An example was a full-page ad for Electro-Voice that described its innovative new "lip mike," so small that it could fit into the strap of a GI's helmet.

Perhaps the ultimate clue that the country was at war came in the December, 1942, issue of *QST* with an article by W1LVQ entitled "Easy Lessons in Cryptoanalysis." And just so you know that hams were experiencing acute "withdrawal symptoms" at not being able to ham it up for four long years, there was an article and accompanying photo of W2DJJ, Lt. Colonel Robert Herzberg of the American Signal Corps, who had been stationed overseas for three years and that "his headquarters has more hams per square fox hole than any other in the European Theater of Operations. The last count showed almost 70 ex-brasspounders, the majority engaged in communications work. They are

Instant Solar Power

planning a hamfest soon." (April 1945 QST)

Also quite humorous was another QST article entitled "A WERS Handie-Talkie for \$1,538.77" (Feb. 1944). It seems that one Fred Long, ex-W8NE, set about to homebrew a military HT in order to save money. While the parts only came to less than \$21, he had to factor in \$1,500 in labor costs as well as public relations costs of \$4 for eight scotch-and-sodas (in order to wrangle some needed aluminum), iodine for cuts received in working with the scarce aluminum, and butter to alleviate pain and suffering from burns received while soldering!

On the serious side

Even though we probably do not need a reminder that many hams did suffer and sacrifice during World War II, the CQs and QSTs of that era are heavy with announcements ranging from those hams who had volunteered for military service to those who had been wounded in action or killed in action. There was also a monthly column in QST about hams who were missing in action and those who were prisoners of war.

We do know that more than 15,000 of the 50,000 licensed American amateurs enlisted within six months of Pearl Harbor and that thousands eventually gave their lives to keep the lines of communication open. One doesn't have to be a genius to realize how dangerous it is walking around with a big whip antenna sprouting from your back—it was almost like painting on a bull's eye for enemy snipers. Other than pilots and submariners, perhaps no other specialized group suffered so many casualties during World War II.

The WERS System

Throughout World War II, volunteer amateurs at home also worked hard to man hundreds of daily and weekly traffic nets in the newly formed WERS (War Emergency Radio System). Still other hams helped man coastal radar sites or helped repair military radios and other electronic equipment or assisted in communications R&D efforts at Forts Monmouth and Gordon. They also volunteered as unpaid instructors for various communications training schools within all branches of the US military.

No phone patches

Even though the primary mission of the MARS systems was and continues to be providing an auxiliary system for essential military communication, without doubt the "quintessential" service for which we are most known

is the phone patch, a call from a GI in some distant corner of the globe to his or her family back home via a combination of HF radio and stateside long distance telephone. Those of us in MARS have always considered such personal traffic to be more than just "health and welfare" communication, since the morale of the troops, particularly during wartime, is strongly correlated with performance on the battlefield.

I have found it surprising then that there is no evidence that amateurs, either within the military or outside in the civilian sector, provided any phone patches for GIs during World War II. Certainly from a technical standpoint, phone patches would have been feasible then and we know that HF radio was prevalent in the US and Allied

military. I have literally combed the records and there is nothing, nada. If any of my readers has anecdotal evidence of phone patches during WWII, I would sure appreciate hearing from you: 5 Burr Drive, Metuchen, NJ 08840.

So MARS, as we know it today, largely sat out World War II. The AARS had temporarily become the WERS and hams were off the air for four long years, except for those who volunteered to serve as communications officers and enlisted men in the military or as shipboard operators in the Merchant Marine. The post-war AARS did not become MARS until 1948 and phone patch service was not offered until the Korean War, both of which will be discussed in Part 3 of this series. □

SAREX

(continued from page 23)

Once again, the radio crackled.

"This is the space shuttle *Atlantis* . . . We're coming down off the coast of Northern California, coming down at 18,000 miles per hour."

This time it was Krista Greksouk who went first. "My name is Krista Greksouk and my question is, what do you like most about space travel? Over."

Okay, Krista," came the response. However, after that, the astronaut's voice became garbled in static.

Patrick Dinsmoor gave it a try next, asking his question, "What did it feel like when you launched at the beginning of your space flight?"

Once again, however, the answer could not be heard clearly. Realizing that contact was about to be lost, Frank Forrester took the microphone to conclude the conversation. "Thank you very much. We have a number of students who are proud to have made contact with you today," Forrester said.

When the antenna crew descended

from the roof, dripping wet but smiling, everyone cheered.

For students, Forrester said that Amateur Radio offers an opportunity for learning that goes beyond the typical classroom. He cited the example of Leo Almazan, who has said that the ham radio hobby he began as a boy in the Philippines and developed as a teenager in the United States led him to his current vocation of engineering today.

Amateur Radio is active learning. "This is not textbook or TV learning, not passive learning. We have one student now who has passed his test for his no-code license and is waiting for his call sign, and three more who are about to take the test. Hopefully we can excite kids to go on and become more 'Leos,'" said Forrester.

Journalist Pamela Stevens has a teaching background in math and science and, through her experience covering the SAREX project, has become interested in Amateur Radio. We hope that she too will soon pursue a call sign of her own! □

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)

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)

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)

Order now from your radio book dealer or



Tiare Publications
PO Box 493W
Lake Geneva, WI 53147

Catalog \$1, free with order
Visa/MasterCard



Should you X your text?

An X in the text of a message clarifies. X is used to separate thoughts. We try and keep the text as short as possible. Thus, we often leave lots of little words out. These short phrases often stand alone. Before you send a message, read it to see if an X is needed. While *you* understand what you are saying, the person on the other end may not. Could it be, "Thinking of you eating all that candy and getting fat"? Or, is it, "Thinking of you x eating all that candy and getting fat"?

Whether reading a name phonetically or sending on CW, spacing is also critical. I received the following name in the address line the other day: Sam erson (Anderson).

QSLs

A QSL is all that is needed to let the other station know you have copied the complete message. When you send QSL, you QSL everything including the number of the message. When you work at faster speeds (on CW), with people you get to know, you may even go from saying QSL for each message to perhaps just sending the letter K. The next step faster is to send one dit. The real pros (like W2RQ in New York) can be depended upon to copy all the messages as fast as you can send them, *and* QSL at the end. This is perfection.

Age

Delivering messages to "older" (it's all relative) people is rewarding. They seem much more appreciative of getting a message. They actually like to talk to people on the phone. They will often send a message back and even make you feel good about doing it.

They almost never block the world out with an answering machine.

School sport meet

The first track and field sport meet using Amateur Radio as communications was held between sixth grade classes at Woodmore Elementary School in Prince George County, Maryland, and Mandarin Middle School in Jacksonville, Florida, on May 5. Tony Young, WA3YLO, coordinated the event in Maryland. Billy Williams, N4UF, took the Florida end.

I'm told that it went splendidly, and took about two hours. Contact was made on 20M by Tony and Billy. Each of these base stations had an "away" person who relayed the scores and names of each event to them via 20M. Both classes had a great time and each participant received a T-shirt and a certificate. The radio ops seemed to enjoy the event also.

All wanted to do it again next year. More grades will probably be added. Both schools won events and learned more about each other. On May 14, Manassas Park, Virginia, will engage Orlando, Florida. The team in Virginia has prepared a video with the participants introducing themselves and making comments. After further video of the actual meet, it will be sent to the school in Florida. The children are very excited about this, and it couldn't happen without Amateur Radio.

Excitement

Does traffic handling still fill you with excitement? Or are you starting to burn out? For those who have done it all, maybe we need to arouse your interest again with some new activities.

How about awarding a WAS certificate? This could be a certificate for those who have worked all schedules. Included would be a local (2M) net, a section, region, and area net. You would also need a TCC sked (at least on the sub list), and will have experienced the thrill of checking into one of our world skeds. No problem checking into the ARN (Atlantic Region Net—where international traffic is routed), SAN (Scandinavian/American Net), or El Hombre (Mex/American Net) for stations in EST (7, 8, and 10:30 a.m. local). For

those out West, you'll need an alarm clock and some true grit. And not to leave out our data modes, you could get a DE (data endorsement) for checking into a PBBS, an AMTOR, and an RTTY BBS. We recognize that some ops have always used one mode and don't intend to ever buy a key, mike or TNC. Thus, some may have to arrange a field expedition to some other traffic handler's habitat to gain access to the necessary apparatus to obtain a WAS. But as with any other certificate, once you have it, you can still lose interest in continuing the activity.

The mind boggles on certificates we could produce for traffic handlers. Why not a QRP endorsement to the WAS for those who like to check in and drive other traffic handlers mad? (This endorsement could only be had by checking in to a region or area net). For those who send at least one message on each holiday, we could give the WHAT (Worked Holidays—All of Them) award. Let's see, there's Valentines Day, St. Pat's Day, Easter, Mom and Dad's Day . . .

We do currently have an A-1 Op award, though you don't often hear of anyone getting it. That's probably because no one knows who has one. Traffic handlers hesitate to appear stupid by nominating someone who probably already has it. So, we could add awards for Incredible Fist (keyboards excluded), and Sweet Sounding Voice (SSV). Five ops would have to nominate you for each of these awards. You would then be asked to have someone make a brief (one minute, or less) tape of yourself to send to the appropriate committee. If they felt you had the right stuff, you would get the award. Of course, after you get one, you could get an endorsement for the other. Since all data sounds alike, there wouldn't be a certificate in this category, but, we could have an award for any PBBS who clears all NTS (forget the bulletins) traffic in five hours. This might be just the incentive for the few SYSOPS who feel that they have done their share by turning on their radios and accepting anything that lands on their board without worrying if traffic is only forwarded every 10 days.

Special event stations would get a two-part certificate, the first for booking as much as possible. There seems to be some controversy just now as to whether booking traffic is working. I was asked to vote just a few weeks ago (as part of the Eastern Area Staff), as to whether we need to review booking or just leave it alone.

Booking is great. It's a shame that it's so rarely used by special event stations. The reason may be that if you

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

WORLD OF HAM RADIO
SHAREWARE on CD-ROM

The World's first ham shareware CD totally dedicated to Amateur Radio related programs collected from all four corners of the world. Contains over 2,000 programs for IBM or PC compatible computers.

Amsoft Ham Radio Software
PO BOX 666 New Cumberland
Pennsylvania USA 17070-0666
Shipping US \$5.00, Foreign \$9.00

WORLD OF HAM RADIO SHAREWARE
Volume One \$79.95

AMSOFT
1121 10th St.
New Cumberland, PA 17070-0666
Phone: 717-938-8249
Fax: 717-938-8742

Only \$79.95 717-938-8249

put three addressees together, you only get credit for one point. Some special event stations hate to divide their traffic by three, so they don't book. Why not just let each addressee count as one point and encourage booking? Talk about boring traffic . . . copying the same message 15 times. The second part of the SEA (Special Event Award) would be for getting the fewest ARL 67s back. Perhaps we could have some number of the total which cannot be exceeded. The endorsement for this certificate would be in having supplied a station to receive the ARL 67s for a period after the event.

As with all other traffic certificates (with the exception of the IF/SSV awards), no proof of activity would be needed. Have you ever been challenged to produce your BPL messages? Unlike DXing, where committees view the evidence, and HQ spends great amounts of time examining each ramification, traffic handlers are taken on trust.

A final wish is that those who send traffic make it as engaging as possible. Traffic handlers like messages with: *gossip*—"Will stay on Sanibel with boyfriend;" *happy thoughts*—"Did you put the bird feeder up yet?" . . . "Your little sister loves you

too x come to see me x have extra bed x love" . . . "The turkey is cooking and we anticipate a fine dinner" . . . "ARL Forty Six still thinking of our great visit" or "Thanks for your radiogram x always enjoy hearing from you."

Also enjoyable to pass are messages which are *educational*—"Wishing you the best of everything on World Hello Day" (World Hello Day?); *interesting*—"Bands have been bad, haven't made schedule x wonder how you are doing" . . . "Good to hear from you after 45 years" . . . "Sorry we didn't get to visit in Newington—they locked me in that room and I couldn't get out" . . . "On 14.327 daily at 2200Z for poet's corner network;" *important*—"Paul had stroke Sunday x in hospital" . . . Need items for Company C newsletter, please forward ASAP" . . . "Please send new rook cards peanut snickers hershey peanut kisses and anything else" . . . "Cataract surgery last Thursday was successful x recuperating normally" . . . "Thank you folks for your help in a very important decision x we hope we can do something nice for you x stay healthy x love" . . . *funny*—"Ate grits every day in hospital x wish you could have shared them;" *patriotic*—"Once and always Semper Fidelis" . . . "Hope to catch you on Navy Net;" *helpful*

—"QSL bureaus and DX station managers often send messages (envelopes needed)."

We even understand the need for thoughts which are: *controversial*—"The Cubs need a few more pitchers;" or *disappointing*—"ARL 67 no traffic handlers in Salisbury." But, we don't like *preaching* messages, especially when we have to deliver them—"More disasters happened in 1991 than ever before x we should be prepared to operate." Why not just say, "Hope you are well and still enjoying Amateur Radio" or, maybe, "Life is great here x what are you up to?" In mid-winter, you always get the "Enjoying my vacation in Florida." Make it enjoyable, traffic handlers.

Care

Those of us with Amateur Radio stations can generally afford to call people we want to contact on the telephone. Sending traffic is done more for its uniqueness than need. There are people who do need the service. Most countries don't have traffic nets. Handling traffic is a way of caring. Why not contact churches in areas who may work with the needy and offer to take traffic once a week via phone? And, don't forget to book it. □

C.M. HOWES COMMUNICATIONS

Kits from

Townsend Electronics, Inc.
P.O. Box 415
Piercetown, IN 46562
219-839-5203 FAX 219-594-5580

NEW!



SMARTER THAN THE AVERAGE KIT!

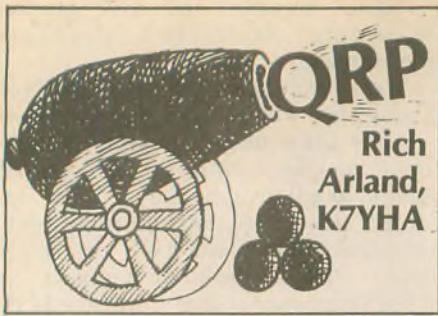
Digital Display-Active Antennas-Receivers-Transmitters-SWR Bridge-Antenna Tuner-S Meters-SSB Transmitters-VFO's

Build your complete station one piece at a time or add units to your own station as your budget allows and discover what being a real Ham is all about, building your own!

These kits feature pre-punched, finished aluminum cases for a first class appearance to reflect the first class quality of these English made units that will speak well of your craftsmanship.

Send for our NEW catalog to learn about these exciting kits and learn what being a Ham is all about!

ORDER FROM:
Townsend Electronics, Inc.
P.O. Box 415
Piercetown, IN 46562
219-839-5203
FAX 219-594-5580



Five watts output for CW and 10W output (PEP) for SSB are the accepted definitions of low-power communications by QRPers worldwide. On the surface this does not seem to present any problems for the QRP operator. Just tune the transmitter for the desired output into a dummy load and you're ready to rock and roll, right? Well... maybe.

Power is a function of some basic Ohm's law formulas that form the fundamental building blocks of electronics theory. Power can be determined if we know any two of the following: resistance of the load, voltage developed across the load, or current through the load. Simply put, Power (P) equals Voltage (E) multiplied by Current (I) or $P = I \times E$. Substituting basic Ohm's law equations in the primary formula we obtain: $P = I^2 \times R$ and $P = E^2/R$.

One of the easiest and most accurate ways of measuring RF power output is to build a non-radiating, purely resistive load, affectionately called a "dummy load," which will replace the antenna. The dummy load should be the same impedance (resistance) as the output of the transmitter which, in most cases, is 50 ohms. If care is taken to choose the resistors of the dummy load correctly, then a very close 50 ohm match is possible. By accurately measuring the ohmic resistance of the dummy load (normally two 100 ohm or three 150 ohm, 2W carbon resistors in parallel for the average QRP transmitter) we will have the basis for accurate RF power measurements.

Once the dummy load is plugged into the RF output jack of the transmitter, it is a simple matter to take a digital VOM equipped with an RF probe and measure the voltage developed across the parallel resistors. Once the voltage measurement is completed, just plug the figures for the resistance and voltage drop into the power formula ($P = E^2/R$) and you can determine the output power developed by the transmitter into the dummy load. Simple, huh?

Figure 1 shows a simple RF probe that can be made using parts from your local Radio Shack. The diode shown in the schematic should be a germanium type since the forward voltage drop is

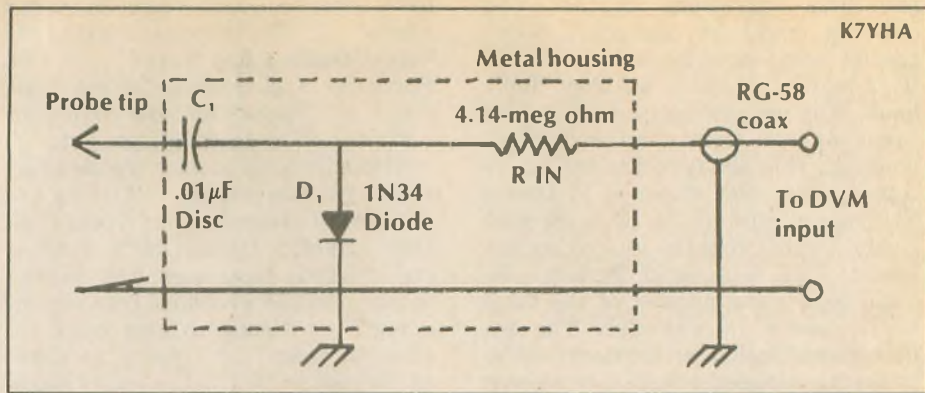


Figure 1. Simple RF probe for digital voltmeters. R IN is actually two resistors chosen to equal 4.14-meg ohms. These resistors coupled with the 10-meg ohm input resistance of the DVM will yield extremely accurate voltage readings, which can be converted to a power reading using the following formula: $P = E^2/R$.

only .3V. If Schottky diodes are available, those can also be used since they have an extremely low forward voltage drop. This probe is simple to construct. R OUT is actually two series resistors that match the probe output to the input impedance of your Digital Volt Meter (DVM). In the case of a 10-meg ohm DVM, the two resistors that comprise R OUT should equal 4.14 meg ohms (3.3 meg + 820K will work nicely). The entire RF probe can be assembled on a small piece of PC board and slid into a piece of copper tubing which will act as the body of the probe and provide shielding.

This is all well and good, but the dummy load/RF probe method is somewhat cumbersome for daily use. What we need is an RF power meter that can be quickly connected to the QRP transmitter output, be entirely self contained, and not require any involved set-up procedures. Enter the QRP dummy load/RF wattmeter of Figure 2.

As can be seen, this is nothing more than the original dummy load circuit coupled with an internal RF probe and a metering circuit. Connection to the QRP rig is via a small length of coax terminating in a matching RF connector. The circuit fits inside an old Heathkit battery tester box, which makes it relatively small and easy to pack along on camping trips. My particular model is outfitted with a dual-range switch that is calibrated for 0 - 1W and 0 - 5W output. Accuracy down

into the milliwatt range is quite good. I used a Schottky diode for D-1 and have had excellent results over the years.

Calibration is done using a DC source voltage injected at TP₁. With S₁ set for the 0 - 5W range and 15.8VDC injected at TP₁, R CAL-HI is adjusted for full scale on the meter. A DC calibration voltage of 7.07VDC is used for the 0 - 1W range. With S₁ in the low-power position, R CAL-LO is adjusted for full scale reading on the meter.

RF probes and simple wattmeters previously discussed work well down to about 500mW. However, with the current trend toward microwatting, more elaborate RF measurement techniques must be done to ensure accurate power measurements. This is especially true when really wild distance records are being set using transmitters like Bob Moddy's, K7IRK, Fire-Ball transmitter. This transmitter is actually a computer oscillator module that will develop approximately 25mW RF output on 28.060 MHz. Bob along with Bill Smith, WB6YPE, have been hard at it setting all kinds of distance records in the milliwatt and microwatt regions.

Unfortunately, with this trend in microwatting comes the suspicion of the accuracy of the RF power measurements. At extremely low power levels, special care must be taken to ensure accuracy. Enter the oscilloscope.

In order to do the job correctly, a 40 MHz (or wider) oscilloscope must be employed to obtain RF voltage measurements across the dummy load. This presents other problems, too. Now, instead of just taking a voltage measurement and applying the power formula, the QRPer must apply some AC theory to the measurement procedure. Since the scope will measure the applied RF voltage across the dummy load as a peak-to-peak voltage, this PP voltage must be divided by two (to

FRIEND OF BILL W. ??
HAAM RADIO / ARS N8KDW
 4121 S. Fulton Place
 Royal Oak, MI 48073

get peak voltage) and then multiplied by .707 to obtain the effective or RMS voltage across the load. This RMS voltage is what is measured by the DVM in earlier applications. Once the RMS voltage is obtained from the oscilloscope readings, it can then be substituted in the power formula as before. As you can see, accurate power measurements in the low milliwatt and microwatt area are somewhat more complicated but not impossible.

QRP Field Day

Field Day is here and you need to participate either as a single FD entry or with your local club. Regular FD participants always talk about the fun and good times involved with the FD experience. However, all too often, the *real* reason for Field Day is overlooked or entirely forgotten by the multitude.

Why Field Day? Originally FD was designed to check our collective readiness to "hit the bush" with our gear and set up and operate for an extended period of time, simulating an emergency communications situation on a national scale. Unfortunately, many (possibly the majority) of the clubs who turn out for FD set up on the previous Friday, party all during the simulated emergency event, and then proceed to pat themselves on the back saying, "Didn't we do good?" Who's kidding whom?

Field Day, when viewed with an eye toward providing emergency communications under *realistic* primitive conditions, leaves a lot to be desired as a true test of our emergency communications preparedness. If we want to get real about this event called Field Day, we collectively need to re-evaluate our goals.

The first goal should be one of mobility. In a real disaster, none of us will have the luxury of being able to pick a spot and set up our gear prior to the event. Mobility, the ability to pick up all the gear needed to place a station on the air for an extended period using portable power sources, transport the gear to a remote location, set up the station and be ready to operate, is not easily achieved—except for QRP. Here our gear is typically packaged quite small and the power levels used easily interface to a single deep-cycle 12V battery.

The second goal should be one of a realistic attitude toward the task at hand. There is nothing wrong with the desire to have fun on FD. The entire family can participate and it makes a great weekend. However, if you are truly viewing FD as a valid test of your emergency communications abilities, then you need to temper this desire to "have fun and party" with the interest to participate in a realistic FD exercise.

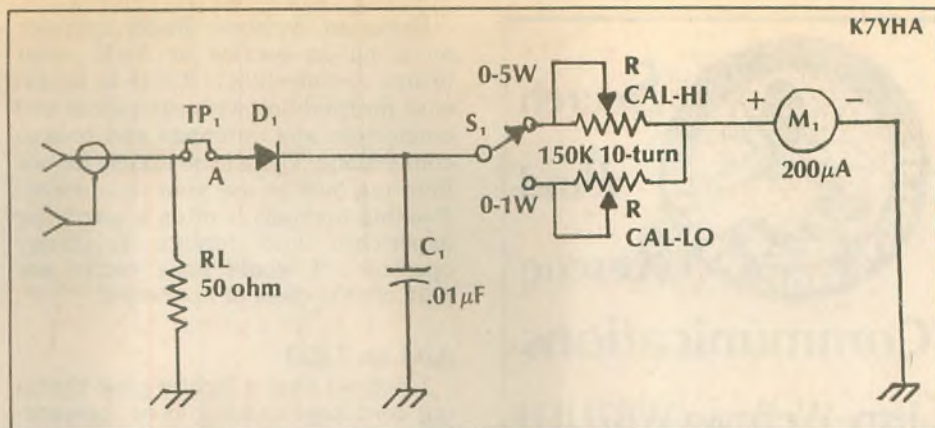


Figure 2. Portable QRP RF wattmeter and dummy load. RL is made up of three 150 ohm, 2W carbon resistors. R CAL-HI and R CAL-LO are 150K 10-turn precision pots. If you have trouble locating exact values, use a 100K ten-turn pot in series with a 50K fixed resistor for each cal pot. The jumper at TP₁ is removed for calibration and the DC calibration voltage is applied between point A and ground.

Goal #3: antennas. Lucky indeed is the amateur who has the good fortune to be packing several tower sections, a five-element HF triband beam and rotor in the back of his or her Volkswagen when it comes time to deploy and provide some real emergency communication. Get real, people. Towers, beams, rotors and the like are for the home station, *not* for FD operations. It is absolutely amazing what can be accomplished using some basic wire antennas coupled with good operating skills.

Goal #4: the care and feeding of an ego. Everyone wants to succeed. Everyone wants to be numero uno. Unfortunately, many individuals and clubs who participate in FD turn this into a crusade. In a disaster there are seldom any winners, but there can be a whole bunch of losers. There are lots of reasons to participate in Field Day, but winning a contest should not be one of them.

The egomaniacs who engage in putting kW stations on the air during FD under the misguided idea that "more power is better" need some intense therapy. In a *real* emergency, you will be lucky to have AC power available at all. Instead, prolonged battery operation (recharging several batteries using an automobile charging system) will negate the use of large amounts of RF power. In reality, QRP rigs are the answer to the problem of keeping a sta-

tion on the air for an extended period of time using battery operation. After all, there are only about 3½ S-units difference between a 100W signal and a 5W QRP signal, and only slightly over 2 S-units difference between a 100W signal and a 5W QRP rig.

Goal #5: participate with the idea that Field Day is a preparatory exercise, a freebie, so to speak, prior to a major emergency communications event. Develop your operating skills and try out new modes. CW and SSB are not the only modes available during FD. HF/VHF packet, satellite communications via OSCAR, AMTOR/RTTY, etc. all have a place in the modern amateur's repertoire.

In a real disaster, the days of using voice or CW traffic handling methods are over; if CB taught us nothing else, it demonstrated that you don't have to be a technical genius to push a mic button and flap your gums. High-speed digital communications links are where Amateur Radio emergency communications will shine. If you are unskilled in the area of packet radio, then you need to get in step with the rest of the world. During a disaster, it will be too late. See you on the air during Field Day 1992. 73, Rich. □

Watts it all about?


Send your news and information to us at Worldradio. We'll help you inform the world!

HT RANGE EXTENSION BASIC REPEATER INTERFACE
 Finally a simple and inexpensive means of having your own repeater or link. Works with ANY receiver and transceiver and requires NO internal modifications! Just wire your mic plug and plug into receiver ext. spkr. Jack. Ideal for special events or mobiles! Specially 9V Batt or 12VDC model! **BRI-2 ONLY \$50.**

ELECTRON PROCESSING, INC.
 BOX 68 • CEDAR, MI 49621
 616/228-7020

FOXHUNTERS!
 Our SGR-1 RF Attenuator box is ideal! 50db attenuation in 10db steps. 50 ohm. Rugged & compact **ONLY \$50.**

US add \$5 S/H; (CN \$8) MI & NY add sales tax.



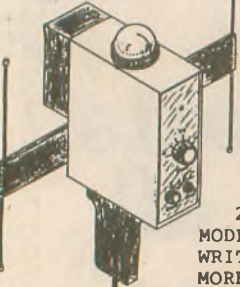
**Search
And
Rescue
Communications**

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

Three climbers were rescued from Mt. Hood after they were caught in an early May blizzard with sub-zero temperatures. The trio was ill-prepared but used common sense to stay where they were and keep dry and warm. A number of SAR teams from many parts of the West were involved in the rescue.

Peaking my interest in the news report was mention that the three had a compass but none knew how to use it. Another news item several months ago said that a significant number of VCR owners did not know how to program their machines. Let's face it, life's complicated!

Still, this sort of thing points out the need for equipment owners to be familiar with their gear. It's critical for SAR communications people. You need to know how to program your radio or what tone to select or how to activate cross-band. You might be able to get some on-the-air help, but why waste victim-survival time by not knowing how to work your own equipment?



VECTOR FINDER

ZERO-IN THE SIGNAL!

HAND-HELD PHASE SENSE ANTENNAS FOR VHF DIRECTION FINDING. USES ANY FM XCVR. COMPASS GIVES DIRECTION. ARMS FOLD FOR STORAGE. TYPE VF-142 COVERS BOTH 2-MTRS & 220MHZ. OTHER MODELS AVAILABLE. WRITE OR CALL FOR MORE INFO.

(\$3 SHIPPING & CA. ADD TAX) TYPE VF-142 \$129.95 619-565-1319

RADIO ENGINEERS 565-1319

3941 Mt. Brundage Ave. Dept. WR
San Diego, CA 92111

Being an Amateur Radio operator on a public service or SAR event brings responsibility. There is no excuse for fumbling with equipment and connectors and antennas and broken connections. There is no excuse for not knowing how to use your equipment! Reading manuals is often a terrifying experience and foreign to many operators. I would hope you're not part of that class of operators!

Add an LED

I noticed that a lighter-plug charging cord kept coming loose, preventing a good contact. So I connected an LED (using a 1/2W 680 ohm resistor) across the wires right at the plug, and now I have a neat visual indicator that I'm plugged in. Use some heat-shrink tubing, and the installation looks professional.

Much of your equipment may be in the "big bucks" category. If your budget is like mine, you cannot just run out and buy a new one if something gets ripped off. Take an evening (even a club or training meeting) and engrave your equipment with a call sign, driver's license number or even an address.

I make a practice of putting my call sign *inside* the covers of radio gear. After several years a stolen rig was recovered locally when the owner's call sign was found inside the top cover of a mobile rig. (I'm still missing an Icom IC-3200A, by the way, in case you notice my call inside one.)

Lots of bucks go into some very small goodies. I'd hate to see you develop a foul attitude toward public service as a result of having your gear stolen. So mark your radios, flash-

lights, coats, battery packs, equipment boxes, and just about anything you have.

LORAN and maps

Long Range Navigation (LORAN) is something you should know about. You should also know something about a computer program that helps you navigate. First, LORAN.

LORAN was developed by the Massachusetts Institute of Technology during World War II. The system has improved to where radio navigation is possible throughout North America (inland as well as coastal areas). Using a number of transmitters on 100 kHz, the position is calculated by measuring the time it takes a pulse to reach your receiver.

Actually the receiver's microprocessor measures the time *difference* between pulses. Because the positions of the transmitters are known, and we know how fast radio signals travel (like circular ripples when you throw a rock in a pond) we can calculate distance from a transmitter. When several transmitters are used, the intersecting "circles" pinpoint your location.

Accuracy is remarkable, however it is *not* a substitute for knowing how to read a map or use a compass. In recent years the cost for LORAN units has dropped to where a good quality handheld unit will cost you \$220.

Some of you are saying the way of the future is the Global Positioning Satellite (GPS) system. And you're correct. However the cost is still quite high (about a thousand bucks). GPS will give you location in places (such as South American) where there are no LORAN chains and GPS is not affected by terrain and urban areas like LORAN. I do notice sporadic coverage on LORAN in areas such as downtown Salt Lake City; however, I've had no problems receiving the LORAN transmitter chains over much of Utah, Wyoming and into Idaho. From an SAR perspective, I don't need LORAN coordinates for downtown, but I do need them in the mountains.

A hand-held LORAN can operate for over 12 hours on rechargeable batteries or from a vehicle system. The receiver will "lock" on a particular "chain" (a chain being a master and several slave transmitters) and give you a continuous readout of position.

During a recent Scout campout, the group plotted their location using maps and compass and we checked the LORAN readings. We were pretty close to being at the same coordinates. The LORAN took about two minutes to lock in and give a reading; the map and compass crew took a good 30



Townsend Electronics
"RIG SAVER"

ANNOUNCING
NEW
MOBILE MOUNTS

Mobile Radio Mount
10" tall for radios up to 15 #

Commercial Mount

for heavier radios and for more than one radio with optional arms

\$39.95 + \$3.00 S & H

\$49.95 + \$3.00 S & H

FAX 1-219-594-5580 or write Townsend Electronics, Inc. P.O. Box 415 Pierceton, IN 46562 Visa/MC accepted

minutes to plot the location.

The advantage to LORAN is that air search and rescue groups use the system extensively. Most, if not all, medical and news choppers also use LORAN. For example, if you're on a missing person search and need to vector in a chopper to evacuate an injured person, you need only give the LORAN coordinates and wait for the chopper to appear overhead.

Most LORAN units also allow you to plot vectors and distances. I have my unit programmed with area hospitals and airports so bearing and distance plotted from present position could be provided to a rescue chopper.

There is a Coast Guard publication (LORAN-C User Handbook) available from the US Government Printing Office. It will only set you back about five bucks and is worth reading if you're not familiar with LORAN. Most LORAN units come with a pretty comprehensive instruction manual. Be cautioned that it's not the kind of thing you can get on a Friday and expect to use Saturday on a rescue. Plan on at least a week or two of study before you know how it works.

Navigation software

There's a software package called Nav Assistant available from Wilderness Technologies (13170-B Central

Ave., SE, Suite 270, Albuquerque, NM 87123) that's worth looking at. I don't like to get specific about products, but I feel this one is unique and offers a pretty valuable SAR tool.

Basically a database program that converts locations, the program accepts latitude and longitude, aircraft SAR grid, ground team SAR grid (yes the two are different), map name, or distance from a city or airport. The program then cross-references the input and gives you latitude and longitude, UTM (Universal Transverse Mercator) coordinates, SAR coordinates, township and range, nearest town, nearest airport, vectors to the two nearest VORs (aircraft navigation devices), and lists what USGS quad map, metric map and aero map to use.

You can also use a USGS quad map, for example, to locate where you are and measure (with a ruler) how many inches up and over you are from the map's border. The program will convert these measurements to all of the above cross references. Talk about a time-saver on a mission!

Typically the program would be running on a base camp computer. When teams (air, water, ground or rescue) check in with a location, you can cross-plot or use the program to convert location for another team.

Your Mountain Rescue team may give you a search coordinate based on the UTM. The Civil Air Patrol crew needs an air SAR grid and the medical rescue chopper would like a vector from the nearest VOR. The program does all this quickly. I would place a high priority on this program as well as LORAN units for any SAR (or any public safety) group that operates away from an urban area.

I would also recommend the Sierra Club's Land Navigation Handbook (about \$10 at most bookstores and outdoor equipment dealers). Over the years I've collected a number of maps, books and compasses (my compass choice is the Brunton pocket transit). The USGS publishes some good reference pamphlets, but the Sierra Club's book puts it together in an easy-to-use format.

It does no good to be in the field and not know where you are! You cannot hope the rescue chopper has direction-finding gear to home on your Amateur Radio hand-held! Part of responding is being able to call in the rescue and medical teams. I've worked searches where an approaching weather front allowed a rescue window of 30 minutes or less. There's not enough time to play guessing games as to where the chopper is needed.

73 until next month, Jerry. □

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 |



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



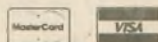
TNR YOUR BATTERY STORE

279 Douglas Ave.
Altamonte Springs, FL 32717

ICOM

Replaceable AA battery holder

| | |
|--------------------------|---------|
| BP-BH | \$20.00 |
| BP-BH with 8 NiCad cells | \$26.00 |



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



County Hunter

Ace Jansen, N3AHA

51 Kenbrook Circle, San Jose, CA 95111



Gene, W1TEE, worked nearly all US counties from his '76 Plymouth Duster.

In the September 1987 issue of *Worldradio*, Chuck Imsande, W6YLJ, wrote an article about Ken Wosika, KB7QO, transmitting from 3,076 counties. He called it "something in Amateur Radio that has never been done before and may not be accomplished again for many years." Well, it was accomplished again and it wasn't many years later—only five.

Gene's story

Gene Kowalewski, W1TEE, successfully completed a two-way contact from Kalawao county, Hawaii on June 29, 1991. The contact capped a six-year pursuit to make radio contact from all 3,076 US counties. Though he was the second to accomplish this feat, he was the first to do it all on CW, and 99.8 percent of it was while traveling alone.

Gene received his first Amateur Radio license, W9LEO, in Chicago; he's had W1TEE since 1952. He spent six years in the Navy during WWII serving on a destroyer, patrol boat, and submarine. He was discharged with a Chief Radioman rating. He's now retired from Pratt Whitney Aircraft, a division of United Technologies Corp.

Gene started county hunting in 1967, mostly in contests. Shortly after beginning, he stumbled across the CW County Hunter's Net. He also collected county contacts on the County Hunter's SSB net. After 20 years of chasing counties he received the *CQ* magazine USA-CA All Counties Award #554 in 1987, endorsed mixed. Today, Gene needs only 30 more counties to have them all on CW.

Gene operated mobile for the first time from his home county, Hartford County, Connecticut, in August 1985.

From that moment, he knew he was going to run all 3,076 counties. It took Gene four years and seven days to complete all counties in the 48 contiguous states, from August 14, 1985, to August 21, 1989.

Gene used the same car to travel through all counties in the 48 states—his trusty 1976 Plymouth Duster. It took approximately 136,100 miles to make all the trips, consuming 5,108 gallons of gasoline and 282 quarts of oil. There were some breakdowns along the way but all the people Gene met were very helpful. Gene had one clutch replaced, two starters installed, two alternators replaced and three new batteries. Fortunately, Gene had only one flat tire and never ran out of gas. Gene's thankful he has a standard transmission—a couple of guys pushing and he could start his car. More than once Gene drove into a service station with no lights, no horn, no radio and, of course, no battery (a car will run on the alternator once it's started). You might expect these kinds of problems with a car that has 332,000 total odometer miles.

Gene's typical trip starts at midnight and he drives the interstates

from Connecticut, through New York and Pennsylvania, and into Ohio. He starts running counties at noon and continues until it's dark. He then finds a motel and a restaurant.

The remainder of his expedition days are equally grueling. He wakes up at 5 a.m., packs the car and conducts the morning checklist: the car's oil, coolant, brake fluid, tires and lights; he checks the SWR on his ICOM 735 transceiver, and has a look at the Hustler antenna and MFJ-406 keyer. Then, he drives out of the county and just about through the next county. He finds a restaurant and has breakfast. Leaving the restaurant, he begins running counties on backroads until dark, skipping lunch. Gene stops along the side of the road to run each county for 20 to 30 minutes. A day's driving takes him between 350 and 400 miles. He finds a motel and restaurant, writes up the log, and is in bed about 11 p.m. Even after all this, Gene says he never feels sleepy or tired and wishes there were more than 24 hours in a day.

Gene was just seven counties shy of running all counties in the 48 contiguous states when he experienced a very low brake pedal. Concerned, he stopped at a garage in Ten Sleep, Wyoming, and had a mechanic check the brakes. The mechanic said everything was okay. Gene continued driving and ran two more counties before he smelled it: The rear left bearing was white hot and Gene thought the heat was baking the brake fluid in the wheel cylinder, causing the low brake pedal. After letting the brake cool for an hour he drove to a nearby town, parked the car at a garage and walked to a motel. After two days, involving two other garages for parts (one 30 miles away), a bearing and bushing were replaced and Gene was on his way. A very scary situation, as Gene had been driving on some mountainous roads. He finished the last five counties in Wyoming.

HamCall / CD-ROM
500,000 HAMS plus
1,000's of Public Domain
Amateur Radio Programs & Data
Now with International

CD-ROM disc.....\$50
Shipping (per order).....\$5

BUCKMASTER Publishing
Rt. 4, Box 1630 • Mineral, VA 23117
703/894-5777 • 800/282-5628

**QSLs by
W4MPY**

Quality printing at reasonable prices ... designs are what DXers want and need. Write for free samples (SASE appreciated) and see why we are the "DXers Choice" for QSLs.

C U in the pileups!!

Wayne Carroll
682-B Mt. Pleasant Road
Monetta, SC 29105 U.S.A.
Phone or FAX anytime
(803) 685-7117

At this point only two states eluded him. Alaska succumbed in June 1990. Gene drove to Portland, Oregon, left his trusty Duster at his daughter's house, and flew to Anchorage, Alaska, to visit his brother. He and his brother used his brother's truck to run the four districts in Alaska. They drove approximately 2,700 miles on good roads and gravel roads. The second district is located 150 miles north of the Arctic Circle and they enjoyed the midnight sun. On their return trip they stopped at Coldfoot, where the temperature was in the high 50s (F). The winter before it was 80 degrees below zero. Now only one state remained.

A year later, on June 25, 1991, Gene flew to Hawaii with his brother from Alaska. The next day, Gene rented a car and ran Honolulu county. His ICOM 735 worked well with his battery jumper cables for power and magnetic mounted Hustler antenna. Later that day, Gene caught a "puddle jumper" to Kauai island, where he successfully rented another car and ran Kauai county on 10 and 15M. His success was not bad for one day: two islands, two rental cars and two run counties. On day three, June 27, Gene ran Hawaii county on the Big Island. His success was still progressing; three days, three islands, three rental cars and three run counties.

There are eight islands that make up

Hawaii. The five largest are Hawaii, Oahu, Kauai, Maui, and Molokai. Hawaii, Kauai and Maui are also counties. Honolulu county is the island of Oahu. But Molokai is both Maui county and Kalawao county. Getting to the island of Molokai is relatively easy. Getting to Kalawao county is not. Kalawao county was once a leper colony and still remains isolated from the rest of the island.

On June 28, day four, Gene spent hours trying to find someone who had a key to unlock a cable that blocks the road leading to Kalawao county. The trip to the county line is about 1,400 feet down a road meant for mules, not cars. By the time Gene got the key, it was too late to run the county.

Finally, on day five, June 29, Gene opened the gate, borrowed a car from the mule boss, drove the treacherous road, and ran the county line of Maui and Kalawao County, Hawaii, county #3,076. The Hawaii trip had culminated in success; five days and counties, four lovely islands, three rental cars, two happy campers, and a man on top of the world. Gene had done it all on his favorite mode—CW!

His accomplishments have not gone unrewarded. He received the MARAC CW Mobiler of the year for 1987, 1988, and 1989. He's received 600 MARAC Last County Awards for giving county hunters the last county for a state and

four Last County plaques for the last county for all 3,076. MARAC also honored him at a National convention with a beautiful trophy for running all 3,076 counties. The trophy stands three feet tall with a vertical mounted straight key at the base and topped with a gold automobile representing Gene's faithful Duster.

What has Gene learned after 51,000 radio contacts? He's learned by memory all 3,076 United States counties, though he admits he can't spell or pronounce all of them. He's learned to drive in bright sun, rain, sleet, ice, snow, floods, forest fires, and sand storms. He's learned that amateurs draw a lot of respect throughout the country. But most of all, he's learned he could accomplish "something in Amateur Radio that has never been done before and may not be accomplished again for many years."

Oh, by the way, Gene's on the road again running counties and has completed 10 states already. Maybe he'll run all counties a second time, another first? The Duster? 400,000 miles and going strong.

If you would like a county hunter's record book, send \$2 to CQ Communications, 76 North Broadway, Hicksville, NY, 11801. Monitor the County Hunter's Nets on 14.336 MHz and 14.0565 MHz. Until September, happy hunting! □

DSP from JPS

Hear how Digital Signal Processing can improve your reception!

Use our new NF-60 to
knock out ALL
heterodynes and tune-ups.

Remove MULTIPLE heterodynes, (tones and whistles) and tune-ups with the new NF-60 automatic DSP audio Spectral Notch Filter. The unit connects between the receiver audio output and the speaker. Contains a built-in speaker amplifier. Knocks out TUNE-UPS, CW, or RTTY tones.



NF-60

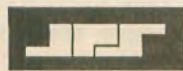
Use our NIR-10 if you're
troubled by more than just
heterodynes.

Reduce white/pink noise, power line noise, ignition noise AND multiple heterodynes with the NIR-10. Unit includes variable BANDPASS filter mode and automatic NOTCH filter mode. Made possible by real time Digital Signal Processing (DSP) using a 40 MHz DSP chip.

NF-60 Introductory Price: \$149.95.

For 115VAC to 12VDC Adapter add \$12. Charge to MasterCard or Visa. Allow 1 week for personal checks. COD additional. We pay surface shipping in the Continental United States. NC residents add 6% sales tax.

NIR-10: Still \$395.



JPS Communications, Inc.
P.O. Box 97757 Raleigh, NC 27624

TOLL FREE ORDER LINE 1-800-533-3819
Technical Info 1-919-790-1048 FAX 1-919-790-1456

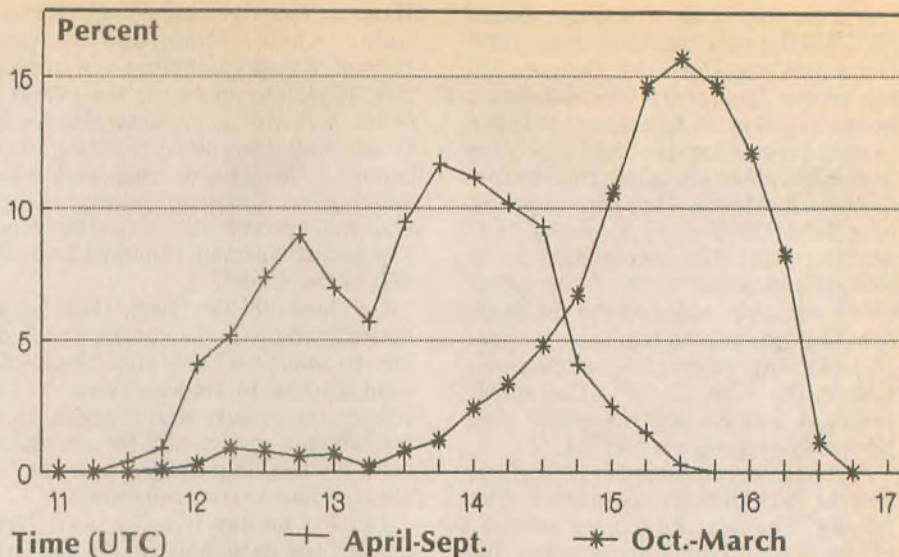


Figure 1. Time distribution of long path contacts.

It goes without saying that in starting an article, one should always begin with some simple, almost innocuous statement that everyone can agree on. Authors should keep in mind that their readers are bound to have certain sensitivities, so an opening statement should appeal to broad interests.

Recently I picked up a copy of *QEX*, an ARRL publication whose declared purpose is to "support efforts to advance the state of the Amateur Radio art." When I turned to an article on Maxwell's theory of electromagnetic radiation, I found the opening sentence went as follows: "Let's face it, nobody likes math. Not you, not me, not even the mathematicians."

I don't know about you but that came to me like a slap in the face. In case you missed my personal bias, let me say it loud and clear: I like math and so does my XYL and all my friends. To me, that statement in *QEX* seemed like a broad-spectrum insult to a readership that's supposed to be devoted to topics like digital signal processing and other advanced pursuits.

When I write an article, I always have the intention of challenging the readership, not insulting them. And that shows up in the feedback I get: "I don't understand everything in your articles but I find them interesting" and the like. That's fine with me, as when I hear that I redouble my efforts to find other words, other ways of making propagation more meaningful or understandable.

How about graphics? Instead of saying "Let's face it, nobody likes graphics," I'm going to use them to our mutual advantage. And let's take a timely topic, my longpath study. There, I found something rather interesting—a seasonal shift in the time when LP propagation started and ended. I can't express that in any simple mathematical fashion but I can in words with the help of Figure 1, as that

graphic tells almost the whole story.

By looking at the legend in the figure, you see that for the spring/summer season (April to September), the long path opening started early, about 4 a.m. here on the West Coast, and lasted about three hours. In the fall/winter season (October to March), the main part of the opening was later and much shorter in duration.

But there's more to the story, something complicated behind those two curves. For example, the long spring/summer opening is really three overlapping openings: one to India (VU), Sri Lanka (4S7) and to what I call "deep Russians" (UIs and UJs); another to places off in the Indian Ocean like Mauritius (3B8) and Reunion Islands (FR5); and the last opening into southern Africa (ZS and Z2) and even Europe.

And the Amateur Radio populations at the far ends of those paths are quite different, the early opening going to a region where the amateur population is in the thousands, the second one where it is in the hundreds and the last one where it is much greater, in the hundreds of thousands. If you give that a little thought, it is not hard to see why the spring/summer part of the curve has a dip in it. So the interpretation of that curve also requires consideration

of demography, another quantitative science. "Hate math," indeed!

If you go back to my March article on long path propagation, the graphic display in its Figure 1 showed how great-circle paths from my QTH to India and Sri Lanka could hide in the darkness below the terminator, keeping those paths open during summer. Now how about the short opening in the fall/winter season mentioned above? That's into Europe, and Figure 2 below shows that the paths into India and Sri Lanka are in sunlight, closing them during the depths of our winter. The same is true for the paths to Mauritius and Reunion Islands. So those paths are shut down for the summer in the Southern Hemisphere.

When you do a study of long path propagation, it is impossible not to "keep score" or compile some sort of statistical record. (See, more math!) So in the dark of winter, I looked back in my log and noted that the last signal from the Indian Ocean area was heard in mid-October. That was about a month after the autumnal equinox, so it wasn't too hard to figure out that a comparable situation, as far as illumination of the great circle paths was concerned, would be about a month before the next spring equinox.

Sure enough, the first VU was heard just after Valentine's Day and I made my first contact in that area around February 22. It was like the swallows returning in the spring. They seemed to come in a flock as I had about a dozen LP contacts with VUs and 4S7s in that first week. The Indian Ocean came alive too, the 3B8s showing up again in numbers.

Going back to Figure 1 in this article, there's more that I can add to its interpretation. For example, the starting times of LP openings are essentially those when the MUF on the path goes above one's operating frequency. After

Personalized Skywave Propagation Programs

- Skywave Hourly Predicts SKYCOM 1.1 . . . \$29.95
Apple Macintosh or IBM-PC's and compatibles

- World day/night Maps DX WINDOW . . . \$29.95
Apple Macintosh

For more info send SASE to:

ENGINEERING SYSTEMS INC.

P.O. Box 939
Vienna, VA 22183

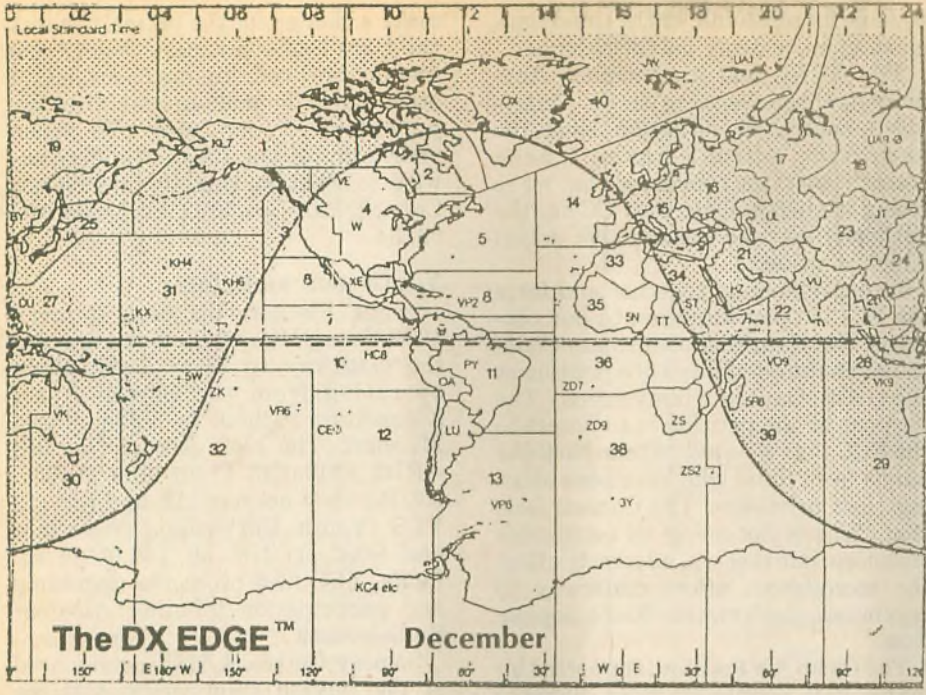


Figure 2

that time, signals come in, peak in strength and finally fade out as a result of increasing signal loss due to absorption on the sunlit part of the path.

Now if you didn't holler, "Hold on, not so fast!" at that last statement, I almost put one over on you. Absorption occurs in the D-region and affects signals that are returned by the ionosphere, but you know as well as I do that QRO stations get their signals through longer-than-QRP stations, assuming the MUF holds up. So I was not being very precise in my earlier statement about the closing time of a path. I should actually add something

about the station's RF power level.

I've been on LP long enough to know a good number of the regular operators and their setups. Thus, I generally heard the kW stations still going at it hot and heavy, from the West Coast to Europe, when the signals of the "barefoot" stations were going down into the noise. As result, I've determined the "closing time" on a path to be when, on the third try, I fail to raise a station running 100W or so. That applies for either ionospheric season, as the European and African stations are the last to be heard on LP in the morning.

HURRICANE TRACKING CHARTS
for Amateur Radio Operators
Atlantic and NEW Eastern Pacific Charts
Multi-Colored..Heavy Laminate Construction
DURING A HURRICANE YOU MAY BE THE ONLY COMMUNICATIONS
LINK WITH THE AFFECTED AREAS!

Please Send Me: _____
 _____ 17 x 22 Atlantic Chart(s) @ 13.95 ea = \$ _____
 _____ 17 x 22 Pacific Chart(s) @ 13.95 ea = _____
 _____ 11 x 15 Atlantic Chart(s) @ 11.95 ea = _____
 _____ 8.5x11 Atlantic Chart (s) @ *8.95 ea = _____
 (*6.00 ea with large map purchase)

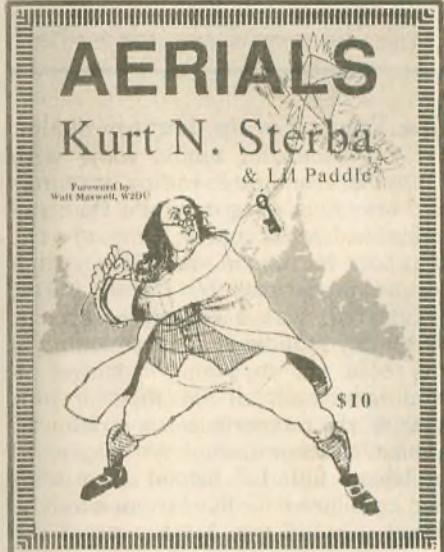
Subtotal _____
 Tax (Ohio Residents add 5-3/4%) _____
TOTAL \$ _____

Mail With Check Payable To: **KORNOR**
 Dept. A
 P. O. BOX 461
 WILLOUGHBY,
 OHIO 44094

Allow 2 weeks for delivery
 Your money back if not completely satisfied!

Now the old saying is that a picture is worth a thousand words. In this computer or word-processing age, that probably should read a thousand bytes. So having included two figures in this article, I should bring it to a close to keep within the bounds of space.

But there are no bounds on what you can do in relating my experience to your own situation. Get out your charts, maps or whatever and see what DX you could work if you turned your beam in the "wrong direction." Long path is a dawn/dusk affair as I've presented it; couldn't you operate on a long path connection from dusk to dawn too? Think about it. More later. □



I've read it four times and I laughed every time.
 —KB6HP

This book taught me a lot and I've held a license 57 years.
 —K6FO

Certainly this book will win the Nobel for Science.
 —N6WR

It could well be that this is what made Johnny Carson retire. —W6AJY


Obviously the antenna book of the decade. —W8IXO

This is a book of sheer genius.
 —WB6AUH

Kurt N. Sterba's "AERIALS"
 Only \$10 + \$2 S&H (DX \$4 for air; \$2 book rate). CA add \$.78 tax.

Worldradio
 P.O. Box 189490
 Sacramento, CA 95818

•Enlightening •Profound
 •Understandable



The Youth Forum

**Travis A. Wise
KB8FOU**

1421 Grace Avenue, San Jose, CA 95125
Home: (408) 267-8849; BBS: (408) 267-6396

joyable for most and, at the same time, chasing away many potential hams.

The ARRL and its Amateur Auxiliary has been assisting the FCC in trying to control the situation. Even the aggressive actions haven't been enough, and I am concerned that we're losing the battle. Only the FCC has the authority to take the decisive action which is needed.

In order to band together and force the FCC to pay attention to our concerns, the Ham Radio Business Council began the circulation of a petition at the 1992 Dayton Hamvention. The purpose of the petition is to assert to the FCC that we want to take back our bands from those who have been abusing their privileges. The Council feels that "this is becoming an intolerable situation, one that will adversely affect the recruitment effort underway to regenerate the Amateur Radio population."

The Clean Air Petition, supported by many key people such as Senator Barry Goldwater, K7UGA, could be very beneficial to Amateur Radio. Young hams would most likely be the first people to leave the hobby of Amateur Radio unless something is done about this frustrating problem.

Rather than mope about what is wrong with Amateur Radio, now is an opportune time to take action and

make a change for the better! Contact the Ham Radio Business Council and find out how you can join thousands of other hams in making this vital improvement for our hobby. To obtain your copy of the Clean Air Petition, write to: Petition, Ham Radio Business Council, P.O. Box 5832, St. Louis, MO 63134.

Youth nets and clubs

Angie Fischer, *Westlink Report's* 1992 Young Ham of the Year, founded the Gateway to Ham Radio Club, operating from the Sacred Heart Elementary School in Valley Park, Missouri. The club recently became ARRL affiliated. From their station, N0DN, they operate DX and run the YES (Youth Enthusiastic Newcomer and Student) Net on 146.94 in St. Louis. YES also promotes upgrading and participation in other Amateur Radio events.

Sammy Garret, AA0CR, announced at the Dayton Hamvention that the Youthlink Youth Net has returned to the airwaves. The net meets every Monday at 2300 UTC on 28.435 and at 2345 UTC on 14.260 MHz. Sammy said that the recently reorganized net will be looking for assistant net control and relay stations. Check in to the Youthlink Youth Net and offer your support! □

The Youth Forum, Dayton style

Forty-thousand hams, some with funny hats, and more radios, antennas and electrical paraphernalia than imaginable. Yes, of course, it must be the Dayton Hamvention! The youth forum, moderated by Carole Perry, WB2MGP, was a complete success. With only standing room remaining in the room, the six young speakers, including myself, all did superior jobs sharing their experiences and opinions about Amateur Radio. We all agreed that ham radio has helped our studies and influenced our lives tremendously. Youth forums are, I feel, one of the more important forums at hamfests and other Amateur Radio gatherings, because those youth forums directly affect the future of Amateur Radio.

Clean Air Bill

Amateur Radio has been plagued for many years by degenerating on-the-air operations. This is, and necessarily should be, a concern for all Amateur Radio operators. It is of special concern for young hams. As a whole, Amateur Radio's ambience is very positive, but as our hobby grows, the number of "lids" grows too. Recently, poor operating has spread to almost all the ham bands. Sections of 20M have reached almost unbelievable levels of foul on-air activities. Ten meters, especially the Novice portion, has turned into one of the worst examples of jamming, music, catcalls, and self-appointed channel cops who are selfishly making the hobby less en-

Join other Amateurs - help the physically handicapped be Licensed Amateurs



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

HANDHELDS



FT-470. DUAL-BAND OPERATION PERFECTED.

2-meter and 430-450 MHz. 42 memories. Simultaneous receive of both bands. Dual VFOs each band. PL encode/decode. Paging feature. 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. Battery packs available from 2.3 to 5 watts. More.

FT-470

YAESU

The Radio Place

5675A Power Inn Rd., Sacramento, CA 95824

(916) 387-0730



CONSTRUCTION

The Portable 300

THOMAS H. DURELL, KG7RD

I needed an antenna that would suit my mobile lifestyle as a house-sitter and a renter, one that would be easy to construct and install in many different situations and locations, and one that would transport and store easily when not needed. A dipole was difficult to support and a hassle to put up and take down. I have an all-band trapped vertical that I could use, but antenna restrictions in some areas where I house-sit, its length, and my current landlord make it less than desirable.

I read several articles and scoured antenna books looking for a solution. I rejected everything until I read about the 300 ohm twinlead antenna. The TV wire is inexpensive and rolls up into a compact coil when not in use. Construction is a snap. If you are quick with a soldering iron and fast with a tape measure, it takes about 15 minutes. There are a few problems with this design that I will discuss later.

To construct, cut a piece of 300 ohm twinlead a quarter-wavelength long, plus an inch for soldering. Use the formula $L = 234/F$, where L equals length in feet and F is the desired frequency in MHz. Strip some insulation off each end of both wires. On one end, twist the bare wires together and solder them. This creates an electrical half-wavelength. On the other end, solder one wire to the center conductor and one to the braided shield of your coax. Seal both ends with Silicone. The explanation in the book says that this setup brings the impedance to about 50 ohms. I did not find this to be true. (In all fairness, however, I have not had the antenna in the air more than 10 feet, nor have I tried to adjust the length for a better SWR reading.)

The first antenna that I made was for 15M. It was short enough to fit inside the shack and thumbtack to the wall where it meets the ceiling. I made several contacts using this setup, including a BY. The signal reports weren't 10dB over 9, but all were 5-4 or better. I did have some RF running around the operating room, so I opened up the window and tossed the radiator across the bushes, which worked fine. The performance impressed me enough to make another for 40M.

Now for the negatives. While the antenna itself is easy to handle, the system does require a counterpoise and

a transmatch. A counterpoise is a length of wire also cut to a quarter-wavelength (which I measured at the same time as the antenna). It is hooked up to the grounding lug on the back of the antenna tuner. When I am house-sitting the counterpoise is really no problem. I stretch it out on the floor and hold it down with a couple of books. I use insulated wire and tape off the exposed end to prevent shocks to any pets that may come into contact with it when I transmit.

I made an interesting discovery with this setup. By using several counterpoises of the appropriate lengths, I can operate on 40 through 10M (including the WARC bands) on one antenna. I get complete coverage of all frequencies with an SWR of 2:1 or less. However, only portions are tunable on 10M with my MFJ Versa Tuner II.

To handle the extra wires for the

counterpoises, I strip enough insulation off the longest wire to allow soldering the others to it. I then stretch them out and tape them together at intervals, making sure to hold each free end in place and protect the tip.

I have used this antenna for more than a year with satisfactory performance. I have not tested it side by side with another radiator yet, but I have worked into Europe, Russia, Australia, China and Japan as well as making many island and stateside contacts. The antenna at that time was run through a row of bushes, only eight feet above ground. I also broke into some pileups.

I use it now at the home QTH since my landlord won't let me have an outside antenna. I put a small hole in the ceiling (with his permission) and have the Portable 300 laying across the floor joists in the attic. The counterpoises run along the baseboard of the shack and terminate in a closet.

As I was typing the above paragraph, I answered N4VCT's CQ from Georgia. He has a four-element homebrew monobander. His first signal report was 5-4, but when he turned the

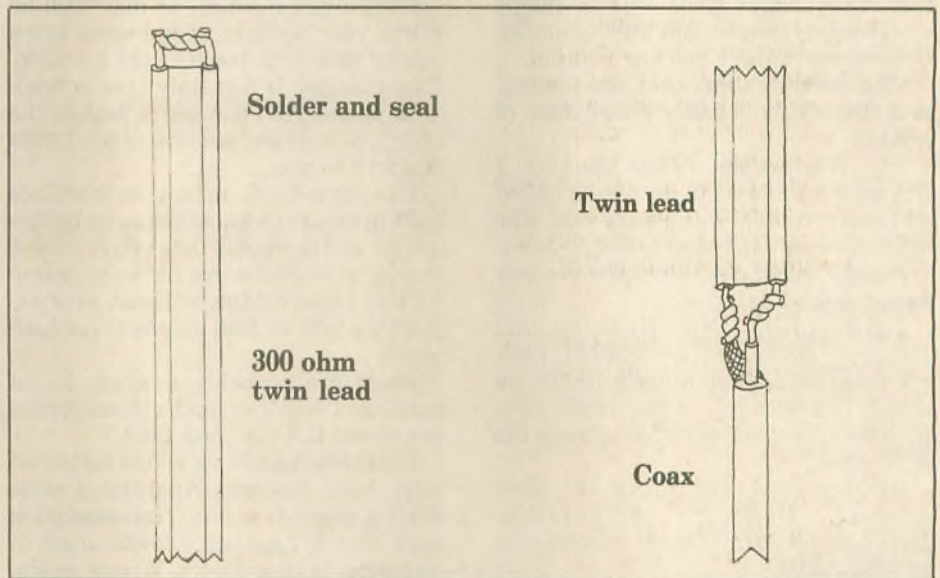


Figure 1. Separate center conductor and braided shield; solder and seal.

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

beam toward Oregon, we had an enjoyable 5-9 QSO. I was running 100W from my Kenwood 440.

The Portable 300 may not be the best system in the world, but it has served me well in many situations. If you already have a tuner and a hunk of coax, give the Portable 300 a try next Field Day, or on your next camping trip. If you have antenna restrictions, try it in the attic, or hidden in your hedgerow. It's well worth the few dollars, and it's a lot of fun to describe it to your contacts. □



KURT N. STERBA

Charlatans! That's what they are! Outlandish promises. I'm looking at a data sheet that claims over 11 dBd gain (on 20M) with six elements on a boom less than 30 feet long.

What they have succeeded in doing is driving away (as potential customers) anyone who knows anything at all. I see another data sheet that promises over 9 dBd with a four-element 20M Yagi with a boom length of about 33 feet. They claim some sort of magic matching system which was apparently borrowed from a Bill Orr column.

Who do they think they are fooling, and why? This is really a sad state of affairs.

The Worldradio office, thinking I had been a bit harsh in the above, called an expert to check out what I said. The office told me that they called Beezley.

I said, "What does that cartoon guy know about Yagis?"

I was told, "Not Beasley but Beezley." Brian Beezley, K6STI. He's got some sort of computer program on which, if a butterfly lands on the very tip of the fourth director, he can see the difference.

Beezley said, regarding the first antenna, "Definitely not possible. Lucky to get 7dB." On the second one, he said 7.5dB.

I don't know about all that computer stuff, I use a stubby pencil for my computations.

All you have to do is read the truthful ARRL Antenna Book and Yagi Antenna Design by Dr. James Lawson, W2PV, published by the ARRL. The late Dr. Lawson had a Ph.D., worked at MIT on RADAR during WWII and afterward was a real scientist with GE. You should take the word of people like him. The reason that QST does not allow dB claims in their accepted ads is the hogwash factor aimed at hammys.

Tragically, there is a lot of (as the Harry Truman story puts it) "goombah" foisted off on the unsuspecting unknowledgeable.

One book says that the formula for power is I squared *divided* by resistance. That's a real ouchie! (Try, instead, current squared *multiplied* by R.)

The same book says a quarter-wavelength vertical has a lower radiation angle than a 5/8 wave vertical. (?????)

Another book, by the same author, throws around dB gains of antennas, never mentioning whether he means gain over the dipole, isotropic (big difference) or what.

Three different ways of feeding delta loops are given, but no mention of which methods gives high angle or low angle radiation. (Boooo!)

What seems unfair, in a book aimed at Novices, is all the talk of gain (wire) antennas, with no mention that the gain comes at the price of robbing radiation from other directions.

The same book talks (many times) about coax lines having a velocity factor of .66 or .81. Sadly, the decimal point, which should have made the numbers .66 or .81, was left out every time. Pity the poor hammy, should this be his only book, trying to do anything with a figure which is 100 times off.

The Novice is told, "It may well be worth your while to spend some extra money and buy some 1/2 in. hardline. Extra money is certainly true enough (a lot extra). All I can say is, look at the chart yourself and see how much 1/3dB is worth to you.

The same book makes an absolute hash in explaining how the noise bridge works, and then tells that you must use an electrical half-wave between antenna and noise bridge, without ever explaining how to find an electrical half-wave.

There are probably a whole lot of perplexed Novices (and not-so-novice) out there. It's not their fault!

There is even a book which calls that nifty MFJ Antenna Analyzer a noise bridge, which it is *not*. The same book says that a Yagi has a lower angle of radiation than a dipole. Wrong again. The determining factor is not the type of antenna but the height above the ground.

I'm looking at an article in a major hammag. In talking about linears and tribanders it says, and I quote, "A good ground would add more dBs, as

much as three or four." And then it goes on to other subjects.

HEY! Back up! Pray tell, please, just what kind of ground added to a Yagi system would add 4dB? And, what is a good ground? Explain that!

I suspect that some writers just let their fingers fly away without thinking about what they are writing. They could have sent out nothing else that month but the explanation of how to add 4dB to your signal with a "good ground" and every reader would have felt they got their money's worth.

Okay, before I start getting letters from the lunatic fringe, there is a way to enhance Yagi radiation. Circles of wire spaced a quarter-wavelength for 3,500 feet in every direction in ever larger circles. (1) It is not a ground, and (2) it will not fit at your station on Elm Street.

This is probably a fine place to again remind you about *my* book, *Aerials*. Only \$10 plus \$2 shipping and handling (non-USA, \$4); W6s must add 78¢ tax. *Worldradio* spent a lot of money printing up this book so please order one from 2120 28th St., Sacramento, CA 95818.

Now, for those who say I'm just a crabby old man who doesn't like anything, I'll tell you what I do like.

Send one dollar to Jim Stevens, KK7C, at Antennas West, Box 50062, Provo, UT, for his Radio Adventure catalog. It's a lot more than a catalog; it has a lot of good antenna savvy in it.

MFJ has just published a book by Ralph Tyrell, W1TF, \$12.95 at the radio stores. I've got a couple minor quibbles with two things in it, but for real, feet-on-the-ground, good sense stuff, it's good. The name of the book is *Troubleshooting Antennas and Feedlines*.

Forwarded to me from the *Worldradio* office was a purchased Texas Bug Catcher. While basically a mobile antenna, it can be used as an unobtrusive home station antenna. Different than the run-of-the-mill antenna (one size fits all), you customize from several choices of masts, loading coils and capacity hats to make the one that best fits your interests. Write to VIS, P.O. Box 16646, Hattiesburg, MS 39404, for the scoop sheets.

On one night in May, I worked Oceania, Asia, Europe and Africa with this antenna, ground mounted with four radials. Not bad potatoes.

(Kurt N. Sterba, like Mr. District Attorney, defends, in this instance, the unsuspecting from overenthusiastic dBers who don't realize that others can read National Bureau of Standards reports or straight-arrow books from the League.) □

Field Day All-Band Antenna

| | | |
|---|---|---|
| Ready to Use Fastest Install Coax Feed 3000 V Insul | Tough Flexible Kink-Proof | Full Legal Power No Lossy Traps Low Noise Never Corrodes |
| QRV- \$49.95 80-10 51 ft. long Includes 40-page Tech Manual Infopack S1 | QRV- \$59.95 160-10 102 ft. long Add \$5 Post & Handling | AntennasWest Box 50062-W, Provo, UT 84605 (801) 373-8425 |



Illinois

The AMATEUR CROSS LINK REPEATER ASSOCIATION is holding a hamfest on July 26 from 8 a.m. at the Des Plaines Senior Center. Features include VE testing from 10 a.m. to 11 a.m., a grand prize and door prizes. Admission is \$2 in advance and \$3 at the door. Vendor set-up time is 6 a.m. Talk-in on 147.225(+), 224.480(-) and 443.700(+). Call the ACLR hotline at 312/594-1628 for more info or send SASE for tickets to ACLR, P.O. Box 34446, Chicago, IL 60634.

The DUPAGE ARC is sponsoring the 10th annual Hamfest and Computer Mart on July 12 beginning at 8 a.m. at the American Legion Post 80, Downers Grove, IL. Features include an indoor hall for dealers, outside paved area for flea market and tail gate sellers, door prizes, food and refreshments, free parking and VE exams for all classes. Admission is \$4 at the gate, \$3 in advance. Talk-in on 146.52 MHz simplex and 145.25 (-600) MHz, (CTCSS 107.2 Hz). SASE or call Edwin Weinstein, WD9AYR, 7511 Walnut Ave., Woodridge, IL 60517; hamline 708/985-9256.

Maryland

The BALTIMORE RADIO AMATEUR TELEVISION SOCIETY will hold its BRATS Maryland Hamfest and Computer Fest on July 26 from 6 a.m. to 3 p.m. at the Maryland State Fairgrounds in Timonium. Features include main exhibit hall, tailgating and VE exams at 10 a.m. Pre-registration recommended. Mail completed form 610 to John Creel, WB3GXW, 3208 Kilkenny St., Silver Spring, MD 20904. Admission is \$5 per adult, children under 12 free. Vendor tables in exhibit are \$50 each. Vendor and tailgating set-up time is 2 p.m. Saturday. Contact BRATS Hamfest, P.O. Box 5915, Baltimore, MD 21208, or call Franz Niedermeyer, N3HFS at 410/583-9147, 24 hours a day.

Michigan

The AUSABLE VALLEY ARC will be holding a Swap-N-Shop on July 18 from 8 a.m. at the Mio-Ausable High School, Mio. Features include food and free parking. Admission is \$3 at the door. Tables \$4 each, trunk sales \$2. Vendor set-up at 7 a.m. Talk-in on 145.35/144.75 or 146.52. For more info, send SASE to Ausable Valley ARC, P.O. Box 1, Mio, MI 48647; or call 517/826-5549, 517/848-5996 or 517/826-6454.

The GENESEE COUNTY RADIO CLUB will hold its 4th annual Swap and Shop on July 19 from 8 a.m. to 1:30 p.m. at the Dom Polski Hall in Flint. Admission is \$3 advance and \$4 at the door. Talk-in on

147.340/940, 146.52 simplex or 444.200. Send monies or inquiries with SASE to Swap Committee, GCRC, P.O. Box 485, Flint, MI 48501, or call Tom, N8DYN, at 313/743-3980.

The STRAITS AREA ARC will be sponsoring a hamfest on July 11 from 8 a.m. to 1 p.m. in the 4-H building of the Emmet County Fairgrounds in Petoskey. Features include VE testing, flea market and refreshments. Admission is \$3. Eight ft. tables are \$3. Talk-in on 146.08/68 and 146.52. Contact Tom Romanowski, N8KHE, 616/436-5033.

Minnesota

Amateur Fair '92 will be held July 10 from 6 p.m. to 10 p.m. and July 11 from 6 a.m. to 3 p.m. at the Aldrich Arena in Maplewood. The Amateur Radio, Hobby Electronics and Computer Swap & Show will feature flea market, food, free parking and door prizes. Admission is \$6; children under six free. Contact Amateur Fair, P.O. Box 26331, St. Paul, MN 55126; 612/653-9999.

Missouri

The ZERO BEATERS ARC will hold its 30th annual hamfest on July 19 from 6 a.m. to 3 p.m. at the Bernie H. Hillerman Park (Washington Fairgrounds) in Washington. Features include food and refreshments, flea market, VE exams starting at 10 a.m., seminars, dealer displays, non-ham displays and free parking. Admission is free. Flea market parking is \$4 a space. Talk-in on 147.240 and 444.900 repeaters. Contact Craig Brune, NØMFD, P.O. Box 24, Dutrow, MO 63342; 314/239-0060 days; 314/281-2784 evenings and weekends.

Montana

The YELLOWSTONE RADIO CLUB is holding its annual Hamfair July 11-12 from 8 a.m. to 6 p.m. Saturday, and 8 a.m. to 12 p.m. on Sunday at the Yellowstone County Fair Grounds, Metra Park Turf Club, Billings. Features include exhibit booths, indoor swap tables, RV campsites with electrical hook ups, VE exams, seminars and prizes. Admission is \$5 advance, \$6 at the door. Swap tables are \$10 or \$5 for a half table. RV package is \$9.50 per day or \$22.50 for three days. Vendor set-up is all day Friday, July 10. Talk-in on 147.200(+),

147.360(+), 3.900 MHz. Contact Eileen C. Jones, 1544 Foothill Dr., Billings, MT 59105; 406/252-2045.

New Jersey

The SUSSEX COUNTY ARC will be sponsoring a hamfest on July 12 from 8 a.m. at the Sussex County Fairgrounds in Augusta. Features include free parking, tailgating and refreshments. Admission is \$4, XYLs and harmonics free. Tailgate space is \$6; indoor space is \$8. Talk-in on 147.90/30, 222.90/224.50, 146.52. Contact Don Stickle, K2OX, 185 Weldon Rd., Lake Hopatcong, NJ 07849; 201/663-0677.

New York

The PUTNAM EMERGENCY and AMATEUR REPEATER LEAGUE is sponsoring PEARLFEST '92 on July 25 from 8 a.m. to 2 p.m. at John F. Kennedy Elementary School in Brewster. Vendor tables are \$10 pre-paid or \$12 at the door. Tailgating passes are \$7 per vehicle. Contact Len Sanchez, N2KPM, R.D. #11, Union Road, Lake Carmel, NY 10512; 914/225-8229.

North Carolina

The CARY ARC is sponsoring the 20th Annual Cary Mid-Summer Swapfest on July 18 from 8 a.m. at the Cary Community Center. Features include indoor flea market, tailgating and VE exams at 11 a.m. Pre-registration deadline is July 7. For VE information contact Vince Yakamovich, AA4MY, 200 Carriage Trail, Raleigh, NC 27614; 919/847-8512. Admission is \$4 in advance or \$5 at the door. Vendor tables are \$10 each. Talk-in on 147.75/15. For info send SASE to Herb Lacey, N4UE, 1022 Medlin Dr., Cary, NC 27511.

The NORTH CAROLINA CHAPTER of the TRIPLE STATES RAC is sponsoring the Firecracker Hamfest on July 18 from 9 a.m. to 5 p.m. at the Civic Center in Salisbury. Features include outdoor flea market, prizes and W5YI exams at 1:30 p.m. Pre-registration required with 610 form, copy of license and \$5.25 fee sent to Isabel Ledford, P.O. Box 826, Cooleme, NC 27014. Admission is \$4 at the door, \$3 in advance. Indoor vendor tables are \$5. No additional charge for flea market. Vendor set-up time is 7 a.m. or 3 p.m. to 9 p.m. Friday. Talk-in on 146.73 or 146.655. Contact Walter Bastow, N4KVF, 3045 High Rock Rd., Gold Hill, NC 28071.

North Dakota

The INTERNATIONAL HAM FEST will be held July 10-12 from the afternoon of the 10th to noon on the 12th at the Peace Garden on the North Dakota-Manitoba border. Features include contests, flea market, dance, bingo, games for the kids, Sunday morning breakfast and plenty of camping spots. Special event station VE4IHF/Ø will be on the air Friday and Saturday. Contact Dave Snyder, 25 Queens Crescent, Brandon, Manitoba, Canada R7B 1G1.

Ohio

The WOOD COUNTY ARC will sponsor its 1992 Ham-A-Rama from 8 a.m. at the Wood County Fairgrounds in Bowling Green. VE exams will be given.

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



Admission and parking are free. Trunk sales are \$5 and inside tables are \$10. Talk-in on 147.78/18. Contact WCARC, P.O. Box 534, Bowling Green, OH 43402.; 419/352-3260.

The ASHTABULA COUNTY ARC is sponsoring the Ashtabula County Hamfest and Computer Show on July 26 from 8 a.m. to 3 p.m. at the Ashtabula Branch of Kent State University. Features include prizes, food services and overnight parking. Admission is \$3.50 in advance or \$4 at the door. Flea market spaces are \$4 and indoor tables are \$8 for the first one and \$6 for extras. Electricity is available. Talk-in on 146.715. There will be a mobile check-in prize. Contact Ken Stenback, A18S, 722 Lyndon Ave., Ashtabula, OH 44004; 216/964-7316 evenings or weekends.

Oklahoma

CENTRAL OKLAHOMA RADIO AMATEURS is sponsoring the 19th Annual Ham Holiday 1992 and State ARRL Convention July 25-26 from 8 a.m. both days at the Made in Oklahoma Building, Oklahoma State Fair Park, Oklahoma City. Features include equipment, dealers, flea market, VE exams on Saturday, forums, Saturday evening dinner, QCWA Sunday morning breakfast, Sunday worship service and prizes. Admission is \$6 in advance and \$8 at the door. Tables \$5 in advance, \$7 at the door. Talk-in on 147.03/63. Contact Ham Holiday 1992, P.O. Box 95942, Oklahoma City, OK 73143-5942.

Oregon

The COOS COUNTY RADIO CLUB is sponsoring a hamfest on July 25 from 9 a.m. to 5 p.m. at the Junior High School in North Bend. Features include VE testing, ARES District 5 meeting, traffic handlers meeting and AMTOR seminar. Admission is \$4 in advance. Tables are \$15. Contact R. Lyon, N7SBF, CCRC, P.O. Box 3494, Coos Bay, OR 97420.

Pennsylvania

The NORTH HILLS ARC is sponsoring its 7th annual hamfest on July 12 from 8 a.m. to 3 p.m. at the Northland Public Library in Pittsburgh. Features include refreshments, free parking and handicap/wheelchair accessibility. Admission is free. Indoor tables are \$10. One free automobile-sized space per tailgater, each additional space \$5. Talk-in on 147.09, the W3BIS Allegheny County Public Service Repeater. Contact Don Jackson, N3LAZ, 8 Dale Ave., Bradford Woods, PA 15015; 412/935-3343.

CONTESTS

Maryland-DC QSO Party

The Antietam Radio Association of Hagerstown, MD, is sponsoring this event from 1600Z Aug. 8 to 0300Z Aug. 9 and from 1600Z to 2359Z August 9.

Rules: Stations may be worked once per band using each mode. CW QSOs in the CW band only. Non-Maryland stations must work Maryland stations; Maryland stations may work anyone. Portables and Mobiles that change Maryland counties during the contest count as a separate station in each new county of contact. No repeater QSOs count. Other HF and VHF contacts do.

Exchange: Signal Report and QTH (county for Maryland stations; state or province or, if DX, country as QTH for others).

Suggested frequencies: SSB—1.86, 3.92, 7.23, 14.26, 21.37, 50.15 and 146.55 MHz; CW—3.643, 7.06, 14.04, 21.115 and 28.06 MHz (+ Novice 3.701, 7.126, 28.115 MHz) CW is suggested on the odd half hours: 1730, 1930, 2130 UTC, etc.

Scoring: Each Maryland county, Baltimore city and DC are multipliers. QSO points—10 points for contact with any club station; five points for contact with any mobile station; two points for CW contact with a Maryland

station; one point for any other valid contact.

Special note: Points are cumulative. Example: A CW mobile contact is worth five points (three for mobile + two for CW).

Final score: Add up all QSO points and multiply by the sum of the multipliers (maximum of 25 multipliers possible, each multiplier may be claimed once only and do not repeat on different bands). Mobiles may add 100 bonus points to their final score for each county outside their home from which 20 QSOs were made.

Awards: Certificates will be awarded to the high score verified from each US state and Canadian province. In addition, there will be awards to the top 10 MD-DC logs; high scoring MD club station, high scoring DC club station; high scoring Maryland mobile; high scoring YL (in and out of MD); and high Novice/Technician (in and out of MD). A certificate of participation will be awarded to each station not winning an award but with at least 50 QSO points in entry. Also, certificates will be awarded to the top three SWL logs and top three QRP entries (no state restriction).

Logs should be mailed to the contest chairman by Sept. 10. Indicate on your entry if you are competing in a special operating class (Mobile, Club, Novice, Technician, QRP, etc.).

Mail Logs to: Antietam Radio Association, P.O. Box 52, Hagerstown, MD 21741. Please include an SASE if you wish a copy of the contest results.

Direct any questions to WA3AAT or WA3EOP, contest co-chairman.

QSL Cards • T-Shirts • Caps
Coffee Mugs • Certificates
Other "Ham Shack" Accessories

For information:

Rusprint

26037 W. 220th Terr.-WR
Spring Hill, KS 66083

Self Addressed Business Envelope with
75¢ postage for Flyer & samples

We Welcome Your Business



See your Outbacker dealer today!

- * All HF bands including WARC's in one neat built-to-last antenna
- * The perfect mate for your all-band rig
- * More QSO's per hour
- * DX - a plenty!
- * Great for the condo
- * Low SWR

it takes a WHAMMIN' and keeps on HAMMIN'

in North America contact:
OUTBACKER ANTENNA SALES
330 Cedar Glen Circle
Chattanooga, TN 37412
(615) 899-3390 faxphone

Worldwide contact:
TERLIN AERIALS
unit 2,3 Yampi Way
Willetton W.A. 6155 AUSTRALIA
tel. (011)6194576238
fax (011)619457737



Information in "New Products" is supplied by the manufacturers to acquaint *Worldradio* readers with new products on the market.

NARA'S Upgrade!

FCC statistics indicate a strong desire of newcomers to improve their license status. The number upgrading from the "no-code" Technician to Tech-Plus and the General Class license is increasing monthly.

The National Amateur Radio Association recognized this new phenomena and has just introduced a unique book called *Upgrade!* The work, written by NARA President Donald L. Stoner, W6TNS, provides strong motivation for those wishing to advance to a higher license class.

Where Morse code has been perceived by the public as an obstacle to newcomers, introduction of the new Technician Class removed this stigma, and the perception now is that Morse is just one of many enjoyable aspects of the hobby.

The largest chapter in *Upgrade!* is devoted to Samuel F.B. Morse and his telegraphic code. Numerous hints for becoming code proficient are provided by Fred Maia, W5YI, and Gordon West, WB6NOA. They tell you how to avoid the dreaded speed plateau at 8-9 wpm. The material covers upgrading to the code requirements of Tech-Plus and higher license classes.

The remaining chapters are tied to the nine supplements contained in the General Class question pool. Stoner discusses the theory behind the questions, and the correct answers, in an easy-to-understand manner. The theory in each chapter is followed by the questions found in the supplement. The correct answer key is located at the end of the book.

Also available is the NARA Upgrade Package, containing the *Upgrade!* book, combined with the newly introduced HamWare General Class testing software, to create a total learning and testing package. HamWare provides on-screen graphics, on-line help, and an on-screen scientific calculator which can be brought up when needed. HamWare also features full mouse support. All choices are mouse or keyboard selectable, to suit the individual user.

In addition, the NARA Package provides an outstanding program for Morse code training and testing as part of the HamWare software. This Morse program offers random or group characters, standard or Farnsworth spacing with selectable speeds and tones. The HamWare Morse program will even send ASCII text files created with a word processor. Also included in the NARA Upgrade Package is the FCC Part 97, Amateur Radio Rules and Regulations, a thorough list of contact volunteer examiners, the *Amateur Radio-King of Hobbies* publication, and a sample copy of the *Amateur Radio Communicator* sent by mail.

Upgrade! is priced at \$9.95 and is available at all major Amateur Radio stores. If you are unable to find a copy, it can be ordered direct

from NARA for \$9.95 plus \$2 shipping and handling. The NARA Upgrade Package sells for only \$29.95 and is available at all major Amateur Radio equipment stores. The package also can be ordered directly from NARA (add \$3 S and H) by calling 1-800-GOT-2-HAM (468-2426). For more information, contact The National Amateur Radio Association, P.O. Box 598, Redmond, WA 98073; 206/869-8052; FAX 206/861-5780. □

Trionics portable power

Trionics now has available the Smart Charge power/charger, a compact, versatile, rechargeable, portable power station that can supply 3, 6, 9, and 12VDC from a 6.5 AH safety sealed lead acid battery. This unit is ideal for powering small amplifiers, mobile rigs, hand-helds, camcorders, or other items in the field, and can be used as a vehicle or boat starter. This is a perfect item for emergency, Field Day, remote or portable operation needs.



The battery can be recharged from either 115VAC or 12VDC power sources. The charger circuit automatically shuts off when battery reaches a full-charge condition. Recharge times are approximately three hours from 12VDC or eight hours from AC. The unit features a voltage/charge meter to monitor output voltage and battery condition. Two "bolt" terminals and a "cigarette lighter" plug supply the 12V connection, while a cordset with four different sized adapters supply multi-voltage outputs. The unit comes complete with a UL listed AC charge adapter, a fused 12VDC cigarette plug cordset and an accessory cord with multi-voltage adapters.

The Smart Charge Portable Power Station, model CA180, is priced at \$79.95. Telephone orders can be placed directly with Trionics at 916/366-7408, or write to P.O. Box 1434, Rancho Cordova, CA 95741-1434 (CA residents add sales tax). □

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



Tri-Ex
TOWER CORPORATION

7182 Ramussen Ave
Visalia, CA 93291

Quality Structures since 1954

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): 2 1/4" X 6 1/4" X 6"
- Weight: 24 oz.
- \$149.95 + \$4.50 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



"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
Rt. 4, Box 1630
Mineral, VA 23117
703/894-5777 VISA/MC 800/282-5628

DeoxIT contact treatment

DeoxIT, by Caig Laboratories Inc., is a one-step fast-acting deoxidizing treatment that cleans, preserves, lubricates and improves conductivity on all metal connector and contact surfaces. This new formula contains improved deoxidizers, preservatives, conductivity enhancers, anti-tarnishing compounds, arcing and RFI inhibitors and provides extended temperature range (-34°C to 200°C).



DeoxIT also prevents dissolved oxides and contaminants from re-attaching to metal surfaces, providing longer lasting protection. Available in spray, liquid, wipes and pen applicators, DeoxIT can be used on switches, potentiometers, relays, PCB edge connectors, batteries, faders, interconnecting cables, plugs, jacks, etc. For more information con-

tact Caig Laboratories, Inc., 16744 West Bernardo Drive, Rancho Bernardo, CA 92127; 619/451-1799; FAX 619/451-2799. □

Long Path Propagation

Bob Brown, NM7M, has just finished his *Long Path Propagation*, a study of long path propagation in solar cycle 22. The booklet details a year-long study of long path propagation from the northwest corner of the US, from which nearly 1,700 long path contacts were made on 14 MHz CW during early morning hours.

The unique location used in the study proved the possibility of separating long path contacts into four groups of paths with in-

creasing distance and complexity. The long path contacts were analyzed by groups according to the level of geomagnetic disturbance and according to season in terms of whether the sun was above or below the equator. The data show the time-distribution of long path contacts and how their frequency of occurrence was affected by geomagnetic activity during months 55 to 67 in solar cycle 22.

Following the results of the study, the discussion concludes with a summary of the types of disturbances which may affect long path propagation and the possible presence of chordal hops on the various paths.

This informative booklet is available directly from Bob Brown, NM7M, for only \$10 (orders from Canada or Mexico, \$11; from overseas, \$12.50). Write to NM7M at 504 Channel View Dr., Anacortes, WA 98221. □

Antennas West TigerTail

LOU ANN KEOGH, KB6HP

From time to time *Worldradio's* advertisers send in a product for evaluation, and we promptly send the item off to someone else for an objective evaluation. This time however, when Antennas West sent in a tiny (1/3 oz.) object that made claim to improving signals on 2M handhelds, I figured it was time for an unscientific, totally subjective product review. In other words, I took it home to try it.

The TigerTail consists of a small diameter insulation-covered cable (roughly half the diameter of RG-59) terminated on one end by a flat circular connector meant to slip over the antenna post. The rubber duck or quarter-wave antenna is then put on, and the TigerTail hangs down the back of the hand-held.

Gayle Shurrum, KD6CJ, lives about seven miles away and, using her Yaesu FT480R and roof mounted vertical, kept record of her receiver's meter readings. Marking my desk so the hand-held would be in exactly the same location, we did the standard ham radio "here's antenna one, here's antenna two" routine. Since the Tiger-

Tail is in effect a counterpoise (or the missing half of the dipole), I expected some improvement in signal strength, but the results were far better than I anticipated. When I transmitted on low power (1W), Gayle recorded an S-3 signal with roughly 15 percent white noise. On low power with the TigerTail, the reading was S-7, and full quieting. On high power (2½W) the meter displayed an S-5 with a small percentage of noise. On high power with the TigerTail, the reading jumped to S-9. The hand-held I was using did not have an S-meter, so I can only relate that the improvement in receiving Gayle's signal was excellent.

So there you have it. A completely subjective, non-scientific report. If you backpack, are involved in search and rescue or help out on public service events, this little device could prove invaluable. The TigerTail is small, neat, tidy, relatively inexpensive (\$7.95), and does nothing but sit there and work. For dBs per dollar, it beats an amplifier, and works on receive also.

What more could you ask? Next month, Antennas West's ribbon J. I grabbed that, too. □

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:



Laekview Company, Inc.
3620-9A Whitehall Rd.
Anderson, SC 29624

800-226-6990, ext. 10 (Orders only)
803-226-6990 (Help and Catalogs)

Add \$4.75 per order for UPS S&H
Catalog Available • Dealers Welcome

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

K2QFL

Harry A. Hamlin
P.O. Box 1
Stewartsville, New Jersey 08886
Washington County, USA

500 QSLs
Only \$19.50!
1,000 QSLs
Only \$29.50!

NOW FAX YOUR ORDER w/VISA or MASTER CARD #!
808-454-9052

Your state outline, other art or large type. Thousand or 500 lots only (specify), one side, black ink on 67 lb vellum Bristol. This report form only. I'll give you equal quantities of yellow, blue, tan and gray stock (only). Please give me your call, name, address and county. Please specify state outline, other art (enclose black & white line art only - for your photo in place of art add \$5.00 - I can resize and crop art or photo to your specs if necessary), or no art (I'll use larger, centered type). Satisfaction guaranteed! ARRL symbol, no charge (specify). MO/DAY/YEAR (std) or DAY/MO/YEAR (specify). Other wording, add \$2. FREE with each order: Logbook & pressure-sensitive decal of your card and 5 amusing award certificates for your XYL and friends. Please add \$2.50 (500 orders) or \$3.50 (1000 orders) for shipping and handling. (Cont. U.S.) Shipped to PO Box add \$3, shipped to Canada and out of US add \$8. We ship U.P.S. when we can. Checks and MOs payable to: Harry A. Hamlin, K2QFL and send orders to P.O. Box 1, Stewartsville, NJ 08886. VISA/MC NJ residents add 7% Sales Tax. Write or Fax inquiries for FULL CUSTOM, FULL or MULTI-COLOR, GLOSSY STOCK CARDS! Your money cheerfully refunded if you can buy higher quality cards for less money!

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 | | | | Aug. 8 | Belleville | John Sundstrom, WA0LIS 618/397-7235 | w/i |
| Aug. 15 | Tuscaloosa | Kelly Bruce, WD4DAT 205/339-7882 | w/i OK | Aug. 22 | Bolingbrook | NM9J 708/442-7100 | |
| Arizona | | | | Aug. 22 | Chicago | 312/929-8500, ext. 2221 | w/i |
| Aug. 1 | Tucson | K7OPX 602/886-7217 | w/i only | Aug. 22 | Chicago | KE9X 312/233-0605 | w/i |
| Aug. 15 | Tucson | Robert Olson, WV7P 602/577-1050 | w/i OK | Aug. 8 | Dixon | W9LDU, 815/284-6380 | w/i |
| Arkansas | | | | Aug. 21 | Elmhurst | WK9U 708/833-7371 | p/r |
| Aug. 22 | Little Rock | Chuck, KI5HA 501/888-7517 | w/i OK | Aug. 13 | Granite City | Larry, NZ0P 314/524-3254 | p/r pref; w/i OK |
| Aug. 8 | West Memphis | Gene Bagley, AB5BL 501/739-4029 | w/i OK | Aug. 1 | Hoffman Estates | NO9A 708/593-8658 | w/i |
| California | | | | Aug. 27 | Lombard | KD9I 708/495-0498 | w/i |
| Aug. 1 | Apple Valley | N6ZCA 619/244-4012 | p/r pref; w/i OK | Aug. 15 | Loves Park | Paul, WB9HGZ 815/987-6754 | p/r; w/i |
| Aug. 1 | Burbank | KE6AR 818/349-0927 | w/i OK | Aug. 15 | Morton | James Cusey 309/266-6756 | w/i |
| Aug. 8 | Camarillo | Tom, KC6JLW 805/486-7619 | p/r pref; w/i OK | Aug. 8 | Mt. Prospect | WA9DLI 708/437-1464 | w/i |
| Aug. 2 | Chico | W6YKU 916/342-1180 | p/r pref | Aug. 6 | Mundelein | K9IW 708/367-6303 | w/i |
| Aug. 15 | Downey | KA3DSE 213/923-5598 | w/i | Aug. 8 | Oak Forest | KA9HDN 312/247-0650 | w/i OK |
| Aug. 4 | Fremont | KJ6EP 510/791-6818 | w/i only | Aug. 29 | Oak Forest | WG9R 708/687-0511 | w/i |
| Aug. 22 | Fresno | Kelsey, KK6AW 209/855-8558 | w/i only | Indiana | | | |
| Aug. 1 | Lancaster | 805/948-1865 | p/r | Aug. 8 | Hammond | WO9H 219/738-2728 | w/i |
| Aug. 27 | Long Beach | KA6HOQ, 714/897-6331 | w/i OK | Aug. 1 | Portage | KE9I 219/762-0580 | w/i |
| Aug. 1 | Los Angeles | Ali Hassan, AA6WC 213/778-6226 | w/i OK | Aug. 1 | South Bend | NI9Y 219/259-9445 | w/i OK |
| Aug. 1 | Northridge | 818/348-4457 | w/i OK | Aug. 2 | Terre Haute | K9EBK 812/466-2122 | w/i OK |
| Aug. 1 | Ontario | Harry J. Kozlowski, KM6LO 818/810-0442 | w/i OK | Iowa | | | |
| Aug. 15 | Porterville | Pat, KG6WG 209/539-2429 | w/i | Aug. 29 | Council Bluffs | Lorraine, AA0BS 712/322-1454 | w/i OK |
| Aug. 15 | Redwood City | Dudley, WB6WAU 408/245-4801 | w/i only | Kansas | | | |
| Aug. 8 | San Pedro | N6DYZ 213/325-2965 | w/i OK | Aug. 25 | Emporia | K0JDB 913/343-2158 | w/i OK |
| Aug. 8 | Santa Maria | KI6XG 805/922-8509 | w/i OK | Aug. 28 | Leavenworth | Martha Auchard, WB0ERI 913/651-7350 | w/i OK |
| Aug. 15 | Santa Monica | 310/398-8538 | w/i OK | Aug. 8 | Olathe | Joe Scalet, WK0G 913/764-2822 | w/i OK |
| Aug. 15 | Stockton | Ed, N6XMA 209/952-5996 | w/i only | Aug. 1 | Parsons | Mort Wilmoth, WS0R 913/421-1822 | w/i OK |
| Colorado | | | | Kentucky | | | |
| Aug. 10 | Boulder | Barbara, N0BWS 303/530-2903 | p/r pref; w/i OK | Aug. 6 | Middlesboro | Andrew A. Pitt, WB8WEZ 606/248-0046 | w/i OK |
| Aug. 8 | Denver | Glenn Schultz, W0LJR 303/360-7293, 24-hr. voicemail 719/948-2291 | w/i OK w/i OK | Maine | | | |
| Aug. 29 | Pueblo | N0BLU 303/650-6826; | | Aug. 29 | Bangor | K1AG 207/947-4051 | w/i OK |
| Aug. 15 | Westminster | N0HNR 303/278-4280 | p/r or w/i | Aug. 8 | St. Albans | Richard, KA1REB 207/583-6915 | w/i OK w/i OK |
| Connecticut | | | | Aug. 30 | Topsham | KY1J 207/725-2359 | w/i OK |
| Aug. 15 | Gales Ferry | KY1F 203/536-0187 | w/i | Maryland | | | |
| Aug. 30 | Milford | NB1M 203/933-5125; WA1YQE 203/874-1014 | w/i w/i pref | Aug. 8 | Davidsonville | NT3Z or NS3V 410/761-7115; or WC3I 301/262-5083 | w/i OK p/r pref |
| Aug. 26 | Shelton | WJ1T 203/736-0488 | | Aug. 15 | Laurel | WB3GXW 301/572-5124 | w/i OK |
| Florida | | | | Aug. 28 | Springfield/Holyoke | WA1ZUH 413/245-3228 | w/i OK |
| Aug. 3 | Dunedin | Marv, WC2G 813/938-7810 | p/r or w/i | Minnesota | | | |
| Aug. 22 | Fort Pierce | Fred Newmann, W2EUX 407/340-1069 | w/i OK w/i OK | Aug. 18 | Eden Prairie | Tom, AA0GP 612/448-2074 | w/i |
| Aug. 15 | Melbourne | WB9IVR 407/724-6183 | | Mississippi | | | |
| Aug. 27 | Miami | Norm Ward, K4RBR 305/823-5437 | w/i only | Aug. 8 | Laurel | Steve Grantham, N5DWU 601/763-3559 | w/i OK |
| Aug. 25 | New Port Richey | Marv, WC2G 813/938-7810 | p/r or w/i | Missouri | | | |
| Georgia | | | | Aug. 13 | Big Bend | 314/567-8777 | w/i ltd. |
| Aug. 23 | Atlanta | Dale Gaudier, N4REE 404/396-1332 | w/i OK | Aug. 23 | St. Charles | Larry, NZ0P 314/524-3254 | p/r pref; w/i OK |
| Aug. 8 | Augusta | Ace, NA4I 404/798-5060 | w/i | Aug. 8 | Valley Park | Dave, N0DN 314/225-1952 | p/r only |
| Aug. 22 | Dalton | Bert, N4BZJ 404/673-2214 | p/r only | Nevada | | | |
| Hawaii | | | | Aug. 15 | Reno | K7HRW 702/827-8450 day, or 702/972-3933 night | p/r 30 days prior, w/i OK |
| Aug. 12 | Kailua-Kona | NH6N 808/325-5475 | w/i | New Jersey | | | |
| Idaho | | | | Aug. 15 | Bayonne | WA2QYX 201/451-9471 | w/i OK |
| Aug. 8 | Boise | W7JMH 208/343-9153 | w/i | Aug. 20 | Bellmawr | WA2VQG 609/546-7710 | w/i |
| Illinois | | | | Aug. 8 | Cranford | 24-hr hotline: 201/377-4790 | |
| Aug. 18 | Aurora | N9AKE 708/892-1252 | w/i pref | Aug. 12 | Fort Monmouth | WB2GYS 908/532-5354 | w/i |

VE exams continue on inside back cover

THE MART

Classified
•Buy •Trade
•Sell •Inform

MART deadline
20th of the month
two months
prior to issue
date.

Commercial rate: 35¢/word, prepaid.
Private rate: 20¢/word, prepaid.

THE MART Worldradio
2120 28th St., Sacramento, CA 95818

WORLDRADIO ON CASSETTES for the blind. For information, contact TOM CARTEN, K1PZU, 1602-Y King's College, Wilkes-Barre, PA 18711.

FREE ham gospel tracts, SASE, N3FTT, 5133 Gramercy, Clifton Heights, PA 19018.

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.

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.

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.

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.

WANTED: LATCHING COAX RELAYS, ICOM-22-U. KE6RL, 805/466-0912.

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.

RADIO REPAIR: Kenwood, Uniden, Yaesu, amplifiers etc. Over 10 years experience quality work, fast turnaround. FRED FISHER, WF9Q, 6866 W. River Rd., South Whitley, IN 46787, 219/723-4435.

VHF-UHF-SHF Large SASE. VHFer, P.O. Box #685, Holbrook, AZ 86025.

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.

AMATEUR HELPS FOR NOVICE, TECHNICIAN OR GENERAL. Programmed instruction—\$10. Diskette pool testing—\$10 (Commodore, Apple, MSDOS) SASE: PUEBLO SUNSHINE SOFTWARE, WONIT, 920 West Adams, Pueblo, CO 81004.

KENWOOD R1000 COMM RECEIVERS, 1-30 MHz, USB/LSB/AM/AMN, mint—\$325.00. Yaesu FRG-7, same coverage, excellent, dry-cell pac—\$195. WS9T, 9145 Ivy Lane, Berlin, WI 54923.

ALL ABOUT METERS. A Learn-by-doing history of the development of electrical meters. Build seven simple meters using common hardware. \$7.95, ppd USA. ALLABOUT BOOKS, Dept. W, Box 14155, Fremont, CA 94539.

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.

C64/128 P.D. HAM, UTILITY, BUSINESS PROGRAMS. SASE for list. WB1FOL, 77 Wentworth St., Malden, MA 02148.

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.

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.

WANTED Yaesu FT23R and Henry 5K or 8K linear amplifier. KK4WW, 703/763-3311; 703/231-6478.

QSL SAMPLES — 25¢. SAMCARDS, 48 Monte Carlo Dr., Pittsburgh, PA 15239.

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.

ARUBA COTTAGE—2 bedroom with beams & rig for rent. For info write to: AI6V.

PICTURE QSLs. Full color \$93.60 per 1,000 B/W \$27.00 per 250. Get better response with: PICTURE CARD, 3806 NE 24th, Amarillo, TX 79107, 806/383-8347.

HEATHKIT NOSTALGIA — Relive the history of the company that developed and manufactured the popular electronic kits. Pictures and stories of and by the people who were involved. 128 pages. Send \$9.95 (WA residents please add sales tax) to HEATH NOSTALGIA, 4320 -196th S.W., Suite B-111, Lynwood, WA 98036.

1992 CALLBOOKS. North American—\$24.95; International—\$24.95; both—\$48.95; supplement—\$9.45. 1992 ARRL Handbook—\$22.95; Repeater Directory—\$5.95. Postpaid. California residents: add tax. DUANE HEISE, AA6EE, 16832 Whirlwind #W7, Ramona, CA 92065.

ANTENNA SOFTWARE design dipole, inverted vee, quad; also make labels, temp. conversions, and guy wire lengths. For IBM compatible 5.25 360K floppy, \$15.00 plus \$3.00 s&h. EMIL KUBANEK, W8BVR, 6298 Old Allegan Rd., Saugatuck, MI 49453.

AA1A SIDEKICK ANTENNAS. 1-800/874-2880.

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.

COMPUTER PRINTER USERS: Renew your ribbons. Ink for 20 to 30 reinkings, \$6.00 plus \$3.00 shipping. C & S ENTERPRISES, P.O. Box 561, Clinton, MS 39056, SID WILSON, WB5GFM.

FREE BROCHURE—SHORTWAVE RADIO KIT, or send \$22.50 includes s&h. M/COM, P.O. Box 423, Southwest City, MO 64863.

WANTED REPLY COUPONS of all types, IRCs & others. Buy, sell, trade. JIM NOLL, P.O. Box 3410, Escondido, CA 92033.

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.

PICTURE QSL CARDS of your shack, etc., from your photo or black ink artwork. 500 \$28.00, 1000 \$44.50. 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.

PERSONALIZED: NAME & CALL — hats, ladies badges, cups. For info SASE: HAN-DICAPABLE AMATEUR RADIO TRAINING SOCIETY, 7045 N. 15 Ave., Phoenix, AZ 85021.

VERTICAL PHASING, COMTEK NETWORKS! DAVIS RF Co., POB 230-W, Carlisle, MA 01741. Voice or FAX: 508/369-1738.

COAX, GROUND RADIAL WIRE, lowest cost, top quality, MilSpec RG213 \$.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. U.S.! Immediate shipment. Catalog \$1.00. DAVIS RF Co., POB 230-W, Carlisle, MA 01741, Radial orders only: 1-800/484-4002. Code 1356. Info or FAX: 508/369-1738.

WANTED pre 1980 microcomputers for museum collection. KK4WW, 703/231-6478, 703/763-3311.

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.

WANTED: BUY & SELL all types of electron tubes. Harold Bramstedt, C&N ELECTRONICS, 6104 Egg Lake Rd., Hugo, MN 55038, 1/800/421-9397 or 612/429-9397. FAX 612/429-0292.

AMATEUR RADIO REPAIR: FCC licensed, 17 years experience, lab quality NBS traceable test equipment, reasonable rates. G.B. COMMUNICATIONS, INC., 963 Birch Bay Lynden Rd., Lynden, WA 98264; 206/354-5884.

More MART

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.

QSL SALE! 200 cards \$11, 300/\$14, 500/\$20, 1000/\$33, 2000/\$58. Many designs! Free shipping! Rubber stamps \$5. Phone or write today for samples or ordering. SHELL PRINTING, KD9KW, P.O. Box 50, Rockton, IL 61072; 815/629-2193.

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.

INTERNATIONAL RADIO & COMPUTER, INC. OFFERS: Sales (authorized Icom dealer), service (authorized Kenwood Service Center), filters, newsletters/publications, Ham-IBM compatible computers. Send \$1.00 for new free Amateur Radio catalog. Free valuable IRCI coupons, free 91 index for Icom, Kenwood, Yaesu, newsletters. Let us know what gear you have or would like to own. Special brochures available on many models. Software catalog available. State which catalog. Send to: IRCI, 3804 South US #1, Ft. Pierce, FL 34982 (Our 13th year).

TELEGRAPH KEYS (eg USN, New 1955 flameproof \$59.00 shipped USA), parts (Bunnell MiniKey/Sounder, double speed key, etc.), memorabilia, meters, radio, quack. Seven page descriptive/illustrated list. LSASE and refundable \$1.00. J.JACOBS, 60 Seaview Terrace, Northport, NY 11768.

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.

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.

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.

RADIO MODIFICATION INSTRUCTIONS: 100 most popular detailed radio mods for Amateur HF, VHF, UHF equipment. Includes Bearcat, Regency etc. scanners. Alinco through Yaesu, Bearcats, Regency, Radio Shack etc. Booklet price \$10 includes prepaid shipping. CHICK'S RADIO COMMUNICATIONS, 1340 Lander Rd., Mayfield Hts., OH 44124-16C6.

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.

YAGI BUILDERS. Tubing, traps, hardware SASE for details. Panels, chassis, cabinets, silk screening, engraving, painting. You design. We fabricate. Roller inductors 10 - 160m. BROWN ENGINEERING INC., 5501 SW 25th Court, Hollywood, FL 33023; 305/989-4658.

F.C.C. LICENSE PREPARATION. Radiotelephone radiotelegraph, radar, avionics, Amateur. Top jobs. Fast, easy, home study. Books audio or video. Free details. WPT PUBLICATIONS 7015 N.E. 61st Ave., Vancouver, WA 98661. 1-800/800-7588.

BROWNIE'S QSLs since 1939. Catalog & Samples \$1.00. 3035 Lehigh St. (REAR), Allentown, PA 18103.

AMATEUR RADIO REPAIR—Professional, reliable service. ROBERT HALL ELECTRONICS, 1660 McKee Road, Ste. A, San Jose, CA 95116, 408/729-8200.

USE AIRMAIL POSTAGE for successful QSLing! Many countries, monthly bargains. Plus European airmail envelopes! Samples, prices: BILL PLUM, 12 Glenn Road, Flemington, NJ 08822. FAX 908/782-2612.

EMBROIDERED EMBLEMS & ENAMEL PINS. Your design, excellent quality. Free catalog. A.T. PATCH CO., P.O. Box 682 Dept. 13, Littleton, NH 03561; 603/444-3423 FAX 603/444-2371.

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 (\$29.95). 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 (\$29.95). SASE for more info: ATTN: DX; ENGINEERING SYSTEMS INC., P.O. Box 939, Vienna, VA 22183.

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.

SUCCESSFUL QRPERS READ K7YHA'S new book: *Low Power Comm., Vol. 1, Basic QRP*. Proven techniques from a world class QRP'er. Get the edge. \$12.50/copy (autographed). R.H. ARLAND, K7YHA, P.O. Box 1691, Wilkes-Barre, PA 18703-1691.

NEW! CHARGE YOUR BP83, 84/85 with a BC-35 charger! Insert battery in adaptor and drop-in your BC-35. Save big \$, only \$15.00 each! ICOM BC-35 clone chargers—\$39.95! 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, drop-in or wall charge: ICOM super BP-8 1400mAh—\$47.00, BP-5 clone 500mAh 10.8V—\$35.00, 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—\$65.00. Inserts: BP-3—\$14.50, BP-5—\$20.00, BP-8 1400mAh—\$25.00, BP-7—\$23.00, Tempo's (w/connector) S-1 & S15—\$23.95, Santic 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! Send to: DC ACE ELECTRONICS, INC., P.O. Box 364, Lincolnshire, IL 60069; 708/634-3337 or 708/587-2291. Good checks okay. VISA/MC. 1 last special: 4AH Gates D NiCads \$4.00 each!!!! Standard/Heath packs now available!

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.

POST CARD QSL KIT — Converts post cards, photos to QSLs! Stamp brings circular. K-K LABELS, P.O. Box 412, Troy, NY 12181-0412.

CLEANING SHACK—Send for list. LEWALSKI, 3512 Moraga Blvd. #4102, Lafayette, CA 94549.

WE BUY ELECTRON TUBES, diodes, transistors, integrated circuits, semiconductor. ASTRAL ELECTRONICS, P.O. Box 707M, Linden, NJ 07036. Call toll-free 800/666-8467.

CUSHCRAFT ANTENNAS, B&W Antennas PILOT ELECTRIC CO INC, 1300 Hwy #35, Neptune, NJ 07753. 1-800/331-5308, FAX 1-908/775-3635.

CHASSIS & CABINET KITS, SASE, K31WK, 5120 Harmony Grove Rd. Dover, PA 17315.

CARL'S ANTENNAS KA2MQG: Lakeviews Dual Band 2M/440 mags. Shipped \$31.95. Payable to Carl Paulicelli. Catalogs 516/363-7446, 38 Oakwood St., Bluepoint, NY 11715.

Subscribe — see p. 9

REVOLUTIONARY HYBRID AERIAL WIRE: 168 strand copper "Flex-Weave"™, #14, ropewoven strong, ultra flexible, ties in knots, non-stretch, won't rust/kink like copper weld, \$36.95 first 275' (minimum), \$.13/ft thereafter, includes shipping! Catalog \$1.00. DAVIS RF Co., POB 230-W, Carlisle, MA 01741; 508/369-1738 or orders only: 1-800/484-4002. Code 1356.

GET YOUR "FCC COMMERCIAL GENERAL RADIOTELEPHONE LICENSE". Electronics Home Study. Fast, inexpensive! "Free" details. COMMAND PRODUCTIONS, D-173, Box 2824, San Francisco, CA 94126.

MAUI, HAWAII—B&B with a ham, KH6SQ. For brochure, send 75 cents for postage to: P.O. Box 351, Pukalani, HI 96788.

LOW COST HAM EQUIPMENT: Send stamp for list. WA4DSO, 3037 Audrey Dr., Gastonia, NC 28054.

FINALLY HEAR THOSE UNREADABLE SIGNALS buried in noise, hetrodynes, tuner-uppers. 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.

MAKE \$\$\$! Become an American Electronics Dealer! Profit opportunities since 1965. Call NICK DELLEN, 1-800-872-1373.

MORSE CODE COMPUTER INTERFACES with software for IBM or COCO—\$49.95. Ham License Study Programs—\$14.95. Free Shareware and Ham catalog for IBM or COCO. DYNAMIC ELECTRONICS, P.O. Box 896, Hartselle, AL 35640; 205/773-2758.

PILL BOTTLE ANTENNA TUNER! Really works!! Plans—\$3. DWM ENTERPRISES, 1709 N. West, #103, Jackson, MI 49202.

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.

ROSS'S\$\$\$ NEW JULY (ONLY): Kenwood TS-140S—\$779.90, PB-2—\$36.00, R-5000—\$819.90; ICOM 735—\$848.00, 471H—\$849.99, AG-35—\$59.99, O4AT—\$269.99; Yaesu FT-212RH—\$317.90, FT-709R—\$279.99, FT-470—\$388.00; Alliance HD-73—\$152.90, U-105—\$51.90. All limited time offer. Call or send 2 stamps for more specials. Looking for something not listed or hard to find call or write. Over 9000 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.

FOR SALE: Yaesu FT767GX XCVR fitted with 2-meter & 440-450 modules, & tone squelch FT5-8. Also includes external speaker with phone patch SP 767P, & hand mic MHI-BH. All in perfect like-new condition "in-the-box," with manuals. \$1850. ALAN CRADDOCK, WB6DXZ, 3432 Ruben Dr., Oakland, CA 94602; 510/530-3911.

STAMP COLLECTORS—SASE brings my price list of worldwide stamps honoring Ham Radio. PHIL SAGER, WB4FDT, 411 S. Sparta, Ruston, LA 71270.

COMMODORE 64 HAM PROGRAMS—8 disk sides-over 200 Ham programs—\$16.95. 29¢ stamp gets software catalog. HOME-SPUN SOFTWARE, P.O. Box 1064-W, Estero, FL 33928.

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 Ham Radio to further and enhance the education of young people nationwide. Your property donation or financial support would be greatly appreciated and acknowledged with a receipt for your tax deductible contribution. 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 more 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 "22 Crew" classroom net, 7 am est on 7.238 MHz. or on 21.395 throughout the day. Hope to meet all of our friends at the Huntsville, Alabama Hamfest in August. We will be presenting a forum on EDUCOM. 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.

WANTED: MFJ-989C Versa antenna tuner. W2AY, 29-29 213th Street, Bayside, NY 11360; 718/229-2449.

TEMPO I FOR PARTS WANTED. KØHQW, Rt. 2, Box 189, Urich, MO 64788.

LET THE GOVERNMENT finance your amateur radio-related small business. Grants/loans to \$500,000. Free recorded message: 707/449-8600. (LH3)

DISCOUNT PRICES AT RT ELECTRONICS. 10/11 meter radios, antennas and more. Free flyer. P.O. Box 2123, Warren, OH 44484; phone 216/369-1789.

RADIO RUBBER STAMPS. 10-10, CW stamp, etc. Free brochure. REID ASSOCIATES, 6680 Mellow Wood, West Bloomfield, MI 48322.

BUILD YOUR OWN WIRE ANTENNAS, parts, ground radial wire, feedlines, various wire, insulators, vertical phasing (COMTEK), coax, Dacron rope, baluns, traps. Lowest prices. Catalog: \$1.00. DAVIS RF Co., POB 230-W, Carlisle, MA 01741. Voice or FAX: 508/369-1738.

ADVERTISER'S INDEX

| | | |
|-----------------------------|-----------------------------|-------------------------------|
| A & A Engineering — 58 | Grapevine Group, Inc. — 41 | QCWA — 38 |
| Ace Communications — 18 | HAAM Radio / ARS | QSL's by W4MPY — 68 |
| Aerials — 71 | N8KDW — 64 | R & L Electronics — 29 |
| Alinco — 17 | Ham Radio Classified — 30 | Radio Engineers — 66 |
| Amateur Radio Specialties | Ham Radio Outlet — 42, 43 | Radio Place, The — 72 |
| — 35 | Handi-Tek — 56 | Radio Works — 36 |
| Ameritron — 57 | Harry Hamlen — 78 | RF Concepts — 11 |
| Amsoft Ham Radio Software | Heights Tower Systems — | RLD Research — 8 |
| — 62 | 28 | Rose — 3 |
| Anne Wright, N6BOP — 56 | Henry Radio — 2, 15 | Rusprint — 76 |
| Antennas West — 38, 59, 60, | ICOM — 84 | Sommer Antennas — 55 |
| 74 | IMRA — 32 | Solder-it Company — 12 |
| Antique Radio Classified — | J-Com — 39 | Startek Int'l, Inc. — 25 |
| 7 | JPS Communications — 69 | Synthetic Textiles, Inc. — 48 |
| AVC Innovations, Inc. — 59 | Jun's Electronics — 51 | Telo Technology — 58 |
| AXM Inc. — 20, 75 | Kantronics — 31, 47 | Texas Towers — 21 |
| Azimuth — 33 | Kilo-Tec — 30 | Tiare Publications — 61 |
| Aztec RF — 62 | Korner — 71 | Tibi Productions — 7 |
| Battery Tech — 23 | KTE Publications — 44 | TNR Technical, Inc. — 67 |
| Bilal Company — 34 | Lakeview Co. — 36, 78 | Townsend Electronics — 63, |
| Bill Mullin, AA4M/6 — 52 | Lightning Bolt Antennas — | 66 |
| Brian Beezley, K6ST1 — 18 | 73 | Tri-Ex Towers — 77 |
| Brinson Microsoftware — 6 | M. Bohnhoff, Inc. — 16, 40 | Trionics — 10 |
| Buckmaster Publishing — | Maxcom, Inc. — 16 | Universal Radio Inc. — 56 |
| 26, 36, 67, 77 | Media Mentors — 4 | Van Gorden Engineering — 7 |
| Butternut Electronics Co. — | MFJ Enterprises, Inc. — 13 | Vector Control Systems — |
| 27 | Mike Foreman — 83 | 26 |
| Courage Center — 72 | OakHill Research — 77 | VIS Study Guides — 28 |
| Cubex Co. — 32 | ONV Safety Belt Co. — 78 | Visit Your Local Radio Club |
| Electron Processing — 65 | Outbacker Antenna Sales — | — 53, 54 |
| Embroidery Warehouse — | 76 | Visit Your Local Radio Store |
| 24 | Palomar Engineers — 22, 35, | — 79 |
| Engineering System, Inc. — | 38, 41, 45 | W5YI-VEC — 20 |
| 70 | Pass Publishing — 19 | W9INN Antennas — 10, 46 |
| Fallert's Engraving — 50 | PC Electronics — 14 | Williams Radio Sales — 37 |
| G.G.T.E. — 34 | Personal Database | Yaesu — 5 |
| Glen Martin Engineering — | Applications — 49 | |
| 34 | | |

CLASSIFIED ADS FOR JOBS WANTED OR POSITIONS OFFERED will be run free of charge in Worldradio's MART.

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

More for Less!

The First High Performance HF Under \$1100.

ICOM Unveils the New IC-728!

The HF All-Band Transceiver offers the high-performance features previously available only on higher priced models. And we mean *features* — not just bells & whistles. The amazing IC-728 sells for under \$1100, yet has more of what you buy a radio for — *to hear and be heard* — than any other transceiver in its class.

More Clarity!

All other radios in this price class use double conversion circuitry. ICOM uses more advanced **Triple Conversion** technology because it improves incoming signal quality and suppresses interference better. And a **Noise Blanker** reduces pulse-type noise interference instantly!



More Selectivity!

You won't find **PassBand Tuning** on some radios at twice the price! PBT is the most effective interference rejection system ever developed. It lets you narrow the IF passband width to cut out nearby signals and zero in on just the one you want to hear.



More Flexibility!

High-performance **AT-160 Antenna Tuner** (opt.) detaches for mobile operation.



More Punch!

ICOM's dynamic **Speech Compressor** increases the transmitter's

output signal strength. This gives you the power to punch through when the bands are crowded or conditions are less than perfect.



More Speed!

Band Stacking Register automatically snaps you back to the last frequency and mode you were using — perfect for contesting, multibanders.

Direct Digital Synthesis, gives you fast T/R switching for digital modes. **DDS** also improves your carrier-to-noise ratio by blocking interference, and it gives you the fast switching times you need for packet radio.

More Value!

We invite you to compare the IC-728 with any other HF. See how much you would pay for another transceiver with all of these performance features!

| | ICOM IC-728 | | |
|---------------------|-------------|--|--|
| Triple Conversion | ✓ | | |
| Passband Tuning | ✓ | | |
| DDS | ✓ | | |
| Speech Compressor | ✓ | | |
| Sugg. Retail Price* | \$1,099 | | |

* AT-160 Antenna Tuner is priced separately.

More Audio! Low-noise front-end technology means high sensitivity. A sharp IF and clear audio amplifier combine for excellent sound reproduction.

More Mobile! The IC-728 is more than a radio — it's a system. For example, the optional AT-160 ANTENNA TUNER can be "built-on" (it's not built-in), for optimal base station operation. Remove it, and you have a supercompact, light weight unit for mobile use, field days, etc. The bright LCD display is easy to see in vehicles (fluorescents aren't), and its superior noise blanker makes auto electrical noise a problem of the past!

And Even More! All-band, all-mode,† general coverage receiver, 26 memory channels, 3 types of scanning, plug-in (solderless) CW filters... plus the same superior quality and reliability you've come to expect with every ICOM transceiver.

† With optional IC-U17

ICOM America, Inc., 2380-116th Avenue N.E.
Bellevue, Washington 98004
Brochure Hotline 1-800-999-9877

All stated specifications are subject to change without notice or obligation. All ICOM radios significantly exceed FCC regulations limiting spurious emissions. 728592

ICOM
Experience the Quality

VE exam schedules

(continued from page 80)

| Date | City | Contact | Notes |
|-----------------------|--------------|--|---------------------|
| New York | | | |
| Aug. 22 | Fort Drum | David, NR2S 315/562-3532 | w/i |
| Aug. 8 | Greenvale | WA2BGE 516/921-0085 | w/i OK |
| Aug. 2 | Yonkers | AC2V 914/237-5589 | w/i OK |
| North Carolina | | | |
| Aug. 15 | Marion | John Garrou II, KC4PGN 704/724-4083 | w/i OK |
| Aug. 9 | Salisbury | Isabelle, AB4UX 704/284-2414 | w/i OK |
| Ohio | | | |
| Aug. 1 | Cincinnati | Herb, WA8PBW 513/891-7556 | p/r pref; w/i OK |
| Aug. 1 | Columbus | Jim Kerr 614/866-5531 | w/i |
| Aug. 1 | Mentor | Scott, KO8O 216/256-0320 | |
| Oregon | | | |
| Aug. 8 | Bend | K7ZM 503/389-6258 | p/r only |
| Aug. 27 | Coos Bay | Chuck, KE7MI 503/756-5693 | w/i OK |
| Pennsylvania | | | |
| Aug. 8 | Butler Co. | W3DMB 412/282-6777 | w/i ltd. |
| Aug. 1 | Erie | W3CG 814/665-9124 | w/i |
| Aug. 6 | Philadelphia | ND3Q 215/482-0386 or 215/879-0505 | w/i |
| Rhode Island | | | |
| Aug. 13 | Providence | NN1U 401/231-9156 or 401/454-6848 | w/i OK |

| Date | City | Contact | Notes |
|-----------------------|---------------|---|---------------------|
| South Carolina | | | |
| Aug. 15 | Charleston | Pat Foster, AC4IH 803/553-3871 | w/i |
| Aug. 15 | Columbia | Ray, N4WR 803/345-3373 | w/i OK |
| Tennessee | | | |
| Aug. 10 | Blount County | Carroll, W4PCA 615/982-5839 | w/i OK |
| Aug. 22 | Henry County | Mackie Gallimore, AA4YF 901/247-5489 | w/i OK |
| Aug. 9 | Jasper | Charles Wooten, KD4XX 615/942-5116 | p/r pref |
| Aug. 15 | Knoxville | Ray Adams, N4BAQ 615/688-7771 | w/i OK |
| Aug. 22 | Loudon County | Bob Gray, KE4SK 615/458-6115 | |
| Aug. 15 | Memphis | Win Guin, W2GLJ 901/754-4552 | w/i OK |
| Aug. 8 | Roane County | Richard Spillee, AA4KS 615/354-4281 | w/i OK |
| Texas | | | |
| Aug. 11 | Houston | ND5F 713/464-9044 | p/r pref; w/i OK |
| Aug. 15 | Irving | Hall Bond, K5ZSB 214/255-1077 | w/i OK |
| Aug. 8 | McGregor | AB5BA 817/859-5374 | w/i OK |
| Aug. 8 | Midland | KT5G 915/694-9450 | w/i OK |
| Aug. 29 | San Antonio | K5JWK 512/657-1549 | w/i |
| Aug. 1 | San Benito | WA2VJL 512/399-0806 | w/i only |
| West Virginia | | | |
| Aug. 8 | Huntington | K8KVX 304/736-6542 | w/i OK |

ATTN: Teachers — Send us an order for sample issues of *Worldradio*, one for each of your students!

What a GREAT Magazine!!

And only \$14 a year
(\$15.09 in California, \$24 for non-US ZIP.)

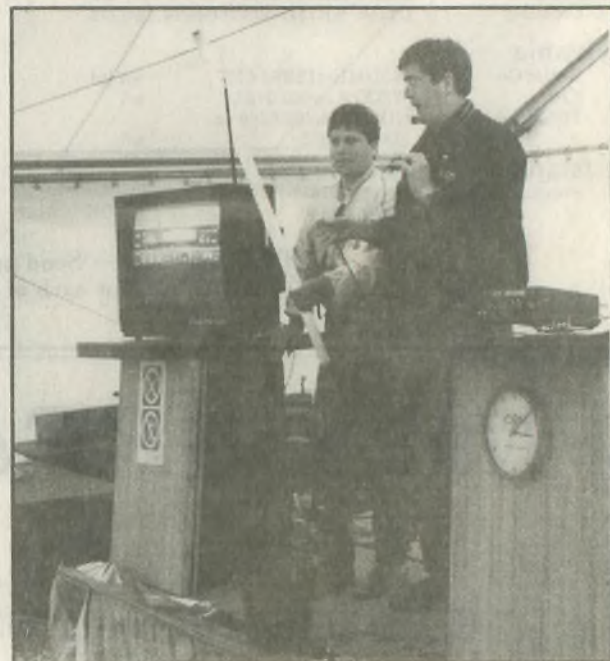
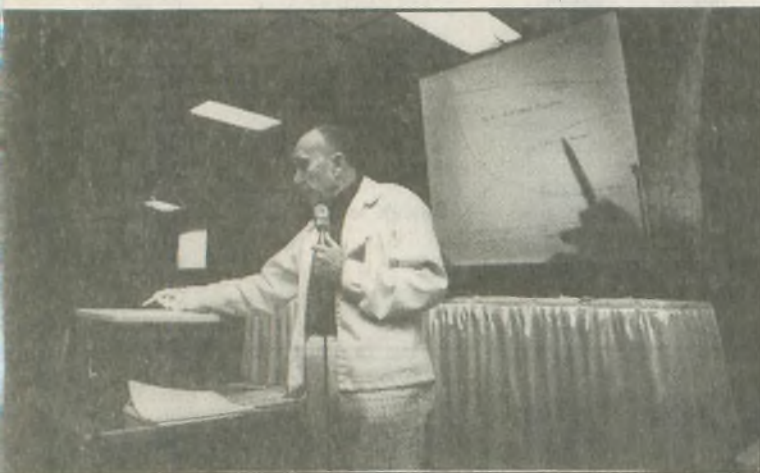
Easy to subscribe, too — just fill in the blanks, cut along the line on the left, enclose a check (or MasterCard, Visa, or American Express card number, expiration date and your signature.)

Mail to **Worldradio**,
520 Calvados, Sacramento, CA 95815

Your name and address are on the other side for your convenience. Please make any necessary corrections to the mailing label.

Card # _____ Exp. date _____

Signature _____



*Daytonmania —
rain outside, but busy inside*



(USPS 947000)
PO Box 189490
Sacramento, CA 95818

**POSTMASTER: Send
changes of address to above
(Please include mailing label.)**

**Second-class
postage paid
Sacramento, California
and additional
mailing offices**