

World Radio

Year 16, Issue 10

WR 95044DMXWJ47368
JAMES MAXWELL LIFE
W6CUF
PO BOX 473
REDWOOD ESTATE CA 95044

April 1987 • \$1

Novices get more!

You go into the shack of a Novice Class licensee and there is a DXCC hanging on the wall.

Next to it is a WAC, earned in half-an-hour. Ten-meter SSB is more fun than a video game!

A Novice going down the highway sees an injury accident and calls it in to the Highway Patrol through the 220 repeater.

Yes. It's all true. Read on:

On Friday, January 30, 1987, the Federal Communications Commission announced the expansion of entry-level privileges for Amateur Radio operators, to include operating modes beyond the traditional Morse code. Among other things, radio amateurs with Novice licenses — the one most people start out with — will now be able to communicate by voice and between home computers linked by radio. Previously, to gain these privileges one had to pass a more difficult examination.

The new rules are effective as of 0001 UTC, March 21, 1987 (a Friday night, local time). Specific rule changes are:

- Novices and Technicians may operate 28.1 through 28.5 MHz, using CW and digital modes from 28.1 to 28.3 and CW, digital and voice modes from 28.3 to 28.5 MHz. Novice and Technician control operators are limited to 200 watts output in this band, but other licensees are not similarly limited.

- Novices may use up to 25 watts in the 222.10 through 223.91 MHz band, with all authorized emissions.

- Novices may use up to 5 watts in the 1270 through 1295 MHz band, with all authorized emissions.

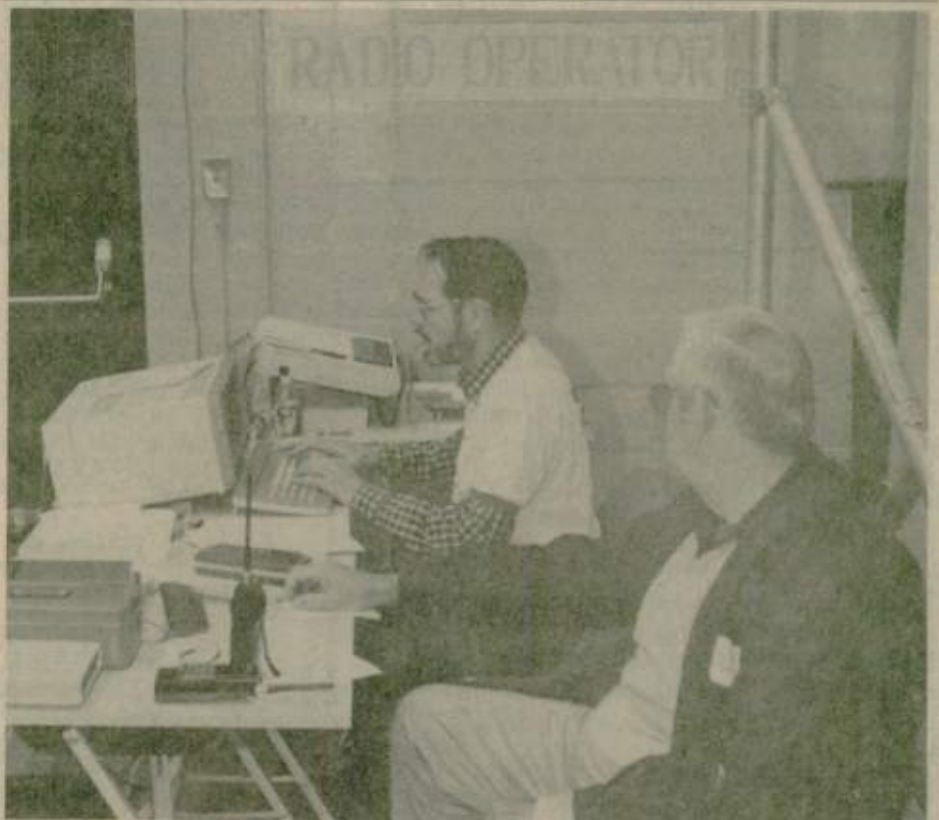
- No amateur station at which the control operator or station licensee holds a Novice Class operator license shall be in repeater, auxiliary or beacon operation.

- Two examiners will be required to administer future Novice exams, which shall consist of 30 questions. FCC Form 610 will be revised to provide for certification by two VE's.

- Present Novice and Technician licensees are grandfathered into the new privileges.

- Element 3 is divided into two parts, 3A and 3B, with each examination to

consist of 25 questions. Present Technician licensees will be given credit for having passed both elements. In the future, upgrades to Technician will only (please turn to page 22)



Art Hartwell, WA6YZD (rear) and Bill Musladin, N6BTJ, operating packet and 2-meter HT on CPR Saturday. (See story on page 4.)

Don't use OSCAR-10

Ross Forbes, WB6GFJ
AMSAT Coordinator, North
Central California

Just a reminder to all OSCAR-10 users, that OSCAR-10 is not — repeat not — available for general use from March 1 to April 30, 1987. This requires close cooperation from all OSCAR-10

users since since the IHU will not be able to control the transponder.

The instruction that there is to be no usage of the OSCAR-10 transponder comes directly from the command stations ZL1AOX, DB2OS and VK5AGR. To repeat, do not use OSCAR-10 from March 1 to April 30, 1987. Please spread the word! □



Worldradio

April 1987

Vol. 16, No. 10

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

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

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

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

We emphasize the positive aspects of this great activity, and desire your contributions dealing with dramatic, personal and

humanitarian uses of Amateur Radio.

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

Subscription rates: \$11.00 per year, \$21.00 for two years, \$30.00 for three years and \$110.00 for life; \$3.00 extra per year for surface mail delivery outside the U.S. Please remit international postal money order. IRCs will be accepted.

Second-class postage paid at Sacramento, CA.

TM

Subscription Dept.
Worldradio
P.O. Box 271309
Escondido, CA 92027-0770
(619) 487-3213 or 487-3212

STAFF

Publisher..... Armond Noble, N6WR
Editor..... Christine Wilson, KA8TAL
Assistant Editor..... Jennifer Kinugawa
Associate Editor..... Norm Brooks, K6FO
Consulting Editor..... Lou Ann Keogh, KB6HP
Advertising Director..... Helen Noble
Ass't Adv. Director..... Rosalie Hernandez
Graphics Director..... Dianne Dunning
Circulation Mgr..... Dorothy Campini

DARA Scholarships

The Dayton Amateur Radio Association is now accepting applications for its 1987 Scholarship Program. Any licensed amateur graduating from high school in 1987 is eligible to enter.

The \$1,000 awards are based on a combination of financial need and academic accomplishment with consideration given for service to Amateur Radio and community involvement. Applicants are not restricted to those preparing to pursue four-year baccalaureate degrees. Those working toward associate degrees or planning to attend an accredited trade or technical institution will also be considered.

Entries must be postmarked no later than May 15, 1987. Winners of the awards will be announced on or about June 1, 1987. For information and application forms write to: DARA Scholarship Committee, 317 Ernst Ave., Dayton, OH 45405. □

•••••

If you received this publication and are not a subscriber of **WORLD-RADIO**, it was no accident. Please consider it an invitation to join. We can be very friendly.

HI-Q BALUN

- For dipoles, yagis, inverted vees, doublets & quads
- For full legal power & more
- Puts power in antenna
- Broadbands 3-40MHz.
- Small, light, weather-proof
- 1:1 Impedance ratio
- Replaces center insulator
- Helps eliminate TVI
- Fully Guaranteed \$14.95



Van Gorden Engineering
PPD U.S.A.
BOX 21305, S. EUCLID, OHIO 44121

A call for papers

The 6th ARRL Amateur Radio Computer Networking Conference will be hosted by the TRW ARC, Redondo Beach, California, on Saturday, August 29, 1987. The Conference will feature technical papers presented by internationally known packet radio pioneers.

Papers are invited on Amateur Radio digital communication — in particular packet radio — in the following subject areas: transmission technologies, networking, network expansion and development, applications, operations, message handling, international matters, spectrum management and integration of data, voice and images.

Prospective authors are requested to contact Mrs. Maty Weinberg, ARRL HQ, 225 Main St., Newington, CT 06111; (203) 666-1541 for an author's kit. Camera-ready originals are due at the League no later than July 27, 1987. — *W5YI Report* □

Traveling hams

A travel service for ham operators has been formed by well-known Dave Bell, W6AQ, called *DX Travel*. A program will rebate 2% of travel expenses to ham clubs that book trips for their members. (*DX Travel*, 11811 W. Olympic Blvd., Los Angeles, CA 90064; (213) 478-0525)

N6KW QSL Cards

The finest QSL Cards at reasonable prices. Basic cards, map cards, cartoon cards, photo cards and more. Your idea converted to ink, or use standard designs. 525 ink colors, any type of card stock. Photos in b/w or beautiful color. Have a card that fits your style. Call or write for free samples and details. Postage appreciated.

Chuck Miller · N6KW

Yavapai Press

Box 98 • Seligman, AZ 86337

(602) 422-3521

Iris in hospital

Iris Colvin, W6QL, has been injured while on the YASME Foundation Indian Ocean DX tour with her husband Lloyd, W6KG.

Iris suffered a fall while at the Maldives. She was flown to Colombo, Sri Lanka where surgery was performed and her broken hip was pinned. Late word has it that Iris is resting in good spirits in the hospital in Colombo. The DX fraternity all wish her a speedy recovery. — *Paul Shafer, KB1BE* □

CONTENTS

FEATURES

Code matters, Part VI — 10
CPR Saturday — 4
Editorial — 3
New Product Review — 47
Novices get more! — 1

COLUMNS

Advertisers' Index — 63
Aerials — 51
Amateur "Hi" — 18
Amateur Radio Call Signs — 8
Awards — 24
Bob's Corner — 46
Clubs — 40
Contests — 55
Digital Bus — 44
DX World — 27
FCC Highlights — 8
Hamfests — 56
MARS — 50
MART Classifieds — 61
Mobile — 38
New Products — 58
Off the Air — 14
Old Time Radio — 54
Propagation — 31
QCWA — 43
QRP — 52
Silent Keys — 20
Special Events — 11
Station Appearance — 26
Subscription, *Worldradio* — 9
10-10 International News — 35
Traffic — 48
VE exam schedules — 12
With the HANDI-HAMS — 37

Editorial

What is the FCC up to?

The FCC just announced the new privileges for Novices. Among the new modes available to the Novice operators will be phone operation in the 220 MHz band. Great! Everyone is predicting a large influx of FM voice operators to the 220 MHz band, which will call for new repeaters, sell new radios for the 220 band, etc. In a way, the FCC is telling us that since we haven't been able to load the 220 band with our existing licensees, they will do it for us by providing a new batch of Novice operators authorized to operate there.

Of course, just how much the new Novice operators will load (or overload) the 220 band is anybody's guess. The worst case would be that so many Novice operators show up on the 220 MHz repeaters, we would have to open new repeater channels in the lower 2 MHz, as we did in the 2-meter band. Time will tell.

Now here's the problem. Before any time was allowed to pass to see how the 220 band could handle its new users, the FCC proposed in its NPRM General Docket 87-14, to TAKE AWAY the lower 2 MHz and give it to the land mobile (commercial) service! Doesn't the left hand of the FCC know what the right hand is doing? They couldn't possibly pick a worse time to carve 40% out of the 220 band.

In addition to the new Novice load on the 220 band, it is no secret that the packet operators are in the midst of installing a new layer of inter-digipeater links, using just the frequencies FCC proposes to give away! Doesn't the FCC pay any attention to what is going on?

You may say this isn't your problem — that it's the VHFers' problem. Not so! When the issue at stake is taking away 40% of a valuable amateur band, especially one that is being depended on to successfully bring thousands of new amateurs into our ranks, it is every amateur's problem. Brother and sister radio amateurs, this is a serious situation. Somehow or other we must convince the FCC they are not paying attention to what is going on in the 220 MHz

A CLASSIFIED AD PLACED IN **WORLD RADIO** will reach the most active, involved Amateur Radio operators. Your ad will be seen here before it will be seen in any other Amateur Radio publication. We get the news out first. Get results from **WORLD RADIO**

band, and that a giveaway of 220 to 222 MHz to the land mobile interests is wrong.

You must organize letter-writing efforts to the FCC in response to NPRM Docket 87-14. For your letter to be formal, you must send an original and five copies. Use the format suggested in Chapter 2 of the FCC Rule Book.

While you're in the letter-writing mood, fire one off to each of your two Senators and your Congressional Representative.

If you are now operating on the 220 MHz band, tell them so. If you are operating or plan to operate in the lower (from 220 to 221.99 MHz), tell them this too. There is some indication that the FCC looked only at the ARRL Repeater Directory, and seeing nothing listed below 222 MHz, assumed it is idle. Prove to them that this is not the case!

Here's an additional thought. If they are looking for unused frequencies to give the land mobile interests, tell them to turn on their TV set. Tune it to the UHF band. Every click on that TV tuner that doesn't bring in a TV station represents 6 MHz that they could assign locally to the land mobile service, without upsetting anyone.

The deadline for comments is April 6, 1987. Time is short. Write those letters today!

NORMAN BROOKS, K6FO
Associate Editor, Worldradio

Hams lose 220-222 MHz

On February 12, the FCC released a Notice of Proposed Rule Making, General Docket 87-14, that proposes to allocate 220 to 222 MHz on an exclusive basis to the Land Mobile Service and 222 to 225 MHz exclusively to the Amateur Service.

According to the FCC, the 220 to 225 MHz band is underutilized, and the Land Mobile Service has needs that can be met in this region of the spectrum. Therefore, the Commission is proposing that the lower 2 MHz — 220 to 222 MHz — be reallocated on a primary basis to the Land Mobile Service for both government and non-government operations, and the existing primary allocations to the Amateur, fixed and mobile services be deleted.

Accordingly, the FCC proposes to allocate the remaining 3 MHz — 222 to 225 — to the Amateur Radio Service on a primary basis.

Comments on this proposal may be filed with the FCC on or before April 6, 1987. Reply comments may be filed on or before April 21, 1987. □

Pass it on . . . **WORLD RADIO**

ANTENNAS

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

MULTIBAND ANTENNAS

- Model AP-1 \$45.00 ppd.
• Covers 80, 40, 20, 15 & 10 Meters
• 102 feet long
- Model AP-2 \$40.00 ppd.
• Covers 40, 20, 15 & 10 Meters
• 51 feet long
- Model AP-3 \$35.00 ppd.
• Covers 20, 15 & 10 Meters
• 26 feet long
- Model AP-4 \$55.00 ppd.
• Covers 160, 80 & 40 Meters
• 204 feet long

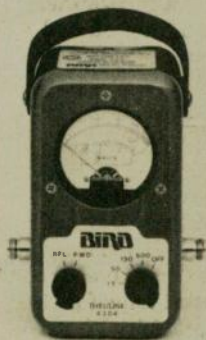
LOOP, TRIANGLE OR QUAD LOOP
Built to frequency of your choice

- Model TP-1 80 or 75 Meters \$55.00
Model TP-2 40 Meters \$41.00
Model TP-6 30 Meters \$39.00
Model TP-3 20 Meters \$37.00
Model TP-4 15 Meters \$33.00
Model TP-5 10 Meters \$30.00

SHIPPED POSTPAID USA
SEND FOR FREE BROCHURE

RUDY PLAK — W6TIK
PO Box 966 • San Marcos, CA 92069

THE CHAMP



BIRD MODEL 4304

NO ELEMENTS
25-1000 MHZ
RF SAMPLING PORT

AUTHORIZED **BIRD** DISTRIBUTOR



WEBSTER COMMUNICATIONS INC.
115 BELLARMINE
ROCHESTER, MI 48063
313-375-0420

CALL TOLL FREE

800-521-2333
800-482-3610



Thousands of people were trained on CPR Saturday.

CPR Saturday

Norm Brooks, K6FO

Over 13,000 people in northern California and Nevada were trained in Cardiopulmonary Resuscitation (CPR) by the Red Cross on Saturday, January 31, 1987. At three college locations in Sacramento, California, 6,000 were trained. This was the fourth annual CPR Saturday, and Amateur Radio has been a part of it since the beginning.

Needless to say, "crowd control" was

a major safety issue, and Amateur Radio operators with their hand-held radios kept things running smoothly and safely. They were members of the Mt. Vaca Radio Club, Telephone Pioneer Radio Club, Sacramento ARC, the SAC-PAC packet special interest group of the SARC, plus other clubs in the area.

Packeteers Jim Rominger, WA6-NWE, his brother Lee and Norm Brooks, K6FO, set up at American Red



Keith Crandall, K6QIF, operates a portable packet station from his communications van.

Cross HQ in Sacramento. Their packet station was in constant communication with Bob Meyer, K6RTV; Bob Cloud, W6CFQ, and George Masters, W6GHE, at American River College; Keith Crandall, K6QIF, Art Hartwell, WA6YZD; (please turn to page 6)



Wanted by FBI

William C. Taylor

William Claybourne Taylor, an alleged hired assassin wanted by the FBI for murder and aggravated battery, holds a Bachelor of Arts degree in Advertising from the University of Florida and has worked as a radio announcer and radio and television advertising salesman.

Taylor, aged 37, is being sought by the FBI in connection with the brutal shotgun slaying of a former Immigration and Naturalization Service Official as well as the wounding of a former mayor who was shot in the face and abdomen with a .32-caliber handgun.

A federal warrant was issued on August 6, 1980, in Jacksonville, Florida, charging Taylor with unlawful interstate flight to avoid prosecution for the crimes of murder and aggravated battery.

Born July 2, 1949, in Jacksonville, Florida, Taylor is described as a 6'4", 200 lb. white male with blue eyes and blonde hair which has been dyed red in the past. He has a scar at the base of his right index and right middle fingers, a burn scar on his right forearm, a scar on his left side, and a half-moon shaped scar on his knee.

Reportedly a heavy drinker with bisexual tendencies who has been known (please turn to page 6)

<p>5 1/4" DISKETTES DOUBLE SIDED, DOUBLE DENSITY</p> <p>Each Diskette 100% Certified</p> <p>59¢ each or 50 for 65¢ + U.P.S. \$2.00</p> <p>(Includes: Tyvek Sleeves, Labels, Tabs & Hubs) Check or Money Order COD add \$3.00</p> <p>Order 250 Units and Ups only is FREE in 50 States & Canada</p> <p>EXTRA WRITE PROTECT TABS 100 for \$1 Prpd.</p>	<p>10 AMP. Regulated POWER SUPPLY</p> <ul style="list-style-type: none"> • Overload protected • Pilot light • On-off switch • Well filtered • All metal cabinet fused <p>\$59.00 Plus UPS</p> <p>Key Pad Mike \$68.00*</p> <p>Auto Dialer Mike \$97.00* (Stores #0 Phone Numbers) With led lighted key pad add \$10.00</p> <p>*Add \$2.50 packing shipping & ins. Check/M.O. For C.O.D. add \$3.00. With AZDEN Mike Plug attached, add \$4.50. Also available for other 2 meter rigs.</p>	<p>NOW USE BOTH SIDES OF YOUR DISKETTE!</p> <p>5 1/4" DISKETTE HOLE PUNCH NO GUESSWORK WITH DEPTH GUIDE AND EDGE GUIDE</p> <p>DEALERS WANTED</p> <p>only \$10.00 EACH add \$2.00 EACH SHIPPING CHECK OR MONEY ORDER</p> <p>AZDEN Service Manuals</p> <p>PCS 4000 \$9.00 EACH 300-3000 \$5.00 EACH</p>
<p>N.P.S. Inc. (215)894-6010</p> <p>1138 BOXWOOD RD. JENKINTOWN, PA 19046</p> <p>A 24 HR ANSWER MACHINE</p> <p>WorldRadioHistory</p>		

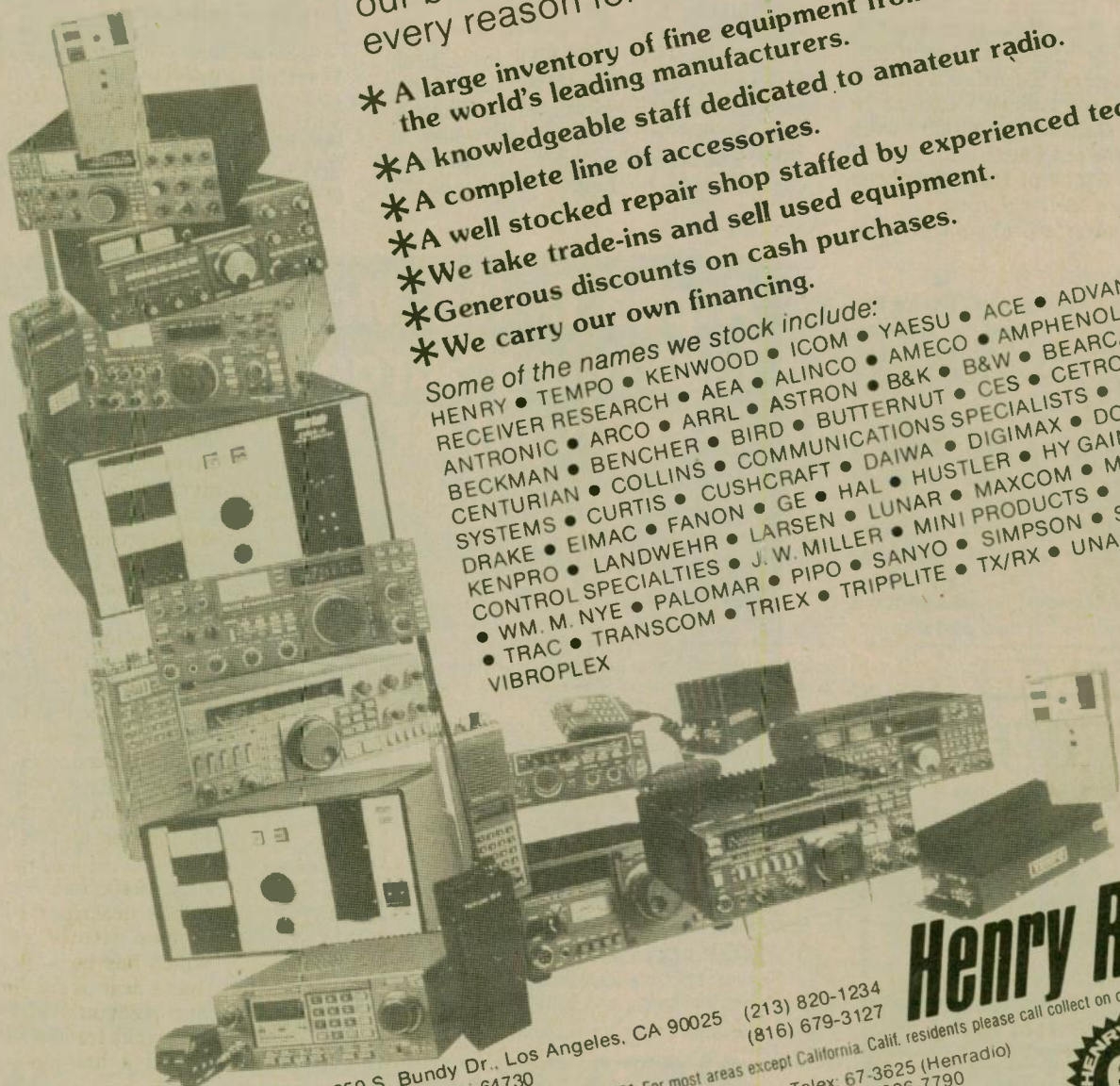
1927-1987 HENRY RADIO... 60 years of dedication to the best of amateur equipment... still a leader in amateur radio

There are a lot of good reasons. We know that we have provided the kind of equipment and service that thousands of amateurs have come to expect. They keep coming back. We'll do our best to see to it that they, and you, have every reason for coming back.

- * A large inventory of fine equipment from the world's leading manufacturers.
- * A knowledgeable staff dedicated to amateur radio.
- * A complete line of accessories.
- * A well stocked repair shop staffed by experienced technicians.
- * We take trade-ins and sell used equipment.
- * Generous discounts on cash purchases.
- * We carry our own financing.

Some of the names we stock include:

HENRY • TEMPO • KENWOOD • ICOM • YAESU • ACE • ADVANCED
RECEIVER RESEARCH • AEA • ALINCO • AMECO • AMPHENOL • ASTATIC •
ANTRONIC • ARCO • ARRL • ASTRON • B&K • B&W • BEARCAT •
BECKMAN • BENCHER • BIRD • BUTTERNUT • CES • CETRON •
CENTURIAN • COLLINS • COMMUNICATIONS SPECIALISTS • CONNECT
SYSTEMS • CURTIS • CUSHCRAFT • DAIWA • DIGIMAX • DOWKEY •
DRAKE • EIMAC • FANON • GE • HAL • HUSTLER • HY GAIN • JIL •
KENPRO • LANDWEHR • LARSEN • LUNAR • MAXCOM • MFJ • MICRO
CONTROL SPECIALTIES • J. W. MILLER • MINI PRODUCTS • MIRAGE/KLM
• WM. M. NYE • PALOMAR • PIPO • SANYO • SIMPSON • SWITCHCRAFT
• TRAC • TRANSCOM • TRIEX • TRIPPLITE • TX/RX • UNADILLA •
VIBROPLEX



2050 S. Bundy Dr., Los Angeles, CA 90025 (213) 820-1234
Butler, Missouri 64730 (816) 679-3127
TOLL FREE ORDER NUMBER: (800) 421-5631 For most areas except California. Calif. residents please call collect on our regular numbers.

Telex: 67-3625 (Henradio)
FAX (213) 826-7790

Henry Radio



CPR (continued from page 4)

Vern, KB6PMJ; and Jerry, N6OJL, at Sacramento City College; and Les Ballinger, WA6EQQ; Jim Ashbaugh, WA6YPL; Howie Phelps, WA6TUI; and Bill Musladin, N6BTJ, at Cosumnes River College. Red Cross leadership was very pleased with the "no error" hard copy from the packeteers.

The voice operators at the three college sites were Bill Harrington, N6MSI; Wayne Minick, WA6APX; Gary Ford, N6GF; Lew Barnard, WA6ESA; Adrienne Barnard, WA6CNE; Bill Yoder, WA6ACF; Bob Weishar, WA6CFI; Marv Bookout, WA6NSI; Jack Beaber, WB6IGW; Ken Wing, N6MPH; Jim Collier, WB6ZII; Bert Bird, WA6TGM; George Besley, WB6DQP; Bill Ozment, W6LSW; Bill Deilke, WB6HQE; and Tom Revak, W6JYZ.

Jim Rainford, WA9KPW, was the communications coordinator for the entire operation. He said, "I'm pleased with the response from the Amateur Radio community. I'm sure that everyone who worked that Saturday felt, as I do, that it was a very worthwhile public service activity." □

FBI

(continued from page 4)

to frequent adult bookstores, Taylor has been employed in the past as a convenience store clerk, dance instructor, key punch operator, painter and trumpet player.

Anyone with information regarding Taylor is requested to take no action other than to contact the nearest FBI office, the number of which can be found on the first page of most telephone directories.

Taylor is an alleged hired assassin and should be considered armed and dangerous. □

RFI KIT

Use ferrite beads and toroids to keep RF out of your TV, stereo, telephone, etc.



Free catalog and interference tip sheet on request.

PALOMAR ENGINEERS

Box 455, Escondido, CA 92025
Phone: (619) 747-3343

Ham bicycles to 50th reunion

Hartley Alley, NA0A, will ride a bicycle to his 50th high school reunion this year. This in itself might not impress you ... until you discover that the distance he's riding is 2,150 miles.

Operating his Yaesu 208R hand-held 2-meter radio with a Larsen 1/2-wave antenna attached to the rear carrier of his bicycle, Alley will leave his Boulder, Colorado home on April 1, headed for his boyhood home of Lynn, Massachusetts. He plans to arrive in Massachusetts on May 26 (three days before the reunion), averaging 40 miles a day on his bike.

His solo trek will take him through Nebraska, Iowa, Illinois, Indiana, Ohio, Pennsylvania and New York. He's counting on his bicycle/mobile rig to provide him with road and weather information, security and just plain ham companionship. He asks that fellow amateurs watch for him along the road and stop to say hello. He'll be easily recognized by his call sign letters on his vest and by the antenna with the safety flag.

Alley and his wife Jean have been serious cyclists since 1962 and have bicycle-toured many times in Europe. They cycled in China for two weeks in 1981. The bike Alley rides is a 21-speed, custom-made by Leiper. It weighs 25



Hartley Alley, NA0A

lbs. and will carry 35 lbs. of clothing, tools, radio equipment and camping gear. □

Alpha Delta Model DELTA-4 Lightning Surge Protected 4-Position RF Coax Switch

Superior RF switching and equipment protection for amateur, military and government communications stations.

- Exclusive center "off" (ground) position internally disconnects and grounds all antenna circuits for maximum protection when operator is away from the station — an Alpha Delta first!
- Incorporates the famous replaceable Arc-Plug® cartridge for continuous protection of the active antenna circuit. Unused antenna circuits are automatically grounded — an Alpha Delta first!
- The Model DELTA-4 Switch features a custom designed cast housing with constant impedance micro-strip cavity construction for outstanding performance through UHF. No lossy wafer switches are used.



also available with N-type connectors

- Positive detent ball bearing switch drive tells you which position you're in ... without guessing ... without looking.
- DELTA-4 handles full legal power.
- Designed and produced in the U.S.A. by Alpha Delta.

Model DELTA-4 4-position coax switch (UHF connectors) \$69.95

Available from your local Alpha Delta Dealer-or direct. Add \$4.00 shipping and handling (U.S.A. only). Exports quoted.

See Data Sheet for surge limitations.

ALPHA DELTA COMMUNICATIONS, INC.

P.O. Box 571, Centerville, Ohio 45459 • (513) 435-4772

current solutions to current problems





ELECTRONICS

P.C. ELECTRONICS 2522 S. PAXSON LN. ARCADIA CA 91006 (818) 447-4565
TOM W6ORG MARYANN WB6YSS Compuserve 72405,1207



SEE US AT DAYTON



AMATEUR TELEVISION

ATV MADE EASY WITH OUR SMALL ALL IN ONE BOX TC70-1 TRANSCEIVER AT A SUPER LOW \$299 DELIVERED PRICE!

CALL 1-818-4474565 AND YOURS WILL BE ON ITS WAY IN 24 HRS (VIA UPS SURFACE IN CONT. USA).

TC70-1 FEATURES:

- * Sensitive UHF GaAsfet tuneable downconverter for receiving
- * Two frequency 1 watt p.e.p. transmitter. 1 crystal included
- * Crystal locked 4.5 MHz broadcast standard sound subcarrier
- * 10 pin VHS color camera and RCA phono jack video inputs
- * PTL (push to look) T/R switching
- * Transmit video monitor outputs to camera and phono jack
- * Small attractive shielded cabinet - 7 x 7 x 2.5"
- * Requires 13.8vdc @ 500 ma. + color camera current

Just plug in your camera or VCR composite video and audio, 70cm antenna, 12 to 14 vdc, and you are ready to transmit live action color or black and white pictures and sound to other amateurs. Sensitive downconverter tunes whole 420-450 MHz band down to channel 3. Specify 439.25, 434.0, or 426.25 MHz transmit frequency. Extra transmit crystal add \$15.

Transmitting equipment sold only to licensed radio amateurs verified in the Callbook for legal purposes. If recently licensed or upgraded, send copy of license. Receiving downconverters available to all starting at \$59 (TVC-2G).

WHAT ELSE DOES IT TAKE TO GET ON ATV?

Any Tech class or higher amateur can get on ATV. If you have a camera you used with a VCR or SSTV & a TV set, your cost will just be the TC70 and antenna system. If you are working the AMSAT satellites you can use the same 70cm antennas on ATV.

DX with TC70-1s and KLM 440-27 antennas line of sight and snow free is about 22 miles, 7 miles with the 440-6 normally used for portable uses like parades, races, search & rescue, damage assessment, etc. Get 50 watts p.e.p. with the Mirage D24N or D1010N-ATV amp for greater DX or punching thru obstacles.

The TC70-1 has full bandwidth for color, sound, like broadcast. You can show the shack, home video tapes, computer programs, repeat SSTV, weather radar, or even Space Shuttle video if you have a home satellite receiver. See the ARRL Handbook chapt. 20 & 7 for more info & Repeater Directory for local ATV repeaters.

**PURCHASE AN AMP WITH THE TC70-1 & SAVE!
50 WATT WITH D24N-ATV....\$499**

All prices include UPS surface shipping in cont. USA

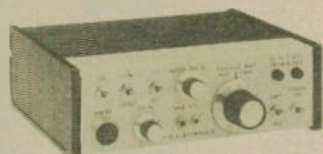
COMPLETE ATV STATION



TV SET

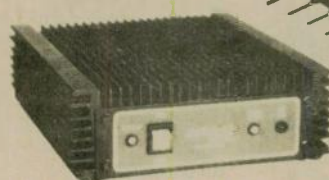


TV CAMERA

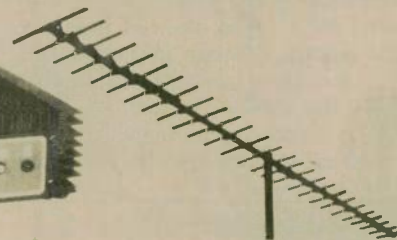


TC70-1...\$299
ATV Transceiver

Astron RS20M...\$129
13.8 vdc 20A Power Supply

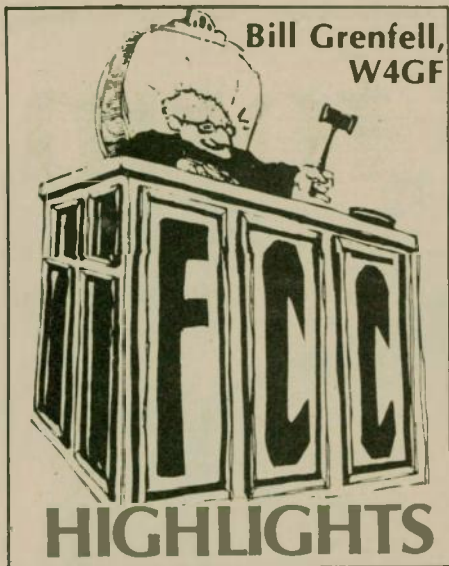


Mirage D24N....\$219
(optional) all mode 70cm amp
13.8vdc 9 amps @ 50 watts RF



KLM 440-27	14dbd	\$107
KLM 440-14	11dbd	\$77
KLM 440-6	8dbd	\$62

HAMS! Call or write for full line ATV catalog....downconverters start at only \$59



**Bill Grenfell,
W4GF**

On January 28, the FCC acted on its proposal to amend Part 97 to expand Novice and Technician Class amateur operators' privileges to include CW, RTTY and SSB operation on subbands within the 28.0-29.7 MHz band with less power output than authorized for other classes of operators in the band. The commission's action in PR Docket No. 86-161 also included provision for Novice licensees to operate on subbands in the bands 220-225 and 1215-1300 MHz bands with limited transmitter power.

Novice operators may use all emissions permitted other class operators in the 220-225 and 1215-1300 MHz bands. See rule section 97.61(c). Details regarding the subband frequencies, transmitter power ceilings and the effective date of the new privileges were not available when this was written.

On January 30, the FCC announced that amateur operator examination Element 3 is to be separated into two elements: 3A for Technician Class license candidates and 3B for General Class. Effective date and other details were not included in the release.

The examination credit rules became effective on February 13. This permits an examinee who has passed the written element(s) for a given class of amateur operator license, but has not yet taken or has failed the code test, to receive credit for the written element(s). This permits volunteer examiners to give credit for that written element any time

up to 365 days after the written element was passed (PR Docket No. 86.63). (*Westlink Report*, 01/23/87)

The FCC has issued a request for comments on the establishment of a system whereby amateur licensees could choose the call signs they use to identify their stations in accordance with identification procedures required by Rule 97.84. Such calls would be available through a Special Call Sign Coordinator (SCSC) who would be allowed to recover only administrative costs. FCC would only issue one 2x3 call sign from the NA-NZ prefix block to each licensee.

The FCC view is that having only one SCSC would be more efficient, more consistent and would simplify the FCC-SCSC contact. The comments on this "PRB-3" proposal are due by April 22, 1987 and reply comments are due by May 22, 1987. (ARRL, 02/03/87)

Comments should refer to PRB-3 and be addressed to FCC, Washington, D.C. 20554.

FCC's release of a further public notice encouraging VECs to use the existing examination question pool throughout 1987 and to cooperate in creating a new one, has the ARRL "...evaluating the latest announcement to determine whether it goes far enough to render the ARRL petitions moot." (*ARRL Letter*, 01/13/87)

A FCC Public Notice issued December 19, 1986 "...stated that the Commission expected all VECs to honor the agreements made at the 1986 Conference of VECs. One of these com-

mitments was that no question pools would be revised by VECs until January 30, 1988. ..." (*W5YI Report*, 01/15/87)

The Chief of FCC's Gettysburg (Pennsylvania) General Radio Branch advised last December that they were running behind on processing amateur license applications "...about eight weeks from the time that we receive the application." Counting time in the VE/VEC system, this adds up to 10 to 12 weeks. He said "...he had three people working strictly on amateur licensing and one passed away in September. We don't know if we are going to replace that person or not." (*W5YI Report*, 01/01/87)

One D.C. FCC official advised me that Gettysburg keeps getting more and more work handed to them without any increase of personnel.

The General Radio Branch and the Aviation and Marine Branch have been merged at the FCC's Gettysburg license processing facility. "The new unit is called the Special Services Branch and is headed by Marcus Stevens. The FCC's contact person for amateur VEC matters at Gettysburg remains Larry Weikert." (*ARRL Letter*, 01/13/87)

The ARRL has filed comments against authorizing additional 40-meter frequencies (7050-7075 kHz) for Novice and Technician operators in Alaska, Hawaii and Region 2 Pacific and Caribbean insular areas (PR Docket 86-397). The League stated, "All nighttime com-

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 February 1, 1987.

For more information about the call sign assignment in the Amateur Radio Service, see Section 97.51 of the FCC Rules, or write to the FCC, Consumer Assistance Branch, Gettysburg, PA 17325.

Radio District	Group A	Group B	Group C	Group D
	Am. Extra	Advanced	Tech./Gen.	Novice
0	NW0L	KE0KO	N0HRI	KA0ZHF
1	NI1U	KC1BY	N1EOU	KA1PNI
2	NV2K	KD2XU	N2GXC	KB2CKZ
3	NF3D	KD3AQ	N3FHI	KA3QWP
4	AA4YU	KK4FO	N4PJJ	KB4WNP
5	WU5P	KF5UR	N5KDO	KB5BWH
6	AA6AI	KI6OT	N6OTB	KB5PXJ
7	NY7W	KE7XE	N7IWS	KB7ANQ
8	NV8H	KE8JL	N8HZM	KB8BDH
9	NQ9L	KE9CC	N9GGV	KA9WQF
N. Mariana Is.	AH0E	AH0AC	KH0AI	WH0AAG
Guam	AH2Y	AH2BN	KH2CH	WH2AKP
Johnston Is.	AH3A	AH3AC	KH3AB	WH3AAC
Midway Is.		AH4AA	KH4AD	WH4AAF
Palmyra, Jarvis Is.	AH5A			
Hawaii		AH6HN	NH6HY	WH6BOE
Kure Is.			KH7AA	
American Samoa	AH8C	AH8AC	KH8AD	WH8AAW
Wake Wilkes Peale		AH9AC	KH9AD	WH9AAF
Alaska		AL7IQ	NL7JQ	WL7BNB
Virgin Is.	KP2R	KP2BB	NP2BZ	WP2AF1
Puerto Rico	WP4W	KP4MA	WP4CC	WP4GPG



Magnetic Call Sign
Instant transfer
car to car

Magnetic call sign 2" x 8" clings securely to your car, weather resistant. Your choice of black, blue, green or red lettering on white background. Only \$8.50 each sign ppd. Sign-On, 1923 Edward Lane • Merrick, NY 11566

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)

4

Name _____

Call _____

Address _____

City _____

State _____ Zip _____

- | | | |
|--|--|---|
| <input type="checkbox"/> NEW
12 issues
24 issues
36 issues
Lifetime | <input type="checkbox"/> Renewal
(92¢ per issue)
(88¢ per issue · save \$1)
(83¢ per issue · save \$3)
Be a WR super booster) | <input type="checkbox"/> Gift
\$11.00
\$21.00
\$30.00
\$110.00 |
|--|--|---|

Overseas Readers! Prices quoted are U.S. funds. Please include \$3.00 extra/year for surface mail delivery outside the U.S. Subscriptions may be paid in U.S. funds drawn on U.S. banks, by International Money Order, VISA or MasterCard. Canadian Postal Money Orders (in U.S. funds) are also acceptable.

- Check enclosed MasterCard AmEx VISA

Card # _____ Exp. date _____

Signature _____

Please clip and mail to . . .

Worldradio™

For Subscriptions (charge cards only) P.O. Box 271309 • Escondido, CA 92027-0770

Thank you!

TOLL FREE 800-341-1522

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.

FCC Highlights

(continued from page 8)

munications for Novices on 7100-7150 kHz are difficult, whether in the 48 contiguous states or in Hawaii, Alaska, Pacific or Caribbean areas, and there is no compelling reason to make a special exception for any area." It concluded that Novice privileges "...soon may be significantly increased due to the Novice Enhancement proposal." (ARRL Letter, 01/13/87) (See report on PR Docket 86-161, first paragraph above.)

A Point Loma, California Extra Class amateur was fined \$750 for operating a pirate broadcast station on 7473 kHz during early 1986. Jerry Gastil, K6DYD, used an alias while on the air as the "Voice of the Pacific Southwest" with the unauthorized call sign KIWI. Gastil was also fined \$50 on July 5, 1985 for operating a repeater in San Diego

without proper identification. (W5YI Report, 01/15/87)

The FCC was *not* considering allowing household members to operate under authority of any existing amateur's license "as rumored," said Ray Kowalski, Chief of FCC's Special Service Division (on January 9, in response to a query by Fred Maia, Editor, W5YI Report).

On January 16, FCC Chairman Mark S. Fowler announced his intention to retire sometime this spring. His regular term expired last June. Unless he were to be re-appointed, retirement would be automatic one year after expiration of the regular term.

A pair of Dallas, Texas radio amateurs who refused to be reexamined after the FCC received complaints of irregularities in their test session, have been cleared of all suspicion by the FCC. "It appears that the charges against the pair were an outgrowth of an ongoing repeater 'war' in the Dallas area. The Commission is now reportedly investigating those who filed the complaints to determine which, if any, laws were

broken." (Westlink Report, 01/09/87)

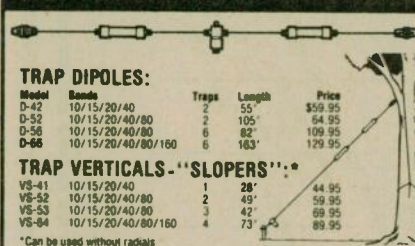
The outcome of the Dallas repeater "war" reported above should be settled by the FCC having ordered the second (interfering) repeater off the air as a result of the Repeater Council's backing the original coordinated repeater. (Westlink Report, 01/09/87)

Revision of the amateur license application Form 610 is underway to take care of examination credit, etc. An FCC Public Notice describing the changes is expected soon. Approval of the new 610 by the Office of Management and Budget is necessary. I understand that the substantial backlog of the old version be depleted before the new 610 may be used.

END-OF-MONTH LICENSE TOTALS

November 1987	December 1987
40,989	41,082
97,821	97,771
115,998	115,715
85,431	83,312
79,019	79,882
419,258	419,762

MULTI BAND TRAP ANTENNAS



TRAP DIPOLES:

Model	Bands	Traps	Length	Price
D-42	10/15/20/40	2	55"	\$59.95
D-52	10/15/20/40/80	2	105"	64.95
D-56	10/15/20/40/80	6	82"	109.95
D-66	10/15/20/40/80/160	6	163"	129.95

TRAP VERTICALS--"SLOPERS":*

Model	Bands	Length	Price
VS-41	10/15/20/40	1 28"	44.95
VS-52	10/15/20/40/80	2 49"	59.95
VS-53	10/15/20/40/80	3 42"	69.95
VS-64	10/15/20/40/80/160	4 73"	89.95

*Can be used without radials
*Feed line can be buried if desired
*Permanent or Portable Use

ALL TRAP ANTENNAS are Ready to use - Factory assembled - Commercial Quality - Handle full power - Comes complete with: Deluxe Traps, Deluxe center connector, 14 ga Stranded CopperWeld ant. wire and End Insulators, Automatic Band Switching - Tuner usually never required - For all Transmitters, Receivers & Transceivers - For all class amateurs - One feedline works all bands - Instructions included - 10 day money back guarantee!

SINGLE BAND DIPOLES (Kit form):

Model	Band	Length	Price
D-15	15	22"	18.95
D-20	20	33"	19.95
D-40	40	66"	22.95
D-80	80/75	130"	25.95
D-160	160	260"	34.95

Includes assembly instructions, Deluxe center connector, 14 ga Stranded CopperWeld Antenna wire and End Insulators.

COAX CABLE: (includes PL-259 connector on each end)

Type	Length	With antenna purchase	Separately
RG-58	50'	\$8.00	\$11.95
RG-58	90'	12.00	16.95

DELUXE CENTER CONNECTOR

- NO RUST Brass Terminals
- NO Jumper Wires Used
- NO Soldering
- Built-in Lightning Arrestor
- With SO-239 Receptacle
- Handles Full Power
- Completely Sealed, Weatherproof
- Easy Element Adjustments
- Commercial Quality

CE-1 \$8.95

DELUXE ANTENNA TRAPS: Completely sealed & weatherproof - Solid brass terminals - Handles Full Power - NO Jumpers - NO Soldering. Instructions included.

For 4-band Dipole Ant. 40/20/15/10 \$36.00/pr.
For 5-band Dipole Ant. 80/40/20/15/10 \$38.00/pr.

ORDER DIRECT FROM FACTORY. All orders shipped US Postpaid. VISA/MC - give card #, Exp. date, Signature

SPI-RO MANUFACTURING, INC.
Dept. 102, P.O. Box 1538
Hendersonville, NC 28793
Dealer Inquiries Invited

Code matters

Part VI

Loraine McCarthy, N6CIO

Let's continue our discussion of sentence techniques this month. Last month we talked about "blocking off" words and "zeroing" in on an answer by drawing vertical lines. Remember, we talked about finding the beginning and end of an answer.

Quite often I have seen students pick a section of letters and determine their answer from this without regard for the preceding and following letters and the words they were meant to form. When you've finished working on a sentence, if you can't read it from beginning to end, then something isn't correct.

Take a look at this section of a sentence:

"and antenna is a V le 6eam
up V1 feet."

The student who puts "beam" for the antenna for an answer without working through the phrase will be incorrect. The letters "V le" are there for a reason. Corrected this would say:

"and / antenna / is / a / V le / 6eam /
4 e b
4
up / V1 / Feet."

This student had copied two letter "V's" for the number "4", as we discussed when we reviewed letters and numbers and left off the first "e" for "ele", which is often used as an abbreviation for the word element.

Let's look at another example:

"Class oll iyenseis a v nce ."
This student wrote Novice for the answer but ignored the letter "n". The answer could have been "Novice" were it not for the "n" and the spacing between the "e" and the period. Let's take a look at the correct work.

f c d a d
"Class / ol / liyense / is / a v nce ."

Note that by determining that the word begins with the letter "a", using the letter "n", and putting the "d" in the space between the "e" and the period we arrive at the correct class of license which is "advanced".

Note that this student also reversed an "l" and "f" in the word "of" and had a final dit-dah on the "c" and "y" as previously discussed.

Let's look at one more sentence where the student has made a few errors but not enough to miss the questions:

"Tse wxsr is garm and windc
an tem era ture is Z 4 degrees."
First divide the sentence in half by drawing vertical lines around the "and". Corrected, the first half would look like this:

h h w y
"Tse / wx / sr / is / garm / and / windc"

Note that there are two "close association" errors that we discussed in Part IV, the "s" and "h", and a reversed "g" and "w".

(continued on next page)

Special Events...

Maple Leaf Festival

The Somerset County (Pennsylvania) ARC will operate KA3IUS on the lower 25 kHz of the General section of 75 and 40 meters. Operation will take place on April 11, from 1700 to 2200 UTC on 40 meters, then from 2200 to ? on 75 meters. On April 12, we will operate from 1700 to 2200 on 40 meters.

Please send SASE for certificate to commemorate the 40th anniversary of the Pennsylvania Maple Festival to KA3IUS, R.D. #1, Box 394-B, Meyersdale, PA 15552. □

Code

(continued from page 10)

Now let's look at the second half corrected:

d p a 7
"an tem ern ture / is / Z 4 degrees."

Note here that we added the "d" and "p" as they were left out when this student was copying. There was a reversed "n" and "a" and the letter "z" where we needed a number. Remembering our studies on letters and numbers, the "Z" begins with two "dah" sounds so we would correct this to a "7".

OK, start taking a closer look at your copy. Remember, if you're getting close, go ahead and give the test a try.

I would like to hear from some of you. Do you have a question about your code practice that you would like to ask? Send it to me on a postcard and I will pick those that occur most often and respond to some in the column in the June issue. For a personal answer, send along an SASE.

Next month we will continue our study of sentence techniques.

Here at Radio School we have tapes available with practice exams at 5, 13 and 20 wpm. Also, there are speed builders from 5-7, 7-10, 10-12, 12-15 Calls and Numbers, 13-15 Random, and 13-15, 15-17 and 17-19 speed builders.

These single tapes are \$9.95 plus 75¢ for postage and handling. Also available are theory courses on cassette at the Novice, Tech./General, Advanced and Extra levels, and these are \$19.95 plus \$3 for postage and handling. The helpful 10 handouts on the code are still available for \$3.

Any of the above items can be ordered from me directly at: Loraine McCarthy, N6CIO, 315½ Ruby, Balboa Island, CA 92662. □

U.S. Submarine Service

The Olympia RAC will celebrate the anniversary of the U.S. Submarine Service by operating from the USS *Becuna*, a World War II submarine, and the USS *Olympia*, flagship of Admiral Dewey 1898.

Transmissions can be heard from 1300Z, April 11, until 2000Z, April 12. Frequencies: CW — 3590, 7050, 14050, 21090, 28150; Phone — 3890, 7240, 21360, 28600 (all frequencies within 10 kHz). Two-meter operation is planned, as well as Novice bands.

The ORAC call is WA3BAT. A beautiful certificate has been prepared for contacts. Stateside mailings require business-size SASE. Foreign contacts

please remit 1 IRC. Please use the address below. The address for WA3BAT in most Callbooks is incorrect.

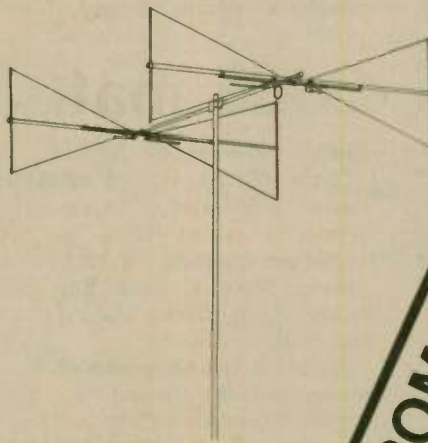
For additional inquiries about the ships' histories or the club's operation and QSL information, please write to: Olympia RAC, P.O. Box 928, Philadelphia, PA 19105, USA. □

St. Charles ARC's 15th

The St. Charles ARC will operate WB0HSI on Saturday, April 11, from 1400Z to 2200Z, to celebrate its 15th anniversary. (continued on next page)

The HF4B "Butterfly"™

A Compact Beam
for 20-15-12-10 Meters



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.

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



BUTTERNUT ELECTRONICS CO.

405 East Market

Lockhart, Texas 78644

VE exam schedules

As a service to our readers, Worldradio presents a feature listing those VE exams, times and locations which are sent to us. Please remember that our deadline for publication is two months in advance. For example, if your VE group is scheduling an exam for September, please have the information to us by mid July.

Our address is Worldradio, 2120 28th St., Sacramento, CA 95818. Please mark the envelope "VE Exams".

List the location, and information examinees should have (advance registration, etc.) and the name and telephone number of a person to contact for further information.

Date	City	Contact person	Notes
California			
Mar 29	Santa Cruz	W6NLG (408) 255-9000	w/i only
Apr 4	Van Nuys	(818) 762-5095	
Apr 4	San Diego	(619) 465-EXAM	pre-reg by 3/25
Apr 4	Burbank	W6JEP (818) 848-9340	w/i OK
Apr 5	Pleasant Hill	WX6A (415) 932-0491	w/i only
Apr 11	Los Altos Hills	W6NLG (408) 255-9000	w/i only
Apr 11	Palm Springs	(619) 347-4294	
Apr 11	San Marcos	(619) 465-EXAM	pre-reg by 4/1
Apr 12	Eureka	KB6FIW (707) 442-9245	
Apr 18	Santa Monica	(213) 475-0383	
Apr 18	Chula Vista	(619) 465-EXAM	pre-reg by 4/8
Apr 18	Yucaipa	NQ6M (714) 795-2867	some w/i
Apr 25	El Cajon/Escondido	(619) 465-EXAM	pre-reg by 4/15
May 2	San Diego	(619) 465-EXAM	pre-reg by 4/22
May 9	Santa Barbara	W1UUQ (805) 964-7432(H) 967-5511 Ext. 2480(W)	30-day pre-reg some w/i
Colorado			
Apr 11	Denver	W01JR (303) 366-9689	pre-reg pref w/i OK
Apr 20	Boulder	N0BWS (303) 530-1872	w/i OK, but call first
Florida			
Apr 18	Melbourne	WB9IVR (305) 724-6183	w/i OK
Illinois			
Apr 3	Springfield	WD9EBK (217) 629-8190	w/i OK
Apr 21	Aurora	N9AKE (312) 892-1252	w/i OK
Apr 23	Chicago	W9WBY (312) 929-6550	
Indiana			
Apr 4	Speedway	KA9H (317) 241-1272	some w/i call first
Apr 4	Columbus	KI9R (812) 372-5006	10-day pre-reg
May 17	Evansville	KA9EIV (812) 424-9182	30-day pre-reg some w/i
Kansas			
Mar 27	Kansas City	NC0M (913) 262-0631	pre-reg pref w/i OK
Mar 27	Topeka	NA0F (913) 828-3317	pre-reg pref w/i OK

Date	City	Contact person	Notes
Maryland			
Mar 29	Timonium	Jim Kessler (301) 953-1065	w/i
Apr 11	Andrews AFB	Al Abercrombia (301) 868-0399	
Massachusetts			
Apr 7	Acton	W1QLT (617) 263-8742	pre-reg by 3/31
Apr 17	Holyoke	KO1R (203) 623-4850	w/i OK
Apr 18	Worcester	NA1Q (617) 793-5435	w/i OK
Michigan			
Apr 18	Garden City	(313) 562-1243	
Minnesota			
Apr 18	Minneapolis	K0HLA (612) 448-5384	
Missouri			
Apr 4	Camenton	N0GRD (314) 346-2944	
New Hampshire			
Apr 22	Salem	WA2MBQ (603) 893-1764	pre-reg by 4/15 w/i OK
New York			
Apr 11	Long Island	W2NL (516) 541-2450	
Oregon			
Apr 4	Portland	KZ7T (503) 649-5066	30-day pre-reg some w/i
Apr 23	North Bend	WA7AHI (503) 756-6846	30-day pre-reg some w/i
Apr 18	Grants Pass	NS7N (503) 476-6533	10-day pre-reg w/i OK
Pennsylvania			
Apr 8	Scranton	Bob Chimel (717) 586-2659	w/i
Texas			
Apr 4	Midland	KT5G (915) 694-9450	w/i OK
Apr 11	San Antonio	NS5I (512) 681-0702	w/i
Apr 13	Brady	WD5H (915) 597-2561	7-day pre-reg
Apr 18	Cleveland	WM5S (915) 597-0614 N5AF (713) 592-2257	30-day pre-reg some w/i
Virginia			
Apr 4	Williamsburg	Andrew Swanson (804) 253-2811	
Washington			
Apr 11	Seattle (North)	W7WHT (206) 282-1438	w/i only call first
Apr 18	Seattle (South)	N7IL (206) 242-6501	10-day pre-reg some w/i
Wisconsin			
Apr 18	Milwaukee	WD9JKZ (414) 672-7704	w/i OK

Special Events

anniversary near its original meeting site in St. Charles, Missouri.

This special event station will transmit on 7250, 14325, 21350, 28510 and 146.67 as propagation and QRM permit. For certificates, send a large SASE to the St. Charles ARC, P.O. Box 1429, St. Charles, MO 63302-1429.

TWO EGG, Florida

The Coronado Wireless Association will operate a special event station at TWO EGG, Florida during Easter time. The call WO4K will be used and the operation frequencies will be the lower portions of the General Class phone bands.

Send SASE for QSL to William Ken-

nedy, WO4K, P.O. Box 1, Edgewater, FL 32032.

•••••DON'T FORGET•••••
INCLUDE FIRST AND LAST
NAMES with call signs.

One of the most complex operating controls of our high-performance mobiles.

You don't have to sacrifice performance to gain simplicity in your mobile operation.

Yaesu's 2-meter FT-211RH and 440-MHz FT-711RH give you all the performance you look for in a sophisticated, microprocessor-controlled mobile.

With controls that couldn't be more straightforward and easy to learn. Which means no



radios are based on the very same technology.

To begin with, you get an autodialer mic with 10 lithium backed memories, each capable of storing any key sequence up to 22 digits long.

Plus you get: 45 watts output (35 watts on 440 MHz). LCD readout. 10 memories that store frequency, offset and PL tone.

(7 memories can store odd splits.) Scan all memories or selected memories at 2 frequencies per second. Band scan at 10 frequencies per second. Tx offset storage. Priority channel scan.

Tuning via tuning knob, or up/down buttons. PL tone board (optional). PL display.

Independent PL memory per channel. PL encode *and* decode. LCD power output and "S" meter display. Eight-key control pad. Keypad lock. High/low power switch (low power: 5 watts VHF, 3 watts UHF).

What's more, each radio is perfect for overhead mounting. Just remove a few screws and flip the control panel 180°.

Discover the 2-meter FT-211RH and 440-MHz FT-711RH at your nearest Yaesu dealer today. If you can turn a knob and push a button, you'll have high-performance mobile operation mastered.



operating complexities to interfere with your driving.

In fact, if you own our hand-held FT-23R, you've already learned how to use our FT-211RH and FT-711RH. Because all three

YAESU



Yaesu USA 17210 Edwards Road, Cerritos, CA 90701 (213) 404-2700. Repair Service: (213) 404-4884. Parts: (213) 404-4847.
 Yaesu Cincinnati Service Center 9070 Gold Park Drive, Hamilton, OH 45011 (513) 874-3100.

Prices and specifications subject to change without notice. PL is a registered trademark of Motorola, Inc.



Morse code is vital to the hobby

I feel that some response is in order concerning some of the recent statements Wayne Green, W2NSD, made in a speech before the Ham/West banquet that *Worldradio* covered, and also some uncontested remarks Mr. Green offered during his January '87 live 2-meter conference.

The vast majority of amateurs today will agree with Mr. Green in that we all want our hobby to be strong, to grow, and most of all to attract young people that will insure a viable, healthy hobby for the future. There is also no doubt that an excellent way to reach the younger generation is through school radio clubs. Amateur Radio is not going to be of interest to every youngster, nor will it necessarily grant us an open road to more engineers and technicians, but it must be introduced to as many as possible to give them the opportunity to



"It's the only service of its kind," says Westlink Producer, Bill Pasternak.

The *RP Report*, a cassette based amateur radio program service formatted for *your* net with interviews and special programs available nowhere else — for all amateurs.

One time subscription, (4 programs)	\$15
Six-month subscription, (12 programs)	\$30
Twelve-month subscription, (26 programs)	\$55

Make checks payable to:
Hap Holly
964 South 3rd Ave.
Des Plaines, IL 60016

For more info call (312) 298-LINK
Your net needs the *RP Report*.

make a choice for themselves.

Mr. Green's negative statements concerning the Morse code are total nonsense. Continuing to spread this old tripe is one of the things that is currently hurting the growth in Amateur Radio. No wonder new candidates and Novices are scared to death of the code when they are continually being told how difficult it is, when in fact the 5 wpm level is relatively easy for most people if they are taught how to study properly and are willing to put forth a little effort. I refer to the hundreds of handicapped individuals that are passing both the Novice and General code tests, not to mention the written tests.

Yes, there are those who will never be able to learn the code, and by the same token there are those who will never be able to pass the written exams either, so should we have a no-code and no-written exam license?

Mr. Green says the code is useless, not needed, and is an obstacle for youngsters entering the hobby. Not true. For those who are willing to study and work on the code, regulations and theory, most will do well and find their niche in one or more of the many fascinating activities in Amateur Radio. The code is being used everyday to transmit messages, and when band conditions are very low, it's the only way you will be able to complete DX contacts.

When I was first licensed a little over five years ago, I felt the code and theory were challenges, and indeed an important part to my development as a better operator. Although I had to make a special effort at times, I was able to acquire the Extra Class license a year ago, and now operate on CW about 90% of the time.

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!

The Morse code definitely isn't for everyone, but likewise, RTTY, slow scan TV, 2 meters, etc. aren't either. This is just the greatest hobby I have ever seen in my 55 years, and it's high time the no-code license suggestions were put on the back burner.

We must ask ourselves if we are going to play a numbers game with new hams. Are we more interested in increasing subscription rates, radio sales and memberships, or are we going to seek and develop quality in our hobby first?

There are two important things Mr. Green did not touch on that are very relevant to the future of Amateur Radio.

One of the biggest factors in our high loss of Novices is the fact that many of them do not have the opportunity to join active radio clubs where their interests can be kindled by an association with more experienced hams who can guide and teach them about the many facets of the hobby, and also offer them close supervision and assistance in upgrading. A closer club interest will help retain the enthusiasm in active young people whose interests can change rapidly.

The other thing I have recently been experiencing as a VE is that the high percentage of those failing the exams are attempting to memorize the answers to the written tests rather than learn the regulations and theory. Also, those failing the code tests need additional help in the proper techniques for learning the code, and most of all an experienced radio amateur by their side to encourage 15 minutes of faithful practice each day along with good positive rhetoric concerning the code and Amateur Radio in general.

Let's retain more of the young amateurs who have joined our ranks by speaking more positively of the hobby, working more closely with them during their learning process, and offering them assurances that we are always ready to assist and encourage them in times of need, whether it be Novice Roundup, Field Day, upgrading or an electronic project.

DAVE VAN DER WEELE, N3CRN
Forest Hills, Pennsylvania □

'Pure baloney'

With reference to Wayne Green's keynote address at the Ham/West banquet on November 8, reported in the January issue of *Worldradio*. The mystery is not that he makes statements that cannot be backed up by facts; rather, that he has such a following — they that hang onto his every word as gospel truth.

I am relying upon the Amateur Radio census figures published in the Amateur Radio Callbook for my data. That source

shows that between 1981 and 1986 (the figures in the Callbooks "for" 1982 and 1987), the gains (or losses) in Amateur Radio ranks are as follows:

Novice	+11.9%	Advanced	+7.9%
Technician	+13.3%	Extra	+38.2%
General	-2.8%	Overall	+7.5%

So, it is clear that the figure Wayne cites (8.5% loss in only one year) must have been made up out of "thin air."

And then: his proposition that the ills of the electronics industry in the United States can be blamed almost entirely upon our not having a "no code" ham license so as to have attracted millions of young people into the amateur ranks — pure baloney . . . and he knows it.

J. HARVEY CHASE, W4TG

Gray, Georgia

Rebuttal to Wayne Green's speech

When most people hear or read comments made by prominent persons such as Wayne Green, they think those comments are true. Well, some of the statements in the article in the January issue of *Worldradio*, I think, are untrue or "stretched" out of shape.

I have been involved closely with Amateur Radio since the mid-'30s although I did not get my license until 1939. During that time, the license structure was: Class A — all amateur privileges; Class B — all CW privileges and phone on 10 meters and above; Class C — same as Class B, but you lived more than 125 miles from an FCC examining point, and the exam was

given by a Class A or Class B ham. Furthermore, the Class C ham was subject to being called at *any* time into an FCC examining point and required to take the exam.

To my knowledge, there has never been a CW-only or a phone only license.

He says, "Japan went from 18,000 licensed amateurs to 2 million with half our population." It seems to me that if we did the same thing, we would end up with 4 million hams. It's hard to imagine what the ham bands here would sound like with 4 million on the air.

If all these thousands and thousands of would-be hams are so brilliant, the code should be no obstacle to them at



ICOM

KENWOOD

YAESU



HF Equipment	IC-735	List	Juns
IC-735 Gen. Cvg Xcvr		\$999.00	Call \$
IC-745 Gen. Cvg Xcvr		1049.00	Call \$
IC-751A Gen. Cvg. Xcvr		1649.00	Call \$
Receivers			
IC-R7000 25-1300 + MHz Rcvr		1099.00	Call \$
IC-R71A 100 kHz-30 MHz Rcvr		949.00	Call \$
VHF			
IC-271A All Mode Base 25w		859.00	Call \$
IC-271H All Mode Base 100w		1099.00	Call \$
IC-275A 2m Base 25w		1199.00	Call \$
IC-275H 2m Base 100w		TBA	Call \$
IC-27A FM Mobile 25w		429.00	Call \$
IC-27H FM Mobile 45w		459.00	Call \$
IC-28A FM Mobile 25w		429.00	Call \$
IC-28H FM Mobile 45w		459.00	Call \$
IC-38A FM Mobile 25W		459.00	Call \$
IC-2AT FM HT		299.00	Call \$
IC-02AT FM HT		399.00	Call \$
IC-μ2AT Micro HT		329.00	Call \$
UHF			
IC-471A All Mode Base 25w		979.00	Call \$
IC-471H All Mode Base 75w		1339.00	Call \$
IC-47A FM Mobile 25w		549.00	Call \$
IC-48A FM Mobile 25W		459.00	Call \$
IC-4AT FM HT		339.00	Call \$
IC-04AT FM HT		449.00	Call \$
IC-3200A FM 2m/70cm 25w		599.00	Call \$
220 MHZ			
IC-37A FM Mobile 25w		499.00	Call \$
IC-3AT FM HT		339.00	Call \$
Repeaters			
IC-RP3010 44C MHz		1229.00	Call \$
IC-RP1210 1.2 GHz		1479.00	Call \$



HF Equipment	TS-440S/AT	List	Juns
TS-940SAT Gen. Cvg Xcvr		\$2249.95	Call \$
TS-940S Gen. Cvg Xcvr		2049.95	Call \$
TS-930S/AT Gen. Cvg Xcvr		1849.95	Call \$
TS-830S Xcvr		1099.95	Call \$
TS-530SP Xcvr		899.95	Call \$
TS-430S Gen. Cvg Xcvr		819.95	Call \$
TS-440S/AT Gen. Cvg Xcvr		1199.95	Call \$
TS-440S Gen. Cvg Xcvr		1049.95	Call \$
Receivers			
R-5000 NEW!		899.95	Call \$
R-2000 150kHz-30 MHz		649.95	Call \$
TS-670 All Mode Quad 6 M		799.95	Call \$
VHF			
TS-711A All Mode Base 25w		899.95	Call \$
TR-751A All Mode Mobile 25w		599.95	Call \$
TM-201B FM Mobile 45w		369.95	Call \$
TM-211A FM Mobile 25w		399.95	Call \$
TM-2530A FM Mobile 25w		429.95	Call \$
TM-2550A FM Mobile 45w		469.95	Call \$
TM-2570A FM Mobile 70w		559.95	Call \$
TH21-BT FM, HT		259.95	Call \$
TH-205 AT, NEW 2m HT		259.95	Call \$
TH-215 AT, NEW 2m HT		349.95	Call \$
TR-2600A FM, HT		359.95	Call \$
UHF			
TS-811A All Mode Base 25w		1049.95	Call \$
TM-401B FM Mobile 25w		399.95	Call \$
TM-411A FM Mobile 25w		449.95	Call \$
TH-41BT FM, HT		269.95	Call \$
TR-3600 FM HT		369.95	Call \$
220 MHZ			
TM-3530A FM 220 MHz 25w		449.95	Call \$
TH-31BT FM, 220 MHz HT		269.95	Call \$
TL-922A HF Amp		1499.95	Call \$



HF Equipment	FT 757GX	List	Juns
FT-ONE Gen. Cvg Xcvr		\$2859.00	Call \$
FT-757 GX Gen. Cvg Xcvr		995.00	Call \$
FT-767 4 Band New		1895.00	Call \$
Receivers			
FRG-8800 150kHz-30 MHz		599.95	Call \$
FRG-9600 60-905 MHz		679.95	Call \$
VHF			
FT-270RH FM Mobile 45w		439.95	Call \$
FT-290R All Mode Portable		579.95	Call \$
FT-23 R/TT Mini HT		299.95	Call \$
FT-209RH FM Handheld 5w		359.95	Call \$
UHF			
FT-770RH FM Mobile 25w		479.95	Call \$
FT-73 R/TT Mini HT		314.95	Call \$
FT-709RH FM HT 4w		359.95	Call \$
VHF/UHF Full Duplex			
FT-726R All Mode Xcvr		1095.95	Call \$
HF/726 Module for 10, 12, 15M		289.95	Call \$
FT-690R 6m, All Mode, Portable		569.95	Call \$
430/726 430-440 MHz		329.95	Call \$
440/726 440-450 MHz		329.95	Call \$
SU-726 Sate Duplex		129.95	Call \$
Dual Bander			
FT-2700RH FM 2m/70 cm 25w		599.95	Call \$
FT-727R 2m/70 cm HT		479.95	Call \$
220 MHZ			
FT-109 RH New HT		379.95	Call \$
Repeaters			
FTR-2410 2m Repeaters		1249.95	Call \$
FTR-5410 70cm Repeaters		1289.95	Call \$

***** SPECIAL SALE *****

ICOM IC-735 compact HF xcvr
 YAESU FT757-HF 9-band xcvr
 FT2700 2m/440 25W FM

CALL FOR SPECIAL PRICES

JUN'S
ELECTRONICS
 800-882-1343

ENCOMM • TE • MIRAGE/KLM
 AMERITRON • BIRD • AMP. SUPPLY • KANTRONICS
 AEA • ASTRON • RF CONCEPTS • ALINCO

• AMATEUR • TWO WAY • MARINE
 • CELLULAR MOBILE PHONE • SCANNER
 ★ Free U.P.S. Cash Order ★ SE HABLA ESPANOL
 (Most Items, Most Places)

(213)390-8003

3919 Sepulveda Blvd.
 Culver City, CA 90230

PREAMPLIFIER



Can't hear the weak ones when conditions are bad? Receiver lacks sensitivity on 20, 15 or 10? Get the world famous Palomar pre-amplifier. Tunes from 160 to 6 meters. Gives 20 db extra gain and a low noise figure to bring out those weak signals. Reduces image and spurious responses too.

An RF sensing circuit bypasses the pre-amplifier during transmit. The bypass handles 350 watts.

Model P-410X (for 115-v AC) or Model P-412-X (for 12-v DC) \$149.95. Model P-408 (SWL receive only for 115-v AC) \$129.95. Add \$4 shipping/handling in U.S. & Canada. California residents add sales tax.

LOOP ANTENNA



Loops pick up far less noise than other antennas. And they can null out interference. Palomar brings you these features and more in a compact desktop package. The wideband amplifier with tuning control gives 20 db gain. Plug-in loops have exclusive tilt feature for deep nulls. Loops are available for 10-40 KHz, 40-150 KHz, 150-550 KHz, 550-1600 KHz and 1600-5000 KHz.

Model LA-1 Loop Amplifier \$84.95. Plug-in Loops (specify range) \$62.95 each. Add \$4 shipping/handling in U.S. and Canada. California residents add sales tax.



Send for FREE catalog that shows our complete line of noise bridges, SWR meters, pre-amplifiers, loop antennas, VLF converters, audio filters, baluns, RTTY equipment, toroids and more.

PALOMAR ENGINEERS

BOX 455, ESCONDIDO, CA 92025
Phone: (619) 747-3343

all. Just about every issue of *QST* has an article about some 11- or 12-year-old getting a ticket, some even Extra Class. Are the would-be engineers less intelligent than these kids?

The only reason that I can think of for a presently licensed ham to be striving

for a no-code exam, is that he has a friend he would like to see on the air.

Take the code out of Amateur Radio exams and we will end up right where CB is today.

JACK WATT, W8HYQ
Ontonagon, Michigan

Frustration builds while waiting

Are you aware of the difficulty that a person who tries to become a Novice has? We take courses, usually with ARRL booklets which tell us how wonderful Amateur Radio is. We study hard, learn the code, master the law and the theory and pass the test. That's the end!

Licenses are not forthcoming for up to four months minimum. What do you do while you wait? Spend money, build a station you cannot use, listen to old-timers in the Advanced and Extra Class portions of the band break all the rules and courtesies you were taught in your Novice class. But most of all, you wait

while incentive dissipates.

So, you study to upgrade at a VEC test. You upgrade and still cannot operate. I know of an Extra Class ham — via VEC upgrading — who still has no Novice license, so cannot operate yet.

Do licensed hams and the ARRL care about beginners? Experience says "No!" Will Worldradio rally some support for us? I will persevere the waiting period and be an unofficial SWL, as in the Soviet bloc countries, but many others will lose interest and drop out. Does Worldradio care?

DAVID HOUSTEN
Hawthorne, New Jersey

Own a computer?

I am a brand new ham and have set up a computer bulletin board specifically for Amateur Radio. It is running at 1200 baud, 8 bits, 1 stop bit, no parity. We also accept 300 baud users.

We're currently working on packet, but it's only on landline at the present.

Speak with other amateurs! Find out information from the ARRL, FCC and other sources! Call Amateur World BBS at (213) 377-0450.

MICHAEL KEMPS, N6P..(?)
Rancho Palos Verdes, California

If a foreign amateur visits your area, do a picture story for **WORLD RADIO**.

COMMERCIAL - AVIONICS - SOLID STATE - DIPOLE - LONG WIRE - MILITARY - MARINE

"THE AMERICAN ORIGINAL"
MADE IN AMERICA BY AMERICANS

MAXCOM

AUTOMATIC ANTENNA MATCHER
FOR ALL S.S.B. RADIOS
"ONE ANTENNA 100 KHZ. TO 200 MHZ."

MAXCOM has made Global Communications Simple!!!

TEN MODELS:
150 WATTS TO 10,000 WATTS
\$299. TO \$1,999.

VSWR 1.5:1 OR LESS

FIVE YEAR GUARANTY ON MOST MODELS

BOLD BY SERIOUS, PRACTICAL RADIO DEALERS
"THE ONLY ANTENNA SYSTEM YOU REALLY NEED"

Absolutely no tuning with a MAXCOM system
Simply connect dial your frequency and talk
That's it just TALK

OVER 3000 MAXCOM STATIONS WORLD WIDE
MAXCOM, INC. BOX 502, FT. LAUD., FL. 33302
305-527-5172 © 1988 MAXCOM, INC.
THE BOTTOM LINE: "MAXCOM WORKS"

NO MOVING PARTS-INSTANT MATCHING-NO OHM INPUT- NO NOISE-NO CONTROL LEADS- LIGHT WEIGHT
AMATEUR - HIGHEST EFFICIENCY- 200 WATTS TO 10,000 WATTS- FIVE YEAR GUARANTY- QUALITY

HAMVENTION

DAYTON

April 24, 25, 26, 1987

Early Reservation Information

• General Chairman, Jim Simpson, WB8QZZ

• Asst. General Chairman, Bill McNabb, WD8SAY

Grand banquet tickets are limited, please place your reservations early.

- **Giant 3 day flea market • Exhibits**
- **Door prizes • License exams**
- **CW proficiency test**

Flea Market Tickets

We increased Flea Market area by nearly 400 spaces this year and all were sold out by January 10.

Special Awards

Nominations are requested for "Radio Amateur of the Year", "Special Achievement" and "Technical Achievement" awards. Contact; Awards chairman, Box 44, Dayton, OH 45401.

License Exam

Novice thru extra exams scheduled Saturday & Sunday by appointment only. Send current FCC form 610, copy of present license and check for \$4.35 (payable to ARRL/VEC) to: Exam Registration, 8830 Windbluff Point, Dayton Oh 45459

Slide Show

35 mm slide/tape presentation about the HAMVENTION is available for loan. Contact Dick Miller 2853 La Cresta, Beavercreek, OH 45324

Parking

Free parking is available at Hara Arena. In addition, there will be free shuttle bus service from all major motels and designated parking lots. Parking and road information will be available on DARA's 146.34/.94 repeater.

Free Bus Service

Free Bus Service will be provided between many Motels and Hara Arena. See the schedules at the motel registration desks. Avoid parking problems at the Arena by taking the HAMVENTION buses.

Campers & Trailers

Campers and Trailers may be parked at Montgomery County Joint Vocational School. A HAMVENTION bus will provide transportation between the camper parking area and the Arena. No campers or travel trailers will be permitted to park in the Arena lot or Flea Market area.

Wheelchairs

Wheelchairs will be available. Send S.A.S.E. for details to "Wheelchair" P.O. Box 44, Dayton, OH 45401.

Alternate Activities

HAMVENTION is for everyone. We have planned activities for the YL or your non-ham family members.

Deadlines

Award Nominations: April 4

Lodging: April 4

License Exams: March 28

Advance Registration and banquet: USA - April 11
Canada - April 4

Information

General Information: (513) 433-7720

or DARA Box 44 Dayton, OH 45401

Flea Market Information: (513) 223-0923

Lodging Information: (513) 223-2612

(No Reservations By Phone)

This is the year for you to attend the internationally famous Dayton HAMVENTION. Come with your friends to hear enlightening forums, see the latest equipment, and visit a flea market that has everything! No matter what you are looking for, you can find it in Dayton!

HAMVENTION is sponsored by the Dayton Amateur Radio Association Inc.

Over-the-horizon radar

Peter Onnigian, W6QEU

The Air Force has announced that the second sector of its over-the-horizon radar (OTH) in Maine will be in full operation by early spring. Its azimuth beam sweep is 180°.

The range is about 1,800 nautical miles and will be used to monitor both subsonic and supersonic aircraft and missiles. This OTH radar has been used to track aircraft, including Air Force 1, all the way to Reykjavik.

The operating frequency range varies from 5 to 28 MHz. The antenna array for the transmitting facility is 2,265 feet long. The receiver site — located about 110 miles away — uses a 246-element antenna array, which is 4,980 feet long!

The transmitter consists of a series of 12 transmitters which can be brought up to 100kW power output each. At full power, the antenna input power can be as high as 1,200kW. Using an antenna gain of 2 at worse skew angle, the effective radiated power would be 2.4 MW! □



A "crowbar" circuit is one in which a SCR shorts a power supply, thus blowing a fuse or breaker. — John Kielbasa, K9VQC

Amateur "Hi"

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

This month's AMATEUR "HI" winner is Millard C. George, K6ZRY, of El Cerrito, California. He'll be receiving a free year's subscription to Worldradio.

In 1966, my wife and I spent six months touring Europe, England, Scotland and Ireland. Prior to leaving, we had purchased our car through the German Auto Agency in San Francisco for delivery in Paris on a specified date. We flew to New York and sailed for Europe on the SS United States.

After four and one-half wonderful days at sea, we landed at LeHavre, France; thence by rail to Paris. We spent 10 days in Paris visiting all of the interesting spots before starting our tour, which took us through 22 countries and driving over 14,000 miles. Our last visit was to Ireland.

Before leaving Paris, hoping to meet some European hams, I had put the following on the back window of the car in large gold-letter decals:

MILLARD C. GEORGE — K6ZRY
246 Carmel Avenue
El Cerrito, California, USA

Those of you who have driven over the roads in Ireland know that many of the roads are very crooked, narrow, with stone walls on either side and passing

spaces at intervals. On one of our day trips, we were driving at a low speed over the bad roads when a car approached us from the rear. The driver began honking his horn almost constantly. We naturally assumed he wanted us to speed up, as there were no places where he could pass. Accordingly, I began increasing my speed. However, the faster I went, he — almost on my bumper — kept honking.

Finally, after several miles of this, I waved him down and stopped. He jumped out of his car and rushed to me. At first, I felt sure he was going to punch me in the nose. His first remarks were: "First of all, you owe me the price of two gallons of gas, as I have been following you, out of my way, for over 10 miles trying to get you to stop for an invitation to our house for a 'bit' of Scotch, some refreshments and a nice chat."

He then introduced himself, gave me his call letters and kept insisting that we drive back about 10 miles to his home. Reluctantly we had to decline his invitation as we had hotel reservations to keep many miles up the road.

He was a very interesting young man, with a typical Irish sense of humor and we were sorry to have to reject his invitation. He also stated that he tried to use his horn for sending Morse code to us, but admitted it wasn't possible over the rough road with its many curves. □

Announcing New 6- & 8-Pole Crystal Filters

• ICOM 730/735/740/745/751/R70/R71A SSB 2.1kHz, 8-Pole — Exact replacement for FL-44A. Model IR455H1.05X — \$99
• ICOM IC-271/471/1271 CW 400Hz, 8-Pole — Great for DXing or EME.

Model IR10.7H400C — \$115

• Kenwood TS-930/940/830/R-2000 CW Super Selective 250Hz 8-Pole 455 kHz Filter — Comes mounted on high-quality glass PC board for the TS-930 and TS-940, drops into the TS-830.

Model IR455H125C — \$125

• TS-940/930/830 Super Selective CW Switch Kit — This new kit allows you to add another CW bandwidth. For example, on the 930/940/830, if you already have 400Hz or 500Hz filters installed, you can now select a set of 1R1250Hz filters. Our 250Hz matched set allows for a lower noise floor for super quiet DXing.

• 9mHz 8-Pole Crystal Filters for Experimenters — All 8-Pole Filters — \$60
All 6-Pole Filters — \$50

For SSB

For FM

- | | |
|------------------|-----------------|
| A. 2.4kHz @ 6dB | A. 1.5kHz @ 6dB |
| B. 2.1kHz @ 6dB | B. 30kHz @ 6dB |
| C. 1.8kHz @ 6dB | For CW |
| D. 2.2kHz @ 6dB | A. 600Hz @ 6dB |
| ★E. 2.2kHz @ 6dB | ★B. 600Hz @ 6dB |

For AM

★(6-pole)

- | | |
|------------------|--|
| A. 6.0kHz @ 6dB | \$5.00 shipping and handling on all orders |
| ★B. 6.0kHz @ 6dB | |

For more information, call

International Radio, Inc.
747 So. Macedo Blvd.
Port St. Lucie, FL 33452
(305) 879-6868



GO MOBILE WITH YOUR H.T.!



New! For Kenwood TH-21AT Series

Why let dead batteries make YOU a wreck?



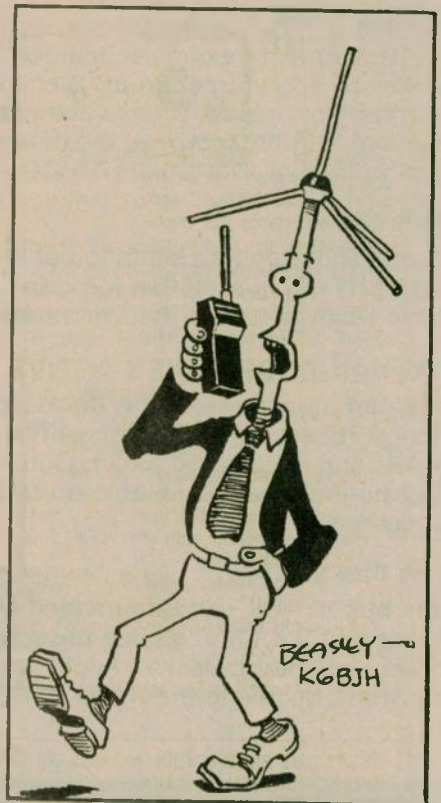
★ A unique battery eliminator ★ HANDI-TEK Regulator allows constant hand-held operation from auto DC or base supply with no lead drain and WITHOUT RADIO MODIFICATION! FULLY GUARANTEED. \$24.95 PPD in USA. Calif. add \$1.50 Sales Tax.

ATTENTION TH21/31/31 Series Owners!!!
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. Thru battery plug.
YAESU - Order Model Y for KT-207R, Wilson. Fits in battery compartment. Model N for FT-203R, 208R, 209R, 727. Powered thru plug on radio bottom.
ICOM - Order Model I for all Icom (2AT/02AT). Slides on bottom of radio.

TEMPO, SANTEC - Order Model T (Simple mod). Write for spec sheet/info on other radios

HANDI-TEK

P.O. BOX 357 • PINON HILLS, CA 92372

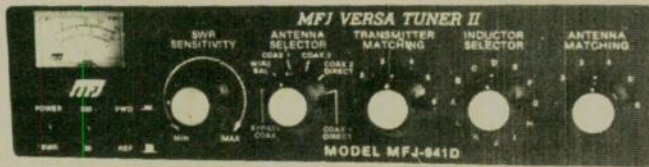


BEASLEY
K6BJH

I READ SOMEWHERE THAT TOO MUCH OPERATING ON A RUBBER DUCKY MIGHT HAVE AN ADVERSE EFFECT ON YOUR HEAD --- ISN'T THAT RIDICULOUS ?

MFJ ACCESSORIES

300 WATT ANTENNA TUNER HAS SWR/WATTMETER, ANTENNA SWITCH, BALUN. MATCHES VIRTUALLY EVERYTHING FROM 1.8 TO 30 MHz.



\$99.95 MFJ-941D

NEW FEATURES

- MFJ's fastest selling tuner packs in plenty of new features!
- **New Styling!** Brushed aluminum front. All metal cabinet.
 - **New SWR/Wattmeter!** More accurate. Switch selectable 300/30 watt ranges. Read forward/reflected power.
 - **New Antenna Switch!** Front panel mounted. Select 2 coax lines, direct or through tuner, random wire/balanced line or tuner bypass for dummy load.
 - **New airwound inductor!** Larger more efficient 12 position airwound inductor gives lower losses and more watts out. Run up to 300 watts RF power output. Matches everything from 1.8 to 30 MHz: dipoles, inverted vee, random wires, verticals, mobile whips, beams, balanced and coax lines. Built-in 4:1 balun for balanced lines. 1000V capacitor spacing. Black. 11x3x7 inches. Works with all solid state or tube rigs. Easy to use, anywhere.

RTTY/ASCII/CW COMPUTER INTERFACE

MFJ-1224
\$99.95



Free MFJ RTTY/ASCII/CW software on tape and cable for VIC-20 or C-64. Send and receive computerized RTTY/ASCII/CW with nearly any personal computer (VIC-20, Apple, TRS-80C, Atari, TI-99, Commodore 64, etc.). Use Kantronics or most other RTTY/CW software. Copies both mark and space, any shift (including 170, 425, 850 Hz) and any speed (5-100 WPM RTTY/CW, 300 baud ASCII). Sharp 8 pole active filter for CW and 170 Hz shift. Sends 170, 850 Hz shift. Normal/reverse switch eliminates retuning. Automatic noise limiter. Kantronics compatible socket plus exclusive general purpose socket. 8x1 1/4x6 in. 12-15 VDC or 110 VAC with adapter, MFJ-1312, \$9.95.

RX NOISE BRIDGE

Maximize your antenna performance!



\$59.95 MFJ-202B

Tells whether to shorten or lengthen antenna for minimum SWR. Measure resonant frequency, radiation resistance and reactance.

New Features: individually calibrated resistance scale, expanded capacitance range (± 150 pf) Built-in range extender for measurements beyond scale readings. 1-100 MHz. Comprehensive manual. Use 9 V battery. 2x4x4 in.

INDOOR TUNED ACTIVE

NEW! IMPROVED! ANTENNA with higher gain "World Grabber" rivals or exceeds reception

of outside long wires! Unique tuned Active Antenna minimizes intermode, improves selectivity, reduces noise outside tuned band, even functions as preselector with external antenna. Covers 0.3-30 MHz. Tele-scoping antenna. Tune, Band, Gain, On-off bypass controls. 6x2x6 in. Uses 9V battery, 9-18 VDC or 110 VAC with adapter, MFJ-1312, \$9.95. **MFJ-1020A \$79.95**



POLICE/FIRE/WEATHER 2 M HANDHELD CONVERTER

Turn your synthesized scanning 2 meter handheld into a hot Police/Fire/Weather band scanner!

\$39.95 MFJ-313

144-148 MHz handhelds receive Police/Fire on 154-158 MHz with direct frequency readout. Hear NOAA maritime coastal plus more on 160-164 MHz. Converter mounts between handheld and rubber ducky. Feedthru allows simultaneous scanning of both 2 meters and Police/Fire bands. No missed calls. Crystal controlled. Bypass/Off switch allows transmitting (up to 5 watts) Use AAA battery. 2 1/4x1 1/2x1 1/2 in. BNC connectors.



MFJ/BENCHER KEYSER COMBO

MFJ-422
\$129.95

The best or all CW worlds-

a deluxe MFJ Keyer in a compact configuration that fits right on the Bencher iambic paddle! MFJ Keyer - small in size, big in features. Curtis 8044-B IC, adjustable weight and tone, front panel volume and speed controls (8-50 WPM). Built-in dot-dash memories. Speaker, sidetone and push button selection of semi-automatic/tune or automatic modes. Solid state keying. Bencher paddle is fully adjustable; heavy steel base with non-skid feet. Uses 9 V battery or 110 VAC with optional adapter, MFJ-1305, \$9.95.



VHF SWR/WATTMETER

Low cost VHF SWR/Wattmeter!

Read SWR (14 to 170 MHz) and forward/reflected power at 2 meters. Has 30 and 300 watts scales. Also read relative field strength. 4x2x3 in.

MFJ-812 **\$29.95**



1 KW DUMMY LOAD

MFJ-250 **\$39.95**

Tune up fast, extend life of finals, reduce QRM! Rated 1KW CW or 2KW PEP for 10 minutes. Half rating for 20 minutes, continuous at 200 W CW, 400 W PEP. VSWR under 1.2 to 30 MHz, 1.5 to 300 MHz. Oil contains no PCB. 50 ohm non-inductive resistor. Safety vent. Carrying handle 7 1/2x6 3/4 in.



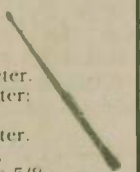
Compact Speaker

MFJ-280, \$18.95. Mobile speaker. Tilt bracket on magnetic base. 3/2 mm phone plug. Use with 8 & 4 ohm impedances. Handles 3 watts audio.



Handheld Telescoping Antennas with BNC

MFJ-1710, \$9.95. 3/8 wave 2 Meter. MFJ-1712, \$14.95. 1/4 wave 2 Meter; 5/8 wave 440 MHz. MFJ-1714, \$16.95. 1/2 wave 2 Meter. End-fed halfwave dipole. Shorter, lighter, more gain, less stress than 5/8 wave on handheld.



DUAL TUNABLE SSB/CW/RTTY FILTER

MFJ-752B **\$99.95**



Dual filters give unmatched performance!

The primary filter lets you peak, notch, low pass or high pass with extra steep skirts. Auxiliary filter gives 70 db notch, 40 Hz peak. Both filters tune from 300 to 3000 Hz with variable bandwidth from 40 Hz to nearly flat. Constant output as bandwidth is varied; linear frequency control. Switchable noise limiter for impulse noise. Simulated stereo sound for CW lets ears and mind reject QRM. Inputs for 2 rigs. Plugs into phone jack. Two watts for speaker. Off bypasses filter. 9-18 VDC or 110 VAC with optional adapter, MFJ-1312, \$9.95.

ORDER ANY PRODUCT FROM MFJ AND TRY IT-NO OBLIGATION. IF NOT SATISFIED, RETURN WITHIN 30 DAYS FOR PROMPT REFUND (less shipping).

- One year unconditional guarantee
- Add \$5.00 each shipping/handling • Call or write for free catalog, over 100 products.

MFJ

MFJ ENTERPRISES, INC.
Box 494, Mississippi State, MS 39762

TO ORDER OR FOR YOUR NEAREST DEALER, CALL TOLL-FREE

800-647-1800

Call 601-323-5869 in Miss. and outside continental USA Telex 53-4590 MFJ STKV



Silent Keys

Bob Gunderson, W2JIO

When Amateur Radio operators establish their own Hall of Fame, Robert W. Gunderson, W2JIO, will be a prime candidate. Despite — or perhaps because of — his lifelong handicap of total blindness, Bob (as his friends called him) probably did more to draw handicapped people into the hobby than anyone else.

On January 11, Bob became a Silent Key, but the memory of Bob is still very much alive in the hearts and minds of those who knew him. Even those who did not know him will go on benefitting from his life for years to come.

For example, blind radio amateurs can now take advantage of several auditory devices that Bob created. Two different types of measuring instruments he designed are: Wheatstone bridge circuits in which a null (absence of sound) is used as an indication, and circuits in which a pitch change is produced by changes in circuit parameters. Readings are taken by audible tones and Braille dials, instead of visual indication. Other devices include a phase meter, grid dip oscilla-



Bob Gunderson, W2JIO's radio lab at the New York Institute for the Education of the Blind, circa 1955. Bob's teaching career at the Institute started before he graduated in 1937.

tor, distortion analyzer and a continuity checker.

Bob's own interest in radio was noticed by his mother when he was 5; he had been "playing wireless" with an assortment of old corks and jelly jar lids arranged on a board like knobs and dials. Three years later, he was enrolled at the New York Institute for the Education of the Blind (NYIEB), where he received most of his formal educa-

tion. (He graduated from NYIEB in 1937.)

During the '30s, Frank Tomari — a year older than Bob and also blind since birth — and Bob made crystal sets and got on the air as "bootleggers". During one of their experiments, they caused interference with the New York City Police radio system. An officer came to investigate, and suggested the school develop a course to teach them more about radio. Dr. Van Cleve began by hiring Paul von Kunits in 1935 to give them "proper instruction," and thus began NYIEB's radio department.

Bob received his first license, W2JIO, before graduating two years later. By that time, he had already started his career as a teacher, beginning with his classmates.

The sequence of instruction, methods of demonstration and a myriad of lesser problems had to be overcome, for Robert W. Gunderson had no pattern or example to follow except that of determination to succeed at his task . . . (Radio News, December 1947)

During his years as electronics instructor at NYIEB, Bob served as a part-time troubleshooter for Hudson Radio and Television Corporation, solving all types of radio, TV and high-fidelity phonograph problems.

W2JIO reached out to the blind not only through his teaching and inventions, but also through the media. For 23 years — with the help of his first wife,

"FINAL EXAM" CODE and THEORY

Let your computer test you before the license examination. FCC Amateur License Pool Questions. Complete multiple choice answers. Computer generated questions. Keeps a running score (percentage) so you know how well you are doing. User friendly. Separate data base for all SUB-ELEMENTS, generate a PRACTICE TEST Complete MORSE CODE program. IBM PC/XT/AT and PC "look alikes" using DOS 2.1+ *Apple II+, IIe, & IIc having 128K of memory using ProDos or Apple Dos 3.3

Test yourself for either NOVICE, TECH/GENERAL, ADVANCE or EXTRA
NOVICE \$39.95
TECH/GENERAL \$49.95
ADVANCE \$49.95
EXTRA \$49.95

Add shipping & handling. Phone orders -- Visa MasterCard Illinois residents add 7% sales tax. *Apple products include only the theory test and can only be ordered from D. S. I.


DIAMOND SYSTEMS, INC.

P.O. Box 48301 NILES, IL. 60648

(312) 763-1722

HEATH COMPANY

(800) 253-0570



IMRA

People Helping People

Service to Missioners
(all denominations)

Missionary Net • 14.280 MHz, Mon. thru Sat.
2:00-3:00 Eastern Time
(1800-1900 Z DT, 1900-2000 Z ST)
Annually 20,000 check-ins, 9,000 traffic

Membership • 800 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:

Br. Bernard Frey, OFM, WA2IPM
1 Pryer Manor Rd. • Larchmont, NY 10538

Lillian — Bob wrote and published *The Braille Technical Press*.

In an effort to make it easier for blind applicants to qualify for FCC commercial and amateur licenses, W2JIO proposed in 1937 that they be allowed to write word descriptions of the circuit diagrams when taking the examinations. This method was approved by the FCC and is now the standard procedure for examining blind applicants.



Bob (W2JIO) and Linda (K2LY) Gunderson, outside the motorhome they acquired in 1981.

Public recognition

High points of Bob's life included:

- Seeing his life reenacted on Ralph Edwards' "This Is Your Life" radio broadcast on WNBC, January 15, 1950.
- Receiving the Edison Radio Amateur Award in 1955, granted by the Tube Department of the General Electric Company in recognition of his ingenuity and sacrifice displayed in employing Amateur Radio in the public interest.
- Receiving an award from the New Jersey Foundation of the Blind (1976).
- Receiving the Major Armstrong Memorial Award for Pioneering in Amateur Communications (1980).

True satisfaction

Despite his appreciation of the recognition he had received, Bob's greatest satisfaction came from knowing he had improved the lives of his students. Speaking for all of the radio students, Chris Kiler reveals, "Mr. G was more than just my electronics teacher. He taught me important lessons of life. I appreciate the fact that he would stop to talk to me when he visited Recording For the Blind. I was proud to have him see me working successfully."

W2JIO mobile

Following his first wife's death, Bob married Linda K2LY in 1976. This introduced W2JIO to a whole new realm of activities, since Linda owned a car. (Lillian didn't drive.) The Gundersons

Super ComShack 64

Repeater Controller / Dual Remote / Autopatch

CONTROL YOUR SHACK FROM YOUR MOBILE /HT

Instant code practice mode controlled from your HT

COMODORE 64

Super Repeater Controller

- * Remotely programmable with Touchtones/ change up to 9 sets of access codes from HT or telephone!
- * Synthesized speech consisting of high quality male or female digitized human voice
- * Dual Remote base (HF & VHF)
- * Autopatch & Super Repeater Controller
- * Program voice ID tail message from your HT
- * Automatic voice clock & activity timers
- * Multiple commands can be executed at once (up to 16 digits per command string)
- * Sub-audible tone & speed dial compatible
- * Alarm clock & auto-execute command string!
- * Optional autoboot cartridge (no disk drive needed)
- * Send system commands from telephone line!

Special Club Features

- * Generates random code practice @ any speed with voice readback after each 20 random code group!
- * Set CW speed & pitch from your HT
- * Input up to 22 vocab words & letters as ID or mail box message @ speed dial rates from HT
- * Enable/disable up to 50, tel #'s + wild cards

Autopatch Specifications

- * 300 Touchtone loadable Autodial numbers plus 10 Emergency Autodial (quick access)
- * 300 Reverse patch call signs uploaded from your HT /general or directed page modes
- * Incoming caller receives voice message to enter 3 digit code to selective page a call sign (D.P. mode)
- * Phone number memory readback
- * Enable/disable 50 area codes + wild card #'s
- * Full or half duplex (repeater on/off)
- * Storage of MCI/Sprint access codes
- * Call waiting allows switching to second phone line
- * Touchtones are regenerated onto the tel /speed dial
- * Touchtone or dial pulse modes
- * Reverse patch active in all modes

Dual Remote Base Specifications

- * HF remote supports: Yaesu FT-757/767/980 Kenwood TS-440/940, Icom IC-735
- * 2nd remote control data supports Yaesu FT-727 FT-767 & Kenwood 711/811 or the-7950 or TS-2530/70 with RAP1 (control card)
- * 10 HF Memory channels/enter or recall
- * Automatic USB/LSB/FM/AM mode select
- * Scan up/down, fast, or 100hz steps
- * Control CS-8 relay/latch /master reset /Status
- * HF /VHF Monitor only or TX enable modes
- * All control inputs are voice confirmed including frequency, mode, scan status, time, outputs on/off
- * VHF remote, as link input, & repeater can be active

System Options

- * 8 Latching Relay control (CS-8) \$ 79.95
- + 3 DPDT 2A relays, 5 open collector outputs
- + user defined 2 letter function name & state
- + automatic PTT fan control/master all off code
- * Optional CMOS auto-boot 72k EPROM Cartridge programmed with your parameters \$99.95
- * Keypad Control for VHF remote, RAP1 \$149.95
- * Super ComShack Manual (credit later) \$15.00

MODEL CS64S-\$349.95 (wired and tested)

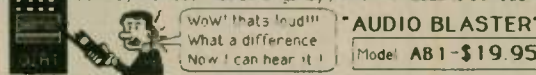
includes computer interface, disk, cables & manual, duplex & simplex versions are supplied (some features not applicable when using simplex) (add \$4.00 shipping / Ca residents add 6%)
MASTERCARD/VISA/CHECK/M.O./COD

Engineering Consulting

583 Candlewood St.
 Brea, Ca. 92621
 tel: 714-671-2009

Audio Blaster Module IC-02AT/IC-04AT/IC2AT

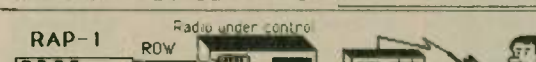
Module installs inside the radio in 15 Min. Boost audio to 1 watt! Low standby drain/Connects low audio/1000's of happy users (Works in other HT's too)



Used by Police, fire, Emergency, when it needs to be loud!
"AUDIO BLASTER" Model AB1-\$19.95

Touchtone to RS-232 (300 baud interface)

Program your computer in basic to decode multidigit strings sound alarms, observe codes. Simple to install. +12 VDC audio. Includes basic program for 064/VIC20/0128, all computers!



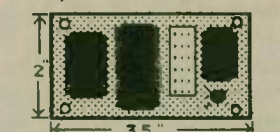
DECODE-A-PAD Model DAP \$89.95

RAP-1 Radio under control

Remote Keypad Rows & Columns Controller Plus Two 4 digit decoders (on/off) will control frequency of any keypad entry radio such as the Kenwood 7950/2530/IC04-AT Easy to install! In parallel with existing keypad use with ComShack 64 as a freq controller or with Pro Search motor control box/A variable board for all remote control applications. The latches may be used for on/off or momentary.

"REMOTE-A-PAD" Model RAP-1 \$149.95

Touchtone 4 Digit Decoder & on/off latch 50,000 combinations



Repeater on/off Master control

Wired and tested +5 to +12 Volts/ User programmable to 50,000 codes/ All 16 digits/ send code once to turn on, again to turn off/ Momentary & Latching output/drives relay/LED latch indicator/Optional 4 digit extra custom latch IC's \$8.95 each/add as many latches as you want to your external board
Model TSD \$59.95

Touchtone Decoder Kit

4957 Teltone 5 to 12V 15mA (SSI-201 compatible) inc. 3.58 Mhz Crystal/ 22 pin socket, Data Sheet, Sample circuits, decoder specs, all 16 touchtones, BCD/HEX filters req.
Model TTK \$22.95

operated mobile while traveling throughout the country, visiting friends, clubs and radio museums. A car also made it possible to outfit and organize a Field Day at the NYIEB campus.

Appropriately, the graveside service for Bob was performed by a radio amateur — Father Jude, WA2NYO,

Order of St. Benedict. Linda said that the last thing he did before going to the hospital was to leave some ferrite rods and a spool of wire on his file cabinet — for a local radio amateur who was having interference problems.

In memory of W2JIO's appetite for technical books from Recording For the Blind, provision has been made to

receive donations at National Headquarters: Recording For the Blind, Inc., 20 Roszel Rd., Princeton, NJ 08540.

'Learning Through Listening — free taped education books for the print-handicapped.

—Linda Gunderson, K2LY

Carolyn Currens, W3GTC

On January 14, Carolyn Currens, W3GTC, of Norristown, Pennsylvania became a Silent Key. She was well known to many YLs nationwide for her involvement with the annual Powder Puff Derby — an airplane race from Carlsbad, California to Elmira, New York. She had been chairman of the event since 1957, only one year after receiving her license.

Her involvement started when she became acquainted with the chairman of the All-Women Transcontinental Air Race, Inc. — the race's sponsor group — and accepted the responsibility for setting up the following year's relay system.

Carolyn originally decided to enter the hobby because of her husband, Harold W3EQZ. She figured that "what's sauce for the gander can be just as tasty for me, so I'll go along for the ride." She got her Novice in 1956 and upgraded to General in early 1957.

W3GTC had been a RACES member, very active in the Pennsylvania traffic net, and was treasurer of the Penn-Jersey YL Radio Club at the time of her death. She is survived by her husband and a son. — *Information submitted by Bertha Kenas, W3TNP*

'Buzz' Reeves, K2GL

Electronic pioneer Hazard "Buzz" Reeves, K2GL, passed away suddenly on December 23, 1986.

As a part of his long and outstanding Amateur Radio career, K2GL had assembled one of the top Amateur Radio contest stations to be found anywhere in the world. At the time of his passing, it boasted a dozen operating positions. Each one was equipped with a dedicated Kenwood TS-940 transceiver and either an Alpha 77 or Henry 3K linear amplifier. Buzz's antenna farm included over a dozen towers with most being between 100 and 200 feet high.

Over the years, this station has used several call signs including K2GL, K2GM, WA2ZAA and most recently N2AA. A strong supporter of Amateur Radio and the ARRL, it was his initial pledge of \$10,000 that led to the creation of the Goldwater Scholarship Fund.

Reeves, who was 80 when he died, founded many companies allied with the electronic and entertainment industries. The best known of these was Cinerama: a wide-screen motion picture process that still bears the company name. Tnx ARRL. — *Bill Pasternak, WA6ITF, Westlink Report*

♦♦♦♦♦

Help a friend become a ham!

Are you radioACTIVE?



Dean LeMon, KR0V sure is! Dean got active in Amateur Radio when he was 16 years old and earned his Extra Class license in less than four years! "It's a fascinating hobby and a great

way to meet all kinds of new people from all over the world."

Dean has cerebral palsy and got started in Amateur Radio with help from the Courage HANDI-HAM System. The HANDI-HAM System is an international organization of able-bodied and disabled hams who help people with physical disabilities expand their world through Amateur Radio. The System matches students with one-to-one helpers, provides instruction material and support, and loans radio equipment.

Isn't it time you got radioACTIVE with the Courage HANDI-HAM System?



Call or write the Courage HANDI-HAM System W0ZSW at Courage Center, 3915 Golden Valley Road, Golden Valley, Minnesota 55422, phone (612) 588-0811.

Novices

(continued from page 1)

have to pass Element 3A and future Technicians upgrading to General will have to pass both Element 1B, 13 wpm, and Element 3B.

The FCC action opens new opportunities to anyone who can meet the relatively simple requirements for a Novice Amateur Radio license. Novice operators can now join other hams in using radio to link personal computers, in order to access one another's information data bases, and to exchange and relay messages either directly or via bulletin boards — things that other computer buffs do by telephone line and modem.

Novices will also be able to use voice for reliable local communications and for worldwide communications under the right radio conditions. By going to higher classes of license, through progressively more difficult examinations, one earns access to more frequencies and transmitter power.

Mike Fitch, Chief of the FCC's Private Radio Bureau, enthusiastically supported the Novice enhancement concept from its inception. Fitch commented, "I am delighted with the Commission's action. I believe the new operating privileges on the 0.23, 1.25 and 10-meter bands will attract new people to Amateur Radio and keep their interest in the hobby by encouraging upgrades. We've provided these new growth tools to Amateur Radio. It's now up to the amateur community to put the tools to work."



Performance, Reliability, and Customer Support: The Winning Team

While attractive front panels and impressive magazine advertisements may initially glamorize any amateur radio item, they can also reflect the classic proverb of beauty being only skin deep. The favorable returns from any unit and the success of its manufacturer, however, are directly influenced by **after-purchase reliability and factory-backed service**. Knowledge of such performance records and readily available customer support encourage the peace of mind to use and enjoy a new unit to its maximum potential.

ICOM considers the aspect of service from two interrelated standpoints: daily in-field use and possible "down the line" repairs if, and when, needed. This concept is pursued by first building **professional communications quality and reliability into every unit**, confidently backing it with a full warranty, then substantiating that dependability with **uncompromised factory authorized service and customer support**. All ICOM HF transceivers and shortwave receivers reflect that philosophy with their **full one-year warranties**...and service centers that are not bottlenecked with backlogs (stout performers simply give less trouble). ICOM isn't playing down customer support, but building a positive long-term reputation on it!

Today's era of advanced technology and seemingly endless consumers tends to replace old-

time "concerned treatment" with attitudes of "being one of a vast number in line." Returning a unit for adjustment or repair and later attempting to check its status sometimes proves to be a frustrating experience. While no one is infallible, ICOM honestly strives to avoid an attitude of "too many customers to provide congenial service." ICOM's customer service **hotline** at (206) 454-7619, for example, will put you directly in touch with the main service department. The only prerequisite is **mutual understanding** in sharing this resource so everyone can have queries answered and radios repaired. If a problem can't be alleviated via telephone, ICOM strives for a service center "turnaround time" of three to five days.

Continuing that customer support, **ICOM is the only amateur radio company with four factory-owned service centers in North America**. The centers are located in Atlanta, Georgia; Dallas, Texas; Bellevue, Washington; and Vancouver, British Columbia. Most ICOM service centers are also situated near major airports to further minimize transportation problems.

The amateur radio industry is ICOM's major interest; it's not a sideline or spin-off of other pursuits. ICOM doesn't manufacture stereos, VCRs, or televisions. ICOM is communications industry oriented with secondary involvement in top quality marine, land mobile, and avionics equipment.

The stouthearted reliability of ICOM equipment is continuously praised in testimonial letters from proud owners. A few samples from those "believe it or not" files include stories of transceivers literally drowned in salt water two or three hours, yet continuing to operate flawlessly...of no failures to date in the IC-735 and IC-751 power amplifiers...of handheld transceivers dropped from towers, and one was even run over by a truck(!), yet continued to operate after outer case repairs (fortunately, ICOM handhelds include a separate metal frame to protect PC boards and a high impact plastic "outer case").

The next time you switch on a deluxe HF transceiver, compact VHF mobile rig or handheld FM unit, pause a couple of seconds and think about its less apparent aspect of customer support and service. Who would you call if a problem arose, what would be their attitude, and approximately how long might you anticipate being off the air? If you're a proud ICOM owner, those answers are reassuring rather than aggravating.

Again, ICOM's dedication to top performance, exceptional reliability and unsurpassed customer support may not be visible on a front panel or in a colorful ad, but they're **Included in every ICOM item**. ICOM equipment is simple to use and the best in quality. It's "Simply the Best" and an increasing number of amateurs are proving that statement in their setups every day. Isn't it time you, too, joined the ICOM winning team?

AWARDS

FAR scholarships

The Foundation for Amateur Radio, Inc., a non-profit organization with headquarters in Washington, D.C., plans to award 26 scholarships for the

academic year 1987-88 to assist licensed radio amateurs.

The Foundation, composed of 50 local area Amateur Radio clubs, fully funds two of these scholarships from the proceeds of its annual hamfest. It administers without cost to the donors, seven scholarships for the Quarter Century Wireless Association, two each for the Dade (Florida) Radio Club, the Baltimore (Maryland) ARC, the Department of State ARC and the Amateur

Radio News Service and one each for the Radio Club of America, the Richard G. Chichester Memorial, the Young Ladies' Radio League, the Edmund G. Redington Memorial, the Columbia (Maryland) Amateur Radio Association and the Vienna (Virginia) Wireless Society. Also this year, there will be three one-time awards in memory of recent Silent Keys.

Licensed radio amateurs may compete for these awards if they plan to pursue a full-time course of studies beyond high school and are enrolled or have been accepted for enrollment by an accredited university, college or technical school. Most of the scholarships require the applicant to hold at least at FCC General Class license or equivalent. The awards range from \$350 to \$900 with preference given in some cases to residents of specified geographical areas or the pursuit of certain study programs.

Additional information and an application form can be requested by letter or QSL card, postmarked prior to May 31, 1987 from: FAR Scholarships, 6903 Rhode Island Ave., College Park, MD 20740.

The Foundation for Amateur Radio, incorporated in the District of Columbia, is an exempt organization under Section 501(c)(3) of the Internal Revenue Code of 1954. It is devoted exclusively to promoting the interests of Amateur Radio and those scientific literary and educational pursuits that advance the purposes of the Amateur Radio Service.

Tri-Town honors member

Jerry Bette, N9BMT

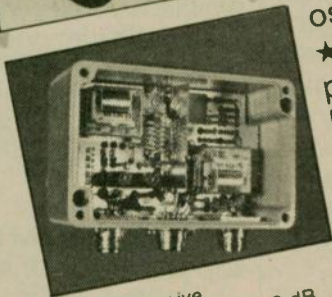
On November 7, Tri-Town Radio Amateur Club member Rich Bauer, N9DKO, of Park Forest, Illinois was awarded with a Certificate of Merit for Outstanding Service to the Amateur Radio Community. Bauer was nominated for this award by club president Jerry Bette, N9BMT, of Country Club Hills, Illinois. The Certificate of Merit award is sponsored by the ARRL.

Bauer, 36, is the editor of the club newsletter, *The Oscillator*. He heads the Membership Committee and serves as Co-Chairman of the 1987 Field Day Committee. In addition, Bauer serves as the unofficial head of the Publicity Committee and as club photographer.

Bauer has been a licensed radio amateur since 1982 and currently holds a General Class license. He has been married to Donna Bauer, who holds Technical Class license N9DKN, for 16 years. The Bauers have no children and reside in Park Forest, Illinois. Bauer enjoys working 2-meter FM as well as 40-meter and 20-meter radioteletype (RTTY).

THIS IS IT!
...an affordable high
quality masthead
VHF/UHF 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. PTT operation up to 750 W PEP.
- ★ The price...only **\$179.00** Prices subject to change without notice

SPECIFICATIONS:

Receive	0.8 dB
Noise figure	18-20 dB
Gain	

Transmit	150 W
Switchable power (VOX)	750 W PEP
Max TX power (PTT)	

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 — at the L.A. store ask for Jack (WA6VGS).

Henry Radio

(213) 820-1234

2050 S. Bundy Dr., Los Angeles, CA 90025

TOLL FREE ORDER NUMBER: (800) 421-6631
For all states except California.
Calif. residents please call collect on our regular numbers.

Or This Inexpensive It Really Shouldn't Be This Easy

Remember just a few years ago, how it took a roomful of equipment just to work RTTY. And if you wanted more than one mode it took a dedicated computer system costing thousands of dollars. The new AEA Pakratts are proving it doesn't take lots of equipment or money to enjoy working all bands in five different modes.

First, A Good Idea

The idea behind the Pakratt is very simple. One controller that does Morse, Baudot, ASCII, AMTOR, and Packet, and works both HF and VHF bands. Of course the decoding, protocol, and signal processing software must be included in the unit, and connection to the computer and transceiver have to be easy. The unit also has to be small and require only 12 volts, so it will work both in the shack and on the road.

Second, Computer Compatible

It doesn't matter what kind of computer you have, we have a Pakratt for you. The PK-64 works with the popular Commodore 64 or 128, and the PK-232 works with any other computer or terminal that has an RS-232 serial port. The PK-64 doesn't require any additional programs. Simply connect to the computer and transceiver and you're on the air. The PK-232 needs a terminal or modem program for your computer. The one you're using with your telephone modem will work just fine.

Fourth, AEA Quality and Price

Not many manufacturers like to discuss quality and price at the same time. AEA thinks you want high quality and low price in any product you buy, so that's what you get with the Pakratts. Ask any friend who owns AEA gear about our quality. The people who buy our products are our best salespeople. As for price, the PK-64 costs \$219.95, or \$319.95 with the HF option. The PK-64A, an enhanced software unit with a longer flexible computer cable, costs \$269.95 or \$369.95 with the HF option. The PK-232 costs \$319.95 with the HF modem included. All prices are Amateur Net and available from your favorite amateur radio dealer. For more information contact your local dealer or AEA.

Prices and specifications subject to change without notice or obligation.

AEA

Advanced Electronic Applications, Inc.
P.O. Box C-2160, Lynnwood, WA 98036-0918
206-775-7373 Telex 6972496 AEA INTL UW

PAKRATT™ Model PK-64



PAKRATT™ Model PK-232

Third, Performance and Features

The real measure of any data controller is what kind of on-air performance it gives. While the PK-64 and PK-232 use different types of modems, both give excellent performance on VHF. The optional HF modem of the PK-64 uses independent four-pole Chebyshev filters for both Mark and Space tones, and A.M. detection. The HF option can be factory or field installed.

The PK-232 uses an eight-pole bandpass filter followed by a limiter discriminator with automatic threshold correction. The internal modem automatically selects the filter parameters, CW Fc = 800 Hz, BW = 200 Hz; HF Fc = 2210 Hz, BW = 450 Hz; VHF Fc = 1700 Hz, BW = 2600 Hz.

The PK-64 uses on screen indicators to show status, mode, and DCD (Data Carrier Detect) while the PK-232 uses front panel indicators. Both units use discriminator style tuning for HF operation. And that's just the tip of the iceberg. Features like multiple connects on packet, hardware HDLC, CW speed tracking, and other standard AEA software features are included in both the PK-64 and PK-232.



W6LDE

STATION APPEARANCE

The winner of our April Station Appearance contest is Albert W. Speyers, W6LDE, of Big Bear Lake, California. The information that he sent about his station follows.

"We live in Big Bear Lake, at an altitude of 7,000 feet in the San Bernardino Mountains — about 75 miles north-

east of Los Angeles. My antennas are: 2-element 40-meter beam, Hy-Gain TH5-MKZ for 10-15-20 Hy-Gain vertical 400 ft. long-wire for 80-160; and 2-meter vertical.

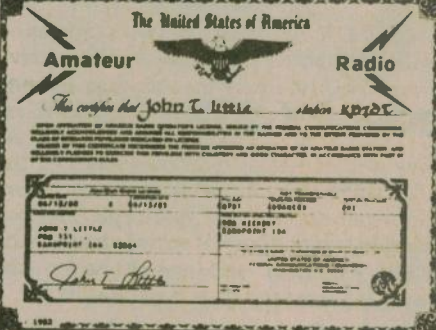
Station equipment includes: Yaesu 902 DM; Kenwood TL-922A linear; Den-

tron MT-3000A antenna tuner; Hy-Gain HDR 300 rotator; and 2-meter mobile, fixed and hand-held."

Speyers, recently elected as a councilman for Big Bear Lake, will be enjoying a free one-year subscription to Worldradio! □



Display Your License . . .



. . . with an official looking, 8 x 10 white parchment certificate printed with red, blue and gold ink (gold borders, gold eagle with red, white and blue shield, red lightning bolts and blue type). Looks good with original license or photocopy.

Area reserved for your license is pre-slotted for easy insertion. Your name and call are hand printed on certificate in calligraphy.

To receive your personalized certificate, print name, call, address and zip. Send with check or money order for \$4.00.

EXTRA CLASS AMATEURS ONLY!

You've made it to the top!! Now you can display your name and call on an attractive, 3 color, white parchment, 9 x 12, "Extra Class Diploma".

To receive your Diploma, with your name and call hand printed in calligraphy, send your name, call, address and zip with a check or money order for \$5.00. (Diploma is not a license display).

Both certificates include postage and handling. U.S. and possessions only. U.S. license only.

John T. Little - KB7DT
P.O. Box 483
Poulsbo, WA 98370

Wiping out whales or workers

Waiting workers were warned of work action as Western Widget's Wilber Woodley welded walking papers which will wreck widespread woe in Woodville, Wisconsin.

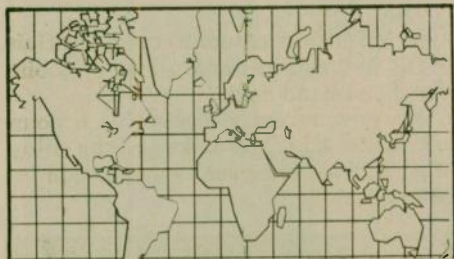
"What a wicked world!" wailed one weary woman, Wanda W. Waterford, who worked for a while with Western Widget.

All of Woodville is wild. One week ago, Western got a whiff of a warrant from

the Woodville Town Council wherein the Woodleys were whalloped with a "warm water waste discharge" charge. It seems that warm water was wiping out the white widemouth whale who wallow in the wash water west of Woodville.

— Utah ARC, Salt Lake City, UT □

Happy
 April Fool's Day!



DX WORLD

John F.W. Minke III, N6JM

6230 Rio Bonito Drive Carmichael, CA 95608

Activities Calendar

- 28-29 March CQ World Wide WPX Contest (SSB)
 04-05 April PZK SP DX Contest (CW)
 11-12 April RSF Yuri Gagarin Contest (CW)
 25-26 April USKA Helvetia H-26 Contest
 09-10 May RSF CQ-M Contest

W-100-N

The following DXers recently completed the requirements for Worldradio's Worked 100 Nations Award and have been issued certificates for their efforts.

305. YC4FRX Cholid Sanjaya
 306. KU0S Vernon H. Veenhuis (All CW)
 307. KA6SPQ Bill Wortell
 308. WB5MTV Geoffrey K. Kolb (All CW)

The complete set of rules and list of nations that qualify for this award were given in our September 1986 column.

Peter I Island (3Y)

The fantastic DXpedition to Peter I Island is over. Considering the fact that there were only two operators involved, this operation was hard to beat. Over the period of 10 days, Einar Enderud, LA1EE, and Kaare Pedersen, LA2GV, made almost 20,000 contacts, using the calls 3Y1EE and 3Y2GV.

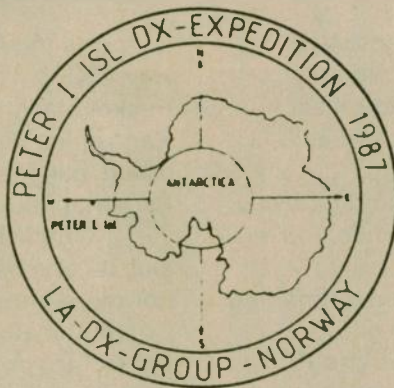
Their camp was established on a glacier near the beach on the northwest

side of the island. The local temperature was -3° Celsius, with fog and sun and only a few blizzards. Igloo-shaped tents served as ham shacks! Those of you who monitored the operation witnessed some fine operating on the part of the Norwegians.

The calls were used as follows: 3Y1EE on 40, 20 and 10-meter CW, and 75- and 15-meter SSB; 3Y2GV on 80- and 15-meter CW, and 40, 20- and 10-meter SSB. Some RTTY operation was also reported.

We have seen various comments and criticisms about the operation, such as reports of the greedy DXer who just had to work the same station over and over again on the same band. It was also amazing the number of calling DXers who called on the DXpedition's frequency. Most of this, of course, was attributed to the excited DXer using the wrong VFO. There were some who were too stupid to know the difference. As a whole, the nasty remarks and catcalls were at a minimum.

As for our own success with Peter I Island, we did manage to work them one weekday evening on 15-meter SSB. We made up our mind that we were going to go work them and thought positive. We had also hoped to work them on CW near the end of the DXpedition (Sunday afternoon), but had to leave to attend a seminar in the San Francisco area for a week. We consider ourselves fortunate that we were in the log, regardless of mode or band.



QSL cards will have picture(s) of the island and are not expected to be printed until early March. Send your QSL requests to Peter I Island DXpedition, c/o Erling J. Wiig, Jacob Fayes v.6, N-0287 Oslo 2, NORWAY. This address is the same as in the Callbook for LA6VM. Be sure to include a little extra as this has been an expensive undertaking. If you care to send a sizeable sum, they also give the bank account number as 7085.05.06025, Den norske Creditbank, Oslo. Or, you could send it via the Northern California DX Foundation — the funds, is that is, not your QSL.

Note that this does not yet count as a country for DXCC or the Golden Jubilee Award. Please do not submit cards for Peter I until a date is published.

And, not to forget the others involved in the DXpedition, we also have Jorgen Hoel, LA5UF, Contracts; Trond Olsen, LA8XM, Coordination, and possibly others. Einar, LA1EE, was Project Manager, and Kaare, LA2GV, was concerned with arrangements for the equipment.

Andaman and Nicobar Islands (VU4)

QRZ DX reports that two stations — VU4APR and VU4NRO — will be active from the Andaman and Nicobar Islands beginning February 20. It is said that VU4APR is probably VU2APR, who was one of the several operators of the VU7WCY operators (there was more than one) about three years ago. The two stations will also be active during the major contests and are to be on the islands through the end of March.

St. Pierre & Miquelon (FP)

About June 16, Ralph Hirsch, K1RH, and Elmer Yates, W1CCN, plan to activate St. Pierre & Miquelon on all bands, CW and SSB. Ralph also reports that they will leave behind at Hotel Robert a complete station including a tri-bander beam, vertical antenna for 160, 80 and 40 meters, and a G5RV antenna for miscellaneous use. Also, there will be power for 117 and 220 volts AC, and 12 volts DC at 35 amperes, a 1.5kW antenna tuner, rotator, antenna switch, SWR/power meter, etc. All that will be needed by any visiting amateur will be their own rig.

Presently active from this one are: FP5DF who has been reported on 20 meters on 14.164 MHz around 1900 (please turn to page 29)

NEW

You Asked For It: The SUPER DX EDGE®



for the Commodore 64 & 128
 Complete software package.
 The most advanced available.
 All the tools you need.

The Great DX Operating Aid

- NOW, your own propagation predictions with Maximum Usable Frequency (MUF) on a daily basis. ALSO, Great Circle Bearings and distances anywhere.
- Accurate sunrise/sunset/daylight/darkness info.
 - Most likely times for Gray Line and long path openings.
 - Best times for great DX on any band, 1.8 through 30 Mhz.
 - Pinpoint any QTH in the world with a meridian and parallel.
 - Simulates the earth's rotation.
 - Finest graphics show best paths in REAL TIME! Color too.
 - Fully menu driven.
 - Requires 1541 or 1571 disk drive.
 - \$34.95 (less \$10 with your old DX EDGE disk)

The original plastic alderule version of the DX EDGE is \$19.95.
 A Great Circle Slide is \$3.00 additional (specify your latitude).

All ppd. in U.S., Canada. Add \$4.00 elsewhere, air mail. Add tax in NYS. U.S. funds only.

Please make check or M.O. payable to the DX EDGE and mail to:
 The DX EDGE, P.O. Box 834, Madison Square Stn. New York, N.Y. 10159.
 An information flyer is available free of charge. A product of Xantek, Inc. *Xantek, Inc. 1986
 Commodore 64 and Commodore 128 are trademarks of Commodore Electronics Ltd.

MULTI-BAND SLOPERS

ALSO: DIPOLES & LIMITED-SPACE ANTENNAS —
 Outstanding performance of WSINN antennas is well known! Now enjoy multi-band BIG-SIGNAL reports! Automatic bandswitching • Very low SWR • Coax lead • 1/2w power • Compact • EASILY ASSEMBLED to your specified center frequency each band • Easy to RETAIL • Very low profile • Complete instructions • Your personal check accepted

4 BAND SLOPER - 160, 80, 40, 30, or 20M	60 ft long	\$ 48 ppd.
3 " " " " " " " " " " " " " " " "	40 ft " "	\$ 43 " "
2 " " " " " " " " " " " " " " " "	40 ft " "	\$ 35 " "
3 " " " " " " " " " " " " " " " "	113 ft long	\$ 71 " "
2 " " " " " " " " " " " " " " " "	85 ft " "	\$ 45 " "

2 BAND SPACE-SAVER DIPOLE - 160 thru 10M • 48 ft long \$ 85 ppd.
 * Requires wide-range tuner (80, 40, 20, 15M without tuner)

SEND \$ASE for complete details of these and other unique antennas
 WSINN ANTENNAS 312 394 3414
 BOX 393-W Mt. PROSPECT, IL 60056

I N T R O D U C I N G

KPC-4 DUAL PORT



KPC-4 Gives Simultaneous Connects, Digipeating, and Gateway On Two VHF Radio Ports

KPC-4™ is your GATEWAY into VHF Packet flexibility. KPC-4 features **two fully functional packet ports**, digipeating on each port, VHF gateway between ports, and an RS-232 computer port.

What's more — digipeating and gateway operations occur simultaneously while you're connected on one or both ports.

KPC-4's RS-232/TTL terminal interfacing provides universal compatibility to all computers, including Commodores and PC compatibles. Stream switching provides for access to both radio ports, each of which

supports the ARRL adopted AX.25 protocol.

KPC-4 also contains the popular Personal Packet Mailbox™ feature, (optional on all other Kantronics Packet Communicators). You or others can leave and retrieve messages from the Personal Packet Mailbox.

Only KPC-4 lets you bridge two frequencies on one band, and operate crossband. For more information about KPC-4 Dual Port Communicator, contact Kantronics or your Kantronics dealer.

Suggested Retail \$329.00.

KPC-4 Dual Port Features

- Two simultaneous operable VHF radio ports, both ports operating at 1200 baud.
- Automatic gateway operation between ports.
- Command driven, like KPC-2 or KAM, with over 100 software commands.
- Kantronics Personal Packet Mailbox feature included.
- External modem connection point provided for future use.
- RS-232 or TTL level operation by jumper selection.
- 32K bytes RAM, 32K bytes EPROM, 512 bytes EEPROM, 63B03X processor.
- Kantronics' industry standard extruded aluminum case.
- ARRL adopted AX.25 protocol.
- FCC part 15 compliant.
- Each port includes watchdog timer.

Kantronics

RF Data Communications Specialists

1202 E. 23 Street Lawrence, Kansas 66046 (913) 842-7745

DX World

(continued from page 27)

UTC, FP5HL on 14.188 MHz at 1800 UTC, and FP4CJ on 3.780 MHz around 2100 UTC. *The Long Island DX Bulletin* reports FP/F2JD near 14.200 MHz from 1800 UTC and on 7.095 MHz around 2300 UTC. This station listens for stateside calls on 40 meters just above 7.200 MHz.

Cocos (Keeling) Islands (VK9Y)

Two well-known DXers — Jim Smith, VK9NS, and Bob Winn, W5KNE — were scheduled to keep this one active for two weeks in February. The expected calls were VK9YS for Jim and VK9YW for Bob. Operation on all bands, 160 to 10 meters, was expected using SSB, CW and RTTY.

From Cocos the team was to leave as scheduled on February 24, where Jim would stop over on Christmas Island to operate as VK9XS for a week. Bob was to return to Texas to get out the next edition of *QRZ DX*.

YASME

We received word that Iris Colvin, W6QL, fell and broke her hip while in the Maldiv Islands. She was flown to a hospital in Colombo, Sri Lanka, where she had two pins placed in her hip. Word is that they would then return to the Maldives for the continuation of their DXpedition. Hopefully, we will be able to see Iris in good spirits in Visalia this April.

Prior to Iris' injury, she and Lloyd, W6KG, had been doing well with their DXpedition by giving out "new ones" to many a DXer. From the Comoros Islands, they made 9,000 contacts with 152 DXCC countries between December 13 and 30. They were assigned the call D68QL which cost them \$160 (U.S.) — the highest they ever paid for any amateur license during their past DXpeditions.



Moussa Atchia, 3B8FI (center), hosts Iris (W6QL) and Lloyd (W6KG) Colvin at his QTH in Mauritius, Indian Ocean. Iris was recently flown to a hospital in Sri Lanka, where she had two pins placed in her hip.

Heard Island (VK0)

Neil Penfold, VK6NE, writes us with some information regarding applicants for a month-long Antarctic Research program to Heard Island this October. The two ships, *Nella Dan* and *Icebird*, are once again under charter to ANARE.

The program is not limited to Australian Nationals, so if any of you are interested, you should contact ANARE Coordinator, Antarctic Division, Department of Science, Channel Highway, Kingston, Tasmania 7150, AUSTRALIA. The closing date for applications was February 27 and the delay in printing this is the fault of N6JM. If your qualifications are good, they will grant an extension for valid circumstances. Whatever, look for Heard Island in October!

Vatican (HV)

From the Vatican we have HV3SJ, who has been reported very active. He has been found on the bands from about 1430 UTC in the 20-meter SSB slot, 14.207 to 14.227 MHz. His QSL manager, Giuseppe d'Aurelio, I0DUD, reports in *DX News Sheet* that improved 40- and 80-meter antennas will be installed shortly.

Long Skip reports HV1CN being worked into the Yukon Territory on 14.249 MHz around 1615 UTC.

Mongolia (JT)

From the pages of *Long Skip* we see that the Canadians have been busy with this one. JT3JC has been reported from the Maritime provinces on 14.012 MHz around 0015 UTC, with JT1BT being worked by members of the French-speaking province on 14.200 MHz at 0005 UTC. Out in the Yukon Territory, JT5AA was worked on 14.194 MHz at 0100 UTC. We are surprised that none of these stations were reported by any stateside stations.

In Europe, JT0DJT was found on 15 meters around 1145 UTC on 21.025 MHz with a good strong signal.

International DX Convention

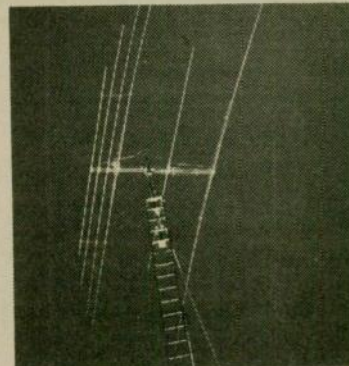
If you haven't already registered for the annual DX convention in Visalia, you had better get busy. This year's convention will be held on April 3, 4 and 5 at the Grosvenor Holiday Inn, and it is highly recommended that you make that hotel reservation now at (209) 651-5000. Do not use the Holiday Inn's

Step up

to the world's most-advanced antenna system!

WITH NOT A SINGLE WATT WASTED IN LOSSY TRAPS! (There aren't any!)

Hams in over 50 DXCC countries have done so already!



The DJ2UT-Multiband-Systems offer:

- Maximum gain plus F/B ratio with low VSWR across each band
- 2 kW CW output power
- 10/15/20/(30) 40-meter bands with up to 7 band coverage incl. WARC bands with self-supporting "TWIN-BOOM" and boom-lengths from 8 to 20 ft
- Air-core teflon dielectric coax-balun and stainless-steel hardware at no extra cost
- traditional Blackforest craftsmanship

The DJ2UT-MULTIBANDERS provide the superior full-size monoband-beam performance required during the present sunspot minimum.

For further information contact:

SOMMER

H. J. THEILER CORP.
P.O. Box 5369, Dept. 15
Spartanburg, SC 29304
Tel: (803) 576-5566

IOTA

The following islands have been

reported recently for the Islands-on-the-Air program, sponsored by the RSGB.

EU-48 Groix Island	F6DYK and F6FCV	March DXpedition	NA-47 Baffin Island	VE8HL	3.799 MHz	1830 UTC
EU-43 Skaftoe Island	SM6PVB	Often on 15, 20 and 40 meters	SA-25 Grande Is. of Santa Isabel	PS8AM	14.260 MHz	1230 UTC
EU-76 Lofoten Islands	LA5RX	14.260 MHz	1300 UTC			
EU-79	LA6TAA	14.260 MHz	1315 UTC	SA-26 Anhatomorin Island	Brazilian DXpedition in January	
NA-45 Cancun Island	XE1X/XF3	21.025 MHz	1430 UTC			

There are presently two nets that support the IOTA program. Check 14.260 MHz around 1300 UTC on Saturdays and Sundays. There is also a 75-meter

net on 3.737 MHz each Friday from 2030 UTC, but this is of little value to this part of the world.

There is also a report of ON5RL/W4

operating from Marcos Island, which is expected to count in the IOTA program, although no reference number has been given.

800 number. Room rates are \$43 for a single and \$51 for a double.

The program includes Jim Neiger, N6TJ, and his crew on their JY7Z operation; Lloyd and Iris, W6KG and W6QL, Colvin, with their most recent YASME DXpedition; and tentatively scheduled are Ron Wright, ZL1AMO and Chuck Taylor, KC7UU, with their recent operations.

Pre-registration is \$40, if made prior to March 8. After that date the fee is \$45. For those DXers who bring non-interested guests, the fee is \$30 for meals only, or \$15 for the seminars only. No prizes are available for the latter two rates.

Send your registration for the activities to Jim Hicks, KK6X, 2260 Santa Fe Dr., Santa Rosa, CA 95405. This year's event is sponsored by the world-famous Northern California DX Club. Co-chairmen Len Galdi, K6ANP, and Lyle Meek, WW6F, assure us that you will have a good time.

European awards

Ralph Hirsch, K1RH, informs us that he is the checkpoint for U.S. and Canadian applicants for the DARC awards program. This includes the popular Worked All European (WAE) and other awards such as Europa-DX Diplom (EU-DX-D) and the Europa Diplom. A complete set of rules and application forms

are available from Ralph at 172 Newton Road, Woodbridge, CT 06525. Please include a business-size (#10) SASE plus \$1 with your request.

Here at N6JM we have the Europa Diplom that we received eight years ago, which we found very attractive. It is presently displayed on the wall. Also sponsored by the DARC is the DLD award for working the various "DOK"s of the DARC, although Ralph has no connection with this award.

Liberian awards

The Liberia Radio Amateur Association will celebrate its 25th anniversary during the calendar year 1987. All members will be using the special prefix 5L and the club station will be signing 5L2RL. Several special events will be conducted throughout the year.

The 5L Award is available to any station who has worked at least five stations using the 5L prefix. The club station 5L2RL will count as three contacts.

The Worked All Liberia Award is available to any station who has contacted one 5L station in each of the nine counties of Liberia. All contacts for this award must take place between March 13 and 15, 1987. Obviously, they are not interested in issuing the award with requirements such as this — three days!

To apply for the above two awards, send a copy of your log with a fee of \$5,

or 20 IRC's to: Awards Manager EL2BA, P.O. Box 987, Monrovia, LIBERIA, WEST AFRICA.

DX News Sheet(s)

RSGB's *DX News Sheet*, edited by B.J. McCartney, G4DYO, has now expanded from a single sheet to four pages. The DX newsletter is a weekly publication that has a wealth of DX items, particularly to those of the European interests. Often we have found items in that publication that are not included in our domestic DX newsletters. If interested, we suggest you contact the publication for subscription information at 123 Reading Road, Finchampstead, Wokingham, Berks RG11 4RD, ENGLAND.

80-meter antenna!

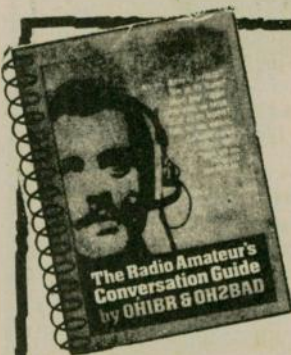
We often show a bit of envy of the big gun with his "Long John" beams, but how about this one! Tom Cathey, K1JJ, of Windsor, Connecticut, runs 1.5kW to an 11-element beam on 80 meters! Each element is individually tunable and is fed with ¼-wave stubs terminated by a remotely controlled tuning capacitor. Each element, 110 feet in length, is supported by two 60'-high masts. He uses 1.0mW transmitters located about 1,000 feet east and west of the antenna to aid in the tuning the monster. The forward lobe of the horizontal array may be reversed instantaneously by the use of 11 relays.

Thanks to *DX News Sheet* for this bit of interesting information.

Antique QSL Department

The following QSL comes from the files of Alvin Phillips, W7HS, of Ogden, Utah. Al worked LY1J of Lithuania back on June 21, 1938, when that little country was still an independent nation.

The upper left reads "1918-1938 Twentieth Anniversary Restitution of Independence of Lithuania". During the period prior to that, Lithuania was part of the Russian empire, and once part of Poland. At one time Lithuania made up a large portion of that part of eastern Europe. Following World War I, Lithuania was granted independence which lasted until World War II, when the Soviet Union gobbled this little country up.



Increase your QSL return ratio THE RADIO AMATEUR'S CONVERSATION GUIDE

A conversation guide containing numerals, phonetics, 147 phrases covering many fields of Amateur Radio; antennas, contests, DXing, equipment, personal information, QSLing and much much more, plus a 450 word dictionary. Languages:

• ENGLISH • FRENCH • SPANISH • RUSSIAN
• GERMAN • ITALIAN • PORTUGUESE • JAPANESE

Supplements are now available in

• SWEDISH • FINNISH • DANISH • YUGOSLAVIAN • NETHERLANDS

Many languages are also available in 60 minutes cassette tapes. Prices: POSTPAID

- Guide Book \$9.41 each (plus 59¢ shipping)
- Supplements \$1.75 each or all five for \$7.00
- Guide and all supplements \$16.50 postpaid
- Cassette tapes in all languages \$6.00 each (3 or more \$5.00 each)

TRANSELECTRO-AMERICA

ATT: Helen
2301 Canehill Avenue
Long Beach, CA 90815 U.S.A.

1918-1938
 TWENTY
 ANNIV
 RESTITUT
 INDEPEND
 OF LITHUANIA



QSL information

Jim Imhof, KP4CZ, informs us that the new 1987 Callbook has an incorrect address for him. The correct address is P.O. Box 1556, Villalba, PR 00766-1556. Of course, you could also use the bureau.

Jack Sproat, W4LCL, writes us regarding his Indonesian operations a few years ago. Jack writes, "Although I shut down station YC0ACL in mid-1983, cards continue to come in to my former QSL manager, WA4RRB. Any remaining requests for YB0ACL cards should be sent via the bureau or direct." Jack gives his address as 2791 Florida Mango Road, #301, Lake Worth, FL 33461, and will be there until May when he then expects to move to Amman, Jordan, for two years.

Fred Covell, WA1ZIC, is looking for tips on obtaining a QSL from SV0WEE (1980), FO0ES (1979) and YV0AL.

Propagation

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

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

You can get a free complete set of these predictions for low angle antennas, Maximum Usable Frequency (MUF) and Frequency of Optimum Transmission (FOT). You may also request an introduction to using HF propagation predictions. Requests should be sent to W6LS, 2814 Empire, Burbank, CA 91504. Each request should be accompanied by an SASE (54¢) envelope at least 9"x11½".

MAY 1987

UTC	AFRI	ASIA	OCEA	EURO	SO AM
0100	12.6	18.6	23.1	11.2	20.0
0200	10.5	19.7	23.3	10.8	19.5
0300	10.9	20.6	23.7	10.9	17.5
0400	15.5	20.4	24.2	11.5	15.4
0500	13.8	19.1	23.7	12.2	14.5
0600	12.1	17.3	20.0	12.3	13.3
0700	10.7	15.2	17.7	11.3	10.8
0800	9.4	15.8	14.6	10.4	8.9
0900	8.7	14.7	12.9	9.6	10.5
1000	8.9	13.0	12.9	9.3	12.5
1100	10.1	11.6	13.5	9.8	12.2
1200	12.0	11.2	13.2	12.0	13.0
1300	14.1	12.0	12.4	14.2	15.3
1400	15.7	13.9	13.8	16.3	17.5
1500	16.6	14.1	14.3	17.4	18.1
1600	16.7	13.3	14.2	17.4	17.6
1700	16.8	13.2	13.2	17.0	18.0
1800	17.3	13.9	12.3	17.0	19.8
1900	17.6	15.6	13.0	17.4	21.8
2000	17.5	17.9	15.6	17.7	23.2
2100	17.2	19.6	18.7	15.7	24.2
2200	16.5	20.0	20.8	14.3	23.4
2300	15.3	19.6	22.0	12.9	21.2
2400	14.3	18.7	22.8	11.9	19.9

Al made the contact with LY1J on 20 meters CW and received a 559 report. The card is rather colorful with various shades of red and brown. Al received his card via Horace Greer, W6TI, the W6 QSL Manager at that time. In those days the 6th Call Area included more than just California.

This is the third card from pre-World War II Lithuania that we have run. In our August 1979 issue we had LY1AA for a 1933 QSO with LA3B, and in our May 1983 issue we had LY1S for a contact made with W6ITH in 1939.

This is the second card from LY1J. The first was a 1934 contact with W9PST which we used in our February 1985 column.

QSL routes

A82AY	-N5GAP	K6JAJ/KH8	-K6JAJ
C21NI	-FK0AT	KA21J	-W6CNA
	(See Note 1)	KC6HA	-KA6V
C31NP	-EA3AQS	KC6MR	-JJ1TZK
CO5GV	-W3HNK	KK7K/DU7	-N2AU
CT3EU	-G3PFS	KL7LF/KH3	-KL7VZ
CX0XY	-CX2CS	KN4BPL/KH3	-WB4MJH
D68QL	-YASME	S79KG	-YASME
DL7AGD/		T50DX	-I2JSB
6W7	-DL7AGD	TA2C	-W14K
FG/W3BTX/			(See Note 3)
FS	-W3BTX	TI9W	-TI2KD
FH/IK2GNW	-I2PQW	TL8AM	-DL1EBP
FK0AT/FW	-FK0AT	TR8CA	-W6BF
GB4JBA	-G4SJX	TZ2XN	-DK3HL
HD8G	-KT1N	TZ6ZZ	-W4FRU
HG4SEA/MM	-HA4WM	V31JK	-W9GW
HK0BXX	-WB9NUL	V15AQZ	-VK5AQZ
HR1XV	-W3FV	V15BJA	-VK5AQZ
J6LTA	-NF5Z	V15ZW	-VK5AQZ
	(See Note 2)	VK9LM	-OE1ZL
J70A	-NF5Z	VK9XS	-VK9NS
	(See Note 2)	VK9YS	-VK9NS
K1COW/J87	-K1COW	VK9YW	-W5KNE

(please turn to page 34)

L INDUSTRIES, INC.
LUNAR



The **ORIGINATOR** of the VHF AMP/PREAMP COMBO!
YOU KNOW THE LUNAR NAME...NOW OWN THE BEST.

- Complete Line of Multi-Mode Amps, all with Low-Noise Preamp Built-In •
- NEW! UHF Models with GaAs FET Performance •

2 METERS	220 MHZ	440 MHZ
2M2-100P	1.3M2-80P	70CM2-50PG
2M4-40P	1.3M4-30P	70CM10-100PG
2M10-80P	1.3M10-80P	70CM30-100PG
2M30-160P	1.3M30-140P	

Lunar Model # shows: Band, Drive Pwr, Output Pwr (nominal), Preamp Included.

Six meter, special purpose, and repeater versions available.
 AT FINE DEALERS EVERYWHERE

L INDUSTRIES, INC.
LUNAR

COMMUNICATIONS & SYSTEMS DIVISION

7930 Arjons Drive • San Diego, CA 92126 • Telephone (619) 549-9555 • Telex 181747

WORLDWIDE DISTRIBUTION



HAM RADIO OUTLET

LARGEST HAM OUTLET IN THE WORLD

OUR COMMITMENT TO YOU IS
QUALITY, ACTION & SERVICE.

7 STORE BUYING POWER

KENWOOD TS-940S



TOP-OF-THE LINE
HF TRANSCEIVER

GREAT PRICE, CALL

KENWOOD TM-3530A



The First Comprehensive
220 MHz FM Transceiver

**ARE YOU READY FOR
220 MHz OPERATION?**

HAM RADIO HOME STUDY NOVICE VOICE COURSE



- Updated novice-voice questions
- 6 stereo code & theory cassette tapes
- 2 text books, code oscillator, key & battery
- Color Ham Bands wall chart & frequency list
- Sealed novice exam for a Ham friend to give you the code & theory test in your home
- FCC license application forms & instructions to your examiner **Ideal for spouse & the kids!**

\$49.95



MA-40
40 TUBULAR TOWER
£745 SALE! \$549

MA-550
55' TUBULAR TOWER
£1245 SALE! \$899

- Handles 10 sq. ft. at 50 mph
- Pleases neighbors with tubular streamlined look

TX-455
55' FREESTANDING
CRANK-UP

- Handles 18 sq. ft. at 50 mph
- No guying required
- Extra-strength Construction
- Can add raising and motor drive accessories

Shown with optional
MARB rotor base

**IN STOCK FOR QUICK DELIVERY
OTHER MODELS AT GREAT PRICES**

hy-gain

CRANKUP SALE!

Single Strength
(handles 9 sq. ft.)
HG37SS - 37' Tower
HG52SS - 52' Tower

Heavy Duty
(handles 16 sq. ft.)
HG54HD - 54' Tower
HG70HD - 70' Tower

- All steel
- Includes base & rotor plate
- No guying required
- Hot dip galvanized
- Accessories available

CALL FOR PRICE!

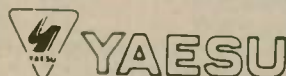
KENWOOD R-5000



High Performance Receiver

- Covers 100 kHz - 30 MHz in 50 bands
- Superior dynamic range
- Computer control system

LOW PRICE!

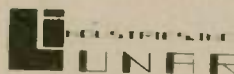


FT-727R

5w, Dual Band
2m/440 MHz

**Enhanced Version
Now Available!**

GREAT PRICE!



30w in, 160w out,
with low-noise
preamp!

MODEL
2M30-160P
for 2 meters

SALE!

\$219.95

From the Originator of the

QUALITY VHF AMP/PREAMP COMBO!



Full Line Now Includes
UHF Models with
GaAs FET PREAMP!

All Major Brands in Stock Now!

CALL TOLL FREE (800) 854-6046



Toll free including Hawaii. Phone Hrs: 7:00 am to 5:30 p.m. Pacific Time. California, Arizona and Georgia customers call or visit nearest store. California, Arizona and Georgia residents please add sales tax. Prices, specifications, descriptions subject to change without notice.



WORLDWIDE DISTRIBUTION



HAM RADIO OUTLET

LARGEST HAM OUTLET IN THE WORLD

SPECIAL ANTENNA PRICING FOR APRIL AND MAY

7 STORE BUYING POWER

ICOM IC-R71A



Superior Grade General Coverage Receiver

SALE! CALL FOR PRICE

ICOM IC-275A/275H **NEW**



138 - 174 MHz
IC-275A (25w) IC-275H (100w)
GREAT PRICE!

ICOM IC-1271A



1.2 GHz Transceiver:
The First Full-featured
1240-1300 MHz Transceiver
**ARE YOU READY FOR
1.2 GHz OPERATION?**

ICOM IC-28A/28H



2-METER MOBILES
IC-28A (25w) IC-28H (45w)

LOW PRICE!

**NOW!
IC-38A
220 MHz**

NOW! RAPID DELIVERIES



FROM STORE NEAREST YOU

ICOM HAND-HELD VHF/UHF



**IC-02AT IC-2AT
IC-03AT IC-3AT
IC-04AT IC-4AT**

ICOM IC-735



The Latest in ICOM's Long Line of HF Transceivers

CALL FOR LOW, LOW PRICE

ICOM IC-R7000



25 MHz-1300 MHz

IN STOCK FOR IMMEDIATE DELIVERY

ICOM IC-μ2A/μ2AT

NEW Mini Hand-Held AT Model w/ TT Pad

GREAT PRICE!



All Major Brands in Stock Now!



Bob Ferrero W9RJ
President
Jim Rafferty N3RJ
VP So. Calif. Div.
Anaheim Mgr.

ANAHEIM, CA 92801
2620 W. La Palma
(714) 761-3033, (213) 860-2040
Between Disneyland & Knotts Berry Farm

ATLANTA, GA 30340
6071 Buford Hwy
(404) 263-0730
NEtl. Mgr. KC4MJ
Doraville, 1 mi north of I-285

BURLINGAME, CA 94010
999 Howard Ave.
(415) 342-5757
George, Mgr. WB6DSV
5 miles south on 101 from SFO

OAKLAND, CA 94606
2210 Livingston St.
(415) 534-5757
Al Mgr. WA6SYK
17N-5th Ave./17S-16th Ave.

PHOENIX, AZ 85015
1702 W. Camelback Rd.
(602) 242-3515
Bob, N7RDH
East of Hwy 17

SAN DIEGO, CA 92123
5375 Kearny Villa Rd.
(619) 560-4900
Tom, Mgr. KM6K
Hwy 163 & Claremont Mesa Blvd.

VAN NUY, CA 91401
6265 Sepulveda Blvd.
(818) 988-2212
Al, Mgr. K6YRA
San Diego Fwy at Victory Blvd

**STORE HOURS
10 AM-5:30 PM
CLOSED SUNDAYS**



CALL TOLL FREE (800) 854-6046

Toll free including Hawaii. Phone Hrs: 7:00 am to 5:30 p.m. Pacific Time. California, Arizona and Georgia customers call or visit nearest store. California, Arizona and Georgia residents please add sales tax. Prices, specifications, descriptions subject to change without notice.



DX World

(continued from page 31)

VK0DA	-VK9NS	3B8FP	-IK8DYD
VK0SJ	-WB6FNI	3B9RS	-VE3JR
	(See Note 4)	3C1MB	-EA7KF
VP2MDB	-W2WSE	3D6CL	-KX8V
VP8PTG	-G4RFV	3Y1EE	-LA6VM
VP9BO	-N1AFC	3Y2GV	-LA6VM
W1BIH/PJ2	-W1AX	4M7A	-YV7QP
W3WYP/DU2	-WA3HUP	4S7NMR	-KZ8Y
WB3KBZ/VP9	-K88U	4Z4DX	-WA4WTG
XF4DX	-K9AJ	4Z7T	-4X6TT
YB0AV	-K02A	5A0A	-SP6BZ
YB0WR	-DK2JD	5H3RB	-NM2R
YC8VCE	-JL1MWI	5H3ZO	-K01ST
YJ8MC	-FK0AT	5V7SA	-WB4LFM
ZD9CA	-KA1DE	5X5GK	-DJ5RT
	(See Note 5)	7J1ADJ	-KA2PF
ZF2HM	-K9QVB	8P9AY	-K1COW
ZF2KD	-N6TP	8R1X	-W14K
ZF2KE	-K9QVB		(See Notes 3 and 7)
ZF2FK	-K9QVB		-W14K
ZP5JAL	-K02A	8R1Z	(See Note 3)
Z33BI	-DF2AL		-G3LNS
Z33Z	-ZS6BCR	8P9GV	-DK9XD
ZX0ECF	-PY2ASK	9L1AR	-WD8OHU
ZY0ZSA	-PY1BVY	9Q5WA	-WA9PCI
	(See Note 6)	9Q5FF	-YU3KI
ZY0ZSB	-PY1BVY	9Q5KI	-AL7EL
	(See Note 6)	9Q5NW	

A61AB	-P.O. Box 696, Abu Dhabi, UNITED ARAB EMIRATES
C53FH	-P.O. Box 165, Banjul, THE GAMBIA
FR4EB	-Michel Monin, P.O. Box 152, F-97470 Saint Benoit, REUNION ISLAND via FRANCE
FY4EE	-P.O. Box 999, Cayenne, FRENCH GUIANA
JY8NT	-P.O. Box 146, Cambridge, ENGLAND
TA2AD	-Sua, P.O. Box 68, Zonguidak, TURKEY
VK6CUP	-WIA VK6 Division, P.O. Box 10, West Perth, West Australia 6005, AUSTRALIA
VP8BLQ	-P.O. Box 260, MPA, FALKLAND ISLANDS

VP8BLT	-P.O. Box 260, MPA, FALKLAND ISLANDS
ZB40ANV	-P.O. Box 292, GIBRALTAR
ZD7BJ	-Brian Fowler, P.O. Box 54, St. Helena Island, SOUTH ATLANTIC OCEAN
ZL8HV	-Isher, Raoul Island, via Overseas Mail, Auckland, NEW ZEALAND
3G9SBY	-Radio Club Puntas Arenas, P.O. Box 2000, Puntas Arenas, CHILE
5U7/12VA	-15GWO, via Solferino 22, I-20121 Milano, ITALY (See Note 8)
7Q7LW	-Mrs. Helen Sampson, 57 Milford Court, Brighton Road, Lancing, Sussex BN15 8RN ENGLAND
9Q5NW	-P.O. Box 368, Stockbridge, GA 30281

Notes

1. This route applies for contacts made by FK0AT only.
2. Use 1987 Callbook for address.
3. QSL manager W14K reports his latest address as P.O. Box 5614, Virginia Beach, VA 23455.
4. This route applies for contacts made on HHH Net only.
5. This route applies for contacts made on Snooky Net only.
6. Latest address given for this QSL manager is P.O. Box 1502, 24000 Niteroi, BRAZIL.
7. Applies for contacts made during the November 1986 World Wide DX Contest only.
8. This address is 15GWO's father - address in Callbook is incorrect.

Contributors this month include K1RH, WA1ZIC, KO1R, WI4K, K4PI, KP4CZ, W4LCL, N5GAP, K6ANP, WW6F, W6MFC, W7HS, LA6VM, PJ8UQ, VK6NE, Salt City DX Association (KB2G), Carolina DX Association (K2SD), DX Incorporated (WA9BXX), Kansas City DX Club (AB0X), Northern Arizona DX Association (NN7A), Southern California DX Club (NK6A), Western Washington DX Club (K7ZR), Long Skip (VE3IPR), Long Island DX Bulletin (W2IYX), DX News Sheet



Erwin Ferrier, PJ7EF, of St. Maarten, is one of the active resident amateurs at this DXCC country. Erwin is a retired Antillean government official.

(G4DYO), QRZ DX (W5KNE) and The DX Bulletin (VP2ML).

The DXpedition to Peter I Island puts lots of excitement on the bands. I'm sure there were some stations that DXers worked who thought they were working the DXpedition - LU6UO/Z South Shetlands for one. The Norwegian team signed with their call quite often so there should have been no mistake with them. There were many who forgot what VFO they were using, but what about the lads who came on the DXpedition's frequency asking where he was listen-



★★ NEWS RELEASE ★★

A new USA company is being formed by the 2 original co-founders of Mirage Communications. Everett L. Gracey, WA6CBA and Kenneth E. Holladay, K6HCP. The new company name is RF Concepts, "RFC".

Ken and I put our ideas together and came up with some very interesting ideas that will include our past marketing ideas, a good quality product, excellent warranty, excellent service, etc. Please check these units over before making your next purchase. You will be pleasantly surprised.

WE NOW HAVE IN PRODUCTION:

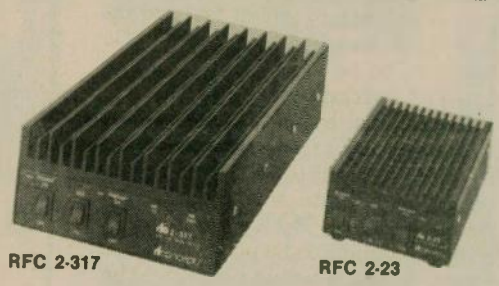
- 144 MHz, Model RFC 2-23 2W in = 30W out.
- 144 MHz, Model RFC 2-217 2W in = 170W out.
- 144 MHz, Model RFC 2-117 10W in = 170W out.
- 144 MHz, Model RFC 2-317 30W in = 170W out.
- 144 MHz, Model RFC 2-417 30W in = 170W out.
- 220 MHz, Model RFC 3-22 2W in = 22W out.
- 220 MHz high power models also available.

COMING SOON:

1. A 100 watt UHF amplifier with a GaAs FET receive pre-amp.
2. A real repeater amplifier for 144, 220 and 440 MHz.
3. A very affordable repeater controller, this little jewel will have all the functions needed to have complete control.
4. A new dual-band amplifier 144/440 MHz for "HT" and high-power mobile operation.
5. Switching power supplies from 10 amp to 50 amp.

All amplifiers will have high VSWR and overdrive protection and have built-in GaAs FET receive pre-amps. All products have a 5-year warranty, RF transistors have 6 months. All products are made in the USA.

See us at Dayton Hamvention, booths 23 and 24.
Call your nearest dealer for the latest updates.



RFC 2-317
Power in - 30W = 170 watt out
All mode - FM, SSB, FW.
GaAs FET receive pre-amp.
Noise Fig. .75dB - 20dB gain
High VSWR shut down

RFC 2-23
Power in .2 to 5 watt
Power out 2W in = 30 watt out
GaAs FET receive pre-amp.
Noise Fig. 1-1.5 - gain 20dB

Send inquiries to:



2000 Humboldt St. • Reno, NV 89509
702-827-0133

Factory:
2140 Jeanie Ln. • Gilroy, CA 95020
408-847-7373

ing? To those of you who didn't work the team, don't worry about it — it's only one DXCC country in that 300-plus list. Good DX es 73! de John N6JM. □

Product Review The Super DX EDGE

Norm Brooks, K6FO

For the year and a half before I got my 5BDXCC, I worked only 80 meters and studied the DX EDGE diligently. That was the "slide rule" version of DX EDGE. I found it to be invaluable in determining sunrise and sunset DX possibilities for 80 and 75 meters.

You amateurs who are now doing the same thing have it made, if you have a Commodore 64 (or 128) computer. DX EDGE is now available on disk. And it is easier to use than the slide rule version. There are also added features that the slide rule version does not have.

First, you read the instruction book, which is well written and easy to understand. Of course, if you're the type that runs the program first and reads the book later, you'll have to go to the book anyhow to learn, for example, that the month and date must be entered as JAN/15, not 01:15.

A map of the world on the display screen gives you most of your information. You give the program two locations on the Earth in which you are interested. One should be yours, but it doesn't have to be. You can give these locations by latitude and longitude, by call sign prefixes, by country names or by CQ zones.

The "Gray Line" is drawn on the map, with indicators as to which side is in daylight or dark. The program will automatically update the position of the Gray Line, so that you can just leave the display on as you're operating. A quick glance will show you the position of the Gray Line at that moment.

The program is menu-driven, making it easy to do all of these operations: Go to display; Mark location; Select Gray Line curve; Shift curve position; Rotate the earth; Solve for sunrise/sunset; Determine MUF; Solve Great Circle bearings; Set clock; Set colors; Exit.

The determination of MUF (Maximum Usable Frequency) and Great Circle bearings are added features, making this the "Super" DX EDGE. Those who purchased the original DX EDGE computer program can upgrade to the Super DX EDGE by sending in their old disk for a \$10 discount.

The Super DX EDGE is available from dealers or directly from Xantek, Inc., P.O. Box 834, Madison Square Station, New York, NY 10159. The price is \$34.95, and well worth it, in the opinion of your reporter. □

10-10 INTERNATIONAL News

Chuck Imsande, W6YLJ

10-10 19636

More about 10-10

In the last column I discussed the collecting of 10-10 numbers and receiving "Bar" awards for each 100 new numbers collected. When you receive the 500 Bar, you automatically become a member of the International 500 of-the-World and receive a VP (Vice President) number. Everyone who reaches the 500 bar becomes an Honorary Vice President. There are now over 1700 VP certificates issued for those attaining the 500 bar.

The International 500 of-the-World was the brainchild of Frank Orcutt, W4JO, 10-10 Awards Manager in 1971. Frank had received his 500 Bar (#2) and thought that had to be the end of number collecting! 500 Bar #1 had been

previously issued to Grace Dunlap, K5MRU.

As the number of VP's continued to grow, it was decided to see who could contact 100 of the VP's in the shortest time, with one year being the target date. Ramon Narad, K5AK, was the winner, contacting 100 VP's in nine months. After this first "contest", the VP Certificate was established for those 10-10'ers making contacts with other VP members and exchanging VP numbers.

A certificate is issued for each new group of 100 VP numbers collected. In order to promote more time on the air, the rules for collecting VP numbers require that all contacts must be made below 28.5 MHz or above 29.0 MHz and must last at least five minutes.

At last report, the following VP Certificates have been issued: 99 VP-100; 28 VP-200; 12 VP-300; 5 VP-400; 2 each VP-500, VP-600 and VP-700; 1 VP-900 and 1 VP-1000. Frank Cembruch, KA4DDY, is the champion VP number collector, with W. Gravenhorst, PJ2WG, a close second. They are the 500-Club's biggest boosters.

In addition to 10-10 number collecting for "Bars" and collecting VP numbers for certificates, there are numerous other awards offered by 10-10. More on other 10-10 awards next month.

Who is the youngest — who is the oldest?

In the last column we suggested a contest to see who is the youngest 10-10 member and who is the oldest 10-10 member? Just drop me a QSL card with your age including your birth date so it will reach me on or before April 25, 1987.

Now don't just sit around and let someone else beat you out because you think you cannot win. If you are up there, let us know, and if you are down there, we want to know also. All it takes is a QSL (or postcard) with a 14¢ stamp. It will be the oldest and youngest on April 25, 1987.

The prize? One year free dues to 10-10 for each. This is one contest that your 10-10 dues does not have to be paid up to win, because if you win, YOUR dues will be paid up!

Come on you young 10-10'ers — let's see if the number of your entries outnumber the old-timers. Remember, put your current age and birthday on your cards. Send your card today to me at: 18130 Bromley St., Tarzana, CA 91356-1701.

Spring CW QSO Party

The next 10-10 QSO Party will be held on May 2 and 3. This is the Spring CW QSO Party; it begins at 0000Z on May 2 and ends at 2400Z May 3. Single op stations only are permitted and all contacts must be between 28.0 and 28.2 MHz. Exchange call sign, name, QTH and



SAVE TIME and MONEY with THE HAZER

Bring things down for safety and convenience.

Never climb your tower again with this elevator system. Antennas and rotator mount on HAZER, complete system trans tower in verticle upright position. Safety lock system operates while raising or lowering. Never can fall.

Complete kit includes winch, 100 ft. of cable, hardware and instructions. For Rohm 20 and 25 G Towers.

Hazer 2 - Heavy duty alum. 12 sq. ft. load	\$297.00 ppd.
Hazer 3 - Standard alum. 8 sq. ft. load	\$213.00 ppd.
Hazer 4 - Heavy galv. steel 16 sq. ft. load	\$278.00 ppd.
Ball Thrust bearing TB-25 for any of above	\$42.50 ppd.

KENPRO Antenna Rotors

KR-400 11 sq. ft. Azimuth Rotor	\$214.95 ppd.
KR-600 19 sq. ft. Azimuth Rotor	\$299.95 ppd.
KR-2000 27 sq. ft. Azimuth Rotor	\$549.95 ppd.
KR-5400 AZ-EL Satellite Rotor	\$399.95 ppd.
KR-001 C-64 Computer Interface	\$159.95 ppd.

Send for free details of aluminum towers specifically engineered for use with the Hazer.

Satisfaction guaranteed. Call today and charge to Visa, MasterCard or mail check or money order.

GLEN MARTIN ENGINEERING INC.
P.O. Box W 253
Boonville, Mo. 65233
816-882-2734





Cypress Chapter 10-10 Members (left to right): Stan Brugh, WA4VCK; Bob Lucas, K4HTU; Betty Coleman, W4EHN; Marie, XYL of N4JCS; Bill Evans, KA4OFG, New Chapter Head; Emma, XYL of KA4OFG; and Wally White, N4JCS.

10-10 number. A dupe sheet is required. If you want a complete set of rules or if you need a dupe sheet and instructions for using, drop me a #10 (business-size) SASE. My address is listed above.

As this is being written, we just completed the Winter Phone QSO Party (weekend of February 7-8). We here on the West Coast had a good band opening on Friday night with zero's from Colorado booming into Southern California with 20 over signals from the start of the contest until after 0300Z.

The group from Pueblo, Colorado was particularly noticeable with 15 stations from Pueblo listed in my log. Stations from Denver, Colorado Springs and Greeley, Colorado also made an appearance in my log, along with stations from Aloha, Eugene and Gladstone. Oregon and Holbrook, Arizona.

Attention Chapter Heads

Here is a request for you Chapter Heads. Is your chapter doing something special in the coming months? Drop me a note with details, and we will do our best to give your activity notice in the column.

Cypress Chapter picnic

The Cypress Chapter of 10-10 held its annual picnic recently at Moss Park just outside of Orlando, Florida. A good turnout of 10-10'ers from the Orlando area enjoyed a beautiful cool and sunny day. Steaks, burgers and hot dogs rounded out a great outing.

The annual election of officers took place with Bill Evans, KA4OFG, elected as Chapter Head and Bob Lucas, K4HTU, as Secretary and Certificate Manager. Tune in each Wednesday at 0000Z on 28.665 MHz and check in with this active group. Depending on band conditions, there is usually a good out-of-state check-in along with the locals.

10-10 International Convention

Latest word from Mel Sojka, KD5DE, indicates that everything is taking shape for the forthcoming 10-10 International Convention in Shreveport, Louisiana on August 7-9, 1987. If you are interested in attending, advance

registration is \$3 and a check payable to ARK-LA-TEX Ham-Com should be sent to Jim Burnley, N5HSV, P.O. Box 4252, Shreveport, LA 71104-4252. For motel information, contact Karen Conley, KA5WXE at (318) 687-2588.

Feedback

Barry Bevan, KA3KWH, writes to say he has been on the air over two years and has yet to make a contact on 10 meters. Being optimistic, Barry asked for the 10-10 Information Packet so that when he makes those 10 contacts on 10 meters with 10-10 members, he will have his 10-10 Application Form handy. Don't give up, Barry; keep listening on 10.

JUNGLE RIVERS EXPEDITION AMAZON & ORINOCO

A Fabulous Ham Vacation
For A Lucky Few

On September 26 a group of us will fly to Barbados to board the Society Explorer, a rugged yet luxurious vessel, highly maneuverable & capable of swift runs through the narrow waterways & hidden lakes of two great rivers, the Orinoco and Amazon.

We have received permission from Society Expeditions to operate a ham radio on board, and we have written to Brazil & Venezuela for information on obtaining our licenses.

Few people have seen these remarkable rivers & their tributaries as we will by expedition ship. We will explore remote Orinoco villages by zodiac, infamous Devil's Island, Belem at the mouth of the Amazon, then up the great river to Manaus & the confluence of the Amazon & Rio Negro where we will witness the remarkable "meeting of the waters."

This is a great DX vacation for a few, shall we say, "advantaged" hams since costs begin at about \$6,100, and since the ship only accommodates 100 passengers.

If you are ready for this exciting adventure, call me or drop me a note and I will send you full details.

GARY PICKARD — WB7VIW
PICKARD TRAVEL SERVICE
2817 E. Camelback #500
Phoenix, AZ 85016 • 602 956-2150

10220 W. Bell Road
Sun City, AZ 85351 • 602 977-1272

Starting Our 22nd Year

One of the favorite bands of Chuck Curtis, KA8OFP, of New Lebanon, Ohio is 10 meters. He says he has his 10 contacts and requested a 10-10 application and info as to where to send it. By now, Chuck should have his new 10-10 number and giving it out as fast as he can.

Walt Gage, AJ8A, of Leo, Indiana, says he always wanted to join 10-10 but never knew how till he started reading *Worldradio*. Hope I hear Walt soon on 10 as I also collect prefixes and Walt's AJ8 would be a new one for me.

A potential new member from Puerto Rico — Guillermo Martinez, KP4BKY — asked for all the information about joining 10-10.

Albert Allen, WB4NNC, of Stuart, Florida, is the editor of his radio club newsletter and wanted to not only get involved in 10-10 himself, but also pass along the 10-10 membership information to his club through their newsletter. Thanks, Al, for the help in spreading the word about 10-10.

From Sedona, Arizona, Howard Rathbun, W6CRK, writes that "After all these years, I think I will try for 10-10." Good luck, Howard, in working your 10 10-10 contacts for your 10-10 number.

10-10 information

If you are interested in finding out more about 10-10 and how you can get your own 10-10 number, drop me a note and a #10 business-size envelope at the address above for an Information Package. Also available for 56¢ in stamps is a sample copy of the official publication of 10-10, *The 10-10 International News*, a 32-page magazine with interesting information and pictures about 10-10. Best 73 es cu next month. □

Apple MacSat

MacSat is a general purpose satellite tracking program for use with the Apple Macintosh 512K or Mac Plus computers.

The program has been designed to track up to 18 satellites simultaneously, either in simulation or real time mode. There is a text screen which displays satellite ground coordinates, range and Doppler shift frequency information in tabulated form. A graphical screen portrays the satellite ground tracks superimposed on a world map. There is also a screen which displays the precise location of each visible satellite above the observer's horizon.

The program is available for Canadian \$39 from: Geodetic Research Laboratory, Department of Surveying Engineering, University of New Brunswick, Box 4400, Fredericton, New Brunswick, CANADA E3B 5A3.

— *Amateur Satellite Report* □



You have read time and time again in my columns here about Novices and about Radio Camp. I hope I haven't bored you to death, but I guess those are two of my favorite topics — along with the topic of CW. Since I primarily work with Novices and beginning students, I can focus best on their activities. Recently I had the privilege of again teaching a Novice class at the 1987 Courage HANDI-HAM Radio Camp.

As I was teaching, I reviewed in my mind the classes I had had over the years. Since people are never the same, so it goes with Novice classes. They are always different.

I have been teaching at the last 14 Radio Camps. At times I have taught Extra, Advanced and General, but for the most part have worked with Novices. Usually classes have averaged about four or five students. In most classes, all of the students have been blind, but recently this has been changing. If you have a good memory you will recall that in one of my more recent columns I described a class in which I had eight people, each having a different disability.

The smallest class I ever taught was last summer when I worked with J.R., a totally deaf/totally blind man who was successful in passing his Novice. With the help of a tactile pad this was made possible. The largest camp class I had was this past January. Would you believe we had 11 people applying for the Novice test? It was quite a challenge, but was also a heck of a lot of fun.

This is a look into the people who make up a typical HANDI-HAM Radio Camp class and some of the reasons why they come to camp.

You might think that if you took a poll and asked everybody "How come you came to Radio Camp?" they would indicate "to study radio." This is not the case for all persons. Everybody at the camp studies radio intensively (from about 5:30 a.m. until midnight), but Radio Camp is a lot more than just

learning radio. Especially for persons with physical disabilities, it does so much more. Let's look at a few people in this year's class.

K.K. of Minneapolis, Minnesota was a special student. At the age of 7, K.K. was in an accident and became totally paralyzed from the chin down. He is a respirator dependent, and is unable to feel or move anything below his chin. He is very bright, and whatever he lacks in physical abilities is certainly not lacking mentally. He is able to do activities through marvels of rehabilitation technology. For example, K.K. — through the use of a puff and sip switch — is able to use a computer, control the lights in his room, dial a phone number and select television channels.

Shortly before attending camp he passed his Novice license. Since it was rather a quick course, he decided to sit in on the Novice class rather than attend the Tech./General session. We worked a lot on code, and this was great for him

the skills she will need in the Peace Corps.

K.K. is a bright, 17-year-old, senior high school student. Reading, studying and fascination with electronics made the Novice class very easy for him. Blind since birth, K.K. attended Radio Camp so he could go to California. He easily passed the Novice exam and was almost ready for the Technician/General, but decided to have some time enjoying being on the air before upgrading.

S.T. is a Courage Center resident. He has had fewer life experiences due to his muscular dystrophy and has not had the opportunity to participate in many teenage activities. For him, camp was a chance to socialize, see different sights, do some traveling, ride on an airplane for the first time, and learn Amateur Radio skills.

C.H. of Tucson, Arizona, is a brilliant woman. Before she had two aneurisms

For many disabled people who have not been handicapped since birth, there is a feeling of "Now that I am in a wheelchair, I can't go anywhere." Radio Camp proves the fallacy of this thought.

because he had a chance to increase his ability to try and do the code in his head. He has no means of writing things down other than puffing or sipping into his computer, which currently is not at the ham shack. K.K.'s reason for attending camp was to "experience life."

He has been hospitalized or living in a residential facility similar to Courage Center since the age of 7, and this was his first time *anywhere else* in 17 years. What an experience!

C.K. has only been interested in Amateur Radio since the beginning of December. She is a young, vivacious woman from California who is planning on joining the Peace Corps next March. She has a degree in social work and despite cerebral palsy and blindness, is planning on working with blind people in another part of the world. She hopes to use her Amateur Radio skills to allow her to communicate back home.

She did very well in the class, and although she missed passing the test very narrowly, learned a lot. Her reason for attending Radio Camp was to gain

and a stroke — which have caused some speech and mobility difficulties — she was a writer for the U.S. Geological Service. This was the first time since her disability that she had been able to travel, which she formerly had enjoyed very much. Although she learned a lot about radio at the camp, she also had an opportunity to visit with other folks, play some "Trivial Pursuit" (in which she really excelled) and know that despite her disability, she could still get out and about.

For many disabled people who have not been handicapped since birth, there is a feeling of "Now that I am in a wheelchair, I can't go anywhere." Radio Camp proves the fallacy of this thought.

It is difficult for handicapped persons to travel because they often need attendant care, cannot rent a car, and need accessible hotels and medical supervision. At Radio Camp, with the loving care of the camp counselors, even the most severely handicapped persons are able to travel and enjoy themselves.

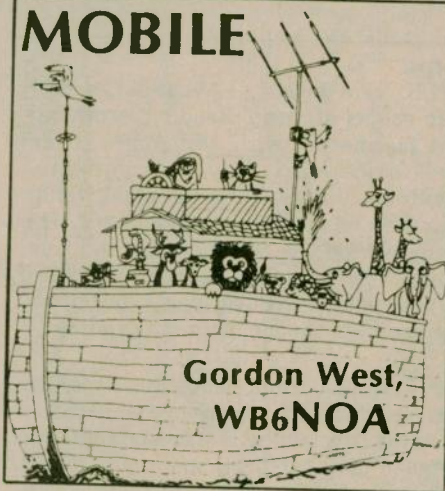
Radio Camp is a lot more than learning dits and dahs. For most people, it is an experience they may only be able to afford once in their life. It's an experience — the only time for the K.K.'s and S.T.'s that they may ever fly on an airplane. It's also the only time that people with one disability will find themselves in the position of helping someone else more disabled than they. It's an adventure — a once-in-a-lifetime experience. □

WRIGHTAPES: (Since 1976) Unconditionally guaranteed Morse Code Practice on 60 min. cassette tapes. Beginners 2-tape set 5 WPM \$7.90. Also 3, 4, 5, 6-8, 10, 9-11, 12-14, 14, 16-20, 22, 24-28 WPM. Specify Plain Language or Code Groups. Also plain lang. only 30-35, 35-40, 45-60. FCC type tests: 5-6, 11-12, 11-17, 13-14, 20-24. Call signs: 12-15, 20-24. Nos.: 5-22, 13-18, 18-24. Check, M/C, Visa \$3.95 ea. PPD 1st class USA. Can. Printed texts add \$.50 per tape. Call anytime.

Instant Service
PH: 517-484-9794 WRIGHTAPES
235 E. Jackson S-3 • Lansing, MI 48906

WBBVAS W80N

MOBILE



Installing HF-autotuners

Auto-tuned long wire

This is Part I of a three-part series on how to install a high-frequency SSB ham rig aboard your boat, in your vehicle, motorhome or cabin, using an automatic antenna tuner and a long-wire antenna or insulated backstay. Next month we'll talk about using a manual tuner to tune up a long-wire or backstay. Part III will deal with using no tuner, but running pre-tuned mobile whips.

Getting power

Your Kenwood, Yaesu or ICOM high-frequency ham rig will not run off of your fuse panel or tapped into any old wiring harness under the dash. You must run the supplied power cable directly to a battery or to a battery selector switch. Attempting to connect your rig to any existing wiring harness using smaller than a red and black 4-gauge wire will lead to distortion, garbled transmit, and threats to your Amateur Radio operating career if you ever transmit sounding like that again. You must run your power cable directly to the main line or the battery.

Grounding

There are 10 pages of grounding instructions that I have prepared for marine installations, vehicles and portable installations. Send me a self-addressed envelope and \$2, and the grounding instructions are yours. In a nutshell, wires won't work for ground. You must use copper foil or flat braid (round wires are reactive at RF frequencies).

Copper foil is connected to the chassis of your radio as well as to the ground lug on your automatic tuner. Sailboats should ground to the lead keel for maximum results. If you can't get to the lead keel, try harder. The lead keel will give you a sea water capacitive ground that is unsurpassed. You can also use underwater ground plates, and also your underwater through hulls, providing they already have a green bonding wire

going to them. Stainless steel tanks below the water line are a good ground; and as a last resort, you can run 3"-wide copper foil all around the inside of your hull, below the water line, for a good ground. Send for my grounding sheet — it tells all.

In vehicles and motorhomes, run the flexible braid or foil over to a convenient chassis bolt. Get under the bolt, or use a hose clamp, and you are all grounded.

Never rely on your battery negative lead as an RF ground! In portable installations, use foil or an earth ground, or run the foil over to a babbling brook or dump it into the lake for an exquisite ground.

Coax to tuner

Your automatic tuner stays away from your rig. Keep it at least 10 feet away so your rig's microphone doesn't pick up the hot RF coming out of the autotuner. RG-213 non-contaminating coax cable is your best choice between the tuner and the rig. Sure, it's big and hard to work with, but it's the best. If you must, run top-quality RG-8X that is smaller and more flexible. There's even a new version of RG-8X that gets away from the foam dielectric, that soaks up moisture, and it's called RG-8X MARINE GRADE. It's non-contaminating and I have it by the roll! It's 40¢ per foot.

Never run RG-58U, and never, never, never buy your coax from the local hob-

by radio store. That coax is really designed for CB radio application with 75% braid.

When you run the coax back to the tuner, strap to it the two-conductor of four-conductor cables supplied with your automatic tuner. You might as well run them all at the same time, rather than repeating the process twice.



Double-check your connections

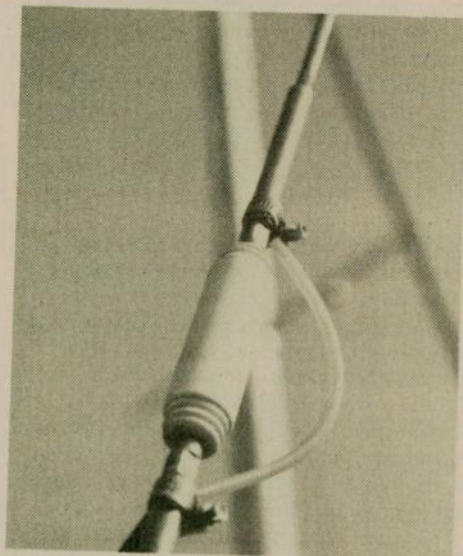
Automatic tuners

If you are using an ICOM HF rig, use their AH-2 automatic tuner and control head interface. Be sure and tell the salesman which ICOM rig you are using so he can give you the proper head interface cables.

The AH-2 tuner is about a \$400 proposition, less that ridiculous stainless steel whip assembly that doesn't work anyway in mobile and mobile home installations. Don't buy the whip assembly that comes with the AH-2. It simply is too short to work effectively.

The AH-2 control head simply plugs into your ICOM HF rig, and a four-conductor cable interconnects the automatic tuner with the head controller. Run this four-conductor right next to the coax cable that goes back to the tuner.

If you are running a Kenwood or Yaesu HF mobile, the AH-2 ICOM autotuner is tough to modify unless you really know what you're doing with high-brow electronics. I recommend you consider the Stephens Engineering fully automatic tuner, Model 1612 — about a \$1,000 proposition. This tuner requires no data line to your transceiver; it will work with any HF rig, and instantly tunes up as soon as it sees some SSB modulation coming down the line between 2 MHz and 30 MHz.



Hose clamps work fine



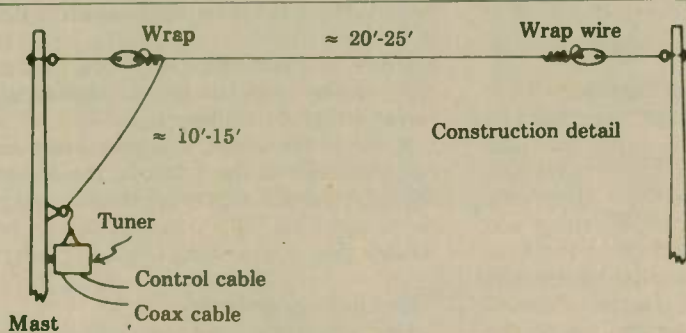
WEATHER BOOT

- Weather seal your coax connection!
- Use with PL-259/SO-239

Kit of 8 each your choice for RG-8, RG-58, RG-8X & RG-59, RG-214 ... only \$8.95 post paid.

Now available for BNC!

KILO-TEC
P.O. Box 1001 • Oak View, CA 93022
Tel: 805-646-9645 • Dealer/OEM inquiries invited



Just give this tuner your output power, one amp of 12 volts that runs to the tuner whenever you turn on your rig, and you are all set. One "hell-oww" and it self-tunes, and you are on the air.

Tuner placement

Since the automatic tuners don't require any manual adjustment, you can literally bury the tuner below decks or out of the way just below the feedpoint to your antenna system. On sailboats with a backstay, the tuner goes in the lazarette. In mobile homes, the tuner goes way in the back and up high. Powerboats put the tuner right beside the feedpoint to that 23-foot white fiberglass whip. Campers can run the tuner near the point their long-wire is going to be strung up to a tree, and the foil disappears into a creek.

Both the ICOM and the Stephens automatic tuners are completely weatherproof, so don't worry if they are exposed to the elements. Just make darn sure that ground foil interconnects the tuner to your main ground system. Remember, ground wires won't work.

The antenna

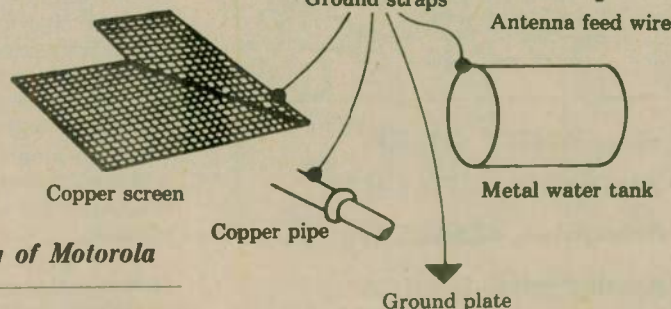
The automatic tuner's output goes to a single wire, 2-10 ohms Z, reactive antenna. The autotuner won't work with a beam, dipole or any other "balanced" antenna system.

For sailboats, connect an insulated backstay to the output of the tuner using GTO-15 single wire. "GTO-15" is high voltage, neon sign wire; you could even use spark plug wire for that matter. Same thing with powerboats — run the GTO-15 from the output lug of the tuner to a 23-foot, non-resonant, white fiberglass whip antenna (Shakespeare Model 390).

For temporary or portable installation, you can attach the antenna long-wire directly to the output of the tuner and run it up to a tree. In mobile home installation, the GTO-15 is run over to something that's at least 20 feet away. You need at least 20 feet of wire for the tuner to do its job properly. This is why that 9-foot ICOM whip antenna simply doesn't radiate — it's too short.

In vehicular installation, the automatic tuner is just not going to play until you stop and put at least 20 feet of

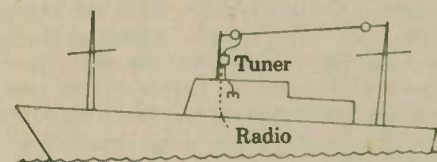
(Solder around edges for better contact)



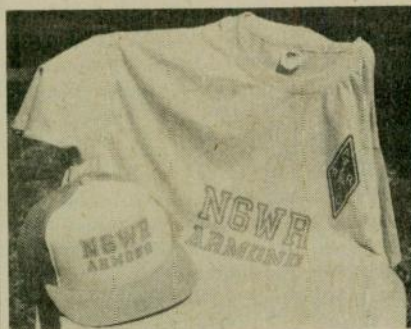
All diagrams courtesy of Motorola

wire to it and throw it over a tree to get some elevation on it. Go ahead and try and use a stainless steel whip, but it won't work.

The wire that leads from the tuner to the antenna system is all radiating. This is why we want the tuner away from your equipment and up as high as possible.



Only One Person in the World has your call . . . YOU!



Letter style on shirt is "Ivy Open" and on cap is "Sportswear."

Now you can wear and display your call, name and your club name on a high-quality T-shirt for only \$10.00. Your call, name and A.R.R.L. logo (if desired), printed on shirt front, with club name printed on shirt back. Shirts (sizes S, M, L, XL) are available in light blue, light yellow, beige (tan) or white. A.R.R.L. logo available in 2 1/4" x 5" or 1 3/8" x 3" in red. Lettering is available in two styles — Ivy Open or Sportswear — and the following colors: black, royal blue, maroon, brown, green, red, or orange. For individual orders please add \$1.50 shipping and handling. Club orders (would prefer quantities of 10 or more) are shipped postpaid.

Matching cap printed with your call and name has foam front and mesh back, is adjustable for size, and costs \$5.00.

High quality golf shirts available, printed one side \$12, both sides \$14.

Make checks or M.O. payable to:

Anne Wright, N6BOP
2272 Kellogg Park Drive
Pomona, CA 91768

California residents add 6% sales tax.

ble in mobile installations. You cannot run the tuner closer than 10 feet to your HF equipment because the 100 watts of signal gets into your set quite easily and causes horrendous distortion.

Once everything is hooked up, get on the air and give it a try. Just because your SWR is real low on all bands after tune-up doesn't mean a thing. Look for good signal reports from distant stations.

The most important points to remember in Part I of this series are: super 12 volts to your power cable, enormous copper foil grounding below your antenna system, separating the automatic tuner by at least 10 feet from your operating equipment, and using a single-wire antenna system that is a minimum of 20 feet, ideally 40 to 60 feet, and even up to 150 feet if you've got enough wire in the clear.

NEXT MONTH — a manual tuner for mobile/portable HF operation. □

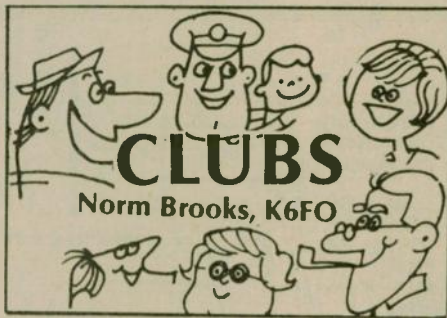
West Coast OTH

Peter Onnigian, W6QEU

Construction will start this spring on the transmitter site which is east of Christmas Valley, Oregon, while the receiving station is to be near Tule Lake, California.

So far, no complaints have been heard from amateurs or shortwave listeners from the U.S.-based OTH radars. This may be due to their beam directions.

The Russian woodpecker keeps QRM-ing the ham bands. Unlike the U.S. OTH radar, the Russian does not skip the ham bands when frequency sweeping. □



Anatomy of an auction Part II

Art Mayoff, VE2AQV/W6

Auction rules

Create a set of auction rules. Consider the type of equipment you would like to auction. Do you want to limit the age of the gear? Will you accept boat anchors, transformers, rack-mounted equipment, towers, computers, CB sets, TV sets, stereos? (My feeling has been that if it needs a hand truck to get it inside, don't bring it.)

Decide on a commission rate. (Generally 10% with possibly a maximum not to exceed \$5 or \$10 for any single item.) Decide whether a full fee or partial fee will be charged should the seller "buy back" his own gear. Buybacks regularly happen when minimum selling price is stipulated on the "EIF" or when the seller bids on his own gear to increase the price and ends up buying it back. We have found that a maximum of \$1 is a fair fee to charge for a buyback.

(As with all radio club meetings, it would be suggested that no smoking be allowed inside the building. Do provide receptacles outside the building for cigarette butts for easier cleanup afterwards.)

Parking and refreshments

To facilitate the unloading and subsequent loading of equipment, your club might consider reserving the three or four parking spaces closest or most convenient to the auction hall. Post stand-up signs at each of these parking stalls indicating that vehicles must be moved when unloading/loading is completed. If deemed necessary, have a club member act as an enforcement "officer" to keep things clear.

Another member of the auction committee will be responsible for picking up the refreshment, coffee and soda pop. Decide whether you want to have a "kitty" and self-service or a canteen attendant selling refreshments.

Displaying equipment to be auctioned

Provide tables along the right, left and rear walls for the gear to be placed on. This will allow the equipment to be

inspected without blocking the view of those seated.

Storing auctioned equipment

Decide where the equipment should go AFTER it is sold. In small auctions (around 100 or less) you might allow successful bidders to store their equipment at their chairs. In larger auctions you might set aside a portion of the room (or a separate room if available) for the storage of auctioned items. Trusted "runners" will carry equipment to the "secured area" and security "guard(s)" will need to verify that a paid receipt is presented for each piece of equipment claimed.

Buyer/seller number and bidding paddles

Prepare bidding "paddles" in advance. Prior to the auction, with a broad felt marker, number a sufficient quantity of "IBM" cards so everyone attending gets one. (Only one number is needed per attendee and it is used for both buying and selling.) Also, prepare a sign-in log corresponding to the numbers on the IBM cards. Be sure to provide room on the log for name, call sign, address, city, ZIP, phone number and whether club member or not. (Following the auction, those who are not club members might be mailed an invitation to join the club.)

The auctioneer

Select an auctioneer and alternate. Discuss the auction's objectives to make sure you're on the same wavelength. A veteran ham might be a bit more familiar with some of the older gear and be able to provide additional input. Also, your local ham store might consider providing one of their professional sales staff in return for some free publicity. Ask them. You might be surprised.

Time and method of payment

You will need to decide if payment should be made at the time each item is sold or if it should be made at the end of the event. Experience has shown that

one payment at the end is most efficient. A numeric file with each new buyer's ID number is created on a 3"×5" card. Subsequent purchases by the same buyer are added to his card.

A computer with the proper program can obviously be used, too. At the end of the auction the file is totalled as each buyer pays his bill. A receipt should be issued. (See Accounting Crew Section.)

The auction podium

Properly organizing the podium crew is of the utmost importance. A smoothly working crew enhances efficiency and exudes confidence to those in the audience. It will reduce "dead time" between items and allow a quick and steady flow of the auction. The podium crew and their duties consist of:

The Runners: Two or three runners will need to move the equipment from the display tables and place it next to the podium.

The Auctioneer's Assistant: This assistant 1) hands auctioneer the Equipment Identification Form (EIF) and 2) displays the item (quite often by holding it up).

The Auctioneer(s): If more than one auctioneer is used, a schedule of when he/she is to be relieved should be worked out prior to the auction. The auctioneer reads info from the EIF regarding the description of the item, its working condition, bands of operation, power requirements, minimum or silent bids, if it's a donation to the club and any additional information he might find of value to the bidders. As the bidding begins he hands the EIF to the first member of the accounting crew, and conducts the selling process.

The Spotters: In a wide room it is wise to have additional spotter to help make the auctioneer aware of bidders he might not see.

The Accounting Crew: Accountant #1 is seated immediately next to the auctioneer. He takes the EIF from the auctioneer and records on it the selling price (or Buyback) and assigns an item number (starting with #1 for the first item auctioned, #2 for the second, etc.). He also enters accounting information into a previously created log.

This log contains the item number, short description, seller's number, buyer's number and selling price. This operation provides an accurate audit trail as all transactions are logged immediately upon completion. The EIF is then passed to next accountant.

Accountant #2 creates a "Buyer's File" on a 3"×5" card for each new buyer. On this card he records the buyer's number, item number, short description and selling price. If this buyer buys additional items, they are added to the same 3"×5" card. The cards are stored in numerical order of (please turn to page 43)

Identify yourself

with our custom engraved call pins

1 line 1"×3" . . . \$1.00
2 lines 1"×3" . . . \$1.25
3 lines 1½"×3" . \$1.75

DAVE W2CFP
TOMPKINS CO. A R C

Any color • (Add 20¢ per tag for postage.)

Logos for MARS, ARRL, CD, most Lodges, OH, IN, IL, MI, PA, SMIRK, can be engraved on badges for \$.75 extra per badge. Special logos can be made at a reasonable cost; write for quotations.

FALLERT'S ENGRAVING

27 Verlynn Ave. • Hamilton, OH 45013

Visit Your Local RADIO CLUB.

ALABAMA

Birmingham Amateur Radio Club, Inc. (BARC)
Meets at the American Red Cross Building
2225 3rd Ave. North in downtown Birmingham, Alabama
1st and 3rd Thursdays/monthly at 7:30 p.m.
For info call Chuck Conkell, N4MLN, (205) 833-9555

ALASKA

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

ARIZONA

Scottsdale Amateur Radio Club
Scottsdale Senior Center
Corner of Wells Fargo/2nd Street
1st Wednesday/monthly — 7:30 p.m.
rpt. 147.18 (+) or 444.000 (+) • Call (602) 951-8300

Old Pueblo Radio Club
Meets: 2nd Wednesday/monthly — 7:30 p.m.
Location: Franklin Building
University of Arizona
N.E. corner of 6th St. & Park.

Tucson Repeater Association
P.O. Box 40371, Tucson, AZ 85717-0371
2nd Sat./monthly — 7:30 p.m., Pima Co.
Communications Bldg., 2145 E. Ajo. Net Thurs. 7:30 p.m.
146.28/88 (146.22/82, 147.68/08, 147.70/10-PKT)

CALIFORNIA

Amador County Amateur Radio Club
P.O. Box 1094, Pine Grove, CA 95665, Pioneer Elementary
School, Pioneer, CA • 1st Thurs/monthly 7:30 p.m.
WA6WYI Rptr. — 146.835, 146.235.
Net Tues. 7:30 p.m.

Anza Valley Radio Club
Anza Valley COOP
58460 Highway #371
Anza, CA 92306
Meets 1:00 PM last Sunday/monthly

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

Coachella Valley Amateur Radio Club (CVARC)
Columbia Savings and Loan Association
Highway 111 and Highway 74
Palm Desert, CA 92260
1st Monday/monthly 7:30 p.m.

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

Gabilan Amateur Radio Club
South Valley J.H.S.
385 IOOF Ave. • Gilroy, CA 95020
Meets: 2nd Thursday/monthly — 7:30 p.m.
Talk-in 145.47-

Golden Empire Amateur Radio Society (VEC)
P.O. Box 508, Chico, CA 95927.
Al Biegler WA6WJZ (916) 343-6141/call 146.25/85
Meets in conference room 1, Enloe N T Memorial
Hospital, 3rd Fridays/monthly — 8:00 p.m.

Hangtown Amateur Radio Club
P.O. Box 305, Placerville, CA 95667
Meets: 3rd Wednesday/monthly — 7:00 p.m.
Senior Citizens Center, Spring St., Placerville
Info: (916) 622-9488

Kern River Valley Amateur Radio Club
P.O. Box 1902, Lake Isabella, CA 93240
4th Saturday/monthly — 4:00 p.m., (Pot Luck)
Veteran's Hall, Lake Isabella
WA6UYW Repeater 146.085/146.685

Marin Amateur Radio Club (MARC) W6SG
Box 1231, San Rafael, CA 94901. Meets 1st Fri./8 p.m.;
MARC Clubhouse Bldg. 549, HAFB, Novato, CA (415) 833-
9789 (Summer exceptions; contact Pete N6IYU, 924-1578)
Sunday AM Club at Red Cross, San Rafael

Mt. Wilson Repeater Assoc. (M.W.R.A.)
P.O. Box 1384
Monrovia, CA 91016
Net. Mon. 7:00 p.m.
WB6JPI Repeater 146.400/147.435

Naval Postgraduate School Amateur Radio Club K6LY
Monterey Peninsula; 146.97, 444.7
2m net Weds. 8 p.m.; Meets 2nd Thurs. 7:30 p.m.
Contact: Keith Beard WE6R
9 Cielo Vista Terrace • Monterey, CA 93940

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

Radio Amateur Mobile Society
Meets: 2nd Tuesday/monthly — 7:30 p.m.
Carmichael Elks Bldg.
Cypress and Hackberry, Carmichael, CA
Net Saturday a.m. 224.84 8:30/146.79 9:00

River City A.R.C.S.
Meets: 1st Tuesday/monthly — 7 p.m.
SMUD Building, Room A
Elkhorn and Don Julio, Sacramento, CA
For info: (916) 483-3126

Sacramento Amateur Radio Club, Inc.
Contact: Ron Wenstrom, KJ6R, (916) 962-2415
after 6 p.m. Meets Sac. Brood Bank
32nd St. & Stockton Blvd.
2nd Wednesday/monthly—7:30 p.m.

San Fernando Valley ARC Inc. (W6SD)
Meets 3rd Friday/monthly — 7:30 p.m. • Red Cross
Bldg. 14717 Sherman Way, Van Nuys, CA 91407. Exams
8 a.m. 1st Sat./monthly • Pre-registration via P.O. Box
3151, Van Nuys, CA 91407

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

San Mateo Radio Club
Beresford Park Recreation Center
28th Ave. and Alameda de las Pulgas
San Mateo, CA 94403
3rd Friday/monthly — 7:30 p.m.

Santa Clara County Amateur Radio Assoc. W6UW
P.O. Box 6 • San Jose, CA 95103. W6UU 146.385 +
Meets: Santa Clara County Service Center
1555 Berger Dr., Building 2 Auditorium
2nd Monday/monthly — 7:30 p.m.

Sierra Foothills Amateur Radio Club
P.O. Box 3262, Auburn, CA 95604.
Office of Education Bldg., 360 Nevada St., Auburn, CA.
Meets: 2nd Friday/monthly at 7:30 p.m. Net Thurs.
7:30 p.m. Rptr. 145.43- Tues. 7:30 p.m. 28.543 MHz.

Shasta Cascade Amateur Radio Soc. (SCARS)
Redding, CA — Calif. Dept. of Forestry
Communication Center, 1000 Cypress St.
2nd Saturday/monthly, 7:30 p.m.

Southern California Six Meter Club
P.O. Box 448, Cypress, CA 90630
USB Net Tue., 8:00 p.m., 50.150
FM Rpt. Net Thur., 8:00 p.m., 52.28/88
FM Smpix Net Thur., 9:00 p.m., 50.300

Sonoma County Radio Amateurs, Inc.
P.O. Box 116 • Santa Rosa, CA 95402
Meets: 1st Wednesday/monthly 7:30 p.m.
Repeater frequency: 146.13/73
Contact person: Hank, W6DTV, 823-7885

Southern Calif. Amateur Transmitting Society (SCATS)
Vine Elementary School
1901 E. Vine St.
West Covina, CA 91790
1st Monday/monthly — 7:00 p.m. (coffee 6:30)

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

Stockton-Delta Amateur Radio Club, Inc.
U. of the Pacific, Rm 122
Kensington & Mendocino
2nd Wed. monthly, 7:30 P.M.
Rptr. 147.165/765 Net Wed. 8:00 P.M.

Tehama County ARC
13620 Trinity Ave.
Red Bluff, CA 96080
Meets: 1st Wednesday/monthly — 7:00 p.m.
CDF Training Room

Tri-County Amateur Radio Association
P.O. Box 142, Pomona, CA 91769
Meets: 2nd Monday/monthly — 7:30 p.m.
Pomona First Federal S&L — Basement
399 N. Garey — Pomona

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

West Coast Amateur Radio Club
Fun Meetings—No Business
Meets 3rd Thursday/monthly—7:15 p.m.
Fountain Valley Elem. School • Fountain Valley, CA
Net every Thursday 7 p.m. • Repeater 145.440-

Yolo Amateur Radio Society
P.O. Box 659, Davis, CA 95617.
Meets: City Council Conf. Room.
23 Russell Blvd. First Tuesday 7:30 p.m.
Simplex 146.475

Yucaipa Valley Amateur Radio Club (YVARC)
Gibraltar Saving's Community Room
34880 Yucaipa Blvd., Yucaipa, CA 92399
Pres: Fred Schmidt KG6QN (714) 794-1244
Meets: 3rd Monday/monthly — 7:30 p.m.

CONNECTICUT

Tri-City ARC
Groton Public Library
Route 117
Groton, CT 06340
2nd Tuesday/monthly — 7:30 p.m.

DELAWARE

Sussex Amateur Radio Assoc.
Delaware Technical Com. College, Georgetown
211 S.E. Front St.
Milford, DE 19963
3rd Wednesday/monthly — 8:00 p.m.

FLORIDA

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

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

Sarasota Amateur Radio Ass'n, Inc.
Meets: 3rd Tues./monthly — 8 p.m. on the 6th floor (board room) of the County Admin. Bldg. corner of 301 & Ringling Blvd. Club Rptr. W4IE, freq. 146.91/31, open to all. Phone patch *Up #Down. Welcome

South Brevard Amateur Radio Club
P.O. Box 2205, Melbourne, FL 32902
Meets 1st Tuesday, 7 p.m.
Herbert Hoover J.H.S.
Indialantic, FL

HAWAII

Big Island Amateur Radio Club
P.O. Box 1938 • Hilo, HI 96721-1938
Meets: 2nd Tuesday/monthly - 7:30 p.m.
Helco Auditorium, 1200 Kilauea, Hilo
Call in: 146.88(-) or 146.76(-)

ILLINOIS

Bolingbrook Amateur Radio Society
P.O. Box 495
Naperville, IL 60566-0495
(312) 420-0342 • Call in 147.93/33
3rd Monday/monthly — 7:30 p.m.

Chicago Suburban Radio Association (CSRA)
P.O. Box 88, Lyons, IL 60534
Meets 2nd Wed./monthly — 8 p.m. Community Rm.
Clyde Federal Savings & Loan Association
7222 W. Cermak Rd. • North Riverside, IL

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

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

North Shore Radio Club
Karger Rec. Center—1850 Green Bay • Highland Park, IL
2nd Monday/monthly — 7:30 p.m.
For info call (312) 945-0356
WB9FRM Repeater 147.945-600, PL 1B

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

INDIANA

Fort Wayne Radio Club
James Wolf, KR9U
P.O. Box 15127 • Fort Wayne, IN 46885
The Salem Church
Meets: 3rd Friday/monthly — 7:30 p.m.

Northeastern Indiana Amateur Radio Club
P.O. Box 745, Auburn Indiana 46706
Meets: 2nd Tuesday/monthly — 7:00 p.m. at members homes
Daily traffic net at 2300Z
on 147.96/36 MHz, the WB9VDK repeater

KANSAS

Sandhills Amateur Radio Club
Wheatland Electric Meeting Room
West Fulton Street
Garden City, Kansas 67846
1st Thursday/monthly at 7:30 p.m., 146.31-91

KENTUCKY

Kentuckiana Radio Club
Bill Richmond, WD4CPQ, 637-8443
Louisville Red Cross Bldg.
Louisville, KY
Meets: 4th Saturday/monthly — 7:30 p.m.

MARYLAND

The Peninsula Radio Operators Society (PROS)
Family oriented activities — training and exams held throughout the year.
Info net — K3NOQ/Rptr. 146.925 Tues. 1930 Local
P.R.O.S., P.O. Box 2315, Salisbury, MD 21801

MISSISSIPPI

Miss. Coast Amateur Radio Assn. (MCARA)
P.O. Box 1785 • Tel: (601) 388-9232
Gulfport, MS 39502-1785
Meets: 3rd Monday/monthly
Harrison County Courthouse

MISSOURI

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

NEVADA

Frontier Amateur Radio Society (FARS)
Meets: 1st Friday at the Fly-N-Chef at 7 p.m.
Scenic Airlines Terminal, McCarran Airport,
Las Vegas, NV • Net Mondays 7:30 p.m. 145.39
Info: Bob Herrell, WB5PTO, 641-6682

NEW HAMPSHIRE

Great Bay Radio Assn., WB1CAG
P.O. Box 911, Dover NH 03820
(603) 742-0130/755-2600
2nd Sunday/monthly — 7:00 p.m.
Dover Dist. Court. Talk-in 147.57

NEW JERSEY

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

NEW YORK

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

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

Radio Club of Junior High School 22 N.Y.C., Inc.
111 Columbia St. • New York, NY 10002
"At The Core of The Big Apple," QSLs invited.
For info contact WB2JKJ and "The Crew" learning
English thru Ham Radio at (516) 674-4072, 24 hrs.

Rockaway Amateur Radio Club
100th Precinct Police Station
Rockaway, New York
Berne Ross KO2F • (718)634-2167
Meets: 3rd Tuesday/monthly — 8 p.m.

Staten Island Amateur Radio Assn. (SIARA)
P.O. Box 495, Staten Island, NY 10314-0020
Meets 3rd Friday/monthly — 8:00 p.m.
Rm. B-201, College of Staten Island, Sunnyside
Club Repeater — W2CWW/R — 440.325/445.325

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

NORTH CAROLINA

Cabarrus Amateur Radio Society (CARS)
Western Steer Family Steak House
1390 Hwy 29 North
Concord, NC 28025
3rd Monday/monthly — 7:00 p.m.

Raleigh Amateur Radio Society, Inc. (RARS)
P.O. Box 17124 • Raleigh, NC 27619
Meets: 1st Wed./monthly, 7:30 p.m. • First Presb. Church
Club net daily, 8 p.m. on RARS 04/64, W4DW
Annual Hamfest, 2nd Sunday in April

OHIO

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

Northern Ohio Amateur Radio Society (NOARS)
K8KRG/WB8JBM • P.O. Box 354, Lorain, OH 44052
Meets 3rd Mondays/monthly—8 p.m. at Gargus Hall
Info: George—W8ANM • (216) 933-2841
Ohio's largest general interest club.

OREGON

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

PENNSYLVANIA

Penn Wireless Assoc. Inc.
Falls Twp. Municipal Bldg.
Trenton Road
Fallsington, PA 19054
4th Monday/monthly — 8:00 p.m.

TENNESSEE

Middle Tennessee Amateur Radio Society
University of Tennessee Space Institute
Tullahoma, Tennessee 37388
(615) 455-0289 Call in — 146.10/70
Meets: 2nd Thursday/monthly — 7:30 p.m.

Warminster Amateur Radio Club
P.O. Box 113, Warminster, PA 18974
Meets: 1st Wednesday/monthly — 8:00 p.m.
at St. Johns Lutheran Church, Hatboro, PA
Net Wednesdays — 8:30, 147.09/69

VIRGINIA

Southern Peninsula Amateur Radio Klub (SPARK)
Meets: 1st and 3rd Tuesdays
Salvation Army Community Bldg. • Hampton, VA
Operates 146/13 147/73 Repeater
For info call 480-2346 or 851-5573



Three quarters of a century ago, Amateur Radio licensing was established in the United States. All over the world, governments were beginning to recognize that Marconi's new-fangled "wireless" was an essential tool in mankind's ability to communicate. The U.S. Department of Commerce first issued Federal Government Wireless Licenses in 1911 as a result of the Ship Act of that year.

These early commercial tickets were for operators of radio equipment aboard seagoing vessels and contact stations ashore. The government realized that regulations and requirements should be established for all wireless operations. So in 1912, "Amateur" Radio was established as a facet of radio communication, and licenses to operate were issued by the Department of Commerce to these "experimenters". In order to get an operator's license to transmit from a ham station in those days, one had to be certified as a commercial (International Morse Code) wireless operator.

In April 1912, the *Titanic* disaster precipitated further legislation, making wireless installations mandatory on all U.S. seagoing vessels with a certified operator aboard. In addition, passenger liners were required to maintain 24-hour

manned radio watch (two or more operators). Suddenly there were seagoing jobs as radio officers for fellows who had been considered the neighborhood weirdos.

Those were the days when every item involved in an amateur's transmitter and receiver had to be created from scratch, with the exception of headphones, which — thanks to telephony — were on the market. The early radio amateurs, like all predecessors in mankind's rise to civilization, had to be hunters and gatherers. Materials for spark coils, condensers, tuners, detector substances and antennas all had to be sought. Hunts for iron pyrites, telephone wire abandoned after a storm, or empty oatmeal boxes resulted in valuable treasures for the early wireless pioneers.

After the necessary components had been located, collected or scrounged, the excitement of building gear began. Sources of helpful information like schematic diagrams were seldom available to these seekers of the mysteries of radio, so much ingenuity and experimentation went into the successful accomplishment of setting up an amateur station. By the time a fellow was ready to seek the coveted job of Spark, he was proficient in maintenance and repair as well as Morse code. Since there were no radio repair shops ashore, and certainly none aboard a ship, his hobby had paid off.

Of course, not all early hams became seagoing sparks, but every one of them had the spirit of adventure and courage

to challenge the mysterious electronic frontier.

QCWA boasts a few members who are ticket holders from "the year one." This column will report on each of these pioneers as they celebrate 75 years of amateur licensing and are honored with appropriate recognition.

QCWA's Board of Directors' spring meeting will be held in Irving, Texas on April 3 and 4, 1987. The two-day session period will include a social meeting with members and friends attending the Dallas Chapter luncheon on April 4. An invitation to all chapters and members within a 200-mile radius has been extended by Dallas Chapter for this occasion.

QCWA's bi-annual directory will be released shortly and will contain listings of all members in good standing on the rolls December 31, 1986. The publication will be distributed to U.S. members at no charge.

QCWA members participating in the February and March QSO Parties are reminded to submit CW logs to Jim Gundry, W4JM, 2908 Forestgreen Dr. S., Lakeland, FL 33803 and phone logs to Charles Chapman, W4SVB, P.O. Box 2741, Lakeland, FL 33806-2741. All logs must be postmarked on or before March 23 and received by April 8.

Any awards or certification earned should be requested on the first log page. Other rules and information may be found in *QCWA News*, Winter '86 issue. □

Clubs

(continued from page 40)

the buyer in a card file box. (Please note: All the duties of Accountant #2 can be done with the aid of a computer and a proper program.)

Accountant #3 totals the purchases recorded on each 3"×5" card, collects

the money and issues a receipt to each buyer when they pay their bill. It is a generally accepted practice that the person in this position actually be the club's treasurer, as this is the person who handles the money.

Cleanup crew

Usually plenty of stragglers will be present to clean the premises at the conclusion of the auction, but it's not a bad idea to include some of them in the Auction Committee. Leave the building cleaner than it was before the auction. You might want to use it again next time.

Paying the sellers

It is recommended that no payments be made to the sellers at the auction. Payments should be mailed to sellers (at the address shown in the sign-in log) within 10 days.

Auction audit

An independent committee of three club members should be appointed by the Board of Directors to audit the financial records of the auction. □

WASHINGTON

Mike & Key ARC K7LED
Good Neighbor Center
305 So. 43rd Street
Renton, WA 98055
Meets monthly on 3rd Sat. - 10 a.m.

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

WEST VIRGINIA

Jackson County Amateur Radio Club, Inc.
D. General Bailey, NK8P, Sec.-Treas.
113 Winters Dr., Ripley, WV 25271
First National Bank of Ripley
Meets: 1st Thursday/monthly - 7:30 p.m.

WISCONSIN

Fox Cities Amateur Radio Club
Meets: 3rd Monday/monthly — 7 p.m.
Roosevelt Jr. High School • 318 E. Brewster St.,
Appleton, WI 54911. Talk-in 146.16/76
Contact Jack Bigelow, KA9JOL, (414) 766-3861

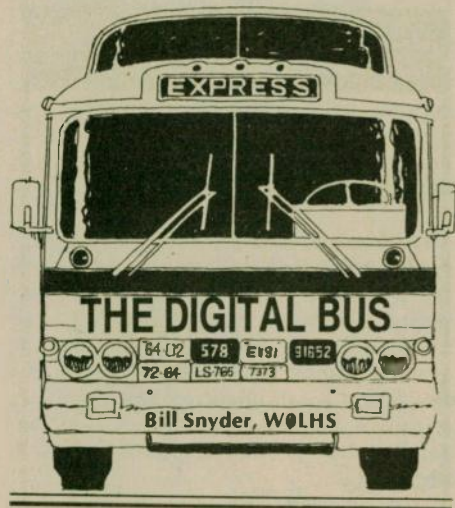
Extends 5MHz O'Scope
Range To 55MHz

**SCOPE
EXTENDERS....**

Type HFX-1, Complete, Ready To Use. \$69.50
Type HFX-2, Requires External Sig. Gen. \$34.95

Info. Avail. RADIO ENGINEERS
3941 MT. BRUNDAGE AVE.
SAN DIEGO CA. 92111
619-268-7988

CA. ADD
6% TAX



One of my most enjoyable contest-like ham activities is participating in the annual North Dakota QSO Party. I usually divide my operating time between CW and RTTY because there are many stations who need North Dakota to complete their WAS card collection and I like to help. I guess I live in a "rare" state.

The North Dakota QSO Party is held each January with the Red River Radio Amateurs, Inc. as the sponsor. At our last club meeting, right after the end of the ND QSO party, I asked those members who participated in the Party to raise their hands. Not too many did; it was a poor showing.

This year's event was not a good propagation weekend; nevertheless, I generated a number of CW pile-ups on 20 meters. For a while the Europeans were piled up so high, I felt like rare DX! I hadn't heard a stack like that since Bob Leo, W7LR, and I were hammering on the Vibroplex from Kenya and Tanganyika. It was great fun!

I suggest every amateur participate in their local QSO party competitions. Besides being a lot of fun, it will hone your operating skills. I found, on questioning, that many of our club members thought such activities were only for the highly skilled "contest operators." This is not true. QSO parties are just what the name implies — they are for

Dear Subscribers . . .

Please include your current mailing label with renewals, address changes, or any subscription problems. Should you receive a subscription as a club or hamfest prize and wish to extend an existing subscription, including your present label will help us give you faster, better service.

everyone to enjoy and speed is not necessary.

Another complaint I heard from our members was that if they participated in the Party they would have to spend a lot of time filling out QSL cards. Come on, gang, the QSL is part of Amateur Radio. Just think how happy you are going to make some ham in Transylvania when he gets that "rare" QSL from North Dakota.

After the Party the cards rolled in. One, from Paula Gold Franke, WB9TBU, was looking for WAS-QRP with only six states to go. Paula came up with this suggestion: "I think maybe there should be a 'Worked all Worldradio Columnists' award. Last month I worked Fred, W5QJM, the QRP columnist for Worldradio. Myself, I am the QRP/Small Station columnist for *Radio Sporting* magazine."

Peter the First

I now wish there was a Peter I island QSO party coming up so I could try for that country again. I missed it on both RTTY and CW. I only half-heartedly looked for the DXpedition on CW, and I never did decode their system of working "up", so I guess it was my fault I didn't get them on that mode.

When the band was open to them on 15, they went QRT about 10 minutes after I was able to hear them. On 20, the band faded out on me each time they were up.

I was not looking for them at all on RTTY. The advance notices I had seen said nothing about RTTY, so I just didn't care. As with so many DXpeditions, RTTY is treated as a poor cousin because the numbers of RTTY stations number only in the hundreds, not the tens of thousands like SSB and CW. If a DXpedition is going to appear on RTTY they usually make it known, and then the whole group of RTTY fans gather for a pile-up watch. But in this case, no one was really watching for Peter I on RTTY, except for a few.

Two nights before the DXpedition was scheduled to depart from Peter I, I was watching a show on public TV. The phone rang. It was RTTY DXer Jack Whitaker, W5HEZ. "Hey, Bill," he said enthusiastically, "3Y1EE is up on 20-meter RTTY!" I raced to the ham shack and flipped on the gear. The band was completely dead! Nothing!

"Nothing here, Jack," I said, "the band has gone out for tonight."

"Still booming in here," he answered. My spirits fell with a thud.

The next evening, I looked for the Peter group on RTTY and CW. I heard them on CW, but the band faded out on me again.

The next day the DXpedition left the island and that was that. So, I tried to put together the story of how Peter I came to be on RTTY. My source is Gin Naniwada, JA1ACB, the number one RTTY DXer in the world. Gin has a count of 260 in the DXCC derby, but has not registered his numbers with the ARRL that I know of.

Gin, for years, has supplied RTTY gear to DXpeditions and rare country operators in order to get the country on the air. I personally have confirmed a number of countries because of Gin's efforts, and I thank him for doing it.

Gin shipped the RTTY gear to the Peter I group when they paused in New Zealand. But when the DXpedition arrived at the island, the RTTY gear was left on the boat until the last Saturday afternoon. Then it was brought ashore and set up in the operations tent. 3Y1EE got on the air about 0030 on Sunday and worked Gin plus 14 others in Japan. That is when alert radio amateurs in the states, like W2JGR, discovered what was going on and sent out the word to the rest of the RTTY fans.

According to JA1ACB, only about 25 stations in the Western Hemisphere worked the island, although Peter I was reported to be on again from 1100Z to 1230Z and another spurt around 1600Z



OUR PARTS FIX BIG PROBLEMS

RADIO, COMPUTER, TV, STEREO, LASER, ROBOTICS, MICROWAVE, ETC.

\$\$\$\$ SUPER SAVINGS

on electronic parts, components, accessories.

Send self addressed, stamped envelope for our 40 page catalog and get on our mailing list. BCD ELECTRO

P.O. Box 830119, Richardson, TX 75083 or call (214) 343-1770

- 7 AMP INLINE FUSEHOLDER WITH 17" 18 GA LEADS 10/3.50
 - AUDIO TRANSFORMER 79" x 43" 600 ohm/600 ohm 50
 - 3 57945 CRYSTAL HC33 75
 - 35A 600V BRIDGE RECT 2.95
 - DIP SWITCHES
 - 4 POS 45, 7 POS 80, 8 POS 90
 - 2764.45-2.35 272562-5.75
 - 4164 15- 90, 41256 15-2 45
- AND MANY MORE ITEMS
PHONE ORDER FOR 24 HR. SHIPMENT

the same Sunday. Whether the island group worked Europeans or others I do not know, but there are a pile of RTTY hams around the world who are unhappy and/or mad about the way RTTY was treated on that DXpedition. Some critics of the DX hobby say the Peter the First (as Gin calls it) operation was one of the best run DXpeditions in recent times, but I don't think too many RTTY DXers will go along with that statement. A big bunch of them feel they've been jilted at the altar!

Packet stuff

In the February issue I printed John Schmid's, WA6PGA, comments on packet operations. John assailed packet as a frustrating mode of operation. Now I would like to quote from a letter from George Winford, KL7VZ, as a result of that column. George's comments have been seen in this column before when he wrote about the inefficiency of HF packet radio to and from Alaska.

"Nothing has happened to change my mind (about packet), except on VHF. Thanks to some yeoman work by Tom Walyer, KL7GNG, and Jerry Curry, KL7EDK, VHF packet is alive and growing in Alaska. These two have contributed time, money and equipment to network the state and deserve a lot of credit.

"On the other hand, HF packet continues to be extremely frustrating. From up here, 14.103 is worth two giggles and HA-HA when conditions produce a crescendo of QRM. I do not want to imagine what it sounds like if you are in the middle of it.

"There are a couple of BBS's I can access now, but I am as likely to be timed out as I am to be able to leave a telegram-like note. It's a toss-up. On the other hand, if I have a message that really needs to go through, I use AMTOR. So far it has never failed me.

"(Packet) definitely needs help and I continue to be very disappointed in the publications that extol its virtues without mentioning its drawbacks."

Well, George, I agree with you and Schmid. I spend quite a bit of time on 20-meter packet and I have worked out some satisfactory schedules with other stations, but I feel a lot of thinking and organization needs to be done in order to make it a really good system. I do hope it will come of age one day.

Beacon problems

Steve Lund, WA8LLY, offers his comments on the problem of packet interference with the beacon stations on 14.100. Steve, who is a student of radio propagation, feels that most of the problem is caused by packet stations moving down from the 14.103 calling frequency. So, packeteers, please note Steve's request. Keep the beacon frequency clear; do not move down below 14.103.

"I'd be in favor of moving the beacons to another frequency such as 14.000 MHz." Steve writes. "That frequency would be clear, but would require special permits in most countries."

That might not be such a bad idea, and it would serve as a good band edge marker. What do you think? This column welcomes your comments.

Eavesdroppings

I COULD HAVE LEFT MY TWO-METER HAND-HELD HOME BECAUSE THOSE KH6 STATIONS DON'T LIKE TO TALK TO TOURISTS. . . . THE WAY BUSINESS IS AROUND HERE, IT'S HELL TO BE YOUNG. . . . THE BAND WENT TO POT WHEN I WENT TO COFFEE. . . . I JUST SPENT SIX HOURS TRYING TO GET THE PRINTER ECHO TURNED OFF. . . . I THINK YOU SAID MARK, THAT I WAS SENDING THE WRONG MARK. IS THAT RIGHT? . . . YOU WERE SENDING MARK WHERE SPACE SHOULD BE AND SPACE WHERE MARK SHOULD BE. . . . I'M MARRIED TO A HOUSEWIFE, IT'S HARD TO FIND ONE OF THEM ANYMORE. . . . MY CAR BROKE DOWN AND BROKE ME. . . . SO FAR OUR WINTER HAS BEEN MILD NOT WILD. . . . GLAD TO SEE YOU IN A DICE QSO. . . . BEEN A HAM FOR 51 YEARS AND BEEN THINKING ABOUT SENDING IN MY CARDS FOR W.A.S. AWARD. . . . CIAO FOR CHOW DOWN HERE. . . . WE ARE SENDING A S.W.A.P. TEAM TO THE DAYTON HAMFEST. . . . I RECEIVED YOUR COPI PERFECTELEY. . . . HAVE SOME LOOSE ENDS IN MY GARAGE, LIKE DRY ROT AND SPILLED OIL. . . . I USED TO WORRY ABOUT MY ANTENNA UNTIL IT BLEW DOWN. . . . I WON'T HOLD YOU FROM GETTING THOSE LAST 63 COUNTRIES FOR DXCC. . . . WELCOME TO SORRY GULCH, AZ. . . . AROUND MY HOUSE I AM THE CHORE-BOY AND I AM BEGINNING TO LOOK LIKE ONE. . . . YOU ARE WAY OVER S-9 ON A SUPPOSEDLY CALIBRATED S METER. . . . YOUR SIGNALS ARE DANCING OVER HERE ON A MULTI-HOPPER. . . . LAZINESS HAS CAUGHT UP WITH MY HAZINESS. . . . I LIVE HERE FOUR DAYS A WEEK AND THEN I GO TO THE CITY FOR THE OTHER FOUR. . . . REALLY ENJOYED (please turn to page 52)

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

BALUNS



For beams. 1.7-30 MHz. 6-Kw PEP 1:1 or 4:1 ratio. Model BA-2000 \$72.95



For dipoles. 1.7-30 MHz. 6-Kw PEP 1:1 or 4:1 ratio. Model 2K \$67.95



1.7-30 MHz. 1-Kw. 1:1 or 4:1 ratio. Model 1K \$45.95



1.7-30 MHz. 350-w PEP. Ratios to match 50/75/100/150/200/250/300/375/450/600/800 ohms. Specify ratio. Model PB \$23.95

Add \$4 shipping/handling in U.S. & 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!

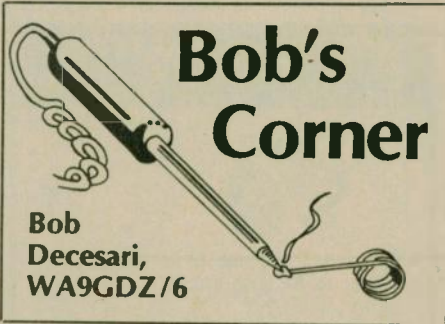
Model PT-340 \$99.95 + \$4 shipping/handling in U.S. & Canada. California residents add sales tax.



Send for FREE catalog that shows our complete line of noise bridges, SWR meters, pre-amplifiers, loop antennas, VLF converters, audio filters, baluns, RTTY equipment, toroids and more.

PALOMAR ENGINEERS

BOX 455, ESCONDIDO, CA 92025
Phone: (619) 747-3343



Sniffing RF with electrical paraphernalia

Any amateur who likes to cut his own antennas can use the simple test equipment to be described in this article to help his or her understanding of how the antenna works or to maximize its performance. My original interest in this hardware was sparked out of necessity while doing some custom antenna design work and by an excellent article written by Donald K. Reynolds of the Department of Electrical Engineering, University of Washington, in Seattle. Unfortunately, I do not know in what publication it originally appeared as I received a copy of a copy from a friend, and there was no longer any visible identifying print.

In Reynold's article, a small 2" loop with a series trim capacitor and series light bulb are used to sense RF in the 140 MHz to 160 MHz range, although it will work at frequencies above and below this band. This original design is illustrated in *Figure 1*.

The loop assembly is mounted on a 3' dowel or other non-conductive stick. It can be used to determine where maximum antenna current occurs along the antenna by simply holding the loop a couple of inches away, parallel to the antenna, and moving it up and down. For example, one will notice that the light will come on on one end of a 1/4-wave vertical and not the other. Similar tests can be conducted on other antennas to determine their voltage and current distribution.

If you decide to construct this device, I would recommend that you select the

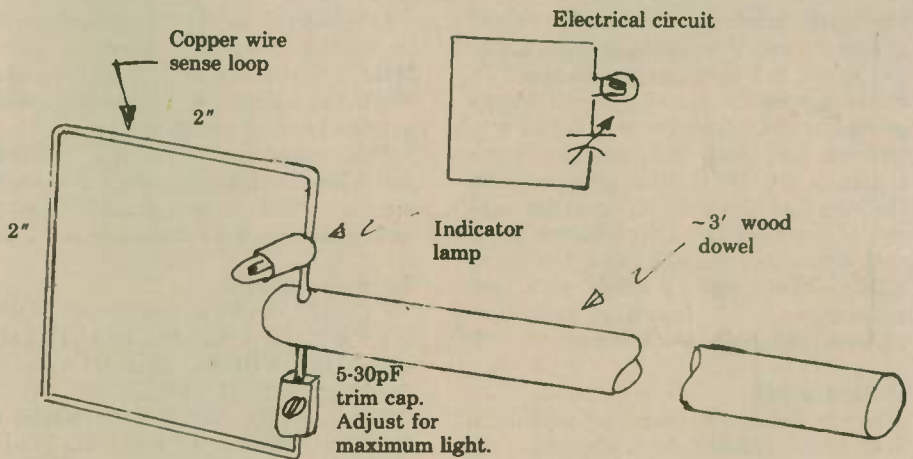


Figure 1 — Basic RF sensing loop "sniffer"

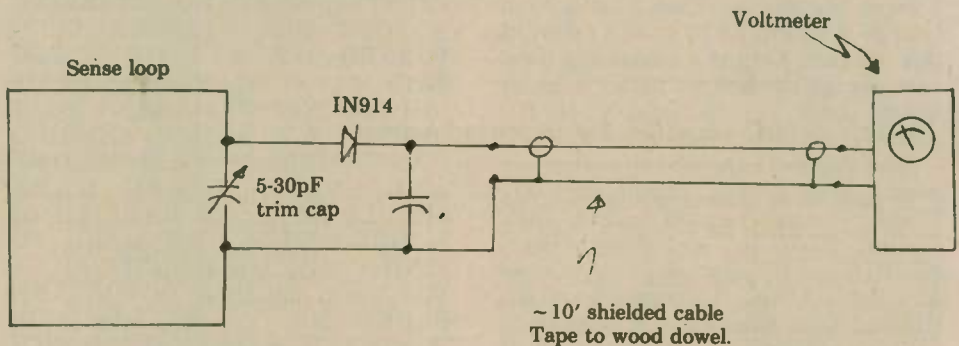


Figure 2 — Improved RF sniffer

lowest current, lowest voltage indicator lamp you can find as it will allow you to look at RF from hand-held transceivers in the 1 watt category. However, approach the antenna with the loop slowly as too much RF will cause the lamp to blow!

In addition to looking at the voltage distribution along an antenna, the loop can be used to see if your transmission line is radiating, as might occur if your SWR is too high or a severe mismatch to the antenna exists. Simply slide the sense loop along the transmission line and observe the indicator bulb.

For this application, you may require more sensitivity, especially if you are running low power. However, assuming

your sensing system is satisfactory, you will see the bulb light up along the line if a mismatch is present and your line is part of the radiating system! If your transmitter power level is too low and you require additional sensitivity with the loop sensor, read on!

As I felt that this little tool was very useful for both analyzing antennas and just plain sensing RF in the laboratory, I decided to modify the basic design and make it compatible with my voltmeter so that I might be able to make some relative field strength measurements. *Figure 2* illustrates the updated version.

Note that the same loop and trim cap are still used, but the lamp is replaced with a diode and a capacitor. The diode and capacitor rectify the RF sensed by the loop and convert it to a DC level that is measured by the voltmeter. A shielded cable is used to transport the rectified voltage down the stick to the voltmeter. Either an analog or digital voltmeter can be used, although I tend to prefer an analog movement for this type of measurement as it is easier to see if the voltage magnitude is increasing or decreasing.

Alternately, today's digital meters include ranges in the millivolt range, thus allowing detection and measurement of relatively small RF voltages. Therefore, if you are fortunate to have both available, don't be afraid to try either with the loop.

GIVE YOUR EARS A BREAK!

(And the XYL's too!)

The **AUTO-KALL** AK-10, is a DTMF selective calling unit. It connects to the external speaker jack on your VHF/UHF FM transceiver, scanner, etc. Your speaker remains silent until someone sends your personal 3-digit Touch-Tone™ code. That means you (and the XYL!) don't have to listen to all the chatter all the time. But if someone wants to reach you they can. Great for families with two or more hams, activation of emergency nets, etc.

FEATURES

- Completely assembled and ready to use.
- Easy setting of your personal code in seconds with small rotary switches. No jumpers to solder.
- Speaker resets automatically to silent-standby and leaves red LED on to let you know someone called if you were away from the rig.
- 8-15 VDC CMOS circuitry provides for low current operation.
- Built-in speaker. External speaker jack also provided.
- Measures only 1 1/4 x 3 x 5 1/2 inches. • Decodes all 16 digits.

*Touch Tone is trademark of AT&T



AUTO-KALL AK-10

\$89.95 Plus \$3.00 shipping & handling

117 VAC power supply and audio patch cord included

Motron Electronics

695 W. 21st Avenue

Eugene, OR 97405

503-687-2118



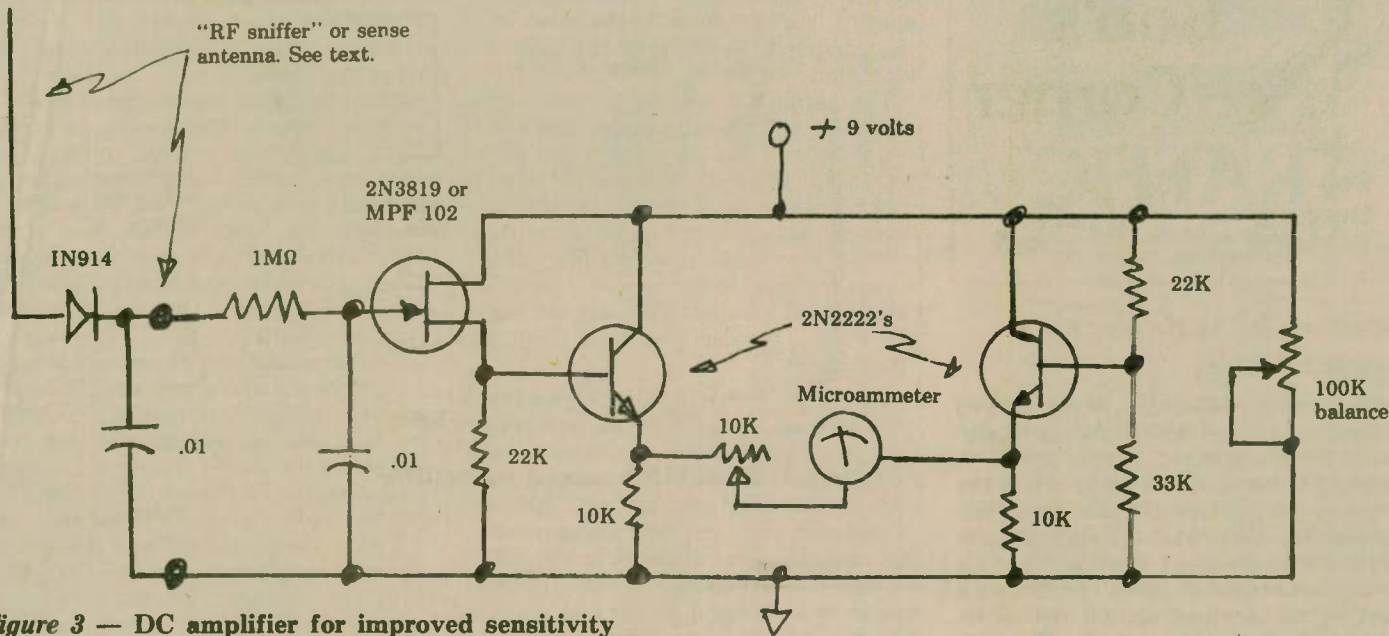


Figure 3 — DC amplifier for improved sensitivity

If even more sensitivity is required, such as needed for antenna pattern measurements, the circuit of Figure 3 can be used to give quite a bit of DC voltage gain. The loop just described can be used with this amplifier; however, a sense antenna other than the loop should be used if antenna pattern measurements are to be attempted.

I have used this circuit with 1/4-wave vertical antennas at some distance from the radiating antenna and achieved fairly good pattern measurements. Again, either an analog or digital meter in the microamp range can be used with this circuit with excellent results.

Although simple, these "RF sniffing" circuits can be used to analyze your antenna system and determine how it is working. Although the hardware just described was originally designed for 2-meter work, the basic sense loop can be enlarged proportionally for operation with HF antennas (i.e., about a 20"/side loop for 14 MHz). For those new to these types of hardware and antenna measurement techniques, I strongly recommend looking through the current ARRL *Antenna Book* for additional information.

Readers keep writing . . .

. . .and I keep procrastinating on my replies! I fully intend to at least acknowledge each individual who sends me some correspondence with a postcard, thanking you for your time and interest. However, as my mother knows, I am awful when it comes to writing thank-you cards! So please hang in there. You might get a card by the end of this year.

What's next?

Since I received a large number of letters about the regenerative receiver, a good ol' super-regenerative circuit is

coming. Also, a simple ZN 414 state-of-the-art TRF receiver is planned for 160-meter reception, and maybe a simple 160-meter CW/DSB transmitter. That's it for this month. □

*Enthusiasm is contagious.
Spread it around!*

New Product Review 1987 Amateur Radio calendar

Norm Brooks K6FO

I finally found it! The perfect calendar to post at my operating position. Up to now, I have used calendars put out by insurance companies and drugstores. They were OK, but somehow they didn't do anything to inspire my Amateur Radio operating.

The calendar is published by John David, KB1T. In his foreword, he apologizes to the amateur fraternity for the calendar being late this year.

Physically, the calendar consists of 36 pages, 8 1/2" x 11", plastic spiral-bound. You can hang it on the wall, with an interesting/humorous picture at the top, and a month calendar at the bottom. Or you can fold it like a book and keep it in a drawer.

The calendar has many features that should appeal to the active ham. First off, it shows all of the major operating tests and contests through the year. It even lists all the contest sponsors and information sources.

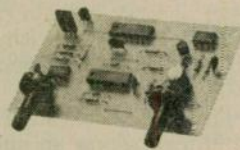
There are four maps: 1) The 40 CQ DX Zones; 2) The 75 ITU Zones; 3) The ARRL Sections; and 4) The Maidenhead Grid locator for the United States.

For you contesters, there are masters for dupe sheets and log sheets that you can duplicate at your favorite print shop.

You can get this super calendar for \$9.95 (U.S.) or \$14 (overseas). A \$1 discount is given on orders of three or more. KB1T Radio Specialties, Box 1015, Amherst, NH 03031. I don't know about you, but I'm ordering MY 1987 calendar now. □

CMOS KEYSER KIT

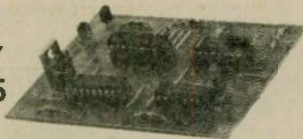
ONLY
\$9.95



- MEASURES ONLY 2.3 x 3.5 INCHES
- SPEED RANGE FROM 5-50 WPM
- VOLUME AND SPEED CONTROLS
- COMPATIBLE WITH GRID BLOCK, CATHODE KEYED, AND SOLID STATE TRANSMITTERS.
- COMES WITH PCB AND ALL PARTS NEEDED TO COMPLETE THE BOARD.

MEMORY KIT FOR CMOS KEYSER

ONLY
\$14.95



- STORE TWO MESSAGES OF UP TO 50 CHARACTERS EACH
- MESSAGES CAN BE PROGRAMMED AND PLAYED BACK AT ANY SPEED
- POWERED BY THE SAME BATTERY AS THE CMOS KEYSER
- COMES WITH PCB, WIRE, SWITCHES, AND ALL PARTS NEEDED TO COMPLETE THE BOARD
- MEASURES ONLY 2.5 x 3.5 INCHES

PLEASE ADD \$1.50 POSTAGE TO YOUR ORDER
WISCONSIN RESIDENTS ADD 5% SALES TAX
SEND FOR FREE INFORMATION

BEL-TEK
P.O. BOX 125
BELOIT, WI 53511



Packet

Packet has been said to be the traffic handlers' mode of the future, but it's beginning to look like the future now. Packet networks are springing up in all parts of the country providing outlets mainly on VHF, but HF packet is also beginning to make its appearance.

Offering error-free communication at high speed, 300 wpm and up, plus automatic operation, packet obviously outperforms other modes of traffic handling, voice and CW. It's not only faster and more accurate, it offers the possibility of being available 24 hours a day.

But, like every forward step we've taken in Amateur Radio, it has been having its growing pains. It has been necessary to develop standards to insure that amateur stations everywhere will be able to intercommunicate. The FCC has had to draft new regulations, which fortunately have been generous and far-seeing, giving us the opportunity to develop our systems in a direction that will greatly enhance our ability to provide the public service envisioned by Section 97.1(a) of the Regulations.

There have been hangups, particularly on the HF systems when marginal conditions and crowded bands have kept two stations together repeatedly trying unsuccessfully to get an error-free transmission from a bulletin board, thus preventing others from accessing it. Messages have gone astray when an operator has inadvertently removed them from a bulletin board or misdirected them.

In the government's Night Tango exercises, which tested the various emergency communication services such as Amateur Radio, MARS, Civil Air Patrol, Amateur Radio's National Traffic System outperformed packet systems. But that's changing as packet systems develop and the bugs are worked out.

Packet's strength — error-free transmission — could be its weakness. Error-free hardware and error-free software do not produce error-free operators (sysops is the buzz-word). One can rely too much on the error-detecting features of the system and forget that any computer system operates on the GIGO principle: garbage in, garbage out. If you send

"prnit" the recipient will get "prnit," and if it's a computer at the other end the computer won't have the vaguest idea what you mean.

The automatic routing provisions of "digipeaters" (smart simplex repeaters which receive digital signals and then retransmit them to other digipeaters or other outlets to forward to the addressees) work fine as long as the correct routing instructions are on file; otherwise the messages can hang around awhile until a human operator can supply what is needed and send them on their way.

The ARRL Board of Directors and the NTS area staffs are studying the problem, and may come up with some modifications to the ARRL message format to make interfacing with packet systems simpler, and they are also making organizational changes in the NTS to take full advantage of what packet has to offer. Expect to see the results within a few months.

Telephone directories

The vast majority of our messages addressed to people who are not amateurs or living in an amateur's home are delivered by telephone. As a result, at every stage of handling the message, operators must take necessary steps to assist the delivering operator to make that final phone call.

The originating operator's part is to get the correct phone number and include it in the address of the message, and then to transmit it correctly to the first relay station.

Should the area code be included? Some might say no, except possibly for emergency or priority messages, as it's unlikely that the delivering operator will be making a long-distance call to deliver

a routine message. The reasoning is that if it's important enough for a long-distance call, it shouldn't go by Amateur Radio.

However, there are two reasons why it may be better to include the area code. First, sometimes a local toll-free call area may include telephones with two different area codes. New York City is one example. Metropolitan areas straddling state lines are another, such as Niles, Michigan and South Bend, Indiana, or Augusta, Georgia and North Augusta, South Carolina.

Second, sometimes the area code helps to correct a garbled address. Thus, if a message comes here with a Greenville, NC address, but with an 803 area code telephone number, I'd strongly suspect that it should be Greenville, SC because 803 is South Carolina's area code, and it's more likely that SC was changed to NC somewhere long the line than that 919 was changed to 803. No, that doesn't mean change the address in the message. Tack on an operator's note instead.

Relaying stations have the responsibility to pass the message on as received, after being sure they have it correctly. And remember, one erroneous digit in the phone number usually makes the whole number useless.

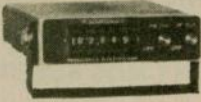
Hopefully the message will arrive at the delivering station with the telephone number intact. The vast majority do. But the exceptions, and the messages that arrive without a phone number or with merely the note "phone listed," are the ones that add work for the delivering operator — work that some amateurs refuse to do and instead file the message in the circular receptacle beneath the operating table. Needless to say, such people have no business calling themselves traffic handlers.

Obviously, the first place to look — and usually it's the only place — is the telephone directory. For us folks out in the sticks, that's usually no problem. Our phone book contains only 40 pages. In the big cities the telephone directory is a small library, with a half dozen or more pages each given to common names like Johnson, Smith, Clark and Jones.

It must be a relief to a big-city ham to have a message for someone with a name like Przybylski to look up (but it may be a different story when it comes time to ask for Mr. Przybylski on the phone!).

If the addressee is not listed, you have the option of calling Directory Assistance (what used to be called "Information"). This service used to be free when Ma Bell had the monopoly, but now there's a charge, and it's usually cheaper to take one of the other options: mail the message or deliver it personally or by messenger. Or the final option — send a (please turn to page 50)

**SYNTHESIZED
SIGNAL GENERATOR**



**MODEL
SG-100F**
\$429.95
delivered

MADE IN USA

- Covers 100 MHz to 199.999 MHz in 1 kHz steps with thumbwheel dial
- Accuracy +/- 1 part per 10 million at all frequencies
- Internal FM adjustable from 0 to 100 kHz at a 1 kHz rate
- External FM input accepts tones or voice
- Spurs and noise at least 60 dB below carrier
- Output adjustable from 5-500 mV at 50 Ohms
- Operates on 12 Vdc @ 1/2 Amp
- Available for immediate delivery • \$429.95 delivered
- Add-on accessories available to extend freq range, add infinite resolution, AM, and a precision 120 dB attenuator
- Call or write for details • Phone in your order for fast COD shipment.

VANGUARD LABS
196-23 Jamaica Ave., Hollis, NY 11423
Phone: (718) 468-2720

RENO RADIO

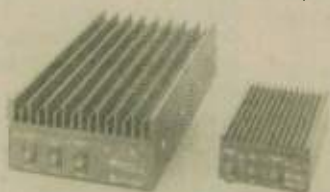
Mail: P.O. Box 20548 • Reno, NV 89509
 Store: 12 Glen Carran Cir. • Sparks, NV 89431
 Phone: (702) 331-7373
 (800) 345-5686 Toll Free

Hours: Mon. through Fri. 10 a.m. to 6 p.m.
 Sat. 10 a.m. to 4 p.m.
 Closed Sunday

New Products

rfconcepts

2m/UHF amplifiers



RFC 2-317

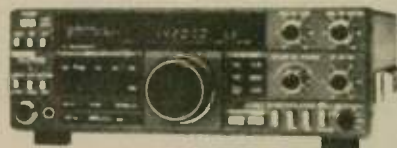
RFC 2-23

- Several models up to 170W out
- American made
- GaAs FET pre-amp
- SWR protected

Call for special prices.

Reno Radio — Your newest full service Amateur Radio dealer. Give us a call for fast, friendly service. Now call toll free for our low price quotes. (800) 345-5686

Jim Myers, WA6ICB, President



Kenwood
TS-440S/AT

ICOM



NEW!
IC-μ2AT
10 Memories
140-160 MHz coverage

KENWOOD

YAESU



Yaesu FT-757GX

KDK
FM-240

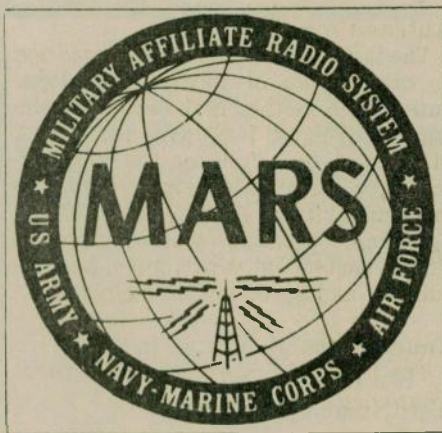


Yaesu
FT-727R
2m/440 5W



ICOM-751

- Cushcraft • Ameritron • MFJ • B & K • Butternut • Kenpro • KLM/Mirage • Larsen • AMP Supply • Kantronics • Kenwood • Belden • AEA • Alinco • Diawa • Hustler • ICOM • Yaesu
- Many more to choose from! For a fast and courteous response, please call our store mgr., Dale Scott, KA7QYX. Phone (702) 331-7373



Military traffic

Have you ever handled traffic to or from an individual in the military services? There are a few points we ought to keep in mind when we handle such traffic:

First, when delivering traffic to the families here in the local area, be sure to let them know you can return messages, *except* to the Marine Corps Recruit Depot, Parris Island, South Carolina. There, they do not like it returned.

You will need the name, SSN, unit, APO number, and city and state of the APO number (ex: APO New York, NY 09757). Do *NOT* include the name of a city in an overseas location. Keep in mind: traffic to a ship at sea cannot be delivered, only traffic to land-based organizations.

If you are delivering a message that has the address in it, try to get a return message. It really helps morale.

How do you pass the message? On any net! There is normally an Army, Navy or Air Force MARS member on most 2-meter and HF nets. Any of the MARS services can handle traffic to any of the other MARS services. Deliver a few of these and you will find you really enjoy it!

—Indianapolis Repeater Assn., IN □

MARS monitors flight

Dick Mills, WA6LML/AFA6PF

"Nine days without a shower," were the first words spoken by pilot Dick Rutan as he climbed unsteadily from the cockpit after completing a record 26,000-mile unrefueled flight with co-pilot Jeana Yeager.

The saga was not without its tense moments from the start when the fuel-heavy 110.8 ft. wingtips scuffed the Edwards runway on take-off. Both of the

• People reaching People •
Amateur Radio is what Worldradio is all about.

small winglets eventually blew away, exposing the graphite composite structure.

Other tense moments monitored by MARS station AFA6PF heard Rutan remark, "Got it running again." When pressed for an explanation by Mission Control, he said the feed tank went dry and the rear engine quit. "That was the longest 10 seconds of my life," Dick remarked in a matter-of-fact voice.

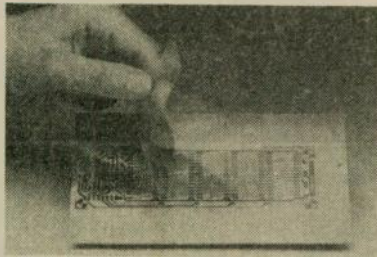
Later, at about 0200 PST, December 23, fuel transfer problems resulted in a flame out of the rear engine and several thousand feet of altitude were lost before restart.

In an interview after the flight, John Swancara, W6LOD/AFA6XJ, of the LAAFS MARS Base Support Team discussed his role in readying *Voyager's* electronics prior to the grueling flight. "We had to work long hours under cramped conditions just like Dick and Jeana did, but it was worth it to see the bird come home safely."

Swancara explained it was originally intended that MARS stations would talk with *Voyager* to keep the crew occupied and awake during the long flight, but this was not necessary. Only once, 1910 PST on the first day out, did Rutan call AGA8HI, Hickam AFB and AGA6LA, LAAFS.

—Submitted by Paul Turkheimer, WA6NKL □

Make Circuit Boards The New, Easy Way



With TEC-200 Film

Just 3 easy steps:

- Copy circuit pattern from drawing or magazine on TEC-200 film using any plain paper copier
- Iron film with pattern on to copper clad board
- Peel off film and etch

End the frustration of using liquid photoresists. TEC-200 makes even difficult circuits accurately and easily. Complete instructions provided. **SATISFACTION GUARANTEED**

convenient 8 1/2 x 11 size

5 Sheets for \$3.95

10 Sheets only \$5.95

add \$1 postage • NY res. add sales tax

The MEADOWLAKE Corp.
Dept. J, P.O. Box 497
Northport, New York 11768

Traffic

(continued from page 48)

service message to the originator saying the message is undeliverable.

Speaking of telephone directories, many nets have developed their own for use by members in routing traffic and also as a help to ungarble garbled addresses. Barbara Osofsky, KB2HM, writing in the *New Jersey Traffic Bulletin*, describes a directory that is being developed there. It carries two listings: amateurs listed by call letters with nets and/or bulletin boards through which they can be reached and their local toll-free phone areas, and exchange names and numbers (the first three digits of the phone number after the area code) together with the amateurs having toll-free access to those exchanges plus their nets and/or bulletin boards.

Here in South Carolina we do it a bit differently. New Jersey is mostly urban, South Carolina is mostly rural. For several years the South Carolina Single Sideband Net has carried a list of towns in the state together with the net members in each, and also a list of the state's telephone exchange numbers (first three digits) in numerical order, with the towns included in each. Thus far it has been adequate, as there is usually someone on the net who can come up with any information not found in the book.

Many other nets and traffic organizations have developed such directories for their areas to speed delivery and to help handle the difficult ones. It's the mark of the dedicated traffic handler to get the difficult ones through, and that is a skill which could at any time be valuable in an emergency. It's a skill that has on many occasions drawn praise from agencies served by Amateur Radio when communication is critical. □

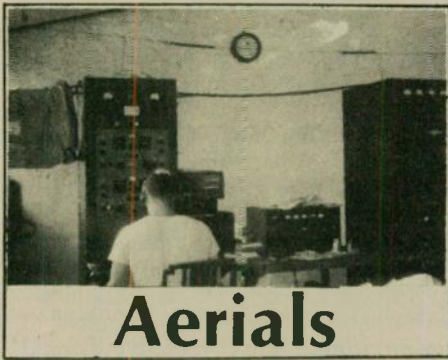
Jammer fined by FCC

Lawrence Kaczmarczyk, ex-W3UQW, of Manhonoy City, Pennsylvania, has been fined \$1,000 for operation of an Amateur Radio transmitter on December 5, 1986.

Kaczmarczyk was monitored and visually observed by the FCC's Langhorne, Pennsylvania facility transmitting harassing and jamming-type signals which interfered with the ongoing communications of licensed radio amateurs.

Kaczmarczyk had previously voluntarily surrendered his Amateur Radio license for cancellation in October of 1985. This action terminated a revocation proceeding by the FCC relative to Kaczmarczyk's malicious jamming of Amateur Radio transmissions.

—W5YI Report □



Bruce A. Ray

This month's column is devoted to the review of a new antenna book — *All About Vertical Antennas*.

As all of us know, all standard AM broadcasting antennas in the Western Hemisphere use vertically polarized antennas. It's estimated that there are about 60,000 such broadcasting stations from Canada down to Argentina. The administrations of these nations chose vertical antennas because they provide the strongest groundwave signal for this frequency band (540-1600 kHz) in their immediate vicinity.

Another useful reason for verticals is that the radiation is low above the ground or horizon, and therefore is useful for long-distance communications. Indeed, long-distance communication is quite possible when propagation conditions are right with these broadcast antennas.

The "bible" on vertical antennas in this country is *Radio Antenna Engineering*, written by the late Edmund Lapor, and published by McGraw Hill, but now out of print. Another engineering reference is the *NAB Engineering Handbook*.¹ This industry book has been written by experts in the radio broadcasting field. It's been updated from time to time, and the latest edition (7th — 1985) has a complete section on verticals. Another and perhaps the greatest, *Standard Broadcast Antenna Systems* by Carl E. Smith,² is on the theory and design of directional vertical antennas used in broadcasting.

William Orr, W6SAI, and Stuart Cowan, W2LX, have written several antenna books, including *The Radio Amateur Antenna Handbook*, and their most recent, *All About Vertical Antennas*. This book is available from many ham supply sources.

The first amateur book devoted entirely to vertical antennas was Capt. Paul Lee's (N6PL) *The Amateur Radio Vertical Antenna Handbook*, first published in 1962, and the 2nd edition in 1984.

The remainder of this column is devoted to the Orr and Cowan book, *All About Vertical Antennas*.

Theory

The most important and sometimes

most misunderstood function of conventional vertical antennas is the ground system. Orr and Cowan devoted 22 pages, the entire second chapter, on this very important subject.

They explain in plain language how and why vertically polarized signals are generated from a vertical antenna. There is plenty of theory, design and construction information, to help anyone build a proper vertical.

The effects of ground attenuation to ham band signals are explored and reasons given why 160- and 80-meter vertical antennas work better than those on 10 and 15 meters.

It is interesting to note that high-power shortwave broadcasting stations around the world do not use vertical antennas. They did in the '20s and early '30s, but now the norm is horizontally polarized arrays. These shortwave antennas, sometimes with inputs as high as 500kW, use stacked horizontal dipole arrays with screen backing. But these are very expensive and require high tower supports. Only when reception target areas are less than about 125 miles away, are vertically polarized antennas used.

Comparisons

This book compares vertical performance with slopers and Marconi antennas. Then there is another chapter about groundplane-type antennas and various methods of feeding them.

While horizontally polarized antennas commonly use parasitic elements, vertical antennas make use of phased array.

Two or more vertical elements are fed with variations in power, phase and spacing. These being the three variables, they produce different radiation patterns — and of course, changes in gain.

Orr and Cowan have a chapter on multi-band vertical antennas, which has some new information not seen elsewhere.

Antenna matching devices

The chapter on matching units is excellent. It describes why there is a need to electrically match the antenna to the feedline and transmitter. It further describes why the resistance making up the antenna impedance is to be matched, and why the reactance needs to be cancelled by the tuning device.

The L-type antenna matching network is thoroughly discussed and its formulas are given, along with examples for making up the two reactances necessary in this type of network.

The L network is quite efficient and simple since only one coil and one capacitor are necessary. A circuit for an L-type tuner is shown and discussed. Shunt and gamma feeds are also discussed for grounded vertical towers and/or antennas.

Antenna roundup

The last chapter contains information on other types of vertical and sloper antennas. A method is shown for obtaining a VSWR of 1.4/1 over the 3.5-4.0 MHz band, by increasing the diameter-to-length ratio of a sloper. Hints on mechanical items such as wire, tubing, lightning, antenna test equipment, VSWR meter, dip meter, guys, base insulators and hardware are included.

Conclusion

The Orr and Cowan book, *All About* (continued on next page)

Only the genuine has these trademarks

Spider Antenna

U.S. Patents 4349825, 4460896

They are your assurance of quality and performance

Wherever you may roam, on Land or Sea . . . or even at Home

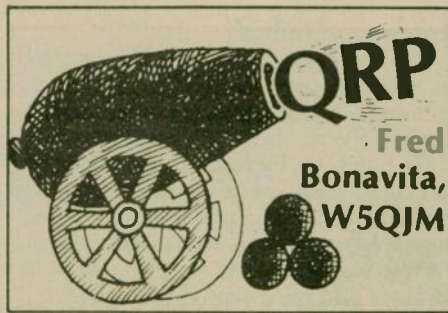
The Spider™ Antenna will help you keep in touch with your ham friends around the world. Four bands—10, 15, 20 and 40 (or 75) meters. Needs no antenna tuner. Custom made with highest quality workmanship and materials.

On Land . . . Suitable for use on any motor vehicle from a compact automobile to a motor home. Work four bands without stopping to change coils.

Or Sea . . . The Spider™ Maritimer™ is for use on or near the ocean. Highly polished non-magnetic stainless steel and nickel-chrome plated bronze.

At Home . . . If you live in an apartment, condominium or restricted area, the Spider™ may well be the answer to your antenna problems.

MULTI-BAND ANTENNAS
7131 DOWNSMOUTH AVENUE, SUITE 563C
CANOGA PARK, CALIF., 91303
TELEPHONE: (818) 341-5460



If anyone is passing out Academy Awards for perseverance, persistence and plain old dogged determination, then Michael Hopkins, AB5L, of Dallas, has got to be a major contender. After eight years of trying to get a homebrew receiver going, he made it. Let's hear it, gang, for Mike!

After failing at such published projects as the Hearing Aid Five and after not being able to get the mixer to function on a modified broadcast-band rig, Mike took off after a one-transistor, direct-conversion receiver to tune from 3500 to 3935 kHz.

Writing from a workbench, he says, is "littered with attempts to get a home-made receiver going," Mike says: "The unbuffered MPF102 drives an entirely passive diode-ring product detector, which is assembled on a piece of perf-board.

"Only the local oscillator is shielded, and I had to cut a hole in a Radio Shack aluminum box to reach a trimmer because putting the lid on detuned the circuit and made calibration impossible," he continued.

"The input is a toroid tuned with a rusty variable capacitor from a neighbor's discarded stereo, and the rig is mounted on a 1" board measuring 12' by 8', but don't get the idea this is a cheap project or a cost-effective one," he says.

He explains: "I used a 'scope to tweak it, and the signal generator and frequency counter I had to have ran the equipment costs alone up to about \$200.

"That does not count the 50 or so hours I spent on the project and, as our hospital's accountant says, 'Registered nurses don't work cheap.' But who's counting?" he asks.

But the effort was worth it.

"It sounds great," Mike assures us. "What's a little microphonics or a peaky

front end? Who cares if it just barely drives a Radio Shack amplifier hard enough to hear through my stethoscope earphones? Naw, unimportant details, those."

So, he goes on, "Let's hear it for Doug DeMaw, Ade Weiss and the 1977 edition of *Understanding Amateur Radio*. They got me into this.

"I call it the Model 41 because that was the birthday I was celebrating the day I got it to work," Mike concludes.

After that enlightening chronicle of homebrewing, Mike probably would have no problems writing an equally funny acceptance speech to be delivered when he picks up his Oscar.

AND SO IT GOES: The QRP ARCI Gulf States Net has been resurrected with Roger Rose, W5LXS, of Midland, Texas, as the NCS. He calls things to order at 0200Z Thursdays (that's Wednesday nights for most of us) on 3560 kHz (±) QRM. □

A duckie won't make it

John, WA3CAS

I know that our repeater's receiver isn't the greatest, but don't expect to be full quieting using a hand-held inside your car with only a rubber duckie! No matter how good we make the receiver,

it was never meant to be operated in this manner. Give our repeater a break and at least put a 1/4-wave magmount on your roof. I'm sure you'll be very pleased with the results.

— Greater Pittsburgh VHF Society, PA

Digital Bus

(continued from page 45)

YOUR DRAG TAPE. ... MY MEMORY BANK IS BLANK. ... I HAVE AN EXTRA FT-101E IN THE CUPBOARD AS A SPARE. ... YOUR COPY IS GETTING PRETTY SCRAMBLED. ... THE YOUR-RIG-HERE IS DOING A FINE JOB. ... I DO NOT SPEEK ENGLISH, SO NO PROBLEM. ... GLAD YOU HAVE AN EYE PEELED FOR DX. ... THE LAZY DOG JUMPED UNDER THE QUICK BROWN FOXES OVERLOADED BELLY. 1+2+3+4+5+6+7+8+9+0 = 45 ... I SPENT AN HOUR IN THE SSB PILE-UP AND THEN DISCOVERED THAT I HAD THAT COUNTRY. ... OLD AGE HAS SPOTS BEFORE MY EYES, BUT CYCLE 21 HAS NO SPOTS BEFORE MY EARS. ... I AM A VERY BAD TYPEWRITERIST. ... I WILL BE GLAD TO QSY, BUT I WILL NOT BE THREATENED. AND NOW, SWEET PRINCE, IN THE INTEREST OF HARMONY I QSY! ... I DON'T HAVE TOO MUCH RTTY GEAR, WHATEVER THAT IS. ... THE BIG CANONS FROM W6 AND W7 LAND CATCH BY1PK FIRST. ... MY QSL IS ON ITS WAY AND THE INK WILL HARDLY BE DRY WHEN

YOU GET IT. ... I'D GO ON ATV BUT I'D HAVE TO CLEAN UP THE SHACK FIRST.

Help wanted

Milen Postadsheiff, LZ2MP, P.O. Box 237, 7000 Russe, BULGARIA is looking for circuits for a homebrew keyboard/video display unit that he could build and get on RTTY, AMTOR and packet radio. Any help to Milen would be appreciated.

Thanks to those unsuspecting people we watched on RTTY and to K1LPS, W5HEZ, W7VFR, KT1N, W1DA for your input. Write me at 1514 South 12th St., Fargo, ND 58103. 73 de Bill Snyder, W0LHS. DIT DIT. □

Aerials

(continued from page 57)

Vertical Antennas, is excellent and is highly recommended for all those seriously interested in vertical antennas for ham use. It should be on the bookshelf of every ham with a vertical antenna.

¹National Association of Broadcasters, 1771 N Street, NW, Washington, D.C. 20036

²Smith Electronics, Inc., P.O. Box 2727, Bath, OH 44210 □

**ANTENNA
And
TOWER
ACCESSORIES
HOT DIPPED
GALVANIZED**

MAST ADAPTERS

MA-2 \$22.50

MA-3 \$29.50

BEAM MOUNT

BM-1 \$29.50

STANDOFFS

SO-1 \$34.50

PO-1 Pully Kit \$8.50

SO-2 \$64.50

SO-3 Commercial Antenna Standoff \$99.50

Ginpole Kits

GP-81 \$129.50

GP-51S \$139.50

BG-18 Ladder Mast \$249.50

FOB Oaklawn

Request our **FREE** Y-3 Catalog for new springtime accessories.

IIX EQUIPMENT LTD.

P.O. Box 233
Oaklawn, IL 60454
(312) 423-0605



SEA - PAC

SEASIDE/PACIFIC HAM CONVENTION

MAY 30 - 31, 1987

(ARRL State Convention)

BUY YOUR NEW GEAR AT SEA-PAC NO STATE SALES TAX!

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

- **BANQUET & PROGRAM**
(Featuring Dave Bell, W6AQ)
- **SEMINARS**
- **NO HOST BREAKFAST**
- **REPEATER OWNERS' FORUM**
- **QCWA MEETING**
- **WOMEN'S LUNCHEON**
- **MANUFACTURERS**
- **PRIZES GALORE**
- **DEALER EXHIBITS**
- **VE TESTING**
- **YL ACTIVITIES**
- **100+ FLEA MARKET TABLES**
- **AND MUCH MORE!**

CONVENTION HOURS

Saturday, May 30 9 a.m. to 4:30 p.m.
 Sunday, May 31 9:30 a.m. to 1:30 p.m.

NOTE: Exhibitor and flea market setup starts at 11:00 a.m., Friday, May 29.

EXHIBITORS:

For early booth reservations, please respond via: OTVARC, P.O. Box 5132, Beaverton, OR 97006 or call Randy, KZ7T, at (503) 297-1175 evenings or Al, WB7SIC, at (503) 640-5456 evenings.

MOTEL ASSISTANCE: IN OREGON 1-800-452-6740 - OTHERS 1-503-738-6391



REGISTRATION

MAKE CHECKS PAYABLE TO: SEASIDE/PACIFIC HAM CONVENTION
MAIL TO: P.O. BOX 920, SEASIDE, OR 97138

No. _____
 (office use)

- ENCLOSED IS MY CHECK FOR \$ _____ (U.S. CURRENCY)
- _____ Registrations at \$5.00 each (\$7.00 ea. at door)
 - _____ Teens Convention Registration at \$2.00 each (Children under 12 free)
 - _____ Halibut Dinner at \$15.00 each
 - _____ Prime Rib Dinner at \$15.00 each
 - _____ Flea Market at \$10.00 per table per day or \$15.00 per table for two days
 - _____ No-Host Sunday AM Buffet Breakfast at \$4.00 each

HURRY! Register early
 If postmarked on or before
 May 1 you will receive
 an extra prize ticket

NOTE: Flea Market participants must be registered for convention.

NAMES (Please Print)

CALLS

Address _____ City _____ State _____ Zip _____



When there were a million amateurs

Carl C. Drumeller, W5JJ

Yes, at one time there were over a million radio amateurs in the United States!

But before going further, let's pause to define terms. Let's agree that "radio amateur" and "Amateur Radio" pertain to non-professionals; that a radio amateur is a person having a deep interest in Amateur Radio purely from a non-professional standpoint. And let's further agree that "radio amateur" defines a person having an Amateur Radio operator/station license and that Amateur Radio applies to the licensed non-professional phase of the art.

Now that we're thinking alike, let's swing our thoughts back to the golden days of Amateur Radio, those years between 1922 and 1926 (or, perhaps, even 1936). Even before 1922, there were many persons interested in listening to radio signals, but with the surge in the numbers of "wireless telephone entertainment broadcast stations" (to give them their full and correct title), the number of listeners increased very rapidly indeed. A few of these bought factory-built receivers. Most did not.

There were various reasons why this was the pattern. One reason was that complete receivers were not widely available; even the "complete" receivers required some assembly by the purchaser. Vacuum tubes, "A" batteries, "B" batteries, headphones (later, speakers), and an elaborate antenna (including ground) system all had to be acquired and properly connected to provide an actual radio receiver.

Given this degree of individual involvement, is it any wonder that a large percentage of those wanting to listen to radio signals elected to purchase parts and build a receiver?

There was no shortage of parts. A vast number of manufacturers — some no more than "fly-by-night" entrepreneurs, some stable organizations

that became "big names" in radio — turned out every item that might be used in building a receiver. Later, some packaged all needed parts in a kit for home assembly.

Why didn't these entrepreneurs turn out completed sets? The answer is contained in one word: patents. Patents were sewed up by a few corporations, and these were not about to license any potential competitors!

Of these, the one most roundly cursed by would-be competitors was RCA, who had a strangle hold on vacuum tube patents. This policy resulted in a rash of "bootleg" tube manufacturers. They undersold RCA and even (a few, a very few) produced quite acceptable products. RCA, of course, fought back with court orders. By the time RCA got the order, the "Bootlegger" would have closed his shop and opened a new one under a different name.

perimenters. All were cursed (or is it blessed?) with little knowledge of electronics theory; therefore they weren't bothered about what would and what would not work. This resulted in some of the wildest circuits ever published. And they were published.

Sunday papers carried a Radio Page. A raft of weekly and monthly radio magazines published everything submitted. Whether this policy came from a desire to keep new material rolling across the editor's desk or simply because the editor lacked the necessary knowledge to discriminate, I don't know. I suspect the latter!

Radio Digest, a weekly paper about the size of *Worldradio's* old format, displayed a half-dozen "new" circuits each issue. And each one of these was touted by its author as being far, far superior to any other known circuit! In all probability, if each was built up with

The really "hairy" circuit to attempt to master was the superregenerative. If you ever got one to work properly, it was superb beyond all dreams. But it was a hellcat of the first magnitude to get working as it should!

After some years, RCA got the message and issued licenses to some of the "bootleggers." Several of these survived to even the 1940s, manufacturing well-regarded vacuum tubes.

A few manufacturers attempted to squirm around RCA's patents. One marketed a triode with the grid on the outside of the glass! Another, the respected Magnavox firm, tried a "grid" consisting of a triangular plate within the V of the tungsten filament; they even sold a few!

Let's return to the individual radio amateur. Many of these were earnest ex-

the same grade of components and with the same care of assembly, there would have been little difference in functioning.

All this information and misinformation was lapped up eagerly by the million (or more) ardent radio amateurs. They rushed out to buy the designated components and wired them up. Some worked!

Building a receiver was not complicated for the radio amateur of those days. No bandswitching was involved, for parts were designed to cover the 200 to 600-meter spectrum (1500 MHz to 500 MHz). Actual circuits might range from a simple one-tube receiver with a non-regenerative detector to a slightly more complex one having regeneration.

Those with the necessary funds might add one stage or two stages of audio frequency amplification, which almost always was transformer coupled. If over 45 volts of "B" battery was used on the AF amplifier, a "C" battery was sometimes (but not always) added. The grid bias ("C" battery) was used to decrease "B" battery drain, not to enhance audio quality. Any sound that could be recognized as voice or music was considered the mark of a successfully-constructed receiver!

Some daring radio amateurs tackled radio frequency amplifiers. As tetrode vacuum tubes were not available in the United States, thanks to RCA (they were available in Europe), our radio amateurs had to fight oscillation in a radio frequency stage.

The most popular method was to ar-



ON CALL

OC-1 only \$59.95
Kit \$49.95

OC-2 only \$79.95
Kit \$69.95

Complete with shipping/handling U.S.A.



ON CALL is a complete selective call system so you don't have to monitor the frequency or it can be used as a decoder for controlling equipment at the repeater site and at home

Compare these features

- 4 digit 16 tone sequential decoder programmable 43 680 different codes DTMF Format with Auto reset
- 1 AMP SPST relay output momentary or latched for external paging device such as Auto horn tape recorder speaker Audio etc
- Flashing LED call indicator (Energizes when your code has been accessed)
- easy connection to any radio of ATT
- 12-16 volt DC operation

• Size OC-1 - 3 1/2 x 2 1/5 x 5/8 in
OC-2 - 2 3/4 x 3 7/8 x 8 7/8 in

PC boards & plans \$19.95

• can be used for clubs or emergency groups for help situations

To Order: Send Check or Money Order to:

MC VISA
NYS Residents Add Sales Tax

CURRENT DEVELOPMENT CORPORATION
E. Carter Rd
PO Box 384
Westmoreland NY 13490
or Phone 315-733-3119

range to put a variable amount of positive bias on the grid of the RF stage. The resultant grid-to-filament current flow loaded down the stage to a degree that would not support oscillation. Of course, the stage's gain became largely imaginary, too, but — what the heck — you could boast that you'd tame that RF stage!

A few RF stages were tuned but many used untuned transformers for coupling. Such transformers gave uneven frequency vs. stage gain curves, but as most broadcast stations were (at first) clustered around 360 or 400 meters, nobody became too excited.

Regenerative detectors were highly popular. Properly designed and properly constructed, they resulted in much better selectivity and much better sensitivity than a non-regenerative detector. The control of feedback was critical for optimum gain and ease of operation. Many methods were explored; all worked. Some gave smoother control, some gave better freedom from body capacity effect, a curse of many homebuilt receivers.

One of the better of these was made popular by John L. Reinartz, who used a capacitive control of feedback. I'd always thought this system was invented by Reinartz until I saw a similar circuit in a book published in 1917!

One inventor, C.D. Tuska, who founded *QST* magazine before it was purchased by the ARRL, marketed a receiver embodying both RF amplification and regeneration. Tuska's solution was to run the feedback circuit element (in this instance a tickler coil) from the plate of the detector to the grid of the RF stage. This provided controlled regeneration to two stages, which probably enhanced overall selectivity.

The really "hairy" circuit to attempt to master was the superregenerative. If you ever got one to work properly, it was superb beyond all dreams. But it was a hellcat of the first magnitude to get working as it should! Two could be built side by side — same components, same care of construction. One would work, one wouldn't. It's easy to see why the superregenerative circuit quickly lost its appeal to the broadcast listener and went into limbo until revived for use on 5-meter transceivers where their superb AGC and sensitivity outweighed their tricky behavior.

Homebrewers generally avoided the superhet circuit. For one thing, that circuit demanded more vacuum tubes than many others. Vacuum tubes were too expensive to encourage unrestricted use thereof! There were a few kits on the market by the mid '20s. Some of these were quite good . . . within the limits of horrid RF image problems. Several kit manufacturers attempted to lick that problem, one using an IF in the VHF range. In addition, there were many at-



Connecticut QSO Party

The Connecticut QSO Party, sponsored by the Candlewood ARA, will last from 2000Z, April 4 until 0200Z, April 5, with a rest period from 0500Z to 1200Z.

Send signal report, serial number and ARRL section (county for CT stations).

Scoring: CT stations work DX stations for QSO points only; one multiplier. Club station W1QI counts 5 pts. per band/mode. Novice QSOs count 2 pts. OSCAR QSOs 3 pts. CT stations multiply QSOs by ARRL sections worked.

Suggested frequencies: *Phone* — 3.927, 7.2250, 14.296, 21.370, 28.540; *CW* — 40 kHz from low end. *Novice* — 3.725, 7.125, 21.125, 28.125.

Awards: Certificates will be awarded to the highest scorer in each state. A Worked All Connecticut Certificate will be awarded to those who work all counties. Mail by April 30, 1987 to CARA c/o R. Dillon, N2EFA, RFD#7, Noel Court, Brewster, NY 10509. □

DX YL — N.A. YL Contest

The 1987 DX YL to North American YL Contest, sponsored by the Young Ladies' Radio League (YLRL), will be held in April. The CW portion will last from 1400 UTC, Wednesday, April 8 to 0200 UTC, Friday, April 10. The *Phone* portion will last from 1400 UTC, Wednesday, April 15 to 0200 UTC, Friday, April 17.

Eligibility: All licensed women operators throughout the world are invited to participate.

Procedure: DX YLs call "CQ North American YL" and N.A. YLs call "CQ DX YL".

Old-time Radio

tempts to improve the frequency-converter stage; one involved what might be described as a series-modulation stage!

By 1930, broadcast receivers were almost all powered by 60 Hz AC and not many were homebuilt.

But another aspect of Amateur Radio building was coming into popularity: building simple short-wave receivers. These often were built from kits, but sometimes individuals exercised their ingenuity.

Some of these receivers were battery- (please turn to page 59)

Operation: All bands may be used. No crossband operation. Net contacts, repeater contacts and contacts with OMs do not count. Stations may be worked and counted once on each band and mode. Participants may work only 24 hours of the 36 hours in each contest. Operating breaks must be indicated in the log.

Exchange: Station worked, QSO number, RS or RST, state/province/country. Entries in log must also show time, band, date and transmitter power.

Scoring: A) Phone and CW will be scored as separate contests. Submit separate logs for each contest. B) DX YLs, including Hawaii and Alaska, may contact all the North American continent which includes the 48 contiguous states and Canadian provinces. C) Contestants on the North American continent (including the 48 contiguous states and Canadian provinces) may contact DX YL stations including Hawaii and Alaska. D) A station may be counted once on each band for credit and 1 pt. is earned for each station worked once on each band. E) Multiply the number of QSOs by the number of different states/provinces/countries worked. A multiplier is counted only once in the contest. It is not counted on each band. F) Contestants running 150 watts or less on CW and 300 watts PEP or less on SSB, at all times, may multiply the results of (E) by 1.25 (low-power multiplier).

Logs: All logs must show your state/province/country to qualify for awards. Do not send carbon copies of logs. Please print or type. Logs must be signed by the operator and no logs will be returned. Remember to file separate logs for each contest. Logs must show claimed score and be postmarked by May 4, 1987 and received no later than May 27, 1987, or they will be disqualified. Mail logs to: Mary Lou Brown, NM7N, 504 Channel View Dr., Anacortes, WA 98221, USA.

Duplicates: For each duplicate contact that is removed from the log by the vice president, a penalty of 3 additional and equal contacts will be exacted.

Awards: Cup to 1st place DX phone; cup to 1st place N.A. phone; cup to 1st place DX CW; cup to 1st place N.A. CW. Plaque to highest combined CW and phone N.A. score. Plaque to highest combined CW and phone DX score. The 2nd and 3rd place DX and N.A. winners in each contest will receive certificates.

Suggested frequencies: *CW* — (80M) 3.540-3.570; (40M) 7.040-7.070; (20M) 14.040-14.070; (15M) 21.180-21.210; (10M) 28.180-28.210. *SSB* — (80M) 3.940-3.970; (40M) 7.240-7.270; (20M) 14.280-14.310; (15M) 21.380-21.410; (10M) 28.580-28.610 MHz.

Note: Since band allocations in other countries are often different than the USA, North American YLs should look for DX YLs in

NEW—MULTI-BAND "KT5BA" ANTENNA—
160M thru 10M

- Single coax
- Legal limit
- No traps
- Dipole, V or sloper
- Ready to use!

ONLY \$49.95
plus shipping and handling

KILO-TEC • P.O. Box 1001
Oakview, CA 93022
(805) 646-9645

other parts of the bands, especially on 40 and 80 meters. □

1987 QRP ARCI Spring CW Contest

The 1987 QRP ARCI Spring CW Contest will be held from 1200 UTC, April 18 to 2400 UTC, April 19. Participants may operate a maximum of 24 hours.

Exchanges: Members give RST, state/province/country (s/p/c) and QRP ARCI membership number. Non-members give RST, state/province/country and power output. Stations may be worked once per band for QSO points. Each member contact 5 pts. regardless of location. Each non-member contact, same continent, 2 pts.; each non-member contact, different continent, 4 pts.

Multippliers: States/VE provinces/countries (s/p/c) — The USA and Canada do not count as countries (count states and provinces only for W/VE). A s/p/c may be worked once per band for s/p/c multiplier credit. Add s/p/c's separately for each band, 1 pt. each, then add up s/p/c points for all bands to arrive at total s/p/c multiplier.

Power: 4-5 watts output × 2; 3-4 watts output × 4; 2-3 watts output × 6; 1-2 watts output × 8; less than 1 watt output × 10. Over 5 watts output counted as check logs only. The highest power used for any contact, any band, will determine the multiplier to be used for scoring the whole log.

Bonus multipliers: Natural power (solar, wind, etc. — with or without storage) × 2. With storage, storage cells must be charged by the natural power source within 48 hours preceding the start of and/or during the contest. Battery power × 1.5. No other source of power may be used at any time during the contest to qualify for these multipliers.

Suggested frequencies: 1810, 3560, 7040, 14060, 21060, 28060, 50360 kHz; *Novices and Technicians* — 3710, 7110, 21110 and 28110 kHz. No 30-meter (10 MHz) or 12-meter (24 MHz) contacts will be counted.

Calling method: CQ CQ QRP DE (call sign)

Scoring: QSO points (total all bands) × s/p/c multiplier (remember, a s/p/c may be worked on more than one band and counts once on each band for s/p/c multiplier points) × power multiplier × bonus multiplier (if none, use 1) = claimed score. Use of the scoring summary sheet will help avoid errors; summary sheets may be obtained by sending a large SASE or 2 IRCs to the contest chairman.

Logs: Separating log sheets for each band is suggested for ease of scoring. Send full log data plus separate worksheet showing details and time(s) off the air. No log copies will be returned. All entrants desiring results and scores please include a large SASE or 2 IRCs. It is a condition of entry that the decision of the QRP ARCI contest chairman is final in case of dispute.

Awards: Certificates to stations scoring in the top 5% overall and the high scoring station in each s/p/c which has two or more entries.

In addition, Adrian Weiss, WØRSP, is sponsoring a special MILLIWATT certificate to the highest scoring station in the less-than-1-watt category, provided there are two or more entries in that category.

Deadline: Logs must be received by May 22, 1987. Logs received after that date or

missing information will be used as check logs.

Send logs to: QRP ARCI Contest Chairman, Eugene Smith, KA5NLY, Pentagon, P.O. Box 46599, Washington, D.C. 20050-6599. □

North Carolina QSO Party

The North Carolina QSO Party, sponsored by the Alamance ARC — K4EG, will be held from 1200 UTC (0800 EST), April 25, to 0400 UTC, April 26 (midnight EST). Work stations once per band and mode. You may work mobiles again as they change counties.

Exchange — RS(T) and QTH, county for NC stations, state/province/country for all others.

Suggested frequencies: CW — 3.540, 3.740, 7.040, 7.140, 14.040, 21.140, 28.040 and 28.140; SSB — 3.860, 7.260, 14.260, 21.360 and 28.360.

Scoring: Count 1 pt. for phone contacts, 2 pts. for CW contacts and 5 pts. for each contact with a Novice. NC stations multiply points by total NC counties/state/provinces/countries. Others multiply score by number of NC counties worked (100 max.).

Awards: Awards and certificates will be awarded commensurate with number of entries received.

Mail logs by June 30, 1987 to NC QSO Party c/o K4EG, P.O. Box 3064, Burlington, NC 27215. Include a large SASE for contest results and certificate. □



Illinois

The LIBERTYVILLE and MUNDELEIN ARS will be sponsoring LAMARSFEST 1987 on Sunday, March 29, at the Lake County Fairgrounds, Grayslake, Illinois.

Doors open at 8 a.m., close at 2 p.m. Set-up begins at 6 a.m. (advanced commercial set-up by reservation only). Admission is \$2 in advance (by March 20), \$3 at the door. Activities will include large indoor electronic and radio swapfest, commercial exhibitors, code speed testing and exams, hourly prize drawings and a grand prize drawing. Rest area, free parking and public cafeteria available.

Talk-in on 147.63/03 Waukegan repeater and 146.52 simplex.

For more information and/or reservations, contact LAMARS, c/o Marc Abramson, P.O. Box 751, Libertyville, IL 60048; (312) 255-0642, 8-10 p.m. CST. □

Kentucky

The 8th Annual Elizabethtown Hamfest and the 1987 Kentucky State ARRL Convention will be held Saturday and Sunday, March 28-29, at the James R. Pritchard Community Center, Elizabethtown, Kentucky.

The hamfest — sponsored by the LINCOLN TRAIL ARC — will feature a flea market, several meetings and forums, prizes and refreshments. No outside set-ups. Forum topics will include: MARS, ARRL, packet radio and electrical safety. Ladies' free bingo. VEC examinations will be given at 10 a.m. each day. Admission is \$5 in advance, \$6 at the door. Grand prize tickets are \$1 each or six for \$5.

All flea market vendors will pay admission price (\$5 — advance only) plus \$5 per space for one day or \$8 for two days, which includes a table and chair. Set-up lasts from 6 to 10 p.m. on Friday the 27th. New equipment dealer spaces are priced at \$10 per space for one day and \$15 per space for two days, which includes admission, one table and chair. Separate admission ticket purchase necessary only to be eligible for door prize drawings. Advanced registration requests received after March 15 will be held at the door.

Talk-in on 146.38/98 and 146.52.

For more information or to register, write to Lincoln Trail ARC, P.O. Box 342, Vine Grove, KY 40175. □

ACOA QUAD ANTENNA FOR 2-METERS

220 — 225 MHz Quad Available
420 — 450 MHz Quad Available

- All metal (except insulators) rugged construction
- Withstands any weather conditions
- Copper radiator and reflector elements
- Covers entire 2-meter band
- Ready to mount on your rotor
- Weight — 9 pounds
- Wind surface area — 0.85 square feet
- Dimensions — 19 × 26 × 17 inches
- Price — \$159.00

Order direct or from your dealer
CALIFORNIA RESIDENTS ADD SALES TAX
DEALER INQUIRIES INVITED

ANTENNA COMPANY OF AMERICA
P.O. Box 2308
Santa Clara, CA 95051
(408) 246-2051

Don't be bashful!
Write something for
Worldradio

Michigan

On April 5, the SOUTH EASTERN MICHIGAN ARA will hold its 29th Annual Hamfest Swap and Shop at the Grosse Pointe North High School, 707 Vernier Road, Grosse Pointe Woods, Michigan from 8 a.m. until 3 p.m.

The hamfest will feature an ARRL forum, DX forum and a packet forum. Advance tickets \$1; at the door \$3. Advance tables \$8; at the door \$10.

Talk-in on the SEMARA repeater 147.70/10 and 146.52 simplex.

For information, write to: SEMARA Hamfest, P.O. Box 646, St. Clair Shores, MI 48080 or phone Fred Lewis, NK8M (313) 881-0187.

Missouri

The PHD ARA will again sponsor the 1987 PHD Kansas City and Missouri State ARRL Convention on Friday, Saturday and Sunday, April 10, 11 and 12 at the Heart of American Trade Center, 8601 E. 40 Highway, Kansas City, Missouri.

There will be complete program of forums: ARRL, FCC, DX, computer, packet radio, Amateur TV and many more. Largest indoor flea market in the Midwest. There will be 700 tables available, all inside the 135,000-sq. ft. one-level, air-conditioned building. Manufacturer and dealer exhibits. Unlimited free parking adjoins site. RVs welcome — no hookups available. Hours 8:30 a.m. to 6 p.m. both Saturday and Sunday. Exams and set-ups 6 p.m. to 9 p.m. Friday.

Saturday night Royals Baseball game with New York Yankees replaces the annual banquet. Reserved seats lower level \$6 each. Guests include Paul Grauer, W0FIR, Midwest ARRL Director; Charles Hutchinson, K8CH, QST Technical Editor; Bernice Dunn, KA1KXQ, ARRL Convention Manager; Bill Pasternak, WA6ITF, Producer of Westlink Radio News; and others. Registration \$5 (good for all three days); swap tables \$11 each (includes one registration with each table). Order swap tables and baseball tickets in advance.

Exams on Friday at 6:15 p.m. (\$1 fee). Walk-ins only if space is available. Urge everyone to register ahead.

Talk-in 146.34/94.

All registrations will be honored if received by Tuesday, April 7. For registration and information, send to PHD ARA, P.O. Box 11, Liberty, MO 64068-0011 or call (816) 781-7313. Send SASE for confirmation. □

New Jersey

The SHORE POINTS ARC invites everyone to Springfest '87, Saturday, March 28, from 9 a.m. to 2 p.m., at the Atlantic County 4-H Center, Route 50, Egg Harbor City, New Jersey (approximately 15 miles west of Atlantic City).

There will be 8,000 square feet of heated indoor selling space; tailgating is also available, weather permitting. Limited AC in indoor space. Sellers \$5 per space (bring own table); buyers \$3. Food and drink available.

Talk-in on 146.985 and .52.

For more information, write to SPARC, P.O. Box 142, Absecon, NJ 08201. □

The WILLINGBORO REPEATER GROUP will hold its annual hamfest on Sunday, April 5, 8 a.m. to 2 p.m., at Holiday Lakes (Rt. 130 and Creek Road, Willingboro, New Jersey).

Admission is \$3 for adults; \$2.50 in advance; XYLs and children under 16 free. Table spaces are \$5 per 8-foot table. Set-up begins at 6 a.m. Tailgaters must purchase admission tickets; outdoor selling only. Family recreation and picnic facilities, food, refreshments and rest rooms. Door prizes all day.

Talk-in on 146.925 and 146.52.

For more information, contact: Willingboro Area Repeater Group, P.O. Box 472, Willingboro, NJ 08046; or call Jack Engel, K2KLM, at (609) 877-5249 after 6 p.m. □

Ohio

The 9th Annual Lake County Hamfest, sponsored by the LAKE COUNTY ARA, will be held Sunday, March 22, 8 a.m. to 4 p.m., at Madison High School, Madison, Ohio.

Admission is \$4. Tables are \$5 (6-foot) and \$6.50 (8-foot). Set-up starts at 5:30 a.m. Table donation with reservation will hold space until 9 a.m. Among the features at the hamfest will be an equipment test bench, computers, software, hardware, prizes and food. All indoors and heated! Overnight accommodations available within 15-minute drive.

VE exams given (some walk-ins, as space permits).

Talk-in and check-in on 147.81/21. Check-in cutoff at 12 noon. Drawing at 12:30 p.m.

For more information, call (216) 953-9784 in Cleveland, or write to Lake County Hamfest Committee, 7803 Skylineview Dr., Mentor, OH 44060. □

The DAYTON AMATEUR RADIO ASSOCIATION will be sponsoring its world-famous Hamvention on April 24, 25 and 26, 1987, at Dayton's Hara Arena.

This giant three-day flea market will feature exhibits, license exams, a CW proficiency test and door prizes. There will also be non-ham activities for XYLs and other family members.

Free parking and free shuttle bus service from all major motels and designated parking lots will be provided. Parking and road information on DARA's 146.34/.94 repeater. Campers and trailers may be parked at Montgomery County Joint Vocational School. Wheelchairs will be available. Send SASE for details to "Wheelchair", P.O. Box 44, Dayton, OH 45401.

Novice through Extra exams are scheduled for Saturday the 25th and Sunday the 26th by appointment only. Send current FCC form 610, copy of present license and check for \$4.35 (payable to ARRL/VEC) to: Exam Registration, 8830 Windbluff Point, Dayton, OH 45459. Registration deadline is March 28.

Special awards will be given for "Radio Amateur of the Year," "Special Achievement" and "Technical Achievement." To make nominations, contact Awards Chairman, Box 44, Dayton, OH 45401. Deadline is April 4.

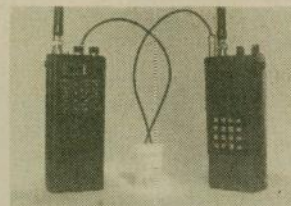
A 35mm slide/tape presentation about the

PORTA-LINK™ FOR ALL ICOM* HANDHELDS

The PORTA-LINK can easily be plugged into an ICOM* Handheld, using only the speaker jack and microphone input. This simple and straightforward design affords use without batteries or any external power connections. All of this gives your new PORTA-LINK the sound and reliability of the best repeater or remote base.

- High-quality glass circuit board
- Weatherproof design
- Small package
- Low cost
- No batteries needed (EVER)
- Can be used on any band to any band as an emergency repeater or remote base
- Excellent audio quality
- Two PORTA-LINKS can be used for full crossbanding
- Buy one for everyone in your club, for those big emergencies
- Provide a service to your club or emergency group by tying two bands together using a PORTA-LINK Dual. Use a PORTA-LINK Single as low power hamfest or emergency repeater.

PORTA-LINK™ Single



Use as one-way crosslink or repeater

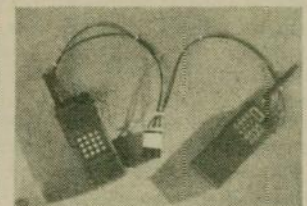
\$24.00 Kit \$29.00 Assembled
Handie Talkies not included.

PORTA-LINK™



IL deliveries 7% sales tax.

PORTA-LINK™ Dual



Use as two-way crosslink or one side as repeater

\$65 Assembled
Handie Talkies not included.

M. BOHNHOFF PRODUCTIONS

P.O. Box 1243
Wheeling, IL 60090
312/298-LINK • 312/298-5465

*ICOM and IC-2A, IC-2AT, IC-02AT, IC-3AT, IC-4A, IC-04A, are all trademarks of ICOM USA, Inc. or ICOM Inc. PORTA-LINK is a trademark of M. Bohnhoff Productions.
©1986 M. Bohnhoff Productions

Hamvention is available for loan. Contact Dick Miller, 2853 La Cresta, Beavercreek, OH 45324.

Deadline for lodging reservations is April 4; for advance registration and banquet, April 11 (USA) and April 4 (Canada). For general information, contact (513) 433-7720 or DARA, Box 44, Dayton, OH 45401. For flea market info, phone (513) 223-0923. For lodging info, phone (513) 223-2612. (No reservations by phone.)

The 18th Annual B*A*S*H will be held on Friday night of the Hamvention, April 24, at the Conference Center (Madison Room) of the Hara Arena and Conference Center (the same location as the Hamvention), starting at 7 p.m.

There is no admission charge and free continuous entertainment. Hot dinner, sandwiches, snacks and beverages are available. Two exciting top awards, and many others. Stay right at Hara when the Hamvention closes on Friday evening and meet your friends; join us for an evening of fun and entertainment.

Sponsored by the MIAMI VALLEY FM ASSOCIATION, P.O. Box 263, Dayton, OH 45401. □

The DAYTON-CINCINNATI CHAPTER 9 of the QCWA announces the 1987 QCWA Banquet to be held Friday night of the Dayton Hamvention, April 24, at Neil's Heritage House in Dayton. COD bar is at 6:30; dinner is at 7:30. Tickets are \$13 each.

Contact Bob Dingle, KA4LAU, 657 Dell Ridge Dr., Dayton, OH 45429 for tickets and details. Come and join the fun. QCWA membership is not required to attend. □

Oklahoma

The LAWTON FORT SILL ARC is holding its 40th annual swapfest on Saturday, March 28, at the county fairgrounds, 8 a.m. to 6 p.m. Admission is \$2; tailgate fee is \$3; tables \$5 each. No pre-registration — first come, first served.

For more information, contact Don Hagler, K5CKQ, 912 Bell St., Lawton, OK 73507. □

Tennessee

The CLARKSVILLE AMATEUR TRANSMITTING SOCIETY is sponsoring their annual swapfest on Sunday, April 5, at the National Guard Armory on Hwy. 41A (Ft. Campbell Blvd.) in Clarksville, Tennessee. (The Armory is off 124, 3 miles south of gate 1 to Fort Campbell.) Tables are \$5 each. Admission is free.

Talk-in on 146.52 or 146.805/600 or packet 145.03.

To reserve tables or for more information, call Larry Burns, WD4DBJ, (615) 232-6141.

Washington

The WALLA WALLA VALLEY ARC will hold its annual indoor Swap-Meet on Sunday, March 29, at the Oregon Community Building in Milton-Freewater. Doors open for all at 8 a.m.; close at 5 p.m. Tables will be \$5 and admission is free.

Repeater talk-in 147.88-28.

For more information contact Bernie Frazier, WA7CBX, 610 S. 1st Ave., Walla Walla, WA 99362; (509) 529-9879. □

West Virginia

The CHARLESTON WEST VIRGINIA AREA Hamfest and Computer Show will be held Sunday, April 5, 8 a.m. to 5 p.m. EST, at the Charleston Civic Center.

Activities will include forums, SSTV, packet, flea market and swap tables and computer demonstrations. An ARRL booth, tables, parking and food will be provided. Admission is \$4.

Talk-in on 6.28/6.88.

For more information and/or reservations, contact Ollie Rinehart, KA8TIK, 1258 Ridge Dr., South Charleston, WV 25303; (304) 768-9534. □

Wisconsin

The MADISON AREA REPEATER ASSOCIATION, Inc. (MARA) is pleased to announce its 15th Annual Madison Swapfest, which will be held on Sunday, April 5, at the Dane County Exposition Center Forum Building in Madison, Wisconsin. Doors will open at 7:30 a.m. for flea market sellers and at 8 a.m. for the general public. Special arrangements for early set-up are available for commercial exhibitors and purchasers of six or more flea market tables.

The Forum Building has over 20,000 square feet of space for commercial exhibitors and the flea market as well as plenty of space for parking in the adjacent paved lot. Hotel accommodations are available within walking distance of the Swapfest. An all-you-can-eat pancake breakfast and various luncheon sandwiches will be provided.

Admission is \$2.50 per person in advance and \$3 at the door. Children 12 and under are admitted free. Flea market tables are \$5 each in advance and \$6 at the door plus admission. Be sure to reserve early as tables were sold out last year. The deadline for mail orders of admission tickets and table reservations is March 31, 1987.

Talk-in on MARA repeater, WB9AER/R, 146.16/76.

For admission tickets, table reservations or information on commercial exhibit space, write to MARA, P.O. Box 3403, Madison, WI 53704, or call (608) 274-5153 day or night for information. □

START COPYING CW THE EASY WAY!

****Start copying words instead of letters!****

****Master the standard exchange in just a few evenings!****

****Gain on-the-air confidence quickly!****

THE QSO-TRAINER™ Code Course - For the ham who already knows the code. If you have been a ham for a while, tried the "traditional" random-letter approach to code practice, and still don't have the on-the-air confidence you'd like—this course may be exactly what you need.

Easy-to-learn lessons on two 60-minute audio cassettes.

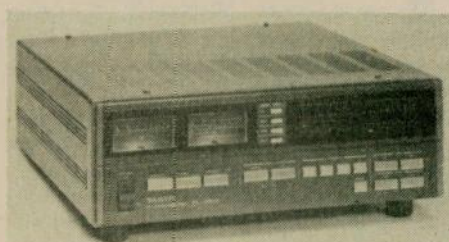
Send \$14.95 + \$2.00 shipping and handling (IN residents add \$0.85) to:

AVC INNOVATIONS, INC.
Dept. W, P.O. Box 20491
Indianapolis, IN 46220-0491

BUSINESS SIZE SASE GETS DETAILS



Information in "New Products" is supplied by the manufacturers to acquaint *Worldradio* readers with new products on the market.



Linear amplifier

Yaesu USA announces the availability of the new FL-7000 Solid State Linear Amplifier for the 160- through 15-meter bands.

This latest addition to the Yaesu product line features an automatic antenna tuner with automatic band-switching when used with the Yaesu FT-757GX, FT-767GX or FT-980 transceivers. Antenna switching is also automatic when using the FAS-1-4R remote antenna selector. Power input is 1200 watts for approximately 70 watts drive.

A protection circuit prohibits operation with high SWR until the antenna tuner completes matching process. Also featured are thermostatically controlled dual fans, run even when the amplifier is turned off, if needed for dissipation of heat.

Contact: Yaesu USA, Amateur Products Division, 17210 Edwards Rd., Cerritos, CA 90701. □

Lunar amps, pre-amps

Lunar Industries, Inc. of San Diego has actively re-entered the Amateur Radio market with its well-known line of VHF and UHF preamps and VHF power amps. President Louis N. Anciaux announces the appointment of Glenn Rattmann, K6NA, as head of the marketing effort for these and a new line of products in final development for early 1987 production.

Lunar has moved recently into new, larger facilities from which to accommodate expanded production of amateur and commercial communications and television equipment. A network of selected dealers is being established and inquiries are encouraged.

Contact Glenn at Lunar Industries, Inc., 7930 Arjons Drive, San Diego, CA 92126; (619) 549-9555. □

Pass it on . . . **WORLD RADIO**

New MFJ antennas

MFJ Enterprises, Inc. announces the release of several high-quality antennas.

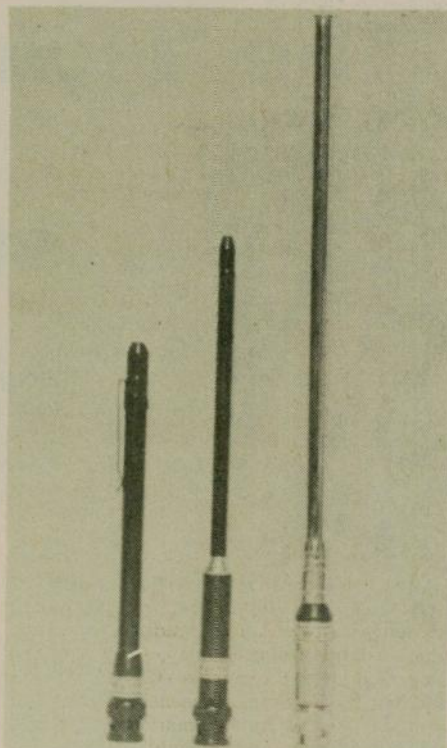
MFJ-1710, \$9.95 retail, is a $\frac{1}{2}$ -wave, 2-meter Telescoping Antenna with BNC. It comes with a convenient pocket clip and is $5\frac{3}{4}$ " collapsed and $24\frac{1}{2}$ " fully extended.

MFJ-1712, \$14.95 retail, is a $\frac{1}{4}$ -wave, 2-meter, $\frac{1}{2}$ -wave 440 MHz Telescoping Antenna with BNC. It is $7\frac{1}{4}$ " collapsed and 19" fully extended.

MFJ-1714, \$16.95 retail, is a $\frac{1}{2}$ -wave 2-meter Telescoping Antenna with BNC. This unit is an end-fed, $\frac{1}{2}$ -wave dipole, which is shorter, lighter, has more gain and places less stress on the connector than a $\frac{1}{2}$ -wave mounted on a hand-held. When collapsed, it performs like a rubber duck.

These MFJ products come with a double guarantee. Order any product from MFJ and try it. If not satisfied for any reason, return within 30 days for a complete refund, less shipping. MFJ also has a one-year unconditional warranty, so customers are assured of continued service.

To order or for more information, contact MFJ Enterprises, Inc., P.O. Box 494, Mississippi State, MS 39762 or call (800) 647-1800, (601) 323-5869, or Telex 53-4590 MFJ STKV. □



Commodore programs

Howard W. Sams & Co., a division of Macmillan, Inc., has recently published this task-oriented program guide for Amateur Radio and electronics for the electronics hobbyist, programmer, engineer and technician.

It contains two general categories of programs — 23 for Amateur Radio technology and 19 for general electronics — that will save time and simplify programming tasks when incorporated into the custom-designed software programs provided.

It also makes full use of the analytical potential of the personal computer with these 42 practical, clearly-illustrated programs.

Topics covered include: Antenna Calculations, Standing-Wave Ratio, Transmission Line, Impedance Matching Networks, Satellite Dish Antenna and RLC Networks.

A diskette is available from the author for readers who wish to avoid keying the programs themselves.

Sams is a leading technical publisher with more than 400 books covering electronics, computers, engineering and communications available through bookstores, electronic distributors or directly from Sams by calling (1-800) 428-SAMS. □

Old-time Radio

(continued from page 55)

powered, especially those with regenerative detectors, as these were quite susceptible to AC hum and also demanded a steady plate voltage supply. Nevertheless, many AC-powered sets were constructed.

Almost all these short-wave receivers used plug-in coils. Many types of pre-wound coil sets were available, some 4-prong, some 5-prong, and even a few 6-prong. Most covered a range from 550 kHz to 18 MHz.

When vacuum tubes with high-voltage heaters became available, many homebrewers adopted the transformerless style of power supply. These were simple and non-expensive but entailed a danger from electrocution.

It should be thoroughly understood that these radio amateurs were accepted by radio amateurs. Every Amateur Radio club had a goodly number of radio amateur members. Often these were avid experimenters; some were highly qualified from the standpoint of technical knowledge. The mere fact that they were not interested in the transmitting phase of radio did not indicate a lack of ability or dedication.

It is to be regretted that the present-day type of radio, with its almost-total use of manufactured products, does not encourage (or even permit) experimentation. The true amateur of radio communication and technology is a member of a highly endangered species, one that may disappear when the last of the Old-Timers attains the status of Silent Key.

2 plus 2 antenna

Valor Enterprises, Inc., one of the world's leading manufacturers of CB, professional and amateur antennas, mounts and accessories, has introduced a new 2 plus 2 antenna for professional and amateur operators.

This new dual-band antenna is $\frac{1}{4}$ -wave on 2 meters and $\frac{1}{2}$ -wave on UHF with less than 1:2:1 VSWR, and is 100 watt rated. This is one antenna to cover it all, horizon to horizon,

and pretuned to the following frequencies:

Model PA270: 144-148 MHz VHF and 440-450 MHz UHF. All Pro-Am products are American made, "Because it matters."

For further details on this and other quality items in the Pro-Am line, contact Mark Smith, Director of Sales Pro-Am Division at Valor Enterprises, Inc., 185 W. Hamilton St., West Milton, OH 45383. In Ohio, phone (513) 698-4194; outside Ohio, phone (1-800) 543-2197. □

(please turn to page 63)

RADIO STORE

VISIT YOUR LOCAL

ARIZONA

Ham Radio Outlet
1702 W. Camelback
Phoenix, AZ 85015
(602) 242-3515

Ham Radio Outlet
999 Howard Avenue
Burlingame, CA 94010

CALIFORNIA

Dick Smith Electronics
2474 Shattuck Ave.
Berkeley, CA 94704
(415) 486-0755

Ham Radio Outlet
2210 Livingston St.
Oakland, CA 94606

Dick Smith Electronics
390 Convention Way
Redwood City, CA 94063
(415) 368-8844

Ham Radio Outlet
5375 Kearny Villa Road
San Diego, CA 92123

Dick Smith Electronics
4980 Stevens Creek Blvd.
San Jose, CA 95129
(408) 241-2266

Ham Radio Outlet
6265 Sepulveda Blvd.
Van Nuys, CA 91401

Dick Smith Electronics
1830 Westwood Blvd.
Los Angeles, CA 90025
(213) 474-0626

Henry Radio
2050 S. Bundy Dr.
Los Angeles, CA 90025
(213) 820-1234

Ham Radio Outlet
2620 W. La Palma
Anaheim, CA 92801

The Radio Place
2964 Freeport Blvd.
Sacramento, CA 95818
(916) 441-7388

Shaver Radio, Inc.
1775A S. Winchester Blvd.
Campbell, CA 95008
(408) 370-6665

GEORGIA

Ham Radio Outlet
6071 Buford Hwy.
Atlanta, GA 30340
(404) 263-0700

MASSACHUSETTS

TEL-COM Communications
675 Great Road Rte. 119
Littleton, MA 01460
(617) 486-3400 or 486-3040

MICHIGAN

H.R. Electronics
722/24 Evanston Ave.
Muskegon, MI 49442
(616) 722-2246

MISSOURI

Henry Radio
211 N. Main Street
Butler, MO 64730

OHIO

Universal Amateur Radio, Inc.
1280 Aida Drive
Reynoldsburg (Columbus), OH 43068
(614) 866-4267

TEXAS

Texas Comm Center
4120-A Directors Row
Houston, TX 77092
1-800-227-8011

The "Flying Horse" sets the standards!

Continuing a great 66 year tradition, there are 3 new Callbooks for 1987. The North American Callbook, the International Callbook, and the Callbook Supplement bring you accurate up-to-date QSL information on over 900,000 amateurs throughout the world.

The 1987 North American Callbook lists the calls, names, and address information for licensed amateurs in all countries from Canada to Panama including the Caribbean islands, Bermuda, and Greenland plus Hawaii and the U.S. possessions.

The 1987 International Callbook lists the amateurs in countries outside North America. Coverage includes South America, Europe, Africa, Asia, and the Pacific area.

The 1987 Callbook Supplement is a new idea in Callbook updates. It lists the activity in both the North American and International Callbooks. Published June 1, 1987, the Supplement includes all the new licenses, address changes and call sign changes for the preceding 6 months.

Every active amateur needs the Callbook! See your dealer or order directly from the publisher.

- Over 900,000 current amateur listings in all countries of the world
- Great Circle Bearings
- Then & Now call changes
- Silent Keys
- Census of Amateur Licenses in all countries
- Standard Time Charts
- International Postal Information
- World-wide QSL Bureaus
- Table of Amateur Prefix Allocations
- Prefixes of the World
- Plus many other features.

Publication: Callbooks - December 1, 1986
Supplement - June 1, 1987

	Including shipment to U.S.A. points	Illinois residents, incl. tax & shipping	Including shipment to foreign countries
<input type="checkbox"/> Single 1987 North American Callbook	\$28.00	\$29.60	\$30.00
<input type="checkbox"/> Single 1987 International Callbook	28.00	29.60	30.00
<input type="checkbox"/> Single 1987 Callbook Supplement	13.00	13.65	14.00
<input type="checkbox"/> SPECIAL OFFER: Order both 1987 Callbooks at the same time for shipment to one address.	53.00	56.25	58.00

Name _____ Amount enclosed _____

Address _____

radio amateur
callbook

Dept. W
925 Sherwood Dr., Box 247,
Lake Bluff, IL 60044, USA

Tel: (312) 234-6600



THE MART

Classified
• Buy • Trade
• Sell • Inform

Mart deadline
20th of the month.

Business firms/30¢ a word, prepaid.
Private individuals/15¢ a word, prepaid.

THE MART Worldradio
2120 28th St., Sacramento, CA 95818

WORLDRADIO ON CASSETTES — Worldradio for blind amateurs on cassettes. To receive this free service send \$3.00 check, payable to George Hickin (for one time only contribution for tapes) with your name, address and call to GEORGE HICKIN, W4GH, 3008 Clairmont Ave., Macon, GA 31204.

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 FRAN NORRICK, WB9WPS, Route 6, Box 239, Kankakee, IL 60901.

HAVE AM CAPABILITY? Join SPAM (Society for Promotion AM). Membership is free. Write: SPAM c/o F. Dunlap, 14113 Stoneshire, Houston, TX 77060. -73 de WA5TWF (SASE please).

HAMS FOR CHRIST — Reach other hams with a Gospel Tract sure to please. CLYDE STANFIELD, WA6HEG, P.O.B. 2063, Upland, CA 91785.

FCC EXAMS, NOVICE-EXTRA. Sunnyvale VEC ARC. 408/255-9000, 24 hours.73, Gordon, W6NLG, VEC.

SUBSCRIBE TO THE DXers Magazine. Gus Browning, W4BPD, editor. Only \$15.00 per year. The DXers Magazine, Drawer DX, Cordova, SC 29039.

QSLs & RUBBER STAMPS — TOP QUALITY! State outline, straight key, space shuttle QSLs and more! Sample pack — 50¢. EBBERT GRAPHICS, Dept. 1, Box 70, Westerville, OH 43081.

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, January through December, K6RAU. Starts first Monday of each month.

AMATEUR RADIO REPAIR — experienced licensed, reasonable. ROBERT HALL ELECTRONICS, W6BSH, P.O. Box 8363, San Francisco, CA 94128. 408/729-8200.

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, 2814 Empire Ave., Burbank, CA 91504.

WANTED: UNUSED TELETYPE repair parts; connectors, tubes. **SELL:** Teletypewriter gears, ribbons, manuals, parts, toroids. SASE List. TY-PETRONICS, Box 8873, Ft. Lauderdale, FL 33310 N4TT, 305/583-1340 after 9 p.m. EST.

MARCO: Medical Amateur Radio Council, Ltd. operates daily and Sunday nets. Medically oriented amateurs (physicians, dentists, veterinarians, nurses, physio-therapists, lab technicians, etc.) invited to join. Presently over 550 members. For information, write MARCO, Box 73's, Acme, PA 15610.

RTTY JOURNAL — Now in our 35th year. Join the circle of RTTY friends from all over the world. Year's subscription to RTTY JOURNAL, \$10.00, foreign \$15.00. Send to: RTTY JOURNAL, 9085 La Casita Ave., Fountain Valley, CA 92708.

CODE PROFICIENCY DRILLS are transmitted from WB311VO 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.

CIRCUIT BOARDS, KITS, & ASSEMBLIES for QST magazine articles. For info SASE to: A & A ENGINEERING, 2521 W. La Palma Ave., Anaheim, CA 92801. 714/952-2114.

VHF UHF SHF; Free sample. WEST COAST VHFer, P.O. Box 2041, Oxnard, CA 93034.

QSLs. QUALITY AND FAST SERVICE FOR 26 YEARS. Include call for free decal. Samples 50¢. Ray, K7HLR, Box 331, Clearfield, UT 84015.

WANTED: DRAKE RV-75 VFO. Call 215/271-8898 K3UKW.

CHASSIS & CABINET KITS, SASE, K31WK, 5120 Harmony Grove Rd. Dover, PA 17315.

'N-TENNA QUAD KITS \$64.50. Spreader kits, \$79.00. Box 5332, Hickory, N.C. 28603.

SOLID BRASS BELT BUCKLES. Name or call. One line - name or call — \$9.50. Two lines, name and call — \$10.50. Add \$1.00 postage. S. Slonim/W, 320 Rose St., Massapequa Park, NY 11762.

NEW, UNUSED Dentron 1000W big dummy load, only 4 pieces, \$35 each. **ORGANS & ELECTRONICS,** Box 117, Lockport, IL 60441. 815/838-1580.

ATTENTION AMATEURS: Send for free discount catalog. **AMATEUR COMMUNICATIONS, ETC.,** 2317 Vance Jackson, San Antonio, TX 78213. 512/734-7793

FREQUENCY DIRECTORIES 530 kHz to 512 MHz for communications receivers & scanners! AM, CW, RTTY, SSB, FAX, FM; Maritime, Aero, Federal, Public Safety, Railroad, Broadcast, Industrial, Meteor, Diplomatic, Espionage, Clandestine, more! Big free catalog of world's most unusual communications books. **CRB, Box 56-WR, Commack NY 11725.**

NO IMPORT DUTY. Ten-Tec Corsair II - \$1120. Argosy II - \$525. Mosley PRO57-5kw 7-el 5-band, 10-20m, \$457. PRO67 5kw 7-el 6-band, 10-40m, \$699. **ORGANS & ELECTRONICS,** P.O. Box 117, Lockport, IL 60441. 815-838-1580

Be first to know precisely when and where to work all the choice DX. Bi-weekly LI DX BULLETIN has: Hot DX news — time and frequency of each goodie — QSL info — propagation forecast — and more... Send business size SASE for free sample or \$15.00 for 1-year domestic subscription to:

LONG ISLAND DX BULLETIN
PO Box 173, Huntington, NY 11743

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.

SELL RF CHIP CAPS, stripline and leadless .5pF to .01mF. Vacuum caps 500pF 15kV, 1000pF 5kV and 2300pF 10kV. Resistor assortment RN55D 1%, 530 values, 10 ohm to 301K ohm 5 resistors per value — \$95. 10 resistors per value \$150. Five million parts in stock, all new. **BOX 73 ELECTRONICS,** Ladd, IL 61329. 815/894-2528.

SELL PCS-5000 AZDEN with mic., new — \$225. W6XM, 619/459-5527.

THE HOT WATER HANDBOOK is back! Second edition, packed with mods and more for the HW-8, HW-7 and even the HW-9. US \$5.00 postpaid, DX \$7.00 airmail. Order from, **QRP SOFTWARE EXCHANGE,** 2225 Mayflower NW, Massillon, OH 44646.

COMPLETE HEATH FIXED/MOBILE kilowatt station. SB-10Z w/AC/DC. Mobile mount. SB-600 spkr and SB-630 station console (SWR-patch-clock). HA-14 linear w/AC/DC. All cables and many spares. Turner +3 and microphones. All good condition. Package — \$800 or B/O. Mosley TA-40KR 40m kit for TA-31/33/36, CL-33/36 new — \$75 or B/O. **BILL, WA6SLA, 916/933-5988.**

MICROWAVE ANTENNAS from \$69.95, Call 1-800-247-1151.

WANTED: Information about your radio club, hamfests and other activities. **K9JZM, ART COLLATZ,** 2127 Market, Blue Island, IL 60406.

NICAD BATTERIES, replacements for BP-2, BP-5, BP7, BP2.5, YNH-4, etc. Fast charge, fresh stock. \$2.75 ea. battery. UPS \$2.50 E. **CHESLOW, 895 E. 54th St., Brooklyn, NY 11234.**

PICTURE QSLs from your slides and photos. Full color — \$84.75 single thousand. B/W 250 — \$25.00 Subject to discount. Samples. Get a better return with **PICTURE CARDS,** 3806 NE 24th, Amarillo, TX 79107. 806/383-8347.

QSL CARDS — Look good with top quality printing. Choose standard designs or fully customized cards. Better cards mean more returns to you. Free brochure, samples. Stamps appreciated. **CHESTER QSL's,** 310 Commercial, Dept. D, Emporia, KS 66801.

COMMODORE IC'S. 64-PLA \$14.00, 6510-\$10.00, 6526-\$10.00, 6567-\$14.00, 6581-\$13.00, 8701-\$8.50. MC6800P-\$1.75, MC6821-\$2.50. Guarantee prime. Add \$1.50 shipping. **AL SMITH,** Box 2125, Vero Beach, FL 32960. 305/562-7163.

QSLs, QSLs, RUSPRINT QSLs. Quantities of 100, 200, 300 more. Full color Old Glory and Liberty also Parchment, Golden Eagle and others. SASE appreciated. **RUSPRINT, Rt. 1, Box 363-WR, Spring Hill, KS 66083.**

POST CARD QSL KIT — Converts post cards, photos to QSLs! Stamp brings circular. **LABEL-CRAFT,** P.O. Box 31, East Schodack, NY 12063.

QSL SAMPLES — 25¢. **SAMCARDS,** 48 Monte Carlo Dr., Pittsburgh, PA 15239.

POST CARD QSL KIT — Converts post cards, photos to QSLs! Stamp brings circular. **K-K LABELS,** P.O. Box 412, Troy, NY 12181-0412.

More MART

WANTED REPLY COUPONS of all types, IRCs & others. Buy, sell, trade. JIM NOLL, P.O. Box 3410, Escondido, CA 92025.

TRANSMITTING TUBES WANTED FOR MUSEUM — Help preserve old amateur and commercial tubes for future and old time hams to see and admire. YE OLDE TRANSMITTING TUBE MUSEUM, K6DIA, P.O. Box 97, Crescent City, CA 95531.

R-390A RECEIVER: \$195 checked; \$115 repairable. Parts, tubes, sections. Info SASE. CPRC-26 six meter transceiver (see HR, March 1985) \$17.50 apiece, \$32.50 pair (add \$4.50/unit shipping). BAYTRONICS, Box 591, Sandusky, OH 44870. 419/627-0460 evenings.

FCC EXAMS for Technician/General and Advanced class on Commodore 64 disks! Study the 500 plus questions and their answers individually for each Subelement or test yourself on FCC sample exams. Ideal complement to ARRL, W5YI-VEC or AMECO manuals. Specify Tech/Gen (\$12.95) or Adv (\$14.95) postpaid. Club and school orders 20 percent less. DR. G. SCHILLING, A161, 37251 Sage Road, Hemet, CA 92343.

REPLACE RUSTED ANTENNA BOLTS with stainless steel. Small quantities, free catalog. ELWICK, Dept. 620, 230 Woods Lane, Somerdale, NJ 08083.

NEW, UNUSED DENTRONS 1000w, big dummy loads, only 4 pcs. left—\$35 each. ORGANS & ELECTRONICS, P.O. Box 117, Lockport, IL 60441. 815/838-1580

SUPERFAST MORSE CODE SUPEREASY. Subliminal cassette. Moneyback guarantee. \$10. BAH, 2549F Temple, Palmbay, FL 32905.

QSL CARDS — Look good with top quality printing. Choose standard designs or fully customized cards. Better cards mean more returns to you. Free brochure, samples. Stamps appreciated. CHESTER QSL's, 310 Commercial, Dept. D, Emporia, KS 66801.

WANTED: EQUIPMENT AND RELATED ITEMS. THE RADIO CLUB OF JUNIOR HIGH SCHOOL 22 NYC INC. is a non-profit organization, granted 501(c)(3) status by the IRS, incorporated under the laws of the State of New York with the goal of using the theme of Ham Radio to further and enhance the education of young people. Your property donation would be greatly appreciated and acknowledged with a receipt for your tax deductible donation. Please contact WB2JKJ through the callbook or telephone (516) 674-4072, 24 hours, seven days a week. Thank you!

SIGNAL GENERATOR — 70 Kc to 32 MHz. Measurements Corp. Model 65B. Stable. Modulation and output metering, motor-driven tuning, +20 DBM. Great for experimenter's bench — \$200. C. CLARKE, 680.5 Perkins Way, Fort Bragg, CA 95437. 707/964-6209.

USED EQUIPMENT LIST — Send #10 S.A.S.E. to: TONY MUSERO, K3UKW, 1609 So. Iseminger St., Philadelphia, PA 19148, 215/271-8898. We buy gear also!

HOME BREW PROJECTS — List, SASE. WB2EUF, Box 708, East Hampton, NY 11937.

HY-GAIN 105BA — \$120. 155BA — \$200. ORGANS & ELECTRONICS, Box 117, Lockport, IL 60441; 815/838-1580.

TEN-TEC, now shipping new -boxed USA-made latest 1987 factory models Corsair II, Century 22, Argosy II transceivers, Titan linear amplifiers, 229A 2KW antenna tuner, plus accessories, antennas. For the best TEN-TEC deal, write or phone Bill Slep 704/524-7519, SLEP ELECTRONIC COMPANY, Highway 441, Otto, NC 28763.

COMMODORE CUSTOM CHIPS—Buy 3 or more, at these prices you may mix. Call for single prices, also orders up to 100 pieces. Dealers and service centers welcome. Fast delivery. #6510-\$10.20, #6526-\$9.70, #6581-\$11.75, #6567-\$15.95, #PLA-\$14.85, #8701-\$7.95, #8721-\$16.95, #8722-\$15.85. Pse include \$3.00 postage. NARWID ASSOCIATES, 61 Bellot Road, Ringwood, NJ 07456. Call 9-3 EST 201/962-4636.

ALM-203T OWNERS — Add an external band switch. Switch bands in a second without removing battery. No electronic knowledge required. No screws to remove, no need to get inside radio. Easy step-by-step instructions with photos. Satisfaction guaranteed. Send \$10.00. KE7GY, Dave Hunt, Rt. 1, Box 1486, Roosevelt, UT 84066.

LEARN MORSE CODE IN 1 HOUR. Amazing new easy technique. Moneyback guarantee. \$10. 3AHR, 2549F Temple, Palmbay, FL 32905.

VOICEGATE COMMUNICATIONS NOISE REDUCTION. Studio technology eliminates background QRN! Features gated audio, dynamic expansion, active filters, cassette remote, and more! SASE for free brochure or include \$3.50 for our demonstration cassette. \$99.95 JABCO, R1 Box 386, Alexandria, IN 46001.

STAINLESS STEEL METRIC machine screws and cap screws. Small quantities, free catalog. ELWICK, Dept. 625-M, 230 Woods Lane, Somerdale, NJ 08083.

HAM PROGRAMS for C128, C-64, VIC-20, Plus/4, TI99/4a, C-16, Apple. Send large SASE: EPO SOFTWARE, 7805 N.E. 147th Ave., Vancouver, WA 98682.

WANTED — PLATE TRANSFORMER for Gonset GSB-201 amplifier #271-081. N2FJQ, ALAN TRUEBLOOD, R.D. 1, Box 454 B-11, Sewell, NJ 08080.

APPLE CODE PROGRAMS — 31 modes, graphics, menus, wrdprsr, etc. \$3.50 Demo Disk gives \$2 off next purchase. LARESCO, P.O. Box 2018, 1200 Ring Road, Calumet City, IL 60409. 1-312-891-3279.

COMMODORE CUSTOM CHIPS at low prices, 24-hour delivery: 6510 — \$9.55, 6526 — \$9.95, 6581 — \$12.85, 6567 — \$14.75, PLA/82S100 — \$14.95, 8701 — \$7.25, and many others @ low prices. Just arrived from Australia, a complete diagnostic reference chart for fixing your own Commodore Computer \$6.95. C-64 Power Supply @ \$29.95. Call Toll Free 800-642-7634 (outside NY) or 914-356-3131. KASARA MICROSYSTEMS, INC., 33 Murray Hill Drive, Spring Valley, NY 10977.

WANTED URGENTLY — AN/APS-20 radar indicators, Hazeltine type IP-203B, must be "B" model complete or parts. Call collect 213/826-4058. ANDREW. Top cash paid or swap for new ham or computer eqpt.

RTTY FREQUENCY LISTS AND BOOKS — We have a complete selection of worldwide RTTY frequency books and lists. Press, weather, government, clandestine etc. Write for free catalog. UNIVERSAL ELECTRONICS, INC., 4555 Groves Road, Suite 13, Columbus, OH 43232, 614/866-4605.

3 FREE ISSUES! Sign up for a year to THE SPEC-COM JOURNAL (10 issues) and get 3 back issues (of your choice) absolutely "FREE"! SPEC-COM is the USATVS Journal and has been serving SPECIALIZED COMMUNICATION RADIO AMATEURS now for 19 years. We offer in-depth coverage of ATV, SSTV, FAX, RTTY, PACKET, satellites, TVRO, EME, LASERS microwave and personal computers. We specialize in Commodore & TRS80C color computer software for ham radio! Sample issues just \$2.00 ppd. U.S.A. \$20.00/Canada & Mexico \$25.00 per year. Foreign surface and Air-Mail R-U-S-H delivery available at higher prices. Special Master Article Index issues add \$3.00. SPEC-COM COMMUNICATIONS GROUP, P.O. Box H, Lowden, IA 52255 (MasterCard & VISA accepted).

DISCOVER "THE RADIO WORKS." The fun begins with our new and unusual 48-page catalog. It's your passport to high performance, no nonsense HF, mobile, VHF antennas, parts, and accessories. It's all here at low prices. Send 22¢ SASE. THE RADIO WORKS, WRAPR, Box 6159, Portsmouth, VA 23703, 804/484-0140.

ROSS' \$\$\$\$ NEW SPECIALS (April only): Kenwood TS-440S — \$849.90, TH-205AT — \$224.90, TR-2600A — \$239.90, TR-3500 — \$237.90, TS-780 — \$759.90, ICOM IC-745 — \$869.90, Yaesu FT-757GX — \$769.90, FT-2700RH — \$469.90, FRG-7700 — \$379.90, FT-720RVH — \$249.90. All L.T.O. Phone or send SASE for over 7500 ham-related items in stock for immediate shipment. Mention ad. Prices cash, FOB Preston. We close at 2:00 Saturdays & Mondays. ROSS DISTRIBUTING COMPANY, 78 South State, Preston, ID 83263 208/852-0830. P.O. Box 234.

SUPER PRICES — Commodore ICs-6510 — \$11.95, 6526 — \$11.95, 6581 — \$14.95, 6567 — \$16.85 PLA — \$14.95, 8701 — \$9.95, 8721 — \$17.95, 8722 — \$15.95 — Discount if you purchase 2 or more you may mix for the discount. Special pricing for 2-11, 12-21, 22-100. Include \$2.50 Postage — CODS OK — Call 201-962-4636. SASE for price list. NARWID ASSOCIATES, 61 Bellot Road, Ringwood, NJ 07456.

SELLING SOLID-STATE POWER SUPPLY. 14V. 6A. DC — \$20.00. Operating pair military field telephones, as seen in M*A*S*H, \$65 or best offer. Mechanical calculator, 18 digits, operational, instructions — \$25.00. Panel mounting electric meters, \$1.00 up. Coaxial fittings, 25¢ up. WØRJA, 402/475-4187.

WANTED: DENTRON CLIPPERTON V 2m base amplifier. Darril, WD5GJP, 409/962-7987 after 5 p.m. C.S.T.

ESTATE SALE: Make offer — all or part H-471 Triex tower with all guys; KLM 4-element tri-band beam — like new; Johnson KW Matchbox; old Henry 2K amp (has 10-meter band); Drake R4A receiver; Drake T4XA, no power supply. W6BA, HC 01, Box 7010, 29 Palms, CA 92277. 619/362-4301.

ROSS' \$\$\$\$ USED APRIL SPECIALS: Kenwood VFO-700A — \$79.90, TS-700A — \$329.90, VFO-520S — \$129.90, TS-180S/DFC with CW & SSB filter — \$459.90, Yaesu FC-901 — \$159.90, FP-301 — \$95.90, Drake TR-4 — \$179.90, RV-V4C — \$79.90, WH-7 — \$89.90, Tempo 2020 — \$189.90. Phone or send SASE for used items list. Over 7,500 new ham items in stock. Mention ad. Prices cash, FOB Preston. We close at 2:00 Saturdays & Mondays. ROSS DISTRIBUTING COMPANY, 78 South State, Preston, ID 83263. 208/852-0830. P.O. Box 234.

THE COMMUNICATION POST: Buy, sell, trade, Ham, shortwave, and other electronic gear. Technical articles, projects. Send large SASE for sample copy. 24 issues, \$9.95 per year. THE COMMUNICATION POST, Box 1711 Grand Forks, N.D. 58206-1771.

EXPERT REPAIR on all types of ham gear by WA6SRX, TIMBERLINE ELECTRONICS, P.O. Box 2064, Idyllwild, CA 92349, 714/659-4018.

LEARN CODE THE EASY W6PHA WAY! — Former USAF code champ gives unique, simple system allowing all ages to learn quickly. No tapes, etc.! Revised booklet \$4.50 ppd. Money back guarantee! GLOBALMAN PRODUCTS, Box 400WR, El Toro, CA 92630 (714) 951-1100.

ICOM 751, FL52A, RC10, SM6, HM12, SP2, boxes, manuals, like new \$795. Microlog C64 AIR1 with AMTOR \$95. Shure 444 mic \$10. New Shure 104A carbon mic \$5. Ameritron RCS8 remote coaxial switch and control \$65. Transco UHF 4PST motorized coaxial switch with N connectors \$35. Cushcraft AV4 trap vertical \$35. Free UPS shipping. WANTED: KWS1, 75A4 reduction knob, Butternut HF2V, TE Systems 1410G. LARRY AD6W, 209/897-7395.

ICOM, KENWOOD & YAESU SEPARATE NEWSLETTERS: 7 years of back issues for ICOM & Kenwood. Cumulative Index available on each. TS-430S, 830, 930S, 940 Users Modifications Supplement available. For free brochure send SASE (30¢) to: INTERNATIONAL RADIO INC., 747 South Macedo Blvd., Port St. Lucie, FL 33452. 305/879-6868.

CLASSIFIED ADS FOR JOBS WANTED OR POSITIONS OFFERED will be run free of charge in Worldradio's MART.

WILL REP YOUR LINE in the Arkansas, Louisiana, Texas area. Also Oklahoma. Contact G.E. McGREDE, 618 Omega, Longview, TX 75601-5828.



If your club is involved in any emergency situations, send the story and pictures to **Worldradio**.

See your group in print and help your fellow amateurs with shared experiences. Your story may help others be better prepared.

ADVERTISER'S INDEX

AEA — 25	Henry Radio — 5, 24	P.C. Electronics — 7
Alpha Delta Communications — 6	H.J. Theiler Corp. — 29	Radio Amateur's Conversation Guide — 30
Anne Wright, N6BOP — 39	ICOM — 23, 64	Radio Clubs — 41, 42, 43
Antenna Co. of America — 56	IIX Equipment — 52	Radio Engineers — 43
Antennas, Rudy Plak — 3	IMRA — 20	Radio Store — 59
AVC Innovations, Inc. — 58	International Radio — 18	Reno Radio — 49
BCD Electro — 44	John T. Little, KB7DT — 26	rf concepts — 34
Bel-Tek — 47	Jun's — 15	RP Report — 14
Butternut Electronics — 11	Kantronics — 28	Sea Pac — 53
Callbook — 60	Kilo-Tec — 38, 55	Sign-On — 8
CDC — 54	Lunar Industries, Inc. — 31	Spi-Ro Distributors — 10
Courage Center — 22	M. Bohnhoff Productions — 57	Spider Antenna — 51
Dayton Hamvention — 17	Maxcom — 16	Van Gorden Engineering — 2
Diamond Systems, Inc. — 20	Meadowlake Corp. — 50	Vanguard Labs — 48
DX Edge — 27	MFJ — 19	W5YI-VEC — 14
Engineering Consulting — 21	Mike Forman — 63	W9INN Antennas — 27
Fallert's Engraving — 40	Motron Electronics — 46	Webster Associates — 3
Glen Martin Engineering — 35	N.P.S. — 4	Wrightapes — 37
Ham Radio Outlet — 32, 33	N6KW QSL Cards — 2	Yaesu — 13
Handi-Tek — 18	Palomar Engineers — 6, 16, 45	

New Products

(continued from page 59)

Computer study disk

If you own or have access to a Commodore 64 or C-128 computer with disk drive, upgrading to the Technician/General or Advanced Class license has been made easier. AI6I is offering, on two separate disks, study programs which greatly facilitate preparing for the FCC exams. Intended as companions to the ARRL, W6YI-VEC or AMECO manuals, they contain more than 500 of the FCC-approved multiple-choice questions and answers for Elements 3 and 4A, respectively.

A menu permits a choice between STUDY and TEST modes. When taking a sample test, a total of 50 questions with their possible answers are shown at random, but with the correct number from each FCC sub-element. After answering all questions, the graded results are presented on the screen. A print-out can also be obtained at that time.

In the study mode, you can select which of the nine sub-elements you want to study intensively. If you answer a question incorrectly, you can try again until you get it right, or give up and go on to the next one. At the end, you receive an evaluation of which topics you need to study more thoroughly.

The Technician/General program also includes a simple code practice mode for any code speed of your choice.

The program disks are available, postpaid, for \$12.95 for the Technician/General version, or \$14.95 for the Advanced version, from Dr. G. Schilling, AI6I, 37251 Sage Road, Hemet, CA 92343. They are continuously updated for the current question/answer pools. □

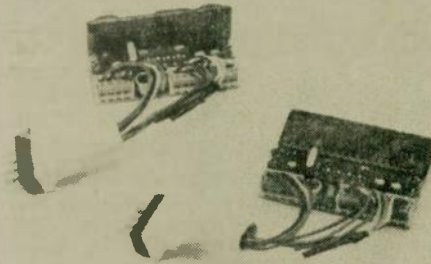
New ICOM catalog

ICOM America, Inc. announces the release of its new 24-page full-product line color catalog. The new catalog includes all of ICOM's new products including the Micro 4AT 440 MHz hand-held, and the IC-275 all-mode VHF and IC-475 all-mode UHF base station.

Catalogs may be obtained by calling ICOM America's corporate headquarters in Bellevue, Washington, at (206) 454-8155 or by writing a letter to ICOM America, Inc., 2380-116th Ave NE, Bellevue, WA 98004. □

Plug-in CTCSS

Communications Specialists, of Orange, California, is currently expanding their line of programmable CTCSS tone equipment that will plug directly into many popular two-way radios.



Two recent additions to this line utilize the new TS-32HB hybrid-sized encoder-decoder. They are adapter kits for the Standard Communications and TAD USA hand-helds. The Standard 734L/834L may now use a TS-32HBL (low profile) encoder-decoder and a #01-1030 adapter plug. The TS-32HBL is priced at \$64.95 and the 01-1030 adapter is \$7.50. The TAD M1520-454 uses TS-32HBH (high profile) encoder-decoder and #01-1031 adapter plug. The TS-32HBH is priced at \$64.95 and the 01-1031 adapter is \$6.

Both applications can be installed in a matter of minutes and do not require any soldering. The TS-32HB used in these applications employs the popular DIP switch programmability first introduced in 1979 with the company's larger TS-32. The TS-32HB uses state-of-the-art hybrid packaging to obtain its small size.

A crystal-controlled clock oscillator is employed for excellent stability under all conditions, and sensitivity is rated at 6mV RMS for use with the lowest output receivers. The adjustable sinewave output is accurate to within ±.5 Hz at a level of 6V peak-to-peak across 10K. Immediate shipment is available from factory stock.

A catalog is available on request. Contact: Communications Specialists, 426 W. Taft Ave., Orange, CA 92665-4296; (800) 854-0547 or (714) 998-3021, 24-hour FAX (714) 974-3420. □

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

Wanted: TUBES

I pay cash or trade
 for all types of
 transmitting or
 special purpose
 Tubes.

MIKE FORMAN
1472 MacArthur Blvd.
Oakland, CA 94602
(415) 530-8840

**New IC- μ 2AT
440MHz Version
Now Available!**



ICOM MICRO

ONLY ICOM COULD BUILD IT!

A new micro-sized 2-meter handheld with all the performance and reliability you've come to expect from an ICOM!

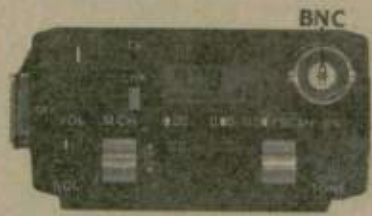
The IC- μ 2AT. A breakthrough that ends every amateur radio operator's quest for that one true, go-anywhere 2-meter handheld.

Miniaturization. The Micro gives you all the advantages and performance of a larger handheld, in a package so small, so refined, so well built that only ICOM could build it.

Measuring only 4.6" high by 2.3" wide, by 1.1" deep, the Micro fits in your pocket or purse as easily as a cassette tape. This miniaturization doesn't compromise ICOM quality. It's exactly what you'd expect from ICOM: high performance in a micro package.

Full Featured. And ICOM hasn't compromised features for size. The IC- μ 2AT DTMF version includes ten

programmable memories, odd offset capability, an LCD readout on the top



panel for easy readability, up to three watts of output (optional), 32 built-in subaudible tones AND wideband receive coverage from 138 to 162.995MHz in 5kHz steps for MARS/CAP operation and weather broadcasts. There's also a simple to use digital **TouchStep Tuning System** for fast shirt-pocket frequency adjustments. An IC- μ 2A version is also available without DTMF and PL tones.

Accessories. The Micro utilizes most existing ICOM handheld accessories plus it hosts a new line of battery packs, long life to alkaline battery cases.



ICOM America, Inc., 2380-116th Ave NE, Bellevue, WA 98004 Customer Service Hotline (206) 454-7619

ICOM CANADA, A Division of ICOM America, Inc., 3071-#5 Road, Unit 9, Richmond, B.C. V6X 2T4 Canada

All stated specifications are approximate and subject to change without notice or charge. ICOM products significantly exceed FCC regulations limiting spurious emissions. ICAT1180