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Amateur Radio

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Results Of The 1988 CQ WW WPX CW Contest

CQ WW WPX CW Contest All-Time Records . . . p. 73



THE RADIO AMATEUR'S JOURNAL



KENWOOD

...pacesetter in Amateur Radio

Affordable
Breakthrough

Dual Band Afford-ability!



TM-701A

Dual Bander

The TM-701A combines two radios into one compact package. You get 25 watts on 2 meters and 70cm, 20 memory channels, tone encoder built-in, multiple scanning, auto repeater offset selection on 2 meters, and a host of additional features!

- **20 multi-function memory channels.** 20 memory channels allow storage of frequency, repeater offset, CTCSS frequency, frequency step, and Tone On/Off status, CTCSS and REV, providing quick and easy access during mobile operation.
- **25W on 2m and 70cm.**
- **Selectable full duplex-cross band (Telephone style) operation.**
- **Easy-to-operate front panel layout.**
- **Multi-function DTMF mic. supplied.** Controls are provided on the microphone for CALL (Call Channel), VFO, MR (Memory Call or to change the memory channel) and a programmable function key. The programmable key can be used to control one of the following functions on the radio: MHz, T. ALT, TONE, REV, BAND, or LOW power.
- **Easy-to-operate illuminated keys.** A functionally designed control panel with individually backlit keys increases the convenience and ease of operation during night-time use.

- **Optional full-function remote controller (RC-20).**

A full-function remote controller using the Kenwood bus line may be easily connected to the TM-701A and mounted in any convenient location. The new controller is capable of operating all front panel functions.

- **Built-in dual digital VFO's.**

a) Frequency step selection (5, 10, 15, 20, 12.5, 25kHz)

b) Programmable VFO

The user friendly programmable VFOs allow the operator to select and program variable tuning ranges in 1 MHz band increments.

- **Programmable call channel function.**

The call channel key allows instant recall of your most commonly used frequency data.

- **Programmable tone encoder built-in.**

- **Tone alert system—for true quiet monitoring.**

When activated this function will cause a distinct beeper tone to be emitted from the transceiver for approximately 10 seconds to signal the presence of an incoming signal.

- **Easy-to-operate multi-mode scanning.**

a) VFO scan

Band scan, Programmable band scan.

b) Memory scan plus programmable memory channel lock-out

c) Dual scan

Dual call channel scan
Dual memory scan
Dual VFO scan

d) Scan stop modes

Time operated scan (TO)
Carrier operated scan (CO)

- e) Scan direction

- f) Alert

When the AL switch is depressed memory channel 1 is scanned for activity at approximately 5 second intervals.

- **MHz switch.**

- **Lock function.**

- **Repeater reverse switch.**

Optional Accessories

- **RC-20** Full-function remote controller
- **RC-10** Multi-function remote controller
- **IF-20** Interface unit handset
- **MC-44** Multi-function hand mic.
- **MC-44DM** Multi-function hand mic. with auto-patch
- **MC-48B** 16-key DTMF hand mic.
- **MC-55** 8-pin mobile mic.
- **MC-60A/80/85** Desk-top mics.
- **MA-700** Dual band (2m/70cm) mobile antenna (mount not supplied)
- **SP-41** Compact mobile speaker
- **SP-50B** Mobile speaker
- **PS-430** Power supply
- **PS-50** Heavy-duty power supply
- **MB-201** Mobile mount
- **PG-2N** Power cable
- **PG-3B** DC line noise filter
- **PG-4H** Interface connecting cable
- **PG-4J** Extension cable kit
- **TSU-6** CTCSS unit

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Specifications and prices subject to change without notice or obligation.
Complete service manuals are available for all Kenwood transceivers and most accessories.

KENWOOD

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All New
Compact HF!

“DX-citing!”

TS-440S Compact high performance HF transceiver with general coverage receiver

Kenwood's advanced digital know-how brings Amateurs world-wide “big-rig” performance in a compact package. We call it “Digital DX-citement”—that special feeling you get every time you turn the power on!

• **Covers All Amateur bands**

General coverage receiver tunes from 100 kHz—30 MHz. Easily modified for HF MARS operation.

• **Direct keyboard entry of frequency**

• **All modes built-in**
USB, LSB, CW, AM, FM, and AFSK. Mode selection is verified in Morse Code.

• **Built-in automatic antenna tuner (optional)**

Covers 80-10 meters.

• **VS-1 voice synthesizer (optional)**

• **Superior receiver dynamic range**

Kenwood DynaMix™ high sensitivity direct mixing system ensures true 102 dB receiver dynamic range. (500 Hz bandwidth on 20 m)

• **100% duty cycle transmitter**

Super efficient cooling permits continuous key-down for periods exceeding one hour. RF input power is rated at 200 W PEP on SSB, 200 W DC on CW, AFSK, FM, and 110 W DC AM. (The PS-50 power supply is needed for continuous duty.)

• **Adjustable dial torque**

• **100 memory channels**

Frequency and mode may be stored in 10 groups of 10 channels each. Split frequencies may be stored in 10 channels for repeater operation.

• **TU-8 CTCSS unit (optional)**

• **Superb interference reduction**

IF shift, tuneable notch filter, noise blanker, all-mode squelch, RF attenuator, RIT/XIT, and optional filters fight QRM.

• **MC-43S UP/DOWN mic. included**

• **Computer interface port**

• **5 IF filter functions**

• **Dual SSB IF filtering**

A built-in SSB filter is standard. When an optional SSB filter (YK-88S or YK-88SN) is installed, **dual** filtering is provided.

• **VOX, full or semi break-in CW**

• **AMTOR compatible**



Optional accessories:

- AT-440 internal auto. antenna tuner (80 m—10 m)
- AT-250 external auto. tuner (160 m—10 m)
- AT-130 compact mobile antenna tuner (160 m—10 m)
- IF-232C/IC-10 level translator and modem IC kit
- PS-50 heavy duty power supply
- PS-430/PS-30 DC power supply
- SP-430 external speaker
- MB-430 mobile mounting bracket
- YK-88C/88CN 500 Hz/270 Hz CW filters
- YK-88S/88SN 2.4 kHz/1.8 kHz SSB filters
- MC-60A/80/85 desk microphones
- MC-55 (8P) mobile microphone
- HS-5/6/7 headphones
- SP-40/50B mobile speakers
- MA-5/VP-1 HF 5 band mobile helical antenna and bumper mount
- TL-922A 2 kw PEP linear amplifier
- SM-220 station monitor
- VS-1 voice synthesizer
- SW-100A/200A/2000 SWR/power meters
- TU-8 CTCSS tone unit
- PG-2S extra DC cable.

Kenwood takes you from HF to OSCAR!



Complete service manuals are available for all Kenwood transceivers and most accessories. Specifications and prices are subject to change without notice or obligation.

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2201 E. Dominguez St., Long Beach, CA 90810
P.O. Box 22745, Long Beach, CA 90801-5745

KENWOOD

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All New!

Stacked in Your Favor!

TM-231A/431A/531A

FM Mobile Transceiver

Looking for a compact transceiver for your mobile VHF and UHF operations? KENWOOD has a compact rig for each of the most popular VHF/UHF bands.

- **20 multi-function memory channels.** 20 memory channels allow storage of frequency, repeater offset, CTCSS frequency, frequency step, Tone On/Off status, CTCSS and REV.
- **High performance—high power!** 50W (TM-231A), 35W (TM-431A) with a 3 position power switch (high, medium, low).
- **Optional full-function remote controller (RC-20).**

A full-function remote controller using the Kenwood bus line, model RC-20, may be easily connected to the TM-231A/431A/531A and can be mounted in any convenient location. Using the IF-20 interface the RC-20 may be connected to four mobile transceivers. (TM-231A/431A/531A or the TM-701A)

- **Multi-function DTMF mic. supplied.** Controls are provided on the microphone for CALL (Call Channel), VFO, MR (Memory Call or to change the memory channel) and a programmable function key. The programmable key can be used to control one of the following on the radio: MHz, T.ALT. TONE, REV, DRS, LOW or MONITOR.
- **Easy-to-operate illuminated keys.** A functionally designed control panel with backlit keys increases the convenience and ease of operation during night-time use.
- **Auto repeater offset on 144 and 220 MHz.**
- **Built-in digital VFO.**
 - a) Selection of the frequency step (5, 10, 15, 20, 12.5, 25kHz)
*TM-531A: 10, 20, 12.5 25kHz
 - b) Programmable VFOThe user friendly programmable VFO allows the operator to select and program variable tuning ranges in 1 MHz band increments.

- **Programmable call channel function.** The call channel key allows instant recall of your most commonly used frequency data.
- **Selectable CTCSS tone built-in.**
- **Tone alert system—for true "quiet monitoring"!** When activated this function will cause a distinct beeper tone to be emitted from the transceiver for approximately 10 seconds to signal the presence of an incoming signal.
- **Easy-to-operate multi-mode scanning.** Band scan, Program band scan, Memory scan plus programmable memory channel lock-out, with time operated or carrier operated stop.
- **Priority alert.**
- **DRS (Digital recording system).** The optional DRU-1 can store received and transmitted messages for up to 32 seconds, allowing the operator to quickly check or return any call using the tone alert system.
- **Automatic lock tuning function (TM-531A).**
- **Repeater reverse switch.**



Optional Accessories

- **RC-20** Full-function remote controller
- **RC-10** Multi-function remote controller
- **IF-20** Interface unit handset
- **DRU-1** Digital recording unit
- **MC-44** Multi-function hand mic.
- **MC-44DM** Multi-function hand mic. with auto-patch
- **MC-48B** 16-key DTMF hand mic.
- **MC-55** 8-pin mobile mic.
- **MC-60A/80/85** Desk-top mics.
- **MA-700**

- Dual band (2m/70cm) mobile antenna (mount not supplied)
- **SP-41** Compact mobile speaker
- **SP-50B** Mobile speaker
- **PS-430** Power supply
- **PS-50** Heavy-duty power supply
- **MB-201** Mobile mount
- **PG-2N** Power cable
- **PG-3B** DC line noise filter
- **PG-4H** Interface connecting cable
- **PG-4J** Extension cable kit
- **TSU-6** CTCSS unit

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Zero Bias

AN EDITORIAL

Tradition is a wonderful thing. In the off chance that I might have forgotten that fact, I've been reminded of it in some of the mail I've received lately. The CW tradition is a good thing, they say, and the goal is sweeter for the hurdle. A few even say that CW gets through in an emergency when everything else fails. Truisms all, and yet most of you seem to feel that something is wrong; something just isn't working anymore.

It's bad enough that we've reached the median age of 51 and that society's values today seem to be far different from, if not unrecognizable, those which we knew as kids, but now the one thing that a lot of amateurs held as immutable to the core—CW—is also being questioned. Like most of the changes in life that happen around us, this can also be frightening. What was once a given is now up for grabs.

Our survey and recent mail all say that at least 60 percent of you favor a no-code entry-level license. Call it what you will, this entry-level license is seen as a positive step in bolstering the future of amateur radio. Of the 40 percent who are not in favor of such a license, many see the problem and understand it but are unwilling to go that extra leap of faith and say that everything will be okay without CW. Very few responses are adamant in "CW Forever," thinking that the hurdle is good for us, or that the pain makes us worthy of being amateurs. Almost everyone sees pros and cons, sees a problem, and senses that something is wrong. Almost everyone senses that our amateur radio spectrum is no longer carved in stone and can be taken away for the common good.

It is far too simplistic to state that one change in the amateur radio regulations, such as no code, will make everything better instantly. It will not instantly add millions to our ranks, it will not instantly add thousands of new engineering students, and it will not instantly create technological breakthroughs. In that sense we are now comparable to an emerging nation whereby down the road the possibility is high if (always the big "if") we don't screw it up. Years ago we sold the rest of the world a bill of goods, starting with the fiasco of "Incentive Licensing," that amateur radio was worthwhile for technological growth. The rest of the world looked at us like idiots, but luckily they bought the concept and went out and did it right. The concept works as can easily be demonstrated throughout the world. The concept works, and that uneasy, gut-wrenching feeling tells you that it does when you see the growth of other countries' amateur populations and accompanying technological growth. There is something basically wrong with our approach, and our emotions and viscera

are telling us what we're trying not to look at. Some of us fixate at a point in time when everything was working. We try to stay there, and then get angry when a simple truth is pointed out. Others simply deny that there is any problem, believing that we indeed are living in the best of all possible worlds.

I receive a tremendous number of club bulletins each month, and I do read them all. A common thread now is the editors asking the members to look around at the next club meeting and check out the average age of the attending members. Like everything else, some clubs go out of their way to court new members, give amateur radio courses, ensure follow-up TLC after someone gets a license, and all the rest. Unfortunately, most clubs do none of these things either through lack of interest or lack of personnel willing to do some work. A number of clubs do see the problem of amateur radio's future and are at least voicing their concerns via the bulletins.

Change in amateur radio has been happening since the very first day I heard about it. The same holds true for all of you out there. For a long time the change was happening very slowly, without opposition, in an evolutionary manner, barely perceptible. Oh yes, we had the occasional leaps such as the Novice license, Incentive Licensing, and various WARC scares, but it took UPS to really shake up the troops. All at once it became perfectly clear that the rules had changed apparently overnight and that things would never be the same. We are now forced to look at certain painful issues that many of us thought we had buried long ago. It's like a toothache. It may stop hurting for a while, but it's not going away without a visit to the dentist.

Amazingly, very few of the comments that we've received are concerned with band overcrowding. Whatever numbers are bandied about apparently do not constitute a perceivable threat. The primary concern is the ubiquitous term "quality" and potential "CB operation" within the amateur bands. The "quality" of an operator, or how well he or she (either singularly or as a group) stacks up against the rest of us landed gentry, is a matter of conjecture. I don't know for sure whether amateurs as a group represent a homogenous "quality" group. There are very few things that "all of us do" in concert. The "CB operation" potential is not really a potential, but a real event happening on different bands at different times. All this means is that there is a lack of peer pressure and education. People will do things a certain way until they are taught and told another way. There is also the matter of how someone is "told" the right way. No one is born omniscient; we all learn the same way. Amateur radio is an ab-

straction; you really have to see it and try to learn about it. That usually involves a few mistakes. So, as far as I can see, more people will mean more of the same—some good and some bad.

Some people have suggested a much stiffer exam as a means of preserving the "quality," as if there is a demonstrable relationship or correlation between CW and technical prowess. A harder exam thereby would equate with faster code speed. By extension of that logic, a graduate EE applying for an amateur license would be given an Extra, a service technician a General or Advanced, and so on. That doesn't wash either when you look at it. CW or a harder exam as a filter is a concept that doesn't relate to fact if you spend some time listening on the bands. Maybe we don't want to talk about some of our brethren or relate some "unique incidents" that we've heard, but if you've been around for a while, you know what's happening.

I think the tide has changed, and most of you seem to feel the same way. It's time to move beyond the 1940s and 50s and look forward to the turn of the century and where we should be instead of where we've been. Let's face it. Most of us are too old to think about jumping into foxholes, building a one-tube (or one-transistor) CW rig out of scavenged parts and saving the day. The ones needed to do the jumping and building are far younger than we are, and as far as I can tell they know extremely little or more likely nothing about amateur radio. At this stage it's been about 28 years since I took basic training, and I know that my mind may think one thing, but my body really would not like to repeat the experience. Why don't we take some time and look around and savor some of the world's realities that we may have overlooked.

This is an exciting time for amateur radio, and by extension it should be an exciting time for you. It's sort of like the time period when you first heard about the hobby and started working for your license. It's all going to be a new experience full of things to learn about and new people to meet. Things most certainly will be different from what you've known, but like most things new they'll become second nature after a while. People new to a hobby are similar to religious converts; they totally immerse themselves in what they are doing. The motivation to continue and "upgrade" comes from the exposure and the ability to participate. We learn by doing. Otherwise all of us would be philosophers or consultants.

Keep in mind that we also learn by *teaching* others, not by haranguing them or berating them. Teaching also makes us examine our own values and quickly points out how much we ourselves don't know.

73, Alan, K2EEK

Others May Try to Imitate, But...

Only One Can Be The Best



Morse Code - Baudot - ASCII - AMTOR - Packet - Facsimile - Navtex

Amateur Net Price \$319.95

It's a lesson you learn very early in life. Many can be good, some may be better, but only one can be the best. The PK-232 is the best multi-mode data controller you can buy.

1 Versatility

The PK-232 should be listed in the amateur radio dictionary under the word Versatile. One data controller that can transmit and receive in six digital modes, and can be used with almost every computer or data terminal. You can even monitor Navtex, the new marine weather and navigational system. Don't forget two radio ports for both VHF and HF, and a no compromise VHF/HF/CW internal modem with an eight pole bandpass filter followed by a limiter discriminator with automatic threshold control.

The internal decoding program (SIAM[™]) feature can even identify different types of signals for you, including some simple types of RTTY encryption. The only software your computer needs is a terminal program.



PC Pakratt Packet TX/RX Display



Facsimile Screen Display

2 Software Support

While you can use most modem or communications programs with the PK-232, AEA has two very special packages available exclusively for the PK-232....PC Pakratt with Fax for IBM PC and compatible computers, and Com Pakratt with Fax for the Commodore 64 and 128.

Each package includes a terminal program with split screen display, QSO buffer, disk storage of received data, and printer operation, and a second program for transmission/reception and screen display of facsimile signals. The IBM programs are on 5-1/4" disk and the Commodore programs are plug-in ROM cartridges.

3 Proven Winner

No matter what computer or terminal you plan to use, the PK-232 is the best choice for a multi-mode data controller. Over 20,000 amateurs around the world have on-air tested the PK-232 for you. They, along with most major U.S. amateur magazines, have reviewed the PK-232 and found it to be a good value and excellent addition to the ham station.

No other multi-mode controller offers the features and performance of the PK-232. Don't be fooled by imitations. Ask your friends, or call the local amateur radio store. We're confident the PK-232 reputation will convince you that it's time to order your very own PK-232.

Call an authorized AEA dealer today. You deserve the best you can buy, you deserve the PK-232.

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206-775-7373

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1 Maximum singleband HT performance. Yaesu's compact, 2-meter FT-411 gives "sophisticated HT operation" a whole new meaning. With 49 memories. Dual VFOs. Keyboard frequency entry. Automatic repeater shift. DTMF autodialer (10 memories, 15 digits each). Built-in PL encode/decode. Extended receive. "Do-re-mi" audible command verification. Backlit display and keypad. Battery saver. Automatic power-off feature. Rotary channel selector. 2.5-watt battery pack (optional 5-watt pack available). Much more.

2 Mini HT packs big performance. Choose Yaesu's miniature FT-23R Series for serious pocket-size performance. 2-meter, 220-MHz, and 440-MHz models. Includes 10 memories (7 store odd splits). Memory scan at 2 frequencies per second. High/low power switch. LCD power output and "S"-meter display. Lots of PL features. Auto battery saver. Aluminum-alloy case. Water-resistant seals. Variety of battery packs available, from 2 to 5 watts. More.

3 Interchangeable HT options. To help save you a bundle of money, many HT options are interchangeable throughout Yaesu's HT line. Choose the FNB-12 12-volt, 500-mAh battery pack. The miniature FNB-9 7.2-volt, 200-mAh battery pack. FBA-9 battery case for 6 AAA-size cells. FBA-10 battery case for 6 AA-size cells. DC car adapter/charger. Mobile hanger bracket. External speaker/microphone. Battery chargers. More.

4 FM Repeaters. Looking for a repeater? Look no further. Our 2-meter and 440-MHz models feature 10 watts output. Glass-epoxy circuit boards. Plus they're FCC type accepted and ready for 19" rack mounting. Yaesu repeaters are the perfect building block for a complete repeater station.

5 Space Station. Work satellites, moonbounce, troposphere, aurora, and meteor scatter with our FT-736R VHF/UHF base station. SSB, CW, and FM on 2 meters and 70 cm (430-450 MHz!) standard. Slots for optional 50-MHz, 220-MHz, or 1.2 GHz modules. Crossband full duplex capability. Satellite frequency tracking function. 25 watts on 2 meters, 220 MHz,

and 70 cm (10 watts on 6 meters and 1.2 GHz). 100 memories. RF speech processor. IF shift. IF notch filter. CW and FM wide/narrow IF filters. VOX. Noise blanker. Three-position AGC selection. Much more.

6 Mobiles that double as answering machines. Our FT-212R Series mobiles take messages just like an answering machine (with DVS-1 option)! 2-meter and 440-MHz models. 45 watts output (35 on 440-MHz). Autodialer DTMF mic with 10 memories (22-digit memory each). 18 memories. Multiple scanning routines. "Do-re-mi" audible command verification. High/low power switch. Oversize amber display. Much more.

7 Mobiles you can take on foot. Our FT-290R Mark II Series (2-meter, 430-450 MHz, and 6-meter models) come standard as mobiles. But remove the heat sink and snap-on the optional battery pack, and you're ready to take your operation on foot! Mobile operation: 25 watts output (10 watts, 6 meters). Battery pack: 2.5 watts output. With SSB, CW and FM. 10 memories. Dual VFOs. LCD display. Offset tuning. Relative power-output/S meter. More.





8 Dual-band mobile with remote control head. The FT-4700RH mounts almost anywhere—the “brains” on your dash, visor, or door, the “muscle” under your seat. 50 watts output on 2 meters, 40 watts on 70 cm. Full crossband duplex. Simultaneous monitoring of each band. Volume balance control for dual receive operation. 9 memories (each band). Extended receive coverage. Reverse repeater shift. Bright dual-band display. 10 memory autodialer mic (option). More.



HF price/performer. Don't let the FT-747GX's affordable price fool you. This rig

9 really works the DX! 100 watts RF output on 160 to 10 meters. Continuous receive from 100 kHz to 30 MHz. LSB, USB, CW, and AM. Slot for optional FM unit. 20 memories. Split-frequency operation. CW and AM filters. Plus one-touch noise blanker. All-mode squelch. RIT. 20-dB attenuator. Great receiver with superb overload protection. More.

10 HF field-day favorite. Contesters appreciate the portability and performance of Yaesu's FT-757GX Mark II. 100-watt output. 10 memories. Dual VFOs. Slow/fast tuning selection. IF notch filter. Iambic keyer. 600-Hz CW filter. AF speech processor. 500 kHz to 30 MHz receive. 10 to 160 meters transmit, including WARC bands. All-mode coverage. QSK operation. Continuous RTTY operation up to 30 minutes. More.



11 Flex your RF muscle. Cut through pile-ups with our FL-7000 power amplifier. 160 to 15 meter coverage. Built-in power supply. Automatic tuner. Fast turnaround for break-in (QSK) CW, HF packet, and AMTOR. 70 watts excitation for full output, 1200 watts PEP input. More.



World's first HF/VHF/UHF base station. Talk about complete. The FT-767GX gives you 160 to 10-meter transmit standard. Optional plug-in modules for 6-meter, 2-meter and 70-cm operation. 100 kHz to 30 MHz

12 receive. AM, FM, SSB, CW, AFSK modes built in. 10 memories for frequency, mode, and CTCSS info. Dual VFOs. VFO tracking. Digital display in 10 Hz steps. Slow/fast main dial tuning. Synthesizer step programming at up to 99.99 kHz per step. Digital RF power/SWR meter. Built-in RF preamplifier. And these are just a few highlights!



13 Serious VHF/UHF Receiver. Our FRG-9600 is a smart way to monitor. 60 to 905 MHz coverage. USB, LSB, CW, AM, FM wide and narrow. Optional NTSC video module. Scanning steps of 5, 10, 12½, 25 and 100 KHz. 99 memories store frequency and mode. Memory scan (also scans between memories). Keyboard frequency entry. 24 hour clock. Multiplexed output. Fluorescent readout. Signal strength graph. AC power adapter. Much, much more.



World-class HF receiver. The FRG-8800's perfect for keeping up with the world. Continuous coverage from 150 KHz to 30 MHz. Expanded coverage with optional 118-174 MHz VHF converter. USB, LSB, CW wide/narrow, AM wide/narrow, FM. 12 memories. Also programmable scanning routines. Keyboard frequency entry. LCD display. SINPO signal graph. Computer interface capability. Two 24-hour clocks. Recording functions. Much more.

14

Antenna rotators for your application.

Our G-1000DX, G-800SDX/G-800S, and G-400RC models feature 360° “radio compass” control heads, and



are compatible with most tower-plate configurations. Plus G-1000SDX and G-800SDX models feature 450° rotation and presets.

15

AZ-EL rotators for space applications.

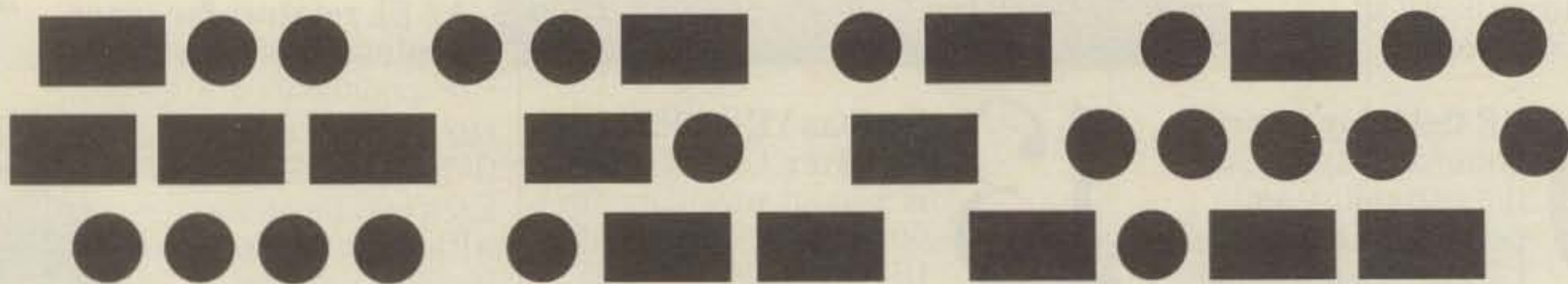
Into OSCAR or moonbounce? Choose our G-5400B or heavy-duty G-5600B AZ-EL rotator. Each is compatible with many vendors' tracking software. And for stand-alone elevation control, choose our G-500A elevation rotator.



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Announcing

•**Foundation for Amateur Radio Scholarships** - This non-profit organization plans to award 32 scholarships for the academic year 1989-90 to licensed radio amateurs who plan to pursue a full-time course of studies and have been enrolled in or accepted for enrollment in an accredited university, college, or technical school. Some of the scholarships require a General class license or above. The awards range from \$500 to \$2000 and in some cases preference is given to residents of specific geographical areas or the pursuit of certain study programs. Additional information and an application can be requested by letter or QSL card postmarked no later than May 31, 1989 from: FAR Scholarships, 6903 Rhode Island Ave., College Park, MD 20740.

•**H.M.S. Plymouth Group, Royal Naval ARS** - Members of the Royal Naval ARS in the Cornwall and Devon, England area have formed a group responsible for amateur radio operations from the Falkland Veteran *H.M.S. Plymouth* based at her namesake city. The ship will be open to the public from the present until October. The group will provide a replica room and carry on communications to be heard and seen by visitors. At press time they hoped to use the call GB3GUZ. For more information, contact Lt.-Cdr. Ellis Diggle, G3LSD, Netherton Cottage, The Elms, Stoke Damerel, Plymouth PL3 4BR, England.

•**VE Exams, Boulder, Colorado** - On the second Monday of most months the Boulder, Colorado VE Team will give amateur radio exams at the American Legion in Boulder. For information and to preregister, contact Barbara McClune, N0BWS, at 303-530-1872.

•**The following Special Events will take place during May:**

One-land, from Dogwood Festival, Fairfield, CT; Greater Fairfield ARA; May 13 from 1300-2200Z; 3.975, 7.235, 14.330, 21.420, 28.310 MHz. For certificate send QSL and large SASE to FARA Dogwood, P.O. Box 486, Southport, CT 06490-0486.

N3FHG, from Washington, PA; WACOM; May 21 from 1500-2200Z and May 22 from 1700-2200Z;

7.250, 14.250, 18.150, 21.350, 28.333, 146.43. For QSL send your QSL and SASE to WACOM, Box 1383, Washington, PA 15301.

WA3PJQ, from the submarine *U.S.S. Torsk*; Maryland Mobileers ARC; May 20 from 1400-2100Z; SSB 7240, 14240, 21340, 28340 kHz, and FM 146.805 (all plus or minus QRM). For certificate send SASE to MMARC, P.O. Box 784, Severna Park, MD 21146.

KM3I, from Pasadena, MD; Bay Area ASR; May 20; CW 7.110, 14.035, 21.110, 28.110. For certificate send QSL (SWLs send details of QSO) and large SASE to The Bay Area ARS, P.O. Box 805, Pasadena, MD 21122-0805.

K4CPO, from the General Jackson stern-wheeler river boat on the Cumberland River, around Nashville, TN; Nashville ARC; May 27-29 during the daylight hours in various sections of the phone bands. For special QSL send your QSL and SASE to K4CPO Nashville ARC via the Callbook.

WA4ZIO, from the Alabama Reunion Train making a 7-day expedition across Alabama; Birmingham ARC and ARRL Alabama section; May 21-27; phone and CW on 80 through 10 meters. For certificate send QSL and 9 x 12 SASE to Birmingham ARC, P.O. Box 603, Birmingham, AL 35201.

W4ODR, from the Naval Air Station Memphis, Millington, TN; Armed Forces Day celebration, operation by sailors and marines; May 20 from 1300-2300Z; SSB 7.230, 14.280, and 21.3780 MHz (plus or minus 10 kHz); CW 21.145 and 28.145 MHz; and 146.52 simplex. For certificate send QSL (no SASE required) to Military Club Station W4ODR, P.O. Box 54278, Naval Air Station Memphis, Millington, TN 38054 (provide frequency and contact number).

W7ZA, from Grays Harbor, WA; Grays Harbor ARC; 1600Z May 6 to 2400Z May 7; lower 50 kHz of the General phone bands on 15 through 80 and on 28.310 (plus or minus QRM), plus hopefully some CW operation. For special QSL send your QSL and SASE to

W7ZA, c/o ARS KA7AIR, Joe Ledesma, 516 Sixth Street, Hoquiam, WA 98550.

W7STB, from Promontory, UT; the Ogden ARC; May 10 from 0001-2100Z; on one of the following—3.970, 7.270, 14.280, 21.375, 28.415 MHz. Send QSL and SASE to Ogden ARC, P.O. Box 3353, Ogden, UT 84409.

W8BAP, from Chillicothe, OH; Scioto Valley ARC; May 27 and 28 from 1400-2200Z; SSB lower 25 kHz of the 40 and 15 meter General and 10 meter Novice phone bands. For certificate send QSL and SASE to Ron Cade, WK8N, 747 Jefferson Ave., Chillicothe, OH 45601.

AD9E, from MidContinent Railway Museum, North Freedom, WI; May 27-28 from 1400-2359Z each day; frequencies 7044, 7144, 10117, 21044, 28044. For QSL send your QSL and SASE to R.L. King, KA9GNY, 411 Lynn Ave., Baraboo, WI 53913.

W9DUP, from Chicago Museum of Science and Industry, Chicago, IL; DuPage ARC; May 20-21 from 1600-2300Z each day; phone 7.250, 14.300, 28.400, 145.65/25. For certificate send SASE to DARC, P.O. Box 71, Clarendon Hills, IL 60514.

W8HVY, from State Capitol Rotunda, Pierre, SD; Pierre ARC; May 13 from 1100-2300Z and May 14 from 1500-2300Z; USB 28.400, 21.287, 14.287 kHz, and LSB 7.267 kHz. For certificate send QSL and SASE to Gary Wallace, KA0AHI, P.O. Box 1261, Pierre, SD 57501-1261 (by June 10).

WB0HSI, from Lewis and Clark Rendezvous, St. Charles, MO; St. Charles ARC; May 20-21 from 1300-2100Z; 7250, 14325, 21350, 28410, and 146.67 as propagation and QRM permit. For certificate send large SASE to St. Charles ARC, P.O. Box 1429, St. Charles, MO 63302-1429.

GB2WW and **GB4BOB**, from a number of former Royal Air Force and U.S. Army Air Force stations in and around the Bedford, United Kingdom area to commemorate the outbreak of WW II; Bedford and Dis-

(continued on p. 104)

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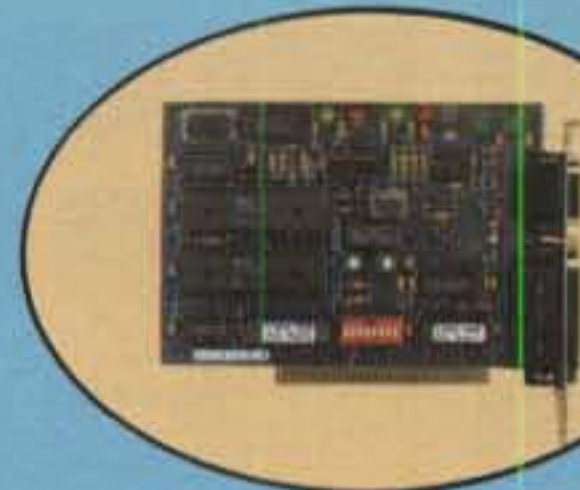
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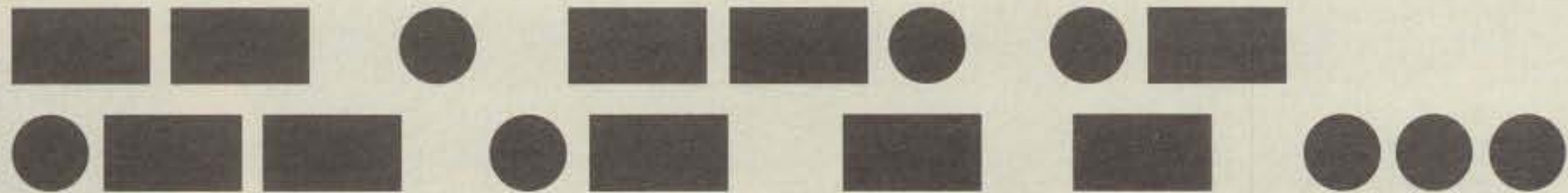
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Our Readers Say

Hewlett Packard Info Wanted

Editor, CQ:

I have been a subscriber to your fine magazine for a number of years and really look forward to each issue.

Perhaps one of your readers could be of some assistance to me. I was able to purchase two instruments at a local fleamarket. They both appear to be working fine, but I would like schematics and/or manuals to make maximum use of these instruments. They are a Hewlett Packard Model 5216A, 12.5 MHz Electronic Counter and a Hewlett Packard 3400A RMS Voltmeter. Any help would be greatly appreciated.

Robert H. Krueger
2S 250 Valley Road
Lombard, IL 60148

The Best Balance

Editor, CQ:

Thought it only appropriate to write a brief note with my renewal to thank you and your CQ staff for a fine publication.

I have been licensed since 1974, and have read all major ham radio publications during that time, but CQ is my favorite, by far. You provide me with the best balance of practical articles on operating and equipment, operating events, and new modes.

The February issue is a great example of why I'm happy to renew: articles on old keys and new equipment (these HR-2510s are neat little rigs!) Antennas and Propagation, Contest Calendar, Packet Notes, Washington News, and DX News, etc. Keep up the good work.

Carl Olson, WA3SEE
Galesville, MD

Courageous Ops Remembered

Editor, CQ:

I read with great interest the excellent article about Harold S. Bride, the radio operator on the ill-fated *R.M.S. Titanic*. No doubt every shipboard radio operator has imagined himself frantically sending SOS while the rest of the crew is scurrying off to the lifeboats.

During WW II, I was a radio operator on the *U.S.S. Thetis*, a Coast Guard cutter in the North Atlantic. I often wonder if I would have had the courage to keep pounding that straight key with water pouring into the radio room. Fortunately, I never found out.

German U-boats were prowling the North Atlantic looking for easy prey, often ships traveling without escorts. On numerous occasions, while standing the radio watch in the wee hours of the morning, drinking coffee to keep awake, I would be jarred wide awake by a SSS SSS SSS (submarine sighted) on 500 kilocycles, the international calling and distress frequency. The SSS was usually followed by the ship's call and her position. The SSS was often followed by "torpedo amidship" and an SOS, but in many instances the transmission ended abruptly in the middle of a word. The radio operator on watch was the last man to leave the sinking ship except for the captain. Many courageous radio operators perished in those sinkings. No doubt, the courageous acts of these men in sticking to their posts and letting the world know that a ship was sinking and her exact position resulted in saving the lives of a great many of their shipmates.

Cecil E. Lester, K8MII
Beckley, WV



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Lockheed Corp. Test Shows
**Wilson 1000 CB Antenna Has
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In tests conducted by Lockheed Corporation, one of the world's largest Aerospace Companies, at their Rye Canyon Laboratory and Antenna Test Range, the Wilson 1000 was found to have 58% more power gain than the K40 Electronics Company, K40 CB Antenna. This means that the Wilson 1000 gives you 58% more gain on both transmit and receive. Now you can instantly increase your operating range by using a Wilson 1000.

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New Design

The Wilson 1000 higher gain performance is a result of new design developments that bring you the most powerful CB base loaded antenna available.

Why Wilson 1000 Performs Better

Many CB antennas lose more than 50% of the power put into them. The power is wasted as heat loss in the plastic inside the coil form and not radiated as radio waves.

We have designed a new coil form which suspends the

coil in air and still retains the rigidity needed for support. This new design eliminates 95% of the dielectric losses. We feel that this new design is so unique that we have filed a patent application on it.

In addition, we use 10 Ga. silver plated wire to reduce resistive losses to a minimum.

In order to handle higher power for amateur use, we used the more efficient direct coupling method of matching, rather than the lossy capacitor coupling. With this method the Wilson 1000 will handle 1500 watts of power.

The Best You Can Buy

So far you have read about why the Wilson 1000 performs better, but it is also one of the most rugged antennas you can buy. It is made from high impact thermoplastics with ultraviolet protection. The threaded body mount and coil threads are stainless steel; the whip is tapered 17-7 ph. stainless steel. All of these reasons are why it is the best CB antenna on the market today, and we guarantee to you that it will outperform any CB antenna (K40, Formula 1, you name it) or your money back!

*Inductively base loaded antennas

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Aug. 21, 1987

Wilson Antenna Company Inc.
3 Sunset Way Unit A-10
Green Valley Commerce Center
Henderson, Nevada 89015

Subject: Comparative Gain Testing of Citizen's Band Antennas

Ref: Rye Canyon Antenna Lab File #870529

We have completed relative gain measurements of your model 1000 antenna using the K-40 antenna as the reference. The test was conducted with the antennas mounted on a 16' ground plane with a separation of greater than 300' between the transmit and test antennas. The antennas were tuned by the standard VSWR method. The results of the test are tabulated below:

| FREQUENCY (MHZ) | RELATIVE GAIN (dB) | RELATIVE POWER GAIN (%) |
|-----------------|--------------------|-------------------------|
| 26.965 | 1.30 | 35 |
| 27.015 | 1.30 | 35 |
| 27.065 | 1.45 | 40 |
| 27.115 | 1.60 | 45 |
| 27.165 | 1.50 | 41 |
| 27.215 | 1.60 | 45 |
| 27.265 | 1.75 | 50 |
| 27.315 | 1.95 | 57 |
| 27.365 | 2.00 | 58 |
| 27.405 | 2.00 | 58 |

**58%
MORE
POWER GAIN
THAN THE
K40**

A complete description of this test is contained in file #870529. Excerpts of this report are enclosed.

Lockheed
Wilson Antenna Engineer
Electromagnetics Laboratory

Approved:
W. C. Weikel
W. C. Weikel, Group Engineer
Antenna/ATS Support Laboratory

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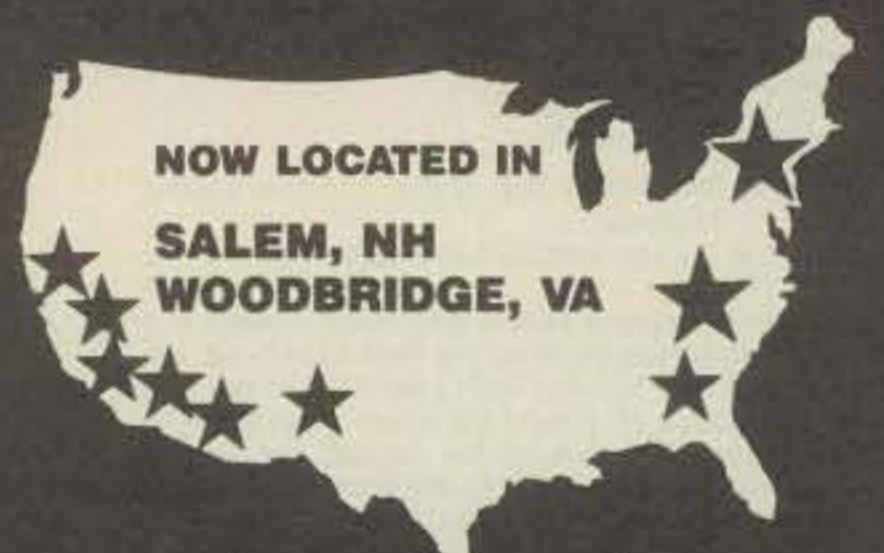
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Results of the 1988 CQ World-Wide WPX CW Contest

BY STEVE BOLIA*, N8BJQ

"An endless path to Europe and Asia. WPX finally got great conditions!" These comments by N2AZS pretty much tell it all about the 1988 WPX CW Contest. Just about everyone reported excellent conditions throughout the world, with 15 and 20 meters open around the clock as well as some good 10 meter openings.

Four world records fell, as well as a host of continental marks. Leading the record onslaught was the multi-multi crew at UP4A, whose 16M points shattered their 1983 mark. Their 1013 prefixes is also a new record. ZY5ZBA (Op. PY5CW) now owns the world 28 MHz record, with YY5A (Op. YV5ANT) the record holder on 14 MHz.

The 1988 single op. all band champ is NH6J/NH0 (better known as JE1JKL). Saty's 4.48M point effort (a new Oceania record) from Saipan was just enough to edge out KT3Y and KM1H (Op. KQ2M). Rounding out the top five were PJ0J (Op. N5RM) and AT0T (Op. K3TW). GB2FXB was the top European finisher and sixth overall. Ten meters belonged to ZY5ZBA with a record 2.5M points, with 9J0A (Op. 9J2EZ) setting a new African record in his last contest from Zambia. AY4F (Op. LU4FD) also broke the 1980 record on his way to third place. In Europe, 9H1EL's 805K points was good for a new European record. 9Y3VU made the best of his special prefix to capture the top spot on 15 meters, edging out ZW4OD for world honors. 4N4A was the top European finisher, with VP2VDX (Op. KT6V) finishing fourth with a new North American record. Also setting continental records were 4Z4NUT and KH2D. YY5A did a super job on 20 meters, turning in a world record score, as well as the top single band score. Second place goes to Terry, VP2VCW (N6CW), with OH1ZAA third (a new European record) and NY6M/NH2 winning the battle of Guam and fourth place followed by N7DF/WH2. IO4IND is the new 40 meter champion followed by TW4O (Op. F6ARC) and KH2F. I4AVG is the 3.5 MHz champ with UA2FF top gun on top band.

In one of the closest finishes ever, Phil, KT3Y edged out KQ2M at KM1H by 19K points for the USA all band championship and the USA record. The 19K margin equates to approximately three multipliers or a very few more DX contacts. Both Phil and Bob broke KC1F's 1985 record, as did K3ZO and KM3T, who finished third and fourth, respectively. There was quite a bit of 28 MHz activity in the States, with WA6FGV leading the pack with 87K points, followed by KG5U and WZ4F. N4ZC's 1981 ten meter record should fall in



World champion NH6J/NH0 taking a well-deserved break. Nice going, Saty.

1989. Dave, K6LL/7, broke his 1981 record on the way to the top spot on 15 meters, with N0BSH, NE8T, and N3RS on his tail. K2VV repeated as 20 meter champ followed by N2AA and W5FO. On 40 meters NM2Y/3 and W3BGN were one and two. NA3J and K5NA/2 took 3.5 MHz and 1.8 MHz honors.

The multi-multi category showed the biggest score increases, with the top five stations all topping UP7A's 1983 mark. The gang at UP4A set out to get the record, and with some fine organizing, along with good operators and antennas, reached their goal. Y34K edged out WL7E for second with NS0Z the top USA multi-multi and fourth overall. NS0Z's 10.8M effort more than doubled the previous US multi-multi record. Second in the US and also doubling the previous record was WM5G with 8.5M points.

The top multi-single entry comes from Asia, with RL1P (special call of RL8PYL) leading the way with 8.1M points. In second with a new European record was LZ9A, followed by HG5A



Here is 9V1XE cooling down during the contest. Mick reports the sweat band was a necessity with the air conditioning not working. Mick was also heard from 8Q7, 4S7, and BY in '88.

and UB3IWA. Also setting a continental record was 5H1HK with 5.3M points. The top USA multi-single was N4WW with a USA record 5.59M points, with WC4E and KI6P in close pursuit. Both WC4E and KI6P also eclipsed the previous record.

In the QRP category 4X1IF was tops with 791K followed by SM5GMG and W8VSK. Some fine single band low-power scores were turned in as well. EA3EGV's 48K points on 10 meters was good enough for a QRP world championship. N4KG was clearly the "big gun" on 15 meters with 295K, with SP5GFG tops on 20 and G3VMY the leader on 40. Y25XA was the top 3.5 MHz QRP scorer, with UG6GAW taking the honors on top band.

The contest expedition trophy was won by station HV3SJ, operated by K4TEA and K4TKM/6. Ken and Brook did an outstanding job from the Vatican City and provided a seldom-heard multiplier. Thanks, guys.

The Northern California Contest Club with 48M points is the new combined SSB/CW world club champion. They received quite a challenge from the Northern Lithuania DX Group and the up and coming Les Nouvelles DX Group. The USA club champion is the Potomac Valley Radio Club with 30M points. Make sure you clearly indicate your club affiliation on your summary sheet so that your club will get the proper credit. The difference between first and second in the world was less than a medium-size multi score, so an omission could cost your club a trophy.

There were quite a few special prefixes and expedition stations active over the weekend. Thanks to NH6J/NH0, PJ0R, GB2FXB, AT0T, 4C2JTW, 9J0A, YE2ZE, 9Y3VU (perhaps the most miscopied call in the contest—everyone assumed it was 9Y4), 6Y6A (the second most miscopied call—a multitude thought they had worked BY6A), C30LFD, VP2VCW, VP2VDX, YY5A, TW5E, TW4O, RL1P, 5H1HK, TW6A, HV3SJ, TE4T, W3KVA/VP2M, 4X0V, 9V1XE, FH5EF, AT0L, C30LFC, G0/KB1CM, LX/PA3EBT, LX/PA3BUD, LX/PA3CNH, LX2QR (Op. PA3BDK), SV7RP, 5W1HA, KX6DC, as well as any others that I might have missed, for handing out a new multiplier or country. It is efforts like these which make the WPX contests a success each year.

A new trophy has been added for the 1989 contests. This one is for the top European single operator all band combined score (SSB and CW). To qualify both operations must be from the same country, and you must enter both contests. If you operate under different calls for each contest, please make sure that I am aware that the operator is the same. This new trophy is sponsored by the Les Nouvelles DX Group.

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The PARAGON, Performance Plus...

All mode versatility and a transmitted signal you will be proud of. A receiver that has set new standards for sensitivity and quietness. Receives from 100 kHz to 29.999.99 MHz. Transmits on all bands from 1.8 MHz to 29.999.99 MHz with 100 watts output. SSB, CW, real FSK and optional FM. Standard equipment includes speech processor, noise blanker, dual VFOs, TX split, RX split and QSK with a changeover time of 30 ms or less. Five I-F filter positions with the 6 kHz AM filter and 2.4 kHz SSB filter, standard. Optional 1.8 kHz, 500 Hz and 250 Hz filters are selectable independent of mode. Two selectable tuning rates. Passband tuning, notch filter, audio bandpass filter, tone control, squelch and more!

Sixty-two programmable memories that store

frequency, mode, filter selected, channel number and a 7 character alpha-numeric "tag" for entering channel I.D. Scan rate is selectable and as each memory is scanned all of the stored information is displayed (what a light show!). Alternately, the memories can be tuned with the main tuning knob.

Frequency selection is with the main tuning knob, direct keypad entry or up/down buttons that will shift in 100 kHz or one MHz increments or to the next ham band. DISPLAY button selects 24 hour clock or date or tag. VOICE button causes a voice frequency announcement with optional synthesized voice board installed.

Rear panel controls are provided to adjust the VOX, cw monitor level and tone, and SSB

sidetone monitor level. Switching is provided to control conventional linear amplifiers and of course, high speed switching for QSK linears, such as the Titan or the Hercules II. Other rear panel inputs and outputs for transverters, FSK (170 Hz shift), fixed level audio out, audio in, external speaker, aux dc jack and provision for the optional RS-232 control interface. An absolute delight for the all mode operator.

The Paragon is the result of a three year engineering effort. We are proud of the Paragon and we think it has set new standards of excellence in synthesized rigs. Check it out yourself. We think that you will share our pride in the Paragon.



The Classic CORSAIR II...

Unique in all the world, the CORSAIR II is the only ham transceiver available that uses a crystal mixed, permeability tuned oscillator. The ability of this scheme to reject strong adjacent signals and to dig out weak signals under the most adverse conditions is legendary. The 95 dB of dynamic range is all useable!

Frequency tuning is also unique. The main tuning is 18 kHz per turn. Dual range offset tuning

can control transmit, receive or transceive. Selectivity is enhanced with a 16 pole crystal ladder filter and pass band tuning. The 50+ dB notch filter virtually eliminates carrier type interference. An eight pole audio filter is standard and the I-F filters are selectable independent of mode for superior operation on the digital modes.

The transmitter is well known for outstanding audio quality on SSB and QSK CW performance is

simply beyond comparison. All ham bands are covered, 160 through 10 meters with WWV at 10 MHz. The front panel is a thoughtful and spacious arrangement with only the controls that you need.

If your number one priority is outstanding performance on the ham bands, and simplicity is still a virtue, you may be the kind of purist who deserves the classic CORSAIR II.

Add Satellite Communications To Your HF Station



Model 2510 B

The Model 2510 B, mode B, satellite station is a 70 cm, 10 watt SSB and CW transmitter with a super-sensitive, low noise, 2 meter to 29 MHz receive converter. The receive conversion idea takes advantage of the excellent selectivity and sensitivity that you already have in your HF station. Frequency tuning is with the PTO in the 2510B and the transmitter automatically tracks the receive frequency for "transceive" operation. "Split" operation is also provided. Two bands are included for full coverage of Oscar 10 and Oscar 13.

The Model 2410 is an all mode, broadband, 100 watt, 70 cm amplifier that adds 10 dB of gain to your up-link signal. Tx/Stby control can be hard-wired or automatic when the drive signal is present. Primary power is 12 to 14 Vdc at 20 amps.



Model 2410



TITAN: A Gallon And A Half Out! (5.68 Liters)

The TITAN has it all! 1500 watts output with ease, all legal bands 160 through 15 meters including MARS frequencies (10 meters after owner mod), lightning fast QSK for full break-in CW or the digital modes and a two speed blower for quiet operation on SSB. This awesome performance from a 17 lb desk top amplifier is made possible by a pair of Eimac® 3CX800A7 ceramic triodes and an external 45 lb power supply that is an absolute "horse."

The heart of the power supply is our own tape wound, four core Hypersil® transformer that weighs in at an impressive 41 lbs. The

transformer is conservatively rated at 2.5 kva CCS. (9.5 kva IVS.) The power supply is housed in a separate utility enclosure and is nearly noiseless even at full power.

Front panel features include a ten element LED bargraph that displays peak power, a multi-meter selectable to read plate voltage, forward or reverse power and grid current. A matching meter is dedicated to display plate current. The TUNE and LOAD controls use 3:1 vernier drives which, in combination with a great RF deck design, make the TITAN a real "pussy cat" to operate.

The low drive requirement of the TITAN (65 watts for 1500 watts output, typical) makes life much nicer for your exciter too. This is especially comforting when operating keydown modes such as RTTY. Two product review articles have been published, see QST April 1986, CQ February 1986.

If you are ready to choose your dream amplifier the TITAN has everything but the highest price. Check it out!

THE TITAN IS BACKED BY A THREE YEAR LIMITED WARRANTY.



Mobile or Base—Solid State

Hercules II No Tune 550 Watt HF Amplifier

The HERCULES II, Model 420, is an amplifier design that offers a combination of unique features that can only be achieved using modern solid state technology. Instant on, 12 - 14 Vdc operation, no-tune broadband final and compact size. General coverage operation from 1.8 to 22 MHz (to 29.999 MHz with authorized modification). Add to that lightning fast QSK cw, remote control, superb linearity and a low drive requirement. Outstanding!

The HERCULES II will interface nicely with virtually all transceivers. The front panel includes an analog multi-meter for collector current, voltage, forward power and SWR. A 10 element LED bar-graph display indicates peak output power. Band selection is made from the front panel switch or remotely controlled through a rear panel connector. Accessories are available for mobile remote control and automatic band tracking when using a Paragon. A front panel speaker is built-in.

The Model 9420 115/220 Vac power supply is in a separate utility enclosure and connects to the RF deck using a 6 foot power cable. It provides 80 amps to the amplifier plus 20 amps at 13.8 Vdc to power a 100 watt output exciter.



Two KW Antenna Tuner

The latest version of the highly regarded Ten-Tec antenna tuner is now the Model 238. The 238 has been re-styled to match our transceivers and looks great in your shack, whether your layout is "look alike" or "mix and match." This tuner adds a great deal of versatility. It will load virtually any unbalanced (coax fed or long wire) antenna. The high power balun is built in as standard which allows the use of balanced feeders also. Full coverage from 1.6 to 30 MHz. The modified "L" network will tame an SWR of at least 10:1, any phase angle, without false load problems. The lighted slide rule dial and calibrated tuning knob skirts make it possible to log settings and quickly QSY to the same frequency and antenna, without going through the tuning process again. Lighted multi-meter reads power in two ranges, plus SWR. A great way to operate all bands, including WARC and MARS, with something less than a world-class antenna farm.

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From our recent DX-pedition to Taiwan, operators easily controlled pileups with the SB-1000 and nothing more than a dipole antenna. This means that when conditions are tough, you know you can depend on your SB-1000 to lift your signal above the rest. Whether you're using a dipole or stacked monoband beams.

Proven output power

We don't play games by using old rating methods to make you pay for input power you don't get at the antenna. What you do get is 1000 watt output of peak

envelope power on SSB and 850 watts on CW. Even 500 watt output on RTTY.

On the chance that someone might doubt our claims, at hamfests we demonstrate that with only 80 to 100 watts of drive, our SB-1000 develops more output than even the world-famous Heath SB-220!

Designed for today, the SB-1000 offers quiet, compact tabletop operation at rated output. That's only 1.7dB (or about 1/3 of an S-unit) below

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I was saddened to learn of the recent death of Burt Curwen, KL7IRT. Burt assembled a good multi-multi station and a good crew of operators and was always a factor to be reckoned with in the multi-multi category. In his memory, NL7HI is now sponsoring a multi-multi trophy for North America for the SSB contest, effective with the 1989 contest.

Again in '88 the number of computerized logs increased, as did the number of typos. If you only send a computer log, check your typing because a typo counts the same as a mis-copied call. Also check your program to see that it computes points and multipliers correctly. Most of them do an excellent job. However, there are enough unusual calls to mess up anybody's program. Computerized logging is neat and fast, but it can get you in trouble if you don't check your log closely before you submit it. For anyone who is interested, I will gladly make available the software that I use for log checking. It is written in Pascal for a PC and runs fairly quickly, even on an 8088. All I require is a 5¼ or 3½ disk and sufficient postage to return the disk to you.

The response to the picture of my antenna farm was overwhelming (May 88 CQ and also CQ Buyers Guide). I received several pleas not to run that picture anymore, as well as several questions about all the funny stuff hanging off the tower. Enough pictures were received this year to spare you from having to see the updated picture with my 2 meter beam (3 elements).

Don't forget to check the 1989 contest rules (especially rule VII) in the February issue for changes and current trophies. Remember, contacts in your own country count for zero points; you still have to dupe your log; you get double points for working 40, 80, and 160; and single ops can only operate for 30 hours. Log/summary sheets and rules are available from CQ Magazine, 76 N. Broadway, Hicksville, NY 11801 for an SASE or an SAE and postage. For faster service, please indicate "WPX Forms" on the envelope. I can also provide them.

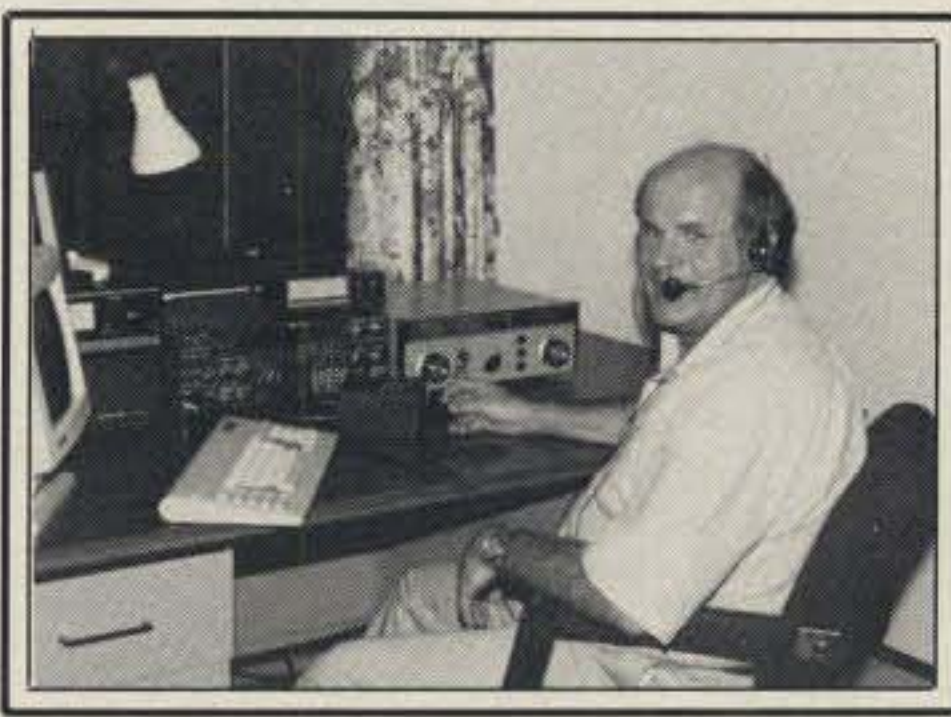
Thanks again to Scott, N9AG, for his help with the logs and to Bernie, W8IMZ, for answering questions when I'm not available. Without their help this would be much more difficult. Thanks to all of you who help to make the contest enjoyable and keep it growing each year. The 1989 WPX CW will be May 27th and 28th. See you then.

73, Steve, N8BJQ

Random Comments

Trey, WN4KKN, searched 15 meters all weekend for the Black Hole and couldn't find it! . . . NS0Z. Unsung op—XYL of K6ZM for great chow! . . . WR6R. We should get more serious about these things . . . WL7E. Fifteen meters was great! . . . NV6Z. We never can get enough operators to work through the night . . . WM5G. We were still setting up at the gong. The great conditions were worth the effort . . . AD6C. There were many prefixes. It was hard to communicate but condition is getting good . . . JA7YFB. We have the most interested conditions . . . JE6ZIH. Many thanks for any guys who worked us. A first time in this contest we used special call (normally RL8PYL) . . . RL1P. OG1AD was 30th anniversary of Radio Club in Salon . . . OG1AD. 21 MHz gave us the push. Fine activity in this nice contest . . . DL0IU.

Isn't there an easier way to get brain damage? HI . . . SK0PC. Working computer-aided is fun. We tested new software which performed



Wayne, NX7K, was fifth in the US on 21 MHz. Nice going, Wayne.

almost flawless. See you next year . . . YO3NP. What a pity. One more multiplier would turn our score over 5M point mark. Will try next year . . . UP1BWW. Finally, good condx during the contest! . . . WC4E. Best 15 meter band condx ever from this QTH . . . AI6V. Make the 10 minute multi-single rule the same as in CQ WW Phone and CW! . . . KI6P. Europe could be heard for the full 48 hours on the 15 meter band . . . VE7ZZZ. A real pleasure to have FT0ZB call ME in a European pile-up for a new one . . . W2HG. First 36 hours condx bad, last 12 very good . . . LS1E. The outstanding highlight was for Israeli amateurs to exchange reports with our Russian colleagues once again . . . 4X1IF.

I got 11 new countries with QRP!! Fine, fine . . . JH1XUZ. They call me crazy keyer . . .

FF50J. Lots of DX and no dupes thanks to fine condx and my home computer . . . SM5CCT. It's a hard work in QRP, but I increased my score with more than 10,000 points from 1987 . . . HB9XY. The condx were a nice gift from our sun . . . OK1HBT. Nice contest but very difficult to work QRP . . . UP2BKJ. Biggest thrill was just getting away from the crowd now and then to make a few QSOs! . . . KU7Y. Biggest thrill was QSOing BY4RB on the first call Sunday afternoon with 5 watts . . . N4KG. Unbelievable conditions. Never, ever, before have I been able to run a string of JAs on 20 meters while QRP . . . VE3OOL. Conditions were so good that most stns heard my QRP on the first call . . . NA6A. First and last attempt at QRP. Condx were unreal! . . . K5ZD/3.

Working the foreign stations was a surprise and thrill . . . KA0KKV. Not much time but QRP is a ball! . . . N6OJ. Did the southern hemisphere know we were having a contest this weekend? . . . WB6JMS. Missed first day of contest. Look out for me next year QRP! . . . NR2H. WPX contest excessive length. Should be cut to 4 hours . . . KL7DG. I had just reinstalled the antenna, found SWR was up a bit, and decided to try QRP as a test. Once I started, I couldn't stop . . . K9OSH. Wkd two BYs, UI8, UM8, and UH8 with QRP—the sunspots are back! . . . W0KEA. After all these years operating QRP with wire antennas, what a difference a tribander makes even at 24 ft. . . AA2U. The pileups were terrific. I only shut down after complete silence on frequency and complete exhaustion at the end . . . 9J2AL.

Enjoyed three weeks holiday on Tenerife Is-

TROPHY WINNERS

SINGLE OPERATOR ALL BAND

WORLD: Terry Baxter, N6CW trophy. Winner: **Satoshi Nakamura, NH6J/NH0.**

USA: Steve Bolia, N8BJQ trophy. Winner: **Station KM1H, Op. Robert Shohet, KQ2M.**

***JAPAN:** The DX Family Foundation trophy. Winner: **Tatsuya Sasaki, JH7WKQ.**

OCEANIA: Tom Morton, KT6V trophy. Winner: **Joel Chalmers, KG6DX.**

***CANADA:** Canadian Amateur Radio Federation (CARF) trophy. Winner: **Kenneth Dixon, VE3KP.**

WORLD QRP/p: QRP Amateur Radio Club Int. Trophy. Winner: **Ralph Rosenbaum, 4X1IF.**

SINGLE OPERATOR, SINGLE BAND

WORLD: Pedro Piza, Jr., NP4A (Pedro Piza, Sr., KP4ES Memorial). Winner: **Terry Baxter, VP2VCW.**

WORLD 3.5 MHz: Lance Johnson Eng. Trophy. Winner: **Gian Franco Aviani, I4AVG.**

ASIA: Bruce Frahm, K0BJ Trophy. Winner: **Shalom Beitcher, 4Z4NUT.**

U.S.A.: Kansas City DX Club Trophy. Winner: **David Hachadorian, K6LL/7.**

U.S.A. 21 MHz: Wayne Carroll, W4MPY Trophy. Winner: **Michael Tessmer, N0BSH.**

U.S.A. 14 MHz: Gene Walsh, N2AA Trophy. Winner: **John Yodis, K2VV.**

U.S.A. 7 MHz: Dennis Younker, NE6I Trophy. Winner: **Stephen Dove, NM2Y/3.**

MULTI-OPERATOR, SINGLE TRANSMITTER

WORLD: Ron Blake, N4KE Trophy. Winner: **Station RL1P operated by RL7PHL, RL7PKN, RL8PY, RL8PZ, UL7PAE, UL7PCZ, UL7PL.**

U.S.A.: Austin Regal, N4WW Trophy. Winner: **Station WC4E operated by WC4E and K4XS.**

***CANADA:** Tehrahedral Contest Circle Trophy. Winner: **Station VE7ZZZ operated by VE7AV, VE7SK, VE7ARS, VE7SSS.**

CONTEST EXPEDITION

WORLD: Ed Roller, K4IA Trophy. Winner: **Station HV3SJ operated by K4TEA and K4TKM/6.**

CLUB (SSB & CW)

WORLD: CQ Magazine Trophy. Winner: **Northern California Contest Club (NCCC).**

U.S.A.: Northern Ohio Amateur Radio Society (NOARS) Trophy. Winner: **Potomac Valley Radio Club (PVRC).**

**Donor is responsible for this trophy.*

CW & SSB CLUB COMPETITION

| | | | |
|------------------------------------|------------|--|-----------|
| NORTHERN CALIFORNIA CONTEST CLUB | 48,405,811 | THE BULLMERTZ (SWEDEN) | 1,263,844 |
| NORTHERN LITHUANIA DX GROUP | 43,790,891 | NORTHERN OHIO AMATEUR RADIO SOCIETY | 1,106,427 |
| LES NOUVELLES DX GROUP | 38,637,660 | NORTHERN ILLINOIS DX ASSOCIATION | 1,088,263 |
| POTOMAC VALLEY RADIO CLUB | 30,130,249 | LOWER COLUMBIA AMATEUR RADIO ASSN. | 982,037 |
| PACRATS | 24,959,649 | KEIV CIVIL AVIATION CONTEST CLUB | 927,017 |
| NORTH TEXAS CONTEST CLUB | 22,993,232 | MAD RIVER RADIO CLUB | 837,300 |
| YANKEE CLIPPER CONTEST CLUB | 17,823,465 | VERULAM A.R.C. (ENGLAND) | 802,343 |
| SOCIETY OF MIDWEST CONTESTERS | 14,739,816 | RUBBER CIRCLE CONTEST CLUB | 801,323 |
| KAUNAS POLYTECHNIC INSTITUTE | 13,562,591 | ST. LOUIS AMATEUR RADIO CLUB | 674,432 |
| YU DX CLUB | 9,356,835 | ROCHESTER DX ASSOCIATION | 601,092 |
| FRANKFORD RADIO CLUB | 8,589,917 | CENTRAL LANCASHIRE A.R.C. (ENGLAND) | 582,062 |
| REDWOOD EMPIRE DX ASSOCIATION | 8,331,218 | DELTA DX ASSOCIATION | 529,431 |
| GUAM DX CLUB | 7,912,842 | SOUTHERN CALIFORNIA DX CLUB | 524,012 |
| LITHUANIA CONTEST GROUP | 7,715,400 | NORTHERN OHIO DX ASSOCIATION | 405,262 |
| SOUTHERN CALIFORNIA CONTEST CLUB | 7,624,836 | NORTHERN CALIFORNIA DX CLUB | 394,211 |
| ALASKA DX ASSOCIATION | 6,961,606 | NORTHERN LITHUANIA CONTEST GROUP | 351,780 |
| SOUTHEASTERN DX CLUB | 5,974,520 | GRUPO ARGENTINO DE RADIOTELEGRAFIA | 306,311 |
| SOUTHWEST OHIO DX ASSOCIATION | 5,436,274 | HOOSIER CONTEST CLUB | 301,788 |
| WESTERN WASHINGTON DX CLUB | 5,169,526 | MAXWELLTOWN AMATEUR RADIO CLUB (ENGLAND) | 270,336 |
| TEXAS DX SOCIETY | 4,757,377 | TALLINN RADIO CLUB | 239,580 |
| OSAKA UNIV. RADIO CLUB (JAPAN) | 3,992,976 | FRASER VALLEY DX CLUB | 195,595 |
| CENTRAL ARIZONA DX ASSOCIATION | 3,662,018 | WESTERN PA DX ASSOCIATION | 171,598 |
| KANSAS CITY DX CLUB | 3,529,348 | NORTHERN OHIO AMATEUR RADIO ASSN. | 162,597 |
| RHEIN RUHR DX ASSOCIATION (F.R.G.) | 3,358,118 | POOLE AMATEUR RADIO SOCIETY (ENGLAND) | 161,109 |
| LITHUANIAN CONTEST GROUP | 3,026,498 | KIEV RADIO CLUB | 140,448 |
| NORTHSEA CONTEST CLUB (F.R.G.) | 2,599,336 | METROCREST AMATEUR RADIO SOCIETY | 137,611 |
| READING RADIO CLUB | 2,444,839 | UTAH CONTEST CLUB | 129,052 |
| SP DX CLUB | 2,415,737 | FOUR LAKES A.R.C. | 127,414 |
| NEW MEXICO BIG RIVER CONTESTERS | 2,392,680 | DADE RADIO CLUB | 121,720 |
| ALBANY AMATEUR RADIO ASSOCIATION | 2,078,072 | TROYAN DX AND CONTEST CLUB (BULGARIA) | 92,988 |
| WARSAW DX CLUB (POLAND) | 1,933,256 | BAVARIAN CONTEST CLUB | 83,790 |
| OAK RIDGE AMATEUR RADIO CLUB | 1,789,284 | RIP VAN WINKLE A.R.S. | 82,940 |
| MURPHY'S MARAUDERS | 1,783,097 | KIEV SPORTS CLUB | 81,158 |
| VENEZUELAN DX CLUB | 1,615,342 | EASTERN IOWA DX ASSOCIATION | 44,692 |
| WILLAMETTE VALLEY DX CLUB | 1,584,882 | NORTH FLORIDA DX ASSOCIATION | 38,989 |
| WEST TEXAS DX ASSOCIATION | 1,512,036 | POWAY A.R.S. | 35,547 |
| GRAND MESA CONTESTERS | 1,498,980 | CONTEST ASSOCIATION OF SOUTH TEXAS | 30,736 |
| ONTARIO CONTEST CLUB | 1,465,344 | SAN DIEGO DX CLUB | 19,578 |
| DIXIE DX'ERS | 1,348,828 | EASTERN MICHIGAN A.R.C. | 17,296 |
| RADIO CLUB VENEZOLANO | 1,341,756 | SHY WY AMATEUR RADIO CLUB | 9,152 |
| CENTRAL VIRGINIA CONTEST CLUB | 1,312,467 | | |

land. One of the highlights was WPX contest. Tnx... *DL8UI/EA8*. I was so lucky to have contacts with North American stations at midnight... *JA6YAI*. The condition was good on 10 meters but not high activity yet... *JG1NBD*. Good fun! Working with a straight key was quite an experience. Won't try it again! Ha!... *AT0L*. Vysped to QSO wid *VP2VDX*. He is first *VP2Vs* for me!... *JA3ARM*. The thrill of making 542 QSOs with rudimentary setup... *VU2TTC*. I worked only 8 hours and rested much... *JA2AJA*. JAs really increased total score. Am I near Japan?... *HL9B*. Two new country get!... *JA8EJO*. What an exciting Saturday Night Fever! All EUs and all USAs came together to my RX. I love WPX CW... *J11CQA*. Sure is a pain with no CW filter. Biggest pileup I've ever experienced on 10 meters... *XX9MF*.

I got my first countries *XX9*, *WL7*, *KS6*, *5W1* with my 10 watts TX. I'm very glad!... *JA2ODV*. Fantastic condition, but it is hard to check logs in such good condition without computer... *JR1JV*. My first took part in WPX CW test... *JA2JW*. My personal record in QSOs from home QTH. Next year hope to get 1000 QSOs (maybe)... *DF1LX*. Fantastic condx during the test. 350 USA stations with dipole only. Big ple worked with so good operators... *SP2PMO*. My licenza 1986—not experience computer—key vertical—very very glad participation, GB 1989... *IK3FHL*. Intended to



This picture was sent along with a cover letter asking me not to print any more of my antenna pictures. This is the multi-single crew at OZ1OXZ. In the picture are (left to right) OZ4XX, OZ2DH, OZ2MY, OZ5UR, top OZ8AE, OZ4RS, OZ5DL, and OZ1JNR.

work WPX from *LX/PA3BUD*. Had incredible bad wx which caused me to QRT. Only six QSOs from *LX/PA3BUD*... *PA3BUD*. Computer failed after 200 QSOs. Had to use the eyeball system... *PA3DMH*. I had a lot of fun and many new country... *DL9NCR*.

Incredible bad conditions on 80 meters! Only few DX was coming true second nite...

YU3HF. Splendid conditions. Lotsa fun... *G4CP*. QTH 2.5 km high in the mountains. Struggling with snowstorms at summer—hi... *C30LFD*. Pleasant surprises to hear and work *WL7E* and *BV2DA* on 10 meters... *9H1EL*. Five new prefixes, good for my honor-roll level! Much QRN... *SM7TV*. First time in the contest, but not the last... *OZ1LQH*. Damm u murphy! Lucky u *YT3AA*! Next time will break record... *CT2BOH*. Amazing, a long-path QSO with *KG6SI* (E.G.) on 10 meters... *DJ4AX*. A good contest on the bands used (1.8, 3.5, 7, 28) except on 1.8 where the statics were strong... *F1JDG*. Tried out my new 7 MHz vertical in this contest. It worked FB... *PA3BNT*. No activity at all on top band. Conditions was vy good with strong signals, but where were all those top band operators?... *CT1AOZ*.

Had to subtract nearly 100,000 points because of a mistake with my rest periods... *DL4BBO*. Enjoyable contest. Breaks an excellent idea... *GM3CFS*. Bad condx = mni QRN in 160 meter band... *EA1AUI*. QSL VIA *DJ8MT*... *3A/DK6AS*... No rotator in use, except ropes hanging from boom ends. That is why I did not turn the antenna but a few times... *OH6VR*. Great fun to work from a semi-rare country with *PA3BDK* as *LX2QR* and *LX/PA3CBH* on the same camping site... *LX/PA3EBT*. Went on the air just to enable some hams a new WPX... *CR0BQH*. The best

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contest I have ever worked. 21 MHz was well-opened . . . OH6YF. Fb condx. Fb contest. My rig no contest (hi) . . . SP2BME. One station called me at least 20 times. Hate to think what their dupes total might be! . . . G4CNY. Very good conditions on 21 MHz. Fine operating from USA! . . . SP2FAP.

As always big pleasure to participate in one of most popular contest. Life occupations do not allowed me for more activity . . . SP5JTR. Super condx. Underestimated condx on 21/28! . . . GB2FXB. Storms and little activity on 40 downed the score . . . IO4IND. Five storms over the contest, preamplifier destruction (blitz), but nice condx = nice contest . . . OK3YX. Heavy QRN first night. Ten, 15, 20 meters were busy during night so 40 meters was empty . . . 4N4L. Nice to work all Alaskan prefixes on 15 meters! . . . DL6RAI. Many tnx for interesting contest . . . UT4UB. Sorry, I couldn't pay more attention to this wonderful contest because of my three-month-old daughter, hi . . . UT4UZ. Good condx 21 MHz! . . . RZ3DZ. Vy tnx for more prefixes in USA . . . UT5HP. Flu and tickets to Mavericks/Lakers playoff game made for limited operating during super conditions . . . K5RX.

Fifteen was incredible! My first mega-point! CQ has the best contests of them all. Tnx, guys . . . NC7K. First contest done totally by computer. Some stations probably confused when I hit the wrong keys . . . WB5BIR. If 15 meters was an oasis of QSOs, 10 meters was the desert. Where was everyone? . . . KG5U. Spent half the contest answering QSL via questions from all the USSR stns. Really slows the rate down . . . VP2VCW. Condx superb . . . W6PM. Hooray for glasnost! Soviet stations were everywhere! . . . W9SU. Murphy stayed away entirely for once. Wish I had worked the other 4.5 hrs to get over 1M . . . KW2J. I have lived here for 8 years and find it silly to have to sign portable-2 when I am certainly not portable . . . K5NA/2.

Condx were great. I got off to the best start ever, then had to go out of town after the first 24 hours . . . NJ9Z. Big decrease in 40 meter activity with return of sunspots . . . KZ2S. Missed 2.5 hrs of prime time Saturday morning to go home and get my amplifier after KM9L's broke down . . . KM9L. Great fun. Almost tripled last year's score . . . N4ZR. Outstanding contest! . . . W5FO. Fifteen meters was great . . . KE6WL. It's getting so 20 meters isn't fun anymore! . . . K2VV. The guys with the 2 x 1 calls have a real advantage in this contest! But I like it anyway! . . . K8HVT/1. HV3SJ tuned up on top of me. Proceeded to work him for a new CW country and gladly QSYed . . . KY7M. I need a good customized WPX program and bad WX to get serious about this fun contest . . . K3WW. With all the Eastern European activity, the East Coast now has a decided edge in CW DX contests . . . K6LL/7.

Conditions good, activity low on 40 because 15 and 20 open all night. Still managed to quadruple last year's score . . . W3BGN. I had plans for this weekend. My wife had plans for this weekend. Guess whose plans were implemented! . . . KT2D. 15 meters—wow! Portable at Lake Coldwater, KS—too much skiing, not enough hamming . . . K0BJ. Great condx in my first WPX . . . AA5BT. I would bet my score will triple next year, with half the effort . . . WA1FCN. Great condx on 15. Band open so late that I never got to 40 and 80. Sick all weekend with the flu. Not much fun . . . K9BG. Don't like the new forms. Report columns too narrow . . . W4KMS. Eight new ones. Spain es France,



The top single op in Hungary was HA0MM. Check out the shirt.

why didn't u ans me? Tnx CQ mag! . . . NW7S. Excellent condx on 15 meters. First try at WPX and I beat previous record. Lots of fun . . . NX7K.

Was there a time when 21 MHz wasn't open to JA? Great condx! . . . K3ZO. Nice to have a CQ test without a solar storm . . . NL7DU. I hope 10 is as good next year as 15 was this year . . . WD8AUB. My second WPX CW. Can't wait for the third one! . . . NX5H. My rest period spent building 500 sq. ft. deck. Ever tried using a keyer after pounding nails? . . . WA8LLY/6. Hellooo sunspots! Welcome back. We missed you!! . . . WD8LLD. Fifteen meters—wow! . . . KM0L. Too many stations not even keeping a PX dupe sheet. Result 8 percent dupe rate on stations calling only A17 in test . . . A17B. Seven hours of playing around low power plus trap dipole. Wait 'til next year . . . WA8MAZ/4. Fantastic conditions. First time I have heard 21 MHz CW open around the clock here in W6 . . . W6BIP. This year's score was 10 times greater than last year's score . . . KU2Q.

Europe was coming through 24 hours a day on 15 meters here in Seattle, and that was on an apartment-mounted vertical . . . K7RA. In 24 years of contesting from this QTH I have never heard 15 meters as wide open to Europe during our evening hours . . . W7AYY. Very poor conditions. Sometimes I was the only ham in the world except for ZY5ZBA! . . . KH6DW/KS6. Working S0RASD through EU pileup with my tribander—big thrill . . . K3ZJ/4. No page 3—lost to the wind gods of Texas (groan). Eighty QSOs down the drain. 21 MHz best condx ever heard! . . . N5RZ. 24 hour EU opening on 15. Watch out East Coast! We may actually beat you guys in 1989-1990! . . . NN7L. Should have spent more time operating than enjoying the nice wx, but it was hard not to . . . N18L/1. Had good luck with a low tribander . . . KD2SX/1. Great contest! Great time! . . . VO8AC.

Love it!! . . . N2AA. My in-laws 40th anniversary on Saturday made me go 80 meter single band. I never did like my in-laws . . . VE6CB/3. Nothing like 15 meters being open at all times and in all directions . . . N4QS/5. My first WPX. I'm hooked! . . . KA1IOR. Biggest surprise—antenna pointed to W0 and worked AT0T, whose signal was like USA, not VU! . . . N8BC. Not the best solar flux/season for single band 80 entry, but could only operate at night . . . NA3J. Nice to hear a good op at HV3SJ . . . VE3INQ. Tnx to 9V1XE and KC6SI—two new countries for my DXCC . . . WA8YTM. Incredible conditions!! 15 meters was open around the clock! . . . N0BSH. Insomnia before contest caused me to fall asleep 30 minutes after start . . . VE2ZP. WPX finally got great conditions! An endless path to Europe and Asia. . . . N2AZS.

How do you guys pull it off? Incredible conditions! All-time personal best score . . . WM5K. First CW WPX. Since I did 15 meter SSB WPX, I guess that band was better for CW test. Hi! . . . VO7MP.

Always try to have a good record, but electricity out . . . HI8LC. 20/15 condx were phenomenal! Neat EU opening on 20 meters at 0500Z . . . KM3T. Biggest horror was losing logs to computer malfunction . . . KD5GD. Condx are really coming back . . . K5GN. Thirty hours helps us old guys stay awake . . . KH2D. Hard to work on 28 MHz. Doing pileups was like picking up pistol sound stns among bomb explosion of pirate stns. QSL YC2OK . . . YE2ZE. Condx good. Fifteen was open 24 hrs and 10 was good to Europe . . . KG6DX. I should have gone the 10 meter route! Forty meters was lousy . . . KH2F. Great condx to East Coast and Europe both nites. Working 4U0UN for a new one made my weekend! . . . NY6M/NH2. Never worked so hard for 100 Qs . . . YB3ASQ. Finally broke 1,000,000 pts.

For the first time on CW and all done with only 100 watts . . . K1BAZ/DV1. Not so good opening, slight QRM, slight QRN, nil QSB. Vy short opening, no pile-up . . . YB8AX/0. When the contest began, I was still adjusting my Butternut . . . NH6J/NH0. My first CW WPX Contest ever. Conditions were strange, JAs almost all day long. Where was South America? What about U.S.A.? . . . 9Y3VU. Didn't think I did that well but worked 45 countries QRP. One-half DXCC in one weekend with 4 watts! . . . NU4B. Great fun working with 2 watts to a water pipe taped to a step ladder! . . . NY9M.

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UR1RWQ: Club Group. OK2KBH: Club Group. UB4EXN: Oleg, Serge, Andre. UZ4HXZ: Victor & Alexandr. OK3KYH: Club Group. Y41CA/P: Y41VA & Y23BA. UL8LWW: Club Group. UR1RXB: Club Group. UB4RXJ: Club Group. UB4RWW: Club Group. H8BKDA: Makrai Guyla & Kovacs Istvan. OK2KVI: Club Group. OK3RRC: Club Group. JA1YAL: JO1JOZ, JN1SBT, JR0ALC. LZ1KKR: Krasimir Ivanov & Emil Mlatenov. UB4TWL: Club Group. UB4QYA: Club Group. KJ0G & NY0Q. OK2KPS: Club Group. GB75WKS: G4KIU &



A QRP team. Standing is Ralph, 4X1IF, with son Danny, 4X6IF, at the key.

G4FDC, UB4FXX: Sorokin, Kurales, Panasenko. HA6KVB: Bocsi Jozsef, Dienes Zoltan, Szabo Tibor, Peto Peter, Simon Laszlo, Korepta Gyorgy. WH6AYI/W50NL: WH6AYI & W50NL. OK10AB/P: Club Group. UZ4HYU: Fursov, Ishmetov, Savilov. K6LRN & Spotting net. OH3AT: Club Group. DL8GC: DL5JO & DL2ECU. JA7YFB: JF7LEI & JQ1NBV. UZ3DWV: Club Group. RB4IWU: V. Goltsman & V. Litwinov. 4N4W: YU4CR & YU4RS660. KQ1F & K1XM. UQ1GWJ: UQ2-037-521 & UQ2-037-290.

UP1BZM: UP2-038-1787 & UP2-038-1833. OK10FM: OK1ALZ & OK1DRQ. UZ9UZL: Serge, Nick, Igor. UZ1QWX: Vitaly & Eugene. UZ6LXM: UW60E, UV6LIP, UA6LTA. AX3VT: VK3VT & VK3CGH. UB4IWI: UB5INT, RB4ITG, RB5ICY. NV5L & K5HKX, WB5J. HB9IOG & HB9APJ. UZ3AWR: UV3ACK, UA3-170-1072, UA3-170-1034, UA3-170-1056. OK3KGO: Club Group. OK3RDM: Club Group. LZ1KVF: LZ1C75 & LZ1C80. N6JV & NCDXC

repeater. EA6URP: EA6DO, EA6WX, EA6EJ, EA6ZV, EA6KC. UP1BYK: UP2BJV & UP2BFY. UP1BZU: UP2BAT, UP2BMQ, UP2BKZ. W2HG: & 2 meter net. SK6AW: SM6AWA, SM6DED, SM6EHY, SM6HCX. UL8GWF: RL7GO, UL8GBI, UL8GCZ. UP1BZU: UP2BBI & UP2BOA. UP1BZL: UP2BBL & UP2BNW. UP1BYC: UP2BTA & UP2-038-2504. G3VER/P: G3JKS & G4DJX. UL8CWW: UL7CDO & UL7CBT. Y78CL: Y78VL & Y78-14-L. N8ZA & NN8M. UZ9AWH: UA9AE, UA9-165-1454, UA9-165-1836, UA9-165-1841, UA9-165-1843. OK2KLI: Club Group. W7DG: N7JXD & WA7ILC. OK2KOD: OK2BDI, OK2BGR, OK2BNX. UZ9OWD: UA9-145-168, UA9-145-294, RL7PKE, UA9-145-338. UZ8QWT: Kolomijev, Stepanenko, Glinskij.

DX1CW: 4F1AAR, 4F1FZ, 4F1FP, 4F1BYN, 4F1DMD, DU1CJC, DU1CWT, DU1MDS. N7TT & Cheryl. 9H1MRL: 9H1GP, 9H1GI, 9H1EJ. KS3F & K3NW, NE3F. JA1YAG: JP1NWZ, JG2CEZ, JH0NZN, JH0SPE. Y03NP & Y03APJ,

Y03JF, OH9AR: OH9RJ & OH9KK. F660E & F50F, F5WB, F6DZS, F11AUB, YL of F660E. OK3KEE: OK3CTL, OK3YEC, OK3MB, OK3CGG. HA3KNA: HA30V, HA30U, HA3NS. HA8KVK: HA8VK & Lukacs Laszlo. OZ10XZ: OZ2DH, OZ4RS, OZ4XX, OZ5DL, OZ5UR, OZ8AE. OK3RJB: Club Group. W200SKH: K4LTA, K4PJ, N4PXV, KK4CA, WD4KNS. UZ3WWW: Salov, Prokushev, Pikkiev. UB4XWB: UT5QG, UB5-062-56, UB5-062-240. NQ7M & KE7PN, W7TJ, WA7EGA, WB7RBJ. 4N2D: YU4BZ, YU2FK, YU2WQ, YU2FN. SP5PBE: SP5ANJ, SP5ELA, SP5GIQ, SP5JTM. JA4YJA: JJ3LJU, JM3ILK, JO3GPL, JR4KTO. OH2BAH & OH2BJN, OH2BMD, OH2PQ. KC6SI: JA7HMZ, JH7IOS, JA7AB. UP1BZO: UC2IAP, UP2BDW, UP2BFN, UP2BMX, UP2-038-1751. SP8BEM/SP5KVW: Club Group. YB8ZDC: YB8BRX, YC8JCT, YC8JDU, YD8UZA. UZ1AWD: UA1AAF, RV1AW, UA1-169-2418, UA1-169-2392, UA1-169-2391.

UZ8AXX: UA8AGI, UA8BW, UA8AMA, UA8AFC, UA8-103-712, UA8-103-729. UB3JWW: UB4JFR, UB4JIW, UB4JCF. HA6KNG: HA600, HA6IOB, HA6OI, HA6OA, HA6NG, Dekany Laszlo. JA1YAD: JP1DMX, JS1IKQ, JS1NMF, JO300B, JH5GHM, JH7UCC, JA9UFS, JH9AMJ, C. Gemae. RS3A: UA3DSP, RA3DUU, UZ3AXX, UA3DMY, UA3DNY. JE6ZIH: JR6GKT, JF6TMH, JG6CVO. UP1BZA: UP2RIM, UP2BLR, UP2BLW, UR2RDZ, S. Swed. VE7ZZZ: VE7AV, VE7SK, VE7ARS, VE7SSS. SK8PC: SM8NAS & SM8PSO. N9AG/8: N9AG, N8BJQ, W8DN. KB1W & NJ1T, N1EMG. DL0IU: DL1SBR & DL4AAE. NA9J & K9LJN, KS90. OH2AQ: OH2BCI, OH2BUQ, OH2BOW, OH2LQ. JA3YBF: JN1DPL, JJ2ICA, JJ3BFC, JJ3IMX, JJ3KGS, JO3VUX, JF4FUF, JF4FWT, JH9JFH, JH9PHD. JE2YRD: JR8MD, JI2KVV, JI3JGJ, JR2SQU, JF2ECC, JF2VZU, JF2XJE. HG8Q: HA8LKE, HA8JP, HA8PG, HA8IE, HA8JV, Pantya. UP1BZG: UP2QA, UP2BCO, UP2BOC, UP2BCT, UP2-038-439. FV8NDX: F5WA, F6CEL, F6DKV, F6ENO, F6EQV, FE1JVP. OH7AB: OH8SR, OH7MA, OH7UE, OH7KA, OH7XM, OH2BSS. I1ZEU & I1XPQ, I2VXJ, IK2EGL. OG1AD: OH1PS/OH2PM, OH1WZ. JA7YAA: JJ3CNL, JE7HLZ, JH8ORW. JA9YBA: JA9LJN, JA9VDA, JH9VSF, JA9-10148. K8RF & W8UA. Y35L: Y33VL, Y33UL, Y26WL, Y26BL. A16V & NB6G. WA6AUE. OH6EI & OH6OS, OH6UI, OH6XA.

UZ8QWA: UA8QDL, UA8QN, UA8QAS. JA3YKC: JH4RHF, JI3ERV, JK3GAD, JG3HJG, JG3MRT, JG3WDN, JG6VTM, JR4PMX. UZ9JWR: RA9JR, RA9JX, UL70B, UA9JEV. HV3SJ: K4TEA & K4TKM/6. GB2MM: G4DSE, G3XVR, G3RZI, G1TQU, G4GXL. UP1BWW: UC2WAO, UP8BA, UP2BIJ, UP2BKW, UP2BMW, UP2BO, UP2PX, UP2-038-1052. HG9R: HA9QA, HA9RP, HA9RG, HA9PP, HA9RU, HA9RX. K16P: K3EST, K6TMB, N6IG, WA6VEF. WC4E & K4XS. TW6A: F5IN, F6IWW, FD1LGE. 5H1HK: WH6X & JE3MAS. UQ8GZ: UQ2GKL, UQ2GM, RQ2GN, UQ2GID. HG6N: HA6ND, HA6ON, HA6OQ, HA6NY, HA6NQ, HA6NF. N4WW & NX4N, K8LUZ. LS1E: LU5UL, CX7BY, CX8BBH, CX5AQ, LU8DPM. HG7B: HA5DW, HA7UG, HA7JAO, HA5WA, HA8FM, HA8DU. HG1S: HA1TD, HA1AH, HA1DAC, HA1DAE, HA1AG, HA1SV. UR1RWX: UR2RJ, UR2RRR, UR2RHF, UR2RDJ, UR2RNA, UR2RNT. UB3IWA: UB5IFZ, UB5IML, UB5IOK, RB5II. HG5A: HA5UA, HA7RY, HA5GF, HA5MK, HA5IW, HA5AWH, HA5LN, HA5WE, HA5FM, HA5JI. LZ9A: LZ2PO, LZ2HE, LZ2DF, LZ2CC, LZ2-E-41, LZ2-E-72. RL1P: RL7PHL, RL7PKN, RL8PY, RL8PZ, UL7PAE, UL7PCZ, UL7PL.

Station Operators Multi-Operator Multi-Transmitter

JA2YEF: JI2SIC, JF2NFC, JR2PVI, JF2ACB, JJ2LYF, T. Yamamoto, K. Okumura, A. Okumura, T. Ino, E. Yoshikawa. JA4YPE: JF4MUY, JJ3IRO, Y. Kodama. JA1YXP: JH9CAU, JI2DLF, JN10TG, JH8RRR, JI1UTP, JP1SMR, E. Ogawa, Y. Sasaki, E. Takaoka. NV6Z: N6TU, N6RZ, AA6T, WB6SHD, K6XO. WR6R & K6ZM, NB6L, K16EZ, K4UVT, AK6T. JA8YAK: JG7JMO, JA9DSX, JH8ELL, JH8MVU, JH8NVX, JH8OPX, JH8RGJ, JH8TJU, JH8USD, JH8DYG, JH8XUP, JR8HYT, JR8QWW, Chinda, Hatori, Nitta. JA1YFG: JO1RUR, JP10GL, JO1BRW, JJ3OLZ, JE7WBI, JG7QQA, AD6C & N6DX, N6VR, NM5M, N6IC, NY6Y. JA2YKA: JE2's JCV, VPZ, VYM; JF2's DOJ, PZH, UTC; JG2's MTC, UTD; JK2CZL, JL2TZC, JE4LIK, JF2HPN, JG2XZG, JJ2FAU, JR8IRB, JM2CVT. WM5G & WQ5W, KR8Y, KM5R, KC5DX, AA5DX, KW5P, KO9Y, WG5J, NJ5N, K5KJ. OH1AA: OH1CO, OH7XE, OH1NHU, OH1JD, OH1HD, OH1LD, OH1LF, OH1DL, OH1MD, OH1SY, OH1SV, OH1KO. YT2R: YU2IQ, YU2HO, YU2NJ, YU2OG, YU2MY, YU2IR, YU2LJ, YU2LH, YU2DQ, YU2OH, YU2FI, YT2AA, YT2GW. NS8Z & K4VX, K4XU, WN4KK, AC9C, AG9A, K9BGL, K9FD, NU9R, KM9P. WL7E & KL7PJ, KL7U, KL7Y, NL7GP, WL7AVK. Y34K: Club Group. UP4A: UP2BAW, UP2BIG, UP2BIL, UP2BKT, UP2BNB, UP2BRJ, UP2PAJ.

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| 28 9J0A | 1,782,426 | 28 ZY5ZBA | 2,543,476 |
| 21 DL8UI/EA8 | 428,632 | 21 9Y3VU | 3,332,616 |
| 14 No Entry | | 14 YY5A | 4,085,127 |
| 7 EA8BLC | 557,872 | 7 CE6NOT | 382,430 |
| 3.5 No Entry | | 3.5 No Entry | |
| 1.8 No Entry | | 1.8 YV10B | 5,184 |

| ASIA | | OCEANIA | |
|--------------|-----------|--------------|-----------|
| AB AT0T | 3,337,085 | AB NH6J/NH0 | 4,484,760 |
| 28 UJ8JCM | 414,700 | 28 YE2ZE | 456,692 |
| 21 4Z4NUT | 2,319,665 | 21 KH2D | 1,793,754 |
| 14 JA2JW | 1,152,400 | 14 NY6M/NH2 | 2,204,920 |
| 7 UA9YJP | 439,752 | 7 KH2F | 985,748 |
| 3.5 UA9SP | 230,736 | 3.5 No Entry | |
| 1.8 No Entry | | 1.8 No Entry | |

| EUROPE | | MULTI-SINGLE | |
|-----------|-----------|--------------|-----------|
| AB GB2FXB | 3,282,903 | AF 5H1HK | 5,360,820 |
| 28 9H1EL | 805,552 | AS RL1P | 8,156,016 |
| 21 4N4A | 2,585,460 | EU LZ9A | 7,651,908 |
| 14 OH1ZAA | 2,351,117 | NA N4WW | 5,593,772 |
| 7 IO4IND | 1,402,668 | OC YB0ZDC | 2,125,023 |
| 3.5 I4AVG | 558,056 | SA LS1E | 5,595,920 |
| 1.8 UA2FF | 54,612 | | |

| NORTH AMERICA | | MULTI-MULTI | |
|---------------|-----------|-------------|------------|
| AB KT3Y | 4,079,036 | AF No Entry | |
| 28 WA6FGV | 87,889 | AS JA2YKA | 6,776,352 |
| 21 VP2VDX | 2,491,818 | EU UP4A | 16,204,961 |
| 14 VP2VCW | 3,426,980 | NA WL7E | 12,397,316 |
| 7 NM2Y/3 | 381,810 | OC No Entry | |
| 3.5 VE6CB/3 | 42,084 | SA No Entry | |
| 1.8 K5NA/2 | 8,052 | | |

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|--------|---|--------------|-----|-----|
| 4X11F | A | 791,340 | 778 | 363 |
| SM5GMG | A | 661,242 | 732 | 382 |
| W8VSK | A | 528,504 | 605 | 366 |
| UB5PAG | A | 504,243 | 820 | 313 |
| FF50J | A | 499,150 | 899 | 335 |
| | | (Op. FB1LMJ) | | |
| UP28KJ | A | 436,760 | 660 | 305 |
| NA6A | A | 415,712 | 556 | 352 |
| | | (Op. W6REC) | | |
| AA2U | A | 372,402 | 479 | 306 |
| UA30PX | A | 351,810 | 664 | 270 |
| YU2TY | A | 345,610 | 523 | 323 |
| LZ2QV | A | 333,044 | 584 | 278 |
| SM5CCT | " | 292,512 | 532 | 264 |
| KE7X | A | 284,981 | 453 | 283 |
| YU1LM | " | 271,908 | 996 | 273 |
| OK3CUG | A | 268,474 | 507 | 241 |
| OH3JF | A | 247,676 | 458 | 286 |
| NR2H | " | 227,856 | 349 | 204 |
| CN8FC | A | 194,616 | 320 | 202 |
| K5ZD/3 | A | 192,712 | 321 | 218 |
| WB9HRO | A | 184,920 | 330 | 230 |
| UA6LIG | " | 173,670 | 414 | 210 |
| N1AFC | A | 159,200 | 307 | 200 |
| WBKEA | A | 155,916 | 321 | 213 |
| AC5K | A | 124,260 | 315 | 218 |
| YU7RU | " | 116,529 | 311 | 217 |
| PA8ADT | A | 109,980 | 295 | 195 |
| IV3EAD | A | 109,592 | 280 | 206 |
| UB5WAB | " | 107,880 | 242 | 174 |
| NI9C | " | 97,776 | 252 | 194 |
| IK0CPS | " | 95,709 | 291 | 183 |
| VE300L | A | 85,013 | 187 | 151 |
| NU4B | A | 82,995 | 220 | 165 |
| SM0BYD | " | 79,704 | 220 | 164 |
| UV3TD | " | 69,412 | 239 | 148 |
| Y23TL | A | 60,207 | 184 | 141 |
| JH3TXP | A | 57,596 | 156 | 121 |
| RB5AT | " | 50,690 | 190 | 137 |
| UB4IM | " | 49,530 | 192 | 130 |
| IS0LYN | A | 48,464 | 253 | 194 |
| NK4Q | " | 46,400 | 158 | 116 |

| | | | | |
|----------|----|--------------|-----|-----|
| RABJJ | A | 46,345 | 160 | 115 |
| RA4HBY | " | 45,756 | 141 | 123 |
| KB4GID | " | 40,500 | 163 | 150 |
| DL6SF | A | 40,132 | 186 | 127 |
| Y03CR | A | 38,357 | 170 | 121 |
| N05W | " | 34,661 | 163 | 137 |
| IO8KHP | " | 34,606 | 161 | 121 |
| KZ1L | " | 32,242 | 113 | 98 |
| N6NF | " | 28,372 | 116 | 82 |
| W9PNE | " | 27,804 | 108 | 84 |
| H89XY | A | 27,588 | 153 | 114 |
| OK1KGR | " | 23,422 | 157 | 98 |
| N8COA | " | 17,296 | 112 | 93 |
| Y09CXE | " | 15,246 | 94 | 66 |
| Y06ADW | " | 11,840 | 92 | 74 |
| DL4GBR | " | 10,620 | 114 | 59 |
| 9H3IA | A | 10,345 | 103 | 85 |
| | | (Op. PABPUR) | | |
| N60J | " | 6,579 | 60 | 53 |
| KA0KKV | " | 228 | 23 | 19 |
| EA3EGV | 28 | 48,081 | 200 | 141 |
| JH9HXF/1 | 28 | 35,721 | 172 | 147 |
| UD6DF | 28 | 27,900 | 123 | 90 |
| JH1XUZ | " | 15,996 | 92 | 86 |
| Y02AQB | 28 | 11,310 | 85 | 78 |
| JA1KFX | " | 8,820 | 76 | 70 |
| OK1CZ | 28 | 3,774 | 56 | 51 |
| UB5ZEL | 28 | 2,030 | 33 | 29 |
| N4KG | 21 | 295,240 | 422 | 305 |
| JA6GCE | 21 | 153,090 | 291 | 210 |
| JA0BMS/1 | " | 100,144 | 231 | 176 |
| UB4LCB | 21 | 90,958 | 253 | 178 |
| KU7Y | 21 | 38,645 | 151 | 131 |
| WB6JMS | 21 | 27,945 | 132 | 115 |
| UA4LAE | 21 | 23,862 | 125 | 97 |
| RB5HB | " | 23,320 | 104 | 88 |
| W6RVY | 21 | 23,100 | 112 | 100 |
| OH6NVC | 21 | 20,303 | 100 | 79 |
| JS1GHA | " | 12,920 | 93 | 68 |
| UJ8JME | 21 | 12,240 | 80 | 60 |
| OK1HBT | 21 | 12,036 | 63 | 59 |
| UA9SG | 21 | 18 | 4 | 3 |
| SP5GFG | 14 | 219,440 | 466 | 260 |
| JAZDN | 14 | 134,976 | 261 | 192 |
| OK1AAW | 14 | 103,950 | 303 | 189 |
| SP5CJO | " | 94,336 | 250 | 168 |
| Y05B0 | 14 | 62,700 | 211 | 150 |
| LA2HFA | 14 | 46,500 | 232 | 150 |
| K90SH | 14 | 44,844 | 159 | 148 |
| OK3TUM | " | 21,691 | 162 | 109 |
| KA1CZF | 14 | 12,852 | 78 | 68 |
| PA8PLN | 14 | 7,194 | 89 | 66 |
| JH7XGN | " | 6,116 | 48 | 44 |

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|---------|----|--------------|------|-----|
| KM1H | A | 4,060,203 | 2097 | 609 |
| | | (Op. KQ2M) | | |
| K8HVT/1 | A | 1,289,775 | 1045 | 435 |
| KA110R | " | 126,608 | 232 | 164 |
| W10PJ | " | 14,280 | 78 | 68 |
| WA1FCN | 28 | 11,484 | 99 | 88 |
| K1TR | 21 | 49,288 | 148 | 122 |
| NI8L/1 | 14 | 1,404,200 | 1260 | 425 |
| KD2SX/1 | 14 | 946,895 | 899 | 435 |
| K1AD | " | 161,851 | 363 | 227 |
| | | (Op. WA2LBT) | | |
| NJ1V | " | 97,520 | 302 | 212 |
| W10PB | " | 45,864 | 144 | 126 |
| KZ2S | A | 2,537,460 | 1712 | 508 |
| AB2E | A | 1,676,468 | 1237 | 452 |
| N2AZS | " | 840,322 | 824 | 386 |
| KW2J | " | 727,089 | 791 | 363 |
| W2FTY | " | 346,338 | 470 | 271 |
| KT2D | " | 84,632 | 207 | 149 |
| W2FUJ | " | 83,212 | 197 | 142 |
| W2DW | " | 82,940 | 193 | 143 |
| W2GKZ | " | 76,347 | 204 | 153 |

CIRCLE 63 ON READER SERVICE CARD

| | | | | |
|----------|-----|--------------|------|-----|
| KU2Q | 28 | 52,460 | 226 | 172 |
| WB2Q | 21 | 1,363,120 | 1171 | 440 |
| KF2Q | " | 151,076 | 290 | 211 |
| WB2DND | " | 19,734 | 105 | 78 |
| WA2C | " | 11,448 | 129 | 108 |
| K2VV | 14 | 2,078,072 | 1514 | 536 |
| N2AA | 14 | 1,993,374 | 1483 | 531 |
| K2TW | 14 | 1,573,200 | 1287 | 456 |
| K02HE | 7 | 61,285 | 149 | 119 |
| K5NA/2 | 1.8 | 8,052 | 93 | 61 |
| KT3Y | A | 4,079,036 | 2194 | 611 |
| K3Z0 | A | 3,184,818 | 1857 | 546 |
| KM3T | A | 3,167,540 | 1945 | 545 |
| K3IPK | " | 1,977,672 | 1448 | 456 |
| K3WW | " | 817,380 | 805 | 342 |
| K3FN | " | 577,772 | 590 | 271 |
| K3YGU | " | 353,493 | 456 | 279 |
| ND3A | " | 266,474 | 433 | 277 |
| | | (Op. WB3FSB) | | |
| W3FQE | " | 8,500 | 58 | 50 |
| NN3SI | 28 | 36 | 8 | 6 |
| | | (Op. W4KM) | | |
| N3RS | 21 | 1,846,086 | 1392 | 498 |
| KJ3L | 21 | 525,456 | 658 | 328 |
| WA3VPL | " | 5,500 | 54 | 50 |
| N3CZB | 14 | 1,136 | 25 | 16 |
| W4KM/3 | " | 49 | 7 | 7 |
| NM2Y/3 | 7 | 381,810 | 373 | 286 |
| W3BP | 7 | 344,645 | 356 | 212 |
| W3AN | 7 | 113,520 | 193 | 132 |
| NA3J | 3.5 | 13,392 | 95 | 72 |
| | | (Op. WB2EKK) | | |
| KG4W | A | 1,312,467 | 1092 | 461 |
| AA4U | A | 1,188,292 | 1059 | 434 |
| K4PR | " | 311,108 | 449 | 287 |
| N4ZR | " | 219,655 | 356 | 223 |
| K4FPF | " | 170,892 | 328 | 202 |
| W4YN | " | 113,400 | 224 | 200 |
| K40D | " | 92,660 | 217 | 164 |
| K6ETM/4 | " | 86,584 | 216 | 158 |
| W4KMS | " | 66,582 | 198 | 137 |
| W4MGX | " | 29,666 | 109 | 91 |
| WB4UBD | " | 24,276 | 100 | 84 |
| WB8MAZ/4 | " | 21,385 | 1909 | 91 |
| WU4G | " | 11,529 | 70 | 63 |
| WZ4F | 28 | 40,145 | 229 | 155 |
| KD1U/4 | 28 | 10,332 | 98 | 84 |
| K4BAI | 21 | 1,255,626 | 1089 | 474 |
| WB4TDH | 21 | 1,212,896 | 1090 | 464 |
| K3ZJ/4 | " | 411,355 | 556 | 365 |
| WA4DRU | " | 38,989 | 142 | 127 |
| N4SUU | " | 16,926 | 100 | 91 |
| WA4SSB | 3.5 | 1,848 | 49 | 42 |
| N5RZ | A | 2,521,455 | 1651 | 535 |
| KA5W | A | 1,356,552 | 1089 | 498 |
| NT5G | " | 529,431 | 574 | 357 |
| KA5GFJ | " | 263,572 | 448 | 26 |

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- George Jacobs, W3ASK,
CQ Magazine Propagation Editor

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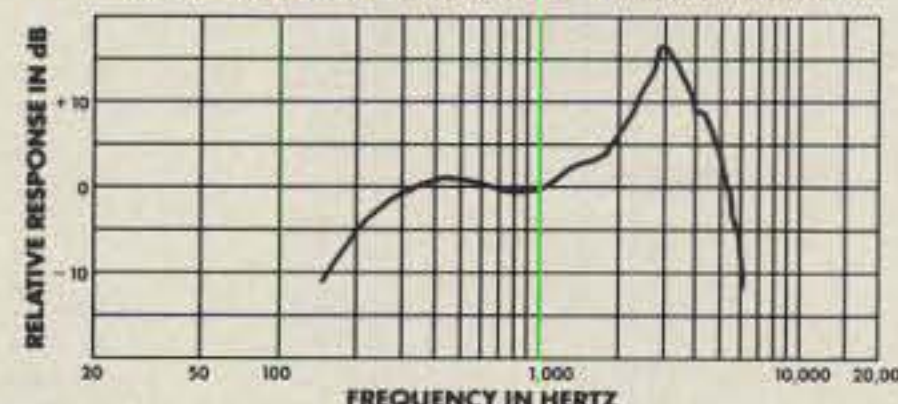
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|----------------|---------|-----------|----------------|---------------------------|-----|-----------|---------|-----------------------|--------|-----------|----------|--------------|---------|-----------|----------|---------|--------|-----------|----------|
| LA9HFA | A | 112,307 | 247 163 | OK3IF | ** | 299,667 | 473 303 | SP2FAP | 21 | 840,000 | 812 448 | YU7SF | A | 529,320 | 742 330 | UT5HP | A | 1,067,634 | 1043 459 |
| LA9VDA | ** | 49,728 | 197 148 | OK3CAE | ** | 299,520 | 508 288 | SP7GAQ | 21 | 124,236 | 262 204 | YT7KW | ** | 395,472 | 691 308 | UB5YCV | A | 750,329 | 1030 391 |
| LA3WBA | ** | 5,940 | 78 55 | OK2ON | ** | 33,128 | 132 101 | SP9IGY | ** | 103,776 | 254 188 | YU7MF | ** | 38,512 | 128 116 | UB5CGN | ** | 678,222 | 811 369 |
| LA4YW | 28 | 13,846 | 125 86 | OK1HR | ** | 13,376 | 77 64 | SP9HWN | ** | 63,042 | 200 114 | YU3C | 28 | 395,970 | 657 335 | UB5IAN | ** | 627,361 | 874 371 |
| LA6PB | 21 | 25,850 | 121 94 | OK2PEX | ** | 11,022 | 68 66 | SP2BME | ** | 24,843 | 101 91 | (Op. YU3B0) | | | | RB5AL | ** | 602,160 | 692 386 |
| LA9HW | 7 | 376,656 | 568 266 | OK3CLR | ** | 10,971 | 84 69 | SP5JTR | ** | 5,371 | 45 41 | YU20B | 28 | 370,844 | 654 332 | UY5TE | ** | 474,936 | 755 308 |
| LUXEMBOURG | | | | OK2SWD | ** | 10,324 | 75 58 | SP2PMO | 14 | 732,042 | 822 402 | 4N7ZZ | ** | 314,901 | 577 321 | UT4UZ | ** | 453,492 | 635 323 |
| LX2QR/P | A | 103,376 | 335 182 | OK1JJB | 14 | 229,336 | 443 263 | (Op. SP2JKC) | | | | YT3T | ** | 219,800 | 476 280 | RB5WR | ** | 413,740 | 625 302 |
| (Op. PA3B0K) | | | | OK3CWJ | 14 | 209,880 | 428 265 | SP4JWR | 14 | 622,116 | 784 396 | YU1HA | ** | 76,360 | 240 184 | UB4MF | ** | 353,328 | 683 272 |
| LX | /PA3CNH | ** | 12,580 110 74 | OK3TBB | ** | 120,130 | 307 205 | SP6CYX | ** | 343,758 | 570 318 | 4N4A | 21 | 2,585,460 | 1729 615 | UB5IBV | ** | 325,064 | 474 358 |
| LX | /PA3BUD | 21 | 60 6 6 | OK1FKW | ** | 89,725 | 292 185 | SP8HXN | ** | 211,165 | 522 269 | (Op. YU4EU) | | | | RB5EX | ** | 286,464 | 546 256 |
| LX | /PA3EBT | 14 | 82,303 348 169 | OK1PFJ | ** | 73,872 | 227 171 | SP5JXK | ** | 164,265 | 373 233 | YU3MM | 14 | 1,399,008 | 1342 494 | RB5ID | ** | 280,060 | 510 268 |
| BULGARIA | | | | OK1JDJ | ** | 69,440 | 23 160 | SP9EMQ | ** | 105,198 | 299 197 | YT3M | 14 | 894,960 | 979 396 | UBSEF | ** | 253,000 | 502 253 |
| LZ1BJ | A | 141,370 | 311 211 | OK3CDZ | ** | 62,775 | 220 155 | SP9FZC | ** | 75,690 | 257 174 | (Op. YU38C) | | | | UB5MMF | ** | 234,267 | 469 229 |
| LZ2ZV | ** | 2,262 | 39 29 | OK1DRR | ** | 44,446 | 201 142 | SP6FXX | ** | 50,320 | 204 148 | (Op. Zlatko) | | | | UB5QJN | ** | 213,120 | 355 240 |
| LZ2AP | 28 | 33,782 | 178 127 | OK2LN | ** | 32,186 | 133 121 | SP98CH | ** | 44,010 | 203 135 | YU3BU | ** | 921,078 | 877 461 | UB5DW | ** | 140,448 | 281 176 |
| LZ1VA | ** | 9,108 | 70 66 | OK3CMW/P | ** | 28,932 | 150 98 | SP6DHH | ** | 26,910 | 162 115 | YU2WV | ** | 884,000 | 899 442 | UB8YW | ** | 103,000 | 243 200 |
| LZ1KZM | 21 | 979,013 | 1035 433 | OK2BWZ | ** | 20,216 | 90 76 | SP7EJS | ** | 4,812 | 43 38 | YU2CQ | ** | 815,100 | 900 418 | RB5VW | ** | 56,704 | 180 152 |
| (Op. Plamen) | | | | OK2BHQ | ** | 18,894 | 113 94 | SP8ZB | ** | 2,870 | 53 35 | YU2WJ | ** | 24,437 | 110 97 | UB5UHD | ** | 39,424 | 160 128 |
| LZ1MG | ** | 100,208 | 300 174 | OK3ROS | ** | 2,438 | 53 46 | SP3RBR | 7 | 867,672 | 769 351 | YU7NH | ** | 21,420 | 104 90 | UB5IDA | ** | 38,497 | 164 137 |
| LZ1KDP | 14 | 1,560,405 | 1443 539 | OK3CMZ | 7 | 808,495 | 835 338 | SP8TQ | ** | 171,380 | 326 190 | YU3MM | 14 | 1,399,008 | 1342 494 | UB5EPV | ** | 34,441 | 131 101 |
| (Op. Ilko) | | | | OK1XW | 7 | 408,456 | 547 279 | SP9CVY | ** | 5,040 | 50 45 | YT3M | 14 | 894,960 | 979 396 | UB5WCG | ** | 31,740 | 115 92 |
| LZ1LW | ** | 48,094 | 180 139 | OK1DLF | ** | 156,672 | 308 192 | SP9GKM | 3.5 | 6,160 | 66 44 | (Op. YU320) | | | | UB5EIT | ** | 27,030 | 119 102 |
| AUSTRIA | | | | OK3CGI | ** | 39,758 | 127 103 | GREECE | | | | YU7FN | ** | 775,738 | 975 397 | UB5CN | ** | 26,460 | 136 126 |
| OE9SLH | A | 173,679 | 341 209 | OK2BCZ | ** | 34,454 | 150 107 | SV7RP | 14 | 968,100 | 1277 461 | YU7FT | ** | 107,800 | 313 200 | RB5VL | ** | 25,806 | 130 102 |
| FINLAND | | | | OK1OH/P | ** | 26,616 | 130 98 | (Op. SV1RP) | | | | 4N4L | 7 | 962,920 | 800 380 | UB5HDX | ** | 16,166 | 125 59 |
| OH6YF | A | 2,160,587 | 1855 521 | OK3CAB | 3.5 | 30,590 | 161 95 | GERMANY (G.D.R.) | | | | 4N3M | 7 | 651,728 | 699 322 | UBSKV | ** | 13,599 | 82 79 |
| OH1AF | A | 2,001,450 | 1607 550 | OK3CUZ | ** | 4,480 | 54 40 | Y46IF | A | 566,162 | 888 317 | YU4CR | ** | 38,850 | 149 111 | U5WF | 28 | 184,690 | 459 253 |
| (Op. OH1HS) | | | | OK1DRO | 1.8 | 20,230 | 136 85 | Y47YN | A | 528,408 | 800 328 | YU3HF | 3.5 | 90,872 | 302 148 | UB5CDF | 28 | 103,400 | 304 200 |
| OH6NIO | ** | 677,115 | 944 369 | DL8CLU | 1.8 | 10,956 | 101 66 | Y45TJ | A | 445,518 | 716 318 | (Op. YU3AY) | | | | RT5UO | ** | 9,240 | 100 66 |
| OH5AD | ** | 249,606 | 380 283 | OK1DQT | ** | 6,064 | 75 57 | Y525J | ** | 129,614 | 283 229 | UB5IUH | 21 | 1,298,480 | 1147 470 | UB5IUH | 21 | 1,298,480 | 1147 470 |
| (Op. OH2IC) | | | | DL1BSI | ** | 2,952 | 54 41 | Y63QI | ** | 104,157 | 253 163 | UB5OKO | 21 | 651,648 | 736 384 | UB5OMA | ** | 327,912 | 533 312 |
| OH3NM | ** | 207,968 | 357 268 | OL9CUD | ** | 1,740 | 39 29 | Y31JA | ** | 104,076 | 238 177 | UB5QMA | ** | 327,912 | 533 312 | RB5HM | ** | 263,692 | 472 286 |
| OH2VZ | ** | 162,726 | 309 222 | OK2PJB | ** | 912 | 27 24 | Y25PE | ** | 77,044 | 219 187 | RB5HT | ** | 245,344 | 444 272 | RB5VT | ** | 245,344 | 444 272 |
| OH6NEV | ** | 120,384 | 319 198 | DL7BQD | ** | 544 | 23 17 | Y21XH/A | ** | 63,920 | 172 136 | UB5MLP | ** | 188,750 | 356 250 | UB5CDX | ** | 168,714 | 334 234 |
| OH7NW | ** | 115,200 | 316 200 | BELGIUM | | | | Y28QH/A | ** | 236,728 | 558 233 | UB5COX | ** | 124,868 | 279 212 | RB5RF | ** | 34,832 | 127 112 |
| OH7SM | ** | 77,520 | 248 170 | ON4XG | A | 388,892 | 620 323 | Y36PI | ** | 140,175 | 352 225 | RB5IOV | ** | 30,906 | 117 101 | RB5FO | ** | 27,951 | 135 231 |
| OH6RC | 28 | 1,944 | 39 36 | ON6LO | 14 | 88,688 | 257 184 | Y56NM | ** | 132,046 | 284 206 | UB5IRI | ** | 22,000 | 110 100 | UB4IRI | ** | 22,000 | 110 100 |
| OH6VR | 21 | 379,516 | 505 316 | DENMARK | | | | Y625J | ** | 129,614 | 283 229 | RB5IA | 14 | 746,928 | 900 432 | UY5ZM | 14 | 431,640 | 750 360 |
| OH7EU | 21 | 241,080 | 355 294 | OZ5ESB | A | 242,060 | 607 266 | Y63QI | ** | 104,157 | 253 163 | UB5XCU | ** | 424,422 | 755 323 | UB5XCU | ** | 424,422 | 755 323 |
| OH7JL | ** | 190,723 | 354 221 | (Op. OZ110C) | | | | Y31JA | ** | 104,076 | 238 177 | UB5JS | ** | 149,076 | 355 246 | UB5JNW | ** | 146,081 | 387 221 |
| OH2EJ | ** | 174,000 | 301 240 | OZ1JVN | ** | 221,132 | 481 236 | Y25PE | ** | 77,044 | 219 187 | UB5EEP | ** | 139,668 | 380 226 | UB5EHP | ** | 139,668 | 380 226 |
| OH3MC | ** | 88,595 | 221 145 | OZ1TKW | ** | 35,075 | 175 115 | Y21XH/A | ** | 63,920 | 172 136 | UT4UB | ** | 81,158 | 271 187 | UB5IPH | ** | 58,575 | 211 165 |
| OH8LC | ** | 55,554 | 182 141 | OZ1FAO | 28 | 799 17 17 | Y56WG | ** | 58,968 | 246 168 | UB5VJ | ** | 43,623 | 154 131 | UB5JAP | ** | 11,594 | 77 62 | |
| OH3MP | ** | 2,132 | 28 26 | OZ1LQH | 21 | 88,938 | 222 183 | Y41UF | ** | 10,240 | 80 64 | UB5CCP | ** | 11,374 | 50 47 | UB5AJP | ** | 11,594 | 77 62 |
| OH1ZAA | 14 | 2,351,117 | 1564 551 | OZ1DPW | 14 | 134,820 | 367 210 | Y24SM | ** | 4,366 | 43 37 | UB5SBR | ** | 4,042 | 50 47 | UB5AJP | ** | 11,594 | 77 62 |
| (Op. OH1EH) | | | | THE NETHERLANDS | | | | Y31NJ/P | ** | 3,772 | 44 41 | RB55A | 7 | 422,280 | 561 276 | UB5CCP | ** | 11,374 | 50 47 |
| OH3GD | 14 | 511,290 | 870 437 | PA3CX | A | 401,212 | 640 322 | Y21RO | ** | 2,352 | 30 28 | UB5WBJ | ** | 222,750 | 393 225 | UB5SBR | ** | 4,042 | 50 47 |
| OH6CD | ** | 62,700 | 240 165 | PA3EY | A | 273,050 | 482 254 | Y32EE | ** | 1,920 | 35 32 | UB5XBD | ** | 23,956 | 216 106 | UB5SBR | ** | 4,042 | 50 47 |
| OH3WD | ** | 37,368 | 138 108 | PA3DMH | ** | 244,663 | 530 257 | Y25XL/A | ** | 1,804 | 56 22 | UB5FAN | 3.5 | 139,992 | 314 152 | UB5SBR | ** | 4,042 | 50 47 |
| OH3BNH | ** | 14,596 | 105 82 | PABINA | ** | 233,295 | 339 309 | Y25DA | ** | 731 18 17 | UB6LAM | 21 | 698,752 | 871 412 | UB5UC | ** | 97,148 | 323 149 | |
| PA3BNH | ** | 14,596 | 105 82 | PA3DMH | ** | 244,663 | 530 257 | Y43RJ | ** | 19,402 | 99 89 | UB5NC | ** | 97,148 | 323 149 | UB5UC | ** | 97,148 | 323 149 |
| PA3CHM | ** | 7,920 | 73 60 | PA3DMH | ** | 244,663 | 530 257 | Y43RJ | ** | 19,402 | 99 89 | UB4LM | ** | 80,958 | 289 131 | UB5NC | ** | 97,148 | 323 149 |
| PA3DKX | ** | 1,876 | 30 28 | PA3DMH | ** | 244,663 | 530 257 | Y27BN | ** | 1,850 | 40 37 | UB5IFN | ** | 62,244 | 232 126 | UB5IFN | ** | 62,244 | 232 126 |
| PABLVB | 28 | 35,200 | 153 128 | PA3DMH | ** | 244,663 | 530 257 | Y73XH | ** | 208 10 8 | UB6HJT | 28 | 49,478 | 205 143 | UB5RFT | ** | 30,438 | 170 89 | |
| PA8LOU | ** | 25,164 | 123 108 | PA3DMH | ** | 244,663 | 530 257 | Y21NE/A | 7 | 637,000 | 746 325 | UB5IHQ | ** | 27,348 | 148 86 | UB5RFT | ** | 30,438 | 170 89 |
| PA3EWM | ** | 9,750 | 84 75 | PA3DMH | ** | 244,663 | 530 257 | Y41ZF | ** | 3,478 | 40 37 | RB5BA | 1.8 | 36,720 | 174 102 | UB5IHQ | ** | 27,348 | 148 86 |
| PA2REH | 21 | 462,672 | 662 306 | PA3DMH | ** | 244,663 | 530 257 | Y24JB | 3.5 | 8,400 | 85 56 | UB4ITO | ** | 5,074 | 58 43 | RB5BA | 1.8 | 36,720 | 174 102 |
| PA8UV | ** | 20,826 | 98 89 | PA3DMH | ** | 244,663 | 530 257 | ROMANIA | | | | UB5CMD | ** | 3,268 | 51 38 | UB4ITO | ** | 5,074 | 58 43 |
| PA3DOW | 7 | 192,618 | 282 174 | PA3DMH | ** | 244,663 | 530 257 | Y03NL | A | 478,957 | 650 331 | UB5CMD | ** | 3,268 | 51 38 | UB4ITO | ** | 5,074 | 58 43 |
| PA3BNT | ** | 28,830 | 108 93 | PA3DMH | ** | 244,663 | 530 257 | Y04BQV | A | 13,986 | 90 74 | BYELORUSSIA | | | | UB4ITO | ** | 5,074 | 58 43 |
| CZECHOSLOVAKIA | | | | PA3DMH | ** | 244,663 | 530 257 | Y08RL | ** | 9,636 | 79 66 | RC2AU | A | 293,245 | 669 263 | UB5CMD | ** | 3,268 | 51 38 |
| OK1ALW | A | 2,738,970 | 1814 585 | PA3DMH | ** | 244,663 | 530 257 | Y04BEW | ** | 5,617 | 50 41 | UC2CFZ | A | 281,912 | 458 262 | UB5CMD | ** | 3,268 | 51 38 |
| OK1VD | A | 1,436,672 | 1230 488 | PA3DMH | ** | 244,663 | 530 257 | Y04FFL | ** | 5,617 | 50 41 | UC2DO | ** | 101,184 | 259 186 | UB5CMD | ** | 3,268 | 51 38 |
| OK2RU | A | 968,691 | 971 417 | PA3DMH | ** | 244,663 | 530 257 | Y02BP | 28 | 65,170 | 247 190 | UC1AWP | ** | 14,620 | 112 86 | UB5CMD | ** | 3,268 | 51 38 |
| OK3GB | ** | 621,152 | 817 329 | PA3DMH | ** | 244,663 | 530 257 | Y04ZF | 21 | 118,428 | 265 213 | UC20CH | 28 | 4,838 | 78 59 | UB5CMD | ** | 3,268 | 51 38 |
| OK3FON | ** | 470,250 | 562 330 | PA3DMH | ** | 244,663 | 530 257 | Y02KJA | ** | 65,232 | 201 151 | UC2AHZ | 21 | 607,905 | 716 405 | UB5CMD | ** | 3,268 | 51 38 |
| OK3PO | ** | 406,350 | 570 315 | PA3DM | | | | | | | | | | | | | | | |

Team ICOM's Recordbreaking DX'pedition to P4ØV

ICOM AMERICA actively participates in several noteworthy public events each year. Some of those activities are relatively low-key while others are popular topics of widespread discussion. A prime example of the latter was TEAM ICOM's world recordbreaking operation from P4ØV during the 1988 CQ Worldwide DX Contest.

Twenty-five well-known and proficient radio amateurs equipped with today's best communications equipment operated from the small Caribbean island of Aruba during this phenomenal DX'pedition. After the contest, they emerged with an incredible tally of 20,000 contacts and 50 million points to establish a new all-time SSB world record. Team ICOM returned to Aruba approximately four weeks later for the CW contest section, and their final score was equally impressive. The combined tally of both SSB and CW contest portions generated more world-record points than any other score ever reported.

Successfully accomplishing a feat of such magnitude was the supreme challenge of operator and equipment. Each member of TEAM ICOM was well qualified in this respect, being previous contest winners, Clipperton DX'peditioners, etc. The Team included the following notables...Mark Allen, WJ7X; Pat Bacon, WA7NIN; Carl Cook, AI6V; Ron Debry, WA6DGX; Jim Duffy, WA6AUE; Wally Eckles, W8LRL; Dick Erhorn, W4ETO; Rusty Epps, W60AT; Danny Eskenazi, K7SS; Dale Green, VE7SJ; Dan Handa, W7WA; John Kiesel, KE7V; Wayne Mills, N7NG; Jim Pratt, N6IG; Dave Rietz, NB6G; Ron Rueter, NV6Z; Tom Schiller, N6BT; Bob Shohet, KQ2M; Bruce Swearingen, N6TU; Bob Wruble, AI7B; Bill Everett, K7RIE; Jim Hadlock, K7WA; Jerry Heron, K7XX; Ed Radlo AJ6V and Jim Sullivan, W7EJ. ICOM sends hearty

congratulations and sincere thanks to all the above for a job well done!

The equipment used by TEAM ICOM consisted of ICOM IC-781, IC-761 and IC-751A HF transceivers, Alpha amplifiers and Cushcraft beams. Several ICOM IC-735's were also used for multiplier hunting, second receivers for tuning pileups and backup rigs. The stations were set up in three closely located cottages rented for the occasion. ICOM 2-meter handhelds were used for communications between the cottages, and for keeping track of contest multipliers. All equipment operated perfectly. There were no failures in anything...and every unit was operated "full bore" for the solid 48 hours of both contest segments. That is true reliability!

Like any extensively planned and diligently prepared DX'pedition, P4ØV also encountered its fair share of gremlins. Air freight erroneously delivered the towers and amplifiers to Curacao, a nearby island, and the Cushcraft beams were discovered hiding in Miami three days before the contest time. All equipment was secured on Aruba just in time for assembly and checkout. Team members jumped into action putting together stations and erecting antennas, with barely enough time to be operational at the "opening gun."

Reflecting back on the super DX'pedition reveals a number of points beneficial to many areas. Team leader Carl Cook, AI6V, described the venture as follows: "Band conditions were absolutely superb, all equipment worked flawlessly, and all areas of the world were worked with continuous pile-ups. At the contest close, we were only 3-80 meter countries shy of 5BDXCC...in only 48 hours! There was extremely good cooperation between all team members. It was the most spectacular operating event I have ever experienced." That's quite a compliment from a multi-time contest winner and

avid DX'er of long standing!

Team member and ICOM America's Service Manager, Mark Allen, WJ7X, adds these additional points of interest: "We operated at the full legal limit on all bands at adjoining sites. Everything was pushed to the limit. We even placed fans blowing on wall circuit breaker boxes to prevent overloads. I was both surprised and pleased there were only miniscule intra-station interference problems. Our extensive use of external bandpass and band reject filters was logical for such a blowout effort; they enhanced the excellent strong-signal rejection abilities of ICOM transceivers. Fine details become quite critical under multi-station conditions. During pre-contest checkout, for example, we found several poorly installed PL-259 connectors caused significant intermod problems. Overall, it was fantastic. All ICOM equipment performed admirably amidst a wide variety of loading and operating conditions." What else can we say except going with the best always assures maximum success!

Team member Danny Eskenazi, K7SS, said, "Having a chance to work with the best of the best, to go after, and achieve the top prize in amateur contesting was a career high for me! The flawless equipment from ICOM was an added bonus."

After the contest, TEAM ICOM members took to the bands with their "personal Aruba calls." They continued passing out Aruba contacts until hoarse. We sincerely hope everybody's needs were answered. Now the big news: TEAM ICOM is QSL'ing their WHOLE LOG...all 37,000 plus QSO's...100 percent! If you contacted P4ØV/TEAM ICOM, your QSL is forthcoming as we waded through the enormous stack of logs! Viva La DX!

| | | | | |
|--------|-----|---------|-----|-----|
| UP2BIP | ** | 444,768 | 568 | 328 |
| UP2BON | ** | 237,360 | 392 | 276 |
| UP2BLQ | 14 | 338,422 | 626 | 322 |
| UP2BZ | ** | 312,430 | 561 | 314 |
| UP3BP | 7 | 736,450 | 747 | 325 |
| UP2BNC | ** | 244,800 | 455 | 225 |
| UP2BNL | ** | 4,680 | 68 | 45 |
| UP2PCI | 3.5 | 230,370 | 461 | 210 |
| UP2CT | 3.5 | 94,952 | 308 | 143 |
| UP2BHK | ** | 22,648 | 153 | 76 |
| UP2BGG | ** | 19,500 | 121 | 75 |
| UP2BKT | ** | 3,876 | 57 | 34 |
| UP2NK | 1.8 | 45,732 | 214 | 103 |

LATVIA

| | | | | |
|--------|-----|---------|------|-----|
| UO2GMR | A | 797,101 | 1082 | 373 |
| UO2GKR | ** | 1,600 | 52 | 20 |
| UO2PG | 21 | 3,640 | 39 | 35 |
| UO2GMB | 14 | 143,440 | 329 | 220 |
| UO2GFE | ** | 45,108 | 166 | 126 |
| UO2GJV | 3.5 | 73,152 | 265 | 127 |
| UO2PJ | 3.5 | 62,540 | 240 | 118 |
| UO2GGE | ** | 21,812 | 117 | 82 |
| UO2GBJ | ** | 7,560 | 70 | 45 |
| UO2GN | ** | 6,006 | 69 | 39 |
| UO2GNL | 1.8 | 7,008 | 73 | 48 |

ESTONIA

| | | | | |
|--------|----|---------|-----|-----|
| UR2RNG | A | 239,580 | 506 | 242 |
| UR2RCU | ** | 11,623 | 101 | 59 |
| UR2RND | 28 | 5,828 | 50 | 47 |
| UR2CR | 21 | 240,254 | 415 | 262 |
| RR2RO | 14 | 11,324 | 105 | 76 |

OCEANIA

WESTERN SAMOA

| | | | | |
|-------|---|---------|------|--------------|
| 5W1HA | A | 805,299 | 1000 | 253 |
| | | | | (Op. JH10RL) |

THE PHILIPPINES

| | | | | |
|-----------|----|-----------|------|-----|
| K1BAZ/DV1 | A | 1,019,480 | 1026 | 331 |
| K4YT/4I8 | 28 | 13,356 | 78 | 63 |

MARIANA IS.

| | | | | |
|----------|---|-----------|------|--------------|
| NH6J/NH0 | A | 4,484,760 | 2576 | 532 |
| | | | | (Op. JE1JKL) |

GUAM

| | | | | |
|----------|----|-----------|------|-----|
| KG6DX | A | 2,928,420 | 1927 | 495 |
| KH2D | 21 | 1,793,754 | 1334 | 454 |
| NY6M/NH2 | 14 | 2,204,920 | 1353 | 554 |
| N7DF/WH2 | 14 | 2,130,975 | 1453 | 495 |
| KH2F | 7 | 985,748 | 605 | 281 |

HAWAII

| | | | | |
|--------|----|--------|-----|-----|
| WH6BUV | A | 76,232 | 255 | 104 |
| AH6EK | 14 | 21,714 | 96 | 82 |

MARSHALL IS.

| | | | | |
|-------|-----|--------|----|------------|
| KX6DC | 1.8 | 12,240 | 60 | 45 |
| | | | | (Op. NZ88) |

PAPUA NEW GUINEA

| | | | | |
|-------|---|--------|-----|-----|
| P29HS | A | 82,304 | 215 | 128 |
|-------|---|--------|-----|-----|

AUSTRALIA

| | | | | |
|--------|----|---------|-----|-----|
| VK2APK | A | 866,550 | 705 | 327 |
| AX2BQQ | ** | 304,425 | 331 | 275 |
| VK4TT | 14 | 52,479 | 150 | 119 |

INDONESIA

| | | | | |
|---------|-----|-----------|-----|--------------|
| YC3HCM | A | 1,246,308 | 861 | 444 |
| YB2FEA | A | 339,365 | 378 | 299 |
| YE2ZE | 28 | 456,692 | 610 | 254 |
| | | | | (Op. YB2CTW) |
| YC0TSU | 28 | 354,721 | 487 | 229 |
| YB2ZAA | 21 | 882,340 | 944 | 314 |
| YB3ASQ | 7 | 43,350 | 100 | 75 |
| YB8AX/B | 1.8 | 624 | 13 | 12 |

NEW ZEALAND

| | | | | |
|--------|----|---------|-----|-----|
| ZL18SG | 21 | 75,690 | 178 | 145 |
| ZL3GQ | 14 | 541,722 | 552 | 339 |

SOUTH AMERICA

TRINIDAD

| | | | | |
|-------|----|-----------|------|-----|
| 9Y3VU | 21 | 3,332,616 | 1916 | 581 |
|-------|----|-----------|------|-----|

CHILE

| | | | | |
|--------|----|-----------|------|-----|
| CE3DNP | 28 | 1,661,844 | 1173 | 474 |
| CE6NOT | 7 | 382,430 | 475 | 229 |

COLOMBIA

| | | | | |
|--------|----|-----------|------|-----|
| HK1KXA | 21 | 2,378,268 | 1552 | 513 |
|--------|----|-----------|------|-----|

ARGENTINA

| | | | | |
|--------|---|---------|-----|-----|
| LU1EWL | A | 306,311 | 388 | 241 |
|--------|---|---------|-----|-----|

| | | | | |
|--------|----|-----------|------|-------------|
| AY4F | 28 | 1,691,895 | 1262 | 447 |
| | | | | (Op. LU4FD) |
| LU6UO | ** | 1,029,834 | 714 | 489 |
| LU1ICX | 21 | 300,352 | 409 | 247 |

NETHERLANDS ANTILLES

| | | | | |
|------|---|-----------|------|------------|
| PJ0R | A | 3,590,730 | 1842 | 558 |
| | | | | (Op. N5RM) |

BRAZIL

| | | | | |
|--------|----|-----------|------|-------------|
| ZY3TD | A | 633,366 | 671 | 317 |
| PP7JR | A | 576,771 | 570 | 299 |
| PP1RR | ** | 80,780 | 203 | 140 |
| ZZ7IE | ** | 68,382 | 171 | 131 |
| | | | | (Op. PP7IE) |
| ZY5ZBA | 28 | 2,543,476 | 1605 | 533 |
| | | | | (Op. PY5CW) |
| PY5BVL | 28 | 377,668 | 483 | 263 |
| PY2OU | ** | 372,969 | 483 | 261 |
| PY1AJK | ** | 179,558 | 320 | 190 |
| PY2UJJ | ** | 7,344 | 53 | 48 |
| ZW40D | 21 | 3,050,132 | 1840 | 557 |

VENEZUELA

| | | | | |
|-------|-----|-----------|------|--------------|
| YV7QP | 7 | 17,702 | 56 | 53 |
| 4M7A | 28 | 1,597,640 | 1214 | 440 |
| YY5A | 14 | 4,085,127 | 2155 | 639 |
| | | | | (Op. YV5ANT) |
| YV10B | 1.8 | 5,184 | 34 | 27 |

MULTI-OPERATOR SINGLE TRANSMITTER

UNITED STATES

| | | | |
|---------|-----------|------|-----|
| N4WW | 5,593,772 | 2655 | 698 |
| WC4E | 5,299,700 | 2693 | 700 |
| K16P | 5,117,778 | 2489 | 711 |
| A16V | 3,898,318 | 2174 | 631 |
| K0RF | 3,716,896 | 2153 | 608 |
| NA9J | 3,003,168 | 1990 | 574 |
| KB1W | 2,869,672 | 1867 | 533 |
| N9AG/8 | 2,836,480 | 1901 | 554 |
| NQ7M | 1,926,732 | 1467 | 523 |
| W200SKH | 1,789,284 | 1525 | 537 |
| KS3F | 1,278,939 | 1126 | 417 |
| N7TT | 1,224,900 | 1055 | 450 |
| W7DG | 982,037 | 922 | 371 |
| N0ZA | 934,767 | 963 | 389 |
| W2HG | 601,092 | 660 | 354 |
| N6JV | 455,787 | 561 | 331 |
| NV5L | 335,276 | 499 | 316 |
| KQ1F | 168,609 | 309 | 217 |
| K6LRN | 108,781 | 237 | 181 |
| WH6AYI | | | |
| /W5ONL | 92,365 | 457 | 203 |
| KJ0G | 52,138 | 162 | 131 |

NORTH AMERICA

| | | | |
|--------|-----------|------|-----|
| VE7ZZZ | 2,764,944 | 1823 | 546 |
|--------|-----------|------|-----|

AFRICA

| | | | |
|-------|-----------|------|-----|
| 5H1HK | 5,360,820 | 2950 | 564 |
|-------|-----------|------|-----|

ASIA

| | | | |
|--------|-----------|------|-----|
| JA3YKC | 3,992,976 | 2163 | 648 |
| JA9YBA | 3,709,552 | 2101 | 616 |
| JA7YAA | 3,683,016 | 2236 | 612 |
| JE2YRD | 3,342,122 | 2064 | 568 |
| JA3YBF | 3,103,206 | 1753 | 597 |
| JE6ZIH | 2,701,929 | 1865 | 527 |
| JA1YAD | 2,579,720 | 1701 | 520 |
| JA4YJA | 1,943,576 | 1815 | 461 |
| JA1YAG | 1,290,101 | 1124 | 419 |
| JA7YFB | 132,990 | 369 | 195 |
| JA1YAL | 39,220 | 124 | 106 |

EUROPE

| | | | |
|---------|-----------|------|-----|
| LZ9A | 7,651,908 | 3437 | 891 |
| HG5A | 6,516,702 | 3535 | 831 |
| HG1S | 5,997,784 | 3417 | 808 |
| HG7B | 5,651,300 | 3199 | 803 |
| HG6N | 5,570,304 | 3106 | 768 |
| TW6A | 5,323,968 | 3458 | 711 |
| HG9R | 5,031,112 | 3201 | 739 |
| GB2MM | 4,710,444 | 2714 | 692 |
| HV3SJ | 4,534,933 | 3223 | 667 |
| OH6EI | 3,948,672 | 2518 | 678 |
| Y35L | 3,776,384 | 2633 | 652 |
| OG1AD | 3,613,545 | 2613 | 639 |
| I1ZEU | 3,496,878 | 2455 | 594 |
| OH7AB | 3,481,056 | 2287 | 648 |
| FV8NDX | 3,414,841 | 2605 | 629 |
| HG8C | 3,363,014 | 2359 | 667 |
| OH2AQ | 3,060,540 | 2027 | 630 |
| DL0IU | 2,892,263 | 2033 | 583 |
| SK0PC | 2,784,521 | 2024 | 627 |
| HAGKNG | 2,401,641 | 1812 | 561 |
| SP0BEM | | | |
| /SP5KVV | 2,014,072 | 1728 | 542 |
| OH2BAH | 1,983,740 | 1623 | 508 |
| SP5PBE | 1,933,256 | 1736 | 498 |
| 4N2D | 1,930,401 | 1694 | 527 |
| OK3RJB | 1,727,039 | 1468 | 499 |

| | | | |
|----------|-----------|------|-----|
| OZ10XZ | 1,660,087 | 1370 | 517 |
| HA8KVK | 1,486,639 | 1525 | 473 |
| HA3KNA | 1,480,705 | 1413 | 485 |
| OK3KEE | 1,474,592 | 1344 | 464 |
| F6GDE | 1,448,370 | 1476 | 462 |
| OH9AR | 1,446,601 | 1347 | 499 |
| YO3NP | 1,418,550 | 1424 | 490 |
| 9H1MRL | 1,254,744 | 1550 | 471 |
| OK2KOD | 993,886 | 1085 | 431 |
| OK2KLI | 962,328 | 1089 | 404 |
| Y78CL | 877,404 | 1081 | 391 |
| G3VER/P | 802,343 | 999 | 379 |
| SK6AW | 659,904 | 751 | 336 |
| EA6URP | 496,790 | 916 | 329 |
| LZ1KVF | 444,808 | 670 | 338 |
| OK3RDM | 416,885 | 733 | 301 |
| OK3KGO | 399,546 | 686 | 302 |
| H89IOC | 343,440 | 639 | 318 |
| OK1OFM | 195,580 | 400 | 220 |
| 4N4W | 163,064 | 378 | 218 |
| DL0GC | 119,992 | 261 | 212 |
| OH3AT | 117,766 | 310 | 202 |
| OK1OAB/P | 92,568 | 250 | 174 |
| HA6KVB | 84,632 | 238 | 142 |
| GB75WKS | 57,378 | 298 | 146 |
| OK2KPS | 55,211 | 243 | 137 |
| LZ1KKR | 39,536 | 155 | 112 |
| OK3RRC | 30,800 | 167 | 110 |
| OK2KVI | 29,502 | 123 | 99 |
| HA0KDA | 21,800 | 125 | 100 |
| Y41CA/P | 3,315 | 45 | 39 |
| OK3KYH | 3,139 | 62 | 43 |
| OK2KBH | 442 | 19 | 17 |

OCEANIA

| | | | |
|--------|-----------|------|-----|
| YB0ZDC | 2,125,023 | 1571 | 453 |
| KC6SI | 1,999,643 | 1578 | 383 |
| DX1CW | 1,198,035 | 1159 | 337 |
| AX3VT | 238,160 | 386 | 208 |

SOUTH AMERICA

| | | | |
|------|-----------|------|-----|
| LS1E | 5,595,920 | 2467 | 663 |
|------|-----------|------|-----|

U.S.S.R. CLUB STATIONS

ASIA

| | | | |
|--------|-----------|------|-----|
| RL1P | 8,156,016 | 3453 | 792 |
| UZ9JWR | 4,231,882 | 2384 | 641 |
| UZ0QWA | 3,954,846 | 2360 | 609 |
| UZ0AXX | 2,168,244 | 1551 | 492 |
| UZ0CWT | 1,100,344 | 1042 | 401 |
| UZ9OWD | 1,092,800 | 1140 | 400 |
| UZ9AWH | 941,160 | 865 | 341 |
| UL8CWW | 816,013 | 795 | 341 |
| UL8GWF | 699,248 | 824 | 319 |
| UZ9UZL | 198,204 | 370 | 199 |
| UL8LWW | 9,774 | 61 | 54 |

EUROPEAN

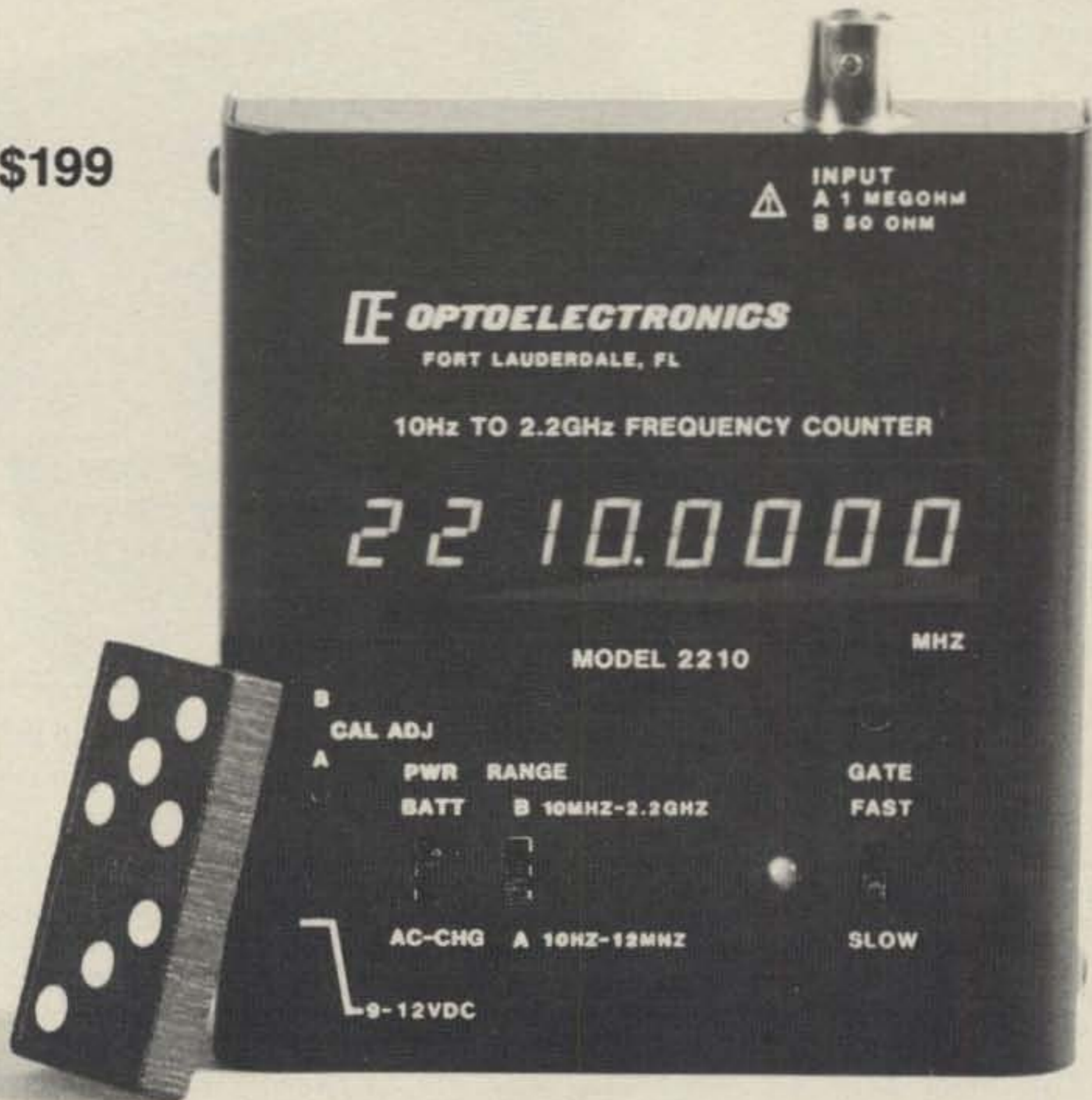
| | | | |
|--------|-----------|------|-----|
| UB3IWA | 6,216,647 | 3546 | 713 |
| UR1RWX | 6,004,460 | 3316 | 770 |
| UQ0GZW | 5,420,580 | 3298 | 764 |
| UP1BWW | 4,976,520 | 2941 | 734 |
| UP1BZG | 3,381,504 | 2195 | 629 |
| UP1BZA | 2,738,880 | 1962 | 634 |
| RS3A | 2,685,798 | 2496 | 562 |
| UB3JWW | 2,234,988 | 1891 | 543 |
| UZ1AWO | 2,144,524 | 1991 | 541 |
| UP1BZO | 2,004,409 | 1679 | 517 |
| UB4XWB | 1,858,770 | 1437 | 570 |
| UZ3WWW | 1,834,350 | 1670 | 525 |
| UP1BYC | 784,641 | 935 | 429 |
| UP1BZL | 732,000 | 1069 | 366 |
| UP1BZU | 725,014 | 875 | 334 |
| UP1BZO | 581,325 | 871 | 337 |
| UP1BYK | 568,968 | 890 | 314 |
| UZ3AWR | 366,783 | 538 | 309 |
| UB4IWI | 332,920 | 580 | 290 |
| UZ6LXM | 225,676 | 436 | 253 |
| UZ1QWX | 212,589 | 478 | 237 |
| UP1BZM | 186,224 | 470 | 206 |
| UQ1GWJ | 17 | | |

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| 450 MHz | < 3 mv |
| 850 MHz | < 3 mv |
| 1.3 GHz | < 7 mv |
| 2.2 GHz | < 30 mv |

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CIRCLE 176 ON READER SERVICE CARD

CQ REVIEWS:

The MFJ Model 1278 Multi-Mode Data Controller

BY LEW McCOY*, W1ICP

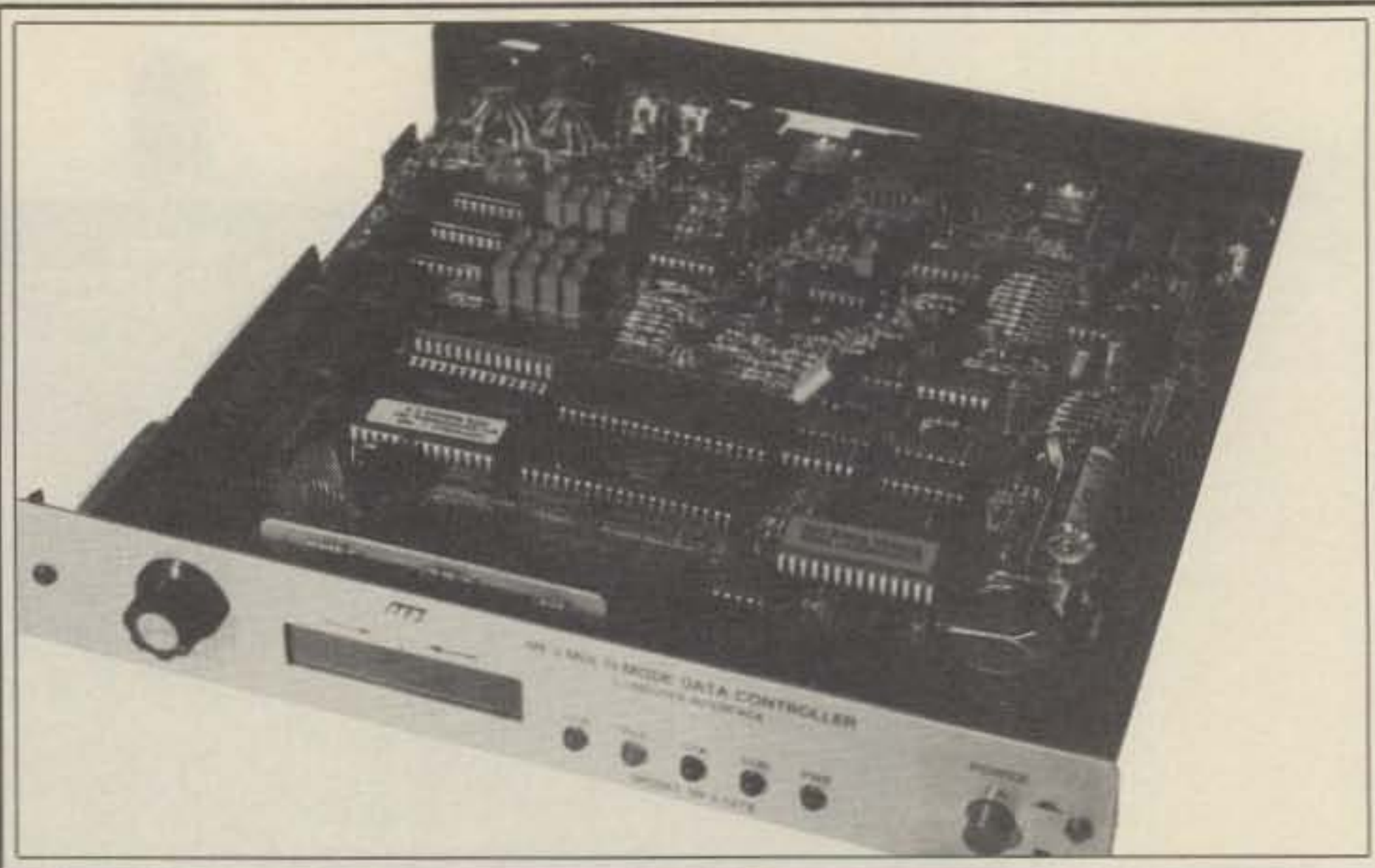
Here in New Mexico, when someone says "the whole enchilada" they really mean the *whole* thing—and I mean *all*. I received the MFJ Model 1278 multi-mode controller about a month or so ago, and I was fascinated, to say the least. Here is a device that permits you to receive or transmit VHF and HF packet, VHF and HF RTTY and AMTOR, CW, copies slow-scan, FAX, and weather pictures. It is truly an amazing device, and is as close to "the whole enchilada" as you can get.

I have two computers that can be used for terminals—an IBM clone plus a Commodore C-64—so MFJ provided me with software to use with either computer. To test the 1278 I went to considerable time and trouble, as my clone, which I use for writing, is in my bedroom, and rather than move this computer to my shack, I ran some coax and installed a second shack in the bedroom (causing some complaints from my wife!).

I thought I could sit right down and start playing with the new toy, but it didn't work that way. The instruction manuals (yes, that's plural) require a lot of study. There are three manuals—one comparatively thick, and two consisting of more than 60 pages each. (I didn't count the exact number of pages in the thick book because it is numbered within the chapters.) This adds up to considerable study, and that is as it should be, because there is a lot to learn before getting on the air. I might also add that the manuals are excellent once you become familiar with finding things.

Interfacing the 1278 to the transceiver is very simple, as is making the connections to the computer. The radio connections consist of four lines—MIC audio, RX audio, PTT, and ground. I was using an ICOM 735, and it was really as simple as wiring a new microphone plug.

The directions for making connections to your computer are very detailed and extensive. They include information for



This is a front view of the MFJ 1278 Multi-Mode Data Controller with the top cover removed. The rectangular window at the right is the bar tuning indicator. At the front left of the chassis is the parallel printer port.

many computers: Macintosh; the Apple series; Commodore VIC-20, C-64, C-128; IBM types (including most clones); Radio Shack (all of them, including the color one, except the Model 1); and last the NEC-8201. For other brands serial port configuration is very detailed, and you shouldn't have any problems making connections.

As to the 1278, it has several front-panel LED indicators: DCD, PTT, STA, CON, and power. Also there is an LED tuning bar indicator which permits you to tune in signals right on the button. Each LED in the tuning indicator represents approximately 10 Hz, and there are 20 of them.

The software package has several programs in it, at least the one I had for my clone did. The main terminal program is PTP (Packet Terminal Program), although almost any good terminal program would work.

Once PTP is initiated, the computer display shows the various modes available, and they are extensive. They include CW, RTTY, AMTOR, HF and VHF

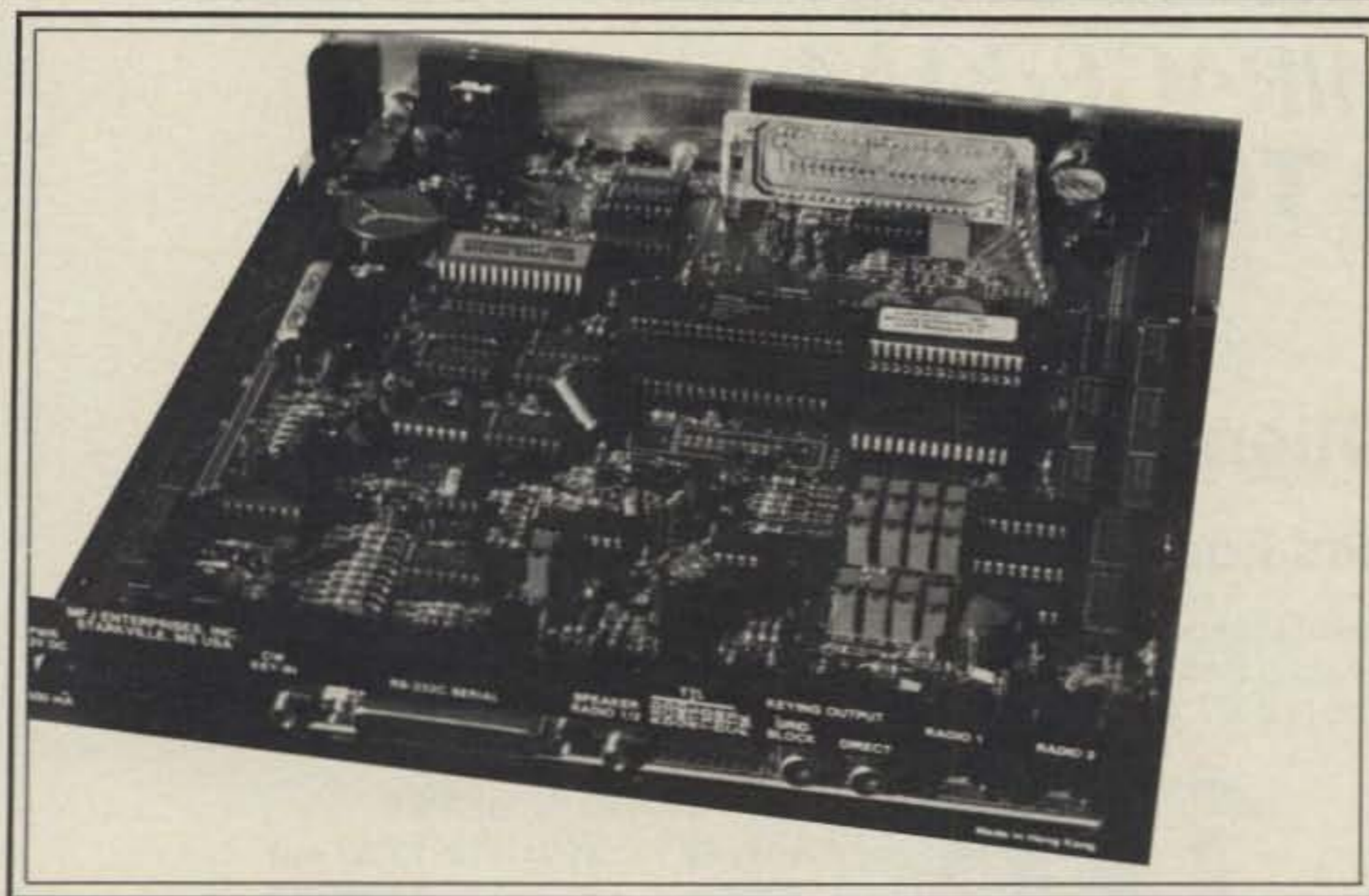
packet, FAX, slow scan, and WFX.

Naturally, I was curious about receiving WX pictures. After finding some stations and learning how to use the tuning indicator on the unit, I received several pictures of excellent quality. I'll have to admit that I didn't understand the isobar maps plus all that other stuff, but I certainly was enjoying myself.

I thought that if I could receive WX material then it might be possible to get some FAX photos. (I'll admit that all this has nothing to do with amateur radio, but it is *radio*, and fun.) Finding Facsimile stations isn't that easy, but I came across a few that were pounding in just above 20 MHz. (A list of Facsimile and WX stations is included in the manuals.) I must have tuned into something out of Siberia, because everyone looked like they had beards and heavy coats on. After getting a couple of those, I thought I thought I had better start on something in amateur radio, so I decided I would see how the unit copies, and sent CW.

The Model 1278 is capable of receiving

*Technical Editor, CQ, 200 Idaho St., Silver City, NM 88061



This is a rear view of the 1278. The connections, from the left, are 12 VDC input (supply provided), CW-KEY IN, RS-232 Serial Input, external speaker, TTL input/output, keying output (either grid-block or direct), and two radio input/output receptacles.

CW from 1 to 89 words per minute and transmitting from 5 to 99 words per minute. In transmitting it is possible to increase or decrease the weight of dots and dashes generated by the keyboard or key paddle. This is done via the WEIGHT command. Also, there is a TUNE command which activates the PTT line for 30 seconds. Additionally, the 1278 has another feature for CW buffs in that it has a Random Code Generator to improve your efficiency.

If you are tuning in CW signals and you wish the 1278 to copy the code, you merely push control U, and "Locking . . ." will appear on your display. A second or so later copy will be displayed. I found the 1278 did an excellent job, even with bad operators. I've checked a lot of CW "copiers" in my time, and certainly this unit was as good as or better than most.

There is an iambic-key-paddle provision for those operators desiring this type of operation. Additionally, there are ten memory buffers where different messages, such as contest exchange information if you are a contest or DX operator, can be stored. There is provision for automatic incremental contact numbering, which of course simplifies contest operating. One last point: The iambic operation has self-completing dots and dashes.

The next mode I checked out was RTTY and then AMTOR. This may be putting the cart before the horse, because the MFJ unit is basically designed for packet. In any event, copy was easy to receive on RTTY and AMTOR. Also, while I didn't mention it before, there are *type-ahead* buffers available, plus "brag" buffers which can be used in any of these

modes. The modes available for RTTY are ASCII VHF RTTY, ASCII HF RTTY, Baudot VHF RTTY, and Baudot HF RTTY. The unit will copy all shifts, including the 170, 425, and 850 Hz shift. It will transmit and receive RTTY at speeds of 45, 50, 57, 75, 100, 110, 150, 200, and 300 baud. The 1278 transmits both wide shift for VHF RTTY/ASCII and narrow shift for HF.

The 1278 will transmit and receive FAX via an independent modem. There are several FAX modes available, including weather FAX and wire photograph. One feature of this operation is that the 1278 does not require any special computer or software to receive FAX on an Epson graphics compatible printer. There is a starter pack available if you wish to print to the computer screen, save the picture to disk, etc.

As with FAX, there is a dedicated modem for SSTV operation. The 1278 will transmit and receive SSTV in two levels (black and white). There are five TV modes with a format of 8.5, 12, 17, 24, or 36 seconds. The 1278 works best with drawings and computer-generated graphics. For example, you could customize your own QSL card via computer graphics and then transmit it to another station that is equipped to receive SSTV.

However, as I said above, the 1278 is designed primarily as a packet TNC. While I have reviewed several units in the past that were capable of HF packet operation, I have never been overly impressed simply because copy was very difficult in most cases. That was a few years ago, and obviously the techniques have improved immensely.

I switched the terminal mode to HF packet (by "switching" I merely mean typing in the command "MODE HF" and

the 1278 hardware does the rest). Frankly, I was very impressed, because with the tuning indicator I immediately received packet copy—and I might add, good copy. Being that I had gone this far, I decided to try a connect to an east coast station. Before I knew it I had a QSO going and even handled break-in stations anxious to log New Mexico. I might add, I did read the manual to become familiar with the protocol, and you should, too.

The command list is extensive and there are many features added in addition to normal protocol. The list is so extensive that you need to spend time studying the manual in detail.

Connection to most VHF and UHF gear is rather simple. You need a Push-To-Talk lead, TX audio, RX audio, and ground (four leads), and everything is set to go. Again, the manual is very detailed. In any event, I really "wrung" the unit out on VHF, where I do most of my packet operating.

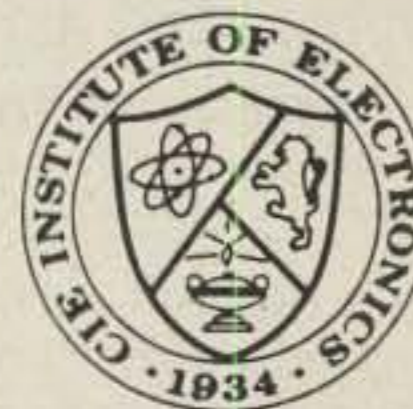
The only mode on which I didn't test the unit was slow-scan simply because at the time I did the tests, I couldn't find any slow-scan stations. In any case, I was extremely impressed with the MFJ 1278. It is an excellent working adjunct to any amateur station.

The MFJ 1278 Multi-Mode Controller is priced at \$249.95 list. It is made by MFJ Enterprises, Inc., P.O. Box 494, Mississippi State, MS 39762.

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Designed For Quality And Value!

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144 MHz Amplifiers
B-1016-G 10W in = 160W out
B-3016-G 30W in = 160W out
B-215-G 2W in = 150W out

1-6

13.8 vDC

220 MHz Amplifiers
C-1012-G 10W in = 120W out
C-3012-G 120W out
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New protection circuitry automatically reduces the output power to prevent damage to output transistors and even returns the amplifier to full power automatically when problem is cleared!

New GaAs-FET pre-amp designs provide gain of over 25 dB and a noise figure of less than .6 dB!

Picture this . . . You know your station . . . You are at home with your gear . . . all the knobs, switches, meters . . . QSY's are no big deal, you could do them in your sleep (and you probably have!).

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Each of the four following amplifiers provide . . .

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Active cooling kit available for 100% key-down duty cycle

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Finally, a ruggedized high-speed RF switching relay that takes the punishment SSB-op's demand . . . 5mS or less typical switch-time . . . Dual-gate GaAs MES-FET pre-amp . . . 22 dB typical gain . . . Wide, dynamic range for overload protection . . . 1 dB compression >+4 dBm

7

30W in - 300W out

(Linear curve: 1W - 30W, 45W max.)
 13.8 vDC 32 amps max.
 440 watts (DC) 68% efficiency

8

30W in - 600W out

24v DC

TWO H-F Amplifiers All Solid State (Waiting FCC Type-Acceptance)

The Band-Pass filter allows wideband performance while meeting FCC specifications . . . 1.8 - 4.0 MHz, 4.0 - 9.0 MHz, 9 - 15 MHz, 15-30 MHz . . . Typical harmonic - 50 dB

9

50W in - 800W out

13.8 vDC
 1,215 watts (DC)
 88 amps
 Available with power supply

10

50W in - 1,500W out

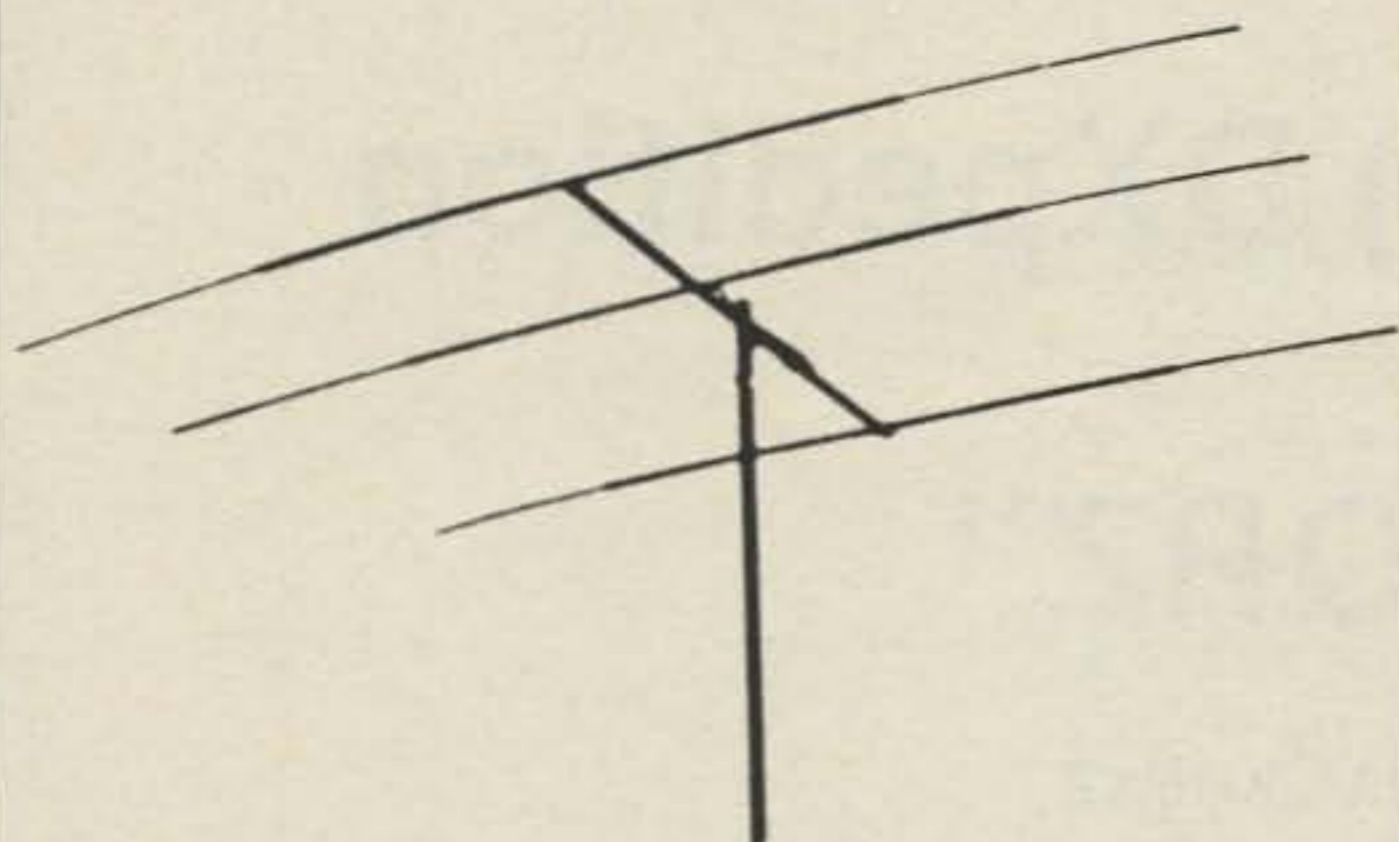
48.0 vDC
 110/220 - 50/60 cycles
 Auto-Band switch Vacuum Relay
 Full QSK 100% key-down forever
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Dedicated 17 Meter Monobander With Dedicated Performance

17M-3



ELECTRICAL

- Bandwidth..... 18.065-18.170 MHz
- Gain..... 6.5 dBd
- VSWR..... 1.5:1
- F/B..... 20 dB
- Feed Imp..... 50 Ohms
- Balun..... 4:1, 5kW

MECHANICAL

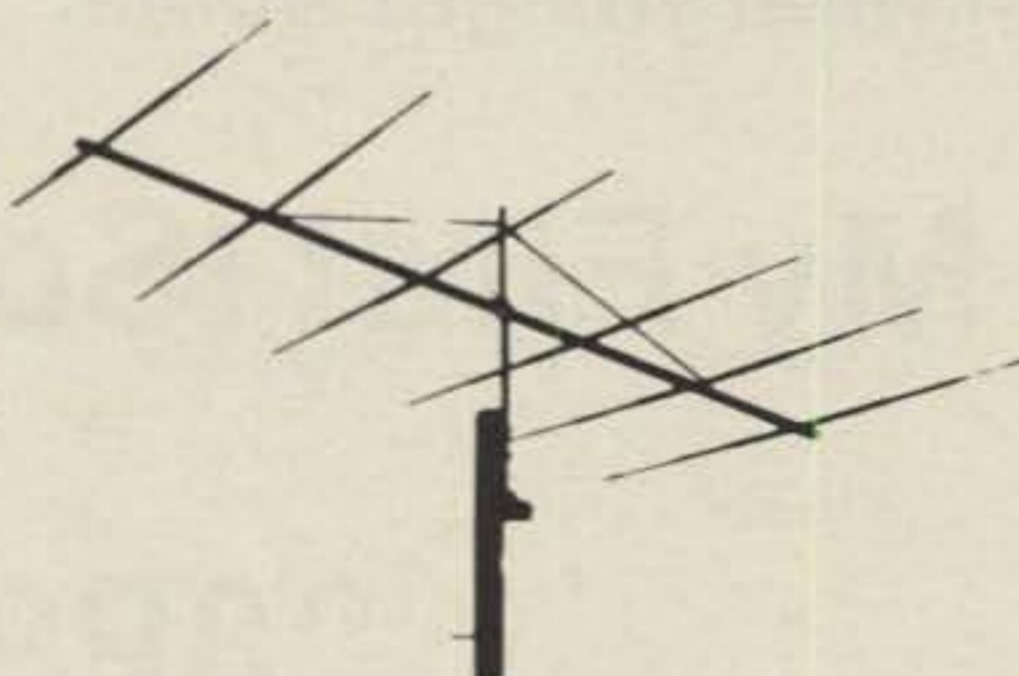
- Element Length..... 28 ft.
- Boom Length..... 16'9" x 3"OD.
- Turn Radius..... 17 ft.
- Windload..... 4.5 sq. ft.
- Weight..... 25 lbs.
- Mast..... 2 in. O.D.

The 17M-3 is a high performance monobander for quality installations where larger models are not practical or necessary. It can be stacked with other beams without overloading the tower/rotor capabilities. Many of the superb performance and construction features of the World Class Extra series are yours in the 17M-3.

17 meters is hot now with plenty of DX coming in. So go ahead, improve your air quality with the Mirage/KLM 17M-3.

10 Meters 3 Ways 2nd To None

10M-6 World Class Extra



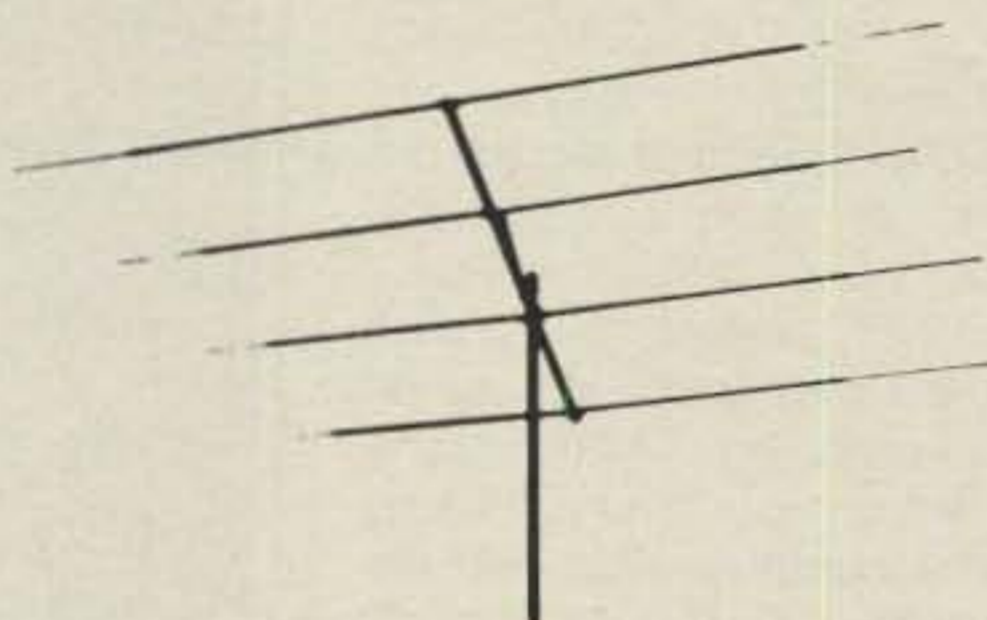
ELECTRICAL

- Bandwidth... 28-30 MHz
x 1 MHz
- Gain..... 11 dBd
- VSWR..... 1.5:1
- F/B..... 30 dB
- Feed Imp..... 50 Ohms
- Balun..... 4:1, 5 kW

MECHANICAL

- Element Length.... 18 ft.
- Boom Length..... 27.5 ft.
- Turn Radius. 16.5 ft., 8 in.
- Windload..... 4 sq. ft.
- Weight..... 29 lbs.
- Mast..... 2 in.

10M-4



ELECTRICAL

- Bandwidth... 28-30 MHz
x 1 MHz
- Gain..... 7.7 dBd
- VSWR..... 1.5:1
- F/B..... 25 dB
- Feed Imp..... 50 Ohms
- Balun..... 4:1, 5 kW

MECHANICAL

- Element Length.... 18 ft.
- Boom Length..... 10 ft.
- Turn Radius..... 10.5 ft.
- Windload..... 2.25 sq. ft.
- Weight..... 12 lbs.
- Mast..... 2 in.

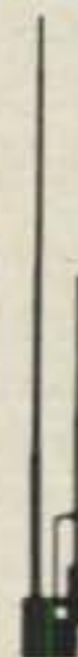
JV-10

ELECTRICAL

- Bandwidth... 27-30 MHz
x 250 kHz
- Gain..... 3 dB gnd/plane
- VSWR..... 1.5:1
- Feed Imp..... 50 Ohms

MECHANICAL

- Windload.... 1.8 sq. ft.
- Weight..... 10 lbs.
- Mast..... 2 in.



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My First (So Far) DXpedition or "8P9FD QRZ"

BY WAYNE T. YOSHIDA*, KH6WZ

There is something significant in doing something for the very first time. One usually remembers such experiences much more vividly. In this case it is travel abroad, with an amateur's twist—a DXpedition! John Johnson, WB6LMN, and I decided to do the CQ World-Wide DX Contest from a DX location. It started out as idle conversation about pile-ups and how great it must be on "the other side." Both of us had not made any vacation plans, so we had plenty of time to do some serious planning. After some thought and discussion and planning around business commitments, we decided to operate the CQ WW DX Contest from "somewhere." We selected the phone weekend for our vacation/DXpedition. (My CW skills have deteriorated over the years, and this was to be a *relaxing* vacation.)

Where in the World . . .

Having decided *when* to go, the next step of course was to decide *where* to go. Being a novice at world travel, going anywhere was to be a new experience for me. This complicated matters, since it gave us too many places from which to choose.

Since John and I had decided that our first DXpedition should be fun and relaxing, not a "camp out in the woods," we stuck to the more "civilized" parts of the world (that is, no Clipperton-type stuff, with those ferocious crabs).

I called Nao Akiyama, JH1VRQ/N1CIX, the ARRL's International Programs Manager, to get some DXpedition sugges-



How does all of this radio stuff fit into a standard suitcase? The clothes aren't even packed yet.

tions and to request reciprocal operating information. One of the things John and I discussed, and Nao and I talked about, was that this very first DXpedition would have to be an easy one—a place that would be easily accessible, a place not too rare, and a place that had been DXpeditioned before. We also wanted complete callsigns rather than signing "portable something." John and I felt that a complete callsign would be more helpful during the contest and that we would be able to enjoy the "status" of having another call. Somewhere along the line we settled on "something in the Caribbean."

Next came considerations such as AC line voltage, transportation costs, hotels, and the ability to operate radios in the hotel. Nao mentioned that knowing a "sponsor" or a local amateur would be very helpful. Not knowing any DX friends who would allow us to just "pop in," we further decided to go to a DX location frequently visited by U.S. amateurs.

Several letters went out to various DXpeditioners. One letter was answered by an old friend, Jack Schuster, W1WEF. Jack has operated (not only winning, but also being second in the world!) the ARRL International DX Contest from Curacao

*P.O. Box 22745, Long Beach, CA 90801



The main antenna system at 8P6BBS. At the top is the Cushcraft 3-element 10 meter beam, with the tribander right underneath. Left to right are Wayne, 8P9FD, and John, 8P9FE.

as PJ9J. Jack offered many helpful hints and a few suggestions for alternate sites.

One day while reading the "How's DX" column in the August 1988 issue of *QST*, I came across a small blurb on the Barbados Boy Scout station, 8P6BBS. Grabbing at a straw in the dark, I wrote to the Barbados Boy Scout Headquarters, wondering if we could operate the station during the contest. Enclosing an SAE and several IRCs, I waited for a reply.

I was pleasantly surprised when the mailman brought the good news! Dean St. Hill, 8P6SH, said that they would be honored for us to operate the Barbados Boy Scout station and use the call 8P6BBS during the contest. Dean was of valuable assistance in getting our licenses and taking care of many details for our trip.

Further letters were exchanged, and a few days before we were scheduled to leave Dean telephoned me to confirm everything. I received the callsign 8P9FD and John became 8P9FE, with full privileges from 160 through 2 meters. Dean was to meet us at the airport and help us with customs and so forth.

We decided that it would be a good idea to schedule in a few days before and after the contest to set up and relax, then do the contest, and then do some sight-seeing. This turned out to be an excellent idea, but we found that only a few days was not enough to really enjoy our new environment.

With plane tickets in hand, 8P licenses taken care of, and hotel reservations confirmed, we were ready to go. Since the radio operations were going to take place at

scout headquarters, I didn't have to worry about operating at the hotel.

Packing for the Adventure

We chose Kenwood TS-440S and TS-680S transceivers for their compact size and high performance. The built-in antenna tuner in the TS-440 really comes in handy. Both rigs were to be powered by PS-430 power supplies, since they are smaller and have switchable multiple-tap primaries. (Although Barbados has 110 volt, 50 Hz AC, which is compatible with all of the equipment made for the U.S., I was planning for future trips.) The matching PS-50, by the way, can be modified to operate on 220 VAC by changing the transformer strapping. (Nao Akiyama, N1CIX/JH1VRQ, pointed this out to me a while back.) Note that this is a "hard wire" modification and will void your warranty. The export (non-U.S.) versions of the PS-50 have switchable primaries. Because of local safety requirements, the U.S. version of the PS-50 does not have a multiple-tap transformer primary.

In addition to the rigs, we brought a 5-band trap vertical, a 3-element 10 meter beam, a trap dipole, and a 3-element 6 meter beam. One potential problem we encountered deserves mention here. We packed the vertical into a length of PVC sewer pipe, an old DXpeditioner's trick (see "Hints & Kinks" in *QST*, May 1988, page 41). The other antennas were left in their original cardboard boxes and duct-taped together to count as one piece of baggage. We found that the boxes soaked up humidity like a sponge. The boxes, although still intact, were very soft and looked as if they were going to fall apart. The PVC pipe antenna carrier is the only way to go.

Packing enough clothes for an eight-day tropical adventure is a piece of cake—just shorts and T-shirts. The hard part is getting all of the radio and accessory stuff packed into the "two checked, one carry-on" rule. By the way, I "maxed out" my luggage allowance and had to pay a fee for one extra bag.

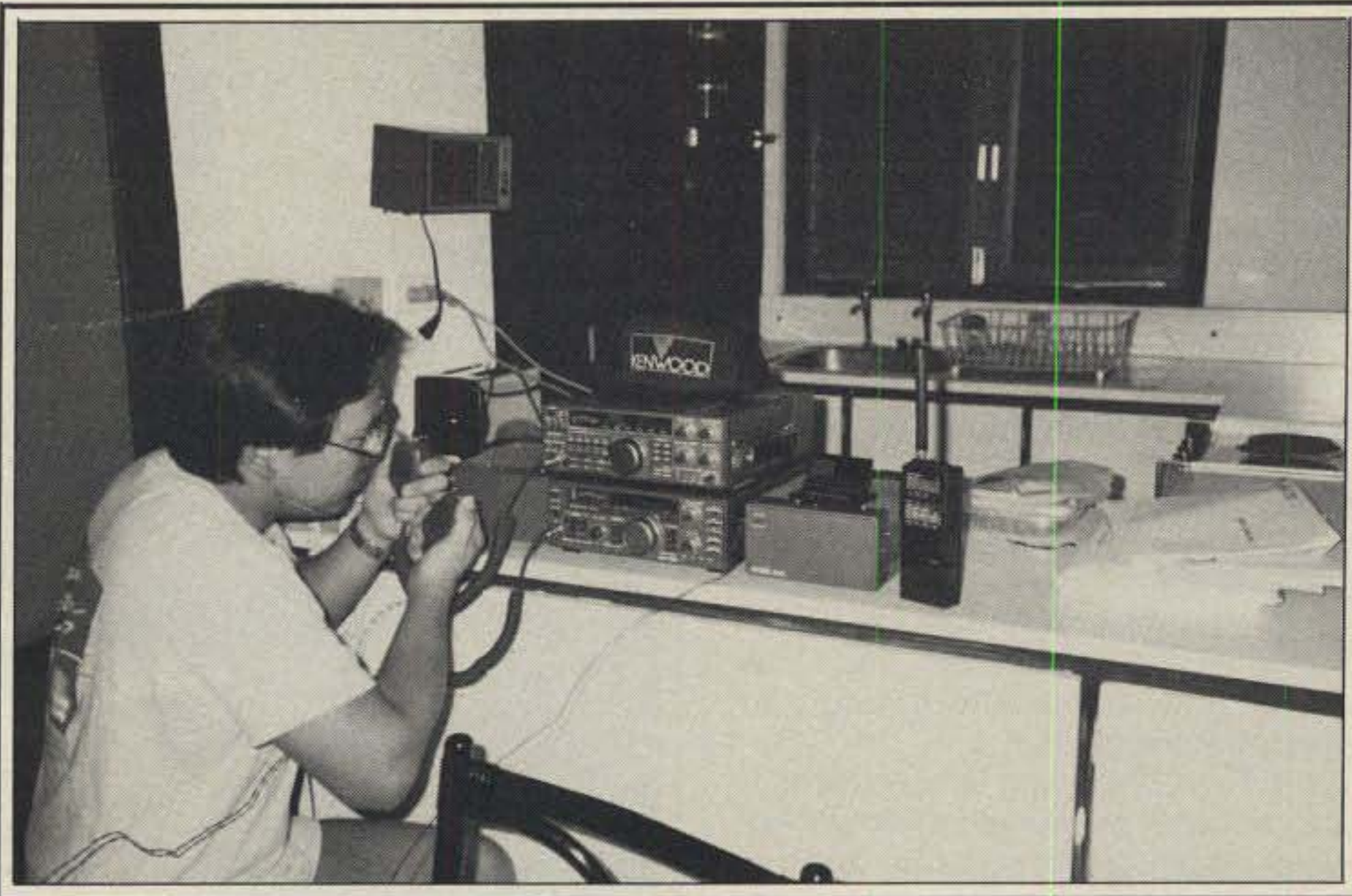
Our Eastern Airlines flight went well as far as modern air travel goes. We arrived in Barbados and waited for immigration and customs. Dean was to meet us at the airport, and I told him that he would be able to spot me because I would be wearing a UCLA T-shirt. This seemed funny as we waited in line at the airport, antennas and baggage in hand.

Going through customs turned out to be much easier than I had thought, but I was prepared for the worst, especially after seeing the movie "Midnight Express." (This is *not* to say that I carried any contraband with me, but I was concerned that my special foil-packed diet foods would look suspicious to customs and security personnel.) Although not a hundred percent trouble-free, it was really no problem.

Dean and his friend Mike Skeete (a CBer and amateur-to-be) drove us to our new QTH and made sure we were all set. Since we were a bit thirsty from the long plane ride, we all went to a local pub to take in a few cold ones. We were treated to Barbados's beer, which is called Bank's. We made set-up plans for the next day, had a few more Bank's, and went back to our apartment.

Setting Up At 8P6BBS

The next morning we went to the scout headquarters to set up things. Their tribander was in sad shape; the antenna



Wayne, 8P9FD, demonstrates "multi-transmitter" technique at the 8P9FD/8P9FE QTH at the Rockley Resort.

was hanging from a single U-bolt with no nuts! Dean and I decided to start the antenna work on the roof, and John began assembling the trap dipole and 10 meter beam.

I repaired the tribander and got the main antenna going. At the same time the 10 meter beam was put on the same mast some 20 or so feet above the roof.

By the way, I will never complain about adverse weather conditions during Field Day again. Working on antennas in the rain is no picnic. In Barbados the rains last a short time, but it comes down very hard. I told Dean that we would continue to work on the antenna until we were finished, unless we got some lightning! (We were working on a metal roof.)

As the rain stopped and the sun came up the beam work was completed. We started to put up the dipole, but had to stop because it became too dark to see. By the next afternoon all of the antennas were up, more or less. It really seemed more like Field Day than anything else. We brought the various coax leads into the operating room and hooked them to our rigs. We also used the 8P6BBS TS-820S for the third operating position.

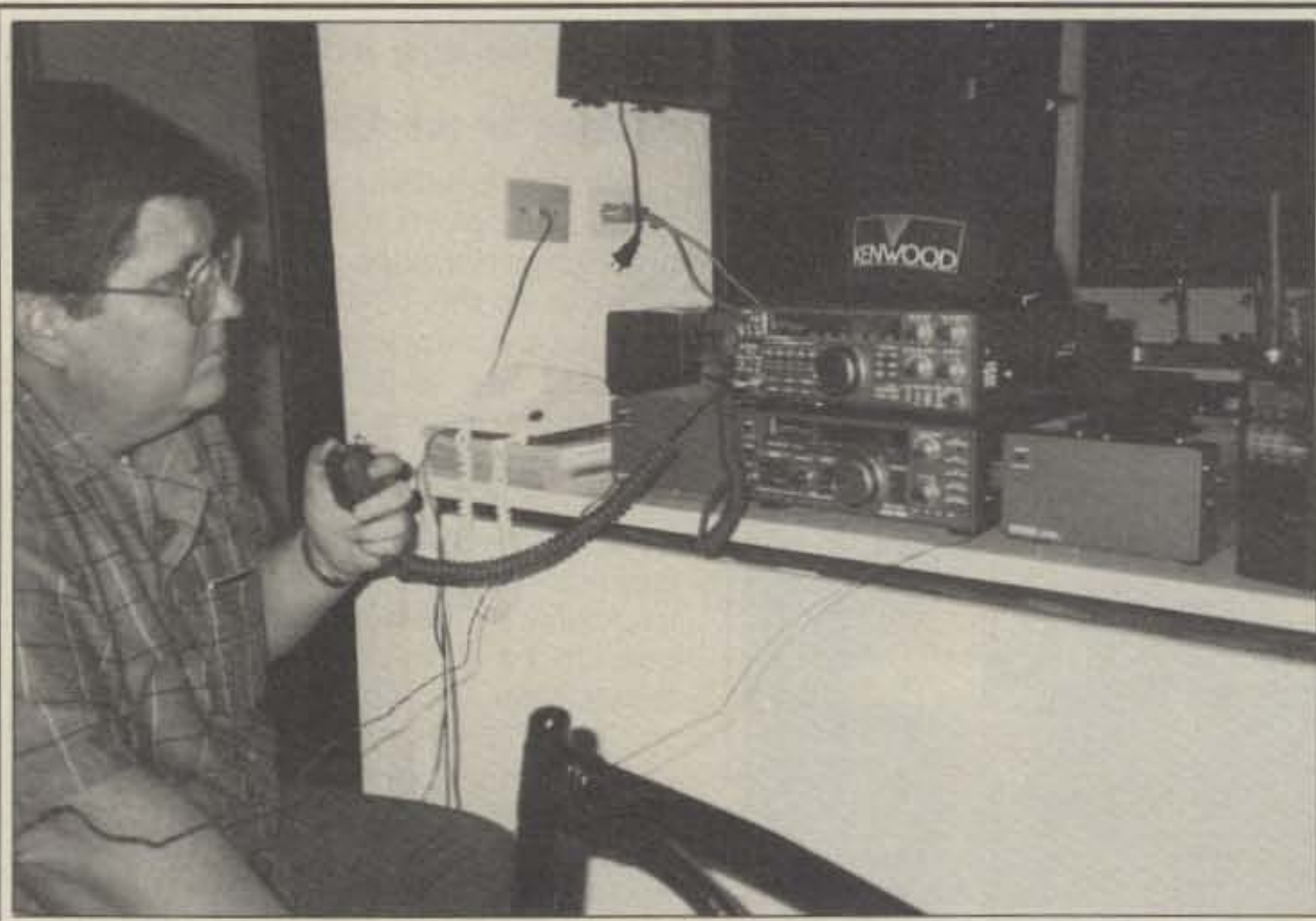
Unfortunately, the radios on 10 and 15 meters QRM'd each other. (The 10 meter beam and the tribander were less than 5 feet from each other!) Since the contest was to begin the next day, we decided not to change anything. We had done enough antenna work for the week.

8P9FD and 8P9FE QRV on 10!

Going back to the hotel, John set up a 10 meter dipole in our apartment, one end attached to the kitchen window. It worked so well that we decided to leave it in place for the duration of our short stay. The old saying that a DX station, depending on its prefix, gains several dB worth of signal strength must be true, as I was constantly amazed that we could call CQ on any clear spot in the band and start pile-ups. After having operated from better stations stateside and only being able to S and P (search and pounce), this was exactly what we had come to Barbados for! We both used our own calls, and we were very pleased that we gave out the first 8P QSOs to many operators.

While operating one morning, I was hit with a huge signal that pegged my S-meter. It turned out to be Tusty, 8P6DD, another DXpedition operating from a nearby hotel. Alas, John and I were not alone on this tiny island. John and I later had a nice dinner with 8P6DD and companion after the contest.

On Thursday evening Dean took us to the local radio club meeting at 8P6AW. We met a number of local hams, and they were discussing the effects of Hurricane Gilbert and the efforts of the Jamaica amateurs. When an island as small as Barbados (or any of the Caribbean spots) gets



John, 8P9FE, passing out QSOs on 28 MHz on the TS-440S and indoor dipole at the hotel QTH.

hit with a hurricane, the destruction is devastating. The experiences in Jamaica are being used to form a disaster-preparedness plan for Barbados.

Ten meters was "really honkin," as my Canadian friends would say. We had a tremendous JA run on 10. Twenty was our next best band, but 15 was terrible due to the 10 meter beam/tribander interaction. John later noticed that the two coax lines were twisted together. Could that have done it?

CQ Contest, CQ Contest . . .

I worked 20 meters at the start of the

contest. I had staked out a good frequency on the band and was making great progress for the first few hours. But then I began to notice that as I was running stations, I could hear other stations calling in, but not in answer to my CQ. It seems that a real strong station decided to take my frequency! (I am going to assume that the other station operator is not a lid and simply could not hear me.) I guess this means that we'll have to bring an amplifier next time!

Because of a mix-up we were not able to operate on Sunday morning. Ten meters came and went, I suppose, and it was



Dean, 8P6SH, enjoying the excellent DX on the indoor dipole at DXpedition station 8P9FD/8P9FE.

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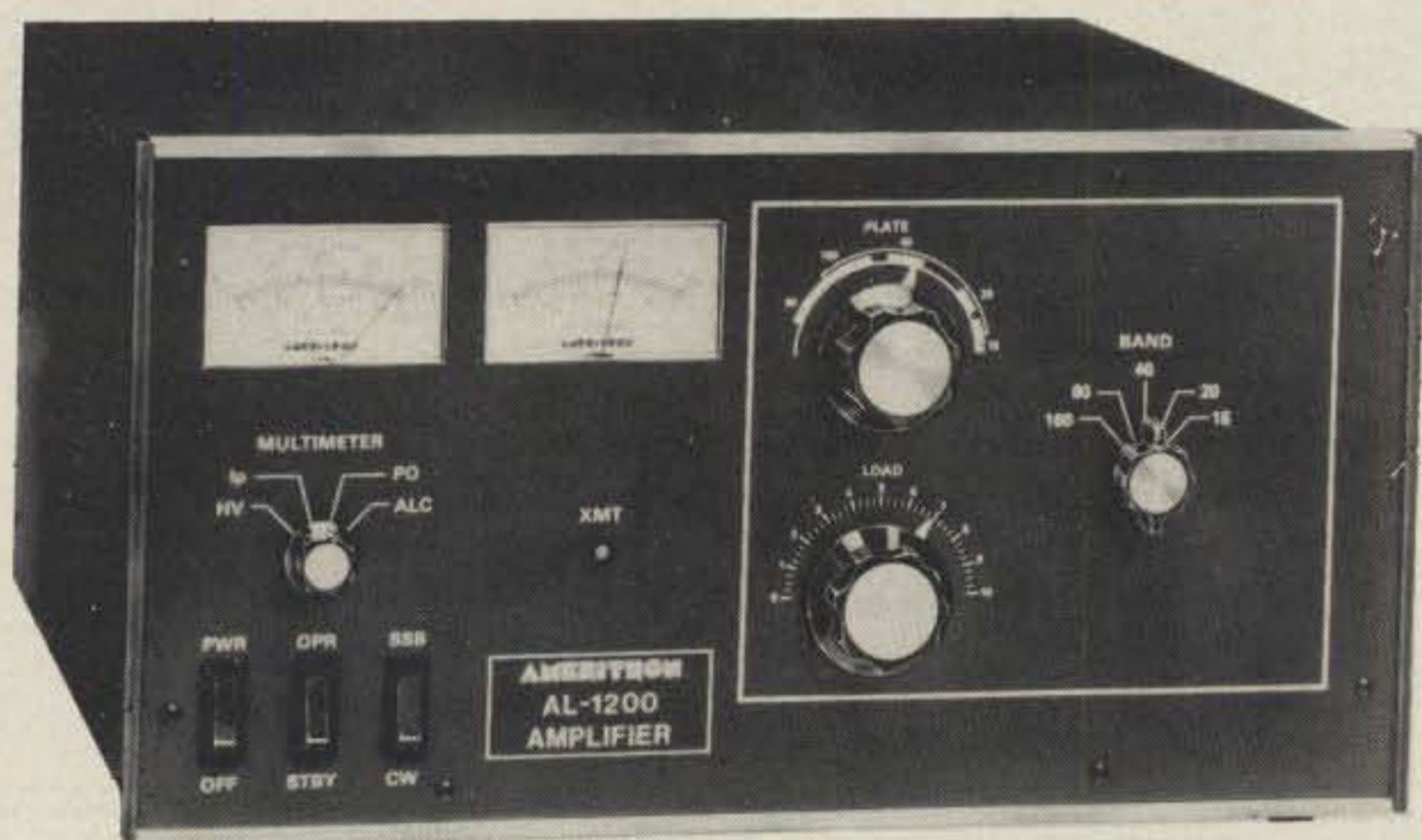
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AL-84 LINEAR AMPLIFIER

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Size: 11½"W. x 6"H. x 12½"D. Wgt. 24 lbs.

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The **Ameritron ATR-15** is a 1500 watt "T" network tuner that covers 1.8 through 30 MHz in 10 dedicated bands. Handles full legal power on all amateur bands above 1.8 MHz.

Five outputs are selected from a heavy duty antenna switch allowing the rapid choice of three coaxial lines, one single terminal feed or a balanced output. An internal balun provides 1:1 or 4:1 ratios (user selectable) on the balanced output terminals.

A peak reading wattmeter and SWR bridge is standard in the ATR-15. It accurately reads envelope powers up to 2KW.

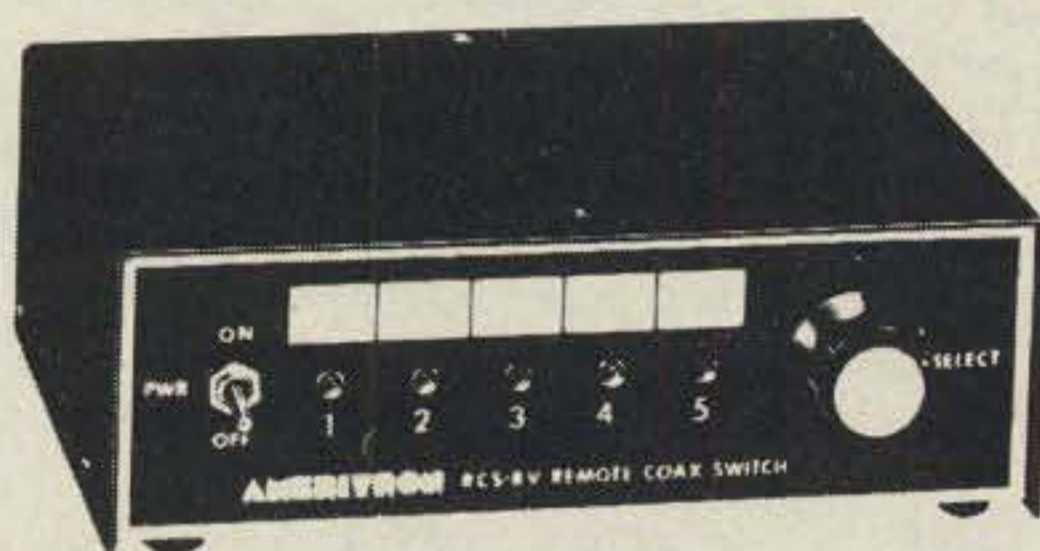
Size: 6"H. x 13¼"W. x 16"D. Wgt. 14 lbs.



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not until the dinner hour that we were back on the air.

During the roughly 17 hours we operated the contest we made approximately 2000 QSOs. For a multi-multi effort I was not impressed with our score (in fact, its down right embarrassing!). But our main objective was realized: We were "on the other side" of a pile-up, and we had a heck of a lot of fun! (For the record, the unofficial score for 8P6BBS is 1910 QSOs, 5044 QSO points, 62 zone multipliers, and 195 country multipliers for a total of 1,296,308.)

Next Time

I know that I speak for John and Dean when I say that this DXpedition was a great learning experience and a lot of fun. I would like to get more time to play tourist on the next trip so that I can document it with more photos for QSL cards and the "memory book." The QSL manager for any DXpedition should be announced well before the DXpedition. (By the way, if you worked 8P6BBS during the phone contest, KH6WZ is the QSL manager. Use the 1987 and later edition *Callbook* address.)

John and I would like to thank Dean St. Hill, 8P6SH, who helped us with transportation, licensing, customs, and all of the little details that made our trip possible. Mike Skeete provided some of the non-



A very quiet beach in Barbados. Warm, clear water and the shining sun make this DX location a "must return" kind of place.

amateur things such as bringing in various refreshments to us during our operation. (I now have a taste for Bank's beer and "pudding and souce"!) We would especially like to thank Mr. Victor Matthews

and the Barbados Boy Scouts for the use of their facility, and last, but not least, Glen Thorpe, 8P6SG, whose information in "How's DX" brought us all together in the first place.

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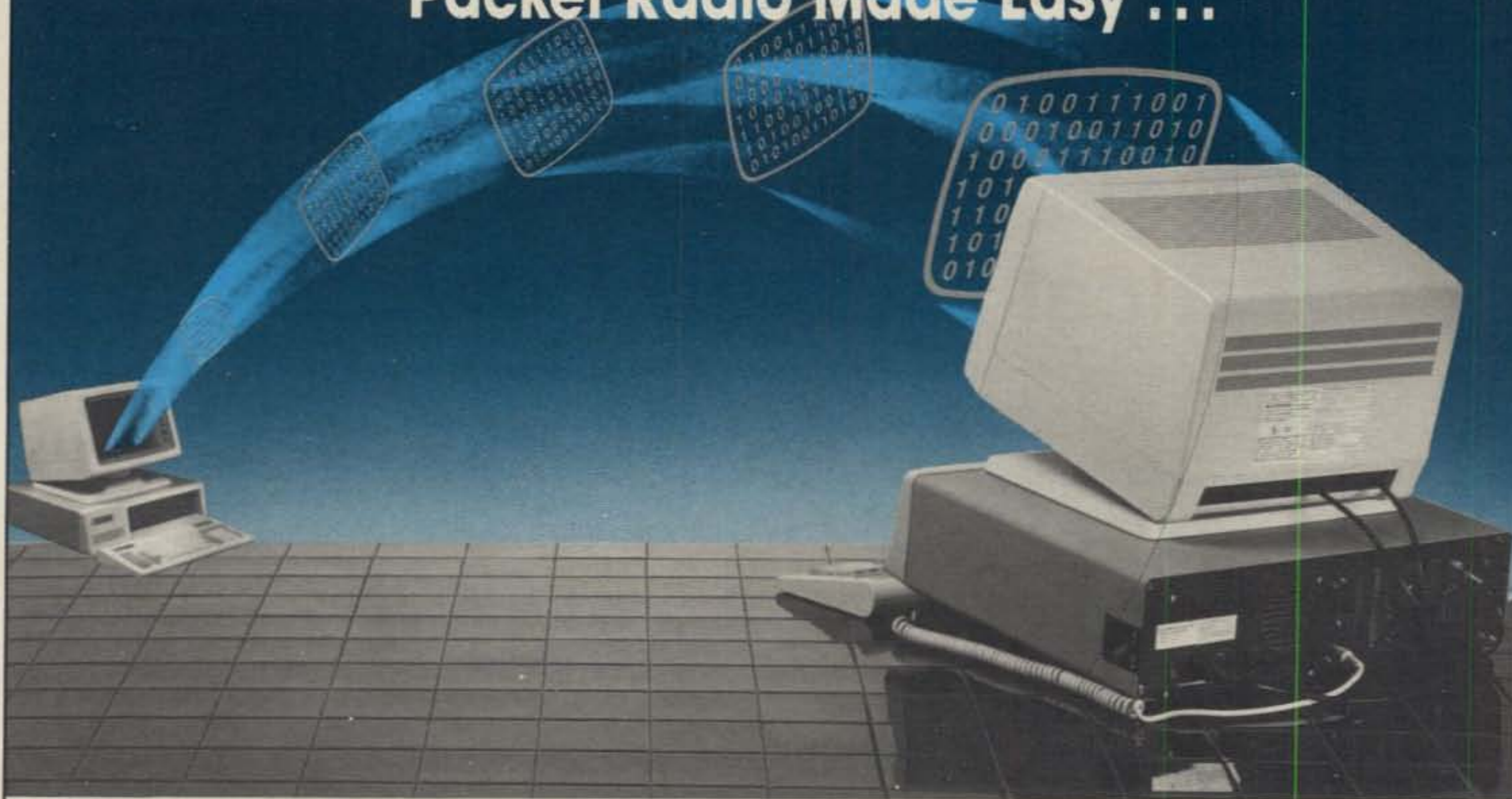
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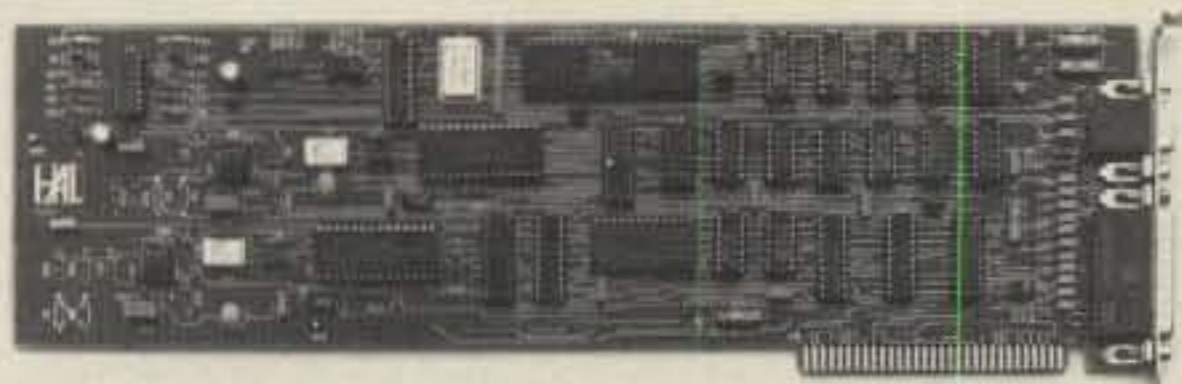
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- Menu driven – No commands to memorize
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The RPC-2000 is a two-channel radio packet controller that adds fast, error-free data communications to radio links. It plugs into an expansion slot of the HAL DS-3200 Radio Data Communications Terminal or any fully compatible PC, PC-XT, or PC-AT computer. The RPC-2000 uses Packet Radio protocol based on AX.25 to provide data communications at rates from 45 to 4800 BPS.

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2000 uses an RS-232C I/O port (Channel A) for an external HF modem (such as the HAL ST-8000) and a 7910 modem for a VHF link (Channel B). The M2-RPC option converts Channel A to a second 7910 modem.

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The 160 Meter Top-Loaded Vertical Antenna Revisited

BY LOUIS B. BURKE, JR. *, W7JI

In January 1968 *CQ* magazine published my construction article "Top Loaded 160 Meter Vertical." The antenna system consisted of a base insulated 36 foot telescoping mast top loaded with a coil/whip assembly and minimal ground system. I used this particular antenna for a number of years with good results, realizing that improvements still could be made to the system.

A very good friend, Bill Turney, now WS4Y, was impressed with the performance of the short vertical and asked me if I had any intentions of trying to market the top-loading sections, since the sys-

tem worked so well and did provide a good antenna system for 160 meters with minimal real-estate requirements. I told Bill that I had no intentions to take on such a project, but if he wanted to do so he had my blessings and I wished him luck with the project.

Bill began manufacturing and selling the top-loading sections under his call at the time of WAØRFF. It's surprising to me how often I run across someone in a QSO who is still using Bill's top-loading section. Speaks rather well for the quality of the project, wouldn't you say?

Inspiration

In a recent QSO with local amateur Charlie Michaels, W7XC, I began discus-

sing my antenna top-loading system. Not far into our QSO I realized that Charlie wasn't your typical cut-and-dried operator. As it turns out, Charlie is a retired electrical engineer and without a doubt one of the brightest individuals I've had the pleasure of meeting on the amateur bands in quite a number of years.

After several exchanges of information Charlie got out his calculator and began running various formulas calculating the inefficiencies of the coil used in my top-loading section. In the ensuing conversation I discovered that Charlie had written an article in the August 1987 edition of *QEX* magazine entitled "Optimum Wire Size For R.F. Coils." In his article he created a chart devised from algebraically rearranging formulas from works of Terman and Butterworth dealing with the

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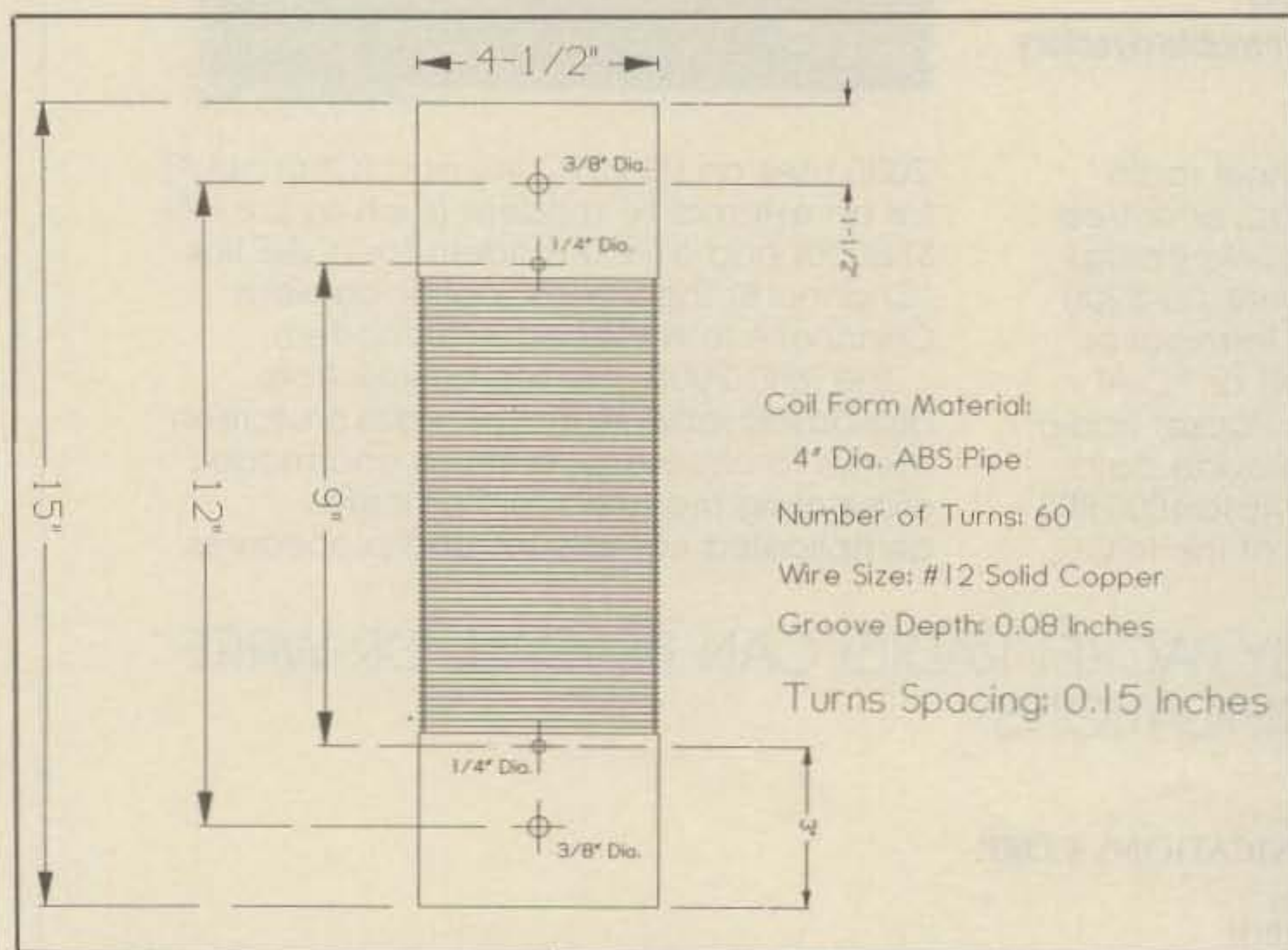
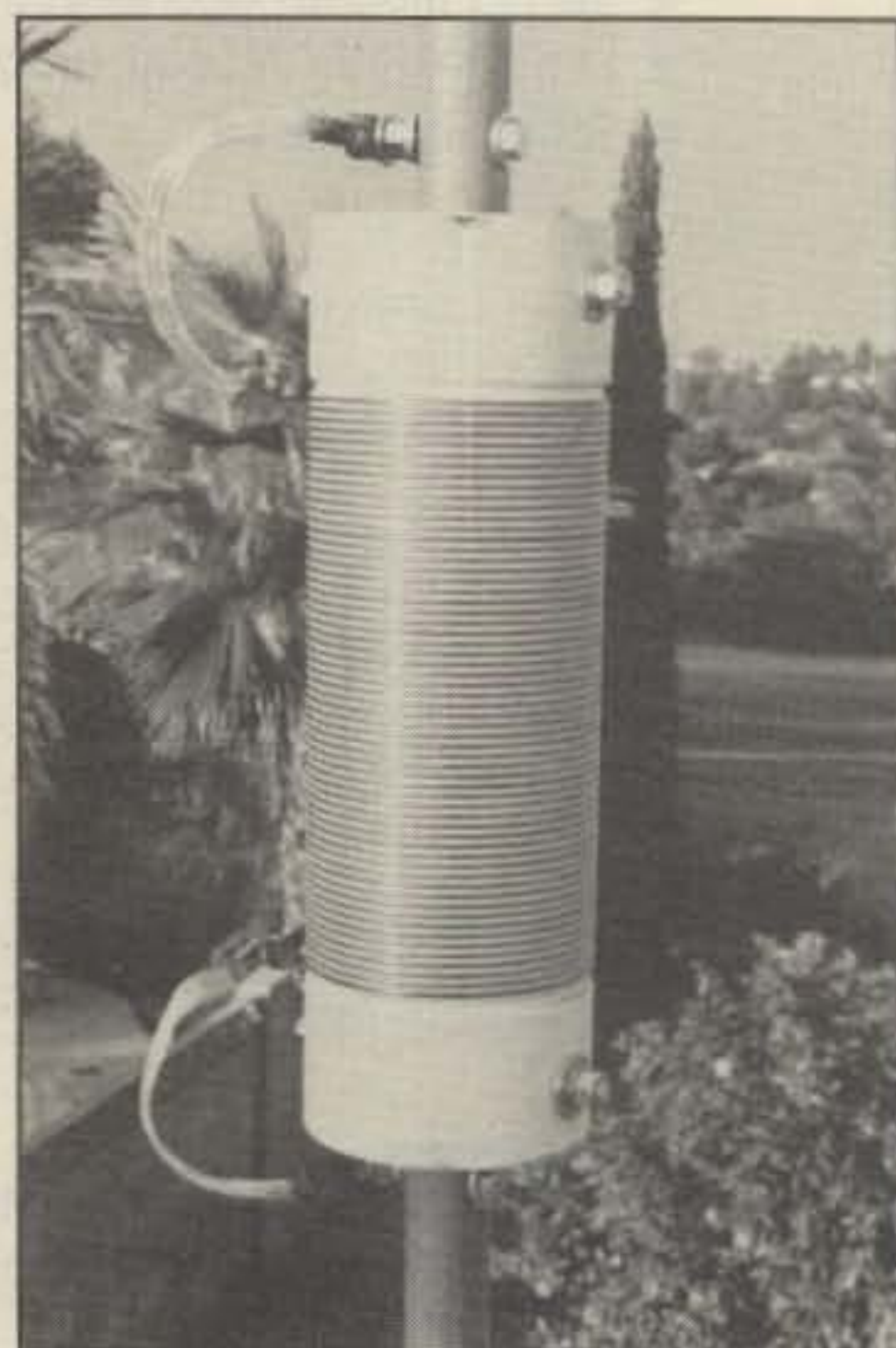


Fig. 1 - Mechanical specifications for the coil. Check the yellow pages of your phone directory for a machine shop in your area.



The completed coil assembly should look like this.



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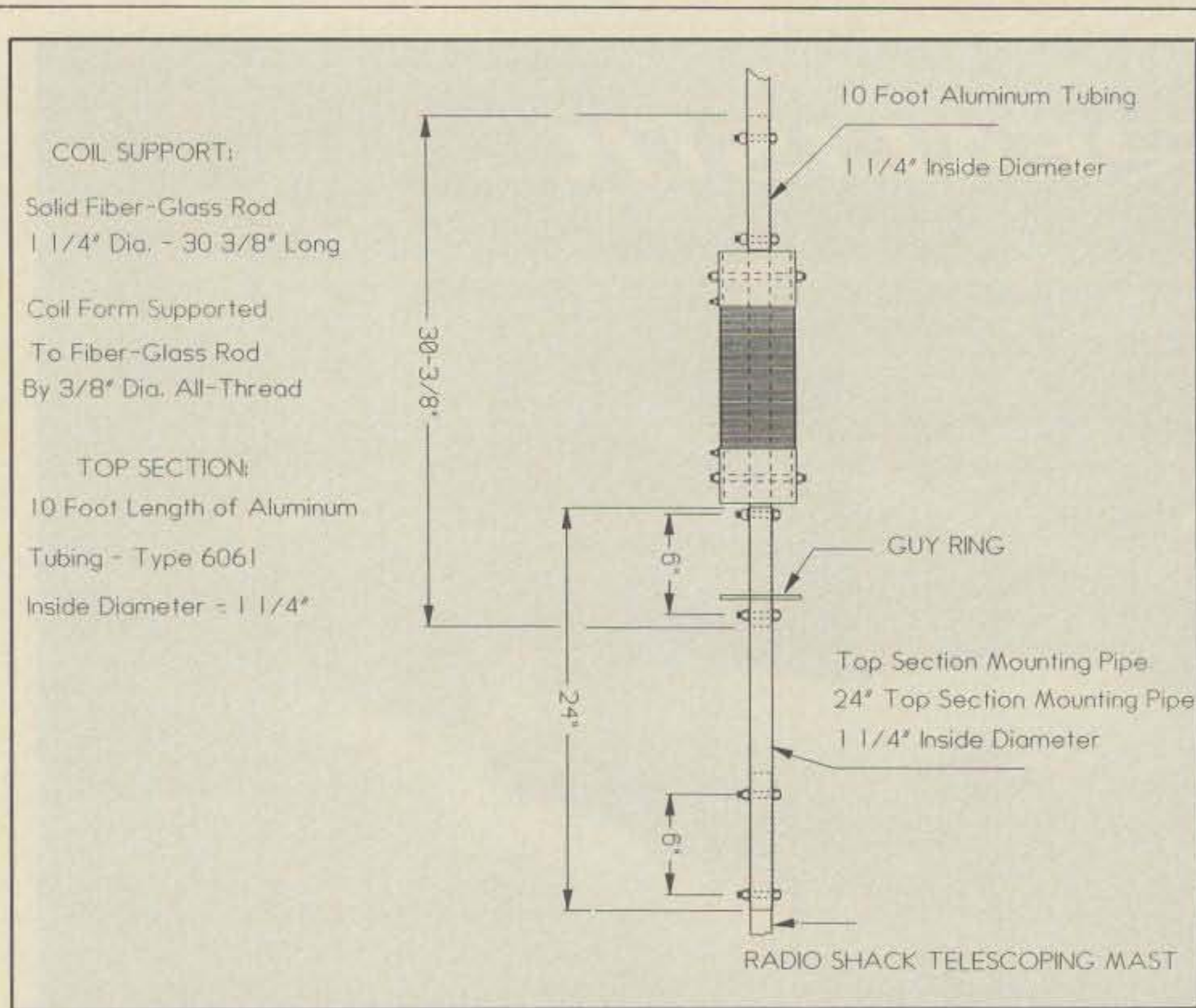


Fig. 2- Support system for the coil assembly.

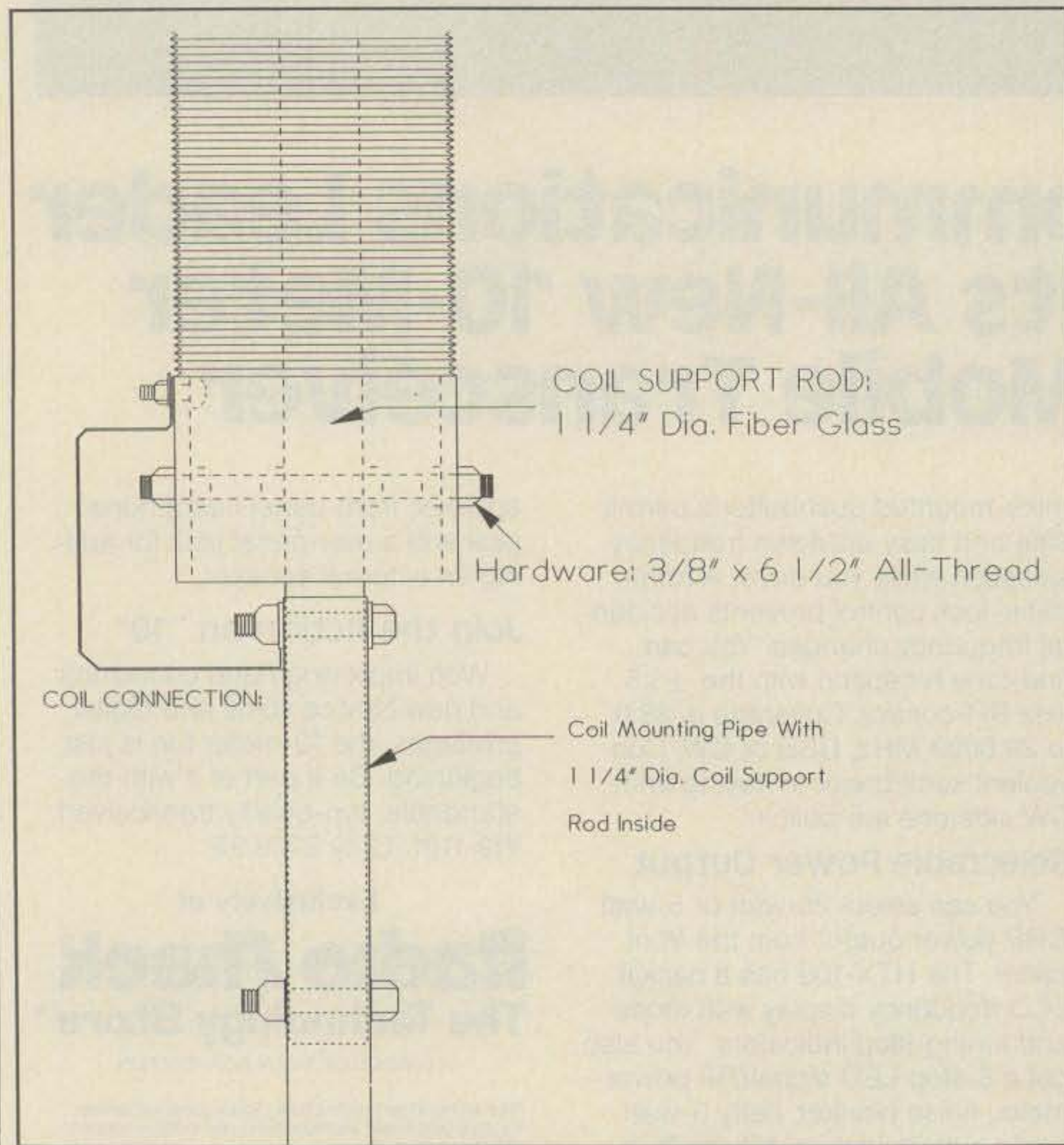


Fig. 3- Assembly diagram for connecting the top section of the antenna to the 36 foot telescoping mast.

optimum wire sizes for a given coil diameter to length ratio and number of turns.

Needless to say, by this time Charlie had certainly piqued my interest. I had always been aware of some of the shortcomings of my system, especially the "Q" of the coil in use. For the first time in 20 years I was actually considering rebuilding the whole system.

Charlie went on to explain his work on choosing the right wire size for a coil of given dimensions and number of turns. Since the coil is the single most important part of my top-loading system, I was very interested in his information. By the time the QSO ended, I had designed a new coil, and Charlie confirmed the proper wire size for the coil dimensions specified. Now the remaining construction details were left up to me.

The Challenge

The design I presented was a coil 4 1/2 inches in diameter and 9 inches in length, wound with 60 turns of number 12 wire, evenly spaced over the 9 inch length of the coil, representing 165 μ H of inductance. I began thinking of just how to construct such a coil without compromising the electrical characteristics of the coil.

Before entering into a serious design mode, it was necessary to decide on materials to be used to construct the top-loading section. The design was based on two factors, quality of materials and cost.

Achieving high-quality materials with respect to electrical characteristics and mechanical stability at minimal expense is no simple task. The two most important factors in the design of the coil were the effect of the material used at RF frequencies and the proper spacing of the individual turns. Other factors such as mechanically mounting the coil in such a manner as to minimize the effect of mounting hardware were also considered.

It became obvious to me that some minor compromises would be necessary in order to construct the entire top-loading section with sufficient mechanical strength to self-support on a 40 foot telescoping mast.

Time To Go To Work

I finally decided on using a piece of 4 inch ABS pipe (outside diameter 4 1/2 inches). It is readily available at most hardware or plumbing shops and is very inexpensive. Depending on whose information you read regarding the use of PVC materials at RF frequencies, ABS pipe seems to be a reasonable choice for the money. Next I decided that the only way I could guarantee proper turns spacing was to take the pipe to a machine shop and have the proper number of grooves cut into the material.

I explained to the machinist that I needed 60 grooves, 0.08 inches deep, spaced 0.08 inches apart, over a 9 inch length cut

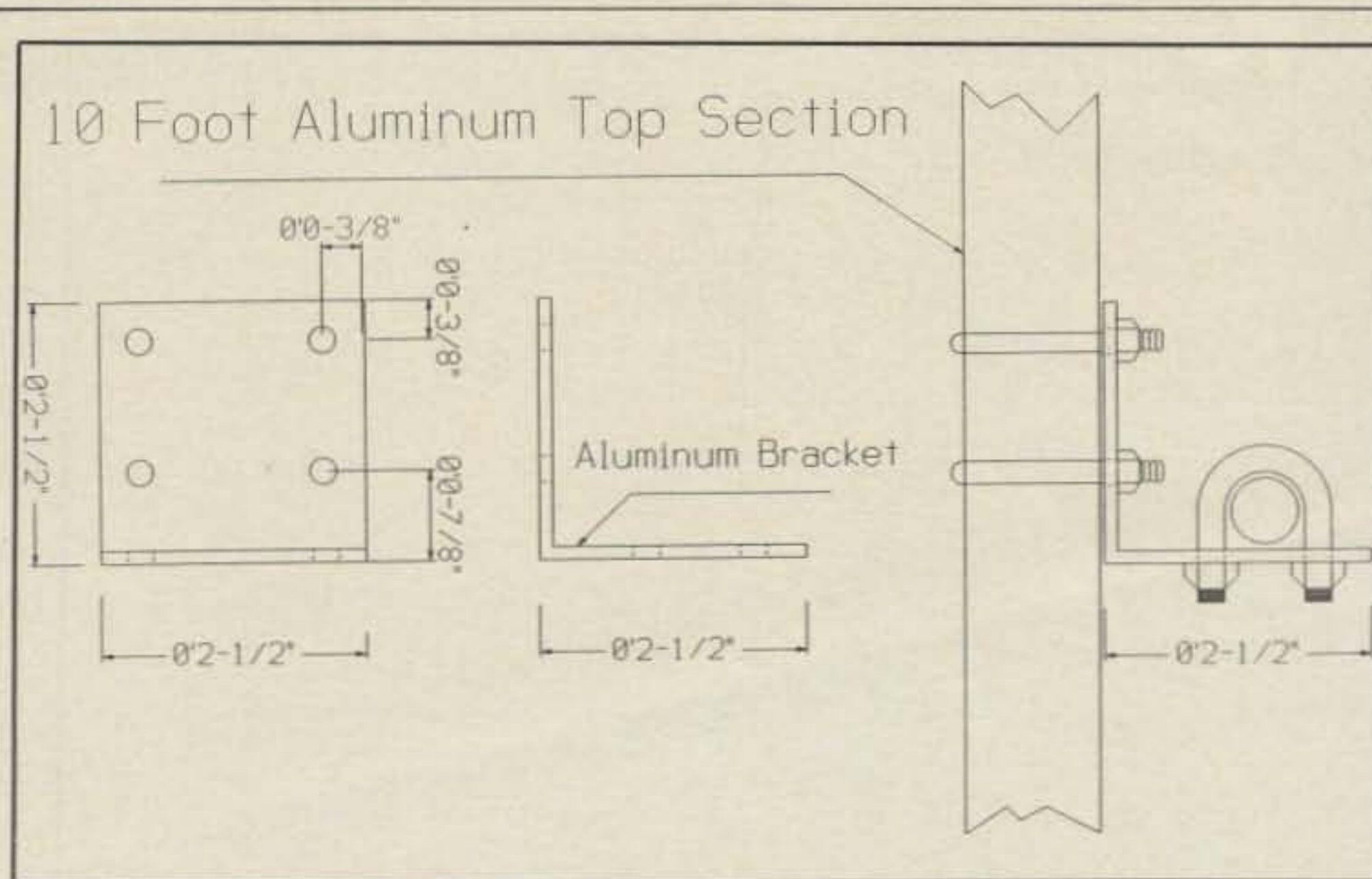


Fig. 4- Mechanical diagram for the support system of the capacity-hat assembly.

into the ABS pipe (see fig. 1). The finished product turned out exceptionally well.

I purchased brass hardware and soldering lugs to use for terminating each end of the coil winding. I also purchased 100 feet of #12 solid copper wire which would be used to wind the coil.

At each end of the coil winding grooves I drilled a 1/4 inch diameter hole through one side of the coil form. From the inside of the form I inserted the brass hardware so that the bolt was protruding out of the form. I placed a brass flat washer onto the bolt, followed by a soldering lug, another brass flat washer, a brass lock washer, and the brass nut. This provides a method of terminating each end of the

coil winding as well as electrically connecting the coil to the support mast and top section above the coil.

After tightening the hardware, I soldered one end of the #12 wire to the solder lug and stretched the wire across the backyard. I tied the other end of the wire securely to a fence post.

I picked up the coil form and pulled on the wire to remove any slack in the wire. While keeping the wire stretched tightly, I began winding the wire into the grooves. After all 60 turns were wound onto the form, I simply soldered the remaining end of the wire to the solder lug. The finished product is a very professional-looking coil. To waterproof the coil I painted it

with several coats of polyurethane.

Due to the weight of the coil I decided that it would be necessary to support it with a material that was both physically strong and a good insulator at radio frequencies. My choice was a 30 3/8 inch length of fiberglass rod 1 1/4 inches in diameter. The coil is supported by centering the 30 3/8 inch fiberglass rod through the center of the coil and attaching the coil form to the fiberglass rod with a 6 1/2 inch length of 30 3/8 inch diameter all-thread (see fig. 2).

In order to keep the capacitive tuning element at a reasonable physical length, I decided to employ a 10 foot vertical section in conjunction with a horizontal capacity-hat arrangement.

I purchased a 12 foot length of 6061 aluminum tubing with an inside diameter of 1 1/4 inches and a 12 foot length of 3/8 inch diameter tubing. This material is very light and sturdy and would fit the mechanical requirements. I cut a 2 foot length off the 1 1/4 inch diameter tubing to use as a method of mechanically attaching the coil to the top of a 36 foot telescoping mast (see fig. 3, top section mounting pipe). One end of the fiberglass rod which supports the coil slips nicely into one end of the 2 foot length of tubing and is secured by two 3/8" x 2 1/4" bolts completely through the mounting pipe and fiberglass rod. The spacing between these holes is 6 inches. The other end of the "mounting pipe" slips nicely over the end of the top section of a Radio Shack 36 foot telescoping mast and is secured in the same manner (Radio Shack part number 15-5067, see fig. 3).

To complete the top section above the coil it was necessary to construct a form

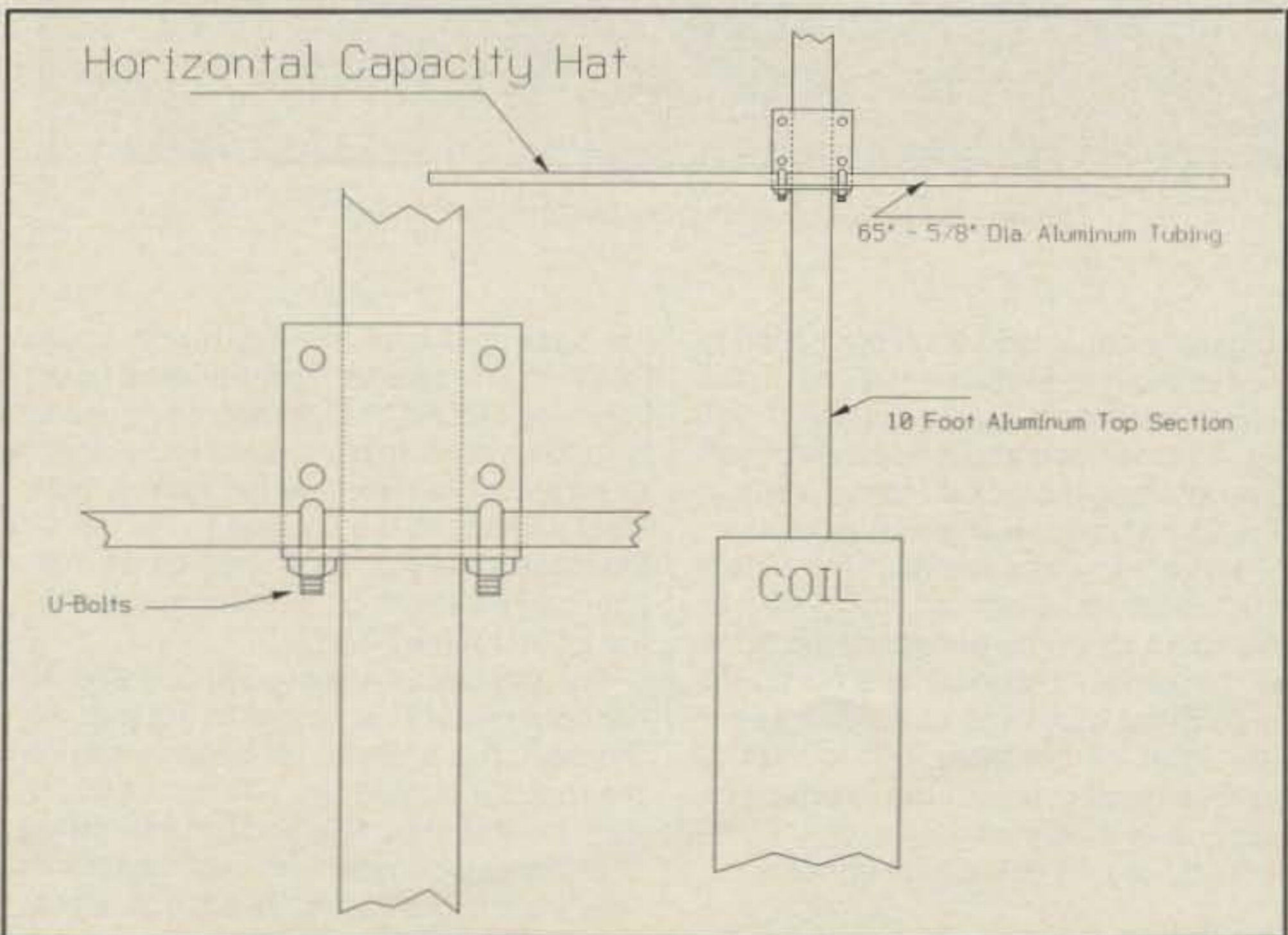
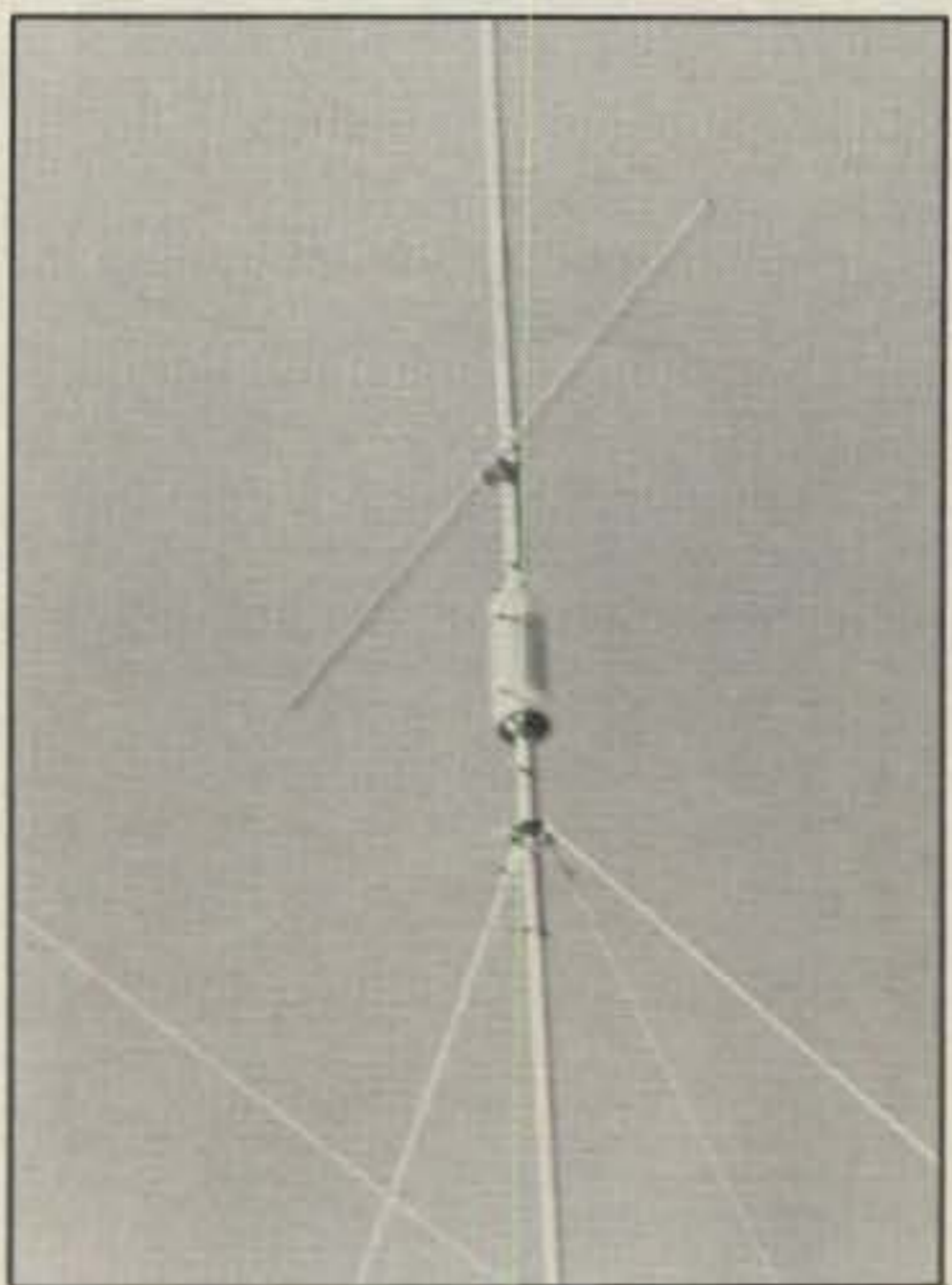


Fig. 5- The horizontal capacity-hat diagram.



A view of the top section of the 160 meter vertical showing the coil and the capacity-hat assembly.



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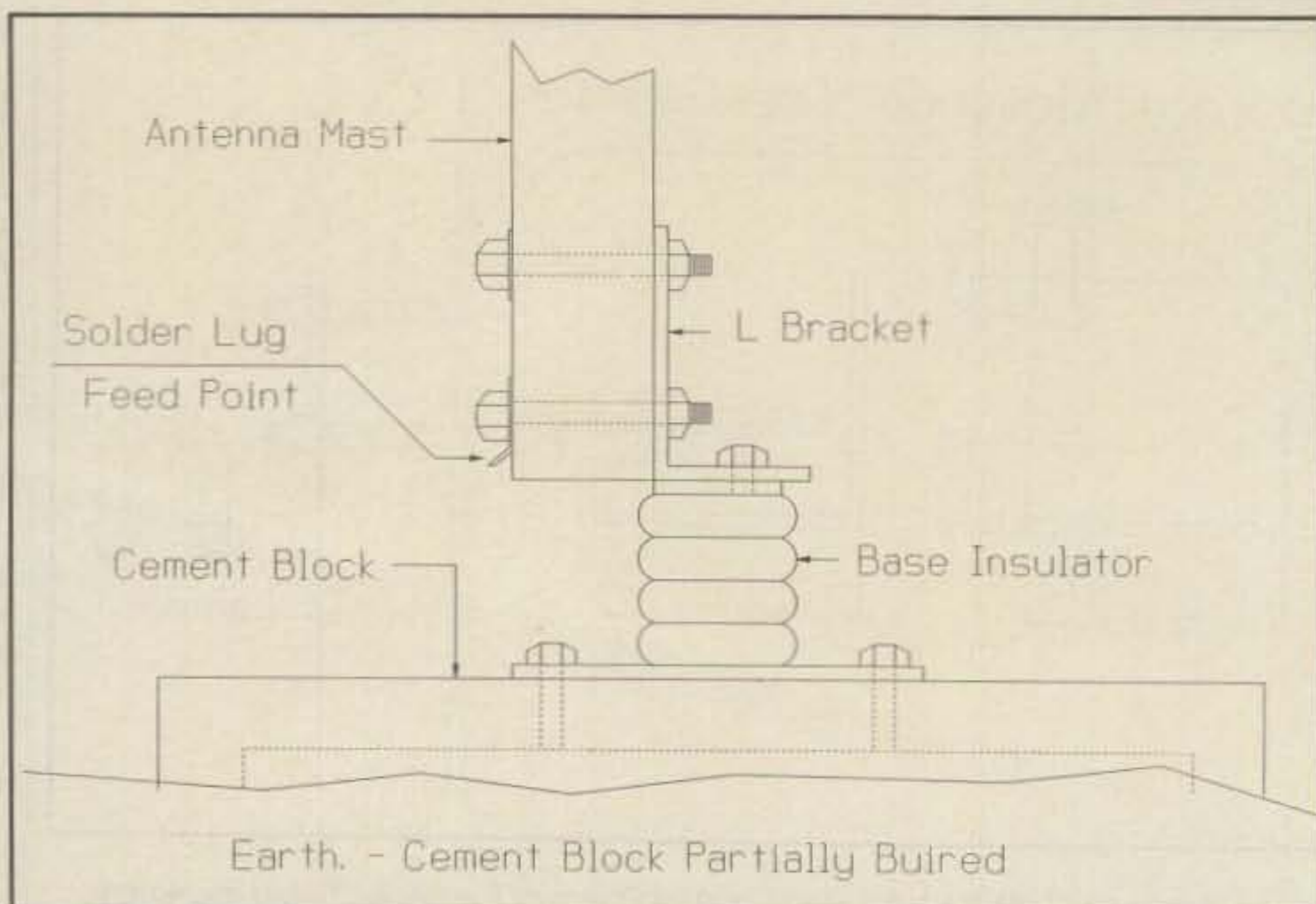
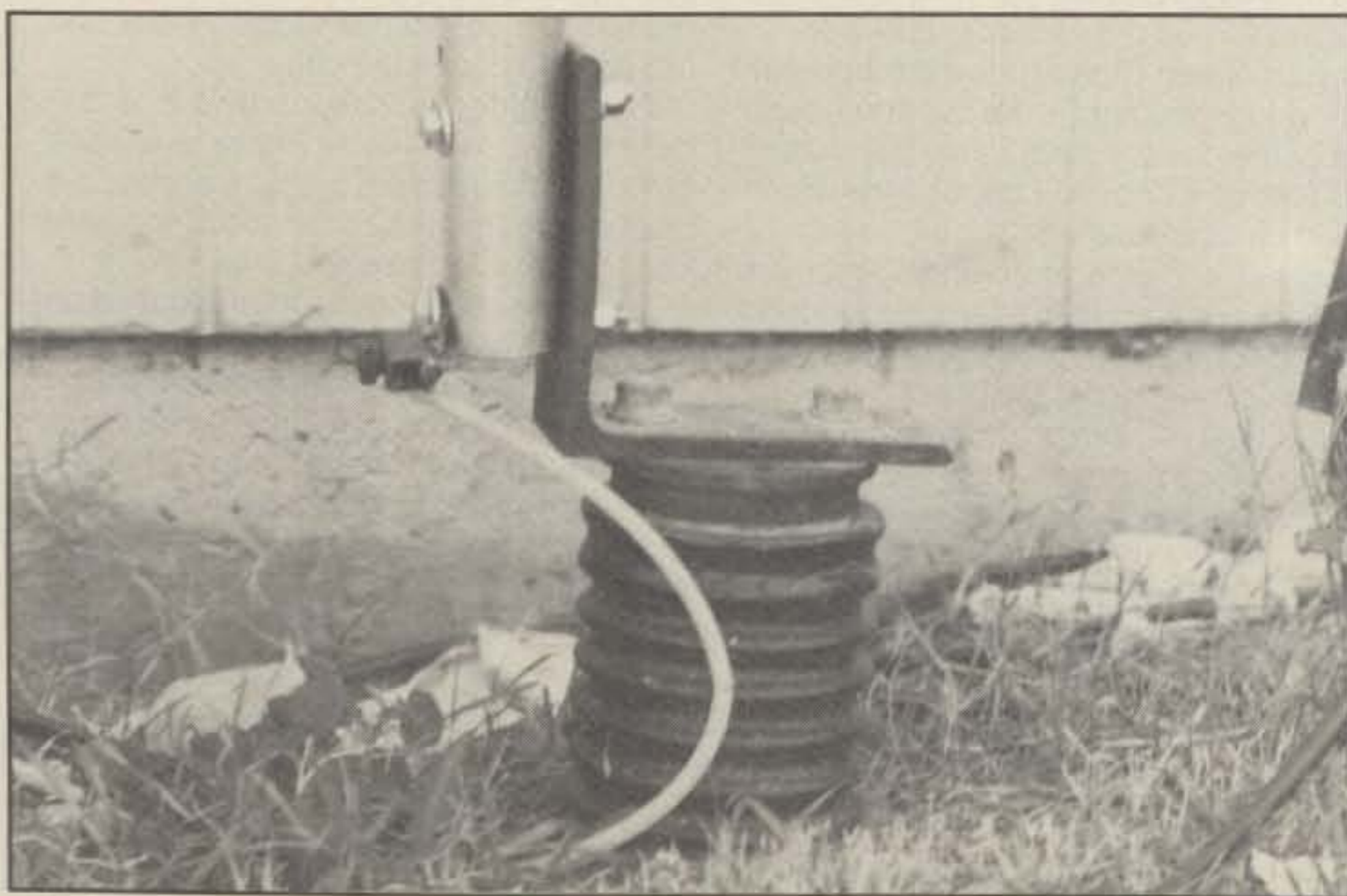


Fig. 6- The base insulator assembly for the vertical antenna.



The completed base assembly as described in fig. 6.

of capacity-hat to add additional capacitance in order to resonate the coil on the desired operating frequency of 1.855 MHz. This was accomplished by fabricating a right-angle bracket from a piece of $\frac{1}{8}$ " \times $2\frac{1}{2}$ " aluminum angle (see fig. 4).

The bracket was secured to the 10 foot vertical aluminum tubing with $1\frac{1}{2}$ inch U-bolts about 15 inches above the top of the coil. I originally mounted two horizontal capacity-hat elements at 90 degrees to each other on the mast, but found that this arrangement presented too much capacity, and I removed one of the elements during my initial tune-up tests.

Installation

The antenna mast must be insulated at

the base and kept free from physically touching any objects. To fabricate a base insulator, I found an old power-line insulator and bolted it to a cement block. I then fabricated a large L-bracket from $\frac{3}{8}$ inch steel and bolted the bracket to the top of the base insulator as a method of mechanically attaching the antenna base to the insulator (see fig. 6).

My antenna is mounted at one end of my home and is very close to the wall. At the point the antenna passes the eave of the roof, I mounted two 10 inch stand-off insulators side by side and bolted a strap of aluminum between the two insulators. This aluminum strap is drilled to accept a 2 inch U-bolt. The antenna mast is bolted to the aluminum strap with a 2 inch U-bolt

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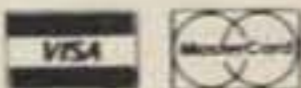
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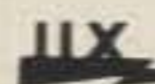
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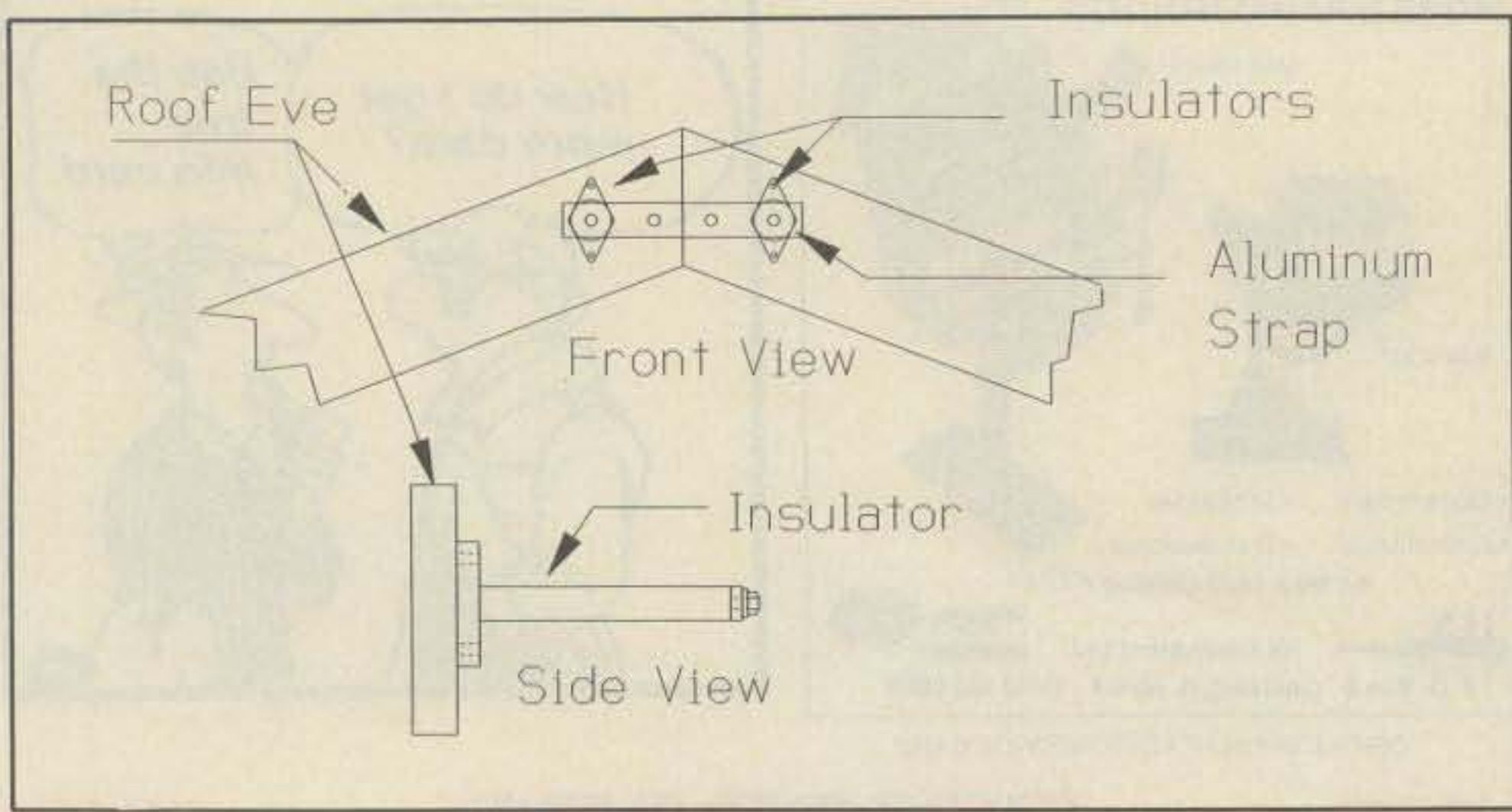


Fig. 7- Method of supporting the antenna from the eve of the house.



A simple, neat installation via long stand-off insulators.

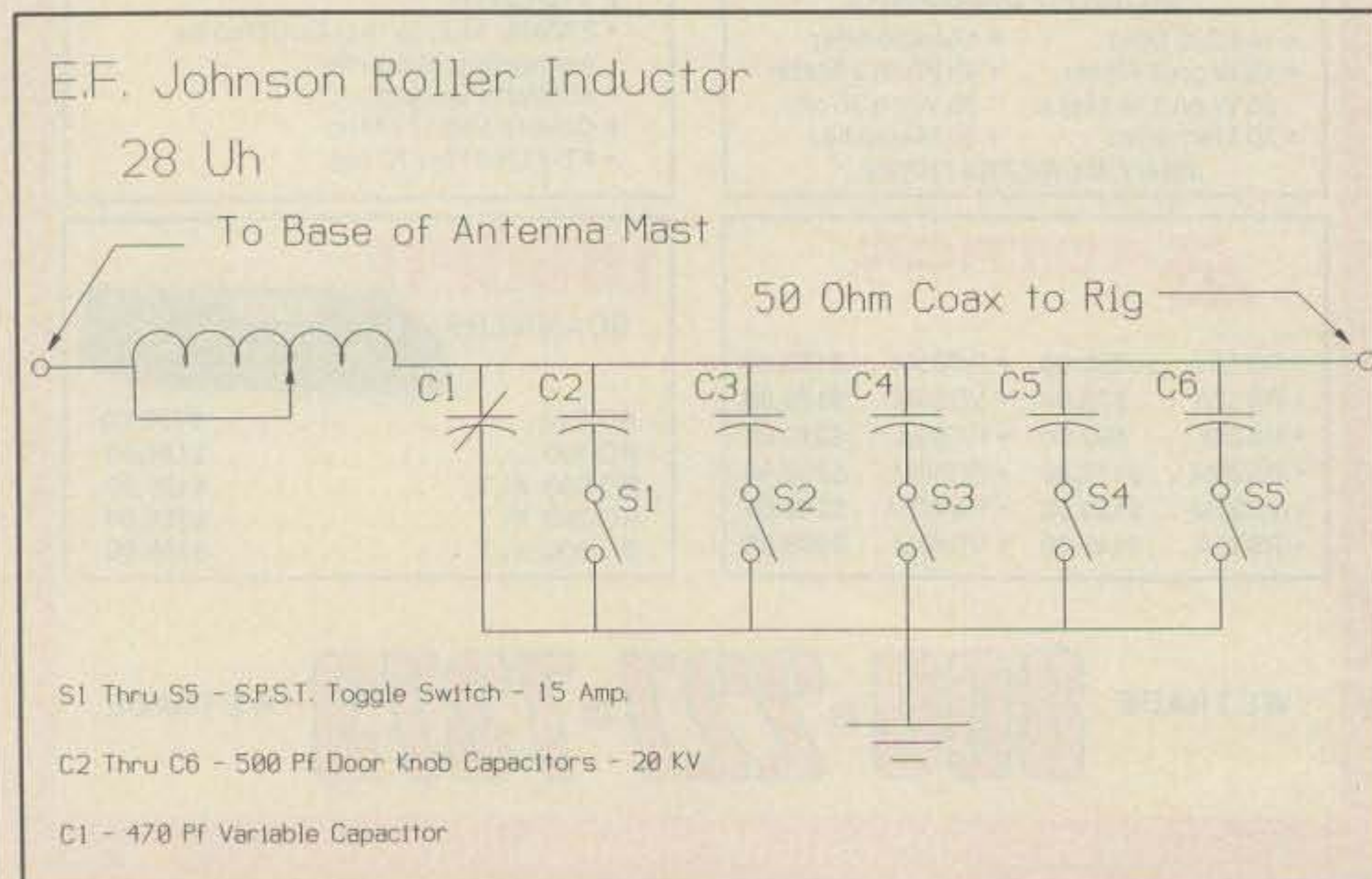


Fig. 8- Details of the author's L-network used in tuning the 160 meter vertical antenna.

at the eve of the roof as an additional means of stabilizing the mast (see fig. 7).

The mast is then guyed with nylon rope at approximately 10 feet above the roof and at the guy ring located just beneath the coil. At both guy points I employ four-way guying utilizing eye-bolts screwed into the roof as anchor points.

Tuning The Antenna

I used a Delta OIB-1 Operating Impedance Bridge to measure the resistive and reactive components of the antenna. My initial measurements indicated that the antenna was inductive. Therefore, I removed one of the horizontal capacity elements and remeasured the base impedance.

My second measurement revealed that the antenna was resonant at 1.834 MHz. Since I wanted to operate with the antenna resonant at 1.855 MHz, I lowered the telescoping mast to a point that allowed me to reach the horizontal capacity-hat element. Using a small tubing cutter I removed 3 inches from each end of the element. Raising the telescoping mast back to the 40 foot level, I again measured the base impedance and found it to be resonant at 1.853 MHz. I decided to accept 1.853 MHz as the resonant operating frequency.

The final base impedance measurement was 40 ohms resistive, plus or minus $J0$. At this point I installed my L-network in series with the feedpoint of the antenna and adjusted for an input impedance of 50 ohms, plus or minus $J0$ (see fig. 8 for details on the L-network).

To verify that my measurements were correct, I inserted a Bird wattmeter, model 43 in series with the input feedline and checked the reflected power. The reflected power was zero.

On-the-air tests seem to indicate that the new top-loaded vertical is working very well. The system does provide a limited bandwidth of approximately 20 kHz before requiring retuning of the L-network.

I would certainly recommend this antenna to anyone interested in operating on 160, even if you have enough room to construct a full-size horizontal dipole. You will find that the short vertical will almost always perform much better than a full-size horizontal dipole.

In the interest of safety, I would like to point out that a 36 foot vertical antenna could be an excellent lightning rod. I would strongly suggest a method of grounding the base of the antenna to a good, solid earth ground during long periods of non-use, especially prior to an incoming storm.

As with almost all vertical antenna systems, a good radial ground system is required for maximum performance.

I welcome any comments or suggestions on the design or construction techniques employed in this construction project.





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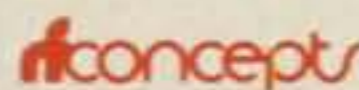
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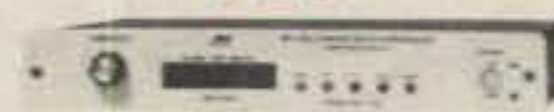
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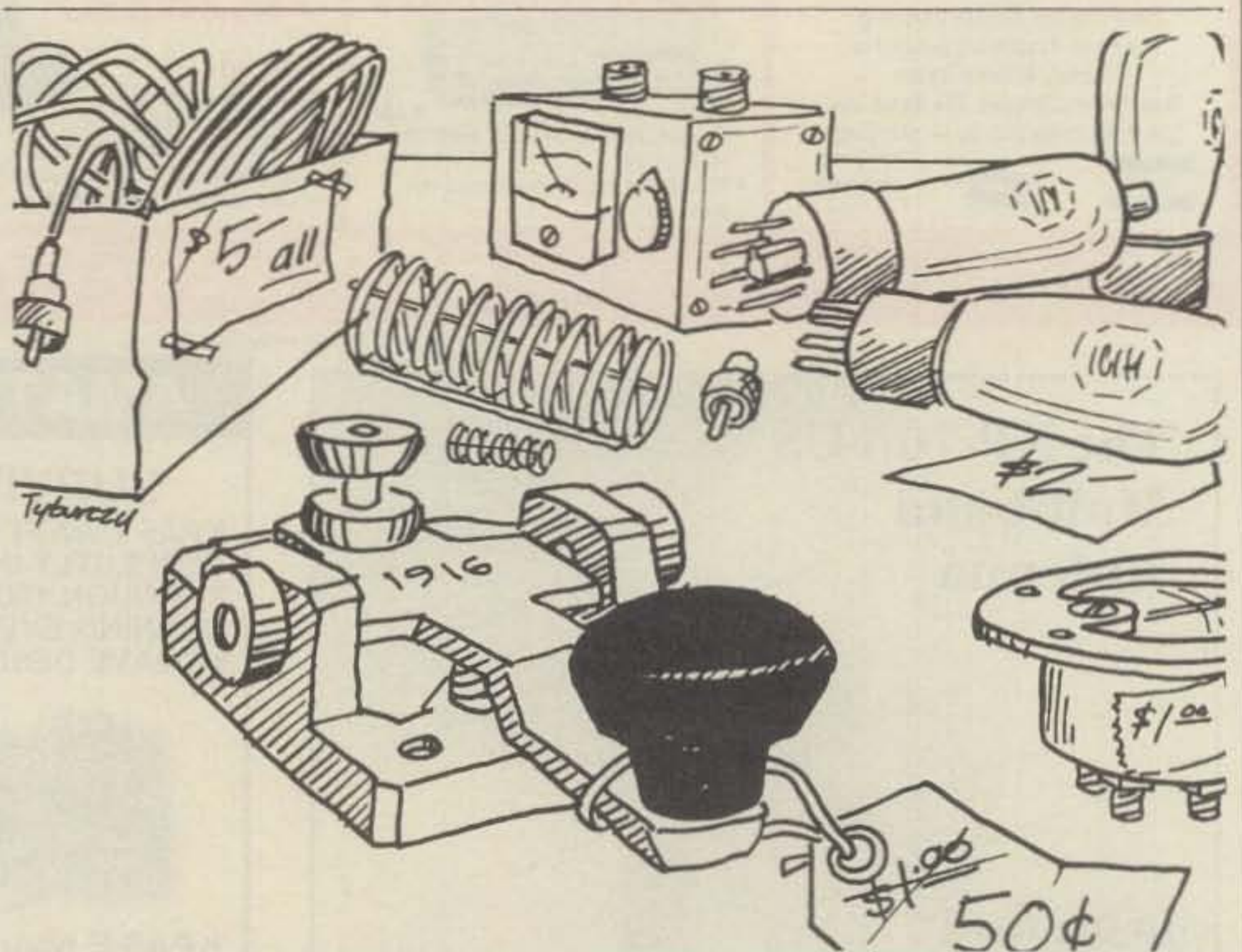
BY JOE TYBURCZY*, WB1GFH

I don't know how these things started. Maybe it's the sight of all that winter snow melting and turning to soupy, gray mush that triggers a strange chemical imbalance in the brain. It could be that those derelict oscilloscopes, moldering Hallcrafters chassis, and shoeboxes full of surplus BC-779 tuning knobs stored in damp basements and garages all across America begin to emit some odorless, mind-altering gas that summons amateur radio enthusiasts, zombie-like, to converge for an annual spring swapfest. Whatever it is, trusty friend Hank and I fell victim to it as soon as we heard news that this season's event would be the largest ever planned. Held on the site of a sprawling county fairground on a sunny Saturday in May, this promised to be the granddaddy of all swapmeets!

We'd been to swapmeets and fleamarkets before and found that a fundamental law governs these events: the best stuff goes early. Hank knew it. I knew it. Several thousand bargain-lusting amateurs knew it, too. At the exact moment when the sun peeks over the horizon at daybreak, the din of money and equipment furiously exchanging hands shatters the morning calm like cannonfire. We'd heard stories of the historic telegraph key used by David Sarnoff to contact the sinking ship *Titanic* being sold for 50 cents during this dawn frenzy. We weren't about to be left out this year. We had to be there at sunrise, and there was only one way to do it. We'd join the hardy souls who camped there the night before.

It occurred to us that we might even be able to sell a few things in the process.

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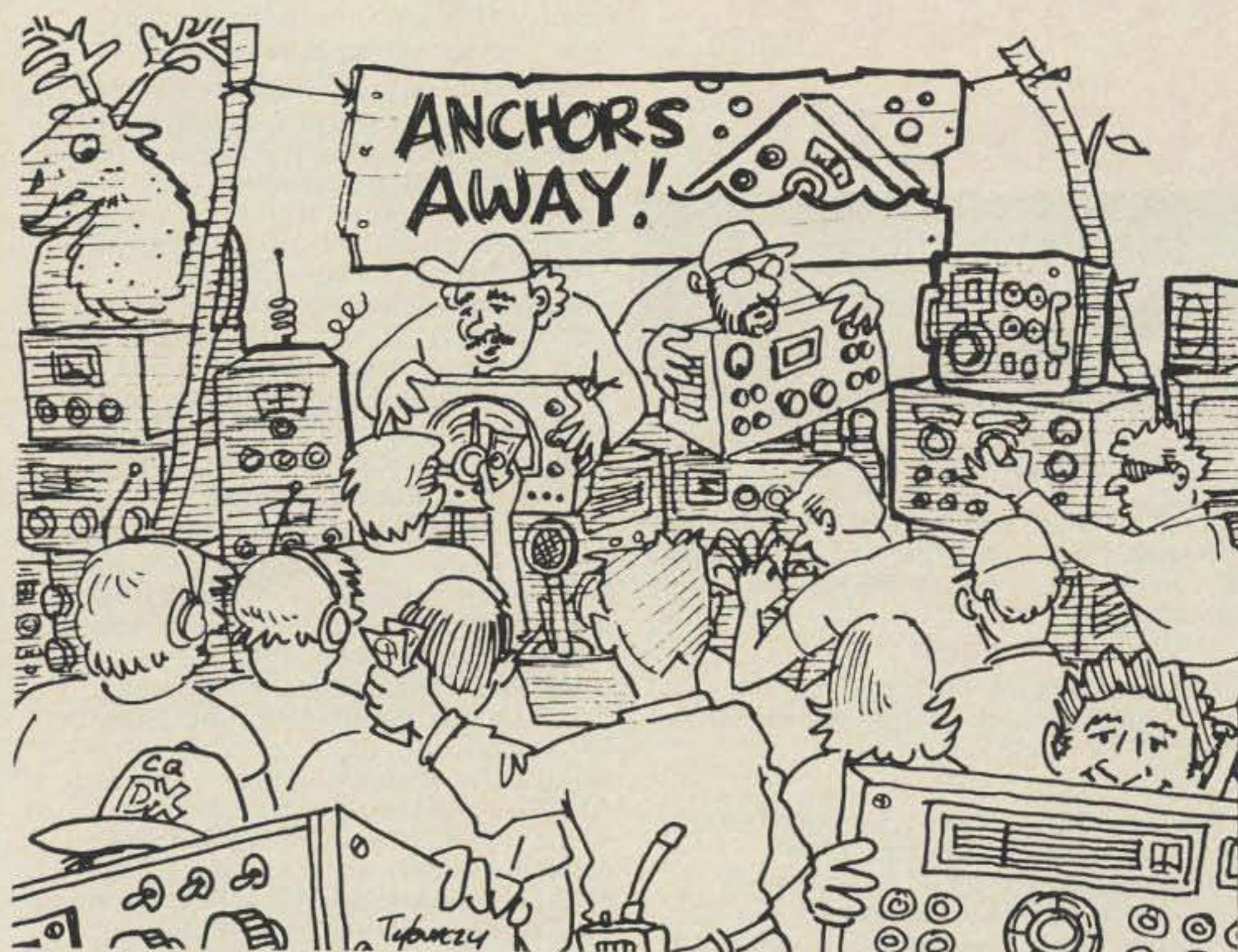


Hank and I took stock of our goodies. Well, gosh, this old power supply might fetch a fair price, and gee, didn't I overhear some guy on 2 meters the other day tell how he'd pay a king's ransom for a Hammarlund Super-Pro just like the one I've got here? We surveyed our shelves sagging with boat anchors and both arrived at the same thought simultaneously: Why not sell everything? Really clean house. Start fresh.

Within days our stacks of stuff selected to be sold loomed like miniature Matterhorns. Before we were finished they grew to include a collection of obscure 16mm newsreel films, various non-func-

tioning TV sets, and a stuffed moose head. We imagined crazed throngs of buyers assaulting our fleamarket table like locusts. Visions of fabulous wealth gleaned from our eclectic junk pile ran like a technicolor movie loop inside our fevered craniums. We'd need help controlling this unruly mob!

Our mutual friend Barry had just gotten his ticket and was guaranteed to be on all bands at all hours. I grabbed my HT, dialed a repeater frequency at random, and mumbled his callsign. He came right back. Sure he'd be glad to help us and promised to rendezvous at our table on Saturday. The next recruit was our pal



Bill, whose pack-rat habits were the stuff of legend. He could never resist acquiring another piece of old gear. Like Atlas holding the world on his shoulders, he'd cheerfully add yet another boat anchor to his burden. If it was electronic or even vaguely mechanical, Bill had at least two of them stuffed squirrel-like in the vast labyrinth of his basement.

Hank and I approached the campsite that Friday night, our two sedans stuffed like gypsy wagons. We found a spot bordering right on the midway nestled between a giant RV and 1957 Ford panel truck rigged with an 80 meter beam and a woodburning stove. Even in the chilly blackness the fairgrounds bristled with campfires and gas lanterns illuminating isolated hotbeds of trading activity. Hank and I had come prepared. We had manufactured elaborate display signs—our own logo "Anchors Away!" complete with illustrations of an ill-fated behemoth of a radio set sinking below the waves. We had price tags. We had cases of beer and soda. We even had an adding machine. What we neglected to bring was warm clothing and a table. From a few scraps of discarded lumber and a handful of rope we managed to throw together something that resembled a table. Rewarding ourselves with a beer, we pondered our handiwork. This was the setting that would showcase our priceless collection of fine, used goods to the public? In the beam of our flashlight it seemed to lack a certain *je'ne sai quois*. We set to work again, and this time arrived at a

point just a few hours from dawn having finished our creative additions to the table. The result was a two-story architectural nightmare of plastic sheeting, scrap lumber, and tree limbs jutting out in all directions. Pleased, we pronounced it a work of genius and fell into our sleeping bags, drifting off to sleep to the sounds of the guy in the panel truck next door working a VK6 on CW.

"Get that @*#@ thing out of the road!" a voice was yelling in my dream. My eyes snapped open and the voice was no longer part of my slumber, as it seemed to be originating directly outside our tent. Blinking in the harsh sunlight, I saw our rustic skyscraper now reduced to rubble. Worse, it had fallen squarely into the middle of the main fairground avenue and was blocking a procession of angry county officials. Barefoot, squinty-eyed, and full of no coffee, we hopped around in the morning dew like a backwoods Laurel and Hardy hastily clearing the debris from the road.

Off in the distance I could see a dust cloud forming on the horizon. The hungry hordes were approaching! Where were our signs? Our computer-printed custom price tags were lost! Frantic, we hauled our stuff out of the cars and barely had time to scribble a few prices on masking tape when they were upon us.

"Have you see Sarnoff's code key!?" a distraught soul pleaded. We admitted that we hadn't, but would keep an eye open for it. "Bless you!" he screamed, and was off. A pair of college students

with bad complexions carried off our pile of dysfunctional TVs. They seemed to communicate with each other through a pair of laser-light-modulated headsets, despite the fact that they were never more than a few feet apart. A tightly packed current of buyers surged past us in an unremitting flow. The fairgrounds were rapidly filling with rows of freshly arrived tailgaters. Where was our promised relief from Barry and Bill?

A black Camaro slid into a spot behind us and a teenage James Dean emerged, instantly setting up shop with a trunkful of car stereos and CB radios with suspicious-looking attachments. Within a few minutes, the moosehead was swept away by a cluster of grinning men sporting some kind of fraternal uniforms, the Hammarlund was carried away by a husband and wife tag team, and someone even bought the adding machine. Finally, a brief lull, and Barry arrived with his six-year-old daughter in tow. "Guys, if you watch Alicia for a few minutes while I take a quick tour of the circuit, I promise you I'll take over the table for the rest of the day . . ." was all we heard before he disappeared, engulfed by the crowd. Alicia stared at us through a mop of blond hair. "I'm hungry," she announced firmly.

As the sun crept higher in the sky, the lull tuned into a bonafide dry spell. Behind us in the Camaro James Dean was making idle conversation with a taciturn old timer festooned with ARRL Lifetime Membership ribbons. "Would it bum you out badly, sir," he began, "if I told you I bootleg on some of your bands a bit?"

We still had considerable poundage to drop. In the last hour we hadn't sold so much as a scrap of wire for a nickel. Hank furrowed his brow. To return home with our original load of boat anchors would be unpardonable. Some promotional advertising was in order. With a little coaching, we soon had Alicia standing proudly on our makeshift table warbling the old Navy theme "Anchors Away" to stunned passers-by. It did the trick. By the time Barry returned, a small pocket of charmed on-lookers had carried away our remaining gear, and Alicia had learned the words to more than a few old Navy songs.

Bill never did make it to our table. Oh, once we thought we saw a figure vaguely resembling his slowly making its way through the rows of sellers' tables, dragging a towering pyramid of iron behind.

We rode home that night bone-tired but satisfied. We never located Sarnoff's code key, but we did sell everything we came with, had some fun in the process, and streamlined our radio shacks . . . well, almost. Sometime that afternoon I had managed to acquire a vintage Collins CW transmitter from the fellow next door to us in the old truck. I figured it rated at about 1 watt output per pound, but it sure would look good on those nice, clean shelves. EJ

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You also get a random code generator that'll help you copy CW faster.

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MFJ-422B

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Now you can quickly optimize your antenna for peak performance with this portable, totally self-contained antenna bridge.

No other equipment needed - take it to your antenna site. Determine if your antenna is too long or too short, measure its resonant frequency and antenna resistance to 500 ohms. It's the easiest, most convenient way to determine antenna performance. Built-in resistance bridge, null meter, tunable oscillator-driver (1.8-30 MHz). Use 9 V battery or 110 VAC with AC adapter, \$9.95.



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Mount it outdoors away from electrical noise for maximum signal, minimum noise. MFJ-1024 covers 50 KHz to 30 MHz

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MFJ-1024 **\$129⁹⁵** MFJ-1312, \$9.95.

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\$34⁹⁵ MFJ-1701



\$21⁹⁵ MFJ-1702



\$59⁹⁵ MFJ-1704

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\$28⁹⁵



MFJ-262
\$69⁹⁵



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MFJ-1286 Gray Line DX Advantage

\$29⁹⁵ MFJ-1286



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MFJ-284 fits Icom, Yaesu, Santec. MFJ-286 fits Kenwood.



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\$19⁹⁵ MFJ-108B **\$9⁹⁵** MFJ-107B

Huge 5/8 inch bold LCD digits let you see the correct time from anywhere in your shack. Choose from the dual clock that has separate UTC/local time display or the single 24 hour ham clock.

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The availability of low-cost solid-state control relays which can switch larger power or coaxial relays opens some useful possibilities for amateur radio applications. W4FA describes a specific application.

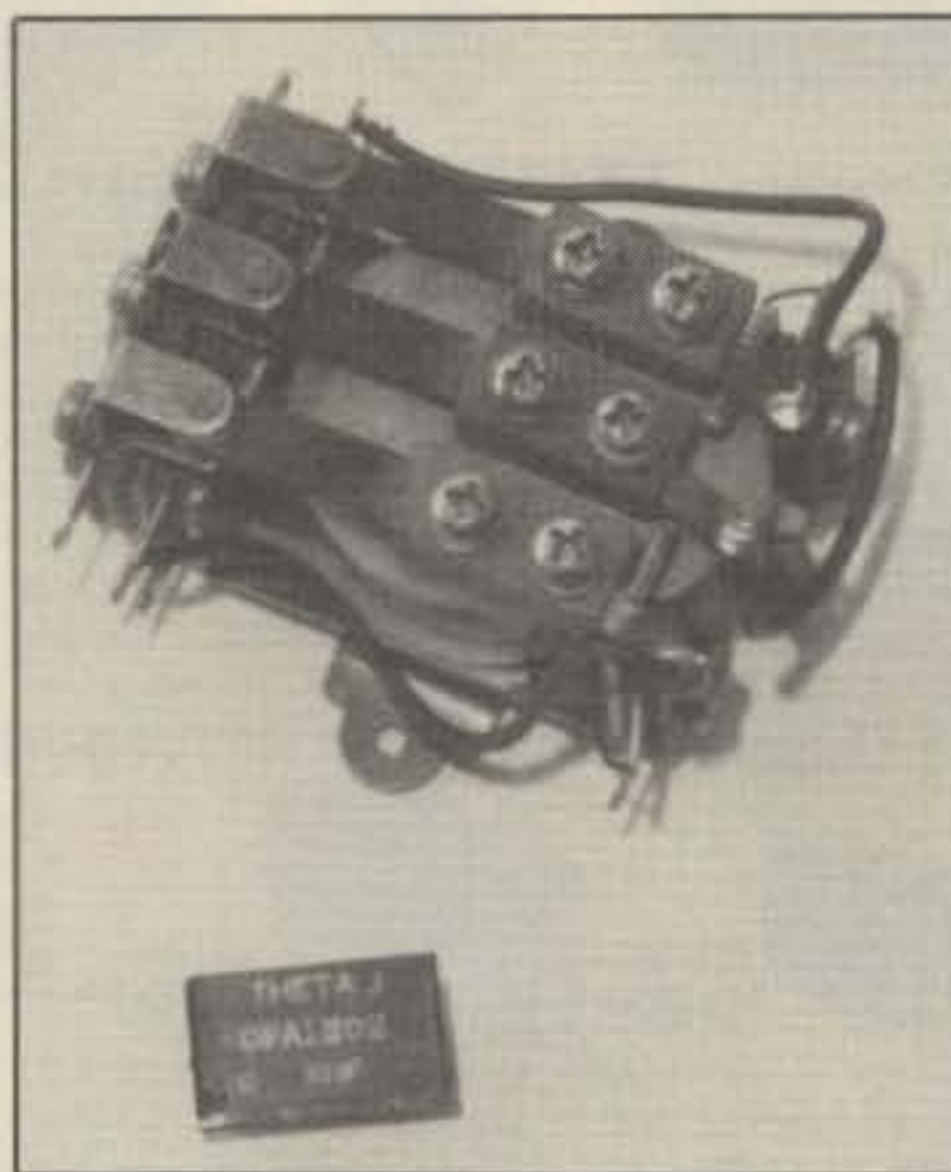
Simplified Remote Antenna Switching

BY JOHN J. SCHULTZ*, W4FA/SV0DX

None of my station setups would ever have qualified for an interior designer's award. Nonetheless, I have tried to keep my station setups reasonably neat looking, if only to keep peace with the XYL, N2BVN. Perhaps the ugliest looking part of any multiband station setup is the maze of coaxial cables from various antennas coming into a manually operated antenna selector switch or switches. I've often wondered what visitors who know nothing about radio think when they see a sophisticated station setup complemented by a weird bunch of coaxial cable "plumbing" draped up and down one or more walls of a shack.

Well, there is nothing new about remote antenna switching so the coaxial cable maze can be hidden away and a simple control box, which remotely activates all of the switching functions, can be installed at the operating position. Commercial remote switching units are available, and many articles have described homebrew designs. However, the increasing availability of low-cost solid-state control relays has made the homebrew construction of remote antenna switching units much more attractive and interesting.

Solid-state relays have been around for years, but until recently have been definitely "pricey." What is a solid-state relay? As the name implies, it is pretty much the equivalent of a mechanical relay, but much more sophisticated in many respects. For instance, the \$2.00 solid-state relay pictured with this article measures only $\frac{7}{8}$ " \times $\frac{5}{8}$ " \times $\frac{1}{4}$ " (excluding wiring pins). Yet it will switch an AC load of up to 1.5 amperes at 400 volts peak. It has optical isolation between the control in-



The relatively little "speck" next to the large relay is a solid-state control relay. It's tiny but mighty, as explained in the text, and a very useful component for the control of antenna switching relays operating in any frequency range and at any power level.

put terminals and load terminals providing 4 KV insulation. Twin SCRs are used for load switching, and the AC load switching is zero-voltage crossing controlled. The latter feature is something that cannot be readily duplicated with a mechanical relay.

If you're switching an AC load (another relay, for instance) with an ordinary relay, the load may be activated during any part of the sine-wave cycle. If the load is activated during the peak of the sine-wave cycle, maximum inrush current into the load takes place. If the load is activated at or very near to the point where the sine wave goes through a zero value, there is

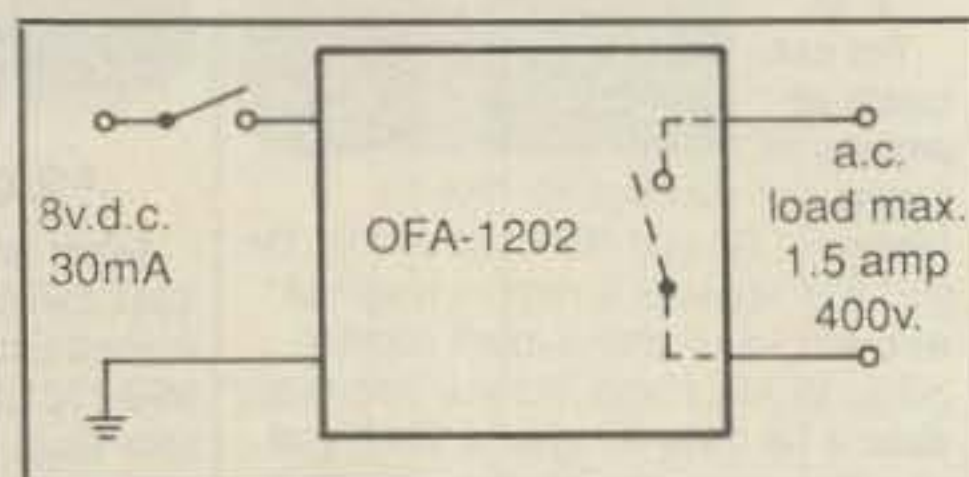


Fig. 1 - Functional operation of a solid-state relay. The internal load switching is actually done by SCRs. The device is primarily intended to switch AC loads only.

no inrush current or, at least, an extremely small value. Minimizing the inrush current saves wear and tear on the load and on the components inside the control relay. Zero-voltage crossing control ensures that the load is switched on only during the zero voltage condition.

Just to be sure the basic application of a typical solid-state relay is understood, refer to fig. 1. Switching the 8 VDC control voltage produces the equivalent action of having a SPST switch being activated which switches the AC load.

For remote antenna switching, the use of solid-state relays to control regular antenna switching relays provides all sorts of economies and conveniences. Fig. 2 shows a typical, simple application. In this case, four antenna switching relays, each having a 110 VAC coil, are controlled remotely by a one-pole five-position switch. The four switching relays are organized to select any one of four antennas. Unused antennas are grounded. The reason for the fifth position on the rotary switch is to allow all relays to be deenergized, thus grounding all of the antennas, when a station is not in use. The 120 ohm resistor in the control box is only there to drop the 12 VDC from a common plug transformer down to about 8 volts. Of

*c/o CQ magazine

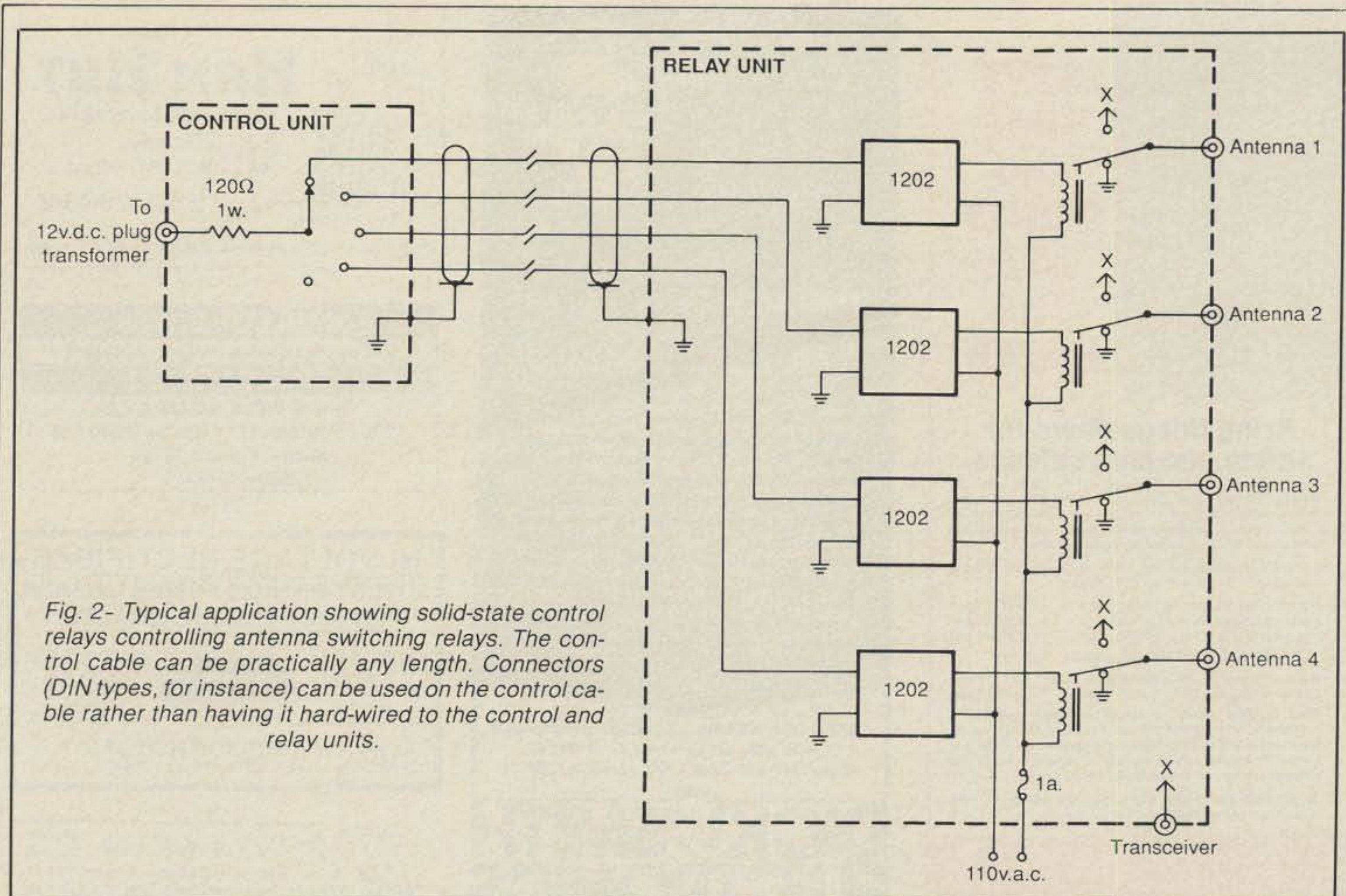


Fig. 2- Typical application showing solid-state control relays controlling antenna switching relays. The control cable can be practically any length. Connectors (DIN types, for instance) can be used on the control cable rather than having it hard-wired to the control and relay units.

course, if a plug transformer with 8 to 9 VDC output can be obtained, the resistor is not necessary. You could also switch an LED with the rotary control switch to indicate which antenna is in use if you wanted to embellish the control box a bit.

The cable between the control box and the relay box can literally be any length, up to hundreds of feet, since only 30 ma flows over the cable. Inexpensive intercom cable having #22 AWG wires is a good choice. However, the cable should be shielded to avoid RF problems.

If you really want to achieve a sophisticated installation, you could control the relay box over the coaxial cable which goes from the relay box to a transceiver. Different voltage levels could be sent over the coaxial line to activate different solid-state control relays. Those readers who understand this concept can certainly put the hardware together, so I'll let it go at that. In general, however, I would simply recommend using the straightforward approach shown in fig. 2. It's simple, reliable, and cost-effective. Note that the type of relay used for actual antenna switching has to have some relation to the frequency range involved, although the concept shown in fig. 2 is valid from 160 meters up through the SHF range. Open-frame power type relays such as that shown in the photograph are quite suitable for antenna switching in the 160-

10 meter range if lead lengths are kept short. When you move into the VHF/UHF range, coaxial relays designed for VHF/UHF service are generally necessary.

Many inexpensive solid-state relays are now available. The one I used is the Theta-J OFA-1202, which sells new at \$1.95 from R&D Electronics, 1202H Pine

Island Rd., Cape Coral, FL 33909. Their catalog (free) also lists various power-type relays which can be used for actual HF antenna switching. Many other firms such as All Electronics, P.O. Box 567, Van Nuys, CA 91408, also offer similar values. You simply have to do a bit of catalog searching.

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| 1130 RG213/U 95% shield mil spec NCV jkt. | .39 |
| 1140 RG214/U dbl silver shld mil spec | 1.85 |
| 1705 RG142B/U dbl silver shld, teflon ins. | 1.50 |
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| UG21DS N plug for RG8,213,214 Silver | 3.35 |
| UG83B N jack to PL259 adapter, teflon | 6.50 |
| UG146A SO239 to N plug adapter, teflon | 6.50 |
| UG255 SO239 to BNC plug adapter, Amphenol | 3.55 |
| SO239AM UHF chassis mt receptacle, Amphenol | .89 |
| UG175/UG176 silver reducer (specify) | .45 |
| UG88C BNC plug RG58,223,142 | 1.45 |

GROUND STRAP-GROUND WIRE

| | |
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| GS38 3/8" tinned copper braid | .35/ft |
| GS12 1/2" tinned copper braid | .50/ft |
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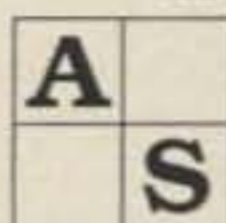
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CQ REVIEWS:

The Kantronics KT-130 Single-Band 30 Meter Transceiver

BY DAVE INGRAM*, K4TWJ

If you are a frequent light traveler, such as HF mobiling, or enjoy camping with a small rig by your side, check out Kantronics' new KT-130 single-band transceiver. This little 20 watt unit fits into an overnight bag or in any car's limited-space interior, and is an impressive little performer.

The Kantronics' KT-130 includes: microprocessor-based tuning with digital frequency readout, RIT, semi CW break-in operation, internal speaker, front tilt-up bale, and a very sensitive receiver. A narrow 250 Hz CW filter and an effective noise blanker are also readily available options.

Overview

The Kantronics transceiver featured in this review (Model KT-130) operates our CW-only band of 30 meters. Refer to the photo and follow along with us in a general overview.

The Kantronics transceiver is enclosed in a light-gray metal cabinet that measures 2.3"H x 7"W x 9.8"D and weighs a scant 5.7 pounds. The front panel is silver with black knobs. The digital readout is green in color, and the clear/white S/Power output meter is illuminated for easy nighttime viewing. The transceiver's front-panel jacks for a key and external speaker or earphone are a welcome variation from the usual rear-mounted sockets, especially when mobiling or operating portable. Everyone likes a rig that is easy to carry and hook up without crawling under a car's dash or stretching over a table.

The KT-130 transceiver covers a 500 kHz range. Power output, as measured by two different wattmeters at my QTH, is 20 watts on CW. Adjusting an internal potentiometer can also reduce that output to 5 watts for genuine QRP operation. The single conversion receiver uses dual-gate MosFETs that are hotter than red peppers in Texas chili. If you cannot hear them with this rig, give up! The receiver's



The Kantronics KT-130 is a compact 30 meter transceiver that fits in small spaces and delivers a good 20 watt signal.

IF filter is apparently a four-pole item. Its bandwidth is 1.1 kHz at 6 dB and 3.1 kHz at 60 dB. The filter exhibits good performance on SSB. The RIT control includes an on/off switch at its full counterclockwise position, and it has an offset range of approximately 2 kHz. CW sidetone level is adjustable via an internal potentiometer.

The transceiver's power requirements of 12.8 volts DC at 5 amperes (maximum) are ideal for long-term mobiling while stopped or for portable operations. Assuming you mate the rig with a small rechargeable battery pack and an easy-to-install wire antenna, HF mountaintopping or oceanside DXing is a snap.

30 Meters and The KT-130

Although the 30 meter KT-130 does not include many bells and whistles, its small book-like size and simple operation make it a neat traveling companion. I carry it on more brief outings than my all-band transceiver simply because it is easier to tuck

under an arm and hook up. Try moving a larger rig with its mating key or mike and external speaker between home and car every day, and you will understand that statement. On-the-move operating should be fun!

I have used homebrewed 1 and 5 watt transceivers while mobiling on 30 meters, but the results have not been earthshaking. There is a noticeable dividing point around 15 watts. Below that level is usually unpredictable (the operator, not the rig, makes the difference!). Power levels between 15 and 20 watts assure fairly reliable communication, especially on 30 meters. The maximum U.S. power limit on this band is 200 watts. Barefoot/100 watt transceivers are thus "big rigs," and a 20 watt signal has the same "clout" as a full-size transceiver on 20 meters. It is a QRPer's haven.

Circuitry

As I often emphasize, looking over any

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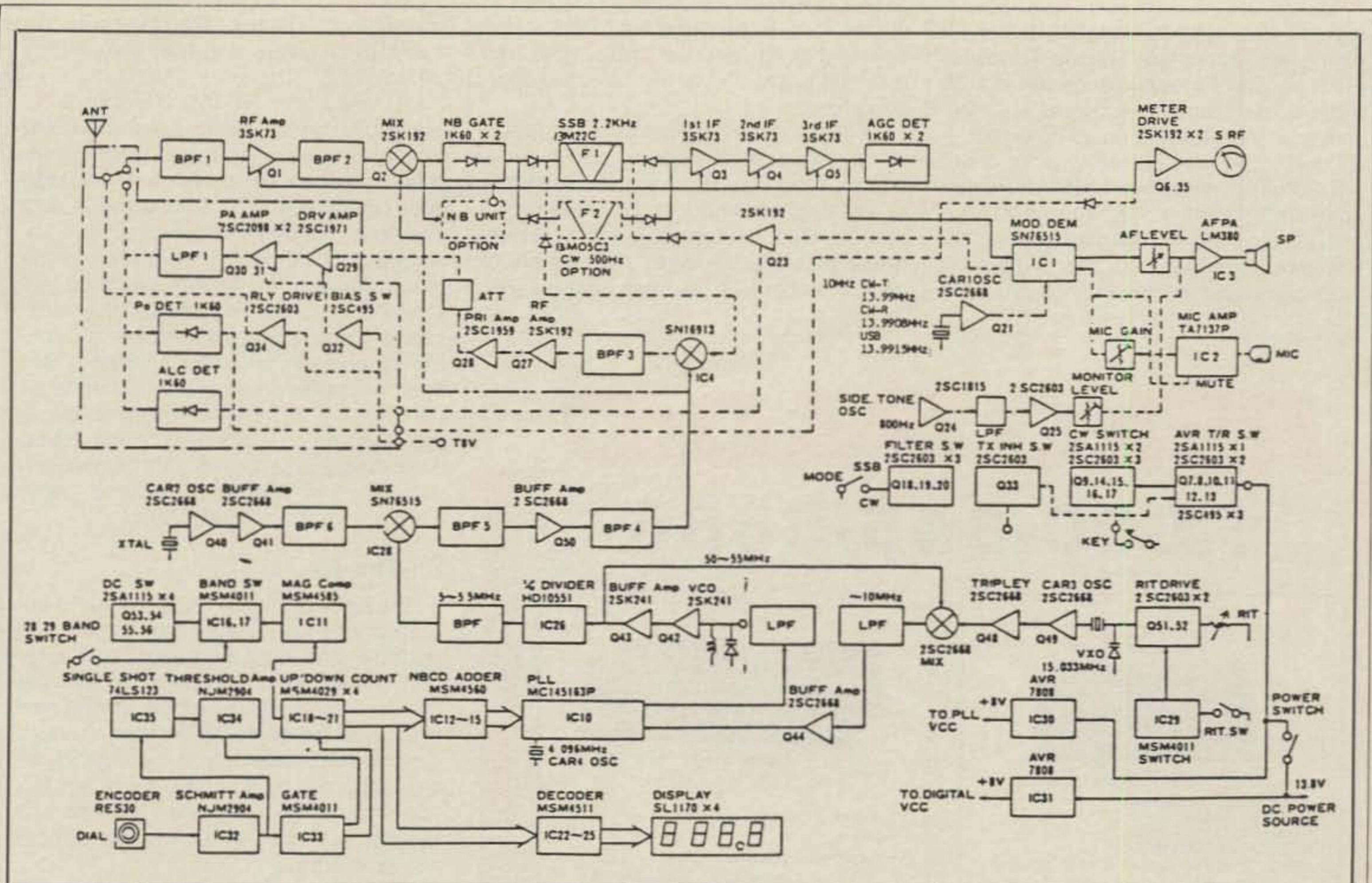


Fig. 1 - Block diagram of the Kantronics KT-130.

unit's block diagram is the most logical and unbiased means of technical evaluation. Using that concept, let's look inside the KT-130.

Refer to fig. 1's left top corner, and we will begin by tracing the receive path. Signals from the antenna are first applied to the bandpass filter BPF-1 and proceed to the RF amplifier Q1—a popular 3SK73 dual-gate MosFET. Signals then proceed through the second bandpass filter BPF-2, and through the first mixer (Q2), where they are downconverted to a 9 MHz IF. A signal then proceeds through the SSB or optional CW filter, F1 or F2, through the first, second, and third IFs, and on to the demodulator IC-1. After detection, the signal passes through the AF amplifier (LM-380) and on to the speaker. Notice the use of more 3SK73 MosFETs in the IF stages. These devices are well-known for their good reliability and high sensitivity.

Now let's follow the transmit path. Looking at the schematic's right center, signals from the microphone are first directed to the mike amplifier, IC-2. They continue through the mike gain control and on to the balanced modulator, IC-1. The double-sideband/reduced-carrier signal then proceeds through buffer Q-23 (dotted lines) to the SSB filter F-1, where it becomes a single-sideband signal. This is for other models not covered in this re-

view. It then proceeds to the mixer IC-4, where it is heterodyned to the desired transmit frequency (that is also equal to the receive frequency). The signal continues on through bandpass filter BPF-3. The transmit signal is then amplified by Q-27 and Q-28, and proceeds through the driver Q-29 to the power amplifier Q-30

and Q-31. This final amplifier stage uses a pair of 2SC2098 transistors in push/pull to produce a respectable and conservative 20 watts output. The signal continues on through lowpass LPF-1 and to the antenna.

Looking in the block diagram's left bottom corner, let's now follow its digital tun-

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ing and PLL system. Rotating the main tuning knob activates the optical encoder (RES-30), and sends pulses to the Schmitt trigger. This unit then activates a single-shot multivibrator and an up/down counter that "tells" the PLL whether to count up or down in frequency. Pulses from that up/down counter (IC-18 through 21) are also directed to the display section for frequency readout. The PLL's signal is then combined in the local oscillator's

closed loop to produce a precise injection signal for receive mixer Q-2 and transmit mixer IC-4 at the selected operating frequency.

Looking at the diagram overall reveals some impressive modern design techniques. First, the use of an optical encoder and frequency counters for obtaining a stable oscillator signal is favorably state-of-the-art. The receiver's inclusion of 3SK73 MosFETs is also impressive.

These devices have proven their worth in many transceivers, and they are difficult to beat.

Internally, the KT-130 transceiver is assembled on two circuit boards that are protected by an inner frame. The final amplifier transistors are mounted to a large heat sink that graces the cabinet's rear and does a good job of keeping the transistors cool. Although not shown in the block diagram, a transmit-switched +8 volts DC terminal is included on the transceiver's rear accessory socket for controlling an external amplifier. Since most linear amplifiers use 50 to 100 volts on their keying terminals, I suggest letting the Kantronics rig key a small Radio Shack relay. Use the relay's switched terminals to key your amplifier, and everything will interface smoothly.

On-The-Air

The Kantronics KT-130 is a smooth-operating little rig. I use it fixed, mobile, and portable, and I am having a ball with it. My first week's worth of operation with the transceiver and a low dipole turned several good DX contacts. In fact, I used it more than 10 days before making a state-side QSO. As I said earlier, 30 meters is a super band for low power! Europe and the South Pacific were worked without any problems.

The rig also does an outstanding job mobile, and the benefits of using a key hidden on a seat rather than a microphone in view of others is preferred for avoiding those horrendous "he's a spy" stares. Twenty watts is plenty of power for 30 meters mobiling. You can even call CQ and get several replies. Honest!

One particularly interesting feature of the KT-130 is its green on-the-air LED. While operating CW, you can actually watch the semi-break-in's delay "time out" between the last keying character and return to receive mode. That delay, incidentally, is just right (approximately 1 second) so that it does not "drop out" between letters even at slow speeds.

Conclusion

All aspects considered, the KT-130 is a gem. It is the kind of unit you can carry anywhere with few worries and operate in almost any environment with good results. Its only drawback is lack of SWR metering, but frills also mean increased rig cost. As the KT-130 stands, it is an ideal second or backup rig that does not represent a large financial investment.

If you really want to have fun with a small rig like this, connect a collector's-item-type hand key or your favorite old-time bug and enjoy CW in high style. Friends, that's living!

List price of the KT-130 is \$349. For more information on the KT-130 of SSB/CW transceiver contact Kantronics Communications, 1202 East 23rd Street, Lawrence, KS 66046.



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| 2-23 | 2 in/30 out | C A L L |
| 2-217 | 2 in/170 out | |
| 2-117 | 10 in/170 out | |
| 220 MHz | | |
| 3-22 | 2 in/20 out | |
| 2-211 | 2 in/110 out | |
| 3-312 | 30 in/120 out | |

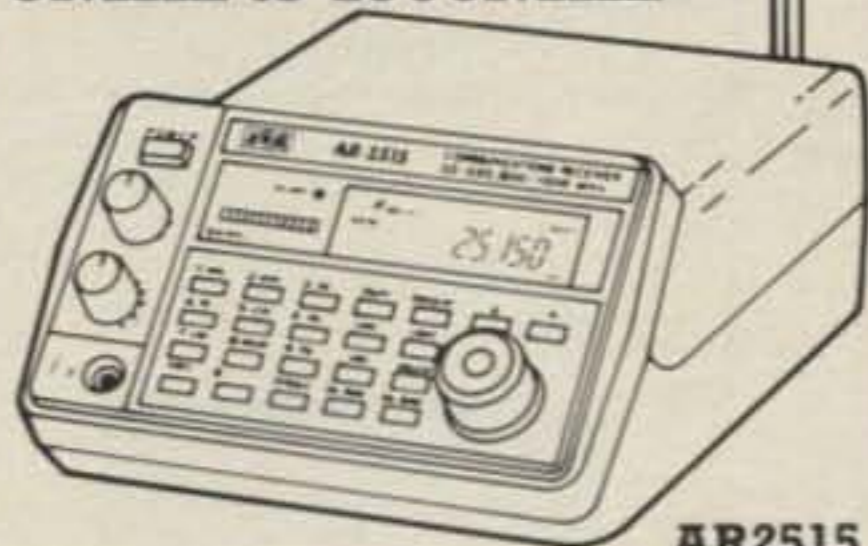
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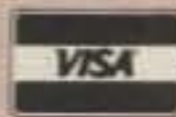
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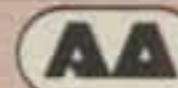
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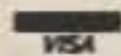
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| Model | Cont. Amps | ICS Amps | Price |
|-------|------------|----------|-------|
| RS4A | 3 | 4 | \$49 |
| RS7A | 5 | 7 | 59 |
| RS12A | 9 | 12 | 79 |
| RS20A | 16 | 20 | 99 |
| RS20M | 16 | 20 | 119 |
| RS35A | 25 | 35 | 159 |
| RS35M | 25 | 35 | 179 |
| RS50A | 37 | 50 | 229 |
| RS50M | 37 | 50 | 249 |

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| Model | LIST | Model | LIST |
|--------|----------|-------|--------|
| AL80A | \$985.00 | ATR15 | 380.00 |
| AL84 | 479.00 | RCS4 | 134.50 |
| AL1200 | 1825.00 | RCS8V | 134.50 |
| AL1500 | 2370.00 | | |

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r/c 2-317 2M
30W in = 170W out
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|-------|------|---------|------------|
| 2-23 | 2M | 2-30W | \$112.00 |
| 2-217 | 2M | 2-170W | \$299.00 |
| 2-117 | 2M | 10-170W | \$299.00 |
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| 3-211 | 220 | 2-110W | \$299.00 |
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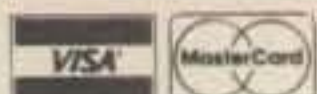
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- All steel construction
- Hot dip galvanized after fabrication
- Complete with base and rotor plate
- Totally self-supporting—no guys needed

| Model | Height | Load | Sale Price |
|--------|--------|----------|------------|
| HG37SS | 37 ft | 9 sq ft | \$CALL |
| HG52SS | 52 ft | 9 sq ft | \$CALL |
| HG54HD | 54 ft | 16 sq ft | \$CALL |
| HG70HD | 70 ft | 16 sq ft | \$CALL |

Masts—Thrust Bearings—
Other Accessories Available
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FREIGHT PREPAID

- All Steel Construction—Rugged
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- Totally Free Standing—No Guy Wires
- America's Best Tower Buy—Compare Save \$
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- In Stock Now—Fast Delivery

| Model | Height | Ant Load* | Weight | Delivered Price* |
|--------|--------|-----------|--------|------------------|
| HBX40 | 40 ft | 10 sq ft | 228 | \$419 |
| HBX48 | 48 ft | 10 sq ft | 303 | \$539 |
| HBX56 | 56 ft | 10 sq ft | 385 | \$629 |
| HDBX40 | 40 ft | 18 sq ft | 281 | \$519 |
| HDBX48 | 48 ft | 18 sq ft | 363 | \$619 |

*Your Total Delivered Price Anywhere in Continental 48 States. Antenna Load Based on 70 MPH Wind.

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- World Famous Rohn Quality and Dependability
- Rugged high wind survival—provides safe installation
- Multi purpose towers satisfy a wide range of needs
- Complete packages include: guy hardware, turnbuckles, guy assemblies, w/torq bars, concrete base, rotor plate and top section per manufacturers specs.

Packages shown below are rated for wind zone "B" (86 mph wind). Zone "C" (100 mph wind) design prices slightly higher. All tower packages shipped freight collect from our Plano, TX warehouse, in stock for prompt delivery.

| | Model 25G | Model 45G | Model 55G |
|------|-----------|-----------|-----------|
| 50' | \$789 | \$1379 | \$1779 |
| 60' | 849 | 1539 | 1989 |
| 70' | 1029 | 1719 | 2199 |
| 80' | 1099 | 2019 | 2559 |
| 90' | 1169 | 2169 | 2759 |
| 100' | 1399 | 2349 | 2969 |
| 110' | 1489 | 2719 | 3159 |
| 120' | 1559 | 2879 | 3399 |

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Coax arms, Thrust bearings
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| Model | Min.Ht. | Max.Ht. | Ant.load* | Sale price |
|------------|---------|---------|-----------|------------|
| MA40 mast | 21' | 40' | 10 sq ft | \$629 |
| MA550 mast | 22' | 50' | 10 sq ft | 999 |
| TX438 | 22' | 38' | 18 sq ft | 919 |
| TX455 | 22' | 55' | 18 sq ft | 1385 |
| TX472 | 23' | 72' | 18 sq ft | 2279 |
| HDX555 | 22' | 55' | 30 sq ft | 2079 |
| HDX572 | 23' | 72' | 30 sq ft | 3559 |

Note-US Towers Shipped Freight Collect From Visalia, CA Factory

*Note-towers rated at 50 mph to EIA specifications

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\$.36/ft \$349/1000 ft.
Up to 600 ft via UPS

- RG-213/U—95% Bare Copper Shield
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select connectors below

Coaxial Cable Loss Characteristics (DB/100 FT)

| Cable Type | Imped. | 10MHz | 30MHz | 150MHz | 450MHz |
|------------|--------|-------|-------|--------|--------|
| RG-213/U | 50 | .6 | .9 | 2.3 | 5.2 |
| RG8X | 52 | .8 | 1.2 | 3.5 | 5.8 |
| 9086 | 50 | .4 | .64 | 1.7 | 3.1 |
| 1/2" Alum | 50 | .3 | .5 | 1.2 | 2.2 |
| 1/2" Helix | 50 | .2 | .4 | .9 | 1.6 |
| 3/4" Helix | 50 | .1 | .2 | .5 | .9 |

HELIX® CONNECTORS

| Cable Type | UHF FML | UHF MALE | N FML | N MALE |
|-------------|---------|----------|-------|--------|
| 1/2" Helix® | \$29 | \$29 | \$29 | \$29 |
| 3/4" Helix® | \$55 | \$55 | \$55 | \$55 |

COAX CONNECTORS

| | |
|----------------------------|--------|
| Amphenol Silver PL259 | \$1.50 |
| UG21B N Male | \$3.50 |
| 9086/9913 N Male Connector | \$4.95 |

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|--------------------------------------|------------|
| Stranded Copper 14ga | \$.10/ft. |
| 1/4 mile 18ga copper-clad steel wire | \$30 |
| Dog bone end insulator | \$.79 ea. |

Van Gardon

| | | | |
|-------------------------------|---------------------------|------------------|-----|
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| Dipole Kits | D80 \$31.95/D40 \$28.95 | | |
| Short Dipole Kits | SD80 \$35.95/SD40 \$33.95 | | |
| All-band Dipole w/ladder line | \$29.95 | | |
| G5RV all band antenna | \$49.95 | | |

ALPHA DELTA

DX-A 160-80-40 Sloper \$49

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| A4S 4-el Tribander Beam w/S.S. Hdwre | |
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| AP8 80-10 mtr Vertical | |
| AV5 80-10 mtr Vertical | |
| D40 40 mtr Dipole | |
| 40-2CD 2-el 40 mtr Beam | |
| A50-5 5-el 6 mtr Beam | |
| 215 WB NEW 15-el 2 mtr Beam | |
| 230 WB NEW 30-el 2 mtr Beam | |
| 4218 XL 18-el 2 mtr Beam | |
| 3219 19-el 2 mtr Beam | |
| 424B 24-el 432 MHz Beam | |
| ARX2B 2 mtr Vertical | |

hy-gain

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| Discoverer 3-el Conversion Kit | |
| EXPLORER-14 SUPER-SPECIAL | |
| QK710 30/40 mtr. Add-On-Kit | |
| V2S 2-mtr Base Vertical | |
| V4S 440MHz Base Vertical | |
| TH5MK2S Broad Band 5-el Triband Beam | |
| TH7DXS 7-el Triband Beam | |
| TH3JRS 3-el Triband Beam | |
| 205BAS 5-el 20-mtr Beam | |
| 155BAS 5-el 15-mtr Beam | |
| 105BAS 5-el 10-mtr Beam | |
| 204BAS 4-el 20-mtr Beam | |
| 64BS 4-el 6-mtr Beam | |
| 12 AVQ 20-10 mtr vertical | |
| 14 AVQ 40-10 mtr vertical | |
| 18 AVT/WB 80-10mtr Vertical | |
| 18HTS 80-10 mtr Hy-Tower Vertical | |
| 23BS 3-el 2 mtr Beam | |
| 25BS 5-el 2 mtr Beam | |
| 28BS 8-el 2 mtr Beam | |
| 214BS 14-el 2-mtr Beam | |
| 2BDQ 80/40 mtr Trap Dipole | |
| 5BDQ 80-10 mtr Trap Dipole | |
| BN86 80-10 mtr KW Balun W/Coax Seal | |

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|---|-----------|---------------------|-------|------|------|
| 68TV 80-10 mtr Vert | \$149 | 58TV 80-10 mtr Vert | \$129 | | |
| 48TV 40-10 mtr Vert | \$99 | G7-144 2-mtr Base | \$129 | | |
| G6-144B 2-mtr Base | \$89 | | | | |
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| 400W Standard | \$16 | \$17 | \$19 | \$22 | \$26 |
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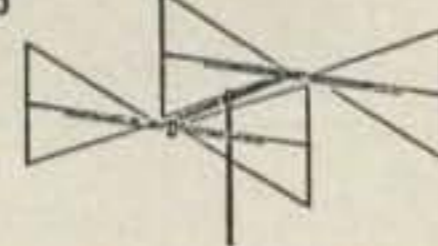
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| STR II Stub-Tuned Radials | \$35 |
| TBR160 160m Coil Kit | \$55 |
| 30m Add-on Kit | \$35 |
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- Element Length 12.5 Feet

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ROTORS

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| Alliance U110 (3 sq ft rating) | \$49 |
| Telex CD 45II (8.5 sq ft rating) | \$Call |
| Telex HAM 4 (15 sq ft rating) | \$Call |
| Telex Tailwister (20 sq ft rating) | \$Call |
| Telex HDR300 Heavy Duty (25 sq ft rating) | \$Call |

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ALL ACCESSORIES IN STOCK—CALL

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| Model | Height | Ant. Load* | Price |
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| FK2558 | 58 ft. | 13.3 sq. ft. | 1199 |
| FK2568 | 68 ft. | 11.7 sq. ft. | 1239 |
| FK4544 | 44 ft. | 34.8 sq. ft. | 1489 |
| FK4554 | 54 ft. | 29.1 sq. ft. | 1599 |
| FK4564 | 64 ft. | 28.4 sq. ft. | 1699 |

| | |
|--------------------|--------|
| 25G Double Guy Kit | \$279. |
| 45G Double Guy Kit | \$299. |

*Above antenna loads for 70 mph winds w/guys at hinge and apex. All foldover towers shipped freight prepaid in 48 states. Prices 10% higher west of Rockies.

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|--|-----------|
| 3/16 EHS Guywire (3990 lb rating) | \$.15/ft |
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| 3/16 CCM Cable Clamp (3/16" or 5/32") | \$.45 |
| 1/4 CCM Cable Clamp (1/4" Cable) | \$.55 |
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| 1/2 x 9EJ (1/2" x 9" Eye & Jaw Turnbuckle) | \$10.95 |
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| 1/2 x 12EJ (1/2" x 12" Eye & Jaw Turnbuckle) | \$13.95 |
| 5/8 x 12EJ (5/8" x 12" Eye & Jaw Turnbuckle) | \$16.95 |
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| | |
|---|-----------|
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| HPTG6700 Guy Cable (6700 lb rating) | \$.72/ft |
| 9901LD Cable End (for 2100/4000 cable) | \$9.95 |
| 9902LD Cable End (for 6700 cable) | \$11.95 |
| Socketfast Potting Compound (does 6-8 ends) | \$16.95 |

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|--|------|-------|-------|-------|
| Heavy Duty Steel Masts 2 in OD - Galvanized Finish | | | | |
| 12 in Wall | \$29 | \$49 | \$69 | \$89 |
| 18 in Wall | \$49 | \$89 | \$129 | \$149 |
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You'll get a real charge out of this article as W9GAV tells us about the use of deep-cycle batteries for portable operation.

Portable Operation Via Battery Power

BY ROBERT HILLIS*, W9GAV

Over the years I have operated portable stations from hotels, motels, and campgrounds. Most of the time the power to run the equipment was obtained from the power lines. The few times when I have gone portable without being where power lines were available, or not usable as on field day, motor generators became necessary.

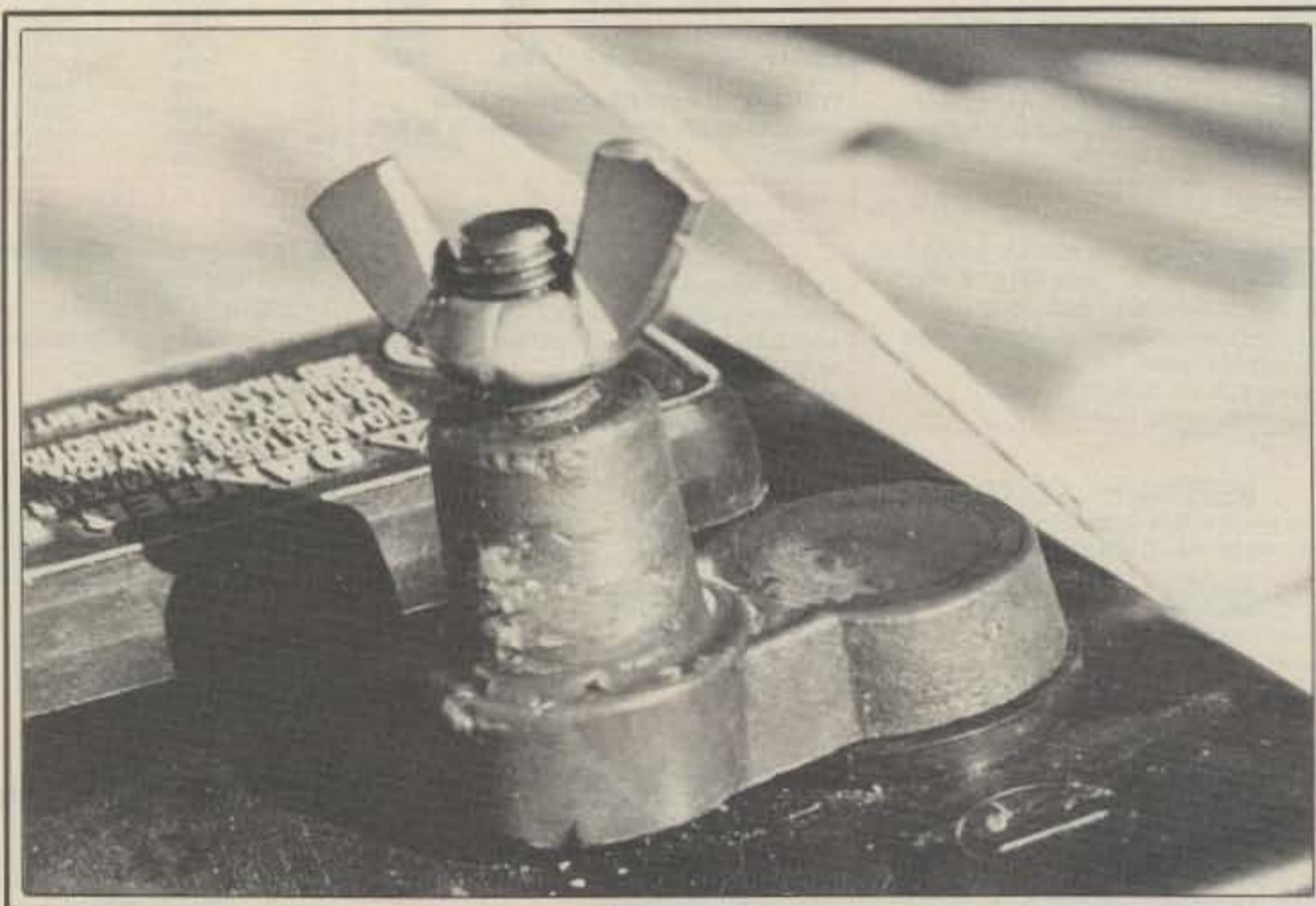
Almost anyone who has used a motor generator might start thinking about the use of a battery for field day or other short-term outings.

I am a Professional Engineer in the consulting business, and I had a local battery plant call me for some services. While I was doing work there, I had time over lunch to talk about using a battery for portable amateur radio operation. One of the lab technicians told me the merits of what is called a deep-cycle battery. These batteries are used quite often by boaters and campers. Some good examples of this type of battery are ones sold for trolling motors and RVs. The techs say that these are much better for amateur radio operation than batteries made for automotive use. These batteries are made to withstand the deep discharge cycles, while automotive units are not.

After talking with the technicians, I decided to look into this type of battery. They suggested that one of their batteries might just fill the bill. After making arrangements to try one, they brought me a test battery that weighed about 60 pounds. At first I thought that was a little heavy, but then I remembered lugging motor generators out to field day.

Some of the deep-cycle batteries have an interesting terminal which makes connecting wires to them very easy. The photograph shows a typical connection post on such a battery.

I was told that the battery that I was go-



This interesting battery terminal offers countless ideas on how to install your portable or mobile gear.

ing to test was one taken from the production line for testing. The only difference between that battery and the ones sold in retail stores was that no label had yet been put on it.

I had recently purchased a Kenwood TS-140S, and it occurred to me that this rig or others with like power requirements should work well with a deep-cycle battery. The TS-140S requires about 2 amps in receive and no more than 20 amps with key down on CW. It can also easily be made to reduce transmitter current when conditions will allow a QSO with less power output. I usually reduce the transmitting output so that the current during transmit is less than 10 amps.

Fig. 1 shows a typical setup that I have used with this type of battery. As you can see, the negative terminal of the battery is grounded to the station ground rod or other convenient ground. An ammeter is

wired so that current from the battery can be checked.

A volt meter is wired across the battery terminals so that the voltage can be observed during operation. This is very important, since damage to both the rig and the battery can result in attempting to operate them at lower voltages than they are designed to use. Consult your instruction manual for the voltages for your particular equipment. If your manual calls for 13.5 volts plus or minus 10 percent, then the operating range is 12.15 to 14.85 volts. No attempt to use less than about 11 volts to the rig should be tried, and key-down or on-voice peaks on SSB should the voltage drop to less than 10.5 volts.

I would suggest reading your manual for the indicated results of low-voltage operation. In the case of the Kenwood TS-140S, for example, my instruction book says that the VFO calibration can be lost

*P.O. Box 2766, Kokomo, IN 46904

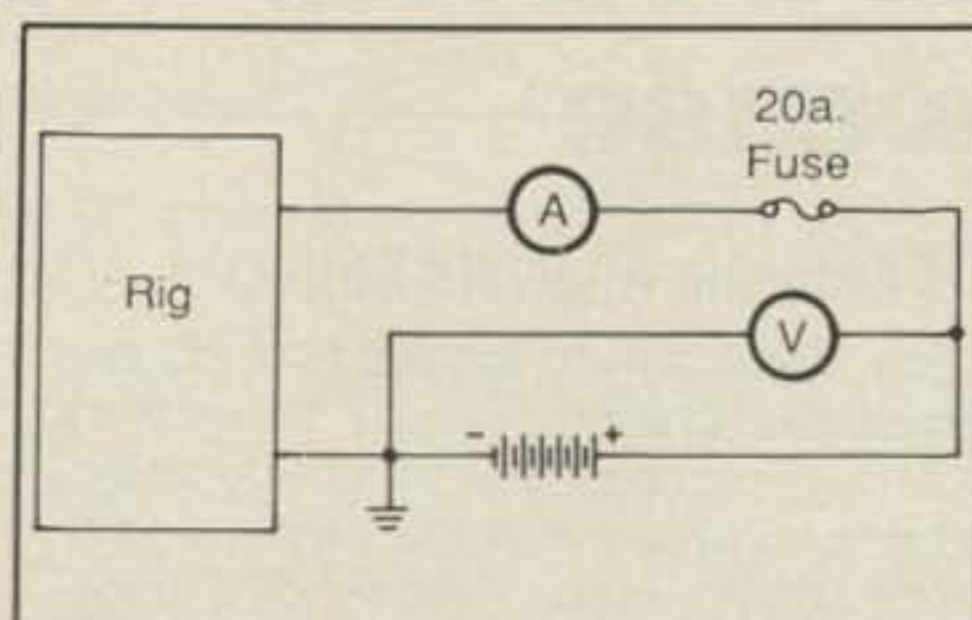


Fig. 1 - The simple hook-up procedure for using a battery. The meters are explained in the text. A fuse is always a good idea not only to protect your gear, but also to protect yourself.

and that recalibration might be necessary. The suggested method of recalibrating the rig does not appear to be very difficult.

I use **S** and **P** (search and pounce) when operating with a battery and seldom call CQ, as this reduces the on-air time and the demands on the battery.

Selection of the battery is easy as soon as you understand the use that these batteries are designed to meet. First look at the current used by your rig in the receive mode. For example, assume 2 amps. Then check the desired current in the transmit mode. Assume 10 amps for this value. This is about 40 to 50 watts output using a TS-140S. Now if we assume that the rig is being used for CW, then the following can be said. Your time on transmit is not more than half the time because you are listening to the other station about half the time or listening for someone to call CQ. When your rig is transmitting, it is only on during the time when the key is closed. This value is about 50 percent of the time the transmitter is on, or no more than 25 percent of the total time the rig is in use.

Therefore, for the above example the following holds true:

$$A_a = R_a + (T_a - R_a) \times T_t$$

$$= 2 + [(10 - 2) \times 25\%]$$

$$= 4 \text{ amps average}$$

where

- R_a is current on receive
- T_a is current on transmit
- T_t is percent of time on transmit
- A_a is average current

The above example shows that the average current is 4 amps. In practice, the average current will be less than the calculated value, but this value can be used to select a battery. A deep-cycle battery will easily deliver this current over a few hours of operating time. Choosing the right battery is now possible by reading the information provided by the supplier or manufacturer.

An example of this kind of battery is

made by EXIDE®, and the published specs show that at 5 amps about 16 hours of operation can be expected. This battery is known as an HC27-106. It weighs about 53.6 pounds (wet) and has dimensions of approximately 13 $\frac{1}{16}$ "L x 6 $\frac{1}{16}$ "W x 10"H including terminals. In the field it will power a rig about 24 hours and can be used for a weekend operation with reasonable time off for rest and meals, etc.

There are a few things that you should know about the care of the battery. These factors all affect shelf-life, and good care will result in a useful battery life of from 3 to 5 years, or about 150 to 200 deep-cycle discharges. For more information you can refer to *The 1988 ARRL Handbook For The Radio Amateur*. By the way, a car battery will only give you about 40 cycles.

- Charge the battery as soon after use as possible, since not doing so will lessen not only the lifetime of the battery, but also how much and how well it will hold its charge in the future.

- It is very important that the liquid levels be kept up to their requirements, because the life of the battery will be greatly shortened if the liquid levels are not maintained.

- Check the voltage and the acid specific gravity after charging the battery. This can be done with a test kit available from car-parts dealers. Be sure to follow the directions that come with the kit.

- Store the battery in a garage or other protected area when it is not in use. Remember that an uncharged battery will freeze in cold weather, while a charged battery is less likely to freeze.

- As a matter of safety use gloves and safety glasses when handling a battery. Do not use this battery to power your rig in an enclosed space, as the battery gives off gases during use.

- Do not smoke or use an open flame near lead cell batteries, as they release hydrogen gas during use and charging cycles.

- Since battery acid can cause damage to clothes and other things, use a plastic battery carrying case in your car or truck. They are inexpensive and worth the money.

- Remember that batteries can explode if they are not charged properly, so get a battery charger that is meant to charge a car battery at a rate of 2 to 10 amps. Quick-charging may shorten the useful life of the battery.

- Batteries accept about 75 to 80 percent of the charging current for charging, and the rest is converted to heat or chemical reaction, not adding to the charge of the battery. Therefore, if you charge a battery at about 10 amps for one hour, the battery will store about 8 amp hours for future use.

- Never short out the terminals of the battery, as damage to the battery and damage especially to you can result.

- By the way, I priced one of these batteries in a national catalog and found that they are in the \$80 price class. This again is less than a good motor generator, and I have seen them at times on sale for less than \$50.

Over the last summer I enjoyed a few hours of truly getting away from the power lines and using my low-band rig on CW and SSB. I do not recommend RTTY or other modes that require the carrier to be on long periods of time, as the battery will not operate the rig for long.

Another advantage of getting out in the wilds is that the noise level is usually quite a bit lower, and you may be surprised at what you can hear and work.

See you on the bands.



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The 5 1/4" MN disk contains over 100 files, including libraries of antenna and plot files, a file editor, and documentation. Price of MN is \$75 (\$80 Canada and foreign). For more information, or to order MN, contact Brian Beezley, K6STI, 507 1/2 Taylor St., Vista, CA 92084, or circle number 109 on the reader service card.

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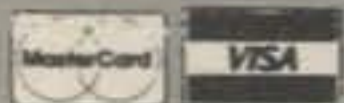
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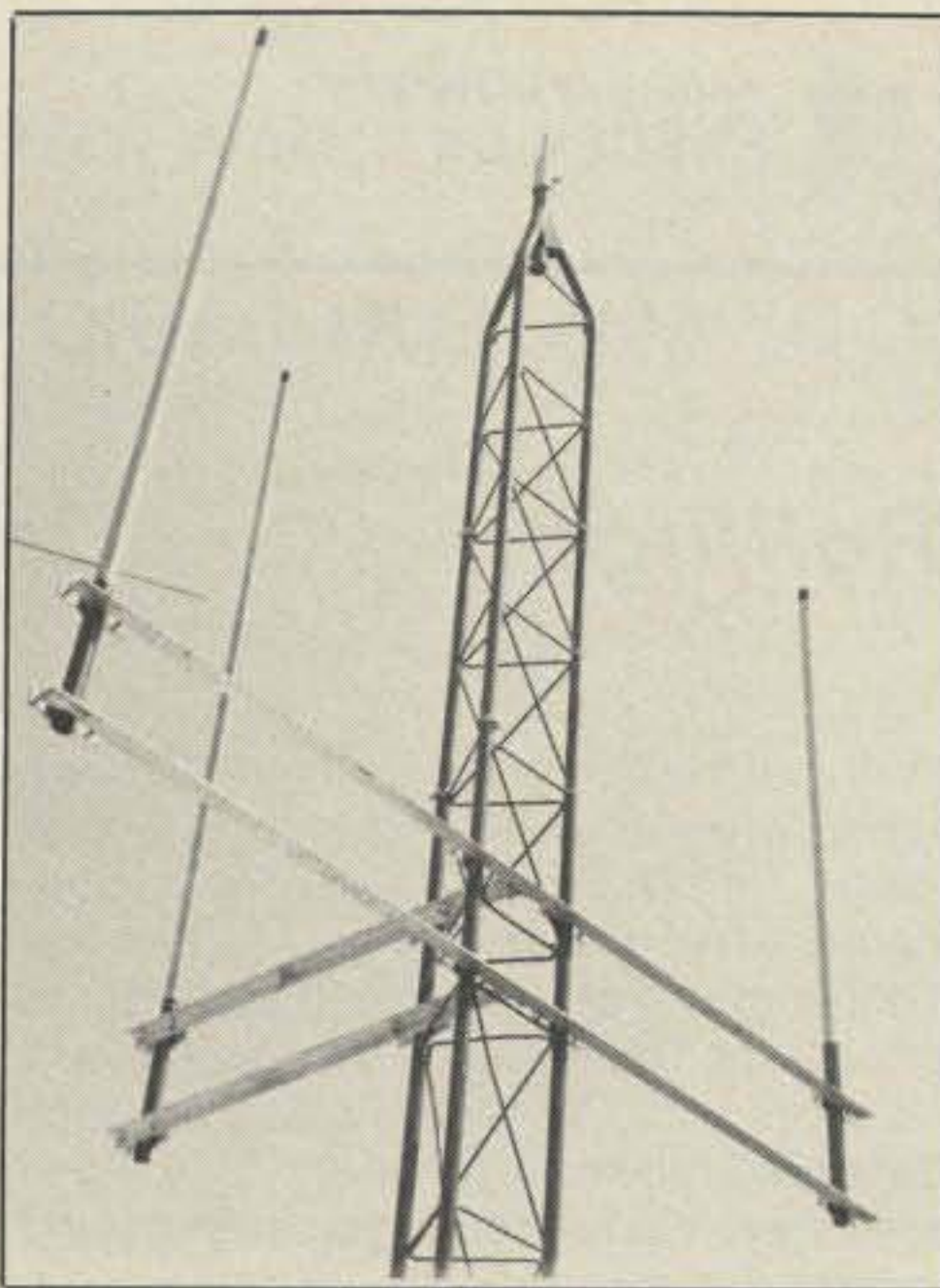
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more information, contact IIX Equipment Ltd., P.O. Box 9, Oak Lawn, IL 60454, or circle number 104 on the reader service card.

Periphex Battery Packs

Periphex Inc. has introduced battery packs for the Yaesu FT-727R, 109RH, 209R/RH, 709R, 103R, 203R, and 703R. The FNB-4SH, 12 volts 1000maH is double the capacity of the original FNB-4/4A battery pack with the full 5 watt output; completely compatible with the Yaesu NC-15 base charger only, it is priced at \$71. The FNB-4SL, 12 volts 750 maH is 150% the capacity of the original FNB-4/4A battery pack with full 5 watt output; completely compatible with the Yaesu NC-15 base charger, NC-18B, and PA-3 trickle charger, and priced at \$65. The FNB-3S, 9.6 volts 1200 maH is almost triple the capacity of the original FNB-3/3A battery pack, designed as a long-life battery pack with 3.5 watt output; completely compatible with Yaesu NC-15 base charger, NC-18B, and PA-3 trickle charger, and priced at \$60.

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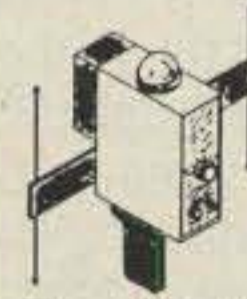


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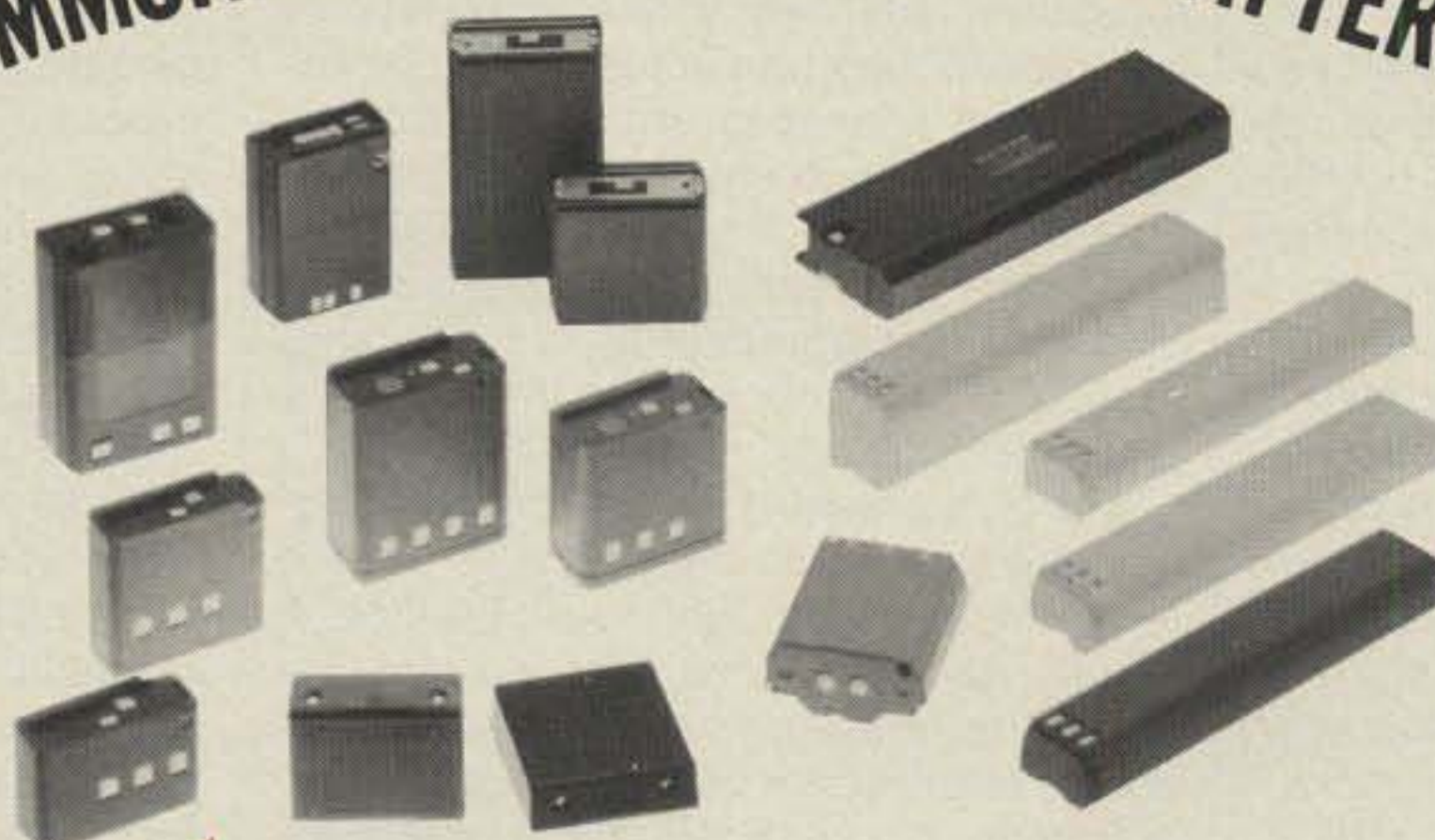
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CIRCLE 158 ON READER SERVICE CARD



The "No-Code" Bandwagon is Rolling!

This is the fifth in a series of columns dealing with changes taking place in the Amateur Radio Service. Our first column dealt with allocations and how the FCC can indeed reallocate frequency bands from the Amateur Radio Service to other radio services, since most of our valuable spectrum is shared with other radio services.

It is simply a case of who needs the spectrum the most. The need for radio spectrum is skyrocketing within the commercial sector. There simply is not enough to go around. Our amateur ranks are not growing, and it is perceived that much of our bands, particularly at the incredibly valuable VHF/UHF range, are underutilized. It is little wonder that amateur spectrum is looked upon as a prime candidate for reallocation to better use.

That is exactly what happened in August of last year when the FCC re-assigned 2 MHz of the 220-225 MHz amateur band to business use. Your friendly brown United Parcel Service truck will shortly be coordinating package deliveries on frequencies that were once part of the 220 MHz VHF amateur band!

In the first installment of this series we also covered the Amateur Radio Service restructuring that is taking place north of the border. Canada is planning to go from a three-class to a four-class "modular" licensing arrangement. At present they have three "certificates" (they don't call them licenses in Canada)—Amateur, Advanced, and Digital. The "Digital" certificate permits VHF and higher frequency operation without Morse code proficiency, but due to its extreme difficulty, this class of certificate is not widely held in Canada. In a sentence, Canada is de-emphasizing aural telegraphy in favor of newer technology.

Certificate "A" will allow Canadian amateurs access to all bands above 30 MHz when they pass a 100-question "basic theory/procedures/regulations" written examination. Certificate "B" is attained when a 5 word-per-minute telegraphy exam is passed. It allows high-frequency privileges below 4 MHz. Canadian amateurs can use all amateur bands, all emissions, and all modes once they

pass the 12 wpm Certificate "C" code test. Certificates A, B, and C permit 250 watt operation using commercially manufactured equipment—no "homebrewing" of transmitters allowed. Certificate "D" requires a rather difficult "advanced theory" 50-question examination in exchange for higher (1000 watt) power levels and the right to construct transmitters. All written examinations are multiple choice. The 5 and 12 wpm telegraphy tests require 75 or 180 characters in a row with 5 errors or less.

Our February column compared the close parallel between the Citizens Band surge of the seventies and the increase in the U.S. Amateur Radio Service. When the CB craze died out, so did amateur radio growth. The 5% amateur radio expansion rate of the seventies dropped to less than 1% in the 1980s.

We also covered the fact that the 66 nations that collectively make up the International Maritime Organization decided to scrap the Morse code requirement as a prerequisite for radio operators operating on the high seas. Ocean-going vessels will now use an automatic satellite-based Global Maritime Distress and Safety System.

Late last year an organized effort was undertaken by a coalition of amateurs to increase the amateur ranks. Despite measures such as wider availability of amateur testing and voice privileges for entry-level licensees, the U.S. amateur ranks continue to show minimal growth. There were less first-time amateurs in 1988, the first year after the so-called "Novice Enhancement" proceeding, than in 1986, the last year before its implementation.

March's column dealt with the changing face of amateur radio and the need to modernize the Amateur Radio Service. A survey card was also stitched into the March issue asking whether readers favored eliminating the Morse code requirement for VHF entry-level amateur radio operation, or were opposed to any changes in the amateur radio entry-level licensing requirements.

The April column covered the views of Arlan Van Doorn, Deputy Chief of the FCC's Washington, D.C. Field Operations Bureau, given before a large Virginia amateur operators club. "... there is not an infinite number of frequencies available, and the demands of this coun-

try and of the rest of the world are becoming so great that it is squeezing everything," Van Doorn said. "... there is going to be more and more pressure on the frequencies that you have. If you want to protect the frequencies, your safety is in numbers. . . . The Commission, as does Congress, bows to numbers. . . . if you don't have the numbers, you aren't going to hack it. Somebody else is going to get in there and put pressure on the Commission to do something else with [amateur spectrum]."

We also mentioned that the ARRL is now looking into the possibility of supporting an entry into amateur radio without a Morse code requirement. It started in January when the League published a column asking if the time was right to reconsider amateur licensing requirements. A "No-Code Study Committee" was also established who will submit a written report to the ARRL Board of Directors at their July meeting.

This month I thought we would update Canadian deregulation and cover some of the U.S. amateur radio community's observations on a code-free amateur radio ticket.

Canada Proposes To Do Away With CW Subbands!

Just before spring the Canadian Department of Communications (DOC) dropped another deregulations "bomb shell" on the amateur community! The DOC is to Canada what the FCC is to the United States. The proposal was not totally unexpected, however, since both of Canada's amateur radio organizations—the CRRL (Canadian Radio Relay League) and CARF (Canadian Amateur Radio Federation)—had come out in 1987 as favoring some sort of mode subband deregulation.

At present Canada, like the United States, allows certain classes of amateurs to use particular types of emissions on specified portions of the amateur bands. Parts of each band, especially the HF bands, are allocated to CW/digital, while emissions such as voice, television, and facsimile must operate on another portion of that same band. The rationale usually given is that digital and analog emissions are not generally compatible.

In Canada the frequencies 3.500-

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3.725, 7.000-n-7.050, 7.100-7.150, 10.100-10.150, 14.000-14.100, 21.000-21.100, 28.000-28.100, 50.000-50.050, and 144.000-144.100 MHz are reserved for CW/Digital emissions.

The DOC is now proposing to totally eliminate the restrictions on the types of emissions that its amateurs may use within the radio frequency bands allocated to the (Canadian) Amateur Radio Service. In its place the new regulations will specify a maximum authorized bandwidth, regardless of the type of emission. "Such an elimination," the DOC wrote in their February 18th proposal, "permits the Canadian amateur to enjoy equal privileges on a par with other radio users in the international radio environment . . . and particularly with those privileges currently extended to U.S. radio amateurs."

Thus, if the DOC has their way, Canadian amateurs will be allowed to operate any mode on any frequency from within an authorized amateur band, limited only by a maximum bandwidth specification. The DOC says the proposal will allow Canadian amateurs to (1) experiment with new protocols and new emissions without having to request special permission or amend existing DOC regulations, and (2) will address the need for more phone frequencies, expressed by many Canadian amateurs after the last round of U.S. phone band expansions.

The Canadian DOC said it was also their opinion that amateurs are best able to decide what frequencies are most appropriate for their various activities. They are counting on the amateurs' "enviable record for self-policing" to ensure the success of the proposed deregulation. Canada also proposed to allow visiting (foreign) amateurs who are operating under a reciprocal license to operate with the same frequencies and emissions as Canadian amateurs. A very short (only 30 days) comment period was allowed.

This means that the CW/digital portions at the beginning of the various amateur bands will not be observed in Canada. American amateurs using digital modes such as telegraphy, RTTY, packet, and AMTOR can anticipate substantial Canadian voice-mode competition. It also means that the CW/digital-only 30 meter (10.100-10.150 MHz) amateur band can now be used for phone transmissions in Canada—something that was recently denied in the U.S.

This is a major change of policy for Canada and seems to underscore their intent of not supporting telegraphy-only spectrum when most of their amateurs wish additional phone spectrum or that provisions be made for modern technology. So-called "gentlemen's agreements" and "accepted band plans" will thus take on renewed importance in Canada.

As envisioned by the DOC, the maximum allowable bandwidths are as fol-

lows: 1.8-29.7 MHz, 6 kHz; 50-148 MHz, 30 kHz; 220-1300 MHz, 6 MHz, with the authorized bandwidths in the remaining microwave amateur bands "not specified."

A somewhat similar proposal was suggested for the United States many years ago, but it was never adopted. The FCC issued a Notice of Proposed Rule Making (Docket #20777, April 26, 1976) proposing to refer to authorized bandwidths rather than types of emissions. The FCC's version differed, however, in that it retained the subband approach and merely replaced specific emissions with maximum bandwidths. It was not adopted when U.S. amateurs said that measuring signal bandwidths was a burden.

Modes of the Future Support VHF/UHF Code-Free Class

National amateur packet and satellite communication associations are united in their support of code-free access to the VHF and higher frequency amateur bands, although they were not in agreement as to how this should be accomplished.

In formal action, the 15 members who make up the TAPR Board of Directors have voted to support an amateur-initiated proposal to the FCC which would provide for a no-code license amateur class. TAPR is the non-profit Tucson Amateur Packet Radio Corporation, the nation's largest amateur packet organization.

President Andy Freeborn, N0CCZ, of Colorado Springs, said he feels that the adoption of a no-code license ". . . was critical to the future of amateur radio." He also feels that the ARRL should undertake the code-free amateur license class initiative. "We hope that by approximately mid-summer we will have been able to generate support for no-code to the extent that the ARRL Board of Directors will favor the action."

"In the interim, we are going ahead with the preparation of a petition to the FCC containing a no-code proposal. I can candidly tell you that it is our hope that the ARRL will be in a position by mid-summer to relieve us of this independent action and take over the leadership of the initiative. Failing in this, we shall proceed."

TAPR held their annual meeting during late February. A poll of those in attendance showed most were in favor of a codeless amateur license. TAPR said their purpose in seeking a license that does not require Morse code proficiency was threefold: (1) to ensure that crucial spectrum allocations in VHF and up are utilized and remain available to the Amateur Radio Service; (2) to lure more technically competent people into amateur radio; and (3) to attract more young people into amateur radio to ensure the future of the Service.

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the ARRL No-Code Study Committee, said that bands like 902-928 MHz will be as important to the Amateur Radio Service in a few years as the 144-148 MHz 2 meter band is now, and "... we should seek to populate these bands now to avoid losing them to commercial interests."

Harold Price, NK6K, heads up the TAPR committee charged with developing a no-code proposal to provide to the ARRL committee. It was decided that TAPR's no-code proposal should have the following characteristics:

(A) The existing licensing structure should remain as it is. No privileges will be given to, or taken away from, any existing licensees. To do so would invite controversy.

(B) An additional licensing structure consisting of two license classes would be added. These classes would grant operating privileges above 30 MHz only. One license would be fairly easy to obtain with a written exam similar in difficulty to the present Technician test. This license would have very limited privileges. The licensee might be prohibited from controlling repeaters, homebrewing transmitters, or operating high power; and/or the license could be made non-renewable. The license would be limited to selected bands or subbands.

(C) The other license would be difficult to obtain, with a written exam more difficult than any now in use. This license would have full amateur privileges above 30 MHz.

AMSAT Advocates Code-Free Operation

In a letter to ARRL president Larry Price, W4RA, Amateur Satellite Corpora-

tion president Doug Loughmiller, KO5I, of Paris, Texas, said, "The AMSAT Board of Directors believe that commercial interests view the VHF and higher holdings of the Amateur Radio Service as temporary storage for their future use. Radio amateurs must do something to make good use of these tremendously valuable allocations ... or they will go the way of 220-222 MHz."

"We believe that our goals can be helped, and our bylaws to encourage use of the higher frequency bands and promote education in the space sciences supported, by a code-free license which allows access to amateur space communications by additional technically-qualified individuals."

"The generally envisioned requirement for such a license is the Technician level 3A ... with 25 additional questions covering satellite, digital, and microwave communications. Successful completion of this test would grant the licensee full amateur privileges in the amateur frequencies above 220 MHz ..."

Barry Goldwater on Morse Code

Barry Goldwater, K7UGA, amateur radio's elder statesman, said he thought Morse code was an impediment to individuals, especially young people, obtaining amateur licenses. He felt that we would not be able to keep our amateur bands unless we increase our numbers. "Amateur radio will just 'go away' if we don't grow."

"I know a lot of people will be shocked to hear an old timer like me say that ... I like to sit down and wobble the key. I will do that forever. I would rather use the code ... than a computer. But I don't want

to see amateur radio die out. Most of the improvements made in radio came out of an amateur's shack. We need to swell our ranks by at least 200,000. I lecture three days a week at Arizona State [University]. The youngsters tell me they would like to become radio amateurs but they don't want to spend the time learning the code. What these young people are interested in is gaining a better knowledge of communications ... which more and more is going to rule our lives. The young ones have the desire to learn. Very few will use the code. Why mess with it."

The CQ No-Code Straw Poll

We conducted an Amateur Radio Survey in the March issue of CQ. A return card asked the following five questions:

(1) Check the statement that best reflects your opinion: "I am in favor of eliminating the Morse code requirement for a VHF-only entry-level amateur radio license." [or] "I oppose any changes in the amateur radio entry level licensing requirements."

(2) Are you a member of the ARRL? (Yes/No)

(3) What amateur radio license do you currently hold? (Novice, Tech, General, Advanced, Extra, None)

(4) How long have you held an amateur radio license? [and]

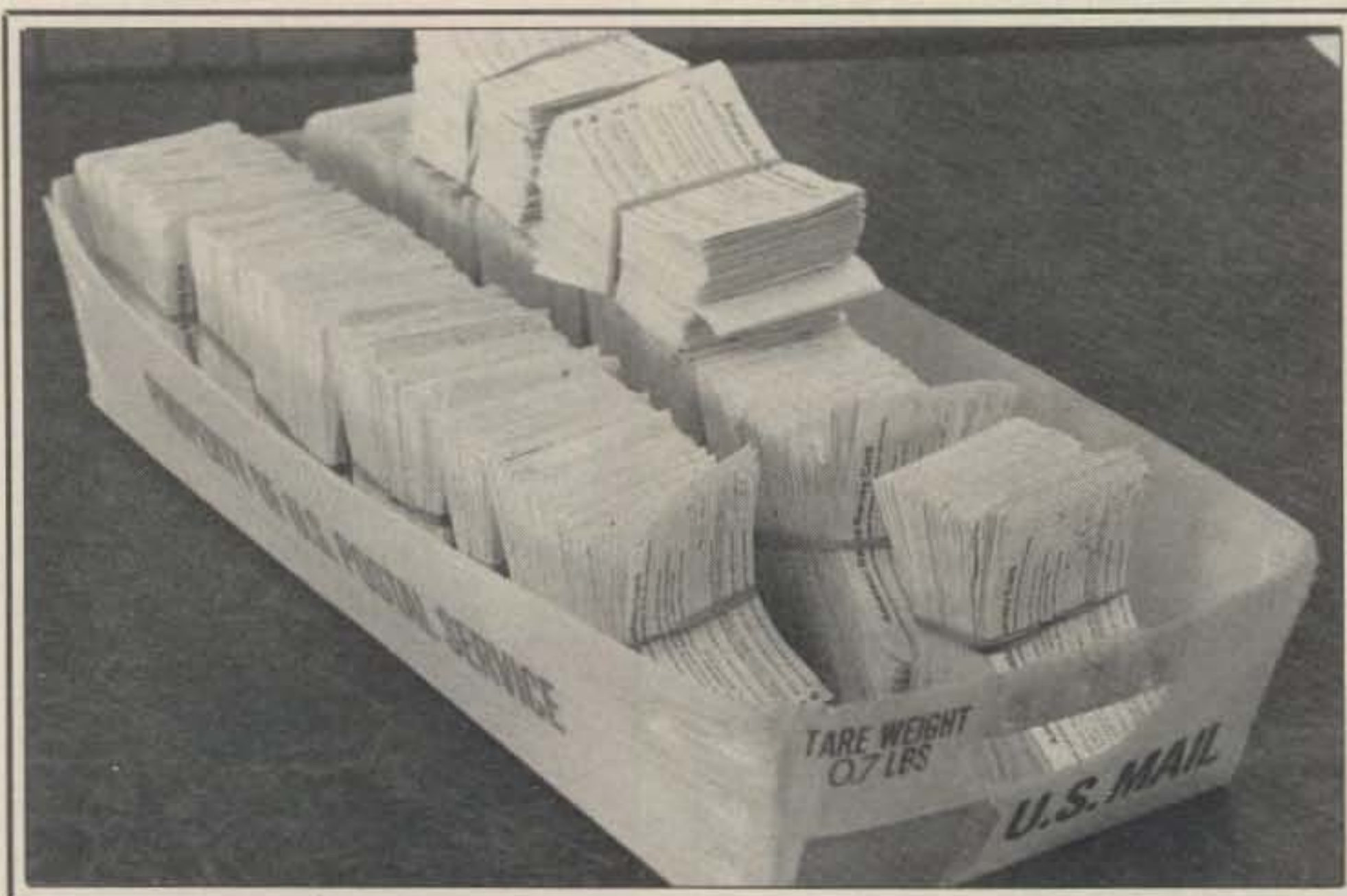
(5) How old were you when you were first licensed?

As of March 14 we had received 4363 survey cards of which 26 could not be tabulated because of damage in the mail or errors in checking off boxes. In addition, we've received over 200 letters along with survey cards with a fascinating variety of opinions very well expressed. About 20% of the survey cards also carried additional comments about the no-code entry-level license concept.

Only the first two questions were completely tabulated at press time with the following results: 59.5% of the valid responses support the elimination of Morse Code as a requirement for an entry-level ham license; 40.5% oppose any changes in the entry-level license requirements. Of ARRL members, 57.6% support a no-code license and 42.4% oppose.

While questions 3, 4, and 5 have not yet been tabulated and cross-tabbed to questions 1 and 2, a surprisingly high level of support for a no-code entry-level license appears to be coming from Extra and Advanced class licensees, and from old timers 60 years of age or more, licensed for 30 or more years. It's quite obvious that if this "poll" were a pre-Presidential election poll, the political analysts would be calling it a landslide indicator, with no-code enjoying a 19 percentage point lead and gaining momentum!

In our next column we will cover how you, the reader, feels about the no-code issue! Until then, 73.



Here's what 4500-plus no-code survey cards look like! The right-hand batch are the "pro's" and the left hand batch are "con's". As of March 16, exactly 60% of the surveys received favored a no-code entry-level amateur license.

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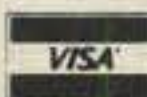
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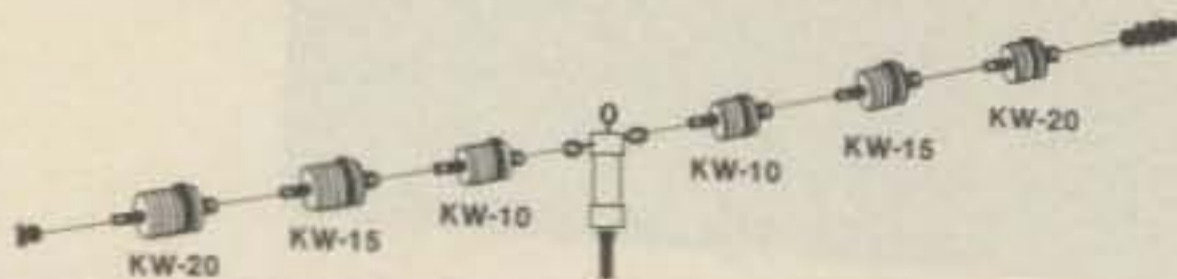
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CIRCLE 129 ON READER SERVICE CARD

CQ World-Wide WPX CW Contest All-Time Records

The contest is held each year on the last full weekend of May. The All-Time Records will be updated and published annually. Data following the calls below are: year of operation, total score, and number of prefix multipliers.

WORLD RECORD HOLDERS

Single Operator

| | | | |
|-----|---------------|-----------|-----|
| 1.8 | UP3BP/UF('85) | 125,240 | 101 |
| 3.5 | UP2NK/UF('85) | 701,012 | 221 |
| 7.0 | VP2VCW('86) | 4,641,120 | 586 |
| 14 | YY5A('88) | 4,085,127 | 639 |
| 21 | HD0E('80) | 3,544,416 | 496 |
| 28 | ZY5ZBA('88) | 2,543,476 | 533 |
| AB | 5L7T('87) | 8,619,225 | 679 |

Multi-Operator Single Transmitter

| | | |
|-----------|-----------|-----|
| V31A('87) | 8,544,768 | 768 |
|-----------|-----------|-----|

Multi-Operator Multi-Transmitter

| | | |
|-----------|------------|------|
| UP4A('88) | 16,204,961 | 1013 |
|-----------|------------|------|

U.S.A. RECORD HOLDERS

Single Operator

| | | | |
|-----|-------------|-----------|-----|
| 1.8 | K5UR('85) | 13,668 | 102 |
| 3.5 | K5NA/2('86) | 197,856 | 216 |
| 7.0 | N5RZ('85) | 1,754,664 | 452 |
| 14 | K2VV('86) | 2,525,880 | 582 |
| 21 | K6LL/7('88) | 2,163,388 | 557 |
| 28 | N4ZC('81) | 136,086 | 222 |
| AB | KT3Y('88) | 4,079,036 | 611 |

Multi-Operator Single Transmitter

| | | |
|-----------|-----------|-----|
| N4WW('88) | 5,593,772 | 698 |
|-----------|-----------|-----|

Multi-Operator Multi-Transmitter

| | | |
|-----------|------------|-----|
| NS0Z('88) | 10,870,380 | 922 |
|-----------|------------|-----|

CLUB RECORD

| | |
|-------------------------------|------------|
| North Texas Contest Club('87) | 62,727,586 |
|-------------------------------|------------|

WPX (Prefix) RECORD

| | |
|-----------|-------|
| UP4A('88) | 1,013 |
|-----------|-------|

QRPP RECORD

| | |
|------------|-----------|
| 4X4UH('82) | 1,028,904 |
|------------|-----------|

CONTINENTAL RECORD HOLDERS

AFRICA

| | | | |
|-----|------------|-----------|-----|
| 1.8 | No Entrant | | |
| 3.5 | EA8RL('84) | 453,456 | 201 |
| 7.0 | EA9GT('81) | 579,824 | 217 |
| 14 | EL2AV('82) | 906,840 | 330 |
| 21 | 5Z4CS('82) | 2,104,245 | 429 |
| 28 | 9J0A('88) | 1,782,426 | 419 |
| AB | 5L7T('87) | 8,619,225 | 679 |

ASIA

| | | | |
|-----|---------------|-----------|-----|
| 1.8 | UP3BP/UF('85) | 125,240 | 101 |
| 3.5 | UP2NK/UF('85) | 701,012 | 221 |
| 7.0 | UP2NK/UF('86) | 2,084,880 | 365 |
| 14 | UZ9FWR('86) | 2,570,940 | 540 |
| 21 | 4Z4NUT('88) | 2,319,665 | 529 |
| 28 | 4X4UH('81) | 1,081,262 | 338 |
| AB | AT0T('88) | 3,337,085 | 543 |

EUROPE

| | | | |
|-----|-------------|-----------|-----|
| 1.8 | UA2FF('87) | 117,424 | 134 |
| 3.5 | CT5AT('86) | 697,248 | 324 |
| 7.0 | DF9ZP('85) | 1,998,372 | 482 |
| 14 | OH1ZAA('88) | 2,351,117 | 551 |
| 21 | 4N4A('88) | 2,585,460 | 615 |
| 28 | 9H1EL('88) | 805,552 | 398 |
| AB | YZ4GD('85) | 3,554,460 | 651 |

Multi-Operator Single Transmitter

| | | | |
|----|------------|-----------|-----|
| AF | 5H1HK('88) | 5,360,820 | 564 |
| AS | RL1P('88) | 8,156,016 | 792 |
| EU | LZ9A('88) | 7,651,908 | 891 |
| NA | V31A('87) | 8,544,768 | 768 |
| OC | KH6XX('84) | 4,646,859 | 553 |
| SA | AZ8DQ('86) | 6,964,584 | 682 |

NORTH AMERICA

| | | | |
|-----|-----------------|-----------|-----|
| 1.8 | VE3BMV('86) | 43,428 | 77 |
| 3.5 | HK3MAE/HK0('87) | 456,280 | 187 |
| 7.0 | VP2VCW('86) | 4,641,120 | 586 |
| 14 | WC4E/KP4('86) | 3,613,248 | 656 |
| 21 | VP2VDX('88) | 2,491,818 | 553 |
| 28 | KP4EQF('81) | 577,500 | 300 |
| AB | NP4A('87) | 5,724,342 | 663 |

OCEANIA

| | | | |
|-----|---------------|-----------|-----|
| 1.8 | KG6DX('86) | 1,224 | 12 |
| 3.5 | T32AF('83) | 93,480 | 95 |
| 7.0 | T32AF('85) | 1,249,176 | 276 |
| 14 | NY6M/NH2('88) | 2,204,920 | 554 |
| 21 | KH2D('88) | 1,793,754 | 454 |
| 28 | KG6DX('81) | 1,238,806 | 334 |
| AB | NH6J/NH0('88) | 4,484,760 | 532 |

SOUTH AMERICA

| | | | |
|-----|-------------|-----------|-----|
| 1.8 | YV1OB('86) | 11,550 | 35 |
| 3.5 | HK7IMB('87) | 184,736 | 184 |
| 7.0 | YX5A('87) | 2,999,977 | 479 |
| 14 | YY5A('88) | 4,085,127 | 639 |
| 21 | HD0E('80) | 3,544,416 | 496 |
| 28 | ZY5ZBA('88) | 2,543,476 | 533 |
| AB | ZZ5EG('87) | 7,228,440 | 690 |

Multi-Operator Multi-Transmitter

| | | | |
|----|-------------|------------|------|
| AF | EA9CE('84) | 4,383,308 | 482 |
| AS | JA2YKA('88) | 6,776,352 | 713 |
| EU | UP4A('88) | 16,204,961 | 1013 |
| NA | WL7E('88) | 12,826,296 | 952 |
| OC | KH6XX('85) | 8,551,399 | 647 |
| SA | HD1A('79) | 6,052,032 | 474 |

QRPP

| | | | |
|----|-------------|-----------|-----|
| AF | EA8ACL('82) | 139,965 | 155 |
| AS | 4X4UH('82) | 1,028,904 | 344 |
| EU | SM5GMG('88) | 661,242 | 382 |

| | | | |
|----|------------|---------|-----|
| NA | WP4F('86) | 594,375 | 317 |
| OC | FO8JP('86) | 572,131 | 259 |
| SA | OA8V('81) | 444,768 | 246 |

CONNECTING YOU AND PACKET RADIO IN THE REAL WORLD

BBSes and More

Considering all the active users of the new EasyMail and PBBS mailboxes that have recently come into play within the ranks of packet radio, I figure it is about time to give a short explanation of the use and *abuse* of the big brothers to these message-storage systems. The BBSes, as they are called, are more than just a message system for local use. In fact, these packet radio BBS systems have a full PC/XT or PC/AT devoted to their use.

The SYStem OPerators, or SYSOPs as they are known, are devout packeteers in that they have spent large sums of money to build the PC or clone into this very useful packet message, file, and National Traffic store-and-forward system. The two systems in our area are both PC/ATs with full-blown 640K + RAM and 40 megabyte hard drives. One is in Warner Robins, Georgia, and the other system is near Headland, Alabama. There are systems all over the United States and Canada, and they are appearing in many foreign countries.

Five or six years ago there were no BBSes to be heard or seen on any packet frequency. Now there is a BBS in almost every area of the United States, within reach of almost every packeteer. Mail and message passing has become a way of life to we who use the BBS and NTS for sending and receiving our mail "enterLAN."

Quantum Leaps and Phenominal Growth

This system was not available or even dreamed of when Doug Lockhart and his Canadian friends developed the 8085-based "Vancouver" protocol in the late seventies. Because so many users have entered the ranks of packet communications, we are now blessed with a perpetual think-tank. This think-tank has given us the Mailbox or mini BBS concept and promulgated the growth of the large area BBS.

Mailboxes and BBSes

Now that we have opened the subject of Mailboxes and

506 Pheasant Ridge Drive, Warner Robins, GA 31088

BBSes, let's quickly get to the highlights of this month's topic. The first thing the new user wants to know is how to use the BBS system. At many of the packet forums and meetings I have conducted, I have had many packeteers, new and veteran, tell me they were afraid to use the BBS for fear they would "mess something up." This is a misconception that may have been started by someone who at one point or another felt that only the BBS SYSOP or the remote SYSOP should be the user of the BBS. Others are by folks like myself who felt that BBSes should be relegated to a frequency of their own.

I have often felt that BBSes should have their own frequency to communicate with each other. Well, much to my dismay, they have. There will soon be a BBS on every frequency I go to. BBSes are a way of life to us in the hobby of packet, and like it or not (I'm biting the bullet), they will be with us for a long time to come.

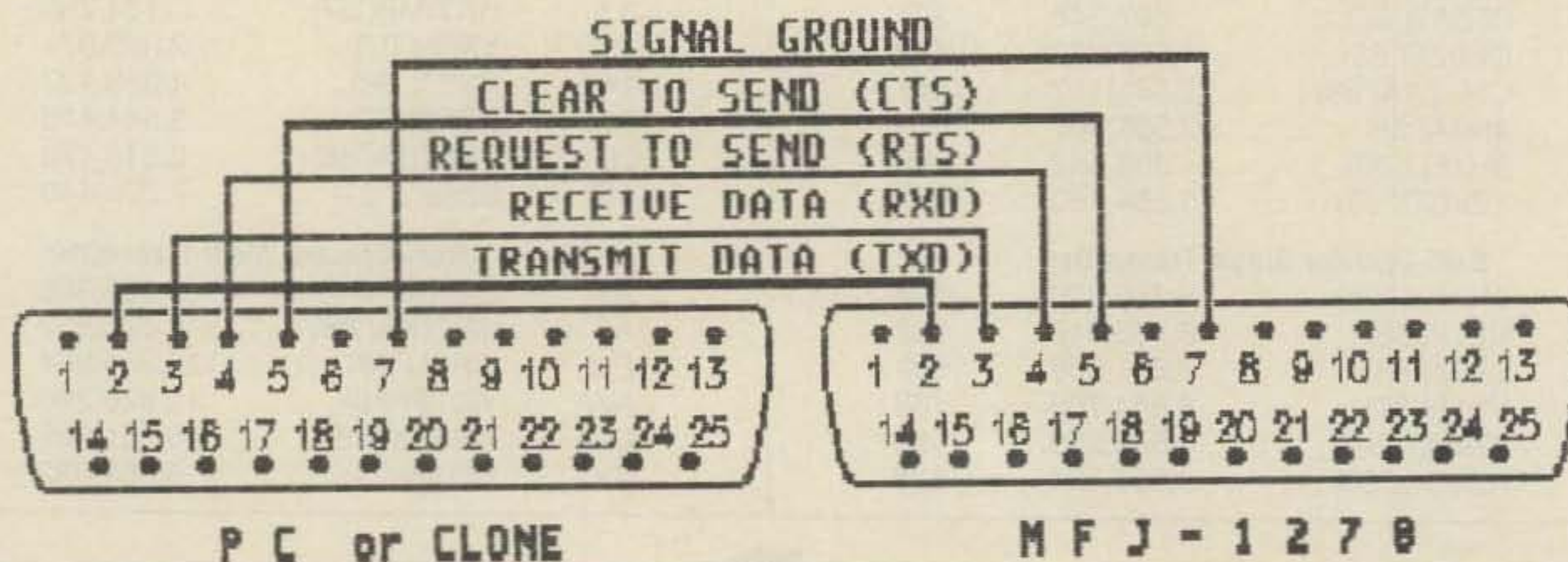
Use Them, But Don't Abuse Them

Don't be afraid of "messing them up"! Both the MBL and RLI BBS systems have a "built-in" recovery system in the software. The real truth is they are almost impervious to outside "crash" influence. The biggest threat to the large BBS is the loss of power or the failure of the CPU and disk drive(s). Most of the time, I have seen the users "crash" but the BBS just sits there and waits for him/her to regain composure.

The biggest abuse is when the user connects and begins downloading a file from the (W)hat directories in the middle of packet prime time, and the file has over 10,000 bytes of data or information in it. Now this will clog the drain of N.Y.C., and you can see fumes and smoke rising from every packeteer's ears within 50 miles of the download. So much for the use and abuse bit, but be kind to yourself and your packet friends when downloading large files. The user can easily see the size of the file before he/she begins a download.

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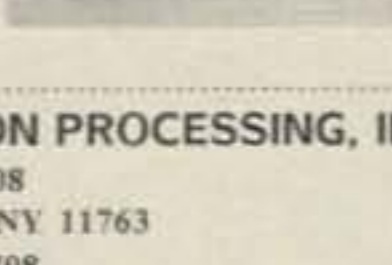
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for assistance in using the BBS. BBS formats are similar in use and command structure. The two major types (I mentioned earlier) of BBSes are known as the MBL and RLI systems. The local BBS near me is an MBL, and the next one that is of a regional nature is an RLI. The two formats are so much alike that you can use either of them with almost the same command structure.

It is not often that we find the kind of cooperation in a unified effort to set a "standard" as the two authors of these two wonderful systems did. For no particular reason, I will use the RLI as a guide in this explanation of the BBS and its use. (The RLI BBS system is copyright by H. N. Oredson, W0RLI. The MBL BBS system is copyright by Jeff Jacobsen, WA7MBL.)

Let's now connect to the WB4RHO BBS (note that text in italics is my comments).

C WB4RHO

RHO2:WB4RHO-2 *Connected to WB4RHO*
[RLI-8.09-CH\$]

Hello new user, welcome to the WB4RHO BBS in Headland, Alabama

First of all, the BBS doesn't know who I am, so it calls me "NEW USER" and welcomes me to the BBS. This is because I have never connected to this BBS before. As soon as I answer the next group of questions, I will be welcomed as "Buck," and the additional questionnaire will no longer prompt me for information. Below is the set of questions which will be sent to me on the initial connect to the BBS:

N xxxx enter your first name into user data base.
NH xxxx enter your 'Home BBS'. Aids in routing messages to you.
NQ enter your QTH.
NZ xxxx enter your ZIP or postal code. Aids in routing messages to you.

<1> K4ABT de WB4RHO: at 0917c on 880921
B,C,D,H,?,I,J,K,L, M,N,R,S,T,U,V,W >

Next, I enter an "LM" to LIST MINE. This will cause a "look-up" table to be activated within the software of the BBS and a check for mail addressed to my call will take place. If there is mail for me, the BBS will list the number of the message. At this point, I can either do an "RM" (Read Mine) or an "R" and the number of the message, and the message will be sent to me. A much easier way is for me to simply send an "RM," which tells the BBS software to READ MINE, and the message will be automatically downloaded (sent) to me. The latest versions of both these BBS systems will recognize my call when I connect, and if I have mail in the BBS, the BBS will send me a courtesy message which says:

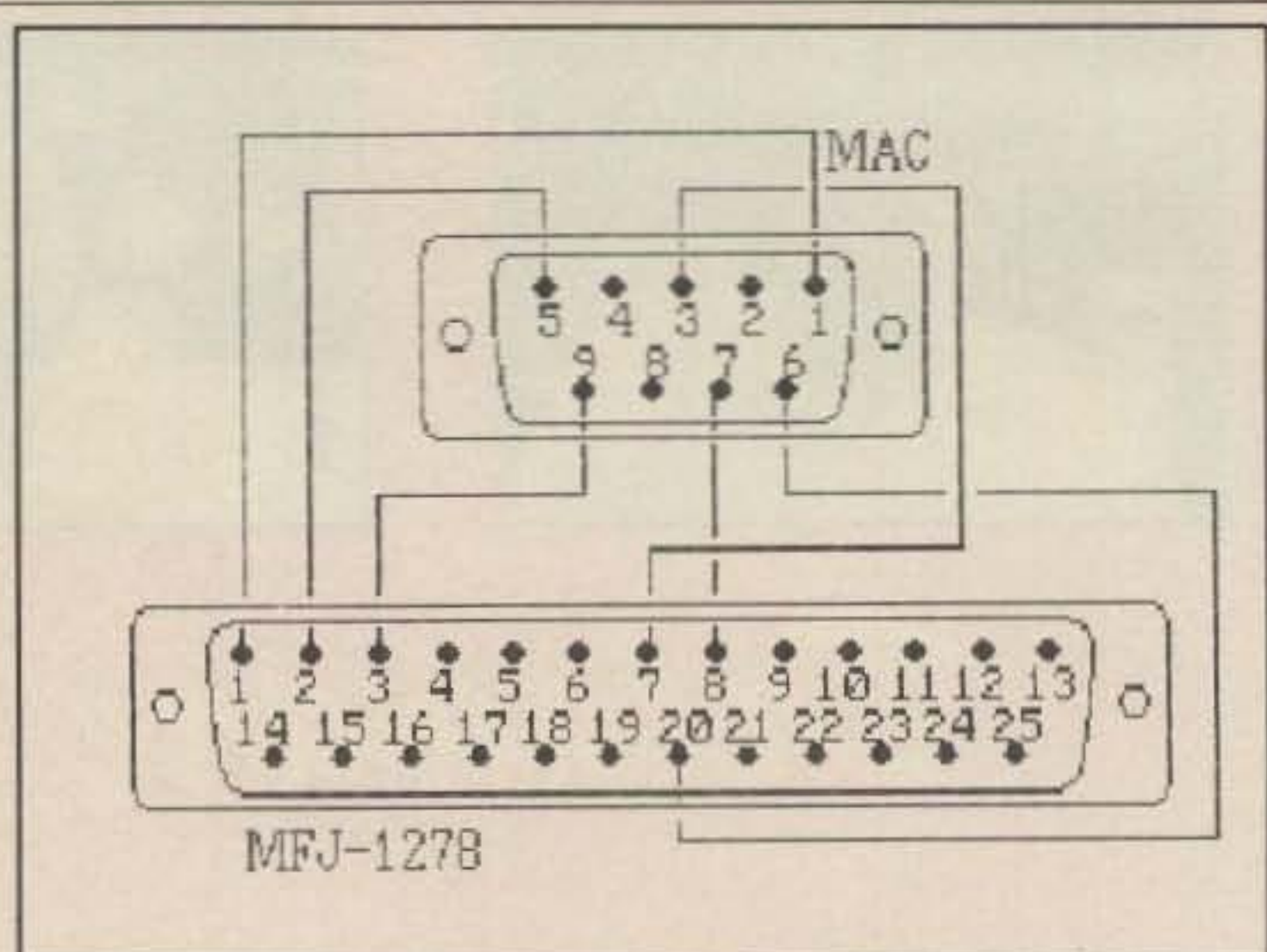
"YOU HAVE MAIL WAITING"

At this point all I have to do is send an "RM" and the message will be sent to me automatically.

LM
*** None found.
RM
*** None found.

<1> K4ABT de WB4RHO: at 0917c on 880921
B,C,D,H,?,I,J,K,L, M,N,R,S,T,U,V,W >

For help on a specific command, enter ? x where x is the command for which you wish help. For example, ? R will give help



This drawing illustrates the hardware hand-shake method used between the Macintosh and the MFJ-127B.

for the READ command. Optional fields of the commands are shown inside "[]"

The command structure is broken up into four categories. They are:

Message commands: (K)ill, (L)ist, (R)ead, (S)end.
File commands: (D)ownload, (U)pload, (W)hat.
GateWay commands: (C)onnect, (M)onitor.
Misc commands: (H)elp, (?) same as H, (B)ye, (I)ntro, (J) Who?, (N)ame, (T)alk to SYSOP, (V)ersion.

H gives a summary of the commands.
H x gives an explanation of command x.
H * gives an explanation of all commands.
B logs off the BBS/Mailbox (disconnecting has the same effect).

Dd filename—download a file from the Mailbox, where d is the path identifier. Full device and directory path may be given.

E #—edit a message header.
EP p—edit port parameters for port p.
ES—edit system parameters.
EU—sweep through all users.
EU CALL—edit a user record.
Fd # FILE opt—make file from message, in directory area d.
F # FILE opt—directory path and file name. Opt A—append to existing file. Opt H—put the message header into the file.
Jp—where p is a port identifier. Gives a short list of stations recently heard on that port. The console port list shows the calls of stations recently connected to the Mailbox.

KILLINGS: (that will get your attention)

K #—kills message number #.
KM—kills all messages addressed to you, that you have read.
KT #—kills NTS message and generates a return "message."
K@ CALL—kills all messages @ CALL.
KA CALL—kills all messages to CALL.
KF—kills all forwarded-but-not-killed messages.
KF CALL—kills all forwarded-but-not-killed messages to CALL.
KH—kills all held messages.

LISTINGS:

Lists messages in reverse order, newest to oldest. "Personal" messages not to or from you will not be listed. The various forms of the L command are:

- L—list all new messages since your last log-in.
- L #—list all messages back to message #.
- LL #—list the last # messages.
- L > call—list all messages to this callsign.
- L < call—list all messages from this callsign.
- L@ call—list all messages addressed at this BBS callsign.
- LB—list all bulletins.
- LF—list all messages that have been forwarded.
- LH—list all held messages.
- LK—list all killed messages.
- LM—"List Mine." Lists all messages TO you.
- LO—list all "old" messages.
- LP—list all personal messages.
- LT—list all NTS traffic.
- LY—list all messages that have been read.

Additional field at end with optional list style:
Semi-colon means list all information about message.

READINGS: (not palms)

- R #—read message number #.
- RH #—read message number #, showing all routing headers.
- RM—"Read Mine." Read all your unread messages.

Send message type '?' to station 'xxxx', at optional BBS 'yyy'. The Mailbox will prompt for the message title and then for the message text. End text entry with a ctrl-Z or /EX.

"?" is an optional "type" of message. It includes: **B**—Bulletin, **P**—Personal (only the addressee can read or list this type), and **T**—NTS Traffic.

The form SB xxxx [@ yyy] [0BID] is also available for compatibility with the WA7MBL bulletin handling systems.

SO YOU WANT TO HAVE A QSO WITH THE SYSOP!

T—chat with the SYSOP. Any command or Return before the request times out will return you to the normal Mailbox prompt.

UPLOADING CAN BE A "CLOGGER" TOO:

U filename—upload a file to the name given. For example: UC WESTNET.BBS. Reject will occur if file name already exists.

MISCELLANEOUS:

- V**—show what version of the Mailbox is running.
- V from to**—copy file.
- W**—gives a list of directory areas available on the Mailbox.
- Wd**—gives a list of the files in directory area d.
- Wd ffff.xxx**—gives a list of files in directory area d that match the given file specification.

As a rule, sending an LL to the BBS will bring the last message entered on the BBS. Sending an LL with a space and a number following it will show you a list of that many messages. I try to limit the number following the LL to a maximum of 10; this way I will read the titles of the last 10 messages left on the BBS.

Study the above BBS commands and try your skills with the local BBS. Remember that the BBS is one of our best ways to pass traffic and to keep up with the latest happenings in amateur radio. The ARRL bulletins, W5YI reports, TAPR announcements, and timely CQ comments are posted on most BBS systems that are available to packet use. By all means remember this: *Please* don't use the BBS in the prime-time for your area unless you really have to. Use it; don't abuse it! The BBS system will work for you and me if we are kind to it. It is one of our best ways to distribute information to the packet world.

Happy packeting, and I hope to see you at the new Atlanta hamfest location.

73 de Buck4ABT

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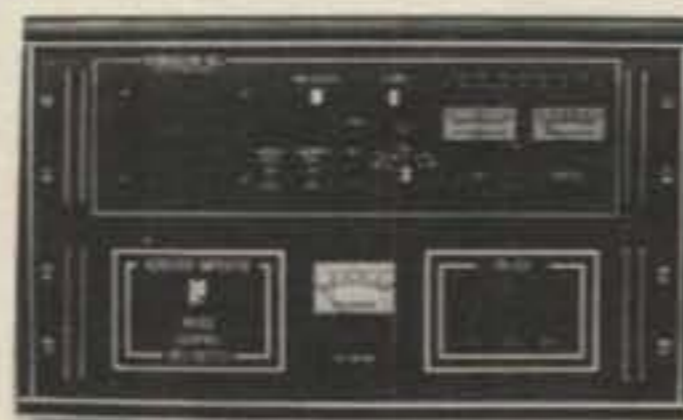
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CIRCLE 116 ON READER SERVICE CARD

Contest Calendar

a monthly feature by
FRANK ANZALONE, W1WY

NEWS/VIEWS OF ON-THE-AIR COMPETITION

Again this month I am pinch-hitting for W1WY, who is recovering from surgery. I apologize for any omissions in the contest calendar, but it is better to be safe than sorry. Starting with the June issue, John Dorr, K1AR, will be filling in for Frank. If you have any ideas or topics for future columns, you might drop John a note.

I was saddened to learn of the passing of Burt Curwen, KL7IRT. Burt was an avid contester and often finished at or near the top in the multi-multi class of the WPX and CQ WW contests. In his memory a new trophy has been added to the CQ WPX SSB Contest for the top North American multi-multi entry.

Speaking of trophies, there are still plenty of vacancies for trophy donors for all of the CQ contests. If you or your club is interested in sponsoring a trophy, contact the contest director(s) for more information. Also, if you are a trophy winner and have not already done so, please take a minute to drop the sponsor a note of thanks. It will be appreciated. If you have questions about past CQ WW trophies, K1AR should be able to help you. For the WPX Contest direct your inquiries to me.

To be included in upcoming Contest Calendar columns your information should be sent to CQ Magazine, 76 N. Broadway, Hicksville, NY 11801 at least three months prior to the issue that you want it to appear in.

That's about it for this issue. I hope to see many of you at Dayton, and don't forget the WPX CW at the end of the month.

73, Steve, N8BJQ

Florida QSO Party

0000Z May 5 to 2400Z May 6

The West Palm Beach Amateur Radio Club and Florida Skip are sponsoring the 23rd Annual Florida QSO Party. All amateurs worldwide are eligible and are invited to participate.

Frequencies: Suggested frequencies are SSB 3945, 7279, 14279, 21379, 28479 kHz; CW 3725, 7125, 14055, 21150, 28150 kHz. All amateur bands 160 through 2 meters may be used. No cross-band or cross-mode QSOs and no repeater contacts allowed.

Exchange: Florida stations send signal report and county. Out-of-state stations

c/o CQ magazine

Calendar of Events

| | | |
|-----|-------|--|
| May | 5-6 | Florida QSO Party |
| May | 6-7 | MARC County Hunters CW |
| May | 13 | Crooked Stick and Rats Nest QSO Party |
| May | 13 | Ten Meter Dash |
| May | 13-14 | Nevada QSO Party |
| May | 20-22 | Michigan QSO Party |
| May | 21 | Midnight Special |
| May | 27-28 | CQ WPX CW Contest |

send signal report and state, Canadian province, or DXCC country.

Entry Class: Florida stations are divided into three classes. Class A stations are those operating portable or mobile using 100 watts or less *output* inside Florida but outside of their home county. Class B stations are any CW stations operating from a fixed location within your home county. Class C stations are any phone stations operating from within your home county. Entrants may be single operator or multi-operator.

Scoring: All Florida stations score as follows. Class A—3 points per QSO, Class B—2 points per QSO, Class C—1 point per QSO. Out-of-state contacts count 2 points for each QSO with a Florida station.

Multiplier: Florida stations count the number of states worked (49 maximum), provinces (12 maximum), and DX countries up to 27 actually worked. Maximum multiplier is 88. Out-of-state stations count the number of Florida counties worked (67 maximum).

Awards: Certificates on phone and CW will be awarded for the top station score in each state, province, and DX country. Certificates on CW will be awarded for the top Novice score in each state. Also the top scores in each Florida county will be awarded a certificate. Multi-operator winners will receive certificates as activity justifies. There will be three plaques awarded to: highest scoring Florida station on phone and CW, and to the Florida club with the highest aggregate score. To be eligible for a certificate you must make at least 10 contacts.

Reporting: Use separate logs for phone and CW. Logs must be legible and in chronological order. Entries with over 200 contacts must submit a dupe sheet. The summary sheet must contain Claimed Score, Florida County or State, QSOs, Multiplier Total, Call Used, Entry Class, Power Source of Class A Entries, Florida Club, and Complete Address. The usual

Results WWSA-88 CW Contest North America

| Class | Call | Score |
|-------|--------|---------|
| MB | VO7AW | 9,768 |
| MB | K2UPD | 105,092 |
| MB | K2SX | 39,812 |
| MB | W4YN | 4,428 |
| MB | KA1MPF | 560 |
| 14 | K3IPK | 33,684* |

Results WAEDC SSB Contest North America

| Class | Call | Score |
|-------|-----------|---------|
| AB | VE1CBF | 48,222 |
| AB | VO7AW | 40,068 |
| AB | K4YKZ | 272,600 |
| AB | K1CLN | 226,255 |
| AB | N5JB | 124,155 |
| AB | N2VW | 70,871 |
| AB | N1AU | 29,190 |
| AB | WK4F | 20,382 |
| AB | KW2J | 8,060 |
| AB | W4TMN | 6,580 |
| HI | HI8LC | 1,056 |
| HI | TI0FRC | 19,656 |
| HI | VE8RCS | 19,964 |
| HI | VE6DZ | 2,002 |
| HI | AK1A | 527,296 |
| HI | AB8K | 228,096 |
| HI | K5MK | 152,304 |
| HI | W2FCR | 120,900 |
| HI | W3ARK | 52,046 |
| HI | KE2CG | 51,606 |
| HI | WA2UDT | 42,480 |
| HI | K3TX | 25,256 |
| HI | WF5E | 22,714 |
| HI | KB0C | 19,532 |
| HI | WA3DMH | 17,708 |
| HI | NQ3S | 17,632 |
| HI | W2GKZ | 4,692 |
| HI | NX9T | 4,150 |
| HI | W8/DL2SCA | 3,960 |
| HI | W6OVO | 2,806 |
| HI | WA0OUI | 2,280 |
| HI | N1EFE | 620 |
| HI | K5LQJ/1 | 320 |
| HI | W7VIH | 208 |
| HI | KB4BBC | 80 |
| M | NA8K | 109,116 |
| M | W0PEV | 1,760 |

signed declaration must be included.

Submit log copies and summary sheet showing all scoring information to: Florida QSO Party Contest Committee, P.O. Box 8194, West Palm Beach, FL 33407. Logs must be postmarked on or before July 4, 1989.

Crooked Stick & Rats Nest QSO Party

2000Z to 2300Z May 13

This fun operating event is designed to encourage Elmering of new Novices and participation by handicapped hams and other interested persons. An article will be written and submitted to *QST*, so bonus points are given for photographs and information about your contest operation.

Frequencies: CW 28.100-28.200, SSB 28.300-28.500.

Power: Limited to 200 watts PEP output.

Exchange: Signal report, QTH, and serial number.

Scoring: SSB contacts 1 point. CW contacts 4 points.

Multipliers: × 2 with an apprentice. Also × 2 if using an antenna built per contest rules. Multipliers are cumulative (i.e., if unlicensed assistant makes an SSB contact using CS&RN antenna, it is worth a total of 4 points).

Bonus Points: 100 points for a newly licensed Novice making first-ever contact; 100 points if operator or apprentice is physically handicapped; 50 points for working all U.S. call areas.

Twenty-five points for description of contest activity or a photograph of antenna, contest operation, or contest group. Note: An apprentice is an unlicensed individual, a Novice or Technician needing assistance getting on the air.

Antennas: To obtain antenna multiplier, antenna must be constructed especially for this contest. No part of this antenna may be more than 20 feet above ground. The antenna must be constructed of no more than 100 feet of wire.

Awards: Certificates will be issued for first, second, and third places for SSB and CW. Certificates will be issued to all entries with an unlicensed or handicapped participant.

Submit log copies and summary sheet showing all scoring information to: Martha Stedman, N7IVX, 15423 SE 7th Pl., Bellevue, WA 98007 by May 25, 1989. Specify names of individuals for special participation certificates.

Nevada QSO Party

0000Z May 13 to 0600Z May 14th

The 1989 Nevada QSO Party is sponsored by the Frontier Amateur Radio Society.

Frequencies: 6 through 160 meters CW, SSB, FM, RTTY, packet, SSTV. Suggested frequencies are CW 15 up from bottom of general bands, phone 25 up from bottom of General phone bands as well as the Novice/Tech bands. No cross-mode or repeater contacts allowed.

Exchange: Nevada stations will send RS(T) and county. Others will send RS(T)

and state/province/DXCC country.

Scoring: One point per contact per mode. Multiply points by number of NV counties worked.

Awards: Certificates to top scorers in each state for General and above as well as Novice/Tech. Also to top scorer in each DXCC country.

Submit log copies and summary sheet showing all scoring information to: Jim Frye, NW7O, 4120 Oakhill Ave., Las Vegas, NV 89121 by June 1, 1989.

Ten Meter Dash

1700Z to 1900Z May 13

The Western Washington DX Club is sponsoring its third biennial running of the Ten Meter Dash, spring version. All interested amateurs are invited to participate in the contest.

Frequencies: 28.300-28.500 SSB only. No cross-mode QSOs allowed.

Power: Use 100 watts or less.

Exchange: Signal report and state. Novice and Technician operators also indicate their license class.

Scoring: U.S. Novice and Technician contacts are worth 3 points (including KH6 and KL7 ops.). DX contacts are worth 2 points. Contacts with other U.S. stations are worth 1 point.

Multiplier: Number of states, provinces (VE1-8 and VY1 Yukon), and DXCC countries. New multipliers must be clearly marked in the log.

Final Score: Sum of total points multiplied by the sum of the total multipliers.

Awards: A Western Washington DX Club certificate will be awarded to the top scorer in each state, Canadian province, and DXCC country *when there are three or more entries* from each state, province, or country, or by each ARRL section and continent if only *two* entries are received from those geographic areas.

Submit log copies and summary sheet showing all scoring information to: Andrew Isar, NN7L, P.O. Box 554, Gig Harbor, WA 98335 before June 13, 1989. Contest results will be provided to each entrant who encloses an SASE with his/her entry.

Midnight Special

0300Z to 0500Z May 21

The Overlook Mountain Amateur Radio Club (Kingston, New York) is sponsoring a Midnight Special on May 21st.

Frequencies: 0300-0400Z 40 meter CW, 0400-0500Z 75 meter SSB.

Exchange: Name and first callsign held (example: K5NA would send Richard/KN5PFL).

Scoring: Total QSOs.

Submit log copies and summary sheet showing all scoring information to: OMARC, W2XL, 133 Clifton Ave., King-

Results WAEDC CW Contest North America

| | | |
|----|------------|---------|
| AB | NL7DU | 1,890 |
| AB | V07AW | 24,380 |
| AB | VE1ASJ | 17,264 |
| AB | K1EA | 851,580 |
| AB | KC8C/3 | 660,231 |
| AB | KM3T | 609,085 |
| AB | N6AR/4 | 579,474 |
| AB | KZ2S | 512,244 |
| AB | K4XS | 507,788 |
| | (Op. WC4E) | |
| AB | K3IPK | 375,678 |
| AB | N2GZL | 282,204 |
| AB | K2LE/1 | 279,565 |
| AB | AB2E | 170,752 |
| AB | K4YKZ | 168,150 |
| AB | K3YGU | 123,413 |
| AB | K5KLA | 111,696 |
| AB | K1ZZI | 71,680 |
| AB | N8BC | 58,500 |
| AB | N5JB | 27,839 |
| AB | W2GKZ | 16,632 |
| AB | KC1F | 14,768 |
| AB | K1CLN | 13,728 |
| AB | K8CV | 12,775 |
| AB | AA5AU | 10,224 |
| AB | K4FW/8 | 9,646 |
| AB | W5NR | 6,820 |
| AB | W2DW | 5,512 |
| AB | K3TX | 5,170 |
| AB | K6NA | 4,002 |
| AB | W5EIJ | 3,760 |
| AB | KC7V | 3,657 |
| AB | K1XM | 3,430 |
| AB | KQ1F | 2,016 |
| HI | HI8LC | 10,994 |
| HI | VE2LJ | 95,892 |
| HI | VE6BF | 8,464 |
| HI | N4RJ | 182,400 |
| | (Op. KM9P) | |
| HI | K5MK | 32,718 |
| HI | N2AZS | 18,810 |
| HI | WB0O | 10,340 |
| HI | K4FPF | 7,840 |
| HI | NQ3S | 7,240 |
| HI | N6EK | 4,216 |
| HI | K7MM | 3,920 |
| HI | N6JM | 3,104 |
| HI | WA8ZDT | 2,584 |
| HI | KD3JH | 1,411 |
| HI | W3ARK | 744 |
| HI | W1OPJ | 702 |
| HI | AA6EE | 252 |
| HI | N6AA | 238 |
| HI | W2QYA | 204 |
| M | N3BNA | 274,992 |
| M | N9AG | 162,800 |

ston, NY 15238. Results will be published in the NCJ.

CQ WPX CW Contest

0000Z May 27 to 2400Z May 28

Complete rules were in the February issue of *CQ*. Rules and summary/log sheets can be obtained from *CQ Magazine*, 76 N. Broadway, Hicksville, NY 11801. Check the current rules for the current trophy list. Results of the 1988 contest can be found elsewhere in this issue.

Awards

a monthly feature by
DOROTHY JOHNSON, WB9RCY

NEWS OF CERTIFICATE AND AWARD COLLECTING

The Story of the Month for May is:

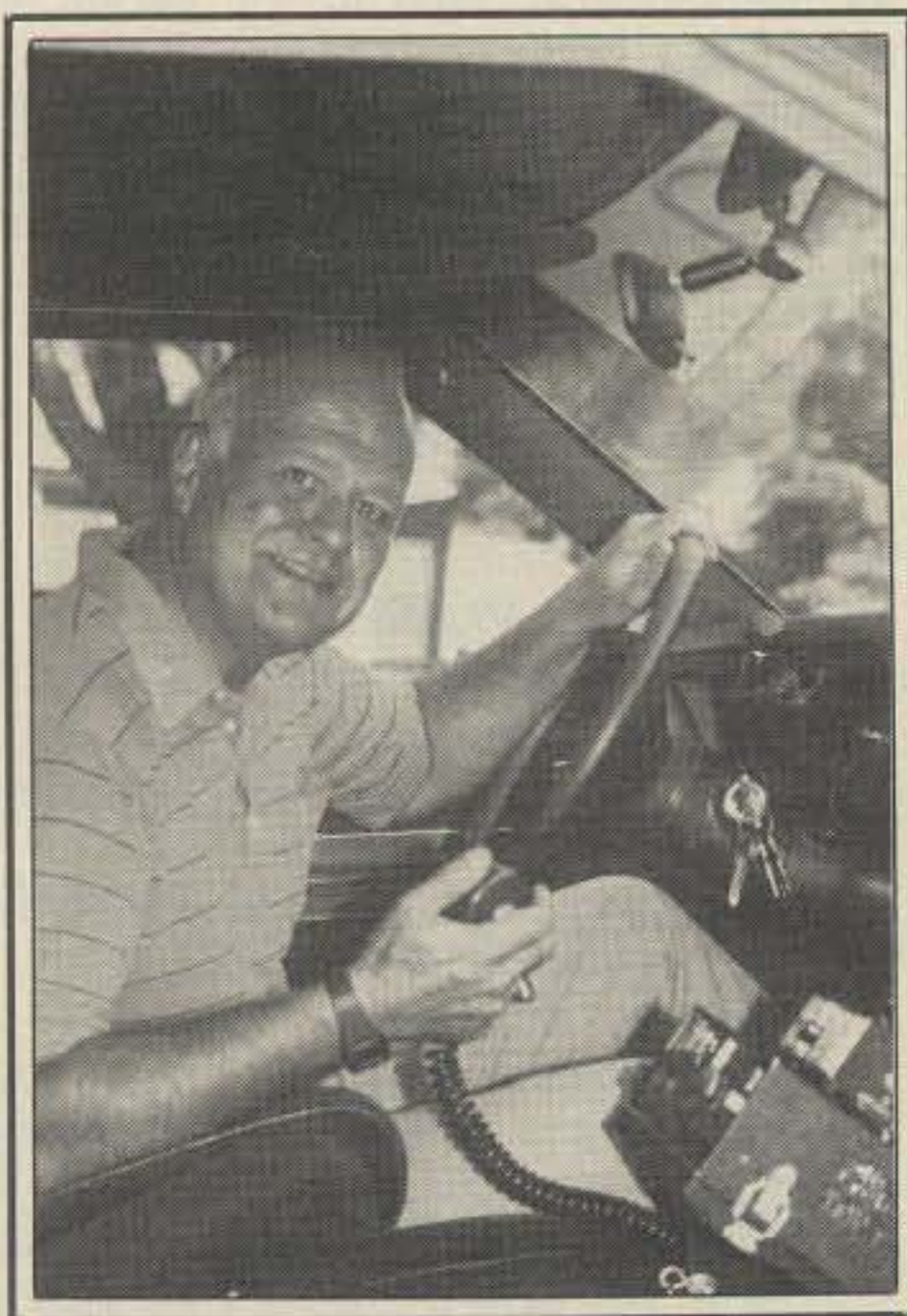
Fred G. Roberts, W6TKV
USA-CA All Counties #576, All SSB,
7-20-88

"My interest in amateur radio began with a telephone call my family received from a local ham when I was 9 or 10 years old. He was talking to a family friend in Baltimore, so I tagged along with my folks to his home (and bedroom shack). My clearest recollection was his carbon microphone suspended by springs in a 6 inch diameter metal ring, but that sparked my interest in amateur radio.

"Years later I finally got licensed as KN2AMN with an upgrade to K2AMN (Angry Mother Nature) a couple of months later. I held that call until 1976 when our move to California changed it to W6TKV.

"When our five children were small, I was inactive due to the normal things—scouts, lawns, shrubs, adding on to the house, and other trivia related to a growing family. When I got back on the air in 1970, I spent three years on 40 meters with an HW-22A, and for those who remember the 40M YL System, that was where I was to be found. I acquired my Kenwood Twins in November 1973, but didn't stumble across the County Hunters until January 1, 1974, when I worked K8CMO in Highland County, Ohio. When I got ready to apply for the certificate about six months later, I thought, 'This is a piece of cake. After all, I've been active on 40 meters for three years and I QSLed absolutely everyone worked.' Boy, was I ever surprised to come up with just 522 counties!

"And it took until July 4, 1988 to finish them all. I began to think I'd be lucky to get a USA-CA number under a thousand. In the time it took to finish up, I had worked over 10,000 stations (not all county hunters, of course) and QSLed every one. The big roadblock on the counties seemed to occur when I got into the low hundreds. I didn't ask many mobiles to go off course until I was around the 25 mark, and the phone calls sure were a big help. As an observation, I still think it's easier to work them all from the east coast because of the evening 75 meter net, and because the 20 meter net's still running when you get home from work. Of course, it doesn't hurt to have 20 meters alive again either.



Fred Roberts, WA6TKV, USA-CA All Counties #576, in his comfortable and efficient mobile station.

"I finally retired my Kenwood Twins in April '88, but they almost completed USA-CA with me. I just made an overall station upgrade with a TS-940, Henry 2K4, and a KT34XA, so it's now much easier to work the weak ones.

"In looking over my Mobile Record book, I wonder who gave me the most counties of all, and maybe some day I'll research that. In reading through the list of stations, I thought of the silent keys who gave me so many counties. I remembered many friends, and I was reminded our net is 'The VERY Independent County Hunters Net.'

"A very favorite memory was operating from 4U1ITU in Geneva, Switzerland and coming up on 14,336 to work Willis, K5WQM, in an Oklahoma county. He really stammered when I gave him the 4U1ITU call.

"I recall running Los Angeles county a while back, and Wally, KB0XB, asked me how Ann, my XYL, was. Apparently someone on the net sort of heard his question but had really poor copy, because the next thing I heard was 'What's her call?' My response was 'She's an anti-ham!' and of course he said, 'Her call again, again!' There were a lot of chuckles breaking VOXs on that one. And, I remember one evening some years ago on 75 meters, when one of the Air Force members ran a bunch of Missouri counties

USA-CA Special Honor Roll

Ed A. Campbell, KF5HY
All Counties #605, All SSB, 1-7-89

Clifford E. Simes, KA6BTU
All Counties #606, All 20M SSB Mobile,
1-10-89

Jerry Ayers, W9ET
All Counties #607, Mixed, 1-12-89

Harold R. Schneider, W7BKM
All Counties #608, All SSB, 1-27-89

from a B-52. There weren't any wet county lines nor were there any 10 minute runs either, just a wild 3-4 minutes for each county.

"I attended the St. Louis, Atlanta, San Diego, and two Denver conventions and have always enjoyed meeting the faces behind the voices, but the most memorable was a famous mini in Paso Robles chaired by W6ANB (now W7CB) where we enjoyed a pickup truck full of liquid gold and a very informal program, including W7VSE's demonstration of how to pull up your socks (for those who may remember). That was the time when a blind WA7RKN pushed a wheelchair-bound N7SU on a wild ride, one trying to outdo the other in navigating. Truly that was a mini-convention to remember.

"My thanks to all the mobiles who gave me so many counties. Of course, a special thanks to those many net control stations, including, for my money, the most famous of all, WA6MAR, who spent more hours as NCS than there are counties.

"My last three counties were in Georgia, and interestingly enough, they all adjoined Baldwin county. N7AKT was my Georgia peach, and my thanks to him for my last, last county. When he gave me Hancock, Georgia, I asked him, 'What am I going to do now?' and of course Scotty's response was 'Do it again!' and so I shall.
—73, Fred, W6TKV."

Awards Issued

Ed A. Campbell, KF5HY, filed his completely filled record book and received USA-CA All Counties #605, USA-CA 3000 #634, USA-CA 2500 #708, USA-CA 2000 #775, USA-CA 1500 #862, USA-CA 1000 #1049, and USA-CA 500 #2300, All SSB, dated 1-7-89.

Clifford E. "Cliff" Simes, KA6BTU, did it all in one giant leap by claiming USA-CA All Counties #606, USA-CA 3000 #635, USA-CA 2500 #709, USA-CA 2000 #776, USA-CA 1500 #863, USA-CA 1000 #1050,

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60060

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CIRCLE 166 ON READER SERVICE CARD

USA-CA Honor Roll

| | | | |
|-------------|-----|-------------|------|
| 3000 | | | |
| KF5HY | 634 | W9ET | 864 |
| KA6BTU | 635 | W3DYA | 865 |
| W9ET | 636 | KB9ER | 866 |
| W7HZZ | 637 | W7BKM | 867 |
| KB9ER | 638 | | |
| W7BKM | 639 | 1000 | |
| 2500 | | | |
| KF5HY | 708 | KF5HY | 1049 |
| KA6BTU | 709 | KA6BTU | 1050 |
| W9ET | 710 | W9ET | 1051 |
| VE1AIT | 711 | W3DYA | 1052 |
| KB9ER | 712 | N0FLK | 1053 |
| W7BKM | 713 | KB9ER | 1054 |
| | | W7BKM | 1055 |
| 2000 | | | |
| KF5HY | 775 | KF5HY | 2300 |
| KA6BTU | 776 | K0AXU | 2301 |
| W9ET | 777 | KA6BTU | 2302 |
| KB9ER | 778 | G3KDB | 2303 |
| W7BKM | 779 | W9ET | 2304 |
| | | KA1RIF | 2305 |
| | | DK0SA | 2306 |
| | | N0FLK | 2307 |
| | | DK8KC | 2308 |
| | | KB9ER | 2309 |
| | | W7BKM | 2310 |
| 1500 | | | |
| KF5HY | 862 | | |
| KA6BTU | 863 | | |

The total number of counties for credit for the United States of America County Award is 3076. The basic award fee for subscribers to CQ is \$4.00. For nonsubscribers it is \$10.00. Initial application must be submitted in the USA-CA Record Book which may be obtained from CQ Communications, 76 North Broadway, Hicksville, NY 11801, USA for \$1.25. To qualify for the special subscriber rate please send a recent CQ mailing label with your application. To be eligible for the USA-CA applicants must comply with the rules of the program as set forth in the revised USA-CA Rules and Program dated April 2, 1985. A complete copy of the rules may be obtained by sending an SASE to Dorothy Johnson, WB9RCY, USA-CA Custodian, 333 South Lincoln Avenue, Mundelein, IL 60060 USA. DX stations must include extra postage for airmail reply.

and USA-CA 500 #2302, All 20M SSB Mobile, dated 1-10-89.

Jerry Ayers, W9ET, claimed a fully endorsed award and received USA-CA All Counties #607, USA-CA 3000 #636, USA-CA 2500 #710, USA-CA 2000 #777, USA-CA 1500 #864, USA-CA 1000 #1051, and USA-CA 500 #2304, Mixed, dated 1-12-89.

Harold R. Schneider, W7BKM, also made a clean sweep of it by claiming USA-CA All Counties #608, USA-CA 3000 #639, USA-CA 2500 #713, USA-CA 2000 #779, USA-CA 1500 #867, USA-CA 1000 #1055, and USA-CA 500 #2310, All SSB, dated 1-27-89.

Alfred B. "Al" Cornwall, W7HZZ, took the next to last step in his quest and claimed USA-CA 3000 #637, All CW, dated 1-17-89.

Richard M. Sears, KB9ER, filed his good application and received USA-CA 3000 #638, USA-CA 2500 #712, USA-CA 2000, #778, USA-CA 1500 #866, USA-CA 1000 #1054, and USA-CA 500 #2309, All 20M SSB Mobiles, dated 1-24-89.

Lin Titus, VE1AIT, added a gold seal to his certificate by claiming USA-CA 2500 #711, Mixed, dated 1-13-89.

Norm Beavers, W3DYA, took a double stride in his march for All Counties by claiming USA-CA 1500 #865 and USA-CA 1000 #1052, All CW, dated 1-13-89.

W. Lee Taylor, N0FLK, filed his good application for USA-CA 1000 #1053 and USA-CA 500 #2307, Mixed, dated 1-19-89.



Al Cornwall, W7HZZ, USA-CA 3000 #367, All CW.

USA-CA 500 certificates went to:
Ed A. Campbell, KF5HY, USA-CA 500 #2300, All SSB, 1-7-89.

Northwest St. Louis ARC, K0AXU, USA-CA 500 #2301, All SSB, 1-7-89.

Clifford E. Simes, KA6BTU, USA-CA 500 #2302, All 20M SSB Mobile, 1-10-89

Peter Miles, G3KDB, USA-CA 500 #2303, Mixed, 1-10-89.

Jerry Ayers, W9ET, USA-CA 500 #2304, Mixed, 1-12-89.

Mark Perlmutter, KA1RIF, USA-CA 500 #2305, Mixed, 1-12-89.

Clubstation der Blaupunkt-Werke GmbH, DK0SA, USA-CA 500 #2306, Mixed, 1-14-89.

W. Lee Taylor, N0FLK, USA-CA 500 #2307, Mixed, 1-19-89.

Wilhelm Schmidt, DK8KC, USA-CA 500 #2308, Mixed, 1-23-89.

Richard M. Sears, KB9ER, USA-CA 500 #2309, All 20M SSB Mobiles, 1-24-89.

Harold R. Schneider, W7BKM, USA-CA 500 #2310, All SSB, 1-27-89.

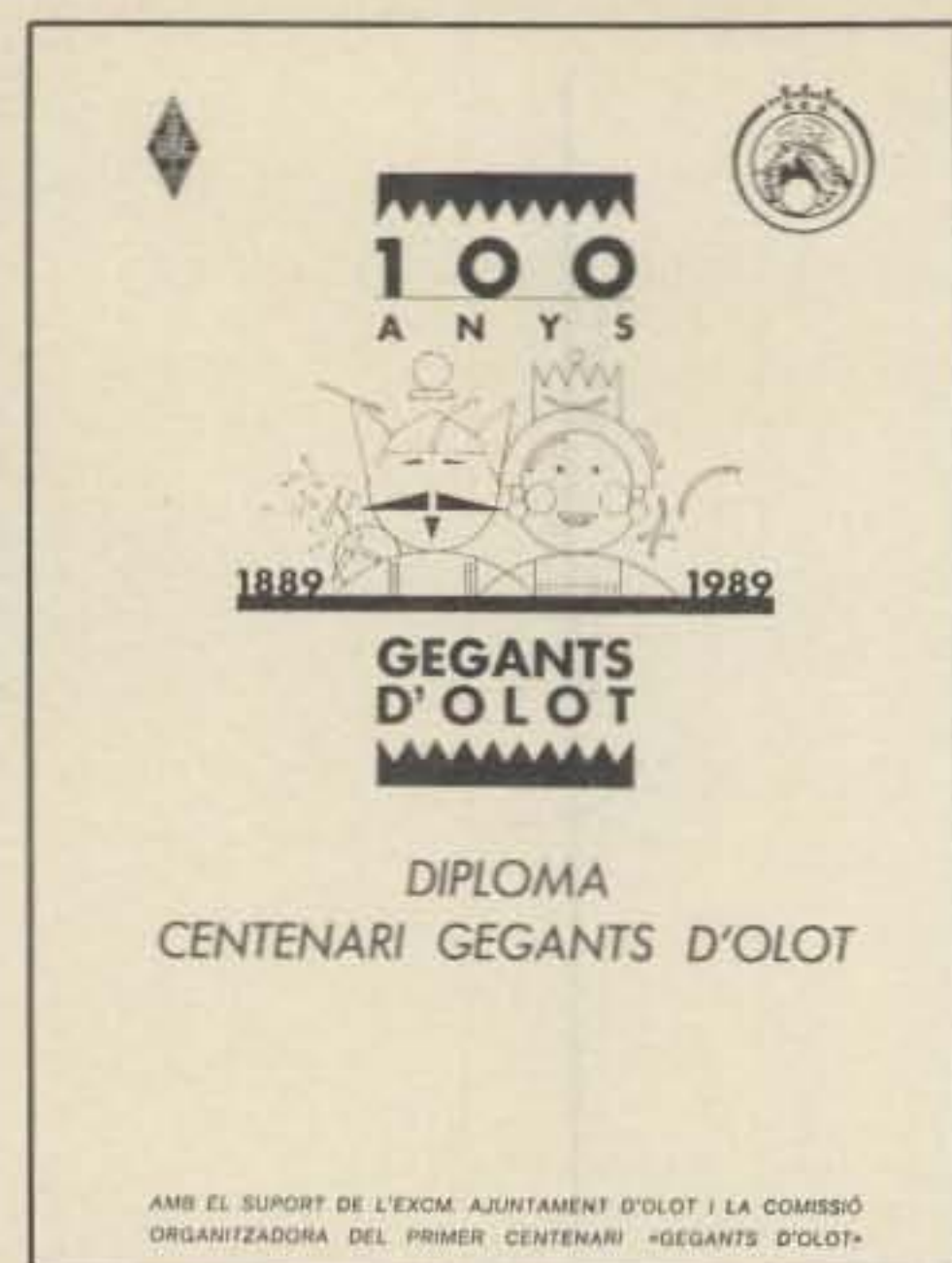
Awards Available

The Giants of Olot Centennial Award. The STC-URE-GARROTXA and RC. GARROTXA radio associations, with the support of the Town Council of Olot, and on the occasion of the Giants of Olot Centennial, offer the Giants of Olot Centennial Award. The following rules are applicable.

Period: From the 1st of January to the 31st of December 1989.

Bands: All frequencies authorized by the IARU.

Scoring: To get the award, 25 points must be scored. Each radio station member of the STC-URE-GARROTXA and RC. GARROTXA associates listed in the last paragraph below will count one point for each phone contact and two points for CW. QSOs with the same station may be counted only if they are on different bands and are separated by a period of at least 24 hours. Any QSO with a special station, which will be on the air all year long in observance of the celebration, will count five points. Special stations will use the following callsigns: AM, AN, AO, ED, EE, EF, EG, or EH3ICG. Any station that



Giants of Olot Centennial Award sponsored by the Town Council and amateurs of Olot, Spain.

makes contact with the special station during the three days the Giants of Olot dance will be able to get the award directly.

To obtain the award, send a LOG summary of the QSOs to Post Office Box 56 or 271, Olot (17800), Spain, before 31 January 1990.

Awards will be sent from the 15th of February 1990 free of charge. Also, the special QSL of the Giants of Olot (Reproduction of the diploma) will be sent to all stations that made contact with the special station during 1989.

The organization reserves the right to modify these rules in whole or in part, in case developments so dictate. *The decision of the organization will be unappealable.*

Stations belonging to the STC-URE-GARROTXA and RC. GARROTXA associations are: EA3AJC, BIY, BJB, BJC, CDA, CGW, CUN, CUU, EGA, EH, EHI, EOW, EPO, FAK, FAL, FED, FJF, FPG, FPH, FPS, FQO, FTC, FYS, FYT, and GBA. EB3AGL, BFF, BSP, BUO, CBC, CJG, CTU and UU. EC3CPV and CQS.

Diploma Torino (DT). Diploma Torino, sponsored by the Torino Section of A.R.I. (Italian Radioamateurs Association), is available to radio amateurs worldwide. The following rules apply:

1. Contacts must be made after January 1, 1952.

2. Contacts must be made all in the same mode and in the same band.

3. Contacts must be made with stations located in Torino and/or in its province.

4. Contacts needed: 10 for European stations; 5 for non-European stations.

5. QSLs are not needed. It is enough to send a log with the necessary informa-

tion, and countersigned by another OM, to A.R.I., P.O. Box 250, 10100 Torino, Italy.

Diploma Dell'Unita' D'Italia (DUI). Diploma Dell'Unita' D'Italia is also sponsored by the Torino Section of A.R.I. For this award:

1. Contacts must be made after March 27, 1961.

2. Contacts must be made with 1 station located in Torino or its province, plus 18 stations located in 18 different Italian regions. (See list of Italian regions and provinces in Table I.)

3. QSLs are not needed. Send log with the necessary information, and countersigned by another OM, to A.R.I., P.O. Box 250, 10100 Torino, Italy.

There is no charge for the DT or the DUI award, but contributions for mailing expenses are welcome.

The European 1992 Community Award (E-1992-C). Issued by the European Community, this new, unique, and very attractive award should emphasize the objectives of the Community. The E-1992-C Award can be obtained by all licensed radio amateurs and shortwave listeners from 1 January 1989 onward.

Requirements: There are three ways to log 12 x 12 different stations from the 12 member countries on the HF bands either in CW, SSB, or Mixed. The member countries are Portugal (CT, CU); Ireland (EI); Denmark (OZ, OY); Greece (SV, SV5, SV9, SY); U.K. (G, GD, GI, GJ, GM, GU, GW, ZB2); Germany FRG (DL); France (F, TK); Belgium (ON); Spain (EA, EA6); Italy (I, IS); Luxembourg (LX); and The Netherlands (PA).

1. Outside the UBA Contests—Log 144 different stations from the EC Member Countries. The log must include at least six different stations from each of "The Twelve," and at the most 20 stations per country to complete the required 144.

2. During the UBA Contests—Log 144 different stations from the EC Member Countries. The log must include at least two different stations from each of "The Twelve," and at the most 24 stations per country to complete the required 144. The application must arrive with your contest entry.

3. Combined Results—A missing LX or SV station in the contest may be replaced outside the contest by two other stations from that country. All other contacts should be logged in the UBA contest and you must have sent your entry. Combined results from up to four consecutive UBA contests to achieve the requirements will be accepted.

The application must consist of a written request signed by the applicant and certified by two licensed amateurs; a list with date, time, callsign, report, band, and mode of 144 contacts; the award fee of 7 IRCs, US \$4.00, or equivalent value in other currency; and name, call, and full

| Region | Prefix | Provinces |
|---------------------|--------|--|
| Valle d'Aosta | IX1 | Aosta (AO) |
| Piemonte | I1 | Torino (TO), Vercelli (VC), Novara (NO), Alessandria (AL), Cuneo (CN), Asti (AT) |
| Liguria | I1 | Genova (GE), Savona (SV), Imperia (IM), La Spezia (SP) |
| Lombardia | I2 | Milano (MI), Bergamo (BG), Brescia (BS), Como (CO), Cremona (CR), Pavia (PV), Mantova (MN), Sondrio (SO), Varese (VA) |
| Veneto | I3 | Venezia (VE), Padova (PD), Verona (VR), Vicenza (VI), Treviso (TV), Belluno (BL) |
| Friuli | IV3 | Trieste (TS), Udine (UD), Gorizia (GO), Pordenone (PN) |
| Trentino Alto Adige | IN3 | Trento (TN), Bolzano (BZ) |
| Emilia | I4 | Bologna (BO), Reggio Emilia (RE), Ravenna (RA), Parma (PR), Piacenza (PC), Ferrara (FE), Forli (FO), Modena (MO) |
| Toscana | I5 | Firenze (FI), Siena (SI), Lucca (LU), Pisa (PI), Pistoia (PT), Massa Carrara (MS), Livorno (LI), Arezzo (AR), Grosseto (GR) |
| Umbria | I0 | Perugia (PG), Terni (TR) |
| Marche | I6 | Ancona (AN), Pesaro (PS), Ascoli Piceno (AP), Macerata (MC) |
| Abruzzo | I6 | Pescara (PE), Chieti (CH), L'Aquila (AQ), Teramo (TE) |
| Lazio | I0 | Roma (RM), Frosinone (FR), Viterbo (VT), Rieti (RI) |
| Campania | I8 | Napoli (NA), Avellino (AV), Salerno (SA), Caserta (CE) |
| Calabria | I8 | Reggio Calabria (RC), Cosenza (CS), Catanzaro (CZ) |
| Basilicata | I7-8 | Potenza (PZ), I8; Matera (MT), I7 |
| Puglia | I7 | Baria (BA), Taranto (TA), Foggia (FG), Lecce (LE) |
| Molise | I8 | Isernia (IS), Campobasso (CB) |
| Sardegna | IS0 | Cagliari (CA), Sassari (SS), Nuoro (NU), Oristano (OR) |
| Sicilia | IT9 | Palermo (PA), Messina (ME), Enna (EN), Ragusa (RG), Catalinsetta (CL), Catania (CT), Trapani (TP), Siracusa (SR), Agrigento (AG) |

Table I - Regions and provinces of Italy for the Diploma Dell'Unita' D'Italia Award.

address of the applicant and his witnesses. The application should be sent to UBA HF Award Manager, Van Campenhout Mat, ON5KL, Hospicestraat 175, 9080 Moerbeke-Waas, Belgium.

QSO Party—Lion City Award. A Singapore QSO party will help amateurs qualify for the Lion City Award. The event will be held on 21 October 1989 from 0000-2400 UTC. The Lion City Award is available to amateurs and SWLs who have confirmed contacts with five 9V amateur radio stations (10 for amateurs in CQ Zone 28). Applicants must submit a certified log extract (GCR) to the Awards Manager, SARTS, Maxwell Road P.O. Box 2728, Singapore 9047 with 5 IRCs.

QSO Party Rules: 9V stations will operate all bands, 80-10 meters (no WARC for the award), CW and SSB. DX stations send RS(T) and CQ Zone; Singapore stations send RS(T) and serial number.

Award Applications: For stations working five 9V stations during the QSO Party, contacts need not be confirmed. Submit log extract with complete exchanges to Awards Manager with reduced fee of 3 IRCs. QSO Party contacts may be combined with confirmed QSOs to qualify for the award. A minimum of 3 QSO Party contacts qualifies for the reduced fee. There is no penalty for invalid submissions, but all applications will be checked against 9V station logs.

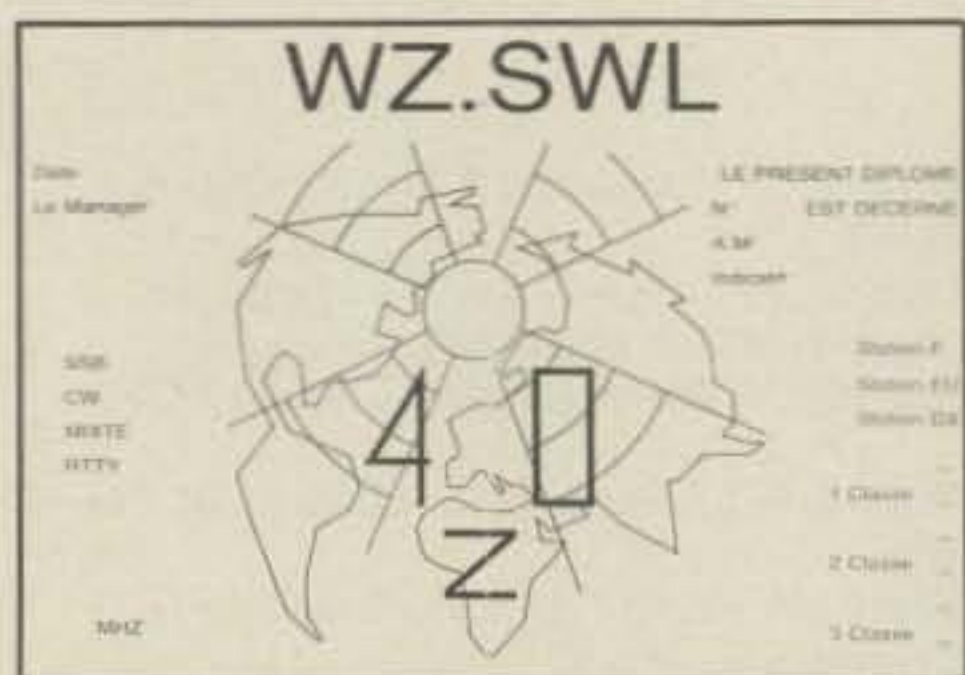
International Marconi Day. The following is based on information received from the Cornish Radio Club in Cornwall, England.

It has been a year since the last Inter-



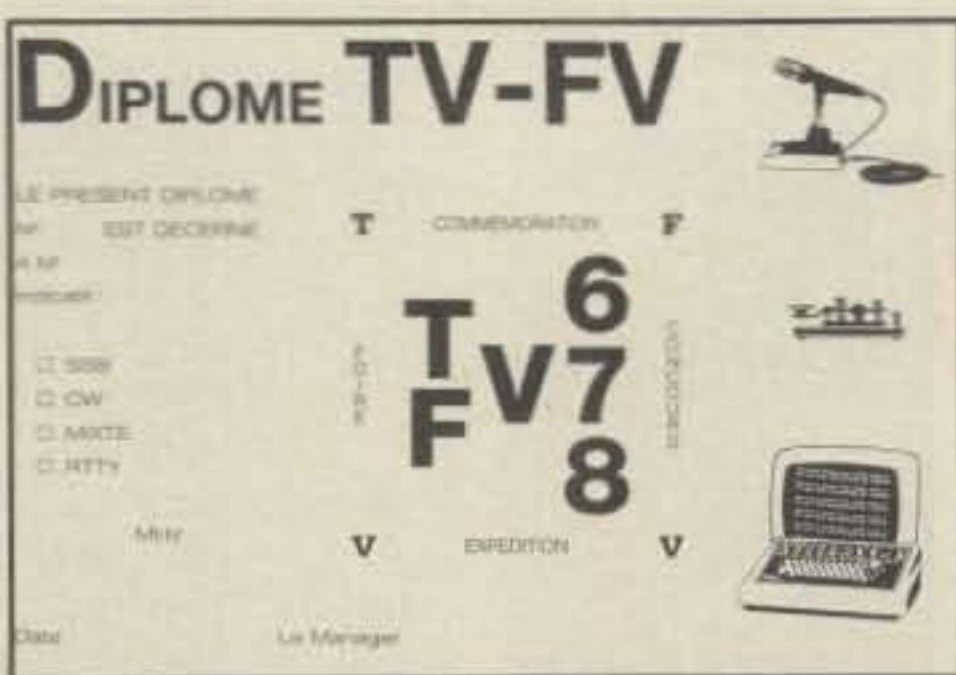
The International Marconi Day Award is printed in three colors on parchment-type paper courtesy of the Cornish Radio Club, Cornwall, England.

national Marconi Day. Monty, G4ZKH, and Norman, G4SUB, have planned another International Marconi Day for 1989, and again they hope to make history. The event of 1978 almost made the *Guinness Book of Records*, for at that time it was probably the longest running special event station ever held, with the operation being nonstop for seven days. This international event involves seven stations in five countries, each of which has some connection with Marconi. GB4IMD, in Cornwall, members of the Cornish Radio Amateur Club, are expected to operate from the site where Marconi made his first trans-Atlantic transmission—Poldhu Cove, near Mullion on the Lizard Peninsula. GB0IMD, a UK station, will be operat-



Worked Zones/SWL Award (see CQ, April 1989 for complete details).

ing from the site of Marconi's early trans-channel tests on the Isle of Wight. EI2IMD, in Eire, the South East Amateur Radio Group, will operate from a site not far from the location where Marconi carried out his first Irish experiments at Crookhaven. K1VV/IMD, in the United States, will be operated by Whitey, K1VV (who took part in the 1978 event), and his friends. They will represent Marconi's 1903 South Wellfleet, Massachusetts site



TV-FV Award based on special French prefixes (see rules in CQ, April 1989).

on Cape Cod where the first USA-to-Europe contact was made. VO1IMD, in Newfoundland, the Society of Newfoundland Radio Amateurs, will operate from St. Johns, the spot where the first trans-Atlantic contact was made. It is expected that the station will actually be on Signal Hill, where the original equipment was used. VE1IMD, another Canadian group participating, is the Sydney Amateur Radio Club of Nova Scotia. Their station will

be set up at the Marconi Museum in Glace Bay, where the first east/west Atlantic contact was made. IY4FGM, from Italy, Marco, I4IKW, and friends will operate a special station from Bologna, the birthplace of Marconi himself.

The date for 1989 is April 22. Operation will be on six bands, phone only. All stations will be on the air for one day only—that is, 0001-2400Z. Stations plan to operate in the General part of the bands.

A special award is offered to stations who work any six of the seven stations. Also, a special shortwave listeners (SWL) award is offered to receiving stations who copy six of the seven stations. The Cornish Club is in charge of all award claims. Send award claims and inquiries to C.R.A.C., P.O. Box 100, Truro TX1 1RX, Cornwall, United Kingdom.

International Listeners' Association

The International Listeners' Association was formed to create a link between listeners throughout the world, regardless of affiliations or special interests. The idea is to foster a free exchange of ideas, techniques, and general information between its members.

The "Newsletter" is published quarterly and contains items of general interest, news of forthcoming events, new memberships, and submitted items. Information sheets on specialty subjects within the hobby are usually issued with the "Newsletter" and suggestions for these are always welcome.

Awards are regarded as a means of improving listening techniques, and a number of these are promoted as part of the association with certificates or trophies offered for successful applicants. Full details are on the "Awards Lists."

Assistance on any related subject is freely available, but when writing for information enclose a stamp or IRC for the reply and *not* an envelope, as these are often the wrong size.

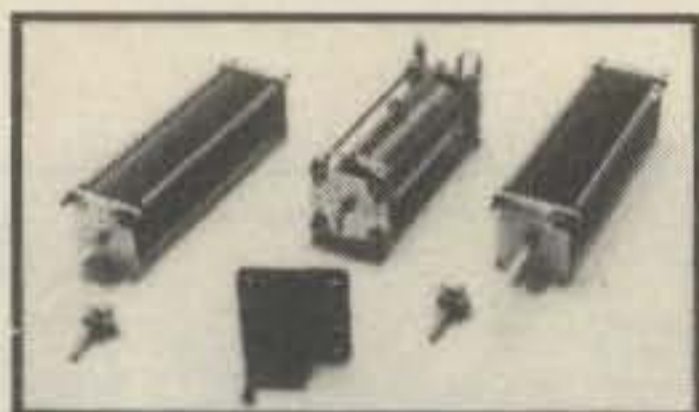
Mail to other members can be sent via the association. Simply mark the *back* of the envelope with the member's number and it will be forwarded.

Suggestions for items to be included in the "Newsletter" are most welcome, but if you want drawings or original material returned, mention so in a cover letter.

Membership fees are intended to cover the costs involved in producing the "Newsletter," and no administration costs are involved. The cost of awards is from other sources. Any association material offered to members (such as QSL cards, badges, or other items) will be offered at cost. To join send name, address, affiliations (RSGB, RAFARS, etc.), equipment details, specific interests, along with 1 pound UK or 4 IRCs to I.L.A., 1 Jersey St., Haford, Swansea SA1 2HF, Wales, U.K.

73, Dorothy, WB9RCY

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- W1FB 160/80 Pre Amp (QST 8/88).....\$19.95
- K9CW Memory Contest Keyer.....\$109.00
- Yaesu FRG-9600, .1 to 60 MHz Converter....\$94.95
- 20m CW, 15w Transceiver (H.R. 6/87).....\$159.95
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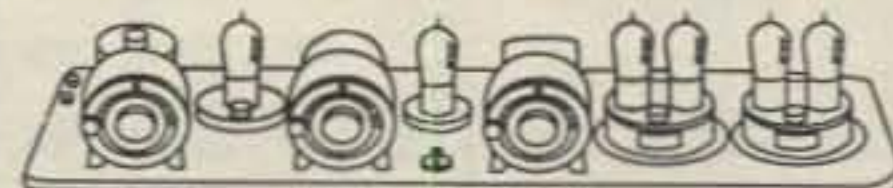
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|--|---|-------------|------------------------|---------------------|---------------------|---------------------|--------|--------|----|-----------------------|----|--------|---------|----|---------------------|----|--------|----------|----|---------------------|----|--------|---|----|---------------|----|--------|----|----|----------------|----|--------|----|----|-------------|----|--------|----|----|-----------------|----|
| <p>RM-A SERIES</p> <p>MODEL RM-35M</p> | <p>19" X 5 1/4" RACK MOUNT POWER SUPPLIES</p> <table border="1"> <thead> <tr> <th>MODEL</th> <th>Continuous Duty (Amps)</th> <th>ICS* (Amps)</th> <th>Size (IN) H x W x D</th> <th>Shipping Wt. (lbs.)</th> </tr> </thead> <tbody> <tr> <td>RM12A</td> <td>9</td> <td>12</td> <td>5 1/4 x 19 x 8 1/4</td> <td>16</td> </tr> <tr> <td>RM-35A</td> <td>25</td> <td>35</td> <td>5 1/4 x 19 x 12 1/2</td> <td>38</td> </tr> <tr> <td>RM-50A</td> <td>37</td> <td>50</td> <td>5 1/4 x 19 x 12 1/2</td> <td>50</td> </tr> </tbody> </table> <ul style="list-style-type: none"> Separate Volt and Amp Meters RM-35 M 25 35 5 1/4 x 19 x 12 1/2 38 RM-50 M 37 50 5 1/4 x 19 x 12 1/2 50 | MODEL | Continuous Duty (Amps) | ICS* (Amps) | Size (IN) H x W x D | Shipping Wt. (lbs.) | RM12A | 9 | 12 | 5 1/4 x 19 x 8 1/4 | 16 | RM-35A | 25 | 35 | 5 1/4 x 19 x 12 1/2 | 38 | RM-50A | 37 | 50 | 5 1/4 x 19 x 12 1/2 | 50 | | | | | | | | | | | | | | | | | | | | |
| MODEL | Continuous Duty (Amps) | ICS* (Amps) | Size (IN) H x W x D | Shipping Wt. (lbs.) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| RM12A | 9 | 12 | 5 1/4 x 19 x 8 1/4 | 16 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| RM-35A | 25 | 35 | 5 1/4 x 19 x 12 1/2 | 38 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| RM-50A | 37 | 50 | 5 1/4 x 19 x 12 1/2 | 50 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <p>RS-A SERIES</p> <p>MODEL RS-7A</p> | <table border="1"> <tbody> <tr> <td>RS-4A</td> <td>3</td> <td>4</td> <td>3 3/4 x 6 1/2 x 9</td> <td>5</td> </tr> <tr> <td>RS-5A</td> <td>4</td> <td>5</td> <td>3 1/2 x 6 1/8 x 7 1/4</td> <td>7</td> </tr> <tr> <td>RS-7A</td> <td>5</td> <td>7</td> <td>3 3/4 x 6 1/2 x 9</td> <td>9</td> </tr> <tr> <td>RS-10A</td> <td>7.5</td> <td>10</td> <td>4 x 7 1/2 x 10 3/4</td> <td>11</td> </tr> <tr> <td>RS-12A</td> <td>9</td> <td>12</td> <td>4 1/2 x 8 x 9</td> <td>13</td> </tr> <tr> <td>RS-20A</td> <td>16</td> <td>20</td> <td>5 x 9 x 10 1/2</td> <td>18</td> </tr> <tr> <td>RS-35A</td> <td>25</td> <td>35</td> <td>5 x 11 x 11</td> <td>27</td> </tr> <tr> <td>RS-50A</td> <td>37</td> <td>50</td> <td>6 x 13 3/4 x 11</td> <td>46</td> </tr> </tbody> </table> | RS-4A | 3 | 4 | 3 3/4 x 6 1/2 x 9 | 5 | RS-5A | 4 | 5 | 3 1/2 x 6 1/8 x 7 1/4 | 7 | RS-7A | 5 | 7 | 3 3/4 x 6 1/2 x 9 | 9 | RS-10A | 7.5 | 10 | 4 x 7 1/2 x 10 3/4 | 11 | RS-12A | 9 | 12 | 4 1/2 x 8 x 9 | 13 | RS-20A | 16 | 20 | 5 x 9 x 10 1/2 | 18 | RS-35A | 25 | 35 | 5 x 11 x 11 | 27 | RS-50A | 37 | 50 | 6 x 13 3/4 x 11 | 46 |
| RS-4A | 3 | 4 | 3 3/4 x 6 1/2 x 9 | 5 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| RS-5A | 4 | 5 | 3 1/2 x 6 1/8 x 7 1/4 | 7 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| RS-7A | 5 | 7 | 3 3/4 x 6 1/2 x 9 | 9 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| RS-10A | 7.5 | 10 | 4 x 7 1/2 x 10 3/4 | 11 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| <p>RS-M SERIES</p> <p>MODEL RS-35M</p> | <ul style="list-style-type: none"> Switchable volt and Amp meter RS-12M 9 12 4 1/2 x 8 x 9 13 Separate volt Amp meters RS-20M 16 20 5 x 9 x 10 1/2 18 RS-35M 25 35 5 x 11 x 11 27 RS-50M 37 50 6 x 13 3/4 x 11 46 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <p>RS-S SERIES</p> <p>MODEL RS-12S</p> | <ul style="list-style-type: none"> Built in speaker RS-7S 5 7 4 x 7 1/2 x 10 3/4 10 RS-10S 7.5 10 4 x 7 1/2 x 10 3/4 12 RS-12S 9 12 4 1/2 x 8 x 9 13 RS-20S 16 20 5 x 9 x 10 1/2 18 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <p>VRM/VS-M SERIES</p> <p>MODEL VS-35M</p> | <ul style="list-style-type: none"> Separate Volt and Amp Meters • Output Voltage adjustable from 2-15 volts Current limit adjustable from 1.5 amps to Full Load <table border="1"> <thead> <tr> <th></th> <th>@13.8VDC@10VDC@5VDC</th> <th>@13.8V</th> <th></th> <th></th> </tr> </thead> <tbody> <tr> <td>VS-20M</td> <td>16 9 4</td> <td>20</td> <td>5 x 9 x 10 1/2</td> <td>20</td> </tr> <tr> <td>VS-35M</td> <td>25 15 7</td> <td>35</td> <td>5 x 11 x 11</td> <td>29</td> </tr> <tr> <td>VS-50M</td> <td>37 22 10</td> <td>50</td> <td>6 x 13 3/4 x 11</td> <td>46</td> </tr> </tbody> </table> <ul style="list-style-type: none"> Variable rack mount power supplies VRM-35M 25 15 7 35 5 1/4 x 19 x 12 1/2 38 VRM-50M 37 22 10 50 5 1/4 x 19 x 12 1/2 50 | | @13.8VDC@10VDC@5VDC | @13.8V | | | VS-20M | 16 9 4 | 20 | 5 x 9 x 10 1/2 | 20 | VS-35M | 25 15 7 | 35 | 5 x 11 x 11 | 29 | VS-50M | 37 22 10 | 50 | 6 x 13 3/4 x 11 | 46 | | | | | | | | | | | | | | | | | | | | |
| | @13.8VDC@10VDC@5VDC | @13.8V | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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"HOW TO" FOR THE NEWCOMER TO AMATEUR RADIO

DX Newsletters

It is normal for new amateurs to develop an interest in contacting amateurs in other countries, which is called DXing. Initially most amateurs just work whatever DX they hear while they are operating. At some point most of the "easy" ones have been worked, and they may become interested in contacting rare DX stations. At this point the DX newsletters can be extremely helpful. I believe DX bulletins are more important to new amateurs than they are to people who have been active amateurs for many years. If you are relatively new to amateur radio, I advise you to subscribe to one or more of the publications described in this article. DX operating is an exciting long-term part of amateur radio.

DXers Magazine. Gus Browning, W4BPD, has published the *DXers Magazine* for years. His address is Drawer DX, Cordova, SC 29039. However, he has temporarily ceased publication until his health improves. Gus was the first person elected to the CQ DX Hall of Fame, an event that occurred 1 November 1967. I had the pleasure of working him from many of his rare DX locations. The call-signs of other electees to the CQ DX Hall of Fame are DJ6SI, DJ9ZB, G3FKM, JA1BK, OH2BH, RAEM, SM0AGD, VK9NS, VP2VB, ZL1AMO, ZL2AWJ, W1BB, W1WY, W2CTN, W2GHK, W3HNC, KV4AA, W4DQS, W4OPM, K5YY, W6AM, WA6AUD, W6ISQ, W6KG, W6QD, K7LMU, and W9BRD. Editor and publisher Geoff Watts is also a member of this elite group.

Inside DX. This newsletter is published by Arthur Hubert, N2AU. His mailing address is 436 N. Geneva Street, Ithaca, NY 14850. This is a four-page newsletter filled with the latest DX news. *Inside DX* includes a column about new and active DX call-sign prefixes, which is useful to amateurs who are interested in the CQ magazine WPX Awards Program. *Inside DX* has been published weekly for more than three years. As is common to all such bulletins, amateurs worldwide provide input to *Inside DX*. If you want a sample issue, enclose a business-size (number 10) SASE with your request. DX amateurs should enclose two IRCs, or \$1.00 U.S., and their SAE with such a request. A trial subscription (one-half year) costs \$17,



This is Byron Peebles, WB3KTX, of Malvern, Pennsylvania. He has been licensed since 1979. Byron upgraded to Technician in November 1987. He passed the 13 wpm General/Advanced code receiving test in August 1988. He has the Worked All Continents (WAC) award, just needs Rhode Island to get the Worked All States (WAS) award, and about a dozen DX cards will enable him to request his DXCC (100 countries) award. Byron runs a Kenwood TS-520 transceiver with an indoor (attic) 10/15/20 meter inverted-Vee antenna. His other interests include skiing, traveling, bicycling, stamp collecting, model railroading, electronics, and computers. Byron is a software development manager for a telephone company.

and a 51-issue subscription (one year) costs \$32.50. DX rates are \$23 and \$45 for 26 and 51 issues, respectively. Arthur is an active DXer with 332 countries worked.

The DX Bulletin. This four-page bulletin is published weekly by Chod Harris, WB2CHO/VP2ML. It covers DXpedition news, DXCC/DXAC news, DX notes/news, islands on the air, propagation data, DX QSL information, DX contact reports (showing band, frequency, mode, and time), and a calendar of future DX contact opportunities. This bulletin receives input from its worldwide readers. Free report forms and cards are available from Chod. The price of 50 issues (to the 48 contiguous states) is \$29 and \$38 for second- and first-class mail, respectively. The price of an overseas airmail subscription is \$50. The mailing address is P.O. Box 50, Fulton, CA 95439; Chod's telephone number is 707-523-1001. A business-size (number 10) SASE with your request will bring a sample bulletin and introductory data sheet.

A sister publication to the *DX Bulletin* is the *DX Magazine*. This approximately 28-page magazine is published monthly. The charter subscription rate is \$15 per year. Initial distribution was made to 6700 worldwide *DX Bulletin* subscribers.

New subscribers receive a two-page sheet that explains how to get the most benefit from issues of the *DX Bulletin*. This introduction is especially helpful to new amateurs. Chod also sends a list of his previous special reports to each new subscriber. His reports are available free to subscribers; simply provide your SASE for each two reports requested.

The Long Island DX Bulletin. If you would like to receive a free sample copy of this biweekly DX bulletin, you can request it by writing to *The Long Island DX Bulletin*, P.O. Box 173, Huntington, NY 11743-0173. As usual, you should enclose an SASE using a business-size envelope. The subscription rate is \$16 per year for domestic (U.S.A.) subscribers. Overseas airmail rates may be requested. This newsletter is printed on 8.5 by 14 inch white paper. It provides a propagation forecast in four categories. DX contact opportunities are listed alphabetically by locations (Bahrain through Tasmania, as an example). Current DX QSL routing information is included alphanumerically in call-sign sequence. The last segment of each issue is a collection of DX news items received in the mail and on the air. J. Harvey McCoy, W2IYX, produces this excellent DX newsletter.

QRZ DX. If you would like to receive a free sample copy of this weekly newsletter, you can request it by writing to *QRZ DX*, P.O. Box 832205, Richardson, TX 75083. It is appreciated if you enclose an SASE or postage. This weekly newsletter is mailed first class to Canadian, Mexican, and U.S. amateurs; it is airmailed to DX amateurs. It lists DX QSL managers and their addresses. It includes a compilation of current DX data (call-signs, frequencies, operating times) obtained from worldwide contributors. *QRZ DX* includes special topics of interest to DX enthusiasts.

DX News-Sheet Publications

Geoff Watts, G3FKM, is the editor of *DX News-Sheet*. He has published four lists (54 pages total) which are very useful to amateurs who like working DX.

The *CQ* and *ITU Zones Guide* lists

2814 Empire Ave., Burbank, CA 91504

PITCAIRN ISLAND VR6TC

To _____ confirming SSB / CW QSO on _____ MHz
at _____ GMT on _____ Report _____

TOM CHRISTIAN
P. O. BOX 1—ADAMSTOWN
SOUTH PACIFIC

BETTY CHRISTIAN P.O. Box 1
PITCAIRN ISLAND - SOUTH PACIFIC

VR6YL



| TO RADIO | DATE | GMT | MHZ | MODE | RST |
|----------|------|-----|-----|------|-----|
| | | | | | |

CONFIRMING OUR QSO 73 DE _____ PSE/TNX QSL

The QSL cards of Betty and Tom Christian, VR6YL and VR6TC, of Pitcairn Island.

every DXCC credit country in each ITU and CQ zone. This 15-page list is in prefix alphabetical order.

The *DX Countries Guide* is an alphabetical list of countries. It lists current prefixes, plus prefixes back to 1945. A cross-reference list of old and current country names is included. Deleted countries and associated data are listed in this 11-page publication. The reference number of each DXCC credit island is listed, plus a comprehensive listing of Russian oblasts.

The *Amateur Prefix-Country-Zone List* shows normal and special callsign prefixes, CQ and ITU zones, DXCC credit status, continent, and the callsign block allocation of each country. Information is also included about Antarctic stations, Russian club stations, and prefixes which have become obsolete during the past decade. All data is in prefix sequence. This is a 15-page list.

The *USSR Oblast Guide* includes a numerical sequence of outline maps of the 184 Russian oblasts. All oblasts are listed in prefix order. Oblasts of 1, 2, and 3 letter callsign suffixes are listed separately. Pre-1970 active callsigns and club station oblast lists are included. A pre-1984 club station oblast list is another helpful feature. "Victory 40" stations, and their oblasts, are listed. Deleted oblasts (which still count) and future Russian callsign prefixes are shown. The Russian "CQ-M" contest rules are stated, and the R-150-S Russian countries are listed. ITU and CQ zone lists are also in this 13-page publication. R-100-O Worked 100 Oblasts Award requirements are stated.

Each of these four publications is available (airmail) to U.S. amateurs at \$3.00 (U.S.) or 6 IRCs. Checks are not acceptable. The mailing address is Geoff Watts, G3FKM, 62 Belmore Road, Norwich, NR7 0PU, England.

QSL Managers Directories

If you become even moderately active working DX, you will soon realize that you

need information about the QSL managers who graciously serve some of the rare DX stations. Two of the very best sources of this important data are listed herein for your use. The address for the *W6GO/K6HHD QSL Manager List* is P.O. Box 700, Rio Linda, CA 95673-0700. The address for the *WB4KCL QSL Manager List* is Fred Smith, 2265 Sweetbriar Drive, Alexandria, VA 22307.

Banned Countries

The October 1988 *CQ* contains information about international agreements which are of interest to American amateurs. That article evoked comments from several Canadian amateurs. They believe I should have listed the banned countries, those countries whose amateurs we are not allowed to contact.

Canadian Radiocommunication Information Circular number three (RIC-3) of February 1, 1988 states that nine countries have notified the International Telecommunication Union (ITU) that they forbid (foreign) radiocommunications with amateurs under their jurisdiction. Those countries are Angola, Burma, Ghana, Ethiopia, Iraq, Saudi Arabia, Suriname, Thailand, and Saire.

FCC Public Notice 3174 (6 June 1988) contains the following information. "Banned Countries: Radiocommunication is forbidden between amateur stations in the following countries and amateur stations in areas where the amateur service is regulated by the FCC because the administration of the country has notified the FCC that it objects to such radiocommunications: None."

The Chief of the FCC Spectrum Engineering Division (Will A. McGibbon) advised that official inquiries have been directed to certain countries, but no country has bilaterally confirmed that it objects to international radiocommunications by their amateurs.

In summary, no banned countries list applies to U.S. amateurs. However,

this difference between Canadian and American amateur radio regulations is interesting.

W200LS Cards

During the 1988 bicentennial celebration I worked more than 1500 Novice band contacts using W200LS. Special cards have been forwarded to every DX contact via the ARRL bureau. Every card received with an SASE had been answered. We have sent cards to about 1200 of the more than 1500 amateurs we contacted. However, I realize that many newer amateurs do not have QSL cards. If you contacted W200LS from September 3-9, 1988, please do not wait to get your QSL cards before requesting ours. Just send QSO information (date, time, band, and mode), plus your SASE, to my California address. Your QSL is not required to receive a W200LS card. Please remember that your SASE is required. The address to use is 2814 Empire Ave., Burbank, CA 91504-3297.

Teaching Amateur Radio In Public Schools

Many of us have conducted amateur radio courses in our local schools, but few (if any) of us have done this on the scale that has been accomplished by Carole Perry, WB2MGP. Her successes caused her to be chosen as the ham of the year recipient at the 1987 Dayton Hamvention.

If you know a teacher who would like to introduce students to the fascinating world of amateur radio, please let him/her know that help is available to achieve this objective.

Carole's "Introduction to Amateur Radio" course can be used by anyone who wants to teach such a course. It includes an instructor's manual, 26 lesson plans, an introductory video tape, a manual telegraph key, a code practice oscillator, and a code training cassette at just \$99.95. Orders and requests for additional information may be sent to Media Mentors,

Inc., P.O. Box 1646, Staten Island, NY 10313-0006. Their telephone number is 718-983-1416. Additional keys and cassettes are available for \$19.95 and \$6.95 each, respectively.

In addition to the preceding items this course is backed by a ham radio hotline for the benefit of instructors desiring assistance; that phone number is the same as above. Media Mentor offers a free four-

page flyer about the course.

The Dayton Hamvention program contains a nice two-page coverage of Carole's school program. Send a business-size SASE with your request. Use the same Staten Island address.

The principal of Carole's school is Stanley Katzman. He wrote a three-page letter which details his satisfaction with Carole's program and encourages other

school officials to initiate similar programs. If you want a copy of his letter to help promote amateur radio in your local schools, send your request and an SASE to Stanley Katzman, Principal, The Rocco Laurie School, Intermediate School 72, 33 Ferndale Ave., Staten Island, NY 10314. His letter does a good job of explaining the many benefits students and schools derive from amateur radio courses. His non-amateur summary of benefits could be effective in convincing other educators to give amateur a try at their schools.

Most of the articles printed in this CQ column are useful as handouts to licensing course students. Instructors are welcome to duplicate and distribute them as is, or to modify them to suit their requirements. One complete set of these printed aids is available for \$15. Requests should be sent to Bill Welsh, W6DDB, 2814 Empire Ave., Burbank, CA 91504-3297.

The best single source of amateur radio information in America is the American Radio Relay League. Their address is 225 Main Street, Newington, CT 06111.

Pitcairn Island

One of the many islands that count as a separate country towards the DXCC award is tiny Pitcairn Island. It is just one mile wide and two miles long, it had no airfield or dock, and its total population is about 60 people. However, it does boast two amateurs. They are Betty (VR6YL) and Tom (VR6TC) Christian. Tom is the great-great-great grandson of Fletcher Christian. Fletcher led the mutiny against Captain Bligh, took over *HMS Bounty*, set Bligh (and his associates) to sea in a lifeboat, and located remote (uninhabited) Pitcairn Island as a refuge for himself and several members of his crew. Those of you who have read *Mutiny on the Bounty* or have seen the movie know this bit of history.

If you want a contact with VR6TC, listen for him on 14,178 or 21,349 kHz (Tuesdays 2330-0200 UTC and 1700-1930 UTC Fridays). Tom can be found on 21,227 or 21,325 kHz Wednesdays, starting at 1700 UTC. If you're lucky you might also contact his wife, Betty, VR6YL. Their QSL manager is Dr. Chas. (Mert) Moser, W6HS, 10861 Langdon Ave., Mission Hills, CA 91345.

Doc has helped Pitcairn Islanders in many ways during the last two decades. He helps them sell the beautiful items they carve from miro wood. One of the best items Doc has available is a 69-page booklet entitled "A Guide to Pitcairn." If you want a copy of this very interesting publication, it is available from Doc for \$6.00, which includes shipping. If you would like to know about the other items the Pitcairn Islanders sell, send your request with an SASE to Doc Moser.

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ATTENTION: WOMEN WHO SOUGHT EMPLOYMENT WITH THE VOICE OF AMERICA (VOA), THE UNITED STATES INFORMATION AGENCY (USIA), OR THE UNITED STATES INTERNATIONAL COMMUNICATION AGENCY (USICA) BETWEEN OCTOBER 8, 1974 AND NOVEMBER 16, 1984.

**YOU MAY BE A VICTIM OF SEX DISCRIMINATION
ENTITLED TO A MONETARY AWARD AND A POSITION WITH THE AGENCY.**

UNITED STATES DISTRICT COURT FOR THE DISTRICT OF COLUMBIA

CAROLEE BRADY HARTMAN, et al.,
Plaintiffs,

v.

CHARLES Z. WICK,
Defendant

Civil Action No. 77-2019
Judge Charles R. Richey

PUBLIC NOTICE

On November 16, 1984, the United States District Court for the District of Columbia found in this class action lawsuit that the United States Information Agency (USIA or the Agency), including the Voice of America (VOA), is liable for sex discrimination against female applicants for the following positions at the Agency. The USIA was also formerly known as the United States International Communication Agency (USICA). On January 19, 1988, the Court issued its opinion ordering relief in a variety of forms to potential class members. Accordingly, this case is now in the remedial phase.

JOBS COVERED

Specifically, the Court has found that the Agency has discriminated against women in hiring in the following jobs:

- Electronic Technician (Occupational Series 856)
- Foreign Language Broadcaster (Occupational Series 1048)
- International Radio Broadcaster (Other) (Occupational Series 1001)
- International Radio Broadcaster (English) (Occupational Series 1001)
- Production Specialist (Occupational Series 1071)
- Writer/Editor (Occupational Series 1082)
- Foreign Information Specialist/Foreign Affairs Specialist/Foreign Service Information Officer/Foreign Service Officer (Occupational Series 1085 and 130)
- Radio Broadcast Technician (Occupational Series 3940)

WHO IS INCLUDED

All women who sought employment with the Agency in any of the jobs listed above between October 8, 1974 and November 16, 1984 and were not hired may be eligible for relief. Also included are those women who were discouraged from applying for these positions during that time period. Even those women subsequently hired by the Agency in some capacity may be entitled to participate in the remedial phase of this case.

Women who sought employment with the Agency as Foreign Service Officers or Foreign Service Information Officers may be eligible for different kinds of relief depending upon the date of application and whether they sought employment at the entry level or mid-level. Women who sought employment with the Agency as entry level Foreign Service Officers or Foreign Service Information Officers in the years 1974-1977 must use the procedure outlined below. Women who sought employment with the Agency as mid-level Foreign Service Officers or Foreign Service Information Officers in the years 1974-1984 must also use the procedure outlined below. However, women who sought employment with the Agency as entry level Foreign Service Officers or Foreign Service Information Officers in the years 1978-1984 cannot use the procedure outlined below, since the Court has ordered an alternative form of relief for them and selected women in this group will be notified individually as to their rights.

RELIEF AVAILABLE AND HOW TO OBTAIN IT

Relief available to class members may include a monetary award and/or priority consideration for a current position with the Agency. If you think you may be entitled to relief, you must obtain a claim form, complete it fully, and return it to counsel for the plaintiff class, Bruce A. Fredrickson, Esq., Webster & Fredrickson, 1819 H Street, N.W., Suite 300, Washington, D.C. 20006 (202/659-8515), postmarked no later than July 15, 1989.

You may obtain a claim form in person and/or in writing from several sources: counsel for the plaintiff class, whose address is listed above; in person from USIA, Front Lobby, 301-4th Street, S.W., Washington, D.C. (8:15am -5:00pm), Office of Personnel Management (OPM), Federal Job Information Center (First Floor, Room 1425), 1900 E Street, N.W., Washington, D.C. (8:30am-2:30p.m.), or from area OPM offices throughout the country; in writing, VOA-Hartman, P.O. Box 400, Washington, D.C. 20044. You should carefully consider all questions on the claim form, sign it, and return it to counsel for the plaintiffs. Do not, under any circumstances, return the claim form to the Judge, the Court or the Clerk of the Court. The Judge, the Court and the Clerk of the Court will not accept the claim forms and will not forward claim forms to plaintiffs' counsel.

PROCESSING OF CLAIMS

The process for handling claims has not been finally decided. Thus far, the Court has ordered that responding class members demonstrate their potential entitlement to relief at an individual hearing to be scheduled at a later date. However, the Court has reserved the right to reconsider this procedure in the event the number of claims filed makes this approach unmanageable.

Should individual hearings be used, you will be fully informed as to the date and time of your hearing. Moreover, you will be entitled to legal representation by counsel for the plaintiff class or his designee at no cost to you. Legal counsel will discuss your claim with you prior to your hearing, help you prepare your case and represent you at your hearing. You may, of course, retain your own attorney to represent you, if you so desire.

At the individual hearing, you will be asked to demonstrate your potential entitlement to relief by showing that you applied for one or more of the covered positions during the period October 8, 1974 and November 16, 1984 and that you were rejected, or that you were discouraged from applying. Evidence may be required in the form of testimony, documents, or both. Once you have demonstrated these facts, USIA is required to prove, by clear and convincing evidence, that you were not hired (for each position for which you applied) for a legitimate, non-discriminatory reason, such as failure to possess requisite qualifications. Should USIA make such a showing, you would then be entitled to demonstrate that the Agency's reason is merely a cover for sex discrimination or unworthy of belief.

Following the hearing, the Presiding Official will decide whether you are entitled to relief and, if so, what relief is appropriate. You may be entitled to wages and benefits you would have earned if you had been hired (back pay) from the date of your rejection until the date relief is approved. Under the law, back pay is offset by earnings you may have had during the period. In addition, you may be found to be entitled to front pay (that is, compensation into the future until an appropriate position is afforded you). Similarly, you may be found to be entitled to priority consideration for employment with the Agency. If hired, you may further be entitled to retroactive seniority with the associated benefits and the value of any promotions you would likely have had if you had not suffered discrimination.

REQUIRED STEPS TO FILE YOUR CLAIM

To participate in the remedial phase, you must fully complete the claim form and return it, POSTMARKED NO LATER THAN July 15, 1989, to counsel for the plaintiff class. Your failure to do so will result in your losing all rights you may have in this lawsuit. If you have questions about your rights or procedures available to you, you may contact counsel for the plaintiff class:

Bruce A. Fredrickson
Webster & Fredrickson
1819 H Street, N.W., Suite 300
Washington, D.C. 20006
(202/659-8515)

/s/ Judge Charles R. Richey

United States District Court
Judge Charles R. Richey

October 4, 1988

Date

NEWS OF COMMUNICATION AROUND THE WORLD

*I know the Kings of DXing,
 I quote the fights historical.
 From Abu Ail to Zanzibar,
 In order categorical. . . .*

Not too long back, maybe 15 or 20 years ago, one of the matured DX types told us that eventually one learns that the world is filled with the obvious, and that knowledge and understanding and even the recognition of the obvious will always come to those who are deserving of the knowledge—deserving people like DXers, of course. Last week, with the month of May at hand, one of the Locals was up the hill to test the self-evident truth. "Tell me," this one said. "Why are DXers different?" This one had yet to qualify on the obvious.

It was a warm day and we were hardly in any rush to answer the question. Once we learned the obvious truth that every good day is a treasure in itself, we hesitate to miss even one hour of the good times. The day was clear, the far mountains sharp on the horizon, and even the small fishing boats were easily noted on the bay waters. Two tugs were shepherding a huge petroleum barge up the bay to a refinery, and the hills were still green with the winter rains. "Why do you ask?" we inquired, and the Local just shrugged his shoulders. "Been wondering," was all he said, and we figured to wait for more information. It did not take long.

"There was a fellow at that last local club meeting," the Local continued before long, "and I had never seen him before. At first I thought that he was a newcomer. Then I found out that he was a long-time club member and also a long-time inactive amateur. But he is retired now, as many of the club members seem to be, and he no longer has to travel. He is getting back into amateur radio. He was asking all about the latest gear and the advantages of the various models. I talked with him, and he said that it wasn't going to be any hit-or-miss operating this time; everything would be planned right down to the decibel. He knew exactly what he wanted, but he was still asking a lot of questions. Do you follow me?" We did, step by step, word by word.

"And the gear he was asking about," the Local continued, "everything was the top of the line. Everything!" The Local paused to lean close to hold our attention. "Do you know how much that stuff costs?" he asked. We had to admit that we did. One learns quickly that when digital readouts show on amateur gear the decimal becomes a floating point on the price tag. But we also realized that there are performance features and accessories built into those marvels of circuit boards that are far removed from the great days of homebrewing. One can quickly learn that every single feature is absolutely necessary, and especially the ability to announce over the 2 meter box the



This DXer is often heard from a DXpedition spot, regularly on 20 meters at 0600Z and other times. He is a member of the DX Hall of Fame and your guarantee that Norfolk Island is not even a semi-rare country. This is Jim Smith, VK9NS, certainly one of the top DXers currently active and a source of many DX counters for those who check in with his net. Jim Smith and his XYL VK9YL are a DX team that never tires. A growing legend in DXing, Jim Smith is DX! (W6ZH photo)

absolute exact frequency of a DX station down to the thousandth point or better. Some even insist that DX stations do not use kilocycles; they transmit signals only a couple of cycles wide, and they can easily be missed. One has to be exact in one's frequencies!

The Local apparently had yet to tell all, and it was not long before he was off again. "This fellow spent a lot of time talking about his coax line. Note that he was talking in the singular. I first thought it was an oversight. But he had done a lot of researching, computed all the parameters, and could quote the velocity factors for various types of line, the Zo characteristics, and just exactly how long his coax had to be cut to achieve the optimum performance—exactly right down to the half inch! What do you think of that?" We were impressed.

"Sounds like a real technician," we commented, and the Local shook his head. "No, no. This fellow is an Extra class. Been for years. He really seems to know his stuff. Heck! I think he is even smarter than I am." We held our silence, though we had to wonder how we were supposed to take that remark.

"So what's the problem?" we had to ask. The Local looked at us as though we had missed part of his exposition. For a moment we thought he was going to start all over again. Fortunately, he did not. "Don't you see?" the Local asked. "He is buying potential. He will surely end up with a top station—top in cost, anyhow—engineered to the last degree and with programs and memory like you would not believe. It will have almost everything. Almost, but you won't believe what he will use for an antenna." By this time we were getting the drift of the thought. "Dipole?" we asked tentatively, and the Local looked at us in amazement. "How did you know?" was all he could say. He did not even have to ask that. We had run this route before.

The good weather is always sure to bring out the Old Timer, he claiming that he always collects the good to better days. As has so often happened, he showed at the right moment and we aimed the Local in his direction. "Listen to this," we advised the Old Timer, and away went the Local, again. The story was even better the second time around. In concluding, the Local asked, "What do you think?" Though obvious, it was hardly a necessary question. The Old Timer, we were sure, would have already thought this one out. We were right.

"How many countries does this fellow have?" the Old Timer asked, and we realized that he was offering a common denominator. Your countries are your glory, your badges of courage and skill, your scarred wounds healed from the fray. A DXer can be gauged by his country total.

The Local shook his head. "He never mentioned having any countries, but he must have some. However, the program at the club that evening was the new one from the Northern California DX Foundation on the KP2A Kingman Reef expedition, the one last year. I worked that one, and I thought it was a most interesting program. The short bank of coral and shells just above sea-level, the everlasting wind blowing things away, and those fellows just doing nothing but holding on and working DX. It surely must be an experience that they will remember. And there were pictures of Christmas Island and Honolulu. All DXpedition stuff. Really great!"

The Local paused to remember and savor the moment, and then his face darkened. "You know something? This fellow did not think much of the program at all. While we were having coffee, I heard him ask if that was supposed to be a DXCC country. What sort of a question was that anyhow?"

"Not a new one for sure," was all that we would say. One must learn that what often holds DXers together is the sharing of things that might mean nothing to anyone else. A DXer learns to believe things that other DXers believe. If the DXAC and the Awards Committee says that it is a country, have no doubt. It is a country! Positively! "Your friend was a stranger looking at a strange land," we suggested, "and he did not recognize it. Possibly he was far from his familiar skies." The Old Timer listened and nodded at our words.

"One has to learn," the Old Timer said, "that DXing is ordered by a system of logic. DXers are attuned to that logic. Consequently, anything a DXer thinks or says proceeds directly from that logic. Thus, there can never be any doubt on a DX matter as far as a DXer is concerned." The Old Timer turned his eyes on both us and the Local and demanded, "Certainly you do see the logic in all of that, don't you?" The Local was quick to acknowledge that he did, but we hesitated. While the words were firm, forthright, and undeniable, there was something about the eyes of the Old Timer that made us wonder. He actually seemed to be finding something humorous in the conversation, lofty as it definitely was. We held our comment, looked wise, and wondered what

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The WPX Program

Mixed

| | | | |
|------|--------|------|--------|
| 1373 | YU1ZD | 1380 | K1MZB |
| 1375 | YU2QU | 1381 | J13AWB |
| 1376 | NG7D | 1382 | DJ4AZ |
| 1377 | EA7CIW | 1383 | IK2ILH |
| 1378 | EA7OH | 1384 | DL8AAM |
| 1379 | WK0B | | |

SSB

| | | | |
|------|-------|------|--------|
| 2040 | N6NXV | 2046 | EA7DHK |
| 2041 | YU2QU | 2047 | CT1CIR |
| 2042 | I7IJU | 2048 | G4OBK |
| 2043 | 4X6DK | 2049 | N0ISL |
| 2044 | CP6PX | 2050 | NB9CZW |
| 2045 | EA7OH | | |

CW

| | | | |
|------|-------|------|--------|
| 2558 | OH7QR | 2560 | JE3CYH |
| 2559 | YU2QU | 2561 | G4OBK |

WPNX

242 KA1SPO

VPX

255 NG7D

Endorsements

Mixed: 450 YU1ZD, YU2QU, YU2QU, J11AUD, DJ4AZ, IK2ILH, 550 YU1ZD, YU2QU, EA7OH, DJ4AZ, DJ4AZ, 600 YU1ZD, YU2QU, HG9R, EA7OH, DJ4AZ, 650 YU1ZD, YU2QU, HG9R, EA7OH, 700 YU1ZD, YU2QU, HG9R, EA7OH, JE1DXC, 750 YU1ZD, YU2QU, HG9R, EA7OH, JE1DXC, 800 YU1ZD, YU2QU, HG9R, EA7OH, JE1DXC, 850 YU1ZD, YU2QU, HG9R, EA7OH, JE1DXC, 900 F1HWP, HG9R, EA7OM, WB2PCF, 950 F1HWP, HG9R, EA3NJ, EA7OH, 1000 HG9R, EA3NJ, EA7OH, WB3DNA, LU1DOW, 1050 NE4F, OE1KJW, 1100 KS0Z, 1150 JA1-20784, 1200 JA1-20784, 1450 W4UW, 1550 K2POF, 1600 I1EEW, K2POF, 1650 N6JM, 1700 N4UH, 2000 IN3ANE, 2150 W4UW, 2250 N2AC.

S.S.B.: 350 YU2QU, I7IJU, 4X6DK, CP6PX, EA7OH, CT1CIR, G4OBK, WB4FOT, N0ISL, HB9CZW, 400 YU2QU, I7IJU, 4X6DK, CP6PX, EA7OH, CT1CIR, G4OBK, HB9CZW, 450 YU2QU, I7IJU, 4X6DK, EA7OH, CT1CIR, NE4F, G4OBK, SM0MIW, HB9CZW, 500 IK7BDN, YU2QU, 4X6DK, EA7OH, CT1CIR, G4OBK, HB9CZW, 550 IK7BDN, YU2QU, 4X6DK, EA7OH, CT1CIR, G4OBK, HB9CZW, K5HT, 600 KL7UR, YU2QU, KA0ZFX, 4X6DK, EA7OH, CT1CIR, G4OBK, HB9CZW, K5HT, 650 4X6DK, G4OBK, HB9CZW, 700 4X6DK, EA5FCO, HB9CZW, 750 4X6DK, HK6BER, HB9CZW, 800 I6GAS, F1HWP, 4X6DK, HK6BER, HB9CZW, 850 I6GAS, F1HWP, 4X6DK, HK6BER, HB9CZW, 900 I6GAS, F1HWP, 4X6DK, HK6BER, HB9CZW, 950 I6GAS, F1HWP, 4X6DK, EA3BOX,

HB6BER, HB9CZW, 1000 I6GAS, 4X6DK, EA5BD, EA3BOX, 1050 4X6DK, 1100 KD9OT, 1300 WE2L, 1450 I1EEW, 1800 NJ0C, 2150 W4UW.

CW: 350 YU2QU, G4OBK, LA3GI, 400 YU2QU, G4OBK, 450 YU2QU, VS6UW, G4OBK, 500 YU2QU, I1EEW, G4OBK, 550 G4OBK, 600 G4OBK, 700 G4OBK, 750 G4OBK, IK3GER, 800 OZ4RS, 900 NE4F, G4SSH, 950 I1ZUT, OK2ON, 1000 I1ZUT, OK2ON, 1050 I1ZUT, 1250 KL7AF, K2POF, 1300 K2POF, 2500 N6JV.

10 Meters: YU2QU, 8J8JU, K9QFR, F1HWP, 4X6DK, N0ISL, W5AWT

15 Meters: K9QFR, 4X6DK, KJ6NR, KS4S, KU0A

20 Meters: K9QFR, 4X6DK, KJ6NR, KS4S, KU0A

40 Meters: K9QFR, 4X6DK, KS4S

80 Meters: YU2QU, K9QFR, F1HWP, 4X6DK, OK3CAB, KS4S, KU0A

160 Meters: K9QFR, F1HWP, HG9R, 4X6DK

Asia: YU2QU, K9QFR, 4X6DK, AB5C, J13AUD, HK6BER, DL2HBX

Africa: NE6I, K9QFR, 4X6DK, NE4F, JA1-20784, K2POF, N6JM, JA2KVD, IT9CUE

No. America: YU2QU, K9QFR, NG7D, W9LCR, 4X6DK, HK6BER, DL2HBX

So. America: K9QFR, 4X6DK, HK6BER, JA1-20784

Europe: OH7QR, YU2QU, I7IJU, K9QFR, 4X6DK, HK6BER, KS4S

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Complete rules and application forms may be obtained by sending a business-size, self-addressed, stamped envelope (foreign stations send extra postage if air-mail desired) to CQ WPX Awards, P.O. Box 1351, Torrance, CA 90505-0351 U.S.A.

the old boy was driving at. We had never completely lost the feeling that the Old Timer lived in a world that at times we only dimly perceived.

"But what about that retreaded amateur with the gold-plated gear?" we finally had to ask, hoping to turn the conversation in another direction. "Isn't there something there? Something unusual?" It was a good move. The Old Timer nodded his head. "Obviously," he said. The Local was all ears. But we had to nudge the Old Timer a bit to get him to continue. "Obviously what?" we finally had to ask, and, displaying our uncertainty, "What's so obvious about him?"

The Old Timer smiled. "Obviously, he is not a DXer, and more so obviously he does not understand DXing." The Old Timer held up a hand, pausing to catch our attention, and then firmly declared, "That one is not a DXer; he does not even suspect the Mystique of DXing. He does not know of the Ancient Enigmas and the Eternal Truths. In short, while technically he may be at a high level, his basic comprehension is not at a DX level. Without an understanding of the Mystique, there can be little un-

derstanding of DXing. Isn't that all obvious to you?"

Now that he had mentioned it, it was. So we gave our attention to the Local. "What was your question about DXers being different?" we demanded, and the Local shook his head. "Forget it," he said. "Forget it! I may not have all the answers, but for the moment I am wondering why I even asked some of the questions." It was a good sign. This one was learning. Maybe he was yet to understand, but understanding will always come to the Deserving. Some may think not quickly enough, but it does come.

We would have been satisfied to let things end there, to sit under the big oak tree on a warm spring morning and enjoy another fine day. The Old Timer was not. "Look," he said, addressing the Local. "DXers are different, and there is nothing wrong in wondering just why. Certainly a DXer is interested in the best gear and a fine station. But they also learn that gear itself must be balanced, and high power with a minimum antenna does not make sense, to a DXer anyhow. DXers must know their gear, and they must know themselves. And



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720 N8HTT 721 WN5K

15 Meter CW

134 JAB1YI 136 YC3HCM
135 AI6Z

20 Meter CW

318 YB0DPO

40 Meter CW

91 N6AW 94 W7IGE
92 W6TMD 95 JA4MRL
93 N4CC

All Band WAZ

SSB

3283 OE3KPC 3290 JI2FAP
3284 K7NW 3291 WB4PUD
3285 JA6HBB 3292 SM6IOI
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6466 AB0P 6475 I3JEX

Applications and reprints of the latest rules may be obtained by sending a self-addressed stamped envelope (39 cents) size 4 1/2 x 9 1/2 to the W A Z Manager, Leo Haijsman, W4KA, 1044 S.E. 43 Street, Cape Coral, Florida 33904. Applicants forwarding QSL cards either direct to the WAZ manager or to a check point should include sufficient postage for safe return of their QSL cards. The processing fee for all C.Q. awards is \$4.00 for subscribers and \$10 for non-subscribers. In order to qualify for the subscriber rate, please enclose your latest CQ mailing label with your application.

they will eventually learn what it takes to work DX. It is not necessarily all the gold-plated top-of-the-line stuff, though admittedly that is nice to have. But DXers learn DX, and they know DX, and they have those values important to themselves and to other DXers.

New DXers will learn that there are things that they will not understand, and when they meet such things, all they can do is leave them alone until understanding comes. DXing is something that sings in the mind. Listen to it. And if you do not yet understand, believe! Always be a Believer! Always!

Grupo Argentino de CW

Most DXers who have aimed their beams south quickly learn that the Grupo Argentino de CW is often involved in Antarctic operations, some from the Antarctic islands, some from the mainland. This year LU2ZC will be the operator on 25 de Mayo Island in the South Shetlands, this at 62 degrees south and 58 degrees west. Felix will be on tour of duty there and will be operating as much as possible. QSLs will be handled by the Grupo CW.

Should you have worked any of the following, the GACW is the QSL route.

LU7X, Staten Island, Tierra del Fuego 1979.

L8D/X, Staten Island 1982.

LU3ZI, South Shetlands 1983.

LU6UO/Z, Marambio Island, Antarctica 1985.

LU5EV/BZ, Marambio Island, Antarctica 1987.

LU6UO/Z, marambio Island, January/February 1987.

LU6UO/Z, South Shetlands, February 1989.

If you worked AY1CJY, AY1DZ, AY1ICX, AY2YA, AY2YE, AY4FC, AY5BB, AY6EF, AY6UO, and AY9HGW, these were commemorative calls in 1987 marking an anniversary of the Grupo CW. You can QSL to them for these calls. These all were mainland stations.

On the CW QSOs of LU3ZY, Isidoro from the South Sandwich Islands, and LU1ZA from the South Orkneys, the QSLing for these was handled by SARA, but the Grupo CW might be able to help you get these. LU1ZE from Margarita Bay in the Antarctic was handled by DNA, but again Grupo CW might be able to help.

The current address for GACW is: Grupo Argentino de CW, P.O. Box 9, 1875 Wilde, Argentina. Use SASE or SAE/IRCs. The Grupo CW has often been of valuable assistance for QSLs from the hard to get Antarctic Islands, and you should keep their address handy.

Rotuma—More

Because of continuing discussion on how Rotuma was approved for DXCC status after having initially been rejected, the ARRL has issued additional background information. One of the main points made, and this should be engraved in every DXer's consciousness, is that any submission, country status or otherwise, should be thoroughly researched and documented. It is not sufficient to toss the ball in the air and yell "Catch!" It is necessary to cover every factor, every angle, and every possible question. This lack of documentation, plus the lack of continued and strong support by the proponents who advance proposals, can cause problems, possible flawed presumptions, and delay or rejection.

The release notes that Rotuma back in 1982 may not have been given sufficient consideration. It did not get on the agenda of the DXAC, and there was no formal action on the matter. Note is made that there were two problems with the 1982 operation. The first was that no one stood up to champion the matter and especially to note the inconsistency in the application of Items 2(a) and 2(b). The second problem was the maps used which gave an erroneous impression that there was land above water between the Fijis proper and Rotuma, and that Balmoral Reef was above the water level at low tide.

The recent 3D2XX operation with its thorough documentation showed that the land in question, Balmoral Reef, is about 25 feet below the surface at mean-low water; that the distance to the reef from the Fijis was 230 miles, though this was no longer a pertinent point; and with Balmoral Reef below water, the open-water distance to Rotuma was 285 miles.

It is possible that even without these erroneous matters Rotuma might have been voted down by the DXAC in 1982. Item 2(b) in 1982 called for a 500 mile separation by water. The DXCC revisions six years later moved to remove some of the ambiguities in the criteria, and this was one that got attention.

One important paragraph in the ARRL release is here quoted exactly as in the letter. The italics is the ARRL's.

"Historically, Point 2(b) was first applied in 1963, without first applying 2(a), to deny Parece Vela (now know as Okino Tori Shima), being less than 500 miles from the US-administrated Bonin and Volcano Islands (KG6I). The

rigorous interpretation was used only to prevent entities from making the List and never resulted in a DXCC country being created. In reviewing past country decisions prior to the rewrite of the criteria, it was also noted that *past precedent does not give unambiguous direction in applying the previous country criteria, including Point 1.*"

You may have to read that more than once to understand the full meaning, and it does seem to acknowledge that there were inconsistencies in the application in other years. It might also be noted that 1963 was more than a quarter-century back and prior to the creation of the Advisory Committees, including the DXAC. Thus, countries which were denied country status prior to the recent criteria rewrite are subject to review. The ARRL states in the release that "... today's rules can be applied with greater consistency. Namely, you cannot go to Point 2(b) without having first exercised 2(a), no matter the circumstances."

On the point of going back to 1945 and day one of the post-war DXCC, this was done to bring some consistency to the interpretations and to wipe out previous inconsistencies where it was practical.

Some have noted that the DX is a state of mind and have pointed to the country criteria to make a point. But keep in mind that while the criteria endures, those administering it do not, and there have been a number of personal viewpoints, philosophies, and perhaps even personal bias involved in some decisions in long-gone days. You must also grasp the fact that a quarter-century back DXing was a minor side aberration in amateur radio and DXers were generally a group considered as marching to a different drummer. But as the Old Timer has often shouted down the hill, "Our strengths were as the strengths of ten because our hearts were pure!" You may also find that besides a pure heart it would be prudent to note the way things are going now and not how they went a quarter-century back. It is always difficult to judge the past in the context of the present, and it is even more difficult to change what brilliant hindsight might reveal. The release of Rotuma certainly indicates a willingness to acknowledge past variants and to move to correct them for the future.

5 Band WAZ

As of February 1, 1989, 207 stations have attained the 200 zone level.

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| 4. K9GX, 199 | 9. W7UR, 198 |
| 5. SP6JCY, 199 | 10. KB0U, 198 |

528 Stations have attained the 150 Zone level, as of February 1, 1989.

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CW

| | | | |
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| 740 | KA5YCM | 741 | WE2L |
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| 320 | W6EUF/320 | 300 | KS0Z/300 |
| 320 | N4JF/320 | 275 | WB4PUD/295 |
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| 310 | KS2I/319 | 275 | KB1JU/283 |
| 310 | W9DWO/319 | 275 | KF5DX/282 |
| 310 | PY1APS/318 | 275 | WN5K/279 |
| 310 | W9SS/317 | 275 | KA5YCM/276 |
| 310 | K4XO/316 | 250 | KA5RNH/273 |
| 310 | W2CC/311 | 28 MHz | N4HID |
| 300 | XE1OX/308 | 28 MHz | WA6ARG |

CW Endorsements

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| 320 | N4JF/320 | 275 | I8WY/291 |
| 320 | W9DWO/320 | 275 | W1WAI/290 |
| 310 | K4XO/316 | | |

Total number of active countries is 320. The basic award fee for subscribers to CQ is \$4. For non-subscribers, it is \$10. In order to qualify for the reduced subscriber rate, please enclose your latest CQ mailing label with your application. Endorsement stickers are \$1.00. Updates not involving the issuance of a sticker are made free when an SASE is enclosed for confirmation of total. Rules and application forms for the CQ DX Awards Program may be obtained by sending a business size, No. 10 envelope, self-addressed and stamped, to CQ DX Awards Manager, Billy Williams, N4UF, Box 9673, Jacksonville, FL 32208 U.S.A. DX stations must include extra postage for air-mail reply. Please make all checks payable to the awards manager.

Revilla Gigedo

Jose Javier Camarena Quinones, XE2TCQ, from Tijuana will head a group that will put XF4, Revilla Gigedo on the air for ten days in the first two weeks of May. The group will also include XE2BDG, XE2MRY, and XE2JFG. They will cover everything from 160 to 6 meters, CW, SSB, and RTTY. Look for the operation at 1850, 3795, 7050-7090, 14250, 21300, and 28500 kHz or somewhere in the neighborhood. On RTTY and 6 meters look around the normal DX spots. They will listen for needy Novices at 3730, 7105, and 28495 kHz. The callsign will be XF4T.

Acknowledging that DX is a relative thing and what might be easy for the W/Ks can be an impossibility for overseas DXers, the group will be listening only for Europe, Africa, Asia, and Oceania in the first half of the operation. The latter part will be for the locals, like the W/Ks. It is interesting to note the number of European DXpeditions to the Pacific these days, these tilling the DX vineyard for those calls which some might consider common DX. But no DX can be thought common if you need it and need it badly. There are still many Europeans who need XF4. QSL to XE2TCQ at P.O. Box 66-D, Tijuana, 22150 Mexico, or via the XE bureau.

Liechtenstein

Every month here is a wet month with bitter tears shed over DX information acquired after deadlines. We write three months ahead, this being written in early February. But when we get advance information, the sun shines again. Here is some.

Romeo Rabic, YT3RU, and a group of DXers from the Sevnica region will be in HB0-land for the first ten days of September, and YT3RU wants every DXer to mark his calendar and listen for the group. It will include YU3ZV, YU3BQ, YU3RY, YU3AY, YU3YI, YU3WC,

CQ DX Honor Roll

The CQ DX Honor Roll recognizes those DXers who have submitted proof of confirmation with 275 or more ACTIVE countries for the mode indicated. The ARRL DXCC Countries List is used as the country standard. Honor Roll listing is automatic when submitting application or endorsement for 275 or more countries. Deleted countries do not count and are dropped from listing as they occur. Total countries are now 320. To remain on the CQ DX Honor Roll, annual updates are required. Honor Roll updates may be made at any time, in any number. Updates indicating "no change" will be accepted to meet the annual requirement. All updates must be accompanied by an SASE for confirmation. The fee for endorsement involving the issuance of a sticker is \$1.00.

CW

| | | | | | | | | | | | |
|--------|-----|--------|-----|--------|-----|--------|-----|--------|-----|--------|-----|
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| N4JF | 320 | W8KPL | 314 | AA6AA | 309 | WB4RUA | 300 | I8WY | 291 | N4AH | 281 |
| W9DWO | 320 | DL3RK | 314 | W9RY | 308 | W0SR | 300 | WA4JTJ | 290 | K7ZR | 280 |
| K4CEB | 319 | K9AB | 314 | EA2IA | 308 | DL6QW | 300 | KQ9W | 290 | I5XIM | 280 |
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| K9MM | 318 | N6CW | 313 | N2KW | 307 | DJ7CX | 297 | W1WAI | 290 | W9NUF | 280 |
| ON4OX | 318 | K1MEM | 313 | SM6CTO | 306 | K8LJG | 297 | W1WLW | 289 | HB9AFI | 279 |
| K6JG | 318 | N4MM | 313 | K3UA | 306 | WD9IX | 296 | W4BV | 289 | DL1QT | 277 |
| SM6CST | 317 | W2FXA | 312 | K9IW | 305 | N8MC | 295 | K8NA | 288 | KA3R | 276 |
| DL1PM | 317 | K6EC | 312 | N4KG | 305 | W9WAQ | 295 | W6YQ | 287 | W6DN | 276 |
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| K4XO | 316 | SM3EVR | 312 | W6SN | 304 | N5FW | 294 | W4DAN | 287 | N57Z | 276 |
| N4PN | 315 | YU1HA | 312 | W0IZ | 303 | K9BWQ | 294 | W9SC | 287 | K2JF | 275 |
| DL7AA | 315 | N6AR | 311 | W7CNL | 302 | IT9TOH | 294 | K4CXV | 286 | K4SE | 275 |
| N6AV | 315 | DJ1XP | 311 | W8DXA | 302 | NN4Q | 293 | G2GM | 286 | W3BBL | 275 |
| K6LEB | 315 | W6ID | 311 | IT9ZGY | 302 | WD9IC | 292 | JH1VRO | 282 | G3KMO | 275 |
| W1NG | 315 | K9QVB | 311 | YU2TW | 301 | K2OWE | 292 | | | | |

SSB

| | | | | | | | | | | | |
|--------|-----|--------|-----|-----------|-----|--------|-----|--------|-----|--------|-----|
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| K2FL | 320 | K9LKA | 315 | KU9I | 310 | W2LZX | 303 | XE1OW | 297 | N9CPW | 286 |
| W6EUF | 320 | ON5KL | 315 | W6SN | 310 | K80U | 303 | WA4ECA | 297 | K9MNT | 285 |
| W4UG | 320 | OZ8BZ | 315 | N6AHV | 310 | KB3OQ | 303 | WD9GOV | 297 | KB5RF | 285 |
| VE1YX | 320 | K9AB | 315 | KB9OC | 310 | K0GT | 303 | WB3GPR | 296 | I8IGS | 285 |
| K6WR | 319 | N6AW | 315 | W8IMZ | 310 | G4ADD | 303 | KB3KV | 296 | K8BV | 284 |
| F9RM | 319 | K1UO | 315 | K2JLA | 310 | K1MEM | 302 | I0SGF | 296 | KC7EM | 284 |
| VE3MR | 319 | K9BWQ | 315 | NY5L | 310 | N5FG | 302 | K8NWD | 296 | KB2MY | 284 |
| W9DWO | 319 | YV5DFI | 315 | IV3YRN | 310 | W6FET | 302 | W0IYR | 295 | KB7VD | 284 |
| DL9OH | 319 | VE3XN | 314 | I8KCI | 310 | I3OBO | 302 | KK0C | 295 | WB3HAZ | 283 |
| OZ3SK | 319 | YS1RRD | 314 | WZ4I | 309 | K9UAA | 302 | G3XTT | 295 | VE3MV | 283 |
| DJ9ZB | 319 | K8LJG | 314 | N4PN | 309 | KP4EOF | 302 | W6MFC | 295 | IN3ANE | 283 |
| ZS6LW | 319 | W3GG | 314 | ZL1BIL | 309 | N5FW | 302 | VE3XO | 295 | ZP5JCY | 283 |
| I8AA | 319 | I2LLD | 314 | WD9IIX | 309 | I5EFO | 302 | K13L | 295 | CX4HS | 283 |
| YU1HA | 319 | W1NG | 314 | K9QVB | 309 | KQ9W | 302 | IK8BQE | 295 | KB1JU | 283 |
| TI2HP | 319 | W1LQQ | 314 | W12FGY | 309 | I2MOP | 302 | WB4PUD | 295 | AE2B | 282 |
| KS2I | 319 | W8JXM | 314 | KR9O | 309 | K4CXV | 302 | WD0BNC | 294 | A19R | 282 |
| W4NKI | 318 | SM4CTT | 314 | WB3DNA | 309 | XE1MDX | 302 | I5BDE | 294 | TG9EP | 282 |
| 4Z4DX | 318 | W7FP | 313 | VK4VC | 308 | KE4HX | 302 | K1VHS | 294 | N1ALR | 282 |
| W4DPS | 318 | EA4LH | 313 | YV5AIP | 308 | WA3HUP | 301 | WB3CON | 294 | KF5DX | 282 |
| W0YDB | 318 | W8PCA | 313 | N6AV | 308 | VE3FJE | 301 | SM6CST | 294 | WA8YTM | 282 |
| ZL3NS | 318 | N2SS | 313 | N4KG | 308 | WB4NDX | 301 | KB8O | 294 | F6BFI | 281 |
| W4EEE | 318 | VE7WJ | 313 | IT9TGO | 308 | W9OKL | 301 | VE3DLR | 294 | PY2DBU | 281 |
| VE3GMT | 318 | N6AHU | 313 | A18M | 308 | YU2TW | 301 | K4JLD | 293 | K9TI | 280 |
| W9JT | 318 | OE2EGL | 313 | NS7Z | 308 | N4CRU | 301 | K4SE | 293 | ZL1BOO | 280 |
| ZL1AGO | 318 | W7OM | 313 | VE7DX | 308 | KZ0C | 301 | KC8JH | 293 | G4FAM | 280 |
| K6YRA | 318 | F2MO | 312 | YV1AJ | 308 | N8BKF | 301 | A15I | 293 | KU9Z | 280 |
| PY1APS | 318 | W0SD | 312 | NN4Q | 308 | WT4T | 301 | W9NUF | 293 | XE1XM | 280 |
| YV1KZ | 318 | K9RF | 312 | WA4DAN | 308 | KB2HK | 301 | G4GED | 293 | WD9IIC | 280 |
| N4MM | 317 | K4MQG | 312 | WB1LC/QRp | 308 | K7LAY | 301 | KD5ZM | 293 | W9VA | 280 |
| I0ZV | 317 | K9HDZ | 312 | XE1OX | 308 | AG9S | 301 | WB6OKK | 293 | KB5DN | 279 |
| DJ1XP | 317 | LA7JO | 312 | WB1DOC | 307 | KB9KD | 301 | W5LLU | 293 | EA6DE | 279 |
| K9MM | 317 | LU3YL | 312 | I0MBX | 307 | K2JF | 301 | WA4LOF | 292 | JH8NYK | 279 |
| K8BVM | 317 | G4CHP | 312 | KV2S | 307 | W0ULU | 301 | AC0A | 292 | KX5V | 279 |
| W2SUA | 317 | N6OC | 312 | VK3JF | 307 | W4BQY | 301 | VE3FEA | 292 | N6CGB | 279 |
| CT1FL | 317 | K3UA | 312 | NJ2C | 307 | VE4AT | 300 | VP9CP | 292 | WN5K | 279 |
| N7RO | 317 | W6DN | 312 | VE4SK | 307 | I1POR | 300 | W8LKG | 292 | K4BYK | 278 |
| W0SFU | 317 | 9H4G | 312 | SV1ADG | 307 | SV8CS | 300 | SV1JG | 292 | VE3IUE | 278 |
| OE3WVB | 317 | VE3MRS | 312 | K9HOM | 307 | G4GED | 300 | VE3IPR | 291 | WA8IUM | 278 |
| VE2YJ | 317 | W4SSU | 311 | KA9ABC | 307 | WB5TED | 300 | W4JFE | 291 | KG9N | 278 |
| YU1AB | 317 | K6EC | 311 | W4UNP | 307 | I2ZGC | 300 | DU9RG | 291 | WB0UFL | 277 |
| N4WF | 317 | I4LCK | 311 | WA2MID | 307 | NW5K | 300 | XE1CI | 291 | W4PTT | 277 |
| W9SS | 317 | W0SR | 311 | N4KE | 306 | WB6GFJ | 300 | VE3CKP | 290 | KB0SY | 277 |
| K6JG | 317 | K8NA | 311 | KC8EU | 306 | JH1VRO | 300 | IK8CNT | 290 | WD0DMN | 277 |
| IT9ZGY | 317 | NJ0C | 311 | KB5FU | 306 | WB6PSY | 300 | KC2FC | 290 | N0AMI | 276 |
| K5OVC | 316 | N2KW | 311 | K8CMO | 306 | IT9TOH | 300 | KE4VU | 290 | N7ASL | 276 |
| I0AMU | 316 | W2CC | 311 | KE3A | 306 | K4LR | 300 | JA5PUL | 289 | WA4OPW | 276 |
| W3AZD | 316 | K9IW | 311 | W6NLG | 306 | KS0Z | 300 | W9TA | 289 | KC2RS | 276 |
| OA4OS | 316 | WB4UBD | 311 | K3LUE | 306 | WA2FKF | 299 | G4ADD | 289 | WA9IVU | 276 |
| OK1MP | 316 | A1BS | 311 | W6BCQ | 306 | WA0TKJ | 299 | A19U | 289 | WA9RCO | 276 |
| EA2IA | 316 | KZ2P | 311 | WD8PUG | 306 | I6PLN | 299 | KA3HXO | 288 | K0HOW | 276 |
| I8ACB | 316 | W2CC | 311 | NA5W | 305 | KA8T | 299 | OK1AWZ | 288 | I2WZX | 276 |
| OZ5EV | 316 | KB8DB | 311 | KZ8Y | 305 | DJ7CX | 298 | WA6DTG | 288 | KA5YCM | 276 |
| K8PYD | 316 | I4EAT | 311 | K8VVF | 305 | K9SM | 298 | EA3KW | 287 | WB1EAZ | 275 |
| DL6KG | 316 | YS1GMV | 311 | EA1QF | 305 | I8LEL | 298 | AB9E | 287 | VE7BSM | 275 |
| W8ILC | 316 | I8XTX | 311 | K4RIG | 305 | JH4PRU | 298 | W9SC | 287 | VE5FX | 275 |
| K4XO | 316 | DK2BL | 310 | K8ZZU | 305 | EA9IE | 298 | PA0XPQ | 287 | I2EOW | 275 |
| XE1AE | 315 | AA6AA | 310 | I4WZK | 305 | XE1HI | 298 | F6BFI | 287 | W0FF | 275 |
| I8YRK | 315 | WA4JTJ | 310 | W4UW | 304 | WE2L | 297 | N8BJQ | 286 | I8INW | 275 |
| N6AR | 315 | AB9O | 310 | KB4HU | 304 | K5DUT | 297 | VE6PW | 286 | WB8TLI | 275 |
| I4ZSQ | 315 | WA4WTG | 310 | KC8YM | 304 | HP1JC | 297 | | | | |

YU3JW, YT3EW, YT3NR, and YT3RU. The group will work on a lot of bands, including all the HF bands, CW, SSB, and RTTY. They will work 144 MHz, they will be in the European DX Contest on SSB, and they will be operating

VHF in Region I of the IARU. They will sign HB0/YT3RU. They will be listening for your call. Try going via YT3RU for QSLs if no other directions are given: Romeo Rabic, Glavni Trg. 34, 68290 Sevnica, Yugoslavia.

The Great WPX Program

Undoubtedly you are aware that there were changes in the WPX Award Program effective January 1st, and these were listed in the December 1988 issue of CQ. One of the changes is that the entire prefix can be used and not just a specific number of characters.

Norm Koch, K6ZDL, who handles the WPX Program, reports that all the active WPX Honor Roll files have been updated to January 1st of this year and do reflect the new rule changes. WPX Honor Roll files currently inactive will be updated upon receipt of an activating submission. The regular WPX files will reflect the new rule changes upon receipt of an updating submission.

Norm notes that it would help considerably when listing a portable prefix that it be shown first, such as KH1/K6ZDL. Such a listing clearly indicates what prefix is being claimed and is the preferred way for such listings.

The following prefixes have been removed and are not acceptable for WPX Honor Roll Credit: DM, DT, GC, HE, M1, MP4, OQ, PK, VO3-4-6, VP1-3-4-6-7-0, VQ all except VQ9, VR except VR6, XV, ZB1, ZC3-5-6, ZE, ZD1-2-4-5-6, ZS7-8-9, 1B9, 1M4, 3B1-2, 3C3-4-5-6-7-8, 3W8, 7G, 8F, 8Z, 9E, 9F, plus all the 1984 Olympic calls containing the "23" and "84."

St. Martin

The VHF test will be in early June, and group of fours will be on St. Martin to offer FS QSOs on the higher frequencies. Included in the group will be WW4T, K4MQG, AA4SC, and Ted Goldthorpe, WA4VCC. They will operate on 6 and 2 meters, on the Intercomm Frequency at 28.885 MHz, and plan to have a complete OSCAR 13 on the air with emphasis on Mode B.

The group will be on the island starting June 7th and will be there until June 13th. In between contesting, DXing, and vacationing (they will have the XYLs with them), possibly they will be heard working the 10, 15, and 20 meter bands. Planning for every possibility, they also will have a PJ7 license for perhaps some operating on the Sint Maarten side of the island.

QSLs? Listen for instructions. If you don't hear them, try going to Ted Goldthorpe, WA4VCC, 209 Swamp Fox Drive, Fort Mill, SC 29715.

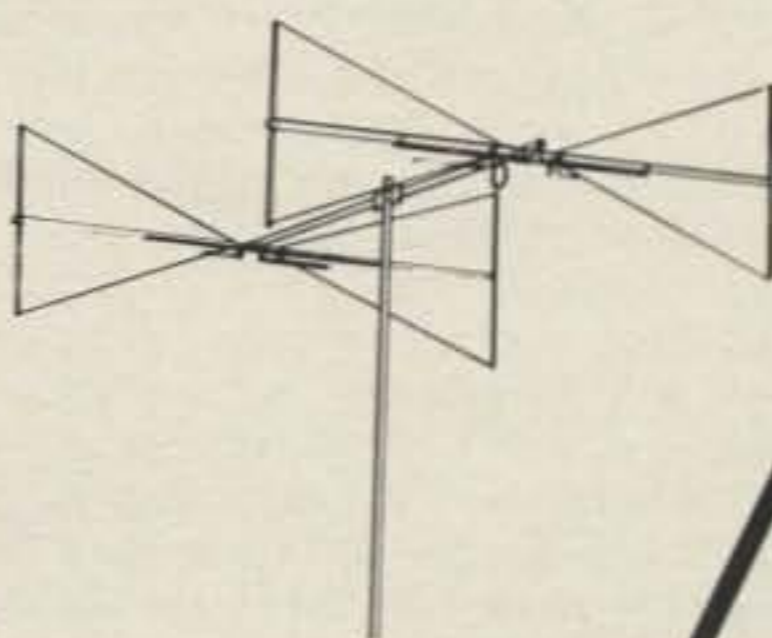
Some Short DX Notes

You may remember that early last year the question was posed as to "What is DX?" in conjunction with the telling of Steven Muster, G4UOL's plans to operate from Wales and the Isle of Man. Steve reports that things got so good that he lost track of multipliers in a contest when operating from GD-land and it hurt his score. But he did enjoy the pile-ups, happily remembering making 79 QSOs on 80 meters in one operating hour; he would have done better, but his power supply went out.

Steve affirms that GD is DX. He had 3620 QSOs in 8 days of operating and 89 countries. In the contest effort he had 1431 QSOs and 61 countries. All this is to emphasize that everything is DX, and a planned operation and a bit of publicity can do some great things for DXers. Steve will be heard again, possibly from GD again, possibly from the Channel Islands.

Jack Sobel, W0SVM, notes that a weak CW signal persists on 14.026.8 MHz signing LA8PF. It gets attention, both foreign and domestic, and even some pileups, but the station never responds. When the locals pool informa-

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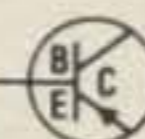
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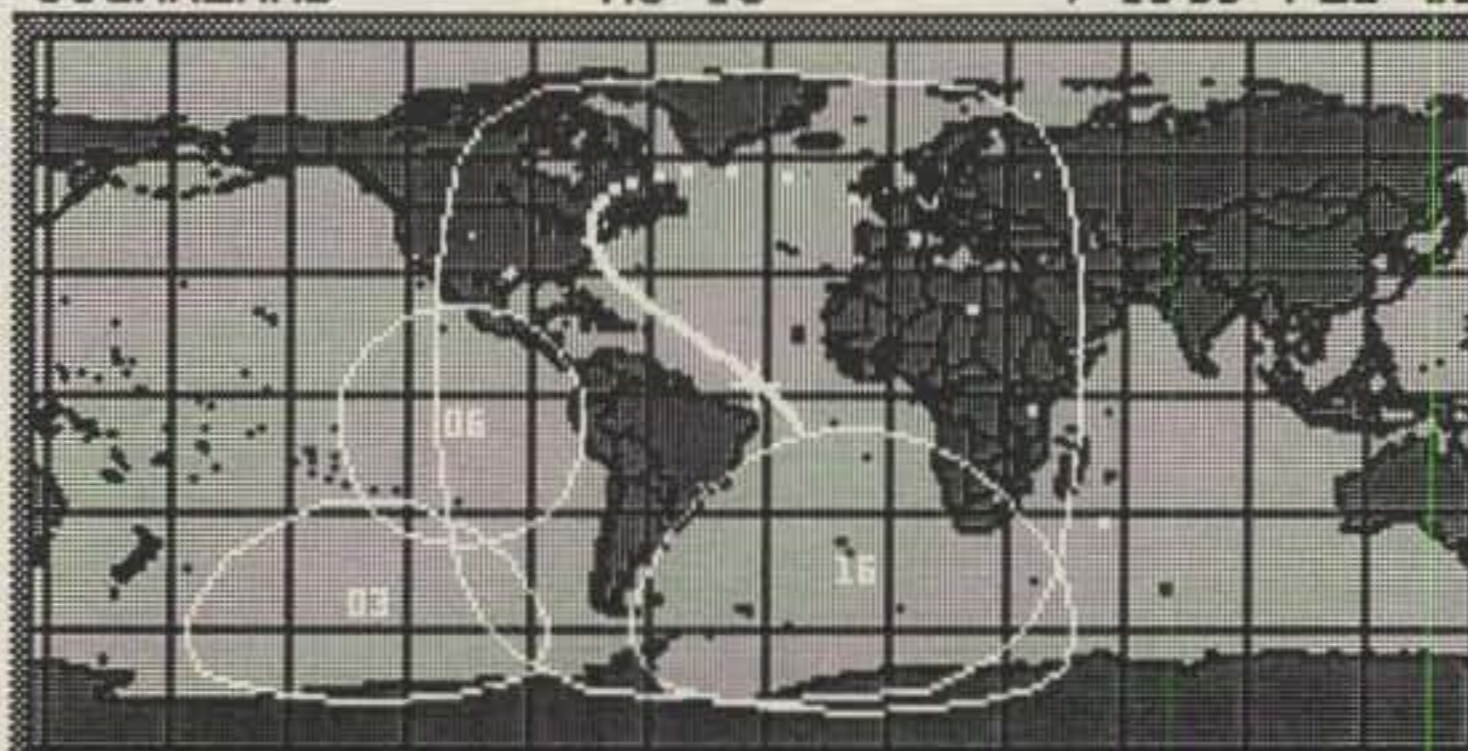
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A0-13

→ 1989 FEB 19 06:55:14



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 - ASTRO
 - MOVE
 - HELP
 - QUIT

| | | | | | |
|-----|----------|------|-----------|--------|--------|
| LAT | 2.2° n | ECHO | 250 ms | ELEV | 15.3° |
| LON | 32.4° w | FRQ | 145.81271 | AZIM | 102.0° |
| HGT | 33296 km | DOP | -294 Hz | SQUINT | 18.6° |
| RNG | 37512 km | DRF | 4 Hzm | φ | 86 |

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tion, they suspect that the station is located in northwest Illinois. They also suspect that the operator has a transmitter but no receiver, or something. If anyone has any idea on this great mystery, W0SVM and others would appreciate enlightenment.

The Araucaria DX Group is now awarding their Certificate of Merit to amateurs, and especially DXers, who have a high level of achievement in DXing, contesting, and other noble endeavors. A committee will meet annually, or at specially called meetings, to consider making the award. The club is located in the state of Parana and believes that there are many DX efforts and achievements that merit recognition. Nominations and the full rules of the award are available by writing to Araucaria DX Group, Atilano de Oms Sobrinho, PY5EG, P.O. Box 37, 80001-Curitiba, PR-Brasil.

Palmyra is still on the market, the asking price still astronomical. It is still being advertised for \$30 million, and this may be only part of the island.

The Northern California DX Foundation continues to add to its DX slide and video show library. A recent addition was the KP2A/K9AJ Kingman effort of last year. There are 26 slide shows and 23 VHS video shows available. WB6ZUC at 207 Evergreen Drive, Kentfield, CA 94904 is the one to write to about obtaining any program. All you need supply is postage in both directions.

The Grumman Radio Club has a schedule with SU1EK on most Thursdays and Fridays usually around 28745 or 29030 kHz from 1300Z. 4W0PA is reported to be a Dutch doctor in Yemen on a two-year contract. Often found on list operation, he has been heard on the Snooky Net at 14183 kHz from 2000Z, and

earlier, from 1600Z a bit lower around 14150 kHz. Apparently only on 20, possibly not too experienced in DXing, look for him around the above-named frequencies, though not necessarily right on them. 4W0PA also has shown at 14220 kHz to make a short visit with Jim Smith at around 0600Z.

Marion Island was due to return to an active status in mid-April, and if ZS6PT shows as anticipated with the new meteorological team arriving on the island, this will be the first ZS2 Marion operation in 10 years. It is reported that ZS6PT will be on Marion for 14 months.

There is a report that a British author currently in Greece is trying to organize the DXpedition to an uninhabited Albanian Island in the Adriatic Sea. Even if nothing develops, it does show that there is innovative thinking going on.

And in conclusion, don't you dare fail to mark your calendar for the Great CQ World-Wide WPX CW Test the last weekend in May. It is the end of the current DX season. The new Great DX Season will be starting shortly. Be Prepared.

73, Cass, WA6AUD

QSL Information

The secretary of the Radio Club of Budapest, HA5FM, passes along the information that there is *no QSL manager* for the club stations signing HG5A/HA5KDOQ/HA5KDX. The individual operators handle the QSLing for their contacts, and QSLs for any of these calls should be sent to: Radio Club of Budapest, Box 2, H-1533 Budapest, Hungary.

INDEXA is the route for the 3W0A QSLs except for those made by Russian amateurs. These should go to UL7PAE.

All the following was compiled with a lot of

help from W9LNQ, AB4LX, F11EJM, and WA9AEA.

CN2AV to FE1HSW
 CN8CC to F6FNU
 CN8EL to F6FNU
 CQ8LN to CT1LN
 C38CAN to DL2AX
 C38LFO to G4WKJ
 C38LFR to DL2AX
 C310F to DL5KA
 EA6WV to F6FNU
 EW2SD to UC2SD
 FX8AW to F6BFH
 FR4FD to F6FYA
 FR7RA to FR5DX
 FT2XE to F6ESH
 FT8XD to F6FNU
 FT8ZA to F6FNU
 FV3ITU to FD1DBT
 FS/K2BS to W2GHK
 HJ8PPY to HK0FBE
 IB8A to IK8DOI
 J7/F2JD to F6AJA
 J28DN to F6GYU
 J28EV to F6ITD
 J52UAH to F6FNU
 JW5E to LA5NM
 JW7FD to LA5NM
 J37AH to W2GHK
 J79ROJ to JG1OUT
 JW9SR to LA5NM
 JY9SR to W3FYT
 K3IPK/VP5 to K3IPK
 KX6GL to KX6BU
 PJ4CR to WB2LCH
 RT8U to UT4UWV
 T77JK to T77J
 TV1GEN to FF6KNN
 TV6GEN to FF6KNN
 TV6YEU to F6AUS
 TX9IPA to F1DGS
 YW5LR to YV5AJ
 UA10IL to UA9MA (2 IRCs)
 UW9XD/UG6 to UA9OFS
 VPSU to K3IPK
 VK9BCW to W6ZH
 VK9BCW/VK9L to W6ZH
 VS6WV to K0TWM
 XF4T to XE2TCQ

XE1EEF to F3HL
 YL2RG to UQ1GXX
 ZF2MZ/ZF8 to K3IPK
 ZL8AJH to W6ZH
 ZM7MV to KK9A
 ZS3Z to ZS6BCR
 ZX8F to PY5EG
 5R8JD to F6FNU
 5U7CW to DJ6SI
 5Z4DU to KE4DA
 6W8JX to F6FNU
 9G1R to JARL
 9N88C to JR8BKL
 9Q5DX to KQ3S
 FY4FC to B.P. 6005, Cayenne, French Guiana 97306
 LA5NM to Mathias Bjerrang, Box 210, N-9401 Harstad, Norway
 RT8U to c/o UT4UWV, R.C. Polytechnic, Box 391-3, 252056 Kiev, USSR
 TA5C to P.O. Box AR210, Adana, Turkey
 UA6LO to Boris Larionov, Box 2330, Rostov-on-Don, 344038 USSR
 UA6LU to Michael Bondarov, Box 416, Rostov-on-Don, 344007 USSR
 UA9MA to Gennady Kolmakov, Box 341, Omsk 99, USSR
 UT4UWV to R.C. Polytechnic, Box 391-3, 252056 Kiev, USSR
 U1ZA/A to P.O. Box 1009, Murmansk, USSR
 YB5OZ to A. Iriawan, Box 55, Pekanbaru 28001, Indonesia
 ZM7MV to John Bayne, 635 Rosner Dr., Roseville, IL 60172
 3W8A to INDEXA, Box 5127, Suffolk, VA 23435
 5NB/OK1AEK to Box 1009, Lagos, Nigeria (or OK Bureau)
 7X2AX to Box 2, Eladjiba, Algeria



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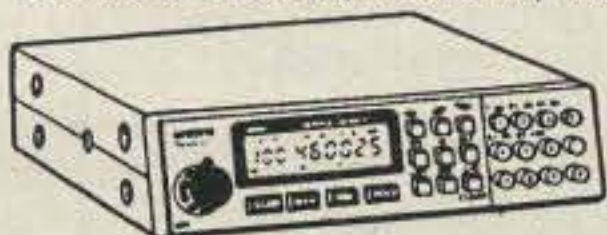
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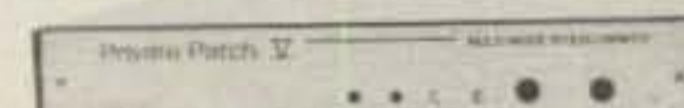
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THE SCIENCE OF PREDICTING RADIO CONDITIONS

Twenty-three months into the new cycle, Cycle 22 continues on track to being one of the most intense, if not *the* most intense, solar cycle ever recorded.

The Royal Observatory of Belgium, the world's official keeper of sunspot records, reports a monthly mean sunspot number of 162 for January 1989. This results in a 12-month running smoothed sunspot number of 104 centered on July 1988. This is an increase of 10 numbers from the previous month's level.

There was a corresponding rise in the 10.7 cm solar radio flux. The Algonquin Radio Observatory at Ottawa, Ontario reports a median value of 236 for January 1989.

Fig. 1 displays the progress of Cycle 22 since its birth in September 1986 in comparison with the previous three cycles, 19, 20, and 21. Most interesting is its comparison with Cycle 19, which is the most intense one recorded to date. The more sensitive parameter of 10.7 cm solar radio flux is used in this comparison, but similar results would be obtained using the smoothed sunspot number parameter.

Clearly, as of July 1988, for which the latest smoothed value of 10.7 cm solar radio flux is available, Cycle 22 almost exactly matches the record-breaking rise of Cycle 19 at the 23-month marker.

A smoothed sunspot number of approximately 165 is forecast for May 1989 as the present cycle continues its rapid climb towards a maximum.

The high level of solar activity expected this month should bring generally excellent conditions on most of the HF amateur bands. Expect worldwide DX openings on the 10, 15, and 20 meter bands during the daylight hours. From sundown to midnight the best DX bands should be 20 and 40 meters, with excellent DX also possible on 15 meters toward the southern and western areas. Some DX should also be possible on the 80 and 160 meter bands. From midnight to sunrise look for openings to most areas of the world on 20 and 40 meters, with some DX possible on 80 and 160 meters as well. All in all, May should really be a good month for propagation conditions on most of the HF bands.

For specific times of DX openings refer to the DX Propagation Charts which ap-

LAST MINUTE FORECAST

Day-to-Day Conditions Expected for May 1989

| Propagation Index | Expected Signal Quality | | | |
|--|-------------------------|-----|-----|-----|
| | (4) | (3) | (2) | (1) |
| Above Normal: 8, 12, 15, 17-18 | A | A | B | C |
| High Normal: 1-3, 7, 11, 13-14, 16, 19-20, 28-30 | A | B | C | C-D |
| Low Normal: 6, 9, 23-27 | B | C | D | D-E |
| Below Normal: 4-5, 10, 21, 31 | C | C-D | D-E | E |
| Disturbed: 22 | C-D | D | E | E |

Where expected signal quality is: A—Excellent opening, exceptionally strong, steady signals greater than S9.
B—Good opening, moderately strong signals varying between S6 and S9+, with little fading or noise.
C—Fair opening, signals between moderately strong and weak, varying between S3 and S6, with some fading and noise.
D—Poor opening, with weak signals varying between S0 and S3, and with considerable fading and noise.
E—No opening expected.
3 dB per S-Unit.

HOW TO USE THIS FORECAST

1. Find *propagation index* associated with particular band opening from Propagation Charts appearing on the following pages.
2. With the *propagation index*, use the above table to find the expected signal quality associated with the band opening for any day of the month. For example, an opening shown in the charts with a *propagation index* of 3 will be good (B) May 1-3, fair-to-poor (C-D) on the 4th and 5th, fair (C) on the 6th, good (B) on the 7th, etc.

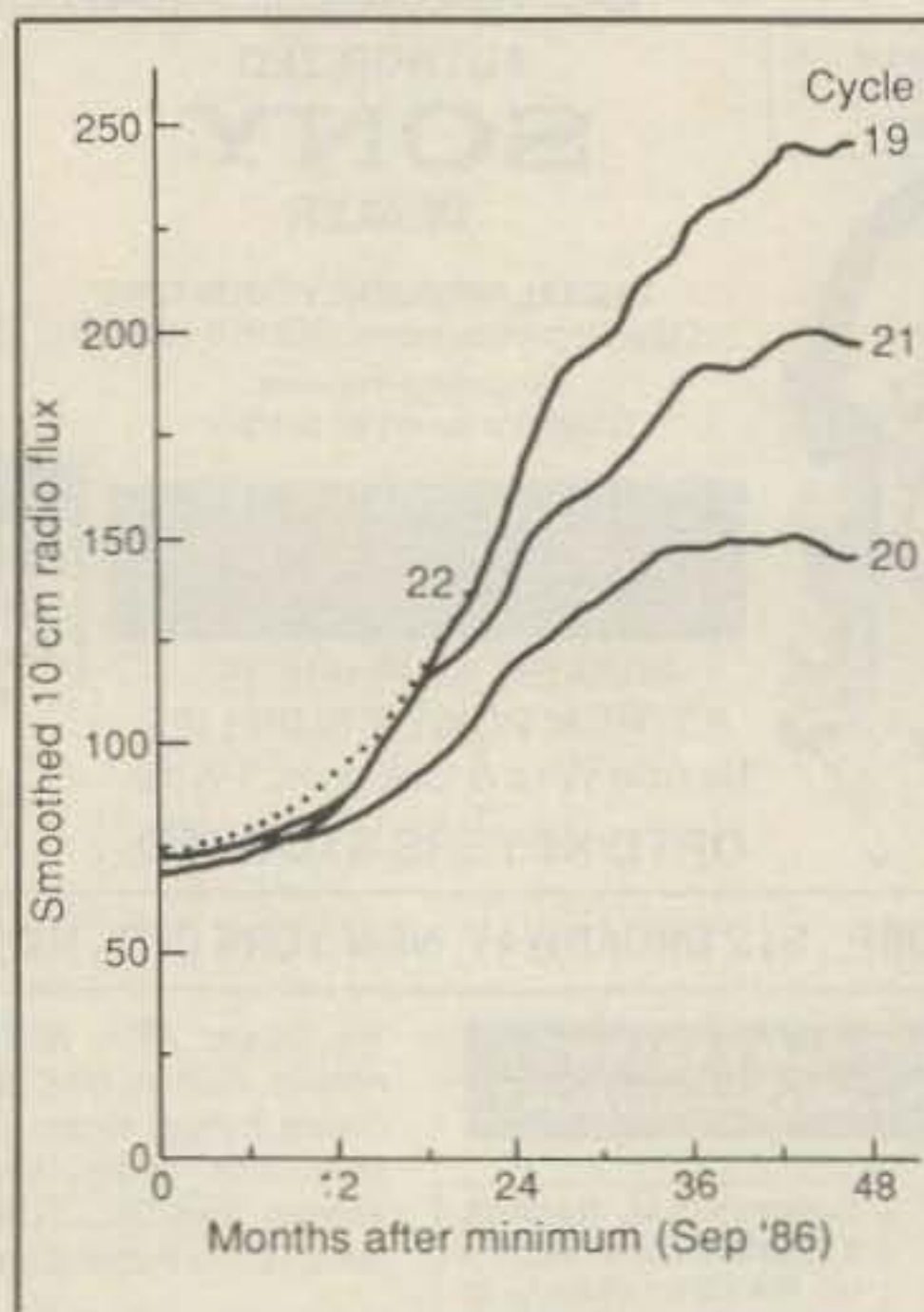


Fig. 1- Rapid rise of sunspot Cycle 22 compared to record-breaking Cycle 19 and to previous Cycles 20 and 21.

peared in last month's column. This month's column contains a Short-Skip Propagation Chart valid for both May and June, as well as charts centered on Alaska and Hawaii. The Short-Skip Chart contains propagation forecasts for openings varying in distance between 50 and 2300 miles. For day-to-day variations expected in propagation conditions during May see the Last Minute Forecast, which appears at the beginning of this column.

VHF Ionospheric Openings

May should also be a good month for ionospheric openings on the VHF bands resulting from the high level of solar activity, increased sporadic-E propagation, meteor showers, trans-equatorial propagation, and auroral activity.

Solar activity is now high enough that some F-layer DX openings should be possible on the 6 meter band during the daylight hours. Conditions are best for trans-continental openings, openings between the western states and Hawaii, and openings toward the Caribbean and Central and South America. The best time to look for these openings is during the afternoon hours, particularly when conditions are High Normal or better.

Sporadic-E ionization is expected to increase considerably during May, and fairly frequent 6 meter short-skip openings should be possible. These are most likely to occur over distances of approximately 1000 to 1400 miles. Although sporadic-E openings can take place at just about any time, the best time to check is between 10 AM and 2 PM, and again between 6 and 10 PM local daylight time.

During periods of intense and widespread sporadic-E ionization, two-hop openings considerably beyond 1400 miles should be possible on 6 meters, and short-skip openings between approximately 1200 and 1400 miles may also be possible on 2 meters.

Some trans-equatorial propagation (TE) should be possible during May on 6 meters and perhaps 2 meters as well. TE openings are most likely to occur between 9 and 11 PM local daylight time on long north-south paths which cross the geomagnetic equator at approximately a right angle. TE openings favor locations in the southern states, but openings are also possible to more northern areas.

The *Eta Aquarids*, a major meteor shower, is expected from May 4 to 6. It should peak with a count of approximate-

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HOW TO USE THE SHORT-SKIP CHARTS

1. In the Short-Skip Chart, the predicted times of openings can be found under the appropriate distance column of a particular meter band (10 through 160 meters) as shown in the left-hand column of the chart. For the Alaska and Hawaii Charts the predicted times of openings are found under the appropriate meter band column (10 through 40 meters) for a particular geographical region of the continental USA as shown in the left-hand column of the charts. An * indicates the best time to listen for 80 meter openings.

2. The propagation index is the number that appears in () after the time of each predicted opening. On the Short-Skip Chart, where two numerals are shown within a single set of parentheses, the first applies to the shorter distance for which the forecast is made, and the second to the greater distance. The index indicates the number of days during the month on which the opening is expected to take place, as follows:

- (4) Opening should occur on more than 22 days
- (3) Opening should occur between 14 and 22 days
- (2) Opening should occur between 7 and 13 days
- (1) Opening should occur on less than 7 days

Refer to the "Last Minute Forecast" at the beginning of this column for the actual dates on which an opening with a specific propagation index is likely to occur, and the signal quality that can be expected.

3. Times shown in the Charts are in the 24-hour system, where 00 is midnight; 12 is noon; 01 is 1 A.M.; 13 is 1 P.M., etc. On the Short-Skip Chart appropriate daylight time is used at the path midpoint. For example on a circuit between Maine and Florida, the time shown would be EDT, on a circuit between N.Y. and Texas, the time at the midpoint would be CDT, etc. Times shown in the Hawaii Chart are in HST. To convert to daylight time in other USA time zones add 3 hours in the PDT zone; 4 hours in the MDT zone; 5 hours in the CDT zone; and 6 hours in the EDT zone. Add 10 hours to convert from HST to GMT. For example, when it is 12 noon in Honolulu, it is 15 or 3 P.M. in Los Angeles; 18 or 6 P.M. in Washington, D.C.; and 22 GMT. Time shown in the Alaska Chart is given in GMT. To convert to daylight time in other areas of the USA subtract 7 hours in the PDT zone; 6 hours in the MDT zone; 5 hours in the CDT zone; and 4 hours in the EDT zone. For example, at 20 GMT it is 16 or 4 P.M. in N.Y.C.

4. The Short-Skip Chart is based upon a transmitted power of 75 watts c.w. or 300 watts p.e.p. on sideband; the Alaska and Hawaii Charts are based upon a transmitter power of 250 watts c.w. or 1 kw p.e.p. on sideband. A dipole antenna a quarter-wavelength above ground is assumed for 160 and 80 meters, a half-wave above ground on 40 and 20 meters, and a wavelength above ground on 15 and 10 meters. For each 10 dB gain above these reference levels, the propagation index will increase by one level; for each 10 dB loss, it will lower by one level.

5. Propagation data contained in the Charts has been prepared from basic data published by the Institute for Telecommunication Sciences of the U.S. Dept. of Commerce, Boulder, Colorado 80302.

CQ Short-Skip Propagation Chart May & June 1989 Local Daylight Time At Path Midpoint

| Band Meter | Distance Between Stations | (Miles) | | |
|------------|--|---|---|---|
| | 50-250 | 250-750 | 750-1300 | 1300-2300 |
| 10 | Nil | 08-10 (0-1) 10-14 (0-2) 14-18 (0-1) 18-22 (0-2) 22-00 (0-1) | 08-10 (1-2) 10-14 (2-3) 14-18 (1-2) 18-22 (2) 22-00 (1) 00-08 (0-1) | 08-10 (2-0) 10-14 (3-1) 14-16 (2-1) 16-19 (2) 19-22 (2-0) 22-08 (1-0) |
| 15 | Nil | 07-10 (0-2) 10-14 (0-3) 14-18 (0-2) 18-20 (0-3) 20-00 (0-2) 00-07 (0-1) | 07-10 (2) 10-14 (3) 14-18 (2-4) 18-20 (3-4) 20-22 (2-3) 22-00 (2) 00-07 (1) | 07-10 (2-1) 10-14 (3-2) 14-16 (4-3) 16-20 (4) 20-23 (3-2) 22-00 (2) 00-07 (1-0) |
| 20 | 10-13 (0-1) 13-19 (0-2) 19-01 (0-1) | 07-10 (0-2) 10-13 (1-3) 13-19 (2-4) 19-21 (1-3) 21-01 (1-2) 01-07 (0-2) | 07-10 (2-3) 10-13 (3-4) 13-19 (4) 19-21 (3-4) 21-23 (2-4) 23-01 (2-3) 01-07 (2) | 07-10 (3) 10-15 (4-3) 16-23 (4) 23-01 (3-4) 01-03 (2-3) 03-07 (2) -- |
| 40 | 07-09 (1-2) 09-12 (2-4) 12-20 (3-4) 20-22 (2-3) 22-01 (1-2) 01-07 (0-1) | 07-09 (2-4) 09-10 (4-3) 10-16 (4-2) 16-18 (4-3) 18-22 (4) 22-01 (2-3) 01-07 (1-3) | 07-09 (4-3) 09-10 (3) 10-16 (2-1) 16-18 (3-1) 18-20 (4-2) 20-22 (4) 22-07 (3-4) | 08-10 (3-1) 10-18 (1-0) 18-20 (2-1) 20-22 (4-3) 22-06 (4) 06-07 (4-3) 07-08 (3) |

| | | | | |
|-----|--|---|--|---|
| 80 | 08-11 (4) 11-19 (4-3) 19-23 (4) 23-08 (3-4) | 08-11 (4-1) 11-17 (3-0) 17-19 (3-1) 19-21 (4-2) 21-06 (4) 06-08 (4-3) | 08-09 (1) 09-11 (1-0) 11-17 (0) 17-19 (1-0) 19-21 (2-1) 21-23 (4-3) 23-06 (4) 06-08 (3-2) | 08-09 (1-0) 09-19 (0) 19-21 (1-0) 21-23 (3-2) 23-04 (4-3) 04-06 (4-2) 06-08 (2-1) |
| 160 | 06-09 (4-1) 09-10 (2-0) 10-19 (1-0) 19-21 (3-1) 21-23 (4-2) 23-06 (4-3) | 06-09 (1) 09-19 (0) 19-21 (1-0) 21-23 (2-1) 23-01 (3-2) 01-04 (3) 04-06 (3-2) | 08-09 (1-0) 09-21 (0) 09-21 (1) 23-01 (2-1) 01-04 (3-2) 04-06 (2) 06-08 (1) | 08-21 (0) 21-01 (1) 01-04 (2) 04-06 (2-1) 06-07 (1) 07-08 (1-0) |

HAWAII May & June 1989 Openings Given in Hawaiian Standard Time

| To: | 10 Meters | 15 Meters | 20 Meters | 40/80 Meters |
|-------------|-------------------------------------|---|--|--|
| Eastern USA | 15-17 (1) | 07-12 (1) 12-15 (2) 15-17 (3) 17-18 (2) 18-19 (1) | 07-15 (1) 15-18 (2) 18-20 (3) 20-22 (4) 22-00 (3) 00-02 (2) 02-04 (3) 04-07 (2) | 19-20 (1) 20-23 (3) 23-02 (1) 20-21 (1)* 21-23 (2)* 23-01 (1)* |
| Central USA | 12-15 (1) 15-17 (2) 17-18 (1) | 05-07 (1) 07-12 (2) 12-16 (3) 16-18 (4) 18-20 (3) 20-22 (2) 22-00 (1) | 08-12 (1) 12-16 (2) 16-18 (2) 18-22 (4) 22-00 (3) 00-02 (2) 02-06 (3) 06-08 (2) | 19-20 (1) 20-21 (2) 21-01 (4) 01-02 (2) 02-04 (1) 20-21 (1)* 21-00 (2)* 00-03 (1)* |
| Western USA | 09-12 (1) 12-17 (2) 17-19 (1) | 06-08 (1) 08-10 (2) 10-12 (3) 12-17 (4) 17-19 (3) 19-22 (2) 22-00 (1) | 06-08 (4) 08-16 (3) 16-22 (4) 22-02 (3) 02-06 (2) | 18-19 (1) 19-20 (2) 20-02 (4) 02-04 (3) 04-05 (2) 05-07 (1) 19-20 (1)* 20-21 (2)* 21-03 (3)* 03-04 (2)* 04-05 (1)* |

ALASKA May & June 1989 Openings Given in GMT

| To: | 10 Meters | 15 Meters | 20 Meters | 40/80 Meters |
|-------------|------------------|---|---|---|
| Eastern USA | Nil 20-22 (2) | 18-20 (1) 22-02 (2) 22-01 (1) 01-03 (2) 03-05 (1) | 20-22 (1) 22-02 (2) 02-06 (3) 06-08 (2) 08-10 (1) 10-14 (2) 14-16 (1) | 05-10 (1) |
| Central USA | Nil | 18-21 (1) 21-23 (2) 23-01 (1) 01-04 (1) | 02-08 (3) 08-14 (2) 14-22 (1) 22-02 (2) | 05-07 (1) 07-10 (2) 10-12 (1) |
| Western USA | 00-03 (1) | 18-20 (1) 20-23 (2) 23-02 (3) 02-05 (2) 05-07 (1) | 02-04 (3) 04-08 (4) 08-14 (3) 14-18 (4) 18-20 (3) 20-02 (2) | 04-06 (1) 06-08 (2) 08-12 (3) 12-15 (2) 15-16 (1) 08-12 (1)* |

See explanation in "How To Use Short-Skip Charts" in box at the beginning of this column.

* Indicates best time for 80 Meter openings. Openings on 160 Meters are likely to occur during those times when 80 Meter openings are shown with a propagation index of (2), or higher.

Note: The Alaska and Hawaii Propagation Charts are intended for distances greater than 2300 miles. For shorter distances, use the preceding Short-Skip Propagation Chart.

ly 20 meteors an hour during the afternoon of May 5. Meteor activity should be intense enough during this shower to support meteor-burst short-skip openings on the 6 and 2 meter bands.

Check the Last Minute Forecast appearing at the beginning of this column for those days during May that are expected to be Below Normal or Disturbed. These are the days on which there is a chance for auroral activity to take place. Ionization associated with auroral displays can result in auroral-type short-skip openings on the VHF bands.

Solar Data Info Available

The National Geophysical Data Center (NGDC) at Boulder, Colorado is the official repository in the United States for worldwide data related to solar activity and the ionosphere and the earth's geomagnetic field.

The NGDC publishes for sale a considerable amount of solar-terrestrial data, much of which may be of interest to radio amateurs. The *Solar Indices Bulletin*, for example, is a two-page monthly publication containing a prompt summary of solar activity, including daily 10.7 cm radio flux measurements, plus measurements of fluxes at eight additional frequencies. Sunspot data summarized in this publication includes daily, monthly median, and 12-month smoothed values, as well as an up-to-date solar-cycle prediction. The data is prepared about a week after the end of the month to which it applies, and is generally in the hands of subscribers by the middle of the month. The price for this publication is \$21 annually for either U.S. or international mail delivery.

A companion publication, *Geomagnetic Indices Bulletin*, is another two-page monthly publication. It contains a summary of geomagnetic field variations, including 3-hour and daily Kp and Ap values, other geomagnetic data, and a descriptive text. It is priced at \$20 a year for mail delivery worldwide.

Sunspot Numbers: 1610-1985 is a 114-page record of observed sunspot data spanning almost 400 years. A supplement is included updating it through 1987. This publication contains daily, monthly median, 12-month smoothed, and yearly average sunspot values from the day that they were first observed telescopically! The price is \$10 postpaid. A companion to this publication is available which contains individual graphs of daily, monthly mean, 12-month smoothed, and yearly average values. The set of four graphs is suitable for display and is available for \$10 postpaid.

For a complete list of publications available from the NGDC write to: National Geophysical Data Center, 325 Broadway, EGC/2, Boulder, CO 80303 (telephone 303-497-6346).

73, George, W3ASK

Announcing (from p. 9)

tract ARC; during 1989. For more information, contact G1Z0J or G0EYM at 30 Cotswold Close, Putnoe, Bedford, MK41 9LR, U.K. (telephone Bedford [0234] 244506).

HX6JUN, from Utah Beach, Normandy, France; Association Des Radio Amateurs De La Manche; May 28 until June 12; CW 3.550, 7.015, 14.015, 21.015, 28.050; SSB 3.750, 7.080, 14.215, 21.215, 28.550 (all plus or minus 5 kHz). A QSL card will be sent for each QSO by QSL manager F5AM, via the bureau, or directly—IRCs. Contact A. Morio, F5AM, 631 Rue de Carentan, 50 000 Saint Lo, France.

• The following hamfests, etc., are slated for May:

May 5-6, **Hamboree 11**, Marina Inn, South Sioux City, NE. Contact Dick Pitner, W0FZO, 2931 Pierce St., Sioux City, IA 51104.

May 5-7, **BirminghamHamfest '89**, Birmingham-Jefferson Civic Center, Birmingham, AL. Contact BirminghamHamfest '89, P.O. Box 26073, Birmingham, AL 35226, or call Frank Blanchard, AA4LB, 205-979-4678.

May 5-7, **Cochise ARA Annual Hamfest**, Sierra Vista, AZ. Contact N7INK at 602-378-3155 after 6 PM, or write to CARA, P.O. Box 1855, Sierra Vista, AZ 85636.

May 6, **Putnam Emergency Amateur and Radio League PEARLfest**, John F. Kennedy Elementary School, Brewster, NY. Contact Terri Cullum, N2GWF, 40 Mile Hill Rd., Highland, NY 12528.

May 6, **Flint Hills ARC Swapfest**, Augusta City Park, Augusta, KS. Contact Zack Wilkerson, K0DVY, Route 1, Box 90, El Dorado, KS 67042 (SASE).

May 6, **Paul Bunyan Radio Club ARC Hamfest**, VFW Club, Bemidji, MN. Contact Robert W. Bitz, KA0KTB, 401 Roosevelt Manor, Bemidji, MN 56601 (218-751-8748).

May 6, **Ozaukee Radio Club Swapfest**, Circle B Recreation Center, Cedarburg, WI. Contact ORC Swapfest, N5415 Crystal Springs Ct., Fredonia, WI 53021.

May 6-7, **Greenville, South Carolina Hamfest**, American Legion Fairgrounds, Greenville, SC. Contact Blue Ridge ARCS, P.O. Box 6751, Greenville, SC 29606 (SASE).

May 7, **Tri-County Radio Association Hamfest/Fleamarket**, Passaic Township Community Center, Stirling,

NJ. Contact Dick Franklin, P.O. Box 182, Westfield, NJ 07090 (201-232-5955).

May 7, **Kishwaukee ARC Hamfest**, Sandwich Fairgrounds, Sandwich, IL. Contact Howard Newquist, P.O. Box 264, Sycamore, IL 60178.

May 13, **Lakeshore Hamfest**, Manitowoc County Expo Center, Manitowoc, WI. Contact Mancorad Radio Club, P.O. Box 204, Manitowoc, WI 54220.

May 14, **Medina County Hamfest**, Medina County Community Center, Medina, OH. Contact Medina Hamfest Committee, P.O. Box 452, Medina, OH 44258 (216-769-3033 from 10 AM to 5 PM).

May 14, **Athens County ARA Hamfest**, City Recreation Center, Athens, OH. Contact Carl J. Denbow, KA8JXG, 63 Morris Ave., Athens, OH 45701.

May 19-21, **1989 Green Country Hamfest**, Expo Square Pavillion, Tulsa, OK. Contact Green Country Hamfest, P.O. Box 4283, Tulsa, OK 74135 (or call 918-272-3081).

May 20, **Wexauke ARA Swap and Shop**, Cadillac Middle School, Cadillac, MI. Contact John Craddock, KX8Z, 616-797-5491, or write to Wexauke ARA, P.O. Box 163, Cadillac, MI 49601.

May 20, **Pikes Peak RAA Swapfest**, Rustic Hills Mall, Colorado Springs, CO. Contact Al, N0CMW, 719-473-1660, or write to PPRAA Swapfest, P.O. Box 16521, Colorado Springs, CO 80935.

May 20, **Rhode Island FM Repeater Service Spring Fleamarket and Auction**, VFW Post 6342, Forestdale, RI. Contact Rick Fairweather, K1KYI, Box 591, Harrisville, RI 02830, or call 401-568-0566 from 7-9 PM.

May 20, **Wellesley ARS FCC Exam Session**, Wellesley Red Cross Building, Wellesley, MA. Contact Vern Valero, ND1Z, 508-533-6822.

May 20, **Ozark Hamboree**, Rodeo Community Center, Springdale, AR. Contact Randall Spear, WA5QGH, 501-846-3210.

May 20, **Arrowhead Radio Amateur Club Swapfest '89**, First United Methodist Church, Duluth, MN. Contact Duane Flynn, KB0LC, 4907 Peabody St., Duluth, MN 55801 (218-525-4580).

May 20, **Key City ARC Armed Forces Day Hamfest and Arts and Crafts Show**, Abilene Civic Center, Abilene, TX. Contact KCARC, Box 2722, Abilene, TX 79604, or call Bill, N5DOX, 915-698-4606.

May 20-21, **Lake Hartwell Hamfest**, Hartwell Group Camp, 3 miles north of Hartwell, GA. Contact M.A.

Counsell, W1BNS, 215 Nottingham Way, Anderson, SC 29621 (phone 803-261-7018).

May 20-21, **Yakima ARC Hamfest**, Central Washington State Fairgrounds, Yakima, WA. Contact Yakima ARC, W7AQ, P.O. Box 9211, Yakima, WA 98909, or call Dick Umberger, N7HHU, 509-453-8632 days, 509-453-3580 evenings.

May 21, **Warminster ARC Hamfest**, Middletown Grange Fairgrounds, Wrightstown, PA. Contact Bill Cusick, W3GJC, 804 Garner House, Hatboro, PA 19040 (215-441-8048).

May 21, **Knox County Hamfest**, Knox County Fairgrounds, Knoxville, IL. Contact Keith L. Watson, WB9KHL, 119 South Cherry St. No. 3, Galesburg, IL 61401-4527, or call 309-342-3885 evenings.

May 21, **Chicago ARC Mini-Hamfest**, North Park Village, Chicago, IL. Contact CARC, 5631 W. Irving Park Rd., Chicago, IL 60634 (312-545-3622).

May 21, **Northern Berkshire ARC Swapfest**, Dalton American Legion, Dalton, MA. Contact Dick, WB1HIH, at 413-458-8267 or 413-458-8452.

May 21, **TSRAC Wheeling Hamfest/Computer Fair**, Wheeling Park. Contact TSARC, Box 240, RD 1, Adena, OH 43901 (614-546-3930).

May 21, **North Hills Radio Club Hamswap**, Folsom Community Clubhouse, Folsom, CA. Contact NHRC, P.O. Box 41635, Sacramento, CA 95841, or call Bob, WA6ULL, 916-983-2776.

May 26-28, **Northern Alberta Radio Club Hamfest**, Narmoo, Alberta, Canada. Contact Northern Alberta Radio Club, 9628 - 69A St., Edmonton, Alta. T6W 1W3 Canada (403-438-9205).

May 27, **Durhamfest 1989**, South Square Mall, Durham, NC. Contact Mick Rankin, W4ZUS, 1001 Wedgewood Lane, Durham, NC 27712.

May 28, **Quebec Provincial Hamfest**, Tracy Curling Club, Tracy/Sorel, Canada. Contact Sorel-Tracy ARC, P.O. Box 533, Sorel, QC J3P 5N6 Canada.

May 28, **Maryland FM Association Memorial Day Hamfest**, Howard County Fairgrounds, West Friendship, MD. Contact Mike Cresap, 1294 Dorothy Rd., Crownsville, MD 21032 (301-923-3829).

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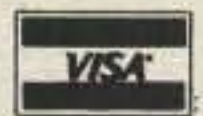
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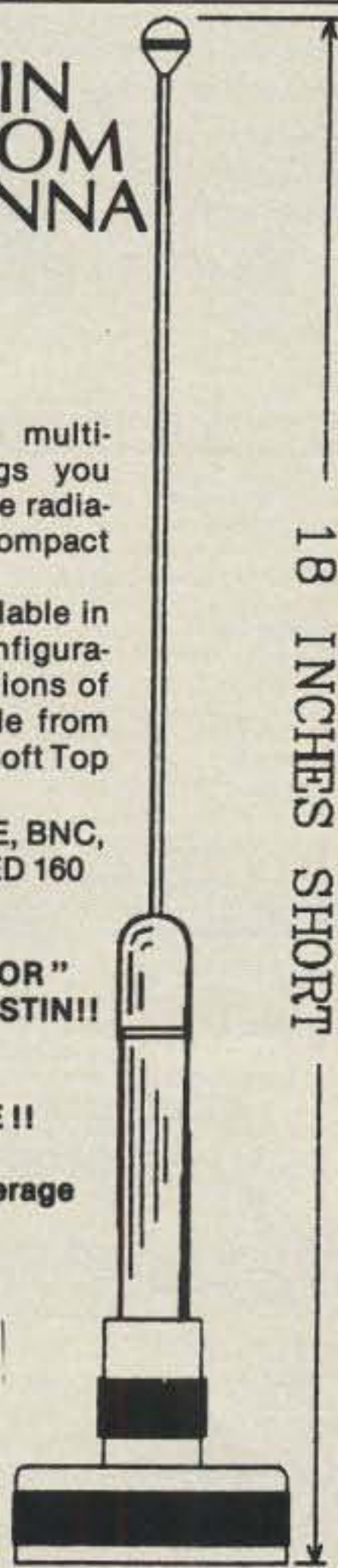
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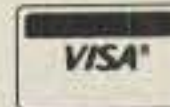
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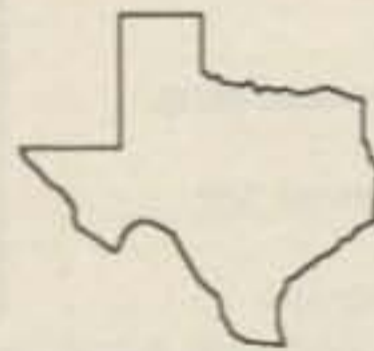
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A LOOK AT THE SHACK FROM BOTH ENDS OF THE COAX

Books for the Hamshack—Part II

Last month we turned to the bookshelf for an update on some hamshack reading matter we thought you'd like. Following that, we saved room for some antenna topics, including a description of the popular Carolina Window and some easy-to-install antennas for 10 meters, and we covered several software programs of interest. This month we'll wrap up our look at books, catalogs, newsletters, and other good reading material.

Books for the Hamshack

Easy-Up Antennas for Radio Listeners and Hams. Many CQ readers are familiar with the series of antenna books written by Ed Noll, W3FQJ, who also holds down the antennas editorship at *Popular Communications*. Ed advises us that although antennas are his hobby, he's sold the antenna farm and house and now dwells in an apartment building. This change may possibly crimp his antenna experimentation in the future, but the change may also constitute a new adventure with indoor receiving antennas.

In the meantime, Ed has come out with his 162-page, 8½" x 11" format *Easy-Up Antennas for Radio Listeners and Hams*, a handbook that offers complete plans and instructions for building a number of antennas that are easy to construct, erect, and put into operation. His projects are inexpensive, as well.

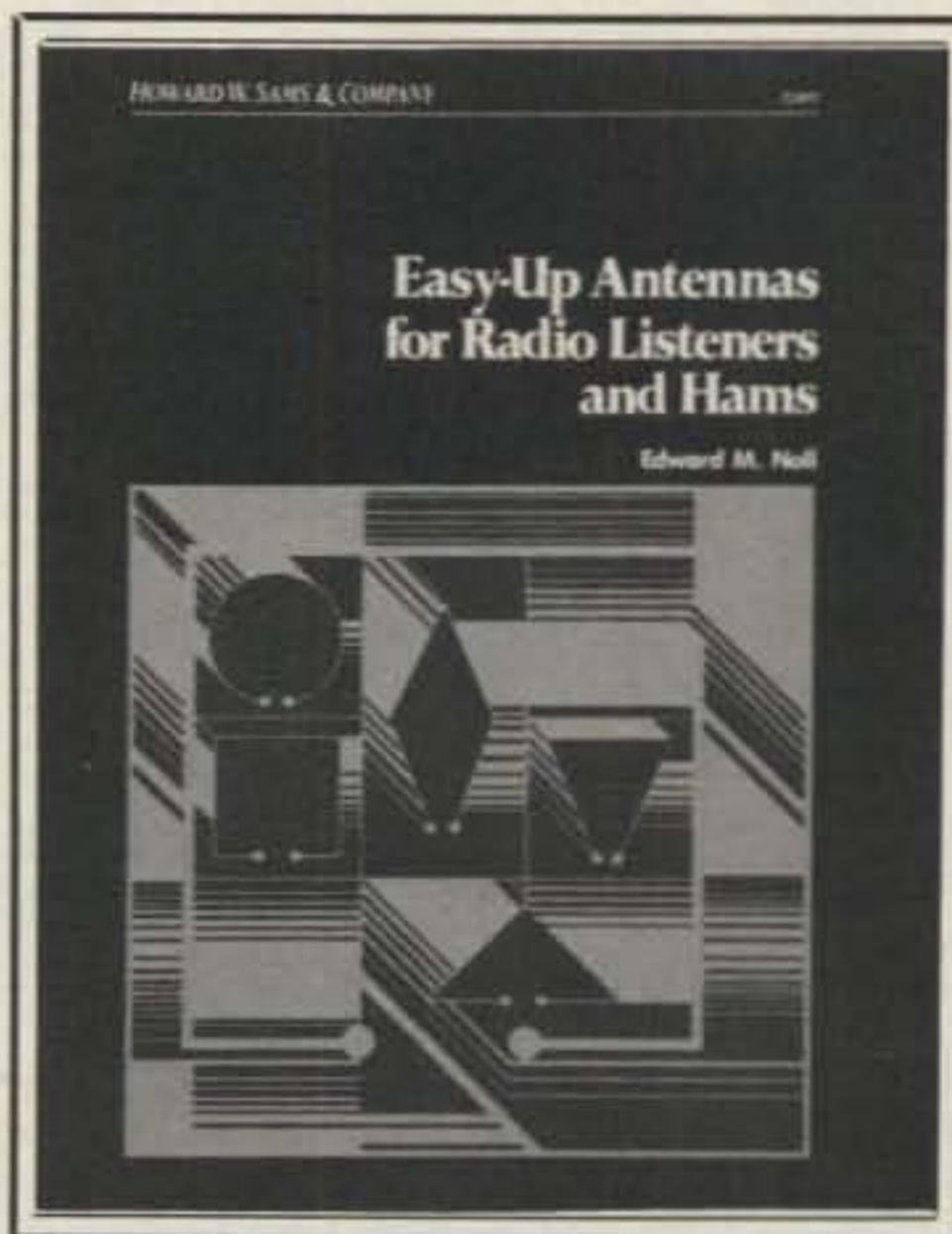
The variety of antenna types and purposes Ed covers in his book—both for amateurs and SWLs—reflects his considerable diversity of interests. Included are antennas for the amateur bands, low frequencies, the shortwaves, medium waves, scanner bands, marine frequencies, and even FM broadcast.

The handbook is divided into two parts—Part I, which is for the radio listener and includes chapters 1 through 11, and Part II, which is for the amateur and includes chapters 12 through 16. However, the contents of both parts are of value to both listeners and amateurs alike.

Some of the radio receiving topics covered in Part I include basic antennas; antenna tests and comparisons; verticals; dipoles; long-wires; beams; medium- and long-wave antennas; limited space and indoor antennas; and VHF/UHF designs. Chapter 11 includes a set of dimension tables for receiving antennas.

The organization of Part II is loosely based on amateur operating privileges. Some of the major topics covered in Part II include antenna fundamentals and tests; antennas for Novice, General, and Advanced class licensees; and Technician class and VHF/UHF antennas. As in Part I, a chapter full of handy tables and conversions is included.

An important point concerning Ed's text is that while many antenna books lean heavily to



The new 162-page Howard W. Sams book by Ed Noll, W3FQJ, *Easy-Up Antennas for Radio Listeners and Hams*, is fundamentally divided into separate sections for amateurs and listeners. It is liberally illustrated, and beginners should have no difficulty understanding the concepts and procedures it contains.

the theoretical, his book—though technically authoritative—is rooted in practicality. He indicates that he has erected and tested each antenna he describes in the book, with the exception of a few commercial antennas. A number of the antennas first appeared in print in his "Better Signals" column in *Popular Communications*. Helpfully, the book is liberally illustrated, and beginners should have little difficulty in understanding its concepts.

Ed's comprehensive book is priced at \$16.95 plus \$2.50 shipping and handling and is available from Howard W. Sams & Company, 4300 W. 62nd St., Indianapolis, IN 46268. It's also available nationally through booksellers and many electronics stores. Ask for ISBN No. 0-672-22495-X; the Sams number is 22495. I suppose that Ed could also supply you with a copy, but I don't know how much "bench stock" he can keep on hand in his new quarters.

Incidentally, Sams now publishes a number of titles of interest to radio amateurs. Some of these include *Computer Programs for Amateur Radio* by Wayne Overbeck, N6NB, and James Steffen, KC6A (\$18.95); *Radio Handbook, 23rd Edition* by Bill Orr, W6SAI (\$24.95); Gerry Dexter's *Shortwave Radio Listening with the Experts* (\$22.95); *RF Circuit Design* by Chris Bowick (\$22.95); and Joseph J. Carr, K4IPV's *Programs for Amateur and Radio Electronics* (\$14.95).

Limited Space Shortwave Antenna Solutions. Frank P. Hughes, VE3DQB, an amateur for over 35 years and a former editor of the *Canadian Amateur* magazine, has come up with a very nice collection of "antenna options" for those listeners who are forced to make do with less space for antennas than they'd like. In it there are a number of ideas for those who live in condominiums and apartment houses.

In his 52-page, 8½" x 11" book Frank addresses the age-old problem of getting maximum antenna results out of minimum space. In a clearly written, conversational style he shows you how to survey your situation and then provides an extended discussion of possible solutions. These solutions include random-length antennas, single- and multi-band verticals and dipoles, indoor and outdoor loops, and indoor dipoles. He also covers possibilities such as balcony antennas, window and loft (attic) installations, helical dipoles, commercial antenna kits, and even CB antennas adapted for shortwave use.

The book also discusses ground systems; soldering techniques; handling wire, insulators, and connectors; pole and mast installation; anchors; and guy wires. The book contains 25 illustrations and is broken down into 11 chapters.

Although *Limited Space Shortwave Antenna Solutions* is geared toward the brand-new beginning listener with little space for a decent antenna, more advanced listeners with all the space they need should find the book filled with useful antenna information. It is available for \$10.95 plus \$1.25 shipping and handling from Tiare Publications, P.O. Box 493, Lake Geneva, WI 53147.

Incidentally, you might want to send for Tiare's catalog of "Great Radio Reads." Though oriented toward the listener rather than the radio amateur, some titles look interesting. These include Mike Witkowski's *The World Ham Net Directory* (\$9.95) and Ed Noll's *The Basic Guide to VHF/UHF Ham Radio* (\$6.95).

International Radio and Computers Newsletters. This Florida-based outfit publishes three monthly newsletters for members of the amateur radio community who want to stay "plugged into" the manufacturers of the amateur radio gear they own. Separate newsletters are published for owners of ICOM, Kenwood, and Yaesu equipment.

The three newsletters provide a worldwide exchange of information between subscribers—sort of like a mail-order "user's group," to borrow from computer terminology. In each issue (published 10 times a year) the material content varies, but typically it includes information on equipment modifications and enhancements; product announcements and reviews; computer interfacing; information on equipment faults; and alignment notes and tips. In order to broaden the base of the publications, subscriptions are exchanged with

dealer service departments and technical magazines. The newsletters also offer free newsletter subscriptions to those who furnish two published newsletter articles.

Each newsletter subscription is \$12.50 per year in the U.S., with higher rates to Canada and overseas. Two newsletters to the same address are \$22.50, while all three are \$33.00. For more information, contact International Radio and Computers, Inc., 751 South Macedo Blvd., Port St. Lucie, FL 34983.

IRCI also sponsors 20 meter user radio nets, the operating schedules of which are published in each issue of the appropriate newsletter.

Amateur Radio Equipment News (AREN). *AREN* focuses on amateur radio equipment exclusively, being designed to "connect" commercial and classified advertisers with amateurs who want to purchase new and used equipment. One of the objectives of its publisher, Joseph Koppi, NØF, is to provide news of the latest developments and offerings of manufacturers, as well as information about existing equipment. Occasionally *AREN* publishes, in addition to classified ads, useful information about new and used equipment, such as equipment design, modifications, serial numbers, dates of manufacture, and the like.

The newsletter, which typically runs 4-6 pages, is published every two weeks. A one-year subscription (24 issues) costs \$10 and includes 200 free amateur calling cards and a free 50-word ad. A sample copy of the newsletter is available from *Amateur Radio Equipment News*, 245 E. Sixth St., Suite 440, St. Paul, MN 55101.

Universal Radio Communications Catalogs. Not long ago I received copies of Universal's two rather comprehensive catalogs, their Amateur Radio Catalog and their Shortwave Catalog. Both are hefty publications which describe Universal's wide range of products offered to amateurs and SWLs.

One interesting fact I noted up front is that the company has been around since 1942, making it one of the oldest retail radio stores in the country. The company, then called Universal Service, was founded during World War II by F. R. "Gibby" Gibb, W8IJ, and featured all the now-just-memories amateur brands the likes of Hammarlund, Hallicrafters, Johnson, National, and Drake.

The amateur catalog, which checks in at 44 pages, features many complete equipment lines and authorized service for Kenwood, Yaesu, ICOM, JRC, Info-Tech, and others. The 52-page SWL catalog features a full line of receivers from \$50 to \$8000, plus an extensive line of RTTY and FAX gear. Antennas, accessories, and a surprisingly wide variety of books—several of which are published in-house—are staples in both catalogs.

Each catalog is available for \$1.00 postpaid from Universal Radio, 1280 Aida Drive, Reynoldsburg, OH 43068.

Grove Enterprises Catalog. A wealth of useful hints and tips for the radio listener, including tutorials on subjects such as choosing a shortwave receiver and a scanner, is contained in their combined catalog and buyer's guide, which describes a complete line of SWL, scanner monitor, and other receivers. Also included are several types of receiving antennas, antenna tuners, clocks, accessories, and listener books, some of which are published by Grove.

For a copy contact Grove Enterprises, 140 Dog Branch Road, Brasstown, NC 28902.

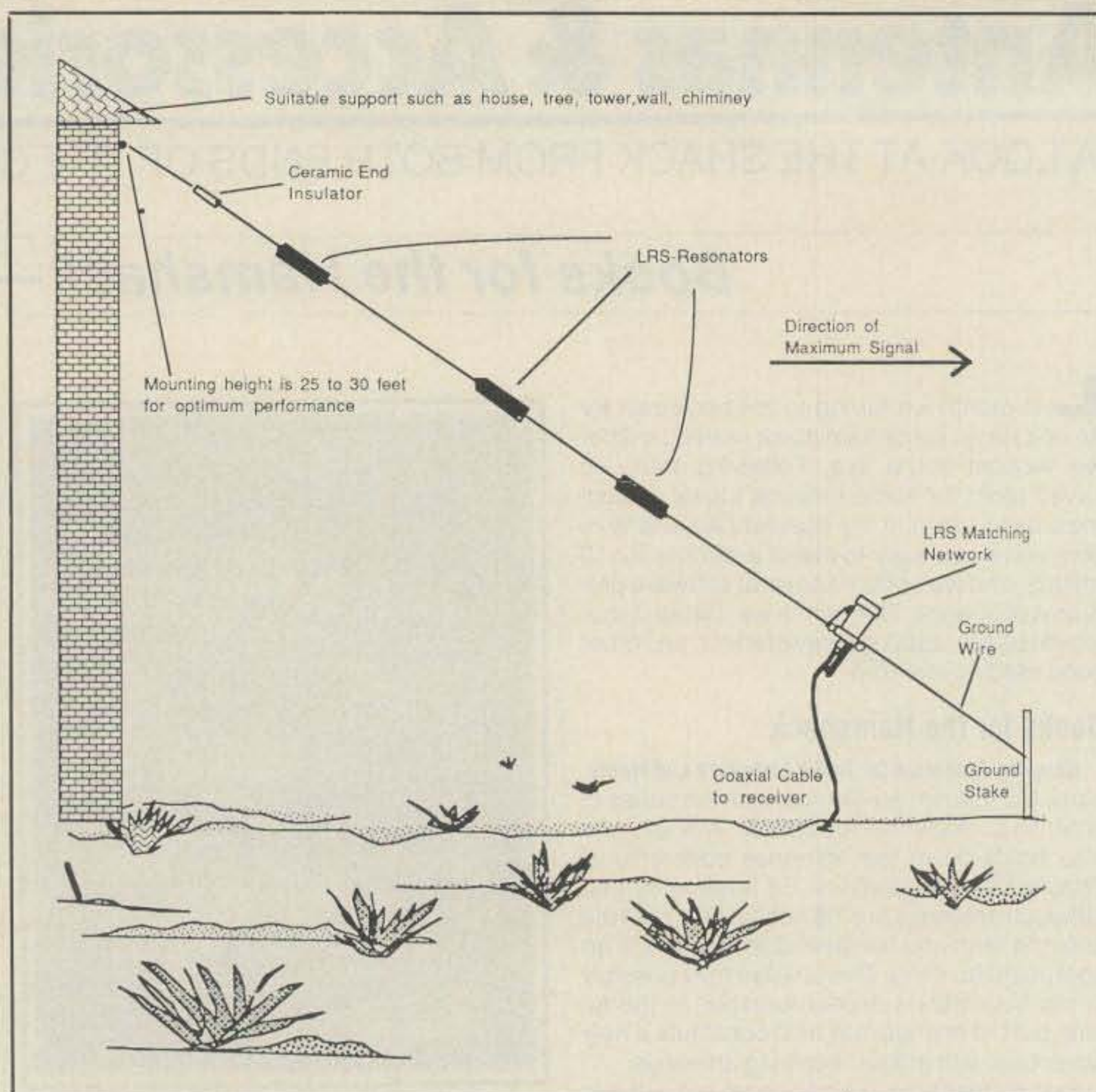


Fig. 1 - Linear resonating sloper. This antenna design by K2RAG is said to offer continuous coverage over all HF bands, 1-30 MHz, with low SWR and a 2000 watt power rating. The sloper is fed with 50 ohm coax.

Antique Electronic Supply Catalog. Although I'm not personally "into" antique radio receivers myself (or antique transmitting equipment, for that matter), the catalog that the father-and-son George Fathauers issue is a fascinating trip down memory lane.

Sandwiched in between catalog listings for hard-to-find and increasingly scarce supplies, parts, tubes, and books are some very interesting products that remind me of my earliest exposure to radio equipment. If you're in the slightest bit nostalgic, you'll appreciate novelties such as crystal detectors, cat's whiskers, ceramic RCA Nipper dogs, battery packs and battery eliminators, regenerative radio kits, and much more—including some fascinating book and magazine reprints.

Contact Antique Electronic Supply, 688 W. First St., Tempe, AZ 85281 for more information.

CRB Research Catalog. Not really aimed at amateurs but serving a wide range of communications enthusiasts, this catalog is a treasure-trove of unusual and difficult-to-find information on scanner and communications monitoring, communications intelligence, clandestine operations, cryptography, electronic surveillance and countermeasures, espionage, computer hacking, and related "esoteric" topics.

The CRB catalog, which no one could ever accuse of being dull, is available for \$1.00 from CRB Research Books, Inc., P.O. Box 56, Com-mack, NY 11725.

Antenna Topix

George is Back! In several columns in the early 80s we mentioned the inexpensive but high-quality line of mobile antennas crafted by George Shira, WD4BUM. George seemed to drop out of the market for awhile, but we see him back on the hamfest circuit in the south-east with some new products.

In George's line are a number of VHF/UHF mobile verticals, including $\frac{1}{4}$ - and $\frac{5}{8}$ -wave models, colinears, and dual-banders; several base antennas, including $\frac{1}{4}$ - and $\frac{5}{8}$ -wave models; fiberglass HF "ham sticks" for mobile use; and a large variety of mobile mounts, including special types for trucks and campers.

For a free flyer, contact George Shira, WD4BUM, at the Lakeview Co., P.O. Box 5706, Anderson, SC 29623.

Garant Windoms. Ed Rehfus, VE3ML, offers a new line of modified Windom antennas for HF use based on Windoms he's been making and selling for more than 18 years. These antennas are fed with 52 ohm coax rather than openwire line, using a balun inserted at the appropriate point in the flattop. An antenna tuner is not strictly required with the antennas.

According to Ed, four different designs are available for work on six, seven, eight, or nine bands (160 through 10 meters) with a single antenna and feedline. Depending on the particular model, a flattop length of either 137 or 255 feet is employed; the antennas can be bent at the balun if space is limited. Each model is available in 500 watt and 2 KW ver-

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- **MB-430** mobile bracket • **MC-43S** extra UP/DOWN hand mic. • **MC-55** (8-pin) goose neck mobile mic. • **MC-60A/MC-80/MC-85** desk mics.
- **PG-2S** extra DC cable • **PS-430** power supply
- **SP-40/SP-50B** mobile speakers • **SP-430** external speaker • **SW-100A/SW-200A/SW-2000** SWR/power meters • **TL-922A** 2 kW PEP linear amplifier (not for CW QSK) • **TU-8** CTCSS tone unit
- **YG-455C-1** 500 Hz deluxe CW filter, **YK-455C-1** New 500 Hz CW filter.



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sions, and pricing runs from \$99 to \$229 (U.S. funds), depending on the particular antenna configuration. A 10-day money-back guarantee is offered, and the antennas are warranted for three years.

Ed has worked up an interesting ten-point fact and data sheet on his Windoms, which is available by writing to Garant Enterprises, 227 County Blvd., Thunder Bay, ON, Canada P7A 7M8.

Antenna Systems Products. Chris F. Bednarek, K2RAG, offers a broad line of HF wire antennas and accessories. Included, in addition to 1:1 and 4:1 balun transformers and a special stress-relieving center insulator, are single-band dipoles covering 160 through 10 meters; 20, 15, and 10 meter single band end-fed "specials"; an SWL antenna; and an all-band "linear resonating sloper" (LRS).

The \$99.95 LRS is a rather unusual antenna which claims all-band frequency coverage from 1 to 30 MHz, including all HF amateur bands. The antenna is 60 feet in length, and because of its sloper design it should be easy to mount in almost any location. The LRS is fed with 50 ohm coax. According to Chris, the antenna should have an SWR of less than 2.5 to 1 at any point in the 1-30 MHz range. Fig. 1 depicts the LRS.

Incidentally, K2RAG's antennas feature stress-reducing baluns that are specially designed to keep the coaxial feedline from breaking at the point of connection to the antenna. The "antenna feedline protector," as it's called, has a support that removes the strain from the feedline connection to eliminate a major long-term feedline problem.

For additional information contact Chris F. Bednarek, K2RAG, at Antenna Systems, Inc., 14465 S. W. Hazelhill Drive, Tigard, OR 97224.

El-Cheapo Thrust Bearing. A neat little trick comes to us from Herman "Bud" Lipps, K8YNU, regarding a modification to his antenna rotor, which turns a three-band, two-element Quad, and which is mounted at the bottom of the tower.

Lacking in his installation was a thrust bearing. He perceived the need for steel roller bearings to roll on an aluminum die-cast race. His answer was to use two roller-skate wheels mounted with the axle through the mast just above the rotor. A piece of scrap aluminum plate, lying on the horizontal gussets of the tower, makes a good plane for the wheels to run on, as can be seen in the accompanying photo.

Bud says he completed the thrust-bearing modification in an hour and a half, including the time needed to raise the mast and antenna. The load is off the rotor now, and he feels that the project was worthwhile in that he now goes through 360 degrees in a good nine seconds less than before.

Software Topix

Proud Amiga Owner! Last Christmas we treated ourselves to an Amiga 500 computer, which joins our Commodore 128 and Cordata PC compatible in the hamshack. The Amiga, of course, is considered by many to be the most advanced home computer one can buy, at least if price is any consideration at all. With its 512K of memory (expandable to 1 MB), dazzling graphics, 4,096 available colors, super sound capability, and much more, the computer has lots of muscle to handle not only games but many "personal productivity" chores as well.

Costing not much more than a Commodore 128 system and about the same as an IBM-PC compatible, the Amiga could become the "volkscomputer" of the early 1990s, and it seems to have a great deal of potential for hamshack use. To date, though, I know of little interest so far in using the Amiga in the hamshack. Hopefully, some Amiga aficionados will prove me wrong!

However, I did notice at least one disk of amateur-oriented public-domain and shareware software offered by Kinetic Designs, their Amateur Radio Disk #AMY-605. According to their catalog, the disk includes Morse tutors, a CW IDer, an MUF program, contest loggers, a packet terminal, an OSCAR locator, several utilities, and more. The disk is available for \$4.00 plus \$2.00 shipping from Kinetic Designs, P.O. Box 1646, Orange Park, FL 32067-1646. Associated with Kinetic Designs is the Casa Mi Amiga BBS at 904-391-6222; it's been open since 1985 and is currently open 24 hours a day, 7 days a week.

Also, in last August's column we took note of at least one on-the-air Amiga net reportedly being in operation. It's appropriately named The Amiga Net, and it meets each Tuesday evening at 2300Z on 3882 kHz. Net control is NG2G. Its purpose is to exchange ideas and views about the Commodore Amiga.

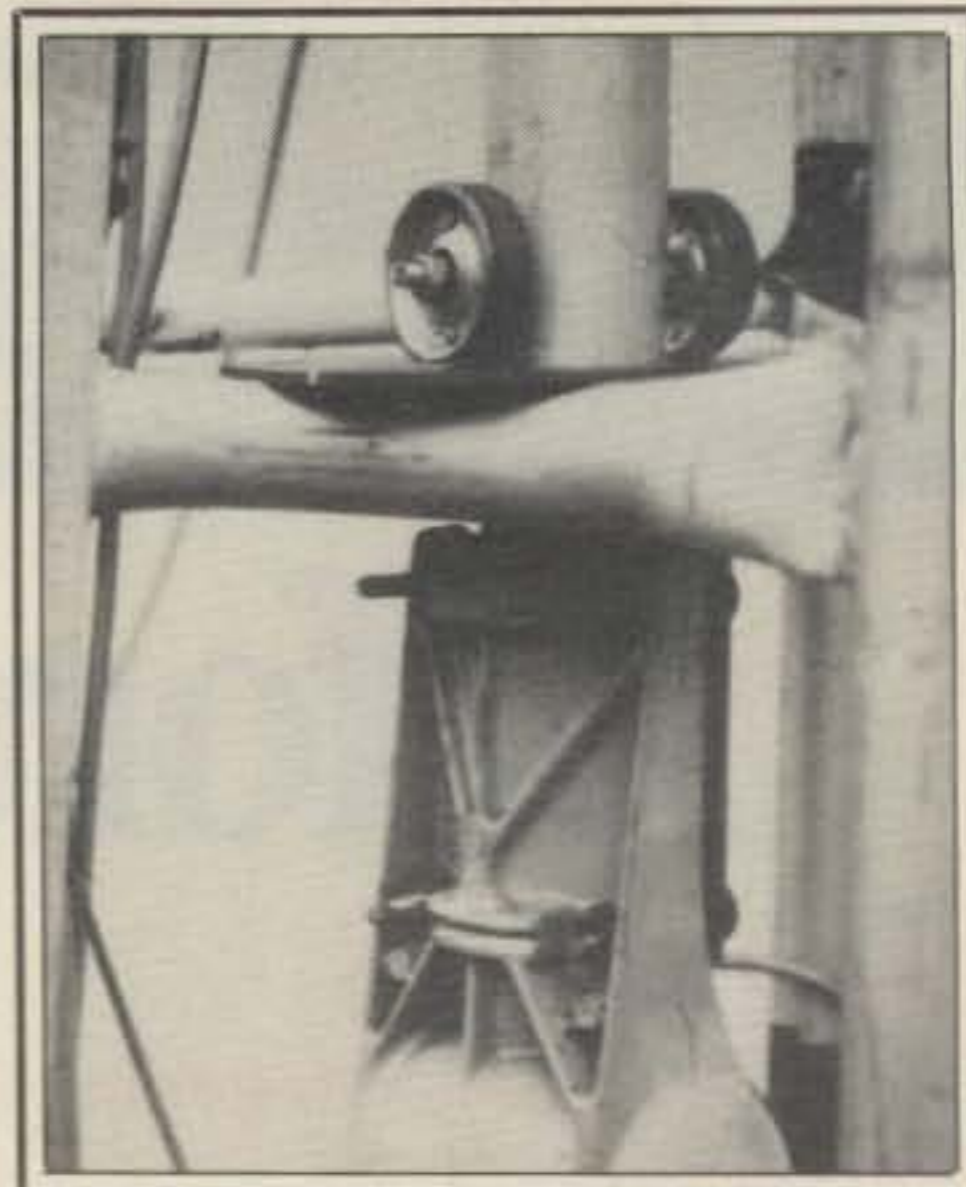
LICE. In last November's column we described several educational engineering programs for the IBM-PC from BSOFT Engineering. The trio of programs we covered were CompView, CompDes, and CompMath, low-cost technical software tools that can be used by most anyone. Now Bob Blackburn at BSOFT has advised us that he's recently added a fourth program to his lineup. It's known as LICE—Logic Circuit Emulator—also for the IBM-PC and compatibles.

The new program is a logic circuit emulation program that is menu driven and easy to use, offering simulation of logic levels from small to large circuits. The main functions are selectable from a menu, and they include a "logic default editor." There also is an integrated TTL family component dictionary listing, and the program accepts optional logic circuit entry via keyboard or diskfile.

According to Bob, LICE requires 256K of RAM, a Color Graphic Adapter (CGA) or equivalent display adapter, and PC- or MS-DOS 2.0 or higher. The software is non-copy protected and includes a tutorial-style logic design manual. LICE is available for \$49 from BSOFT Software, 444 Colton Rd., Columbus, OH 43207.

PC-FullBak. We've preached a little bit from time to time on the importance of backing up one's PC hard disk (HD) in order to prevent loss of programs and data stored on the HD when that awful day comes sooner or later when "something serious has gone wrong with my PC." PCs themselves sometimes fail, and more frequently, HDs give up the ghost. From what I've heard, five to six years is about the average "life" of a HD, so having a general HD failure is not a question of *if*, but rather one of *when*.

Unfortunately, most PC users seem to back up their work erratically, if at all, really courting disaster. This isn't too surprising, since backing up HDs using the awkward DOS backup program is onerous at best, requiring one to do so through arcane command-line arguments. Probably a lot more users would get into the habit of backing up their precious programs and data more frequently if the process were easier and if they had a friendlier "user inter-



Herman Lipps, K8YNU, submitted this suggestion on a new use for an old set of roller skates: make them into a cheap-and-dirty thrust bearing. Details are in this month's column. (Photo courtesy K8YNU)

face" on the backup software.

Westlake Data's new product, Point-and-Shoot PC-FullBak™, turns out to be one of the fastest and easiest to use HD backup utilities on the market; it's about four times faster than DOS. With its attractive Lotus-like menus, PC-FullBak backs up and restores data even from unlike media. DOS, for example, won't let you back up from your HD and then restore, say, to a Bernoulli box.

Some of the utility's main features include the "point-and-shoot" user interface, designed for even beginner use, which lets you choose from three *different* user interface setups, depending on your level of computer savvy. The Westlake product provides easy selection of files to back up or restore; script files which let you set up an automatic, customized backup procedure; and support for practically any IBM-PC or compatible, including the new PS/2 family of computers.

Another nice feature is that it will back up hidden files (such as DOS), but will not overwrite them on restoration without asking permission. Still another is its compare function, which verifies the integrity of backup files for added peace of mind.

Point-and-Shoot PC-FullBak requires a minimum of 384K free memory. It is priced at \$129.95 and carries a money-back guarantee of satisfaction. For more information, contact Westlake Data Corp., P.O. Box 1711, Austin, TX 78767.

Two from HRO. According to Jim Rafferty, N6RJ, of Ham Radio Outlet, the amateur equipment distributor has begun marketing two IBM-PC compatible utilities for radio amateurs.

One of these is the N6RJ Electronic Second Op, a computerized version of the DX-oriented N6RJ Second Op. The new product includes a wealth of DX information that is instantly available from your computer.

Some of the most important of the more than one-dozen features offered by the program include high-speed location of DXCC/

WAZ/country/continent data; bearing and distance information; on-screen DXCC and WAZ summary displays; oblast location; sunrise/sunset calculations; a full ITU callsign allocations listing; instant conversion of prefixes to DXCC countries; and complete help screens for all functions. A comprehensive 52-page users manual is included in the \$59.95 package, which is available in either 5.25 inch or 3.5 inch disk format.

A second product HRO offers for the IBM-PC and compatibles is TS-COMM, a communications and control system for Kenwood radios. It provides full control of frequency, mode, and memory channels, and many front-panel controls are supported.

Examples of some of the many functions supported by TS-COMM include full real-time display of all radio functions; VFO/memory channel/RIT tuning; transmitter on/off; slope up/down; VFO selection; repeater offset selection; memory scan functions; saving to and/or restoring memory channel data from disk file; and a real-time clock.

TS-COMM is priced at \$69.95 and includes a 44-page users manual. It supports the Kenwood TS-940, TS-811A, TS-711A, TS-440A, and R-5000. For more information and interfacing requirements, contact Ham Radio Outlet, 2620 W. LaPalma, Anaheim, CA 92801.

RCSS-7000. The Remote Computer Scanning System (RCSS) is a hardware and software package designed to enhance the ICOM R-7000 series receivers. It basically allows you to control from your Macintosh computer most of the functions that are managed by the microprocessor contained within the receiver, allowing you to expand your control options over standardized receiver functions.

Some of the RCSS-7000 features include scanning of preprogrammed frequencies; scanning of frequencies from any bank of preprogrammed frequencies; searching a preprogrammed frequency range; manual frequency input; and automatic loading of frequencies from disk. Planned enhancements include use with several other ICOM products (R-71A, 735, and 761), and off-site control of a receiver through a modem.

RCSS-7000 is usable with Macintosh 128K, 512K, MacPlus, SE, and Mac II computers. The hardware interface and software are available for around \$190. Contact Systems and Software International, Ltd., 4639 Timber Ridge Drive, Dumfries, VA 22026.

EPO Software. This Vancouver, Washington firm specializes in inexpensive amateur radio, electronic, business, and educational software for the Commodore 64, 128, Vic-20, and Plus/4; IBM-PC; Apple; and Texas Instruments TI-99/4A computers.

Some of the available amateur radio software products include an antenna design and dimensioning program; a QSO simulator; a Morse tutor; several basic electronics tutors; a number of logbooks and contesters; an RTTY reception program; and orbital calculators. Most of the EPO programs and disk collections are priced under \$20.

For a catalog contact EPO Software, 7805 Northeast 147th Ave., Vancouver, WA 98682.

Short Bursts

Interference Pamphlet. The Federal Communications Commission (FCC) and the Electronics Industries Association (EIA) have combined to publish a handy and useful RFI pamphlet, "Consumers Should Know About Interference."

The new booklet is intended to help consumers in identifying and resolving common problems with interference to home electronics products, including video cassette recorders, television sets, cordless telephones, and electronic musical instruments. Copies are available from the Executive Director for Consumer Affairs, Electronics Industries Association, 2001 Eye St., N. W., Washington, DC 20006.

GMT: Up for Grabs? Some things you might think are fixed and the same for all time really aren't, or so it seems. Now it appears that the famous Herstmonceux Castle in England, home of the Royal Greenwich Observatory, is up for sale. The Observatory, of course, has kept time for the world for more than a century. Reportedly, the asking price for the castle is

something under \$19 million, and the sale may have been consummated by the time you read this. I understand that everything goes except for the Observatory's telescopes and the brass strip marking the prime meridian.

Let's hope our own Naval Observatory or the WWV facilities don't eventually end up on the block as a deficit-reduction measure!

Wrapping It Up

That's all for this month, folks. Stay tuned next time for more Antennas & Accessories topics of current interest. See you then.

Overheard: It's far better to look ahead and prepare than to look back and despair.

73, Karl, W8FX

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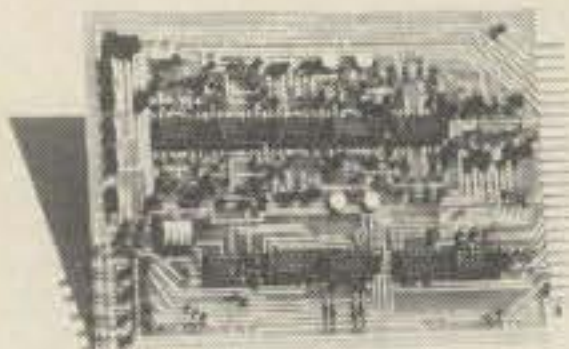
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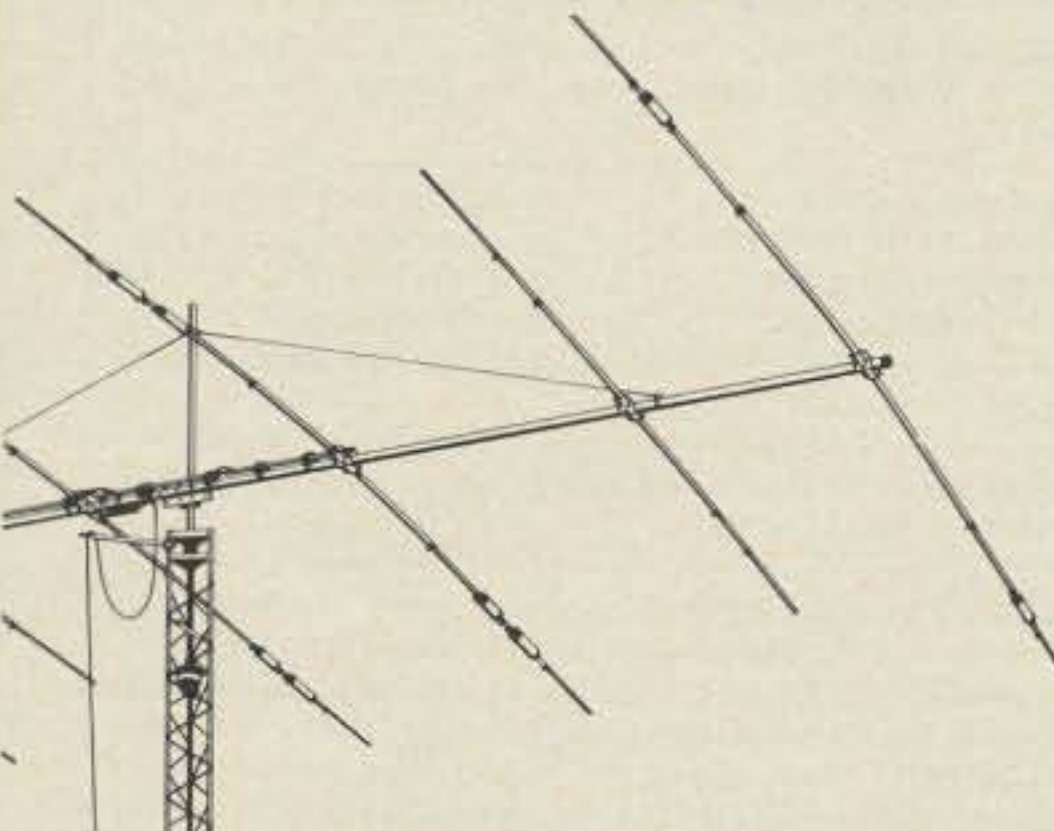


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- Includes custom molded insulators molded of top quality material with high dielectric qualities and excellent weatherability
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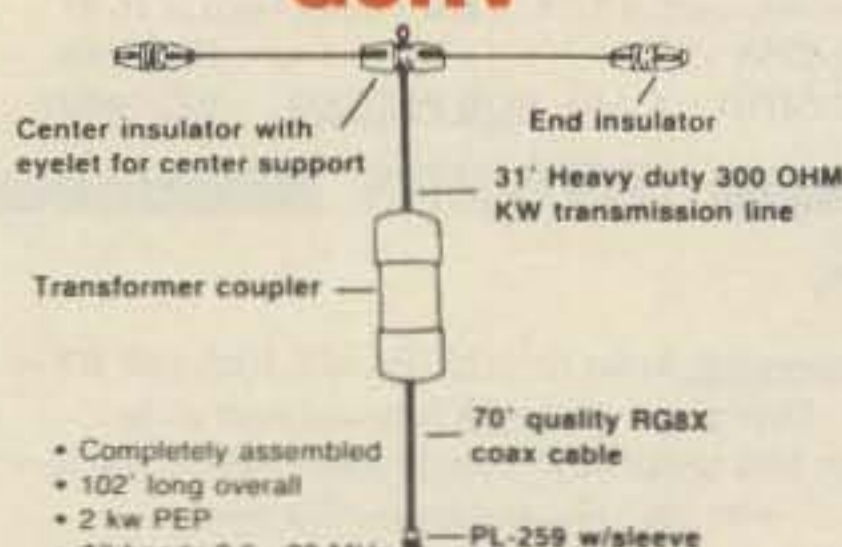
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DIPOLES

| MODEL | BANDS | LENGTH | PRICE |
|---|----------------|--------|-------------|
| Dipoles | | | |
| D-160 | 160 | 250' | \$36.95 |
| D-80 | 80/75 | 130' | 31.95 |
| D-40 | 40/15 | 66' | 28.95 |
| D-30 | 30 | 46' | 28.95 |
| D-20 | 20 | 33' | 27.95 |
| D-15 | 15 | 22' | 26.95 |
| D-10 | 10' | 16' | 25.95 |
| Shortened dipoles | | | |
| SD-80 | 80/75 | 90' | 35.95 |
| SD-40 | 40 | 45' | 33.95 |
| Parallel dipoles | | | |
| PD-8010 | 80,40,20,10/15 | 130' | 43.95 |
| PD-4010 | 40,20,10/15 | 66' | 37.95 |
| PD-8040 | 80,40/15 | 130' | 39.95 |
| PD-4020 | 40,20/15 | 66' | 33.95 |
| Dipole shorteners—only same as included in SD models | | | |
| S-80 | 80/75 | | \$13.95/pr. |
| S-40 | 40 | | 12.95/pr. |

All antennas are complete with a HI-Q BALUN (HI-Q Antenna Center insulator for Models including 160 meters), No. 14 7/22 stranded hard drawn copper antenna wire, insulators, 100' 450lb. test nylon antenna support rope, rated for full legal power

G5RV



- Completely assembled
- 102' long overall
- 2 kw PEP
- All bands 3.5 - 30 MHz
- Use as a marconi on 160 meters with a tuner
- May be installed as in a horizontal or inverted vee configuration

Only \$49.95

SLOPERS

| MODEL | BANDS | LENGTH | PRICE |
|---------|-------------|--------|---------|
| SLA-I | 160,80,40 | 60' | \$49.95 |
| SLA-II | 80,40 | 40' | 44.95 |
| SLA-III | 80,40,20,10 | 27' | 69.95 |

DIPOLES

| MODEL | BANDS | LENGTH | PRICE |
|-------------------------------------|--------------------|--------|---------|
| Half-sized dipoles | | | |
| HSD-160 | 160 | 130' | \$49.95 |
| HSD-80 | 80 | 68' | 46.95 |
| HSD-40 | 40 | 34' | 44.95 |
| Loaded dipoles - using coils | | | |
| LD-I | 80,40 | 80' | \$59.95 |
| LD-II | 160,80,40 | 122' | 79.95 |
| LD-III | 80,40,20,10 | 53' | 89.95 |
| LD-IV | 160,80 | 164' | 69.95 |
| LD-V | 160,40 | 115' | 64.95 |
| LD-VI | 80,40 | 78' | 59.95 |
| Trap dipoles | | | |
| TD-2010-2 | 20,15,10 | 28' | \$49.95 |
| TD-2010-4 | 20,15,10 | 25' | 64.95 |
| TD-4010-2 | 40,20,15,10 | 57' | 54.95 |
| TD-4010-4 | 40,20,15,10 | 48' | 74.95 |
| TD-8010-2 | 80,40,20,15,10 | 106' | 59.95 |
| TD-8010-4 | 80,40,20,15,10 | 99' | 79.95 |
| TD-8010-6 | 80,40,20,15,10 | 84' | 99.95 |
| TD-16080-2 | 160,80 | 210' | 71.95 |
| TD-16010-8 | 160,80,40,20,15,10 | 148' | 129.95 |

Suffix number in brackets indicates number of traps

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TV-2010-1 20,15,10 15' \$39.95

TV-4010-1 40,20,15,10 29' 44.95

TV-8010-3 80,40,20,15,10 44' 67.95

TV-16010-4 160,80,40,20,15,10 75' 79.95

Suffix number indicates number of traps

Dipole shorteners—only same as included in HSD models

SDC-160 160 \$19.95/pr.

SDC-80 80/75 18.95/pr.

SDC-40 40 17.95/pr.

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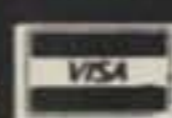
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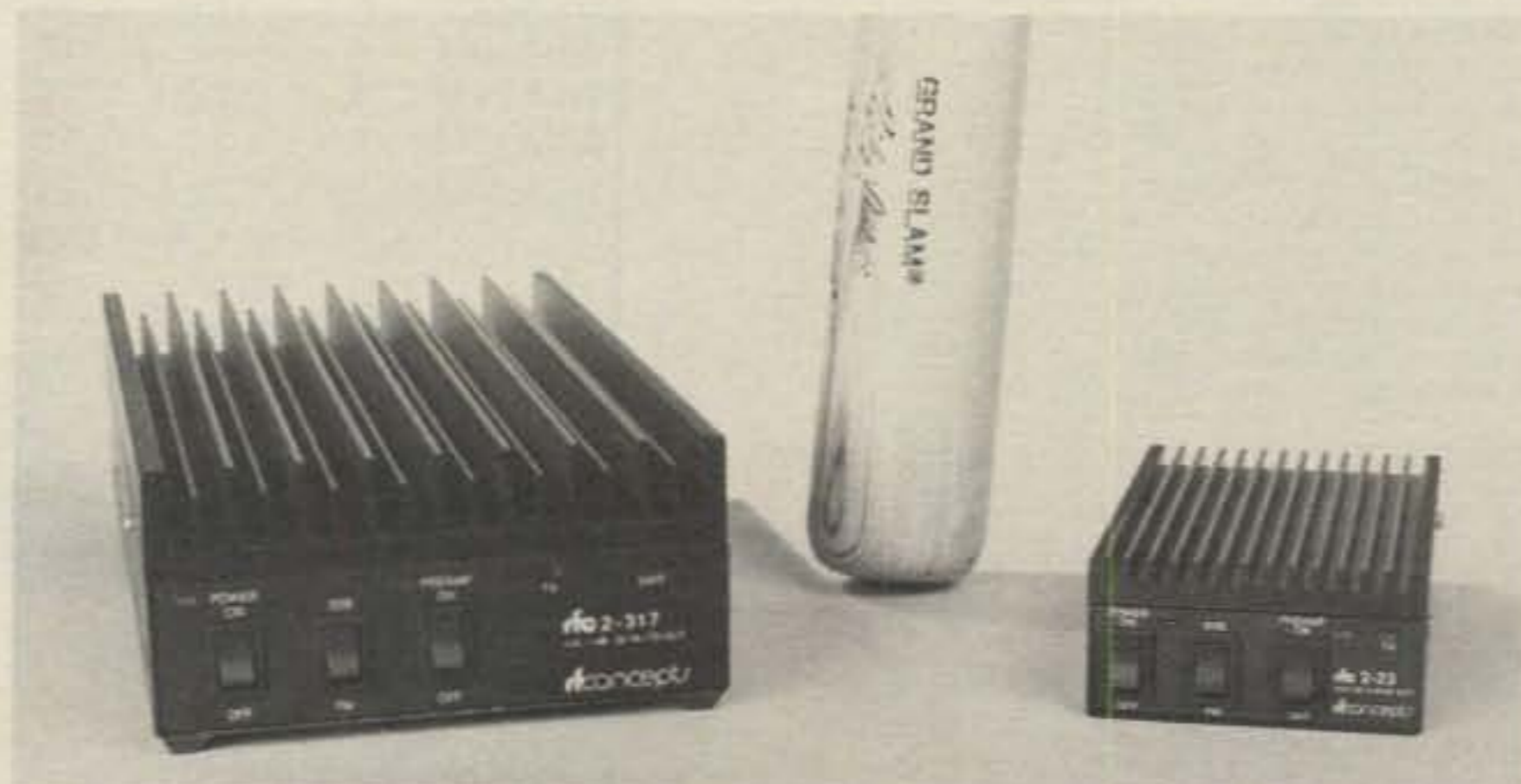
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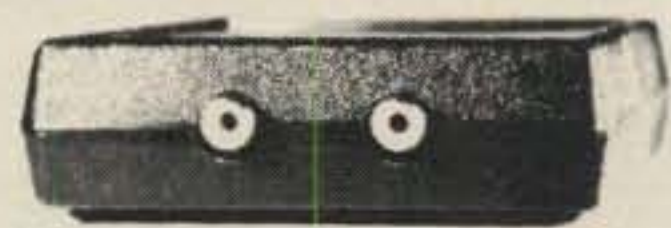
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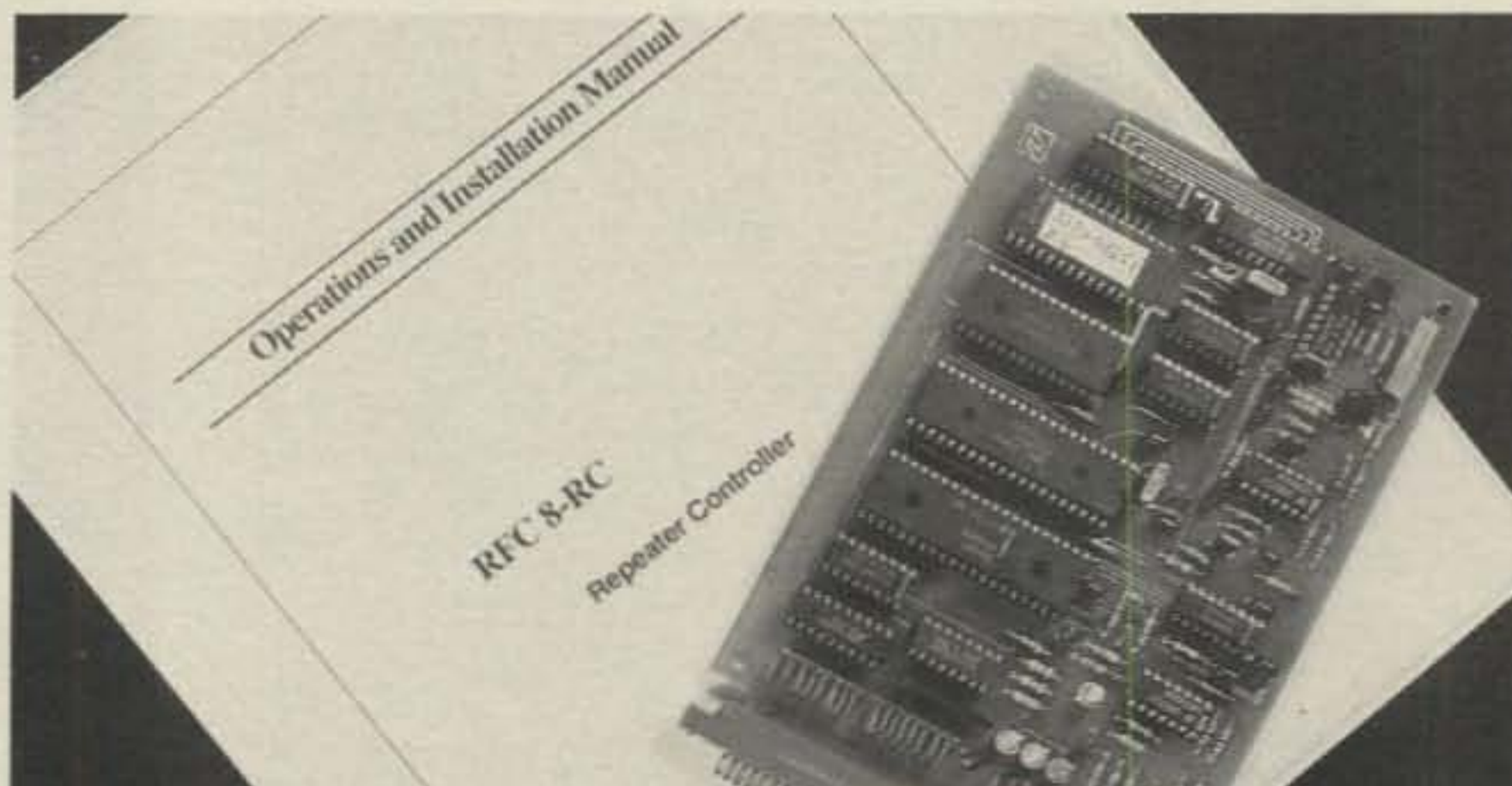
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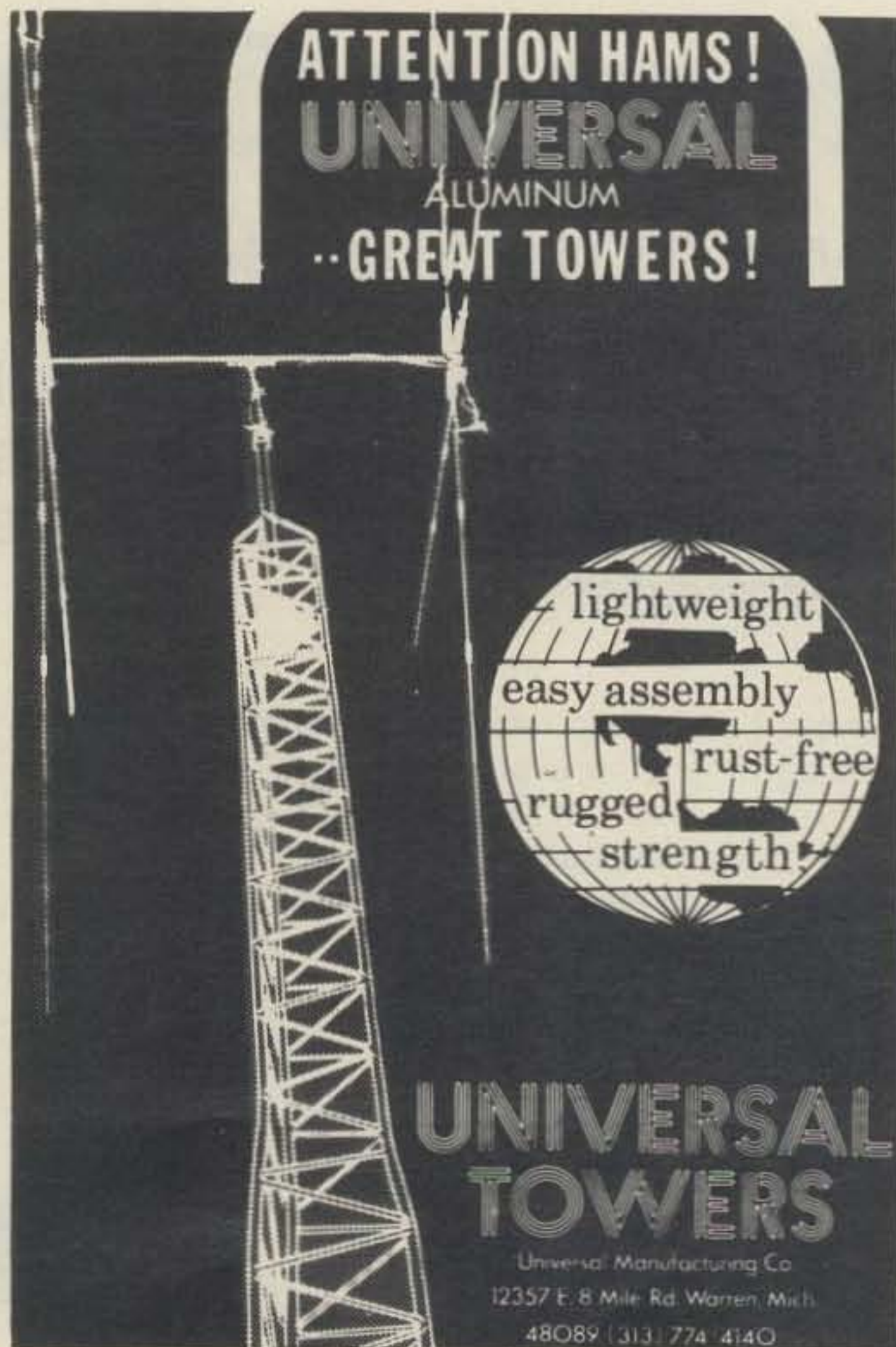
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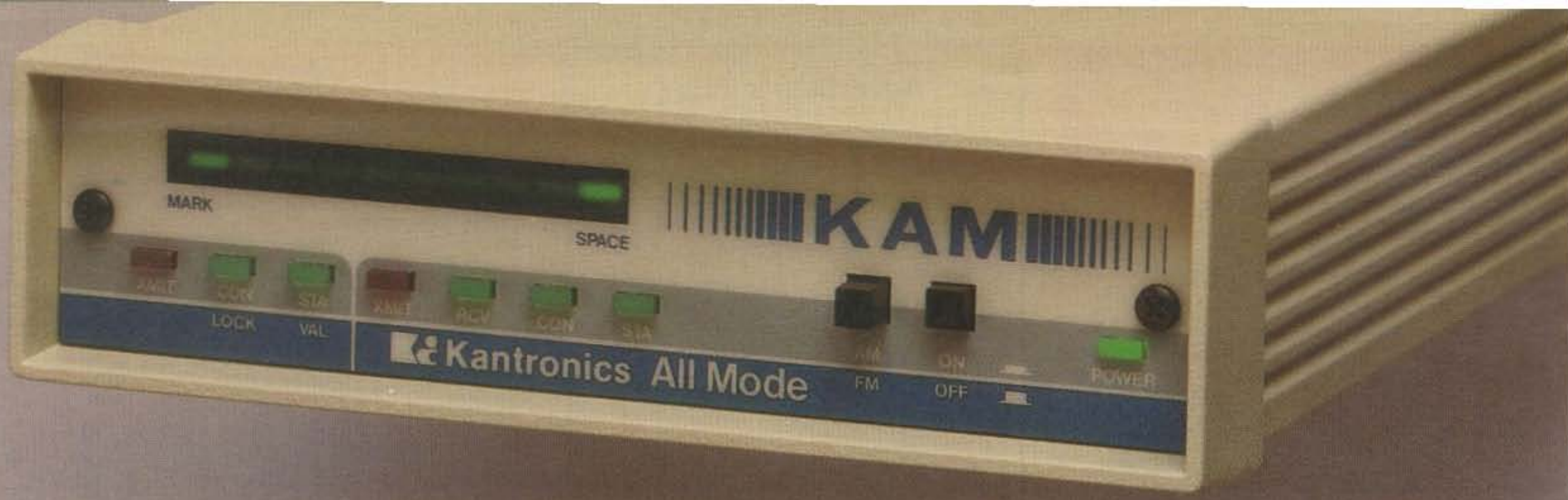
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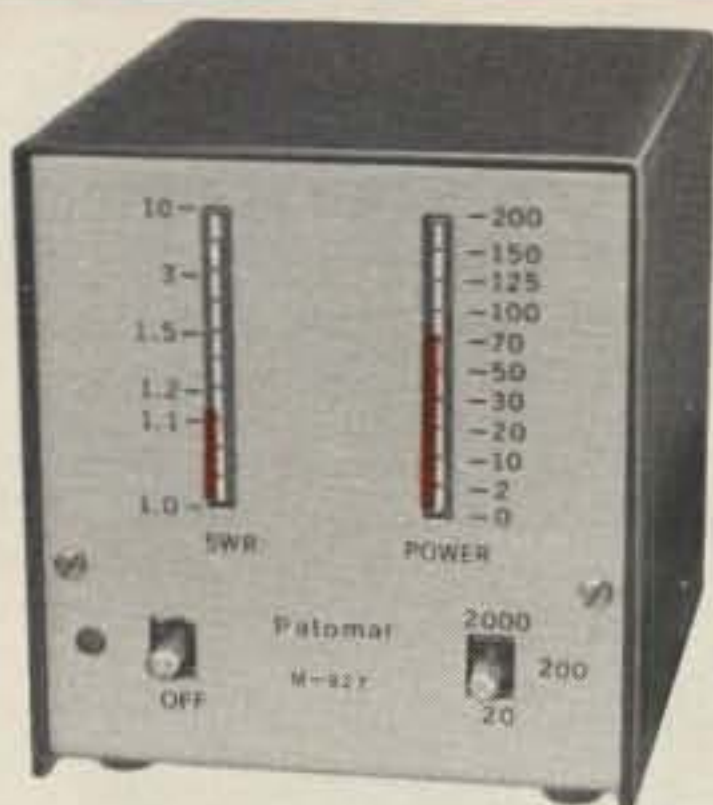


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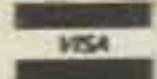
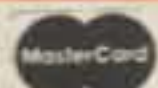
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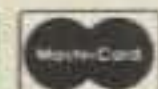
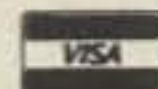
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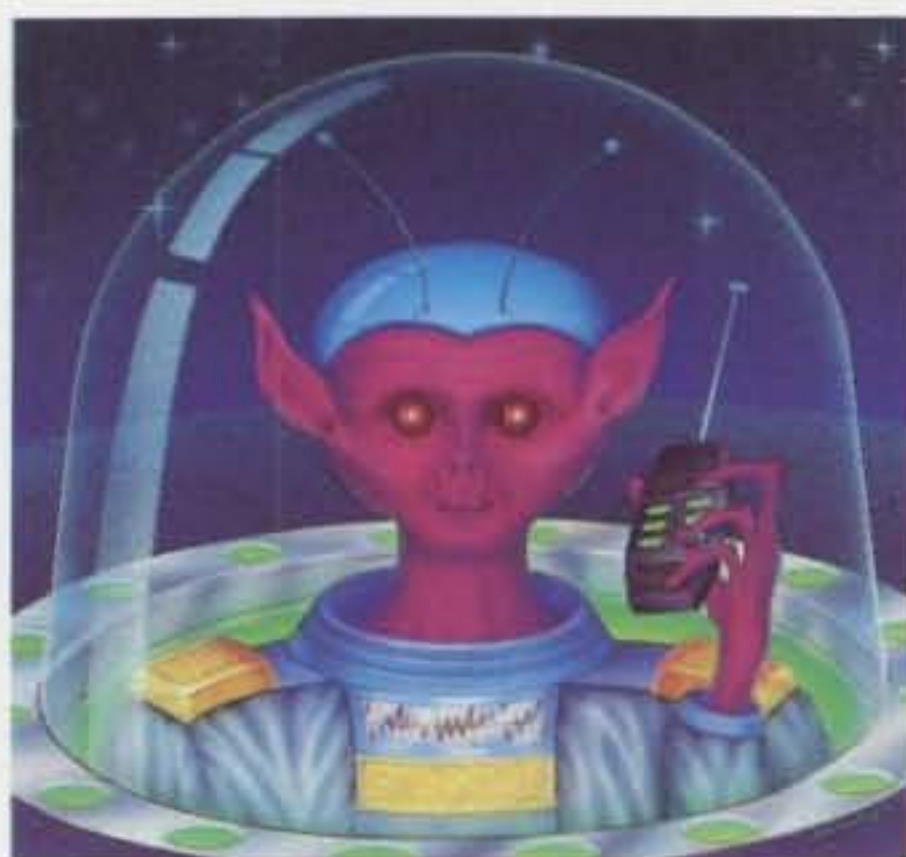
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