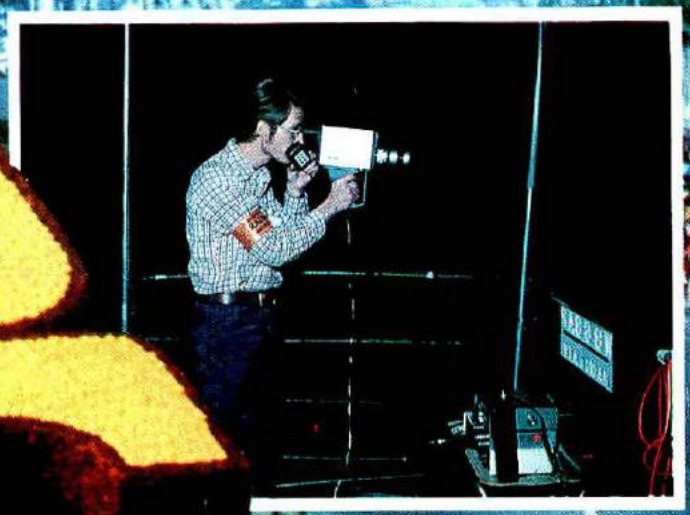
JANUARY 1980 / $1.25

HAM RADIO HORIZONS

HAM TV
Rose Parade to Your Hamshack



KENWOOD TS-820/820S OWNER'S REPORT

WOMAN TO WOMAN: AMATEUR RADIO CAN BE FUN

EASY TO BUILD PROJECT: VERSATILE RF BOX

EXCITING ADVENTURE AMATEUR RADIO ON A BLIZZARD SWEPT MOUNTAIN

The following are excerpts from unsolicited letters and registration cards received from owners of the new TEN-TEC OMNI transceiver.

"I sold a Yaesu to buy this and am very impressed" —WB5ULA

"My first QSO with OMNI-A was LA1SV on CW and second was EA8SK on SSB." —N2CC

"Excellent rig, just as advertised." —WB5TMD

"Very pleased with performance. QSK feature very slick." —WB0ELM

"This is my 5th TEN-TEC transceiver in less than 2 years. I loved them all and still have 3." —WB0VCA

"Through the years I have had complete Drake and Collins stations. I tried a 544 Digital and liked it the best so decided to purchase the 546 OMNI-D Digital." —WA4NFM

"Your OMNI is the best rig I have had in 20 years of haming." —K4IHI

"As a owner of Collins rig, your OMNI-D is the best." —K9JJL

"I already have an OMNI-A, 544 and a TRITON IV. You may ask why I own so many TEN-TEC rigs. In case there is a great RF famine, I want to be ready!" —WD4HCS

"You guys really know how to turn on an old timer!" —K8ELS

"Best operating & most conveniences of any transceiver I've ever used." —W6LZI

"I like CW. Compared OMNI against IC701 (rcvr) and OMNI won hands down. XYL WD6GSB really enjoys rig on SSB. Finds rig is very stable and digital readout accurate." —AC6B

"Have checked it out on both modes from "top band" (160) all the way to 29 MHz. Terrific!!!!" —W4DN

"Works well, parts layout and design much better for any possible servicing than other ham gear. The Japanese hybrid sets can't compare to TEN-TEC for audio. Audio reports excellent without special speech processors, etc., to distort the signal." —AG8K

"I have been using the S-Line over 15 yrs and never thought anything could outperform it. I got the biggest surprise and THRILLED with this OMNI-D even though I have been a ham since 1936." —KV4GD

"This must be the greatest. I've spent enough money on final tubes to almost pay for this." —KA4BIH

"This transceiver was recommended to me by old time hams (Xtras) whom I have known for 40 yrs. Has excellent break-in." —N6AVQ

"Best package job I've ever seen! First licensed 6AAV in 1926. Now in operation—a sweetheart!" —W7LUP

"From a 32V2/SX115 to an OMNI is a big step!" —K6YD

"Receiver prominent—transmitter likewise—working comfortable—pleasing design." —OE1FAA

"First new rig for me in 10 years but seems to be very good." —W5GBY

"The best transceiver I ever used or owned." —W3TS

"I wouldn't swap my OMNI for anything on the market, regardless of price." —WD0HTE

OMNI/SERIES B FEATURES

All solid-state; **160-10 meters; Broadband design; Standard 8-Pole 2.4 kHz Crystal Ladder I-F Filter + Optional 1.8 kHz SSB Filter & 0.5 kHz 8-Pole CW Filter; 3-Bandwidth Active Audio Filter; Choice** of readout — OMNI-A (analog dial), OMNI-D (digital); **Built-in VOX and PTT, Selectable Break-in, Dual-Range Receiver Offset Tuning, Wide Overload Capabilities, Phone Patch Interface Jacks; Adjustable ALC; Adjustable Sidetone; Exceptional Sensitivity; 200 Watts INPUT; 100% Duty Cycle, Front Panel Microphone and Key Jacks; Zero-Beat Switch; "S"/SWR Meter; Dual Speakers; Plug-In Circuit Boards; Complete Shielding; Easier-to-use size:** 5¾"h x 14¼"w x 14"d; **Full Options:** Model 645 Keyer $85; Model 243 Remote VFO $139; Model 252MO matching AC power supply $139; Model 248 Noise Blanker $49; Model 217 500 Hz 8-Pole Crystal Ladder CW Filter $55; Model 218 1.8 kHz 8-Pole Crystal Ladder SSB Filter $55.

Model 545 Series B OMNI-A . . . $949
Model 546 Series B OMNI-D . . . $1119

To add your name to the fast-growing list of OMNI owners, see your TEN-TEC dealer, or write for full details.

TEN-TEC, INC.
SEVIERVILLE, TENNESSEE 37862
EXPORT: 5715 LINCOLN AVE., CHICAGO, IL 60646

OMNI OWNERS SAY:

Swan's Success Story:

100MX Power House

The Field-Proven Rig the Whole World's Talking About.

235 Watt PEP and CW on **ALL** Bands

Price? You won't believe it! Just ask your dealer.

All solid state quality American construction, with epoxy glass boards to withstand the rugged mobile environment.

Look to Swan for Quality Accessories . . . and Service

SWAN ELECTRONICS
A member of the Cubic Corporation family of companies

305 Airport Road
Oceanside, CA 92054
714-757-7525

THIS MONTHS HORIZONS

Hams And The Rose Parade

One of the TV spectaculars of the year is the annual Tournament of Roses Parade from Pasadena, California. Many of us have watched this New Year's Day event without realizing that fellow hams were there, providing communications wherever needed. 1979 saw an added touch: Amateur Radio television. K6PGX's description of how it was done, and who did it, helps us tell the story of Amateur TV in this first issue of the New Year.

Television From Your Hamshack

There's been a lot of publicity for slow-scan TV (SSTV) during the last few years, and its worldwide capabilities make it attractive. However, the original, fast-scan, high-quality television signals are still being used every day by hundreds of enthusiasts across the country. The mode is called ATV, for Amateur Television, and WB2IBE gives you a look at what a couple of groups are doing, starting on page 16.

Survival Hike

It was supposed to be a fun-filled hike up a snow-covered mountain, with a stay in a warm cabin. Operating a low-powered rig from the peak was high on the list of activities. A blizzard and an accident changed the program, with the result that a new Amateur's first contact was under less-than-ideal circumstances. A bit of enjoyable fiction from the pen of K1BE.

Kenwood TS-820/820S Users' Report

The answers have been sorted, tabulated, evaluated, and shuffled, all of which provides a lot of food for thought and information for anyone who wants to buy, sell, trade, or otherwise get involved with a rig. The users weren't shy — some of the persistent troubles were picked on, many good qualities were praised, and some suggestions for improvements, accessories, and features were included.

Anglo-American Connection

The Lakes recount the experiences of their exchange visit to the U.S., and tell of some interesting impressions gained. You've often heard that "we should see ourselves as others see us." Well, here's a chance to catch a glimpse of just such an image, and it's not all that bad.

Woman To Woman, On Amateur Radio

There's an old saying of uncertain origin that goes something like: "He drew a circle and shut me out; I drew a larger one and brought him in." Far too often, wives see Amateur Radio as a hobby that shuts them out. It need not be so; it's truly a hobby that works for either sex. Read what WD5HAM has to say about sharing, then start drawing some circles.

Wide-Range RF Tester

It's a plain box, containing some common circuits, but once you've built and used one, you'll wonder why you waited so long. Check microamperes, millivolts, watts, transmission-line current, circuit resonance, and more with this handy gadget. See page 42.

Hong Kong DXpedition

Contest operation is contagious, and so is DXing. When a couple of eager hams succumb to both maladies, the only remedy is to become immersed in pile-ups while operating from a rare location on the other side of the world. It's very doubtful that the treatment cured the affliction, but WB6JPZ and W6MJE enjoyed nine days of DX, visiting, sightseeing, and more DX. What's more, they brought home some photographs and a story to share with you. Careful . . . the DX bug can be transmitted through the printed page!

The Cover

Everyone loves a parade, and a group of public-spirited hams helped to keep a big one running smoothly, even while they watched it. The occasion was the 1979 Tournament of Roses Parade in Pasadena, California, and the hams used ATV as well as hand-held FM units to keep parade officials informed. They'll do it again this year, so stay tuned in. (*Photos by K6PGX.*)

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Subscription inquiries and changes of address should be directed to *Ham Radio Horizons*, Greenville, New Hampshire 03048. Please include address label from most recent issue if possible.

NEW MFJ-410 "Professor Morse" lets you . . .

COPY CW FASTER AND UPGRADE QUICKER

NEW MFJ Random Code Generator/Keyer sends unlimited random code in random groups for practice. Never repeats same sequence. Tailor level to your ability. Vary speed 5 to 50 WPM. Vary spacing between characters. Speed Meter. Full Feature Keyer.

Sends unlimited random code.
Never repeats same sequence.
Tailor level to your ability.
Vary speed 5-50 WPM.

$149.95

Copy code faster and upgrade quicker. Now you can tailor the level of code practice to your exact needs. Practice copying code anywhere and anytime you have a spare moment. Practice at home, in bed, driving to work, during lunch, etc.

The new MFJ-410 "Professor Morse" is a computer-like random code generator and keyer that sends an unlimited supply of precision Morse Code in random groups.

It never repeats the same sequence so you can't memorize it like code tapes.

Vary speed 5-50 WPM and read on speed meter.

Vary spacing between characters and character groups (for example, copy 5 WPM with 13 WPM characters) to give proper character sound at low speed.

Select alphabetic only or alphanumeric plus punctuation (period, comma, question, slash, double dash.)

Tone control. Room filling volume. Built-in speaker. **Ideal for classroom teaching.** Earphone jack (2.5 mm) for private listening.

Uses 110 VAC, or 9-18 VDC, or 4-C cells (for portable use). Optional cable for car cigarette lighter ($3.00). 6x2x6 inches.

Built-in full feature keyer. Volume, speed, internal tone and weight controls. **Weight control** adjusts dot-dash space ratio; makes your signal distinctive to penetrate QRM. Speed meter works for keyer, too. Tune switch keys transmitter for tuning. Reliable solid-state keying: grid block, cathode, solid state rigs. **OPTIONAL BENCHER IAMBIC PADDLE.** Dot and dash paddles have fully adjustable tension and spacing. Heavy base with non-slip rubber feet eliminates "walking". $39.95.

Order from MFJ and try it — no obligation. If not delighted, return it within 30 days for refund (less shipping). One year unconditional guarantee.

Order today. Call toll free 800-647-1800. Charge VISA, MC or mail check, money order for $149.95 plus $3.00 shipping for MFJ-410 and/or $39.95 plus $3.00 shipping for Bencher paddle.

CALL TOLL FREE . . . 800-647-1800

Call 601-323-5869 for technical information, order/repair status. Also call 601-323-5869 outside continental USA and in Mississippi.

MFJ ENTERPRISES, INC.
BOX 494, MISSISSIPPI STATE, MS 39762

NEW MFJ-624 Deluxe Hybrid Phone Patch

Feature Packed: VU meter for line level and null. Has receiver gain, transmitter gain, null controls, bypass switch. Beautiful hum-free audio. RF filtered. VOX or push-to-talk. Works with any rig. Simple patch-in-patch-out installation.

Crisp, clear hum-free audio
is what phone patching is all about and MFJ has it.

$59.95

This new MFJ-624 Telepatch II hybrid phone patch gives you a combination of performance, features, and quality that you won't find in other phone patches.

PERFORMANCE: Gives you crisp clear, hum-free audio which is what phone patching is all about. Use automatic VOX or push-to-talk. RF pi-filters and PC board construction eliminates RF feedback. Works with any rig.

FEATURES: VU meter monitors telephone line level to prevent crosstalk between telephone channels. Also lets you adjust null depth for maximum isolation between receiver and transmitter.

Separate transmitter and receiver gain controls eliminate readjusting rig's controls after patching.

Null control for maximum isolation.

Function switch: OFF for normal operation. **ON** connects your rig to phone line for patching. **NULL** switches VU meter to let you adjust for maximum null.

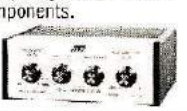
Simple 2 cable installation (plus phone line) when rig has patch-in-patch-out jacks. Connects easily to **any** rig.

Phono jacks for patch-in-patch-out, speaker, microphone. Screw terminals for phone lines.

Eggshell white, walnut sides. 8x2x6 inches.

QUALITY: Every single unit is tested for performance and inspected for quality. Solid American construction, quality components.

MFJ-620 TELEPATCH HYBRID PHONE PATCH. Same as MFJ-624 but less VU meter. 6x2x6 inches. $49.95 plus $3.00 shipping and handling.



One year unconditional guarantee.

Order from MFJ and try it — no obligation. If not delighted, return it within 30 days for refund (less shipping).

Order today. Call toll free 800-647-1800. Charge VISA, MC or mail check, money order for $59.95 plus $3.00 shipping for MFJ-624 and $49.95 plus $3.00 shipping for MFJ-620.

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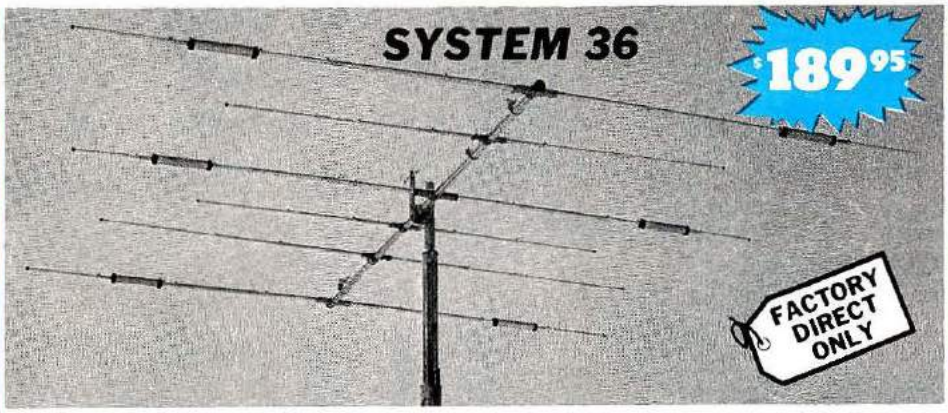
For technical information, order/repair status, in Miss., outside continental USA, call 601-323-5869.

MFJ ENTERPRISES, INC.
BOX 494, MISSISSIPPI STATE, MS 39762

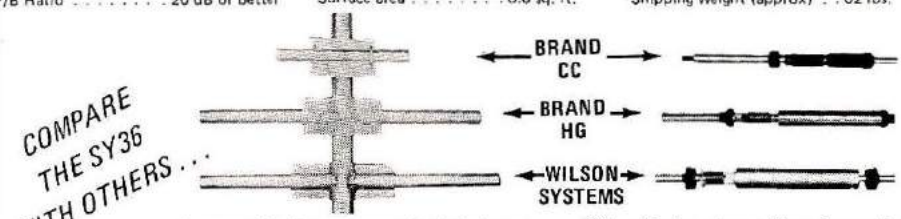
WILSON SYSTEMS INC. MULTI-BAND ANTENNAS



A trap loaded antenna that performs like a monobander! That's the characteristic of this six element three band beam. Through the use of wide spacing and interlacing of elements, the following is possible: three active elements on 20, three active elements on 15 and four active elements on 10 meters. No need to run separate coax feed lines for each band, as the bandswitching is automatically made via the High-Q Wilson traps. Designed to handle the maximum legal power, the traps are capped at each end to provide a weather-proof seal against rain and dust. The special High-Q traps are the strongest available in the industry today.

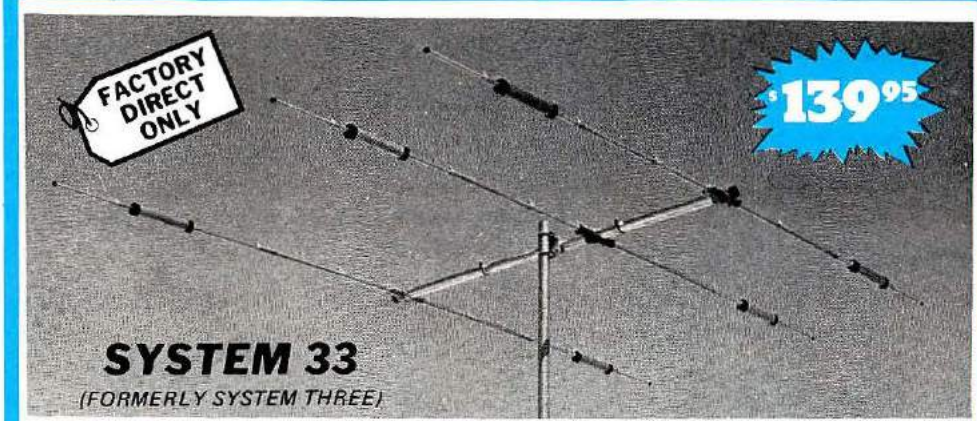
SPECIFICATIONS

Band MHz 14-21-28	Boom (O.D. x Length) . . 2" x 24' 2½"	Wind Loading @ 80 mph . . . 215 lbs.
Maximum power input . Legal Limit	No. of Elements. 6	Maximum wind survival . . . 100 mph
Gain (dBd) . . . . . Up to 9 dB	Longest Element . . . . . 28' 2½"	Feed method . . . . . Coaxial Balun (supplied)
VSWR @ resonance . . . 1.3:1	Turning Radius . . . . . 18'6"	
Impedance . . . . . 50 ohm	Maximum mast diameter . 2"	Assembled weight (approx) . 53 lbs.
F/B Ratio . . . . . 20 dB or better	Surface area . . . . . 8.6 sq. ft.	Shipping weight (approx) . . 62 lbs.



Compare the size and strength of the boom to element clamps. See who offers the largest and heaviest duty. Which would you prefer?

Wilson Systems traps offer a larger diameter trap coil and a larger outside housing, giving excellent Q and power capabilities.



Capable of handling the Legal Limit, the "SYSTEM 33" is the finest compact tri-bander available to the amateur. Designed and produced by one of the world's largest antenna manufacturers, the traditional quality of workmanship and materials excells with the "SYSTEM 33". New boom-to-element mount consists of two 1/8" thick formed aluminum plates that will provide more clamping and holding strength to prevent element misalignment. Superior clamping power is obtained with the use of a rugged 1/4" thick aluminum plate for boom to mast mounting. The use of large diameter High-Q traps in the "SYSTEM 33" makes it a high performing tri-bander and at a very economical price. A complete step-by-step illustrated instruction manual guides you to easy assembly and the lightweight antenna makes installation of the "SYSTEM 33" quick and simple.

SPECIFICATIONS

Band MHz 14-21-28	Boom (O.D. x length) . . 2" x 14'4"	Wind loading at 80 mph . . . . 114 lbs.
Maximum power input . Legal Limit	No. of elements 3	Assembled weight (approx) . . 37 lbs.
Gain (dbd) . . . . . Up to 8 dB	Longest element . . . . . 27'4"	Shipping weight (approx) . . . 42 lbs.
VSWR at resonance . . . 1.3:1	Turning radius . . . . . 15'9"	Direct 52 ohm feed — no balun required
Impedance . . . . . 50 ohms	Maximum mast diameter . 2" O.D.	Maximum wind survival . . . . 100 mph
F/B Ratio . . . . . 20 dB or better	Surface area . . . . . 5.7 sq. ft.	

WSI WILSON SYSTEMS, INC.

4286 S. Polaris Ave . Las Vegas, Nevada 89103

Prices and specifications subject to change without notice

ORDER FACTORY DIRECT 1-800-634-6898

$44.95

WV-1A

4 BAND TRAP VERTICAL (10 - 40 METERS)

No bandswitching necessary with this vertical. An excellent low cost DX antenna with an electrical quarter wavelength on each band and low angle radiation. Advanced design provides low SWR and exceptionally flat response across the full width of each band.

Featured is the Wilson large diameter High-Q traps which will maintain resonant points with varying temperatures and humidity.

Easily assembled, the WV-1A is supplied with a hot dipped galvanized base mount bracket to attach to vent pipe or to a mast driven in the ground.

Note:
Radials are required for peak operation.
(See GR-1 below)

SPECIFICATIONS

- 19' total height
- Self supporting — no guys required
- Weight — 14 lbs.
- Input impedance: 50 Ω
- Powerhandling capability: Legal Limit
- Two High-Q traps with large diameter coils
- Low angle radiation
- Omnidirectional performance
- Taper swaged aluminum tubing
- Automatic bandswitching
- Mast bracket furnished
- SWR: 1.1:1 or less on all bands

GR-1

$9.95

The GR-1 is the complete ground radial kit for the WV-1A. It consists of: 150' of 7/14 stranded copper wire and heavy duty egg insulators, instructions. The GR-1 will increase the efficiency of the GR-1 by providing the correct counterpoise.

More details? Ad Check page 78.

January, 1980
Volume 4, Number 1

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HAM RADIO HORIZONS

CONTENTS

How would you like a high-quality *solid-state* wideband linear amplifier for your station at a price comparable to a tube amplifier? Sound great? Well don't plan on it for the immediate future because the FCC has said they won't approve such amplifiers for Radio Amateurs!

The CBers can buy so-called "amateur" solid-state linears from clandestine sources all over the United States, but most perform so poorly and splatter so badly they wouldn't be tolerated for a minute on the Amateur bands. Several of the large manufacturers are interested in building good quality solid-state linears for Radio Amateurs, and at least one has a unit almost ready for the marketplace, but developmental work ceased recently when the FCC's Office of Chief Scientist terminated, *without explanation*, type acceptance of solid-state broadband amplifiers for the Amateur Service. Are we to be denied the use of modern solid-state technology because of the autocratic decision of an obscure bureaucrat in a supposedly *democratic* government? In my opinion, this decision is in direct violation of paragraph 97.1(c) of the FCC's own regulations which state that one of the fundamental purposes is to encourage and improve ". . . the Amateur Radio service through *rules* which provide for advancing skills in the . . . technical phases of the art."

This is just the latest in a series of apparently arbitrary and capricious actions by FCC staffers and seems to reinforce the notion that FCC bureaucrats are neither interested in the needs of Radio Amateurs, nor in promulgating rules and regulations which are beneficial to the Amateur Radio Service. Indeed, many recent FCC decisions are contrary to the needs and desires of the Amateur Radio community — the 10-meter linear amplifier ban; an unpopular and ridiculous callsign system that has made us the laughingstock of overseas hams; equipment type acceptance; the ASCII band; and recommending that the United States delegates to the World Administrative Radio Conference (WARC) propose that CW be an "option" for obtaining an Amateur Radio license, a highly unpopular proposal that was soundly defeated by delegates from other nations.

Until the last couple of years there was a close, almost symbiotic relationship between Radio Amateurs and the FCC; many on the FCC technical staff were hams, as were most of the Field Engineers. Though the Commission has always been much more conservative than some technically progressive hams would have liked, when viewed over the long term, they traditionally acted in the best interests of Amateur Radio. Unfortunately, that all changed with the CB boom of the mid 1970s — undermanned and short on budget, the FCC concentrated their efforts on Citizens Band problems while Amateur Radio was given short shrift. As a direct result, regulations which should have been the subject of long and careful deliberation were often acted upon too hastily, with little or no thought of the long-term consequences to Amateur Radio. Amateurs, long accustomed to dealing with a generally sympathetic FCC, had grown apathetic and were unable to respond quickly to their new adversary.

Being unprepared to operate from an adversary position is no longer an excuse. If every Amateur in the United States — or even one-third of them — brought pressure to bear on the Commission through their congressman, you can bet there would be some changes in attitude. You may not get an immediate response because bureaucratic wheels already in motion have a great deal of inertia, but we deserve a rational answer to the question, "Why are Radio Amateurs denied the use of commercial high-frequency wideband solid-state linear amplifiers?" If we act together, through our respective congressmen, we can get an immediate answer; I can think of no technical reason why such equipment should not be commercially available.

Jim Fisk, W1HR
editor-in-chief

FM 25W

143.800 — 148.200 MHz Mobile Transceiver

Power to the mobile operators! This one is brand new, and it carries a powerhouse punch wherever you're going. ICOM unveils a full 25 watts of mobile power with the introduction of the new **IC-255A.** When you want increased mobile QSO range, ICOM delivers; and **nobody does it better.**

The microprocessor controlled **IC-255A** is a deceivingly compact unit which packs more big, multifeature flexibility than any other ICOM mobile to date. This one offers a 5 channel memory, complete with memory scan, adjustable scanning speed, and auto-stop. The 5 channels can easily be written from any inband frequencies; and the scan function can be programmed to scan all 5 or only 2, stopping on any signal.

Like the other new ICOM transceivers, the IC-255A comes with 2 VFO's built-in at no extra cost. The radio is programmed to come up to power operating at 600Khz splits, but it can be reprogrammed to any split of your choice. The dual VFO's and single tuning knob provide you with smooth, easy tuning in 15KHz or 5KHz steps.

The use of new low-noise, dynamic range junction FET's (for the RF amplifier and the first mixer) and helical cavity filters (for the antenna and RF circuits) provides excellent sensitivity and intermodulation distortion characteristics. A pair of high quality monolithic crystal filters and ceramic filters facilitates interference free reception reliability.

The new **IC-255A's** power is selectable 25W high or 1W low, yet it draws only 5.5 amps when transmitting in the high power mode. A directly amplified VCO output, without the use of multipliers or mixers, and a power module in the PA unit produce a very clean transmitted signal, with low spurious radiation. When you're in an RF trap, the **IC-255A** can get out the signal. To give your mobile FM operations big features with a power punch, give yourself the **IC-255A.**

HF/VHF/UHF AMATEUR AND MARINE COMMUNICATION EQUIPMENT

ICOM

ICOM AMERICA, INCORPORATED

Sales Service Centers located at:

2112 116th Avenue NE
Bellevue, WA 98004
Phone (206) 454-8155

3331 Towerwood Dr., Suite 307
Dallas, TX 75234
Phone (214) 620-2780

ICOM INFORMATION SERVICE
2112 116th Ave., N.E.
Bellevue, WA 98004 Z

Please send me: ☐ IC-255A specifications sheet; ☐ full color ICOM Product Line Catalog; ☐ List of Authorized ICOM Dealers.

NAME _____ CALL _____

ADDRESS _____

CITY _____ STATE _____ ZIP _____

You may send a machine copy of this form

All stated specifications are subject to change without notice. All ICOM radios significantly exceed FCC regulations limiting spurious emissions.

FOCUS & COMMENT

Get your ball-point pens and some post cards ready, because I'm about to make an offer you can't refuse.

Starting in one of the next two or three months, *Ham Radio Horizons* will answer your questions! Yes, here's your chance to clear up some puzzle that has been bothering you. We've found an expert who avows he knows it all, and, what's more, is willing to tell all. Now, how can you beat that kind of offer, or refuse it?

Of course, like most offers of this type, there is a catch or two, but relatively painless ones: your question must be related to Amateur Radio in some direct manner, and it must be of general interest to a lot of Amateurs.

However, before I tell you how to get in on all this, let me spell out what this new offer will *not* do for you. It is *not* going to be a person-to-person (one-on-one, as the "in" crowd puts it) technical information service or engineering laboratory. Any question that is answered will be answered in the magazine only.

Now, I'm sure you realize that, in order to prevent this project from driving our oracle out of his cave (and the rest of us up our padded walls), there'll have to be some rules; I'll try to keep them simple and painless.

First, only questions received by mail will be answered. Telephone requests will be short-circuited to the nearest ground receptacle. You may put your questions on a post card or in a letter, and each will be acknowledged by a return post card so you know it arrived.

The questions will be analyzed, and the ones that, in our judgment, will be the most useful to the most Amateurs will be answered in our Q & A column.

How can you increase the chances of your question being among those chosen? Easy — keep it simple, write so our oracle can read it in his dimly-lit cave, and make it short. I will add — be realistic; if you ask for the tube-base connections on a 1908 Splitdorf Superwhistler, and your buddy across town wants to know how to tell the difference between NPN and PNP transistors — which do you think will see the printed page? Keep our primary purpose in mind: we'll do our best to answer your question if we feel that a lot of readers would benefit in the process.

Now, here's an angle that will sweeten the pot — both for you who have questions and you who just read the answers. We'll have a prize for the most popular question and answer in each issue, as determined by the number of cards or letters from our readers. We'll also have a grand prize for the most popular question of the year.

How soon will you see your question answered? Well, remember that it takes more time to put a magazine together than it does the Mimeographed club bulletin, what with editing, typesetting, proofreading, page-layout, printing, and so on. You're reading this in the January issue, so let's say you fired off a question right now, and it reached our mailbox before January 10. The question and answer *could* appear in the May issue, if chosen, but that would be tight scheduling. If the question requires some research before it can be clearly answered, the delay could push it into the June issue. What I'm saying is, when you send a question, don't get bent out of shape when it is not in the very next issue to arrive in your mailbox!

Oh, yes, one more thing — in case of duplicate questions, the one with the earliest date stamp (indicating when it was received here) will be used.

Just to fill in the gap between now and the time when your questions start to arrive, some of our staff members have submitted a list of questions that they feel should be asked. You'll see them, and the answers, in an early issue — perhaps as early as March or April.

So, get out your post cards and put our oracle to work, before his ball-point goose quill freezes up and he decides that it's time to go skiing! Just to be sure your questions get to the right department, address them to: Questions and Answers, c/o Ham Radio Horizons, Greenville, NH 03048.

Thomas McMullen, W1SL
Managing Editor

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NEWSLINE

POINT OF SALE CONTROL of Amateur Radio transmitting equipment was rejected again by the Commission at their agenda meeting October 3, when they considered petitions for rule making filed by the San Antonio Repeater Organization (SARO) and two individual Amateurs. One of the petitioners proposed that the Commission require equipment sellers to record details of each owner's license for later FCC inspection, while another wanted equipment registered as well. The SARO petition wanted the FCC to license dealers as well as requiring proof of license.

In Its Rejection of the three petitions, the Commission notes that it has neither staff nor funds to enforce a record-keeping requirement, and licensing dealers would also be expensive.

Any Amateur License Modification will now require filing of a Form 610 or 610B, the FCC has decided. Previously, a change in mailing address (only) simply required a note to Gettysburg, though a station location change did require a Form 610 or 610B. For most Amateurs, mailing address and station location are the same. However, most Amateurs who have moved have not been submitting 610s, thus requiring a response from Gettysburg before their request for modification could be processed.

Modified Licenses now will be extended for a full 5-year term effective on the modification date. These changes became effective November 12.

ENCOURAGING WARC NEWS for VHF/UHF buffs came from Geneva in mid-November. Efforts to make a 50-MHz Amateur band a possibility in Region 1 were disclosed (only very limited 6-meter operation is now permitted there, in only a few countries). A Working Group Amateur-satellite-band recommendation at 3400-3410 MHz (Regions 2 and 3 only) and at the high end of 10 GHz seemed likely; the fate of the 1240-1280 slot was still undecided. The present 24-GHz band was sustained by the Working Group, and the outlook is good for Amateur interests in the millimeter wave area above 40 GHz.

10 Meters Is The Only Amateur band below 50 MHz that so far has been considered; Committee 6 agreed October 11 to maintain the 28-29.7 slot as is (Amateur-exclusive, worldwide).

REVISED LAUNCH PLANS HAVE BEEN ANNOUNCED for the AMSAT Phase III-A satellite. The launch now is scheduled for the middle of May, 1980, probably around May 20.

Some Solar Panels For The Phase III Satellite have been completed by AEG Telefunken, and additional solar panels from Solarex Corporation are expected.

OSCAR 7 Was Five Years Old on November 15. It is the first Amateur satellite to operate for five years continuously. OSCAR 6 came close, ceasing operation after 4½ years.

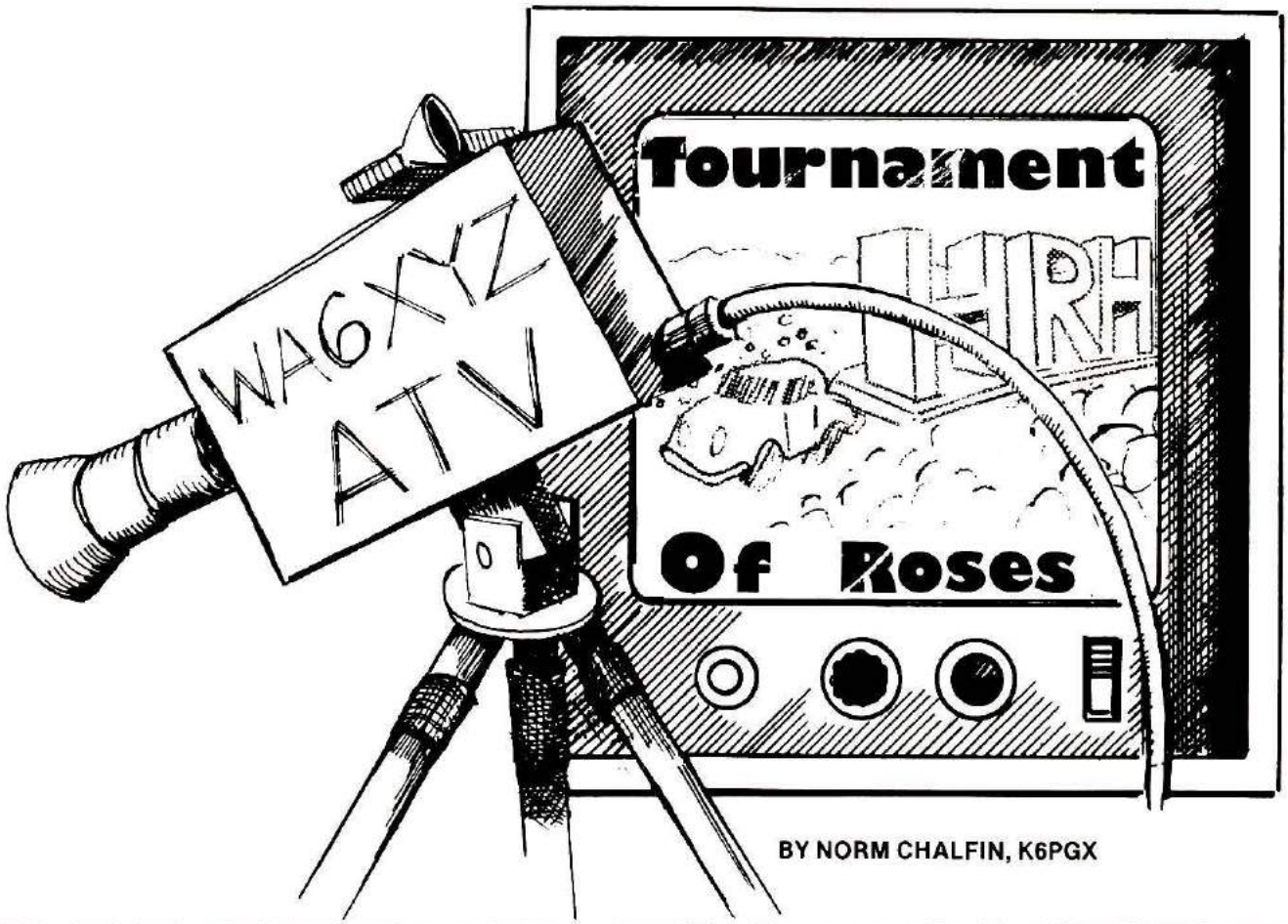
Launching Of The University Of Surrey/AMSAT UK-UOSAT has been approved by NASA. The launch now is scheduled for mid-1981. Plans call for the inclusion of a synthesized telemetry system and a slow-scan TV camera on board the British OSCAR. The TV system can receive the pictures directly on their equipment.

THE LARGE-SCALE EVACUATION in the wake of the midnight, November 10, Canadian Pacific wreck that released chlorine and burning propane gas in Mississauga, Ontario, brought invaluable communications assistance from area Amateurs. Almost 250,000 people were pulled out of the 60-square-mile-area southwest of Toronto early Sunday, and severe overloads of telephone exchanges by concerned relatives and friends made phones unreliable, despite restrictions to "emergency use only."

With Public Services Channels well-occupied with logistical problems and law enforcement, local Amateurs provided the only available link for health and welfare traffic. Two-meter stations, in each of the 11 emergency shelters hurriedly set up in schools, community centers, and shopping malls, were responsible for reuniting many separated families and reassuring others of the safety of relatives and friends. The recently formed COMSONT net on 40 meters (7195 kHz), and another net on 75 (3770 kHz) handled the longer-haul traffic for the refugees, many of whom were kept away from their homes until later in the week.

At Least 150 Toronto area Amateurs took part, with 2-meter repeaters VE3MHZ (Brampton) and VE3SKY (Weston) the principal traffic conduits. VE3DRW (Hamilton) and VE3RSB (Burlington) also were on alert as backups.

THE EARTHQUAKE THAT SHOOK the southern California Imperial Valley area on October 15, injuring nearly 100 and causing extensive property damage, saw widespread use of Amateur Radio to supplement regular communications channels. Emergency nets on 40 and 75 meters began handling health and welfare traffic in and out of the area before the dust had even settled, while the Mt. Laguna 147.75/.15 MHz repeater served as the principal relay for local traffic. It's fortunate that the quake, with a potentially disastrous Richter Scale rating of 6.6, occurred in a sparsely populated area.



BY NORM CHALFIN, K6PGX

AMATEUR TV COVERS THE ROSE PARADE

Nearly one hundred volunteer Amateur Radio operators from the Los Angeles area will take their places this New Year's Day along the line of march of the celebrated Annual Tournament of Roses Parade in Pasadena, California. As they have over the last six or seven years, these Amateurs will, as a public service, use their own mobile, hand-held, and otherwise portable gear to provide emergency and reporting communications for the parade and city officials involved in the planning, assembling, and scheduling of the five-mile-long annual celebration which precedes the Rose Bowl football classic. The Amateur Radio communications are supported by repeaters installed in tall structures in Pasadena and on nearby mountain tops. The San Gabriel Valley Amateur Radio Club, the Pasadena Amateur Radio Club, and the South Pasadena Amateur Radio Association, along with many individual members of clubs from the area in and around Los Angeles, design and install the complex communications network which aids the efficient operation of the parade.

In 1979, Amateur TV was used for the first time. The 1980 New Year's Day event will have ham TV again. The eyes and ears of ham radio are providing a valuable public service.

The volunteer Amateur Radio communicators have been of such value to the parade officials that, having once experienced their ability to keep things running smoothly, they invite the hams back each year.

Before the Amateur Radio entry into the Rose Parade communications activity, temporary telephones, installed on poles along the parade route, were used to report crowd incidents or float breakdowns. To get to a phone in any emergency situation, an aide had to plow through the crowd at the phone location, with all the attendant opposition and complaints to the point where the call sometimes wasn't made. This slowed down the parade; sometimes it even added to the emergency.

The portable, hand-held, mobile gear, and the repeaters pro-

Part of the preparation for the parade includes putting up antennas and checking out the system. Here Wayne Maynard, WB6BFN, is installing a 2-meter antenna atop a temporary tower to provide better reception of the hand-held units (*photo by K6PGX*).

vided by the Amateurs for the parade have just about completely solved the problem of reporting parade slowdowns, a float breakdown, or crowd incident to the parade officials or public-safety authorities.

Amateur Radio communications has eased the load on public safety officials by acting as the prime link between the parade route and the parade command center. For example, there are AAA tow trucks along the parade route at specified locations. Each truck location also has an Amateur Radio communicator who frequently can be reached more easily than the tow-truck operator.

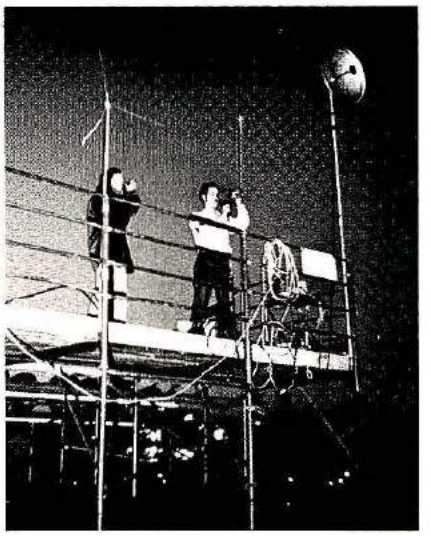
Locations

During the 1979 Tournament of Roses Parade, Amateur television antennas, transmitters, and cameras were set up at two locations at which the parade made right angle turns. Through the Amateur TV eyes, parade officials were able to observe the progress of the parade and note any problems that may have developed with floats. A particular concern which was monitored by the ham TV cameras was the problem of longer floats making the turn. During the 1979 parade, as we watched, one float had to make several passes at the turn to negotiate it. The TV cameras were able to view the parade routes from these corners to see both the oncoming floats and those which had passed.

At the corner of Orange Grove Avenue and Colorado Boulevard, the TV cameras were located at the top of the grandstand, with Ernie Williams' ATV station, WB6BAP. At the corner of Colorado Boulevard and Sierra Madre Boulevard, Ken Smith, WA6YJM, set up his TV-equipped van with Doug Brusche, KA6AGE, operating a color-TV camera from the roof. Both locations permitted viewing the parade over the heads of the parade watchers.

The two TV locations were linked together by a 1253-MHz link, a 420-MHz link for video, and a 144-MHz link for sound. The grandstand location picked up the Sierra Madre repeater transmissions on a 420-MHz groundplane antenna, and on a 1253-MHz parabolic dish. Transmissions to the command trailer were from the Orange Grove grandstand on a 420-MHz video link and a 144-MHz audio link. Orange Grove also rebroadcast the Sierra Madre signals to the command trailer. Mike Hasenfratz, WA6FXT, also operated a video tape recorder in the trailer. The resulting tape has since been used in the updated version of the ARRL movie, "Moving Up to Amateur Radio."

Ernie Williams, WB6BAP, checks out the camera for focus and coverage at the start of the parade. The dish antenna next to him is for a 1265-MHz link to an ATV repeater.



Author K6PGX snaps a photo of Ernie, WB6BAP, in action during their preparations for the big day. In addition to the 1265-MHz antenna, the temporary grandstand also holds antennas for fm communications on lower Amateur bands.

The Command Trailer was located near the Tournament of Roses headquarters, called "Tournament House." This is the elegently furnished home of the late William Wrigley, Jr., (the chewing-gun magnate). It was given to the city of Pasadena, and became the business office of the Tournament of Roses annual events, the Parade, and the Football Game in the Rose Bowl which follows the parade. The mansion is open to visitors at other times.

In the Command Trailer there were TV receivers for both the Amateur operators and the officials on which to view the images received from the two TV installations on the 420-MHz link. A command console designed and built by Wayne Maynard, WB6BFN, was set up to coordinate the various audio and video inputs received at the trailer, and give the Amateur operator on duty access to any of the repeaters in use or any of the simplex frequencies which were selected and used by the

various units in the field. Wayne was also the network control operator.

Repeaters were located on tall structures in the vicinity of Pasadena, or on some of the mountain tops nearby. There were two 144-MHz installations, and one on 220 MHz. The 2-meter repeaters were installed by the San Gabriel Valley Amateur Radio Club. They were designed by Earl Pittman, W6VHU. The 220-MHz repeater was installed by the South Pasadena Amateur Association.

For the 1980 parade on New Year's Day, a TV link has been planned for one of the mountaintop locations. This is expected to provide better coverage than was possible in 1979. The 1979 operations were so successful that tournament and city officials want the hams, with their TV, back again.

The TV systems worked so well, in fact, that there were reports of reception (in color) by other Amateurs at distances up to 15 airline miles from the parade site.

An interesting sidelight was the discovery of a battery-operated portable TV set in the parade-watching crowd near the TV van. It was picking up transmission from the van on TV channel 70 (a harmonic of the transmitting frequency). Since the van camera was a color camera, the images on the TV set were also in color!

That the TV transmissions were in color must be considered incidental, because they were the result of using a color camera on the TV van, feeding a four-hour color-TV recorder. The output of the recorder was fed to the Amateur transmitter modulator, and so the transmission included all of the color sync, burst, and phasing signals.

Before the parade, dawn's early light catches the Amateur communications van set up and ready. A two-meter yagi and a collinear array for 420-MHz adorn the mast, and a pair of ATV cameras are ready for their crowd- and float-watching duties. The 1978 Tournament of Roses Parade saw over 70 Amateurs, either on foot or mobile along the parade route, ready to advise parade headquarters of problems, and speed help on its way if needed. The 1979 parade had even more hams helping out, and they plan to do it again in 1980 (*photo by K6PGX*).

Care and feeding

Amateur Radio preparation for the Rose Parade goes on over a period of nearly a year prior to the event. Amateur coordinators work out the logistics of deploying Amateurs, and what equipment will be required at the command center and along the parade route. Individual assignments are made at an open house sponsored by the Rose Bowl Committee for the Amateur Radio participants.

During the parade period, the participants must be fed, since some of them work throughout the night before the parade. Some are assigned to the various float-construction locations, from which they report when the floats leave, or are advised to direct the floats to leave, so that the floats will assemble in the appropriate order and on time during the wee small hours of the morning.

Others are assigned to the parade-formation area to direct the various participating bands, equestrian groups, and floats into the line of march according to schedule.

These volunteer communicators must also be transported from the specially designated parking areas to their assigned locations along the five-mile line of march, the float-construction, or parade-assembly area. The transportation buses also require communicators aboard, and they, too, are ham volunteers. If you have ever tried to drive into or out of Pasadena during the Rose Parade period, you are aware of the general problem of getting from place to place. The problem of getting to a *specific location* on the parade route is monumental. The only lucky ones in this regard are those who are assigned to mobile locations, since they get parade-access passes. Even this has its limits, since they don't allow mobile rigs into the parade-assembly area. Without radio communications, a "stranded" volunteer may never get to where he was assigned. It is in these areas (commissary and transport) where the flow of people connected with parade activities need the ham volunteer communicator. And make no mistake about it, he or she is there!

I was transported to my TV-van location in an AAA tow vehicle, which was part of a caravan that had to travel almost the entire line of march. The AAA vehicles dropped out one by one as they reached their assigned positions.

Who did it

Some of the participants in the 1979 Amateur Radio volunteer Rose Parade communications operations were:

Coordinators: Bud Boulton, WA6AAD; Fred Edmunds, WB6OJK;

Net Controls (supervised by Bud): Dave Buhler, WA6ZGF; Ken Robbins, WA6PYJ; Al Miller, WA6GMN; Jack Swank, WB6NQD;

Roving monitors: Mike Hasenfratz, WA6FXT; Doc Norland, WB6MOQ (Mike and Doc also were involved in the TV activity);

Technical support and equipment design: Wayne Maynard, WB6BFN;

ATV: Ernie Williams, WB6BAP; Dan Dresselhaus, WB6NUT; Ken Smith, WA6YJM; Doug Brusche, KA6AGE; Mike Collis, WA6SVT; Bob Fee, WA6LGF;

Amateur transport bus communicators: Jim Albright, WB6ZAQ; Steve Tivy, WD6AND; Bob Vanderwall, WB6YJJ;

Tournament transportation communicators: Smith Russel, WB6IPY; Bob Zeiter, W6NAA; Orlo Brown, K6SVJ; John Germany, W6TQG.

WB6BAP runs the frequency-netting bench before the parade starts, as K6PGX (left) gets his 2-meter fm rig ready for its checkout (*photo by W6NAA*).

There were fifty-five Amateur Radio operators at various street corners and other spots along the parade route. Their duties included reporting delays in the parade, breakdowns of floats, and, as has happened, serious crowd incidents. They once called for police help to break up a fight. They called for ambulances when either marchers or watchers needed them. In the 1978 parade, a float broke down and had to be moved off the parade route. The Amateur communicators were heard calling for police assistance to control the crowd — who were taking "souvenirs" from the float!

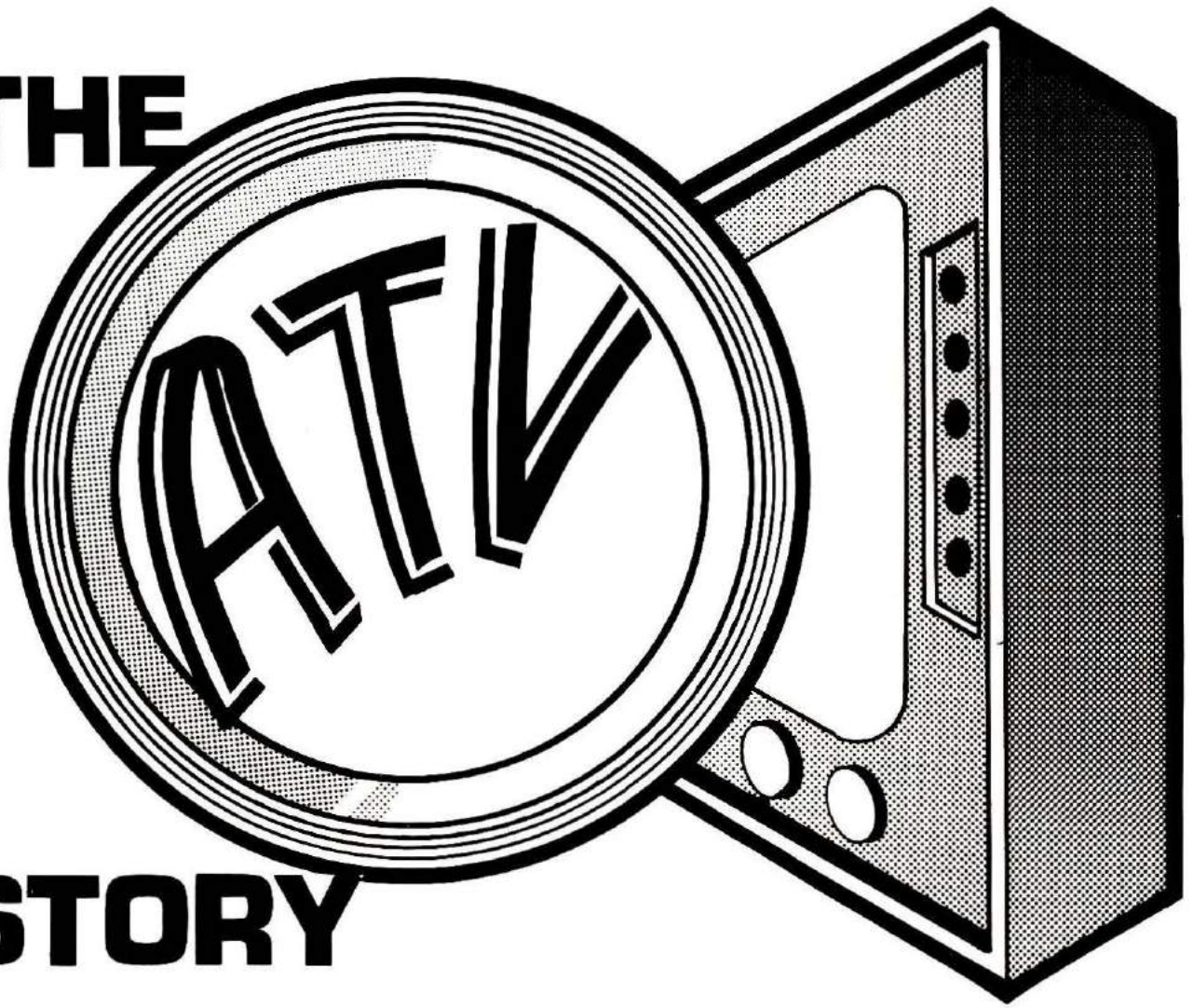
When you watch the Rose Parade on New Year's Day, you might think of the Amateur Radio participation. If it looks as though it went smoothly, remember, in a large measure, the hams helped!

In 1979, for the first time since the parade officials can remember, no float was late at its appointed parade-assembly location. There was one hitch, when one float had a problem on the way to the assembly area. But, thanks to ham radio, a mechanic was dispatched to the ailing float, a fix was made, and it was in place just moments before deadline!

Most of the people who participated in the 1979 parade will be there for the 1980 parade, along with some new hams. All of them love a parade; but that's only part of why they are there!

HRH

THE ATV STORY



BY JOHN EDWARDS, WB2IBE

Imagine this: As you're watching the increasingly grim fare on TV one evening, you rise from your chair in disgust and switch the set's channel selector to your local Amateur Radio repeater frequency. There, your buddy Jack is showing the schematic diagram of a new filter he just built. The repeater visually identifies, and the face of a newcomer flashes on the screen. As a get-acquainted demonstration, he runs a videocassette tour of his home and shack. He then tops it off by playing some tapes of his last antenna-raising party and an imaginative video montage of his DX QSL collection. As you flop back in your chair you quietly exclaim, "Wow, ham TV sure beats regular TV any night!"

Another description of "Ham Radio of the Future," or the system of a very select group of hams? No, not if you live near any metropolitan area — this kind of activity is going on all around you, and you probably don't even know it!

It's not that Amateur television buffs are a secretive lot, it's just that they have such a great time they rarely get around to telling other hams much about their obsession. After all, how are you going to keep them down on 2 meters after they've seen ATV?

All joking aside, ATV activity is picking up almost daily. What was once the realm of a few technically proficient hams is now coming within reach of many beginners. Today, it's possible to assemble a complete ATV station without touching a single piece of surplus gear, or homebrewing a single thing. What is even more remarkable is that the cost for

an entire station — including a transmitter, receiver, camera, and antenna system — can be considerably less than that of some synthesized two-meter rigs. If you're content to just watch, for under 50 dollars you can adapt a home TV set to pick up ATV, and do it with the same ease as hooking up a video game. But, we're getting ahead of ourselves.

What is ATV?

Well, it's not the slow-scan television you may have heard or read about. While SSTV is fun and has a large following on the high-frequency bands, you can hardly consider eight separate frames, or "pictures," a minute to be television in the conventional sense. ATV, however, is broadcast-quality TV with the same standards as any commercial station — even down to "living color," in many cases.

With all the advantages of normal motion, better resolution, simple receivers and the like, you may wonder why ATV isn't used on 20 meters. The answer is simple and devastating: Television is a frequency hog. So much so that it consumes a minimum of six megahertz! Needless to say, such a signal would cause incredible damage anywhere except on uhf. For this reason, the FCC has limited ATV signals to 420 MHz and above. But, this rule does have an advantage for many of us. Unlike SSTV, for which you need at least an Advanced-class license to work the highly popular 20-meter band, ATV requires only a Technician-class ticket to take part in this wonderful sub-hobby. The range of the signal may be limited, but at least you don't have to study so hard to get on the air.

First steps

The first step in setting up your ATV station requires no license at all; even a non-ham can get in on the fun of watching. A number of sources have information on converting the tuner of a TV set to Amateur frequencies, but unless you have a junk set you're willing to sacrifice you'll probably want to buy one of the relatively inexpensive ATV converters currently on the market.

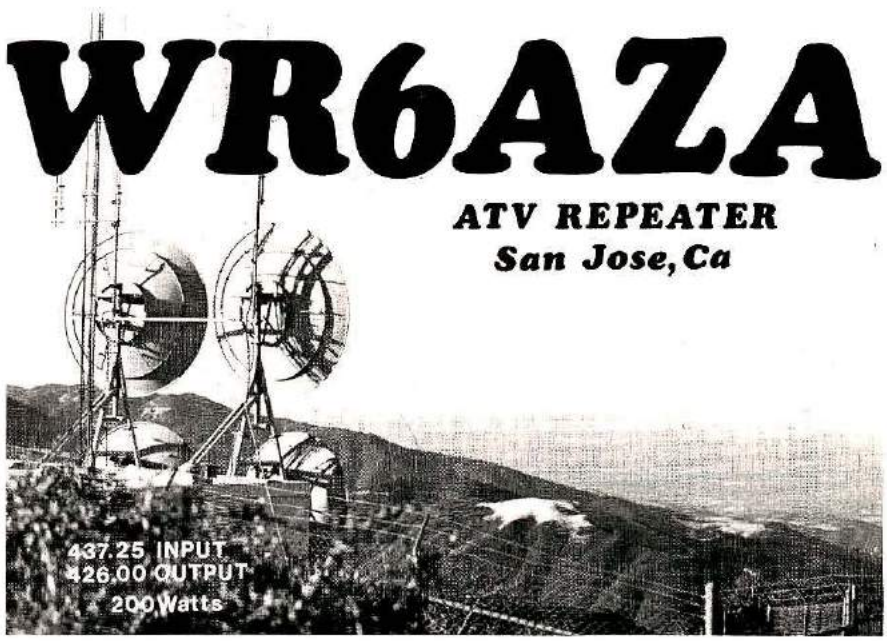
What these units do is to make use of a vacant spot (usually channel 3 or 4), and use that space to inject converted 420 to 450 MHz signals. You use a small tuning dial mounted on the front of the converter to check across the band. If you're old enough, you may remember the uhf converters that hooked up to old vhf-only TVs. Except for the frequency difference, those converters were the same type used by present-day hams for ATV.

Two of the more popular converters are the Science Workshop (P.O. Box 393, Bethpage, New York 11714) ATVC-10, which sells for $49.95, and the Xtronix (2206 Renfrew Court, San Jose, California 95131), which goes for $89.95.

Your next step, after hooking up the converter, is to install an ATV antenna system. You may be able to use a regular uhf-TV antenna if you live close to a group of active Amateurs or an ATV repeater, but nothing beats an antenna specifically tuned for ATV frequencies. In any event, you'll have to get a regular antenna once you start transmitting. The bright side is that at ATV frequencies even a multi-element beam isn't very large and can easily be stacked on your present antenna system, with few weight or wind-loading problems.

Once you're fully equipped for reception and have become acquainted with local activity, your next step will be to get transmitting capability. This involves obtaining two additional components for your station — a transmitter and a camera.

As with receiving converters, ATV transmitters have come a long way from the days of surplus and homebrew gear. Like virtually every other phase of Amateur Radio, the current trend is toward pre-built, factory-manufactured units. Typical of this type of transmitter is the Klitzing ATV Transmitter (Halted Specialties, 729B E. Evelyn, Sunnyvale, California 94086) which lists for $199, or the $159 Xtronix TVX-10. Both units are solid-state, 10-watt transmitters that use a plug-in crystal to determine the output frequency. The crystals can be changed so



This card from WR6AZA shows part of the magnificent view from their mountaintop repeater site near San Jose, California. The dishes are part of their control-link system.

Bill Melody, WA6YBD, takes a moment from antenna work to enjoy the view from the WR6AZA ATV repeater site.

that you can use the transmitter on a number of ATV frequencies. You can use any one of a number of conventional 420-MHz power amplifiers to boost power.

Before leaving the subject of transmitters and converters, let's take a look at a form of hybrid ATV unit — the transmitter/converter. As the name implies, this is an ATV transmitter and receiving converter built into one cabinet; a sort of transceiver, if you will. Actually, there's more to it than that. The transmitter/converter also acts as a central control point for the entire ATV station. Most contain an ac power supply, jacks for video and camera inputs, and most importantly, components for transmitting audio.

Adding sound

This is a facet of ATV that many beginners don't think about at first. Yet, it's quite obvious that television isn't very effective without sound (unless you're a silent-movie fan). However, most converted surplus gear, and even some ready-built ATV transmitters, has no sound capabilities.

In the past, various systems were designed to provide audio. Among the ideas used were separate phone transmissions on a higher frequency, 2-meter voice links (still used in some parts of the country), and various methods of adding an audio subcarrier. The system that seems to have won out across most of the nation is use of an fm subcarrier added to the video signal. This allows any standard TV set (with a converter, of course) to pick the sound right out of the i-f system and play it over the set's normal speaker. That sure beats fooling around with 2-meter rigs or separate 450-MHz transceivers.

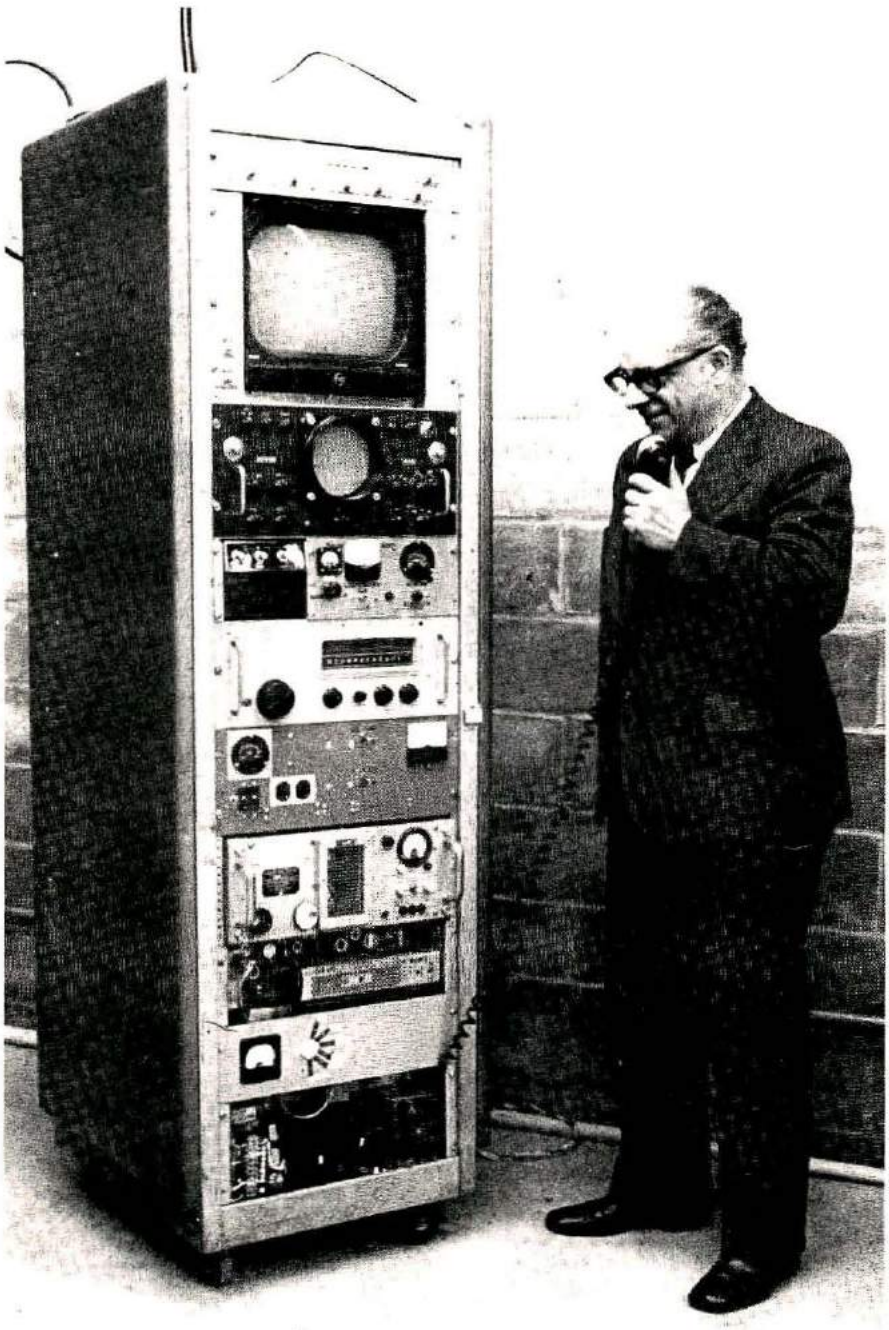
The last element of your ATV system will be the camera. Thanks to the recent boom in home video cassette recorders, low-cost, high-quality TV cameras are available just about everywhere. The price of a new camera should be somewhere in the $150-$200 range. If that's a little steep for you, you might try scouting around at the next local ham fleamarket. You can usually find a few sellers hawking used CCTV (closed circuit television) cameras for about $35 and up, depending on the condition. If you think you might be ready for color (not recommended for beginners), you might want to buy one of the new portable color cameras — like RCA's — for about $900.

So, you now have a complete ATV system. At this point your wife, children, neighbors, and fellow hams are all in the shack demanding to see your fancy TV equipment in action. How do you show them that all the

money you spent was worth it? Well, that's a loaded question — sort of like asking a DXer to prove his country-hunting talents on the spot. Anyway, let's look at a few things ATVers are doing to justify their empty bank accounts.

Programming

Like every other Amateur mode, the most popular ATV activity is ragchewing; perhaps watching each other chew the rag would be more accurate. In any event, the added dimension of sight gives ragchewing more meaning than just mere gabbing. For instance, many ATVers have patched videotape players and film chains (devices that convert motion picture images to video) into their systems. As long as you keep music off the air, you can swap all sorts of — ah — informational programs. One word of warning: keep away from ATVers who have just returned from vacations. You may end up being a captive audience for hours of family-travel films. Unfortunately, baby-birthday-party films are a hazard at any time.



Ed Piller, W2KPQ, checks out the Long Island Mobile Amateur Radio Club ATV repeater at Syosset, New York.

One way to avoid long, boring QSOs is to QSY to a local ATV repeater (transmission-length timers do have their benefits). The 1978-79 *ARRL Repeater Directory* lists eight ATV repeaters. However, by the time you read this article, that number may have doubled.

The history of ATV repeaters is closely linked to that of fm machines. Like fmers, ATVers needed to expand their coverage. They also wanted the side benefits of having a common frequency to experiment on, and, by paying dues, to help the development of a local ATV club. Also, like fm repeaters, ATV machines have played an important public service role for their community. A good example is the WR2ADD ATV repeater in Cherryville, New Jersey.

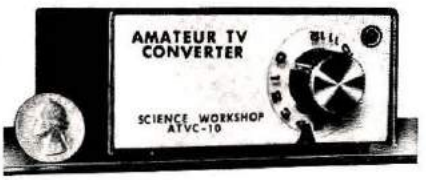
Trustee, Charles Kosman, WB2NQV, explains how his machine helped officials keep watch on a local marathon last year: "With a mobile unit ahead of the runners, we televised pictures of the leaders back to the starting point. Also, with the help of a "minicam" backpack unit, we assisted officials and police in coordinating crowd control."

Of course, WR2ADD isn't unique in the ATV field. WR6AZA in San Jose, California, provides annual television coverage for the Bay Area March of Dimes Walk-a-thon. By placing cameras at strategic points throughout the walk, the repeater is able to beam pictures of lost children back to nervous parents at the finish line.

However, repeater user Werner Vavken, WB6RAW, notes that San Francisco's full-color repeater isn't used for public service alone. He calls attention to the fact that "local activities include playing Pong,

or home-computer games over the air, and even monitoring (for security) the repeater site of WR6AZA.

Back in Cherryville, even more interesting technical features are being used. Besides visually flashing its call sign on viewers' screens for identification, WR2ADD keeps club members informed of the latest Amateur news by running it across the bottom of the screen in true news-bulletin fashion.



This tunable converter allows you to pick up Amateur TV signals on the 420-MHz band and watch them on a standard TV set. It's made by Science Workshop, Box 393, Bethpage, New York 11714.

All of these video pyrotechnics bring out the point that ATVers are experimenters in the true ham radio sense of the word. While only a Technician-class license is required, Advanced- and Extra-class holders are far more common on ATV. Most of this, of course, is due to the fact that, originally, you had to be pretty smart to get on ATV in the first place. That's all changing now, to the regret of some. But, if anything, most ATVers are now glad that the availability of components is bringing more activity to the mode.

As one West Coast ham summed up the situation, "It seems that we old-timers have just about solved all the problems for the newcomer. About the only thing we haven't been able to fix is the problem of looking presentable on television during a 3 AM QSO."

Knowing ATVers, I'd guess they're probably working on it!

Information

Any article about ATV can only scratch the surface of what is Amateur Radio's most fascinating and rewarding mode. For this reason, if you want to obtain more information about ATV and local ATV repeater activity in your area, the following sources are highly recommended:

A5 Magazine, P.O. Box 1347, Bloomington, Indiana 47401. $5 yearly (six issues).

ATV In A Nutshell, by Henry Ruh, WB9WWM, P.O. Box 1347, Bloomington, Indiana 47401. $5.

Specialized Communications Techniques for the Radio Amateur, American Radio Relay League, 225 Main Street, Newington, Connecticut 06111. $4.

ARRL Repeater Directory, American Radio Relay League, 225 Main Street, Newington, Connecticut 06111. Free.

Another source not to be neglected is your local radio club (or some friends with ATV experience). In the words of Henry Wener, WB2ALW, an officer of the Long Island Mobile Amateur Radio Club (LIMARC), which runs ATV repeater WR2ALD, "Newcomers should find someone to help them." This feeling is echoed by John Ruckert, WB6ZPN, president of the Southern California ATV club and repeater WA6EVQ/RPT, "My advice to newcomers is to join the nearest ATV club and attend their meetings for a minimum of one year."

ATV Clubs

BRATS, P.O. Box 5915, Baltimore, Maryland 21208.

Metrovision, P.O. Box 408, Falls Church, Virginia 22046.

LIMARC, 80 Birchwood, Syossett, New York 11791.

Southern California ATV Club, 953 S. Beacon Street, Los Angeles, California 90015.

Indianapolis ATV Club, P.O. Box 95, Waldron, Indiana 46182.

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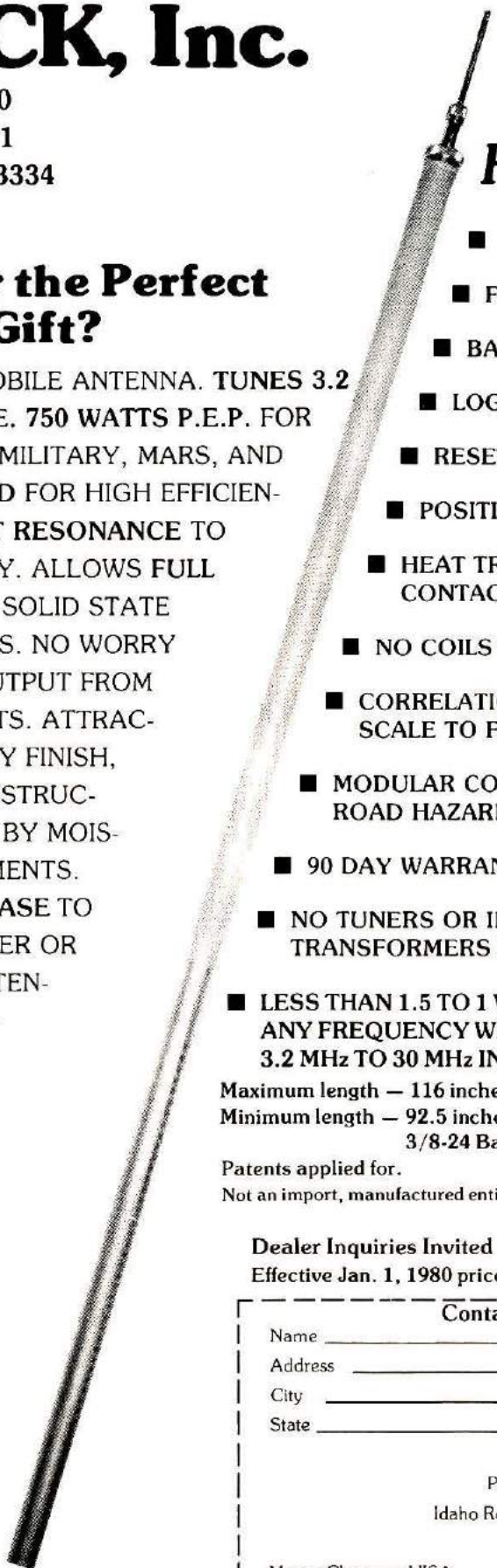

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WINTERTIME SURVIVAL HIKE

BY JEFFREY DUQUETTE, K1BE

Kyaiii! The 120-pound, brown-eyed boy sent the 180-pound man flying through the air and thudding into the mat.

"More hip, and twist," coach Jeff explained, "Catch his arm, and pull hard!"

Glenn smiled and waited for Carl to begin his attack again. With the smile never leaving his face he twisted at the last possible second and screamed as Carl went over and down again.

"Great! Much better. Time is up now, though." The judo students gathered around their coach.

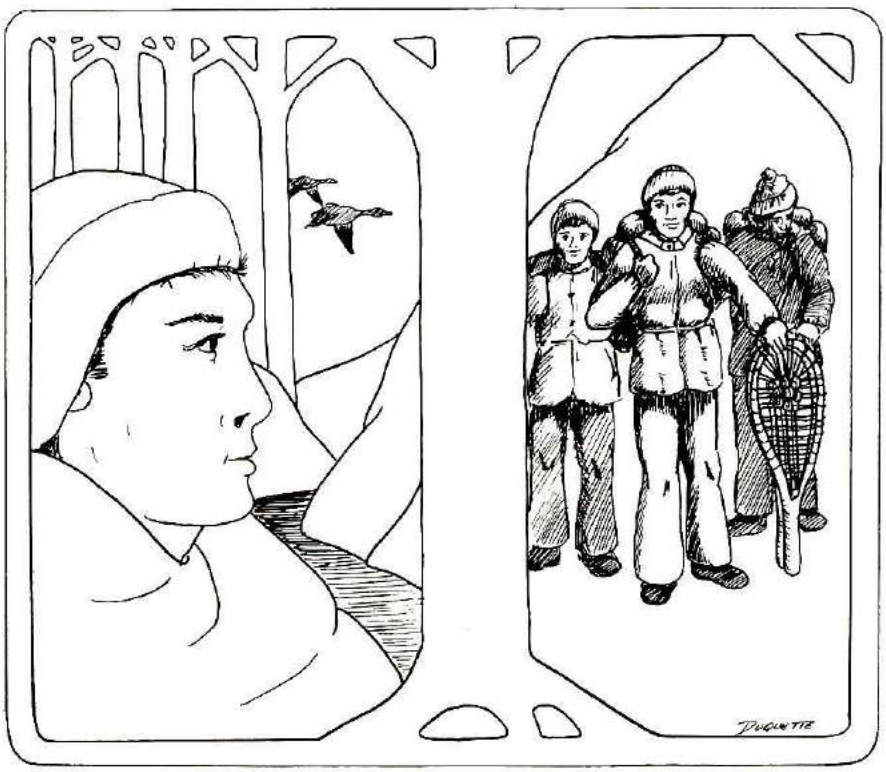
"Glenn, good technique, but you need some practice with that twist. We'll work on it next week. Did you get your Novice ticket yet?" Jeff asked. Glenn replied that it wasn't in yet but should arrive any day now.

"Too bad, I was hoping to use your new call from the mountain top. Is everybody ready for the hike?"

Greg, with mischievous brown eyes, was the opposite of his brother Glenn, and kept up a constant chatter. "Should I wear my orange or white hat, which do you think?"

Brian, another judo player, quickly piped up, "The coach has told you ten times it doesn't matter, no one in the woods will care!" The judo students were going up to Mount Mooselauke in New Hampshire to snowshoe into McKinny Cabin for the weekend. With a low-power HW-7 rig, their coach, Jeff, K1BE, hoped to operate from the summit.

"Well, we're all set," replied Jeff. "See you at 6:00 AM in the parking lot. Let's line up and bow out."



They didn't realize what a harrowing adventure this weekend would be.

As the students finished the traditional Japanese bow that begins and ends all judo classes, they didn't realize what an adventure this weekend would bring.

The snow crunched under their snowshoes as the six hikers chugged along the trail. Morgan, the older brother of Glenn and Greg, was in the lead. Brian, Carl, and Jeff were spread out behind Morgan and his brothers. Carl stumbled, tripped, and fell into a snow drift, and a break was called.

"That's the second time your snowshoe came off. Do you want some help tying it on?" asked Greg.

"I'm a big boy," Carl said, "And you'd probably only push me deeper into the snow, anyway!"

The woods were lovely and very quiet. Mount Mooselauke loomed over them, with the wind swirling snow all over the top. "Do you think we'll make the summit, coach?" Morgan wanted to know.

'Well, we have four feet of snow on the ground now, and it's a good thing snowmobiles have packed down this trail. It's hard work carrying a backpack in 10-degree weather!"

Jeff watched the soot-colored clouds scud across the sky. "They said light snow tonight — I hope we can get some good pictures in the morning." Greg said all he wanted was to get to the cabin so he could take the back-pack off.

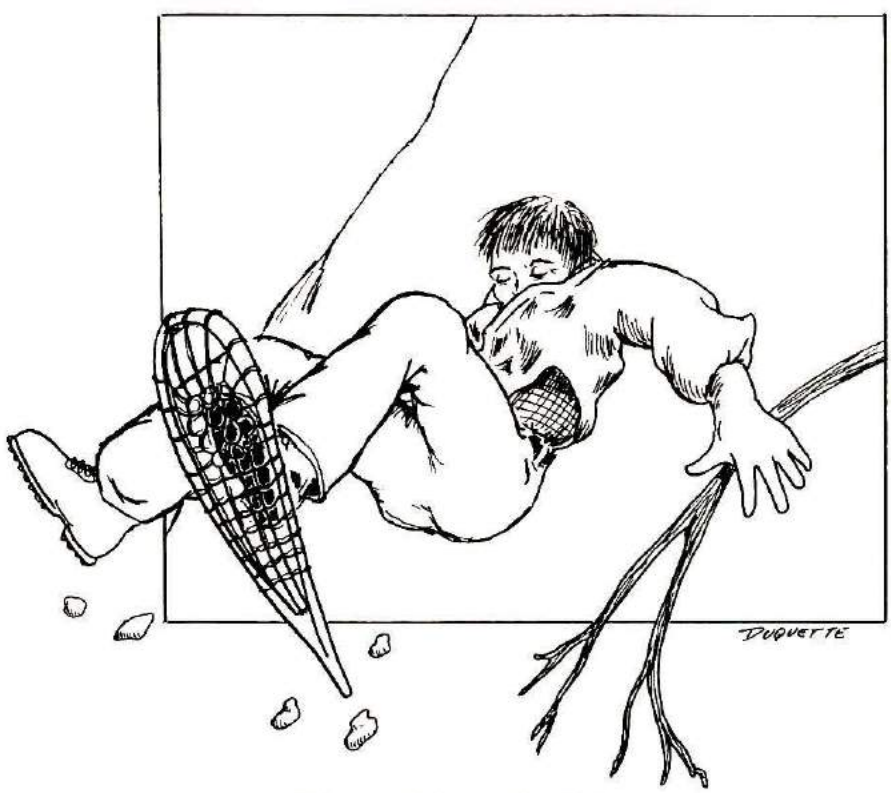
"You've got the lightest one," commented Carl, "And where'd you get that stupid orange hat?" Greg hit Carl with a snowball, and then began trudging up the trail.

The cabin was another hour's walk, and so covered by drifts that the hikers almost walked by it.

"Patience, patience, I've got to dig the key out from under ten layers of clothes." Jeff rummaged through his jacket while impatient hikers bunched up beside him. The door creaked open, and they fell into the cabin as a group.

"It's beautiful," said Greg, "I've got the top bunk!"

Everyone hurriedly staked



Carl stumbled, tripped, and fell.

It was an enjoyable walk in the woods.

out his claim, but Jeff was the final arbitrator. "Greg, Glenn, and Brian, up in the loft, we'll take the bunk beds. That is all."

As they were sorting out the tangle of equipment, Brian asked where the bathroom was.

Jeff pointed and said, "Do you see the small building over by the trees? That's called an outhouse."

"Are you sure it isn't for mailing letters?" asked Brian.

As soon as the gear was sorted, the group assembled in front of McKinny Cabin for pictures. Without the heavy packs, they would explore the nearby area and plan the best way up the next day. Mount Mooselauke is 4,500 feet above sea level, and the McKinny Cabin is on the southeast side at 2,000 feet. They hoped to take the easiest trail up as high as they could go before noon, then return before darkness settled in. It was a good plan, but they didn't know about the three storm cells that had combined and were quickly moving up the East Coast.

It was an enjoyable walk in the woods, made even better because the packs were left behind. At the first small downhill slope, they all had to try sitting on their snowshoes and sliding down on them. Of course everyone took a spill, and they laughed as they brushed the snow off. They returned to the cabin, with Glenn and Greg arguing over who saw the rabbit first. Carl and Brian settled it by pushing them both into a drift and running, as best they could with snowshoes on, for the cabin door.

"When I catch you I'm going to put snow down your neck!" yelled Greg.

Morg and Jeff were doubled over with laughter and tried to cheer the boys up with promises of hot cocoa before supper.

The cabin was snug and

warm once Morgan got the wood burning in the old-fashioned cook stove. He'd neglected to open the flue, however, and everyone's eyes stung from the smoke. All was forgiven when Morg served up the cocoa; to keep the peace, Carl and Brian got served last. Brian started to prepare supper, digging the freeze-dried food out of various packs.

"We've got enough to last a week," said Brian.

"Not with Carl's appetite," Greg quipped, sticking his tongue out at Carl. Amidst chuckles, he began melting snow for water.

"At least when I cook dinner we can get it out of the pan without a jackhammer, Greg!" Greg reddened at the memory of what had happened last summer when he was the group's cook.

"For once, some quiet," commented Brian as he put on the supper.

Jeff and Glenn were patiently uncoiling wires, hooking in batteries, and performing other mysteries. Morgan wanted to know what was going on, so Jeff explained:

"Well, I'd hate to carry this all the way up the mountain tomorrow only to find out it doesn't work. So, we'll test it tonight."

Putting the antenna wire through a crack under the window, he tied the antenna to a tree limb outside. Jeff was talking to Glenn.

"All set, we've tuned it up, plugged in the key, double checked all connections. Now let's see what happens."

They were using the Heathkit HW-7 transceiver, which contains both the transmitter and receiver in one unit. The speaker began to pour out a rush of Morse code. Jeff tapped the key until he heard his own signal and determined that the rig was working.

"Would you like to try it, Glenn?" asked Jeff.

Glenn's reddening face and quiet "no" seemed very definite. He wouldn't try it.

"Okay, but tomorrow on that mountain you've got no choice." Jeff tapped out a general call on the key:

CQ CQ CQ DE K1BE K1BE K1BE K

No answer. He tried it again, and after the third try, there it was:

K1BE K1BE DE WD2XXX
WD2XXX K

After a nice signal report and a short chat with New York at 20 words per minute in Morse code, Jeff was satisfied all was in working order. Glenn still wouldn't take the key, so Jeff signed off and clear.

"Glenn, you were my best student in code, so I know you'll do well. I'll just have to keep after you till you get rid of your jitters. Hey, what's all the smoke from?" asked Jeff. The cooks and the rest of the crew had been watching the radio contact and they were surprised to see supper smoking on the stove. Jeff kicked the door open while Morgan quickly threw Carl's gourmet delicacy into the snow, where it noisily sizzled.

"There goes supper," commented Greg. "At least we got to eat some of mine!"

Morgan pointed out what was obvious to everyone when he said, "It's starting to snow really hard." The large flakes floated to earth, limiting the visibility.

They went back into the cabin, and by lantern light, began supper again. This time Greg took charge, and a delicious meal of tuna, noodles, and carrots was soon ready.

"There's a big pot of French onion soup if anyone's still hungry," Greg said. "We'll leave it on the stove and you can help yourself."

Cards were brought out, and Brian turned his transistor radio on. They almost wished he hadn't when they heard that a storm called "Larry" was expected to drop twelve inches of snow into their area.

"They should have named it Carl if it's that big!" piped up Greg.

Jeff laughed and said, "All right, we might be stuck here for the next twenty-four hours. Try to be nice to each other. I know you'll all hate to miss school Monday!"

When the cheering died down, they intently resumed the card game. Conversation centered around two main topics, the storm howling outside and the Judo National Tournament. All of the students were on the club's competitive team, which stood a good chance of winning.

"We have a lot of hard work ahead of us, but everybody knows where he has to improve."

The coach knew what they were all thinking, which was what an honor it would be to win in the Nationals. He then said, "Let's have a cup of soup and get ready for bed. I'll send a message in the morning to our families to let everyone know we're okay."

"How about a story?" Greg asked, and everybody enthusiastically agreed.

"All right, have I told the one about the skydiving wedding in Orange, Massachusetts?" Jeff asked as he picked up the soup kettle with a pot holder. No one was really sure how it happened, but the soup kettle fell from Jeff's hands, struck the table, and splashed the hot liquid all over his chest and arms. Jeff screamed and dumped the pot of cold water and melting snow on top of himself. He quickly began stripping off his shirts.

"It hurts, it hurts, help me bandage it up."

The group was stricken, and could only watch as blisters formed on Jeff's red, burned chest. Carl jumped up and pulled his dazed friend over to the bed.

"Quick, Morgan, help me wrap him up!" They all began pulling cotton longjohns and

towels out of their packs and passing them to Carl, who quickly wrapped them into a make-shift bandage. As Jeff was being bandaged, he whispered to Carl: "Treat for shock, I'm going into shock . . ." Carl laid his friend down and piled blankets on him. Jeff's face was pale, so with Morgan's help Carl put a sleeping bag under his feet.

"Is he going to die?" asked Greg in a quiet voice.

"He might if we can't get him to a hospital," Carl answered.

Brian wanted to know how that was possible, with the blizzard howling outside.

"We can use the radio to get help," Morgan yelped, "Glenn knows how!"

All eyes turned on Glenn, who looked at the floor and stammered, "But, but, I've never used it, I just know the code. I can't, I don't know how." Morgan replied, "You know what the coach always said, 'Believe and you can do!'" Morg led his brother to the operator's seat.

Glenn looked at the faces of his friends. The snowstorm howled and whistled outside. The shallow breathing of his friend and coach came from the bed. All of his doubts fell away and with a new resolve he turned the rig on and tapped out on the key:

SOS SOS SOS DE K1BE K1BE K1BE K

There was no faltering of his hand, no hesitation in the characters. This message had to get through.

Percy Noble, W1BVR, had been standing by on the frequency of the Western Massachusetts Net for several hours, in anticipation of its activation to help the Civil Defense Agencies. He was concentrating on reading the newspaper when he thought he heard it, a weak SOS for sure. Now he's signing, Percy thought. Why, it's Jeff! That's not him at the key, though; it's someone inexperienced. Percy quickly replied, being careful to send as slowly as the other operator had.

K1BE DE W1BVR W1BVR WHAT'S THE NATURE OF YOUR EMERGENCY? K

"Someone heard us," exclaimed Glenn, as he once again concentrated on his sending:

W1BVR DE K1BE BADLY BURNED HIKER X WE ARE AT McKINNY CABIN, MOUNT MOOSELAUKE, MOOSELAUKE, IN N H X REQUIRE DOCTOR AND EVACUATION K

Percy yelled to his wife to call Doc Barnett and the state police. He then transmitted to the unknown operator:

R R R WE ARE GETTING HELP X WHERE ARE THE BURNS? X WHAT FIRST AID TREATMENT HAVE YOU USED? X HOW DOES THE INJURED LOOK? X IS HE CONSCIOUS? K

Interference from another station calling blocked out the answer. Percy quickly called the blocking station and informed him that an emergency was in progress. The other station moved away, and began to warn other Amateurs to free the frequency. The weak signals were still there. Percy asked for a repeat and received this message:

R R BURNS ON ARMS AND CHEST X BANDAGED AS BEST WE COULD X FACE IS PALE, BREATHING SHALLOW, FACE FEELS CLAMMY X NOT CONSCIOUS, WHAT SHOULD WE DO? K

Percy spoke to the doctor on the phone and quickly apprised him of the situation. The doctor's instructions were then sent:

K1BE DE W1BVR R RAISE FEET X YOU MUST IMMEDIATELY APPLY WARMTH TO THE BODY AREA, BUT NOT JUST THE ARMS AND LEGS X DO NOT APPLY HOT THINGS, JUST WARMTH, ABOUT THE TEMPERATURE OF YOUR OWN BODY X I REPEAT

Glenn's fingers were cramped as he copied the slow morse code. "He says we've got to put some warmth next to Jeff," Carl said, reading the message.

"What can we use?" Morgan wanted to know.

"Greg, Brian, gently lie down next to Jeff and keep him warm with your body heat. Try not to touch the burns," Carl commanded. "Morgan, pile the wood into that stove and put some heat into this cabin!"

Carl pulled out the last of the down sleeping bags and covered Jeff with them. He also raised Jeff's legs a little more by placing extra clothes under them.

"Glenn, ask them what else we have to do," Carl said. The message went out:

R R R WE ARE DOING EVERYTHING WE CAN TO KEEP HIM WARM X WHEN WILL HELP ARRIVE? WHEN WILL HELP ARRIVE? K

Percy had been busy on the phone line. The New Hampshire state police and the National Park Service were organizing to help. Other ham operators guarded either side of the emergency frequency so that no interference could blot out the weak signal. As Percy sent out the message, he wondered how they would take the news:

K1BE DE W1BVR R R RESCUE IS BEING ORGANIZED BUT ROADS MUST BE PLOWED TO GET NEAR YOU X SNOWMOBILES WITH DOCTOR SHOULD ARRIVE ABOUT TEN TOMORROW X WHAT IS THE CONDITION OF INJURED? X I REPEAT . . . K

Glenn asked Carl to check on Jeff's condition. As Morgan busily chopped wood for the stove, Brian whispered to Carl, "His heartbeat is stronger. I can hear it. His breathing has become more regular, too."

Carl also noticed that Jeff's color looked better. Glenn sent out the information, and then began the all-night vigil. Everyone thought the morning would never come. The wood stove blazed, heating the cabin as never before. Drowsy with fatigue, heads drooped, trying

to stay awake. The odors of smoke from the stove, onion soup, burned skin, and fear permeated the confined area. Would morning ever arrive?

Glenn jerked awake, startled by a crackle in the earphones. He had stayed at his station all night, in case there were any more messages.

"Listen!" he cried.

then the code crackled again in Glenn's ear:

BK GOOD NEWS X STATE POLICE CAN NOW SEND HELICOPTER X MARK THE LANDING SPOT WITH AN ARROW STAMPED IN THE SNOW X WILL ARRIVE WITHIN THE HOUR X I REPEAT . . . K

Glenn acknowledged the news and told his friends.

congratulated him for doing such a good job under trying conditions.

"The snowmobiles should be here to pick us up within two hours. But your parents won't be able to drive up to get you for another day. You'll have to be the guests of the National Park Service until then," said the officer.

They had only just finished when they heard the whup, whup, whup of an approaching 'copter.

Morgan, dozing in his position at the stove, replied, "I don't hear anything."

"That's right, the blizzard's gone," said Glenn.

He put the earphones on and began calling:

W1BVR DE K1BE BLIZZARD HAS STOPPED HERE X CAN RESCUE EFFORTS BE HURRIED NOW? K

Percy, who had also spent a long vigil during the night, quickly answered:

R R K1BE DE W1BVR WE WILL SEE WHAT IS POSSIBLE X STAND BY

A few minutes passed and

Smiles brightened their faces. Carl and Morgan pushed the door open as the first rays of sunlight came down from a very blue sky. The large arrow they tramped in the snow in a nearby field was only just finished when they heard the whup, whup, whup of an approaching 'copter.

The tall state policeman commented, as they watched the ascending helicopter: "Your friend will be in the hospital in less than 15 minutes. You all did a great job. Which one of you was the radio man?"

Glenn reddened as the officer shook his hand and

"In that case, we'd better all get ready, and clean up the cabin," Carl replied. As the boys followed him back into the cabin, every eye glistened with tears. It must have been the bright sunlight and the fact that they were all suddenly very, very tired.

Postscript: On July 4th, Glenn received the trophy for placing second in the United States at the Judo Nationals. In the cheering crowd, none yelled and clapped so loudly as did Jeff, his judo coach and good friend.

HRH

KENWOOD Users' Report

BY THOMAS McMULLEN, W1SL

Here's the second of the series of user's reports, triggered by the announcement and questionnaire in our July, 1979, issue. This one covers the Kenwood TS-820, and its brother, the TS-820S. For those of you who have not followed these rigs from the beginning, the 820 had an optional digital-readout accessory which you could purchase and install later. The popularity of this item led the manufacturers to decide that it would save a lot of time and paperwork if it was installed in the first place, and the model with the factory-installed digital readout was named the TS-820S. Otherwise, they're both the same radio, covering 1.8 to 29.7 MHz ham bands, with 200 watts input (PEP), 160 watts on CW, and 100 watts for frequency-shift keying (as in RTTY) use.

Being a transceiver, the 820 is an everything-in-one-box type of rig (except for some accessories which you'll read user comments on), making it compact, portable (well, somewhat portable — it weighs 35 pounds or 16 kg), and functional. On to the comments, taken from 253 returns.

The good features . . .

WA6GGG sums up in a few words what he likes about the TS-820; "Completeness. It provides all the features I desire!" W8MHG likes the rig too; "(It's) a very good value for your money. A trouble-free, popular rig, that sounds good on the air. If you are changing rigs, this model is very marketable." From W3OSE: "Best feature? Difficult to say, because the engineering design, ruggedness, and quality are outstanding. The audio quality on SSB is frequently reported as excellent."

Writing from the homeland of the TS-820, JA1BA likes "the I-F Shift control. It eliminates unwanted signals by moving them out of the passband of the receiver." VE7EMD agrees: "Passband tuning helps considerably when some clod running 2 kW parks 1 kHz away from your QSO." WB1FAE says: I-F Shift . . . allows receiver to remain on same frequency but enables (you) to drop QRM off the side of the filter slope."

K3MMV tells us: "I am on the air every day, and am an avid DXer and contester, so this rig gets a lot of use. It is extremely dependable, which is of utmost importance in contests. I've never had a failure!" And, from Vermont, AE1T says: "The radio has depth! It's really a pleasure to operate, to go up and down the bands, change modes, and especially to pull through the weak ones." From WB4GKI: "Everything considered, the TS-820 is the best transceiver I have ever used on CW."

K5VNJ says that there are "so many good features, but the I-F Shift often makes the difference on the weak ones in heavy QRM." And WD6AQJ says: "Haven't found any (worst features) — I was equally pleased with the TS-520, and upgraded to the 820 when the price dropped. These are well constructed and rugged rigs. With a good antenna system, they hold their own in pileups with anything on the market."

Up in Minnesota, WØRIL likes "Stability, ease of operation, and appearance. I have never owned a unit which has been as satisfactory as my TS-820, and I am proud to show it to anyone." From G3NCC/W9 we hear; "A combination of features — I-F Shift, stability, clean signal, dependability — make it an above average performer." W2GJK says: "I like the digital readout . . . I can easily come back to a given spot."

For a listing of the most-often-mentioned features, both good and bad, see **Table 1**. Sometimes it was hard for the respondents to make up their mind; one person named 18

items as the "Best Feature," along with 11 as "Worst Feature!" Further, several people had words to the effect that the TS-820 is "The greatest — everything is a Best Feature!"

Some items named, but less than 3 per cent, include: portable and compact, digital hold, flexibility, speech processor, PLL design, vhf-converter connections, rf attenuator, good receiver, and solid-state construction.

And the bad ones

According to WD8JPE the rig's worst feature is its instruction book, "poor diagrams, uses very poor English." And W0KC says, "very little human engineering in layout of the front panel. Controls are too close together. When using right hand to adjust the I-F Shift knob, my thumb hits the main tuning dial and knocks it off frequency." WB1HJI states, "(Worst Feature) is getting the rig fixed. I realize that intermittent problems are hard to troubleshoot, but I don't like getting it back with the same problem plus new ones."

And, from W9DCB, "There is no way to switch the CW filter in or out. CW reception is more pleasant during uncrowded conditions without a filter." WA2SRM says: "There is very little I can find wrong with the radio, except possibly the need to incorporate a more effective noise blanker."

The instruction manual scores again, from a user who asked to remain nameless, "Easily the worst feature is its Japanese-English instruction manual. It reads like the dialog in a Charlie Chan movie. It should be totally revised, written more lucidly, and have more information on how to get the most out of the rig."

From WA6HEG, "Can't think of any (bad features) except pilot light hits right in the eye. I solved this by using a small piece of tape above the dial calibrations." He comments further, "I have never heard a bad Kenwood on the air, and have had others say the same."

Even the much-favored digital display comes in for a few barbs, "(Worst feature) is erratic operation and poor soldering on pc boards of digital display. Repair parts for this cost 250 per cent above average, and delivery in excess of four weeks from California" — K1TFX.

From K9AD, "CW filter cannot be switched in and out when operating on CW. If you have a filter installed, you are committed to using it." However, WB3JEX has a different thought about a worst feature. "DC power supply should be standard, with no additional cost. Otherwise, I feel that there are no bad features." According to WB9LUK, "The Digital Hold button has limited use, as once this button is released to check the frequency you are operating on, the frequency is lost. You would have to write it down anyway."

This smiling Kenwood owner is By, W3OSE. A neat station with some photos of neat old cars, too.

Among the items listed as worst features, but in numbers too small to list in **Table 1**, can be found: low output power (mobile, and at low line-voltages), readout numeral size, no MARS coverage, no built-in dc supply, too large, too heavy, internal speaker is inadequate, digital hold is useless, crystal positions useless, poor access to the final tubes, and warranty policy.

Table 1. Best and worst features named by respondents. Some returns listed more than one feature.

Best Features	Per Cent
I-F shift	31.2
Digital readout	20.1
Ease of operation	11.0
Transmit signal quality	8.6
Stability	7.5
Incremental tuning (RIT)	5.1
Sensitivity	3.9
"Everything"	3.9
Selectivity	3.2
Dependable, rugged	3.2
Worst Features	
CW filter (one position only)	11.4
Speech processor (ineffective)	7.9
Controls (crowded, position)	7.1
Noise blanker (ineffective)	6.7
Tune-up procedure	5.1
Digital-readout construction	4.3
Owner's manual	3.9
None	22.9

Problems: question 12

A tally of the answers to question 12, "Have you had any problems" comes out with these figures:

Yes = 49.4 per cent
No = 50.5 per cent

Table 2 provides a closer look at the troubles reported, and again, as in the last month's report, I've used the

Table 2. Types of troubles reported by those who answered yes to Question 12.

Item	Times Reported
Digital readout	52
Poor soldering	10
Speech processor	7
Intermittent VOX and audio	7
Receiver output amplifier	6
Blows out pilot lamps	6
RF feedback	4
Blown resistor	4
TVI	3

actual number of instances reported, instead of percentages. Several users named more than one problem.

As popular as the digital readout is, it also seemed to be the source of a lot of complaints as well. Many instances of instability of the reading were reported, and some were cured, others were not. (Some of them, from the description, appear to me to be caused by rf getting into the timing and display logic, but that's only a guess.)

Let's take a look at what some people had to say about the troubles they've seen.

"Faulty digital (readout), starting with newly purchased set, and after 1 year I'm still trying, and paying, to get it to work properly." — WD9UIK. "The digits go out every once in a while." — WD8JPF. "Digital display blinks intermittently, especially in high-humidity weather." — AE8D. "The digital display malfunctioned intermittently. Repaired it myself." — K8RD. (Many of our readers would like to know what you did to it, Ed.) "Digital readout quits occasionally, reads a constant value, regardless of (VFO) setting." — (from a Pacific station). "Digital readout very unstable at times." — WB4HWM. "Digital readout had to be repaired on two different occasions." — WB1EPK.

Some of the respondents offered some information about fixing the digital readout, too. "(It was) necessary to remove the digital readout cards, clean the contacts, and reinstall. No big problem for me, but I know of some (hams) who sent their set back to the factory for service." — W4ABI. "The digital readout gave erroneous readings. I opened the box, removed the plug and cleaned it with contact cleaner . . . problem solved." — WA7IEJ. "(I found) bad soldering in the display, at three points!" — DL1OV.

Now for a look at comments on some other types of problems. "Main tuning dial action is not uniform. While tuning across any band, the tuning action varies from too loose to tight." — K1JKJ. "Am unhappy with the noise blanker, especially since I have no way or procedure to verify its operating performance." — WB2FOP. "(I had a problem) with main VFO drift and instability. Rig was not three months old and the dealer did a fine business job of repair . . ." — W0KC. "Drifts excessively for 10 minutes after power on. Have to change bands to stop drifting, then it is very stable." — AC8H. "Main tuning capacitor became erratic. (Found) loose solder connection at PC board where tuning capacitor is mounted." — (unnamed station). "Blew a resistor in the keying circuit with too much rf from my end-fed antenna. This wasn't the rig's fault, though." — (unnamed station). "220-ohm keying resistor went." — WB2IQV. "RIT control has become noisy, (causing) occasional frequency instability." — (unnamed station). "Tuning knob and gears occasionally get out of alignment and require adjustment. Instruction book doesn't discuss this problem." — K5ZT. "Receiver output amplifier, TA7201P, has blown twice." — WA5TXN. "Driver tube shorted, it took out both transmitting mixer FETs. Speech processor does not hold alignment, needs constant readjustment and it's inconvenient to adjust — there's no simple access to TC4 control." — AE2J. "Original CW filter opened up. I replaced it with Sherwood Engineering unit. Digital readout went out of control because of an IC temperature problem. I cooled the ICs, and replaced a

JA1BA uses his TS-820 as the main transceiver, with an earlier TS-510 as a backup. Other parts of his station include some 20 receivers, most of them military surplus!

defective one." — WB1FAE. "TVI — I found the case, both top and bottom, was not grounded very well. I scraped the paint from around the screw holes, used star washers under each screw, and my TVI disappeared." — K3MWV. "No real trouble with the rig, but lightning did get the audio output IC. It ran in on the phone patch when all other wires were disconnected or grounded!" — WA4UPO.

Troubles reported only one or two times are: harmonics of 15 meters, driver tube blew, finals blew, excessive plate current, loose phone jack, low grid drive, drifts, blew fuses, poor ALC on 10 meters, S-meter adjustment tricky, bad antenna coil, lightning strikes, blown diode, marker signal out of adjustment, and one bad antenna change-over relay.

Then comes question 13, "Have you had the rig serviced?" which brought forth the following answers:

Yes = 29 per cent
No = 67 per cent

which leaves 4 per cent who did not answer the question.

Where was the service performed?

Manufacturer = 36.9 per cent
Dealer = 47.9 per cent
Other (myself) = 30.1 per cent

Yes, I wondered about that total of 114.9 per cent, and, upon checking back through several of the replies, I found that some had the rig serviced by the Manufacturer/Dealer and then did some additional servicing on it themselves (usually for a different problem, but not always).

Further, of the 29 per cent who had the rig serviced, 67.1 per cent said the service was satisfactory, 21.9 per cent were dissatisfied, and 11 per cent didn't say one way or the other.

Accessories

Only 12.2 per cent of the users said they did not buy any accessories for their TS-820, and the remaining 87.8 per cent had a list that was long and varied. The list included several items not made by Kenwood, but the majority of them bore Kenwood designations, as shown in **Table 3.**

The list of accessories in very small quantity, not shown in **Table 3**, includes such things as fans to cool the finals, phone-patch, spinner-type knob, service manual, TRS-80 interface, electronic keyer, wattmeter, TVI filter, and others.

Table 3. Accessories purchased by owners of the TS-820.

Item	Per Cent
VFO	40.7
Speaker	38.3
CW filter	34.7
MG-50 (or other microphone)	25.2
AT-200 (or other) tuner	13.4
DS-1A dc supply	11.4
SM-220 (or other) monitor scope	11.4
Digital readout	10.2
TL-922A (or other) linear amplifier	2.3
None	12.2

The remote (or external) VFO took top honors as an accessory, followed by the external speaker, and the CW filter modification. A sizeable number purchased the digital readout for their earlier TS-820, to bring it more in line with the later 820-S.

In answer to question 17, "Have you been satisfied with these accessories?" the count shows:

Yes = 55.7 per cent
No = 6.3 per cent

The remaining 38 per cent didn't answer the question.

Some comments about the accessories: "If I had it to do again, I would not buy the digital readout. I rarely calibrate the dial, and even with band switching, the dial is rarely off more than 300 cps." — WB9IPH. "The VFO-820 seems to warble a bit when tuning." — WA5QVK. "There is an intermittent somewhere in the (digital) readout that I have not been able to locate." — N9GK. "The dc converter has low efficiency and costs too much for a case, two transistors, and one power resistor." — DL2QB. "The auxiliary speaker isn't really large enough to provide improvement over the built-in speaker. I use my old HRO speaker instead." — W4JM. "The MC-50 microphone was practically worthless. I swtiched to a Shure 444 for good results." — AF7G. "Only (a) minor dissatisfaction; the center frequency of the Bandscope drifts on warm up." — N2ALQ. "The CW filter (is only) 4-pole, (has) no skirt selectivity." — K8CV. "The AT-200 tuner is pretty expensive for what you get, but it has been entirely satisfactory." — (unnamed).

On the other hand: "Kenwood has done an excellent job in the production of accessories." — WB4HWM. "The TV-506 is super." — WL7ACY. "Had trouble with AT-200 tuner, but the factory service was excellent." — N6AOH. "I am very pleased with my TS-820S. Kenwood quality is fine." — W2BHK.

Accessories and features wanted

The list of features and accessories wanted is long, but 28.4 per cent of the users indicated that they didn't need or want any additional goodies: "Already have all I need. Leave

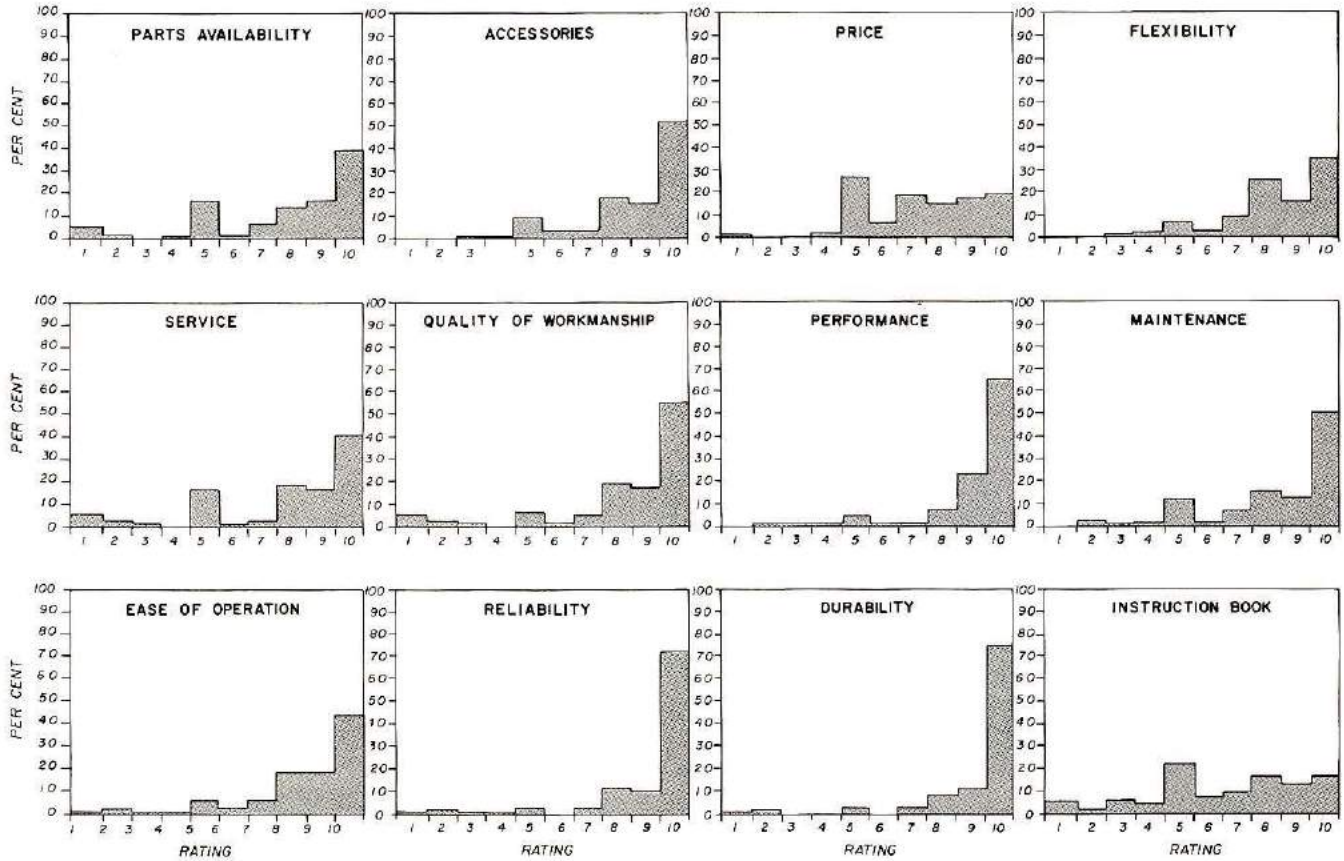


Fig. 1. The answers to question 21, the ratings, provide this group of "skyline" profiles for the various categories. They show percentages of the number of respondents who answered each category. The features receiving a predominately good rating have more weight at the upper end of the scale.

it like it is." — KW6HF. "The 820-S has everything." — (unnamed). "They are doing okay." — AL7B. "Has all the features I use . . . in fact, I don't use all of its many features." (unnamed). "Have those (accessories) I want, need no (features) — it fills the bill." — W0ACH.

Here's a sample of some comments about features wanted: "I bought the rig to take with me when I travel . . . the front casting looks as though it's meant to accept a matching protective cover, but nothing is available from Kenwood. I think I've found a 'scope cover which will fit." — N7BDV. "Something similar to the new solid-state rigs, possibly as an add-on . . . and a better filter system . . . (this one is) not sharp enough for code work." — KA4BAF. "A switch on the front panel to put CW filter in or out. (The) CW filter is no good when copying wide-band RTTY." — W6RUX. "I mounted an outboard mini-toggle switch on bottom front of 820. It puts the CW filter in or out of the circuit as desired." — WB7TNH.

"(How about) a matching 'little linear,' an outboard speech processor, a variable bandwidth control, and a built-in keyer." — (unnamed). "Built-in audio selectivity." — W3NWA. "Believe it or not, a-m capability." — WB1FAE. "Easy WARC band adaptability." — WL7ACY. "Phone patch . . . (it's the) only lack in the Kenwood line." — WD6AQJ. "A built-in second VFO, and additional filters which could be switched in if wanted." — KB2CR. "Why not a nice carrying case for vacations?" — WB9IPH.

A look at some of the features wanted includes: tunable i-f notch filter (or variable-width selectivity, many times), improved noise blanker, frequency memories, MARS coverage, internal keyer, Oscar adapter, clock, all solid-state, scanner companion, full break in (QSK), easier access for maintenance, full service manual, better finals, QRP capability, separate antenna jack for receiver, built-in dc supply, PTT jack, FM capability, less tuning and simple bandswitching, more power out, and — of course — lower cost!

The Ratings

The world is full of opinion polls, consumer index ratings, performance ratings, and the like. Just as in last month's issue, we have a rating chart for the Kenwood features, shown as **Fig. 1**. The ratings are on a scale of 1 to 10, and only those users who answered the question were counted — if someone had never had his rig serviced, or had never bought

and attached any accessories, and left those sections of the rating question blank, that answer was not counted for that particular item. In this way, a group of "no-answers" doesn't adversely unbalance the chart. Again, the answers are shown in percentages.

Here's that important question, number 25, "Would you buy the same rig again?"

Yes = 66 per cent
No = 9 per cent
Undecided = 25 per cent

That looks like a pretty fair endorsement of the TS-820 line, in spite of the digital readout problems and the newer breed of rigs on the market.

Where did you buy it?

A look at the answers to this earlier question reveals:

Dealer = 66.2 per cent
Mail Order = 12.2 per cent
800 number = 15.0 per cent
Individual = 4.7 per cent
Flea Market = 1.9 per cent
Other = 0

Would you buy from the same source again?

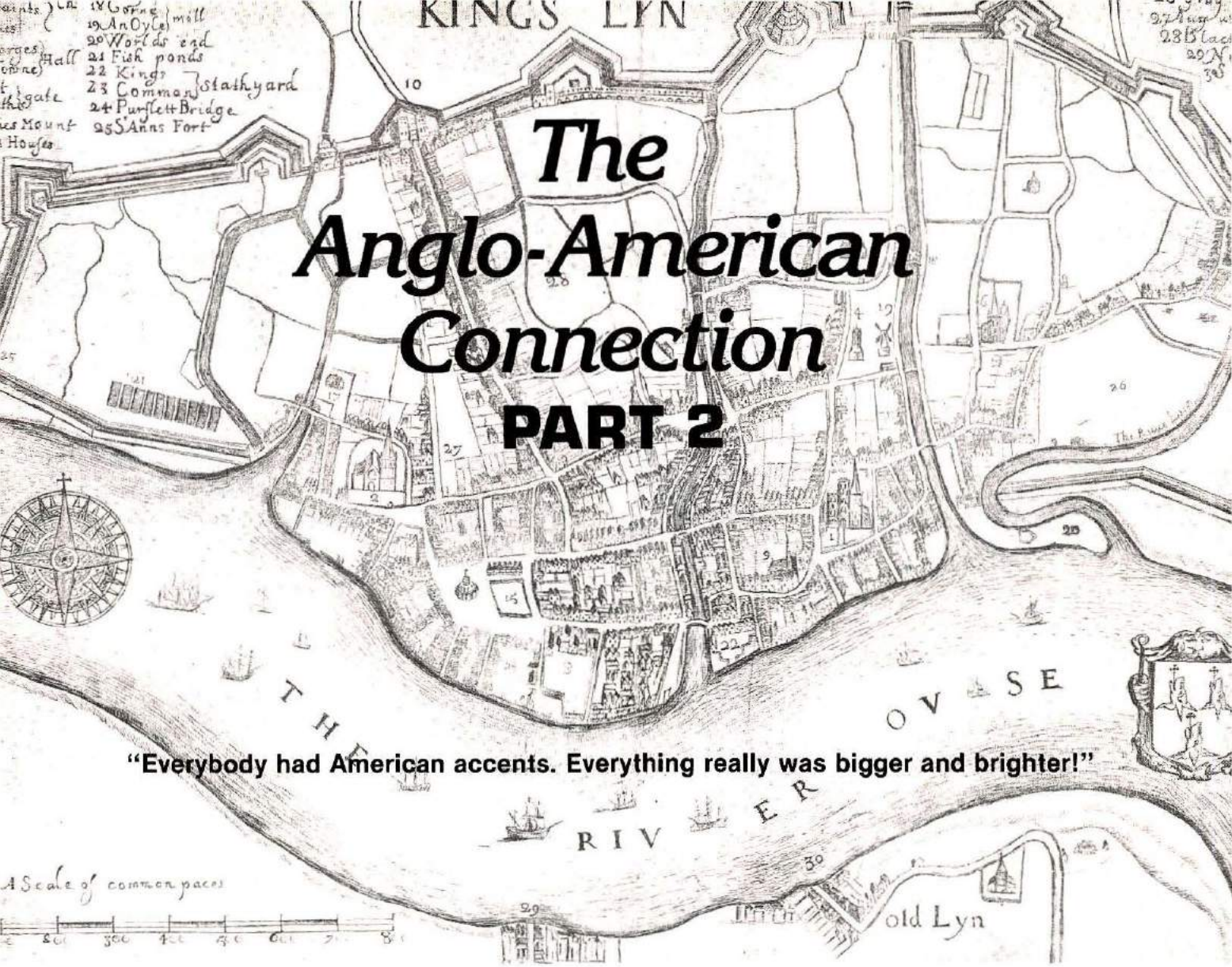
Yes = 69 per cent
No = 6 per cent
(Undecided or no answer) = 25 per cent

Final final

That's the word on the Kenwood TS-820/820S, just the way you readers tell it. I'll say thanks to each of you who took the time to fill out the survey form (and especially those who made suggestions on improving the form), and on rigs to be evaluated in the future. All are duly noted, so keep watching these pages for the results. Thanks also for the encouraging words about the users' survey itself. I'm glad you like the idea so much.

Now, I'll get busy on the pile of comments from Atlas 210/215X users. You'll read about it next month (if my calculator batteries hold out!).

HRH



The Anglo-American Connection

PART 2

"Everybody had American accents. Everything really was bigger and brighter!"

BY DEE LOGAN, W1HEO, and DAVE LAKE, G3ZCA

Without the assistance of ham radio it is highly unlikely that yours truly, Dave (G3ZCA), my wife, Anne (G8MAY), and the two junior members of the family, Tim (now 15) and Vanessa (now 13), would have spent two of the last six years living, working, and playing in the U.S.A.

We have operated mobile to the four corners of the U.S., and to Four Corners itself, where we happened to meet KH6BF. We have been to the Grand Canyon twice and Disneyland four times. The list could go on and on. Maybe you think we are members of the rich set — not so!

The key factors in this story are:

A. I teach electronics at a college of further education in a small town called Kings Lynn, England, one hundred miles north of London. A British F.E. college is about equivalent to an American community college.

B. In 1968 I became a ham.

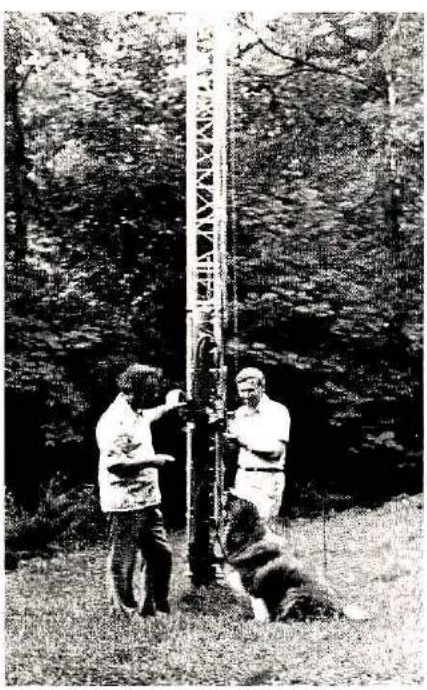
C. In 1970 I responded to a CQ call from W1HEO on 21.33 MHz from which developed a long-lasting and deep friendship between the Logan family in Fairfield, Connecticut, and the Lake family in Kings Lynn, England. As I write these notes I am awaiting our 226th sked on 21.33 MHz.

I had become a ham almost by accident. Soon after I got my job at the college, I was asked by the local ham radio club to teach an evening class for the Radio Amateur's Examination theory test. This is the only theory test required for any U.K. license and is at a reasonably high standard. The candidate must answer eight out of ten essay-type questions in three hours, with a failure rate maintained at approximately 40 per cent of the applicants! After teaching the course for thirty-six evenings, I took the test with the students, and happily, most of us passed. With the theory test under the belt, a Class B (vhf and higher frequencies, phone) license can be obtained for 6.40 pounds sterling per year from the British Home Office (note that

no CW test is required). There are about 7700 U.K. hams in this category. So, as G8BRW, I was away on 2-meter a-m, with a converter working into a high-frequency receiver and a single transmit crystal. Some of you older readers may remember the technique of announcing you were tuning the band for the other bloke's response — three-way nets were fairly difficult!

After something of a struggle with the key, I visited my nearest post office marine-radio station to pass the only CW test required: 12 words per minute transmit and receive, plain language and figure groups, with only a few errors permitted. Now, I could enjoy the full privileges of a Class-A license (there are 16,600 U.K. hams in this category) and I became G3ZCA.

In those days (1969), propagation on the high-frequency bands was fine business, so I bought an HW-100 transceiver and constructed a 2-element quad, using 2 × 2 timber for the boom, and bamboo for spreaders. Transatlantic signals were soon being sent and received.



Checking the 45-foot tower in the backyard at W1HEO, Dave Lake, G3ZCA, left, also notes that radio signals may have gone "to the dogs" during his visit to Connecticut.

G3ZCA traces his three main stopping places in the U.S: Greeley, Colorado; Grand Rapids, Michigan; and Fairfield, Connecticut. All points lead back to his QTH in England.

DX ham radio can do great things for your knowledge of geography, and your general knowledge and understanding of other countries. I now know that Long Island is not covered with New York City, and some Ws may well remember that Wales is not near London.

For some inexplicable reason, some contacts turn out to be highlights. The QSO flows easily in both directions and you are particularly happy to hear such stations again, to exchange QSL cards and other snippets of writing, photographs, details of family, *etc.* For me, rag-chew DX contacts are the most attractive aspect of ham radio. The contacts with W1HEO were quite like that, and, as our contacts continued, I developed a considerable interest in actually visiting the U.S. A teacher exchange was the way to do it.

Once the exchange was set up, G3ZCA could often be heard in QSO with W8-land stations, in addition to the regular W1HEO skeds, to well prepare ourselves for the venture. Information on a wide range of topics is essential — the price of petrol, what to wear, American words for such things as American beer, baseball (instead of cricket), football (U.S. style) instead of football (U.K. style), driving (on the wrong side), in fact, the culture in general.

How about a reciprocal call? The FCC obliged at no cost, but with some delay. I was to be G3ZCA/W8 — somewhat different from the U.K. reciprocal arrangement where the Home Office will issue the visitor a G5ABC-type call sign, but will charge 6.40 pounds. Maybe the envelope franked "On Her Majesty's Service" makes the cost worthwhile!

Anyhow, July, 1972, arrived and we were airborne to New York. We were to be welcomed into the W1HEO household for a few days. Suddenly I realized, no doubt W1HEO did also, that although we had been friends "on the air" for a number of years, we would meet as physical strangers. The Logans were brave to take us on. Would there be a difficult period during which the families would become acquainted? There was not! The spirit of

Visiting the shack of W1HEO, Dave and Anne Lake check the station log before sampling the radio conditions and listening for stations from home.

ham radio (helped by the magnificent American hospitality) extended through to our meeting and we were always totally at ease.

We knew we had arrived in the U.S. Our senses told us:

A. Sounds; everybody had American accents!

B. Sights; things really were bigger and brighter — cars, streets, motel and hamburger signs, house lots, and space. We thought America was vertically polarized, but really, it's horizontal with very few people. The population density is many times less than in the U.K.

C. Taste; charbroiled and dill pickle, and ice cream.

All countries have a characteristic aroma, and (meant in the best possible way) America smells American. I don't know why.

In the few days before we moved on to Grand Rapids, we inspected a number of radio shops and discovered CB. We still do not have CB in Britain. I believe we should, to deflect the nuts from abusing our 2-meter repeaters. The London repeater often carries the kind of language I heard on American CB, and it seems to me that CB is an excellent repository for these people. Of course, one is sorry for the genuine CBers, but let's welcome them to the ham bands.

Having arrived in Grand Rapids, there were so many great non-hams to meet that ham radio did take something of a back seat. I maintained a regular schedule with W1HEO on 40 meters or 80 meters, and it was great fun having eyeball-to-eyeball QSOs with a number of the stations I had talked to from England. Two meters was becoming established and repeaters were starting. I discovered that U.S. practice is to channelize — something we were not doing in England. Six years later the position is reversed. In G-land we are now very much channelized. There are only nine frequencies allocated by the Home Office for repeater operation. Output frequencies start at 145.6 (called RØ) and increase by 25 kHz for each subsequent channel. Input frequencies are always 600 kHz below, and a 1750-Hz tone access is standard. There are now about fifteen repeaters, and most of the country is covered, but we do need many more fill-ins.

Autopatch is not allowed in England, but Anne Lake, G8MAY, tried it on the Bridgeport, Connecticut, repeater while visiting the shack of Dee, W1HEO.

There are thirteen frequencies recommended for simplex operation, starting at 145.25 (called S10) and again increasing by 25 kHz per channel. A typical operation might involve a repeater contact on R8 followed by a QSY to S22! CW and SSB are used from 144 to 145 MHz, and the whole 2-meter band is from 144 to 146 MHz.

During the visit to W1HEO's Connecticut QTH, G3ZCA, left, found that an Englishman's call on the Bridgeport repeater brought instant results.

Back at the junior college, I was teaching electronics to freshmen and sophomores (This kind of terminology eventually became familiar) and we met a number of hams around the college and almost managed to revive the college station.

At the end of the school year, we embarked on an eleven-week camper trip and discovered just how big the U.S. is. It really should be compared to Europe rather than to England. The different call areas could rightly be considered separate countries for ham radio purposes. We operated portable on the high frequency bands. Operation was not too easy using valved equipment, but we maintained a weekly sked with W1HEO using a portable inverted V antenna for 20 and 40 meters, and hence earned our proud claim to have operated from all ten call areas.

Eventually, we made our way back to the East Coast, by this time looking more like Americans than Europeans, understanding the language fairly well, and being able to give sensible responses in restaurants. Sadly, the great adventure was over and we bade farewell to Dee and Liz and our home country for the past twelve months.

The years from 1973 were not too good for high frequency communication. We were at a low in the eleven-year sunspot cycle, so vhf activity in Britain boomed — perhaps encouraged by the lack of a code test for vhf operation. I have never been a CW fan, and I believe a more appropriate "filter test" could be devised, particularly for vhf. Maybe the often-criticized Home Office has a point.

By a stroke of good luck, in August, 1976, G3ZCA and family had the opportunity for another year's teaching exchange in the U.S., which was gladly accepted.

A fact of technical education is that any community needs a good supply of craftsmen and technicians, but by no means must they all be university graduates. Consequently, both in the U.K. and the U.S., there had been a rapid growth of vocational technical training schools. We set out to observe the scene, and teach at the community college in Greeley, Colorado, which also functions as the local area vocational school for high school seniors.

Again, W1HEO and family welcomed us to the U.S., and after a re-introduction to cold beer and Big Macs, we were pointed in the direction of the West!

Arriving in Greeley, we at first experienced difficulty in making contact with the local people. It had something to do with the wide-open-spaces and the loner attitude of cowboys, I think. However, there was a solution; a telephone call to KØOJ put us in contact with the greatest bunch of hams with call signs we too rarely work from England.

Our social life in Greeley was very much Amateur-Radio oriented. I joined the local club and repeater group, and, although I had a high-frequency rig with me, I soon had to go on 2-meters to work those wonderful repeater sites high in the Rocky Mountains.

In Kings Lynn we struggle to get aerials 100 feet above sea level; in Colorado up to 10,000 feet is fairly normal. Friday nights were allocated to transmitter hunts. Despite KØOJ "riding shotgun," I always lost — but I did have excuses. I was, of course, on the wrong side of the road, and embarrassing problems were caused by stop signs (we don't have them in England). People in Fort Collins were astounded to see an Englishman (complete with necktie) apparently butterfly-catching from a fast-moving Chevrolet. We did make a few small contributions. I established a station at the school (I

hope it is still there), and gave a few talks about ham radio in England. The hams introduced us to lots of other things too: rattlesnake hunting, ice skating, cowboying and branding, backpacking, muzzle loading, and violin making, to mention a few. They persuaded us to enjoy July 4th whilst we really should have sat in the basement sulking!

The punch line is, if you are ever lost for friends "phone a ham."

In the summer of 1977 we took a long trip to the West Coast. If you've driven I-80 from Cheyenne to Reno you will have discovered that 2-meter repeaters are as welcome as are oases in the desert. We talked to many hams along the way. A highlight here was the coffee-stop and eyeball QSO we set up — through a repeater in Rock Springs — with Smokey, W0MGW, who was driving one of those enormous lorries equipped for all-band operation. As a parting gift, Smokey gave me an "Ugly Stick" antenna, which is currently giving good service copying GB3PI (our local repeater).

We also met Harl, K6JQD, and his family for picnic lunch.

Talking from the shack of W1HEO, left, Dave Lake, G3ZCA, chats with friends in eastern England as well as the U.S. eastcoast gang on 75 meters. Operating above 3.8 MHz is a luxury not available in G-land.

He was from Paradise. I never established whether that was his city or whether he just meant California.

I'll just mention Lee, WB7EZI. She talked us into an eyeball QSO for a clam giveaway. The river at Coos Bay, Orgeon, was being dredged out, and in the process large quantities of the biggest clams I had ever seen were being brought ashore. The word had gotten around, and WB7EZI, G3ZCA, and many others lined up to collect a few gallons of free clams. It was quite an experience cleaning them, but a gastronomic delight topped off the whole event. We really enjoyed the Pacific Coast. It was nice to see the ocean again after a year in Colorado — remember that in Britain nowhere are you more than 100 miles from the sea. We saw the big trees and the loggers. I also logged many call signs direct or via the repeaters; I was happy to have a synthesized rig. We were directed to many of the off-the-beaten-track highlights which we would otherwise have missed.

From Washington, it was nice to talk to our "cousins" across in Victoria, British Columbia. We spent an unexpected night there, however. Apparently a Colorado driver's license is not sufficient proof of identity for an Englishman who wants to get back into the U.S. We warmed up the ether with our observations on bureaucracy!

Our stay in the U.S. was rapidly coming to an end, and again we had to make our way back to the East Coast, hamming all the way. During a visit to Frank, WA2YVK, who with his family had just returned from England after a one-year teaching exchange, we were able to draw comparisons between the two countries. Needless to say, we found our way back to our anchorman, W1HEO, at Fairfield, Connecticut, and spent a few days remeeting the locals on those late-night 75-meter skeds that W1HEO enjoys. We made a pilgrimage to Cape Cod to see the Marconi station, now unhappily almost in the Atlantic due to coastal erosion.

It takes just seven hours to get back to London and another readjustment.

In 1977/78, high frequency propagation was improving, and the Norfolk college station, G3XYZ, was often on the air again, particularly Thursday evenings when the local club meets there (or at the pub). We are always delighted to talk to old and new American friends.

The Lakes will, of course, return to the U.S., but in the meantime we shall maintain our contacts via Amateur Radio. Remember, should you find yourself in England clutching your "On Her Majesty's Service" G5 call, "phone a ham" — G3ZCA.

HRH

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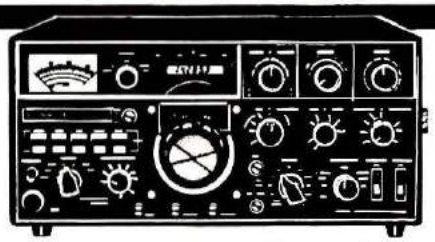

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A Wide-Range RF Meter

As handy for measuring rf as an ohmmeter is for resistance

BY WILLIAM VISSERS, K4KI

What started out as an experiment to measure the rf current in the parasitic reflector of my 80-meter antenna array resulted in the development of one of the most versatile test instruments that I now own. The simplicity of construction and low cost are such as to allow any Amateur to easily duplicate this unit. In my own case, the parts were a combination of items from the junk box plus a 50-microampere meter I bought at a ham convention flea market for two dollars. The circuit diagram is shown in **Fig. 1**.

Circuit description

The circuit is nothing more than a simple diode-bridge rectifier, which feeds a microammeter through a variable resistor. The low-impedance, rf-current measuring circuit is a small transformer wound on an Amidon T-50-6 core. The primary consists of two turns of No. 18 (1-mm) insulated wire. The secondary is ten turns of No. 24 (0.5-mm) insulated wire. The high-voltage pick up circuit uses a couple of ordinary 270-kilohm, one-watt carbon resistors. Two 0.001-μF, 5-kV fixed capacitors serve to isolate the measuring circuit in case dc is present. This feature makes the unit useful in measuring the rf voltage at the plate of a tube, as the capacitors will allow only the rf voltage to pass. A small double-pole, double-throw slide switch on the rear of the unit selects the current or voltage range as

desired. Binding posts allow easy connection for measurement purposes. In addition, a pair of coax connectors mounted on top of the unit allows you to measure current in coaxial lines. I designed the unit to work in either unbalanced circuits where one terminal is grounded, or in balanced circuits where both circuit terminals are above ground.

The maximum ranges that I have used are five amperes and 500 volts, full scale. The voltage scale can easily be raised by using appropriate series resistors connected externally at terminals **E** and **F**.

Calibration

When I developed the circuit I was concerned about calibration of the unit. In a conventional type of wide-range meter, you generally wind up with several switching circuits, and usually need some laboratory-type equipment to properly calibrate the voltage and current scales. To avoid this complexity, and to keep the circuit as simple as possible, I decided to use a simple technique, which can be easily understood and applied. All you need is a dummy load (which every Amateur should have), and some sort of an rf wattmeter. The technique is very simple; for current calibration you just connect an rf wattmeter as is illustrated in **Fig. 2**.

Then, at any given power setting on the wattmeter, the current reading on my meter will be:

$$I = \sqrt{\frac{W}{R}}$$

where I is the current in amperes, W is the power read on the wattmeter, and R is the resistance of the dummy load, which is usually 50 ohms. For example, if the power is 200 watts, then the current will be

$$I = \sqrt{\frac{200}{50}} = \sqrt{4} = 2 \text{ amperes.}$$

The sensitivity control (R3) can now be adjusted so that the 50-microampere meter reads full scale, or 2 amperes rf current. Lower values of power can be used to obtain other calibration points.

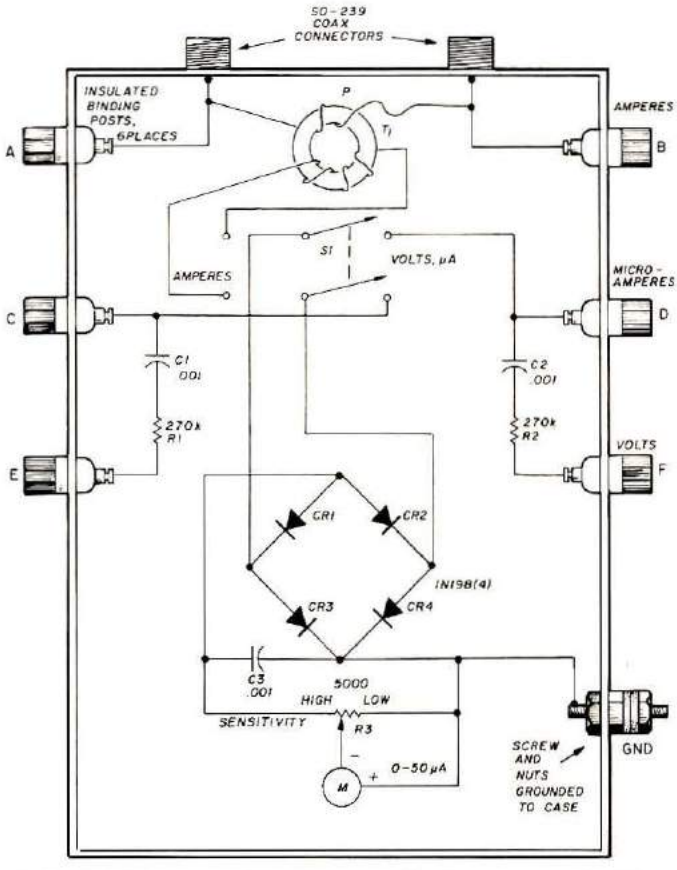


Fig. 1. The schematic diagram of the rf tester reveals no secret components or complicated circuitry. The transformer, T1, should be mounted close to the coax connectors at the top of the box. Keep the secondary leads to the switch and the diode-bridge circuit reasonably short.

A similar procedure is used when you calibrate the voltage scales. **Fig. 3** shows the circuit used. A coaxial T connector is placed at the dummy load, and the meter is connected between the center conductor and ground. The voltage can be calculated from Ohm's law:

$$E = \sqrt{(W)\ (R)}$$

If, for example, the wattmeter is again set at 200 watts, the voltage will be

$$E = \sqrt{(200)\ (50)} = 100 \text{ volts.}$$

Other ranges can be obtained by adjusting the power into the dummy load.

The setting of the sensitivity control should be noted each time you calibrate the meter. As in all meters used in radio-frequency work, the calibration will vary slightly, depending upon the internal stray capacitances of the meter and wiring, and the frequency of measurement. However, this has not proved troublesome, because the ease of calibration is such that a calibration at a new frequency can be done in a couple of minutes.

If you want to use the meter in a balanced circuit, terminals **E** and **F** will be used. However, in this case the **GND** terminal is not used. Because the meter case is above ground in this balanced condition, take care to keep the meter away from metal objects.

No attempt was made to accurately calibrate the microampere range of the unit, as I did not have any equipment to do this with. However,

my own rough measurements showed that the circuit has an internal impedance of about 600 ohms, and a full-scale deflection of approximately 65 microamperes. This means that the meter, at full scale and with the sensitivity control in the most sensitive position, corresponds to about 39 millivolts.

My intended use for the meter was to measure the induced current in the center of

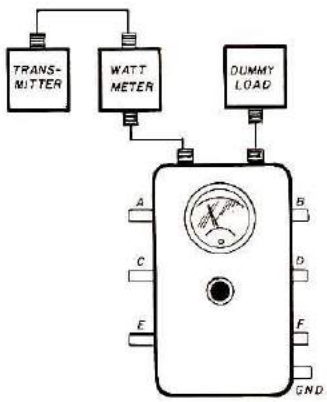


Fig. 2. For initial calibration of the meter, borrow a wattmeter and dummy load if you do not already have them. Set the transmitter power to 200 watts output, then adjust the sensitivity control for a full-scale meter reading; that is 2 amperes. Lower ranges can be calibrated by using the formula given in the text, along with less transmitter power.

the parasitic reflector element used with my 80-meter array. The meter was connected in the center of the reflector using binding posts **A** and **B**. When my transmitter was turned on at the desired frequency, I was easily able to note the induced current, using a pair of binoculars to read the meter.

While keeping my transmitter power at the same level, I was able to trim the parasitic element for a maximum current reading, which indicated maximum coupling. By actually measuring current and trimming the element, I was able to obtain much better results than by just calculating the theoretical length by formula, and then hoping that the length was correct for the maximum energy transfer I desired.

In addition to routine rf voltage and current measurements around my shack, I soon found that, by using my Heathkit Model LG-1 rf signal generator with a maximum output of 100 millivolts, I could measure the resonant frequency of an antenna system. All I did was feed the signal generator into the coax cable feeding my antenna, and then connect the microammeter circuit as shown in **Fig. 4**. When the signal generator frequency was varied so as to pass through the resonant frequency of the antenna system, a sharp dip in current indicated the resonant point.

The same technique was used to measure the frequency at which a piece of transmission line, open at the far end, would be a quarter-wavelength line. As the signal generator reached that frequency, the end of the line connected to the signal generator would appear to be a short circuit, which loaded down the signal generator and made the meter reading dip. In a similar method it is possible to find the velocity factor (V) of coax cable using the equation: $(L)\ (F_{MHz})/246$ where L is the length in feet for an electrical quarter wavelength, and F is the frequency of the signal generator in megahertz. I used the same

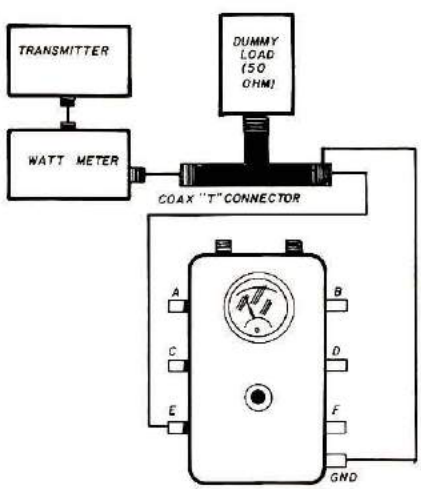


Fig. 3. To use the meter as an rf voltmeter, connect terminals **E** and **GND** across the dummy load. Calibration is done by varying the transmitter output power and using the formula in the text.

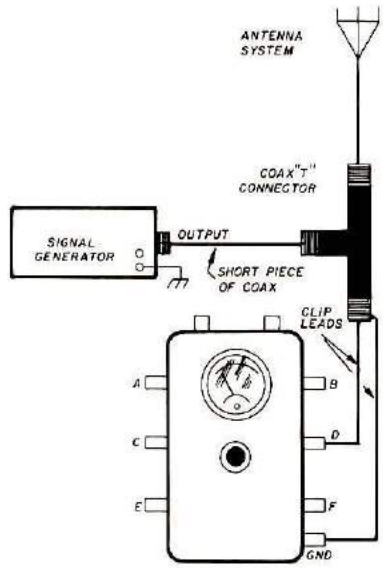


Fig. 4. Check the resonance in your antenna system (or the frequency at which it absorbs power) by connecting the meter across the coax feedline.

technique to determine the resonant frequency of a quarter-wave vertical antenna.

The ease, simplicity, and accuracy of the measurements were a real advantage to me. Further experiments showed that it was very easy to measure the resonant frequency of a series circuit consisting of inductance and capacitance by connecting the circuit directly across the signal-generator terminals and connecting the meter in parallel. As the signal-generator frequency passed through the resonant frequency of the series circuit, the loading effect gave a very pronounced and unmistakable dip in the meter reading.

The resonant frequency of a parallel tuned circuit was easily found by using the circuit shown in **Fig. 5**. The impedance of a parallel circuit is very high at resonance, and the decrease in the meter reading was very definite when the frequency of the signal generator passed through resonance. This method of measuring the resonant frequency of a parallel circuit was found to be particularly valuable in testing such things as enclosed antenna traps.

Another use was found in

neutralizing a power amplifier. A couple of turns of wire connected to terminals **C** and **D** provided a pick-up circuit with such a high degree of sensitivity that very good neutralization could be readily obtained. The meter was also used as a simple field-strength meter by connecting a short piece of wire to terminal **D** and connecting **GND** to a convenient ground.

The last, and perhaps most interesting, use of the meter was as a relative-noise-level meter. When I connected the microammeter terminals **C** and

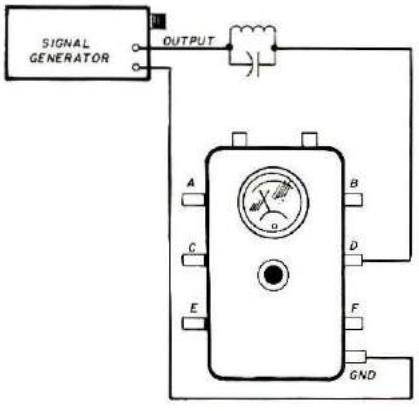


Fig. 5. Tuned circuits can be checked with the meter — a sharp dip in the reading will indicate that the circuit is blocking rf energy flow at the circuit's resonant frequency.

D directly across the open-wire feedline of my dipole, with everything else disconnected, I found that the meter read about a quarter of full scale. This reading varied over a period of several days. One day, when a thunderstorm was in the vicinity, a flash of lightning in the distance pegged the meter! It was like discovering Benjamin Franklin's famous kite experiment all over again. I disconnected the meter in a hurry, and grounded my antenna before the storm came closer.

Undoubtedly there are many other interesting uses you will find for this simple, inexpensive, and easily constructed meter that has proved so valuable to me.

HRH

WOMAN TO WOMAN

BY BONNIE SPEER, WD5HAM

"I've been meaning to ask if you would talk to my wife . . ." The young man gazed at me hopefully.

He knew that I held a General-class ticket, thus sharing my husband's interest in Amateur Radio. Like several other hams who had recently approached me with the same request, W5ISO was wondering if I would encourage his wife in getting into the hobby with him.

Most women seem reluctant to become involved in the world of resistors, diodes, and mathematical formulas: those things have always been looked upon as a man's domain. Women are supposed to be more concerned with knitting, crocheting, and creating little do-dads. Supposedly, they cannot absorb the basic ideas about electricity needed to obtain an Amateur Radio license.

But more and more women are proving these are unrealistic ideas. Women are as capable of mastering the equations and theories of point-to-point communications as men are. Often, it is only their own self-doubts that they have to overcome. Those who do so are finding an interesting and different hobby that takes them far beyond the walls of their homes. In addition, it is helping them gain a fuller understanding of their husband's interest in Amateur Radio, rather than, as so often happens, simply tolerating their husband's ham radio hobby.

My own entry into Amateur Radio grew out of that desire. As a freelance writer, I was fortunate that my husband, Jess, W5SQJ, a retired English and journalism teacher, knew enough about writing to understand my work, and to converse with me about the problems involved.

Yet, it seemed to me, what with my spending long hours in the study and Jess doing the same in the ham shack building his various projects, that our two worlds were widely separated. Therefore, I became determined that, if he could share my major interest, the least I could do was share his, thus bringing our two worlds closer together.

Then, too, if I had a license, I could choose my own conversational partners on the air, instead of just listening to him keep his various schedules.

Study begins

At about the time I came to this conclusion, our local chapter of the South Canadian Amateur Radio Society sponsored a Novice class. Jess was on a trip to California. Imagine his surprise — and delight — when he returned to find that I had enrolled in the class.

Our class met one night a week, at our local library, for six weeks, studying beginning theory and code. I was pleased to see that in the class of twenty-three, nine were women. Unfortunately, fully half the class, including all but two of the women, dropped out before the end of the course. One of the remaining women said she and her truck-driving husband were already involved with CB radio. They were interested enough that each wanted to learn more about Amateur Radio. She hoped to learn enough in the class that she would be able to pass her knowledge on to her husband, so that both could obtain licenses.

Of course, I was the other woman who completed the course. I am one of those who never start something without the intention of finishing it. I consider my time too valuable to waste in half-hearted attempts.

I did not find the class a snap. It had been fully 30 years since I had any kind of high-school math course. Even then, I always rated near the bottom. But I psyched myself up: a lot of the mastery of mathematical formulas is simply a matter of memorizing, then applying. Anyone, I reasoned, can memorize. And I was a lot more mature than I had been in high school. My powers of concentration and reasoning had grown considerably since then, through experience. Added to this, my desire to learn provided the motivation often missing during my high-school math classes.

My husband and I both take part in club and social activities. Here we are at a meeting of the South Canadian Amateur Radio Society at the local Red Cross facilities. The club maintains an emergency station at the Red Cross building.

How pleased I was, at the end of the Novice class when K5KDR gave me my test, that a few weeks later I received my Novice license in the mail. Jess was as proud as if I had sold a novel.

I might have known that Novice license was a trap. This gave me the privilege of getting onto the air right enough, but only with CW — Morse code, that is. I felt limited, because most CW contacts usually consist of an exchange of names, locations, signal reports, and the weather. I wanted to be able to hold some real conversations with people in far-away states and far-away countries.

Branching out

So, I soon set to work on obtaining my General-class license. This wasn't easy either. First, I concentrated on getting my code speed up. I have always heard that women are more dexterous with their hands than men. Supposedly, this is why they are good at handcrafts and why manufacturers favor using them in factory assembly lines. This may be true.

My technique of working on the code was a combination of using home-recorded tapes, purchased tapes, and copying W1AW each evening. My ability to memorize came into play again, for you learn code, not by recognizing a system of dots and dashes on paper, but rather by sound, which comes through as a series of "di-dit-da-da-dahs."

I found it easier to distinguish between the basic sounds of the alphabet, in the beginning, by recording them on tape at my own speed. This also gave me practice in sending. One of the favored methods of learning these sounds is to take them by code groups, the simpler units first, such as E, T, M, A, N, I (dit, dah, dah-dah, di-dah, dah-dit, di-dit), then progressing to the longer combinations. Once the basic distinction between the two sounds, "dit" and "dah," is understood, the letters are easy to pick up. After I had memorized each code group (in sets of six), I began forming simple words using those letters on tape. I added each code group in turn until I had them all.

Then I copied passages from magazines on tape, a different one each day, to give me further practice in sending and receiving.

Once I had the code sounds mastered, I worked at improving my speed. This included the use of both the commercial tapes and listening to W1AW. The experts advise that you spend no more than 15 to 20 minutes a day on practice. Often, I became so interested in what I was doing that I ran far over this time. I don't think it hurt me a bit.

When listening to W1AW, I began at the 5-word-per-minute speed each evening, working up to the required 13 words per minute for my General-class license, then going on to the 15 and 18 words per minute sessions. Of course, I wasn't copying solidly on any of it, but the idea was to become accustomed to listening, and trying to copy, at a faster rate so that when I dropped back to 13 it would seem easier to me. I also spent some time copying from the CW bands on 80 meters each evening, though I was always hesitant about getting on the air and transmitting.

Once I had my code speed worked up, I continued to copy W1AW and 80-meter stations each evening to maintain my speed. Now, it was time to concentrate on theory.

Here, I think most wives entering the Amateur Radio field have it easier than their husbands. A man who is already into the electronics field can pass along experience and knowledge to his wife. On the other hand, men who begin this task without an electronics background do not have this at-home teacher, and must suffer through and dig these things out on their own.

Jess was very patient with me, taking time each evening to answer my questions, and to draw simple analogies and diagrams to explain the various formulas and theories until they sank into my head. I studied from two books. First I used *Tune In The World With Amateur Radio*, the American Radio Relay League publication. Then, when some of the theory was still passing me by, on the recommendation of WB5TZZ, I obtained a copy of *AMECO General Class License Manual*. Material in this book seemed to be presented in simpler language than in the other. By referring back and forth between the two books, obtaining two presentations of the same information, I began to understand radio theory. Also, about this time, *Ham Radio Horizons* began coming out. I went through back copies and found their language so simple and clear that I gained even more understanding. The new pocket calculators were a great help, too. (If I had had one of those during my high school days, perhaps I wouldn't have made such a poor showing in my math classes.)

After about two months of study, feeling that I was about ready for my test, I made an appointment for the exam. I tried not to be nervous, determined that, after all my work, I was going to make it. At the regional testing center in Oklahoma City, I noted several other women among the many men waiting to take their exam, including my Novice classmate, the CB lady.

Jess carefully solders a connection on a PC board, and I now understand his explanation of the circuit and what it is supposed to do.

When the code portion of the test began, I had one moment of fear, for I learned we would be taking the test without earphones and I had been using them during practice. I was afraid this would foul me up, break my concentration. But, again, I decided it was mind over matter. As the test began, I was still a little nervous. I did not copy solid. But, when the instructor graded my paper, I found that I got 100 per cent on the multiple choice exam! All that was required to pass was 75 per cent. About one-fourth of the test group did not make it.

The CB lady was among the lucky ones who did, though. We took the written portion of the exam and returned to our seats. I knew this would be the hardest part of the test for me. It was. I passed my theory test with minimum points, but that was all I needed to obtain my

General license. I never knew if the CB lady obtained her license, for I left the testing center before she did, eager to call Jess and share the good news with him.

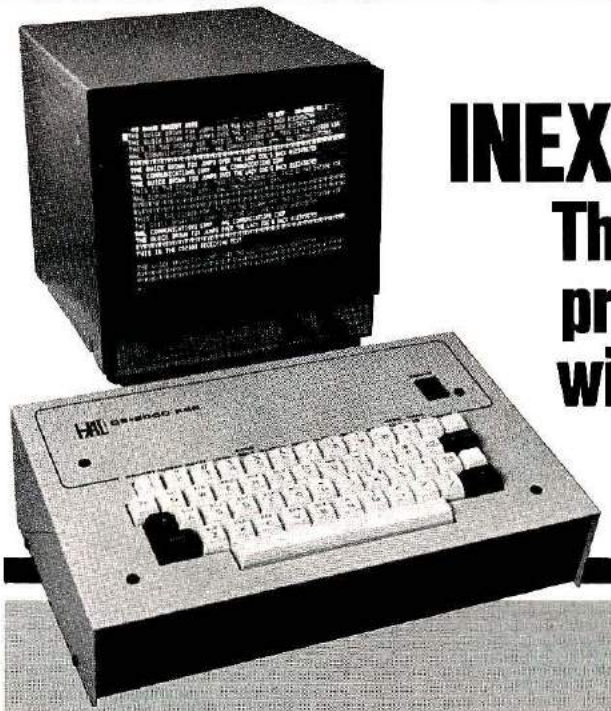
Sometimes I feel guilty in calling myself a ham, knowing that my understanding of the theory of radio is superficial. But, I do have a general knowledge about Amateur Radio. When my husband now speaks about the various components of a receiver, or of an antenna, or discusses the problems he is having with his power supply or linear, I have some idea of what he is talking about and the complexities involved.

In addition, through our mutual hobby, I have formed a closer relationship with his ham buddies. I have more interest in attending hamfests. Here, I proudly maintain my own identity by wearing my own call letters, WD5HAM, pinned to my blouse. I attend some of the lectures, adding to my knowledge of the state of the art, instead of being shuffled off to the various "fashion shows" and luncheons that seem par for the course for the ladies at these functions.

By having my ham license, I have also been able to participate with our local ham club in its emergency weather net during the tornado season, which gives me a sense of fulfillment by contributing to a civic need. Also, I participated in Field Day last summer, the only woman in our area to do so.

But best of all, holding my ham license has helped me accomplish the goal I set for myself. It has given my husband and me a little more in common, something to touch base on, thus making for a better marriage. I can see that Jess feels the same way I do about this when he introduces me to a casual acquaintance at a hamfest or at a ham coffee break.

"This is my wife," he says with a proud gleam in his eyes. "She's a ham, too." **HRH**



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HAMMING IN HONG KONG

BY ALAN ADLER, WB6JPZ

Detailed preparation often decides the success or failure of a DXpedition. The intensive planning for our trip to Hong Kong proved invaluable, since many pitfalls would need to be overcome before Stu and I could feel with certainty that our Hong Kong DXpedition would prove successful. The anticipation of the expedition proved to be almost as exciting as the actual operation.

Following our very hectic and exciting trip to Montserrat under the call VP2MJE in September, 1977, Stu Sokolin (W6MJE) and I (WB6JPZ) vowed that we would attempt another DXpedition within a year. We had never before experienced such excitement in our ham radio careers as we did during our eight days of operation from Montserrat. Now confirmed addicts to the thrills of pile-ups, we eagerly discussed our next trip. Dreams and schemes of operating from Bouvet Island, the interior of Africa, or an exotic island in the South Pacific were brought up, and as quickly thrown out when we realized the expense, time, and trouble necessary for such extravagent expeditions. What we needed was a low-budget trip which conformed to our vacation schedule and our pocketbooks. To find the perfect blend of availability and desirability in a DX location proved difficult. Many times we felt we had located a perfect spot, only to find that a license was unobtainable or that it would be necessary to haul large amounts of equipment long distances. We were about to postpone the whole affair until a later date, when a chance contact changed our luck.

Our chance came through a meeting on the air with VS6AK (Jessie Granier), and later with his friend VS6CZ (Chuck Hall). Jessie worked for the U.S. consulate and Chuck for the Canadian government. They both belonged to the Hong Kong Amateur Radio Transmitting Society, HARTS. Jessie and Chuck, together with other members of HARTS, helped solve our dilemma. They offered Stu and me the chance to travel to Hong Kong for two weeks and operate under the club call, VS6HK. This was a terrific opportunity, since a license to operate in Hong Kong is not available on a short-term basis. We immediately started making arrangements, and the long weeks of planning began. Schedules were kept twice a week working out the details of our trip. This preparation was the key to making our operation a success.

We began to work on the details of our expedition, starting with the basic requirement of locating an operating site. This was a major problem, and many tense weeks passed as we tried to find a suitable base for our expedition. A school offered a clubroom, and we thought all was settled until the school officials, upon finding that we planned around-the-clock operations, reversed their decision. Many hectic days were spent in searching before a tentative place on a nearby island was located, but this, too, proved unworkable. Finally, when Stu and I were afraid we would have to cancel the whole expedition, the HARTS hams found a location at a hospital located on top of Mt. Kellet, one of the highest mountains on Hong Kong, towering 1800 feet over the island. This seemed to be an ideal spot, away from apartments and possible TVI. The great height

Hong Kong and its Aberdeen Harbor as seen from the doorway of our shack.

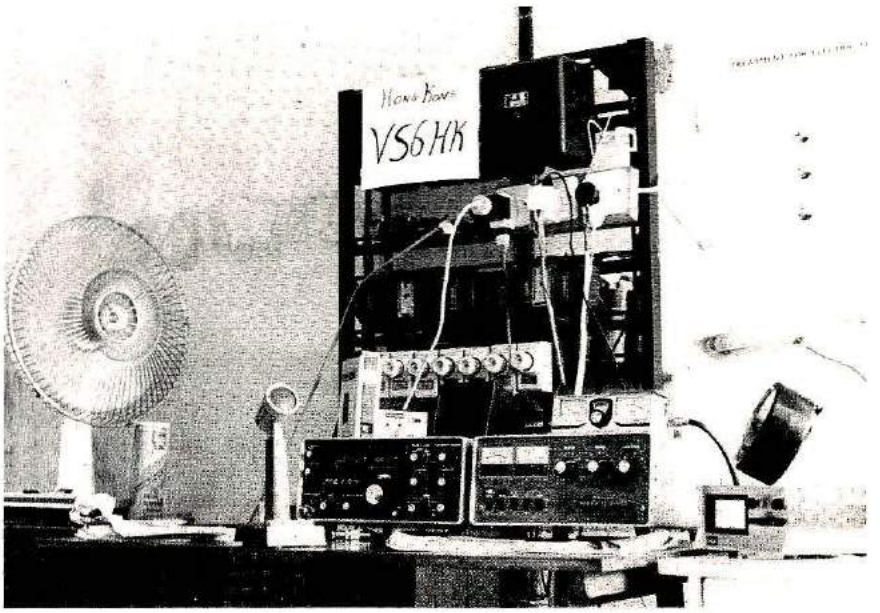
above the island was an excellent location for our antennas.

Upon being assured of a definite operating site (this time we had written permission from the hospital superintendent), we began the second phase of our plan. Excitement was growing on both sides of the ocean as all of us realized that the expedition would be a reality. Obtaining equipment was the next step, and the Hong Kong hams generously loaned us a Yaesu FT201 transceiver. We converted my Icom 22 for use as a base rig, and used a Motorola HT 220 as our roving two-meter rig. There was no antenna available in Hong Kong, so we shipped over a Cushcraft ATB 34 triband, four-element beam and a Ham III rotor.

With the equipment in readiness, all that was left was for Stu and me to fly over to Hong Kong and get on the air. At this point our anticipation was enormous, and we could hardly wait to experience once more the thrill of working DX pile-ups.

Prior to our departure, we heard news that Hong Kong had been hit by a violent hurricane, with winds of over 100 mph blasting the island. We hoped the hurricane wouldn't be an omen of future events. Our eagerness was dealt a sobering blow by the thought that our DXpedition might be ruined by the fierce typhoons and hurricanes which ravage the South China Sea. Still, the tickets had been bought and the plan was ready, so we decided to go. We departed on Sunday night, September 10, 1978.

Our flight was long and uninteresting; the only breaks in the monotony were brief stopovers in Anchorage, Alaska, and Seoul, Korea. Even these stopovers provided little relief, since we spent our time in holding rooms designed to keep international travelers in isolation. After our stopover in Seoul, we thankfully started on our last leg of the trip to Hong Kong, landing there on Tuesday, September 12. The shift in time zones, and the International Date Line, lost us a whole day which we would not regain until our journey back.



The essentials, but not much more. A Yaesu FT201 transceiver, FL-2100B linear amplifier, power/SWR meter, antenna rotor control box, and some transformers and fuses for the ac-power system take up the most of our desk top. The fan, of course, is a must-have item.

After passing through Immigration and Customs we were finally able to enter Hong Kong. Our first impression of Hong Kong was of a scene of overwhelming confusion. The traffic jams were incredible, with thousands of pedestrians running in and out of traffic, dodging cars, buses, and motorcycles. The heat was intense, and coupled with high humidity. After having enjoyed a very dry climate in southern California for many years, the change in humidity and temperature was a shock. The traffic jam around the airport extended all the way from Kowloon (where the airport is located) to Hong Kong (where our living quarters were located).

Driving in Hong Kong is somewhat akin to a demolition derby; it is always exciting and often dangerous. Although experienced drivers at home, we were confronted by problems unknown in the States. First, we learned that everyone drives on the left side of the road. To compound the problem, there are few street signs, so we were constantly getting lost. Narrow streets and many construction projects made matters worse. I think that a lot of Hong Kong residents feel better now that we are back in the U.S. and there are two less crazy foreigners to worry about. Every time we took the car out, it was a new adventure. Eventually, though, we had to return our borrowed car, and we commuted in more sensible transportation, such as taxis and buses. Luckily, taxi cabs in Hong Kong are inexpensive. The going rate is 40 cents for the first mile and 20 cents for each additional mile. Trams cost 6 cents, and the Star Ferry running between the mainland and Hong Kong Island is the bargain of the century at only 4 cents.

After settling down in our apartment and learning some of the ropes in traveling around Hong Kong, Stu and I were eager to visit our operating site

and begin our VS6HK operation. Up and up we went, until we were driving to the very top of Hong Kong. Our operating site was located on the top of a hospital building on one of the highest peaks in Hong Kong. Our view from the station encompassed half the island and its surrounding bays.

A hospital on the highest part of the island proved to be an excellent location for our DX efforts. A triband beam and a vertical antenna gave us all-band coverage.

To reach the equipment shack, we had to climb a set of iron rungs attached to the side of a wall; after a few days, we got accustomed to climbing up walls. Immediately upon arriving at the shack, Stu and I began setting up and testing the various pieces of equipment and attaching the numerous cords and cables. We had to rework the beam somewhat in order to bring the SWR down to an acceptable level. Unfortunately, we were never able to lower the SWR below 2.5 to 1, and we were lucky that the Yaesu has such a wide tolerance. Later, we found that the beam had a defect in one of the traps, and that other beams of this make were similarly defective.

With high SWR and high hopes, radio station VS6HK began operating on September 13, 1978, and the strongest signal to leave Hong Kong in many years was heard on the bands. Upon calling a tentative CQ on 20 meters, we were immediately beset by hundreds of eager Amateurs. Both Stu and I were a bit rusty in handling such large pile-ups, as it had been a year since our last expedition, but, little by little, the pile-up skills learned on our Montserrat trip came back, and we were moving the QSOs smoothly and quickly. We worked a great number of U.S. stations, especially those on the East Coast. We knew that most of the East Coast hams needed Hong Kong, so we made a special effort to stand by for them. Many European stations were also contacted during our first few hours of operation. We made about 360 contacts during our first 20-meter opening; that turned out to be the most consistent band for good propagation; but the most exciting band turned out to be 10 meters. It didn't have the consistency of 20, or the predictability of 15, but when 10 meters opened up, it exploded!

Our first time on 10 meters created a pile-up so enormous that Stu and I worked stations until the band completely closed. We never ran out of stations calling us. The stations we heard first were primarily European and African. Later, we were able to find 10-meter openings to North America, and we enjoyed many huge Stateside pile-ups. Obviously, not many European or Stateside hams hear Hong Kong on 10 meters, and we were never able to satisfy the overwhelming demand for our attention.

Fifteen meters also proved to be a popular band. Usually, we could predict the band openings on 15 quite accurately, and we were always greeted with a pile-up. The pile-ups were not as large or intense as those on 10 meters, but still sufficient to fill several log pages in a very short time. We were constantly beseiged by Japanese stations on all bands, but more so on 15 meters. They would call and call, sometimes making it impossible to hear the European or Stateside stations. During the Japanese pile-ups, it was not unusual to work 300 to 400 stations in a very short time. The density of JA stations must be the highest of all nations, since there seemed to be an inexhaustible number of them following us from band to band at all times of the day and night. On the

Our roof-top shack had the privacy needed to allow us to concentrate on working DX, but the access was rather limited. Here W6MJE tries the ladder leading up to it. We both became skilled at climbing ladders while laden with equipment or food for snacks.

FIRST OF A SERIES

FTC Revolt

You've heard of the tax revolt. It's about time for an FTC revolt. Here's my story and why we've got to stop federal bureaucratic regulation.

My story is only one example of how the FTC is harassing small businesses but I'm not going to sit back and take it.

By Joseph Sugarman, W9IQO
President, JS&A Group, Inc.

I'm pretty lucky. When I started my business in my basement eight years ago, I had little more than an idea and a product.

The product was the pocket calculator. The idea was to sell it through advertisements in national magazines and newspapers.

Those first years in the basement weren't easy. But, we worked hard and through imaginative advertising and a dedicated staff, JS&A grew rapidly to become well recognized as an innovator in electronics and marketing.

THREE BLIZZARDS

In January of 1979, three major blizzards struck the Chicago area. The heaviest snowfall hit Northbrook, our village – just 20 miles north of Chicago.

Many of our employees were stranded – unable to get to our office where huge drifts made travel impossible. Not only were we unable to reach our office, but our computer totally broke down leaving us in even deeper trouble.

But we fought back. Our staff worked around the clock and on weekends. First, we processed orders manually. We also hired a group of computer specialists, rented outside computer time, employed a computer service bureau, and hired temporary help to feed this new computer network. We never gave up. Our totally dedicated staff and the patience of many of our customers helped us through the worst few months in our history. Although there were many customers who had to wait over 30 days for their parcels, every package was eventually shipped.

WE OPENED OUR DOORS

During this period, some of our customers called the FTC (Federal Trade Commission) to complain. We couldn't blame them. Despite our efforts to manually notify our customers of our delays, our computer was not functioning making the task extremely difficult.

The FTC advised JS&A of these complaints. To assure the FTC that we were a responsible company, we invited them to visit us. During their visit we showed them our computerized microfilm system which we use to back up every transaction. We showed them our new dual computer system (our main system and a backup system in case our main system ever failed again). And, we demonstrated how we were able to locate and trace every order. We were very cooperative, allowing them to look at every document they requested.

The FTC left. About one week later, they called and told us that they wanted us to pay a $100,000 penalty for not shipping our products within their 30-day rule. (The FTC rule states that anyone paying by check is entitled to receive their purchase within 30 days or they must be notified and given the option to cancel.)

NOT BY CONGRESS

The FTC rule is not a law nor a statute passed by Congress, but rather a rule created by the FTC to strengthen their enforcement powers. I always felt that the rule was intended to be used against companies that purposely took advantage of the consumer. Instead, it appears that the real violators, who often are too difficult to prosecute, get away while JS&A, a visible and highly respected company that pays taxes and has contributed to our free enterprise system, is singled out. I don't think that was the intent of the rule.

And when the FTC goes to court, they have the full resources of the US Government. Small, legitimate businesses haven't got a chance.

We're not perfect. We do make mistakes. But if we do make a mistake, we admit it, accept the responsibility, and then take whatever measures necessary to correct it. That's how we've built our reputation.

BLOW YOUR KNEE CAPS OFF

Our attorneys advised us to settle. As one attorney said, "It's like a bully pulling out a gun and saying, 'If you don't give me a nickle, I'll blow your knee caps off.'" They advised us that the government will subpoena thousands of documents to harass us and cause us great inconvenience. They warned us that even if we went to court and won, we would end up spending more in legal fees than if we settled.

To settle would mean to negotiate a fine and sign a consent decree. The FTC would then issue a press release publicizing their victory.

At first we tried to settle. We met with two young FTC attorneys and agreed in principle to pay consumers for any damages caused them. But there were practically no damages, just a temporary computer problem, some late shipments, and some bad weather. The FTC then issued a massive subpoena requesting documents that will take us months to gather and which we feel was designed to harass or force us to accept their original $100,000 settlement request.

Remember, the FTC publicizes their actions. And the higher the fine, the more the publicity and the more stature these two attorneys will have at the FTC.

If this all sounds like blackmail – that's just what it appeared to be to us.

We did ship our products late – something we've admitted to them and which we publicly admit here, but we refuse to be blackmailed into paying a huge fine at the expense of our company's reputation – something we've worked hard eight years to build.

We're not a big company and we realize it would be easier to settle now at any cost. But we're not. If this advertisement can attract the attention of Congressmen and Senators who have the power to stop the harassment of Americans by the FTC, then our efforts will be well spent.

ALL AMERICANS AFFECTED

Federal regulation and the whims of a few career-building bureaucrats is costing taxpayers millions, destroying our free enterprise system, affecting our productivity as a nation and as a result is lowering everybody's standard of living.

I urge Congressmen, Senators, businessmen and above all, the consumer to support legislation to take the powers of the FTC from the hands of a few unelected officials and bring them back to Congress and the people.

I will be running this advertisement in hundreds of magazines and newspapers during the coming months. I'm not asking for contributions to support my effort as this is my battle, but I do urge you to send this advertisement to your Congressmen and Senators. That's how you can help.

America was built on the free enterprise system. Today, the FTC is undermining this system. Freedom is not something that can be taken for granted and you often must fight for what you believe. I'm prepared to lead that fight. Please help me.

Note: To find out the complete story and for a guide on what action you can take, write me personally for my free booklet, "Blow your knee caps off."

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More details? Ad Check page 78.

whole, the Japanese stations were very courteous, and their pile-ups were much more orderly than the European ones. Still, the U.S. hams rate the highest in overall operating procedures, and the Stateside pile-ups were the most manageable of all.

Most of our air time was at night since the best propagation occurred from 8:00 PM to 8:00 AM, Hong Kong time. Between turns at the rig we would walk out on the ledge adjoining our shack to enjoy the cool, moist breezes always present at our high altitude. Unfortunately, because of our altitude, these cool breezes would often turn into howling winds blowing more than 50 mph, and we often wondered whether our antenna would still be up in the morning. When the wind was moderate, Stu and I were able to stand out on the ledge and watch the ships wind their way through the harbor, their lights blazing against the dark sea. We could see thousands of brilliant lights turning the island into a glowing picture; it was a magnificent sight.

Back inside our modest radio shack we had a few luxuries, such as a small refrigerator to keep drinks and snacks cold, and a cot to rest on after a long seige at the radio. Not exactly lavish accommodations, but the view and operating location were well worth any inconvenience.

During the daytime, when propagation was at a low point, we traveled back down the mountain road to our apartment in the city. After resting, we would usually set out for lunch and some shopping. I doubt if there is any city in the U.S. as crowded as Hong Kong. New York, Chicago, and Los Angeles are no match for the density and intricacy of Hong Kong. There are literally thousands of shops offering everything imaginable at very low prices, usually half of what would be paid in the U.S. On top of the high density of shops, the pedestrian traffic was incredible. Several times Stu and I were forced to walk out into the street to get around a sidewalk full of shoppers. Street signs were non-existent, and the streets run at all angles. Getting lost was very easy, and it usually took us a good part of the day to find our way back to the apartment.

Even though we spent the daytime sightseeing, shopping, and sleeping, we knew our main activity and reason for being in Hong Kong was Amateur Radio. To this end, we put forth a great effort. We wanted to give as many people as possible the chance to contact Hong Kong. At the same time, we set our personal goals of working DXCC and WAS. With this in mind, we worked relentlessly, searching for elusive states and countries. Propagation to Europe was sporadic, and we were constantly chasing openings to Europe and Africa. Openings to the U.S. were more plentiful, and could be more easily predicted. The best openings to the U.S. were late at night for us, which was early morning for the U.S., and we caught a lot of stations by surprise, since it is not often that a Hong Kong ham will stay up all hours of the evening to work Stateside.

Our efforts finally paid off and, when all was tallied, we ended up with 105 countries and all 50 states. South Dakota was the last state worked, which happened to be the last state worked during our Montserrat expedition. South Dakota gets our award as the rarest state of the U.S.

W6MJE, left, and WB6JPZ at the VS6HK operating desk.

One of the most exciting facets of our DXpedition came when we were invited to Macao as a guest of CR9AJ (Horacio Torres). Earlier, we had spoken to Torres on 20 meters and he indicated that he was having trouble with his beam. The hams in Hong Kong donated a used TH6DXX beam, which we took along to Macao. Hopping on a jetfoil boat, we arrived at the Macao pier in a short time, where we were met by Torres. His location is atop the highest hill overlooking Macao. The whole of Macao was visible,

and off in the distance one could see China and the Pearl River. The view was spectacular, especially from the top of the lighthouse which towers overhead.

As a special favor, Torres let us operate his station for a day under his call, CR9AJ. We found his shack well equipped with a FT401B transceiver, external VFO, Atlas 210 transceiver, and TH3 beam. We fired up the FT401B and pointed the beam Stateside. The demand for Macao was astounding. The pile-ups we experienced in Hong Kong were no match for the massive number of Stateside hams calling CR9AJ. We worked over five hundred stations in half a day's operating, and reluctantly had to shut down to catch the jetfoil back to Hong Kong. Throughout our visit, Torres and his wife went out of their way to make us feel comfortable. Thanks to them, we experienced the excitement of operating from one of the rarest countries in the world.

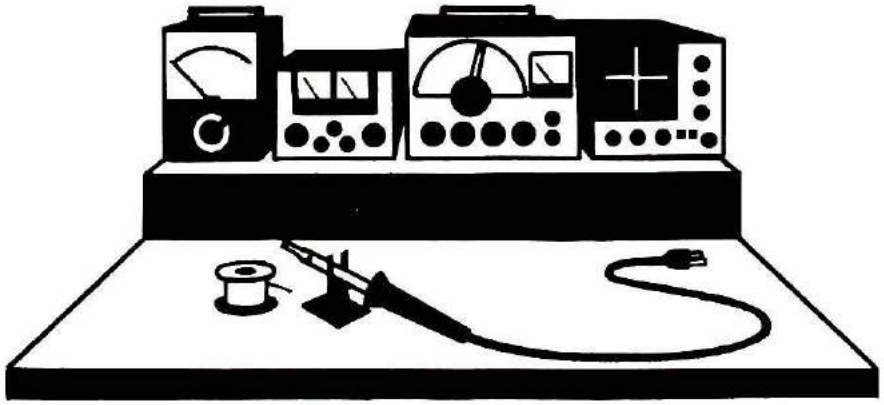
Upon our arrival back in Hong Kong, we immediately resumed operations at our mountain QTH. We had only two days left before our departure for Los Angeles. By the end of our operation we had worked more than 3000 stations in less than nine days. This total does not include those worked from Macao. Exhausted, we climbed down the precariously placed ladder for the last time and headed for the airport.

The trip back to Los Angeles was as uninspiring as the outward-bound trip. After recovering from the rigors of the expedition and flight, Stu and I started working on the first onslaught of QSL cards. We expected a great number of cards on our return, and our QSL manager, Sheldon Shallon, W6EL, did not disappoint us. A huge sack of cards waited to be answered, and the second phase of our expedition began.

After looking though hundreds of QSL cards, I have found that the majority of hams are familiar with proper QSL techniques. Still, there were enough mistakes among the QSLs to warrant a few words on what will help you get that DX card faster. First, a number of cards from Stateside hams came through with no S.A.S.E. (self-addressed, stamped envelope). If you hope to get a speedy reply from a Stateside QSL manager, you must send an S.A.S.E., otherwise, you can wait for a year or more for your card to reach you through the bureau. Second, some hams were not using GMT (Greenwich Mean Time) on their cards. Use of local time on a QSL card will invariably result in the card's being sent back. Remember, the DX operator or manager has all the logs in GMT; he gets hundreds of cards and has no time to convert your local time to GMT. All that effort in the pile-up will be wasted unless your card is marked in GMT, with the correct date, and legible information. Don't lose your chance for a card by making an error. Luckily, most cards we received were properly filled out; we processed them quickly.

The expedition was very successful. Both Stu and I enjoyed the chance to be a sought-after DX station. Being a DX station heightens one's appreciation for the difficult conditions that most DX operators encounter. We both feel that our own operating habits have improved as a direct result of our Hong Kong expedition. An undertaking of this sort is attainable by many hams without spending a great deal of time or money, and the excitement is well worth the expense. I hope that other hams will attempt their own DXpeditions, and enjoy the thrill of travel and adventure. Stu and I will be looking for another interesting spot for a DXpedition next year. Africa is our goal but the excitement will be there, no matter what the location.

HRH



BENCHMARKS

Keyer Paddle

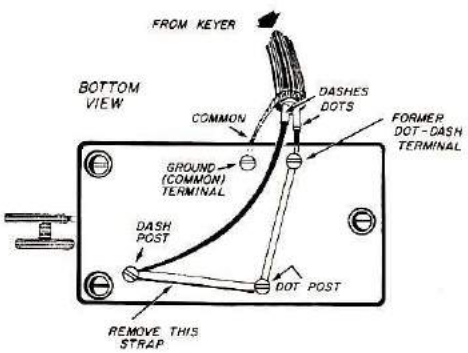


Fig. 1. The modification of a semi-automatic "bug" is started by removing the connecting strap between the dash post and the dot post. Cable from the electronic keyer is connected as shown.

Do you need a paddle for your new electronic keyer? How about considering a slight modification to an old friend — your "bug"? It will not only make an excellent paddle, but can be restored to its original semiautomatic status in five minutes.

Mine is the Deluxe Vibroplex model. I started the modification by removing the strap from the DOT terminal to the DASH contact post, as indicated in **Fig. 1**. Then I connected the KEYER cable as shown. Note that the DASHES wire connects directly to the DASH contact post screw, underneath the base.

Now to **Fig. 2**: Position the weight nearly to the end of the spindle. Back off adjustments **A**, **B**, and **D**. Move the paddle to the right slowly (so there is no vibration) and hold it against **A**. Adjust **A** until the end of the spindle solidly contacts dampener **C**. Now adjust **B** and **D** to give the best feel and keyer response. Adjust DASHES to suit your fist.

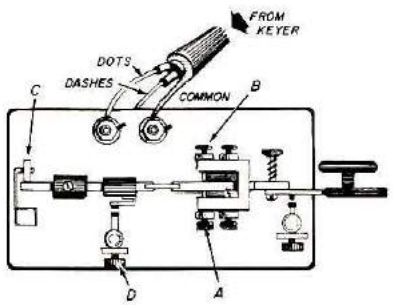


Fig. 2. The contacts, springs, and stops must be adjusted to eliminate vibration in the pendulum arm. The bug can be restored to normal mechanical operation in a few minutes.

Now relax and enjoy nearly effortless CW with the comfortable and familiar presence of an old companion!

Spence Collins, N6SC

Rigid Mobile Mount

I mounted a newly purchased Japanese two-meter fm transceiver under the dash of the car with the one bracket supplied. The unit was not rigid enough and required another bracket from the rear of the unit to the heater duct. The extra bracket had to be designed so that the rig could be taken out easily. I solved this problem by means of the antenna connector located on the rear of the transceiver (see **Fig. 3**).

First, I screwed a right-angle connector (Amphenol UG-646) onto the chassis connector. I bent a right-angle bracket, drilled a 5/8-inch hole in it, and mounted the bracket so the right-angle connector fitted through the hole. The connector from the antenna was then screwed down, thus making a rigid mount.

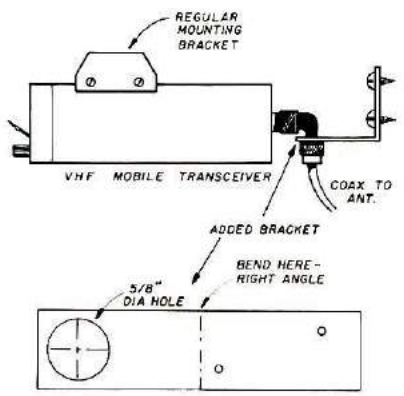


Fig. 3. Bracket at rear of mobile transceiver greatly increases rigidity. Below, layout for the rear mounting bracket.

I have found that the single bracket with which most of the small transceivers are supplied is not adequate for a rigid mobile installation.

Vern Epp, VE7ABK

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THE 1980 FOREIGN CALLBOOK

DXing is a real joy, but it's even better when you get back QSL cards from the countries you've worked. The most important tool in getting those cards is to have a copy of the 1980 Foreign Callbook on your operating table. Stations are listed by country, call, name and address in bold, easy-to-read type. You also get: Great Circle Beam headings from major U.S. cities, International Postal information, DXCC Countries List, Worldwide QSL bureaus, Standard time charts and more. Get the DX information you want, when you want it. Order today so you have a copy on hand for the winter DX season.

☐**CB-F** **Softbound $15.95**

SHORTWAVE PROPAGATION HANDBOOK

Edited by George Jacobs, W3ASK, and Theodore J. Cohen, N4XX

For many hams, both new and old, radio wave propagation is still a mystery. Realizing this, the authors went about the task of preparing a simplified text that could be understood by hams, swl's and engineers alike. Stress has been given to simplified explanations and charts. The authors also detail a simplified method of do-it-yourself propagation forecasting. To assist your forecasting efforts, the book contains a complete listing of the 12 month smoothed sunspot numbers since 1749. Join those who know how to predict when the bands will open to specific areas of the world. ©1979.

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ANTENNA BOOKS

SIMPLE LOW-COST WIRE ANTENNAS

Learn how to build simple, economical wire antennas. Even if you don't know a feedline from a feed-through, W6SAI will get you on the air with an effective low-cost wire antenna. And, apartment dwellers take note! Fool your landlord and your neighbors with some of the "invisible" antennas found here. For the old-timer as well as the beginner, it's a clearly written, well diagramed, and even humorous antenna book. 192 pages. ©1972.

☐**RP-WA** **Softbound $5.95**

BEAM ANTENNA HANDBOOK

by William I. Orr, W6SAI

Here's recommended reading for anyone thinking about putting up a yagi beam this year. It answers a lot of commonly asked questions like: What is the best element spacing? Can different yagi antennas be stacked without losing performance? Do monoband beams outperform tribanders? Lots of construction projects, diagrams, and photos make reading a pleasurable and informative experience. 198 pages. ©1977.

☐**RP-BA** **Softbound $4.95**

THE RADIO AMATEUR ANTENNA HANDBOOK by William I. Orr, W6SAI and Stuart Cowan, W2LX

If you're pondering what new antennas to put up, we recommend you read this very popular book. It contains lots of well illustrated construction projects for vertical, long wire, and HF/VHF beam antennas. But, you'll also get information not usually found in antenna books. There is an honest judgment of antenna gain figures, information on the best and worst antenna locations and heights, a long look at the quad vs. the yagi antenna, information on baluns and how to use them, and some new information on the increasingly popular Sloper and Delta Loop antennas. The text is based on proven data plus practical, on-the-air experience. We don't expect you'll agree with everything Orr and Cowan have to say, but we are convinced that **The Radio Amateur Antenna Handbook** will make a valuable and often consulted addition to any Ham's library. 190 pages. ©1978.

☐**RP-AH** **Softbound $6.95**

73 VERTICAL, BEAM, AND TRIANGLE ANTENNAS

A collection of 73 different vertical, beam, and triangle antenna designs. It contains construction details for single and multi-element verticals, multi- element horizontal arrays, yagis, quads, and triangles. Here's an antenna cookbook sure to spark your imagination. 160 pages. ©1977.

☐**24021** **Softbound $5.50**

BEVERAGE ANTENNA HANDBOOK

by Victor Misek, W1WCR

The Beverage or Travelling Wave antenna is becoming popular as a separate receiving antenna which greatly reduces interference from foreign broadcast and other stations on the lower Amateur bands. Because it consists of a single longwire and a terminating unit, the Beverage is easy and economical to construct. The author gives you theory and describes a number of different Travelling Wave and Steerable Wave antennas, all designed to greatly reduce QRM on the 40, 80, and 160 meter bands. 39 pages. ©1977.

☐**VM-BAH** **Softbound $5.00**

THE ARRL ANTENNA BOOK

For years this has been the standard manual on Amateur antennas. The popular vertical, wire, beam, VHF/UHF, and Oscar antennas are given full theoretical and practical treatment as well as mobile and restricted space antennas. Wave propagation and antenna measurement are also discussed. Makes a great companion to the ARRL's new "Antenna Anthology." 336 pages. ©1974.

☐**AR-AM** **Softbound $5.00**

THE ARRL ANTENNA ANTHOLOGY

by the ARRL staff

This brand new book pulls together a wide selection of antenna articles from QST. Written for Amateurs of all levels and interests. Included are phased arrays, verticals, Yagi's . . . even the VHF Quagi! Detailed instructions and full illustrations make this a really useful book for any Amateur. 152 pages. ©1979.

☐**AR-AA** **Softbound $4.00**

PRACTICAL ANTENNAS

PRACTICAL ANTENNAS is not quite like any of the other ham antenna books. Written by a knowledgeable DX'er, this new book is chock-full of helpful hints and suggestions on the how-to's of putting up a super antenna system. Chapters include information on design and construction of practical Yagis, quads and wire type antennas. Inside you'll also find a complete bibliography of antenna articles from the popular amateur publications. Charts and tables are designed to eliminate all those tricky calculations. And, SCELBI has included a list of computer generated beam headings from major population centers to all the countries of the world. A new format, large easy-to-read text and durable vinyl cover make **PRACTICAL ANTENNAS** a "must" for every amateur library. ©1979.

☐**SC-PA** **$9.95**

ALL ABOUT CUBICAL QUAD ANTENNAS

The cubical quad antenna is considered by many to be the best DX antenna because of its simple, lightweight design and high performance. In Bill Orr's latest edition of this well known book, you'll find quad designs for everything from the single element to the multi-element monster quad, plus a new, higher gain expanded quad (X-Q) design. There's a wealth of supplementary data on construction, feeding, tuning, and mounting quad antennas. It's the most comprehensive single edition on the cubical quad available. 112 pages. ©1977.

☐**RP-CQ** **Softbound $4.75**

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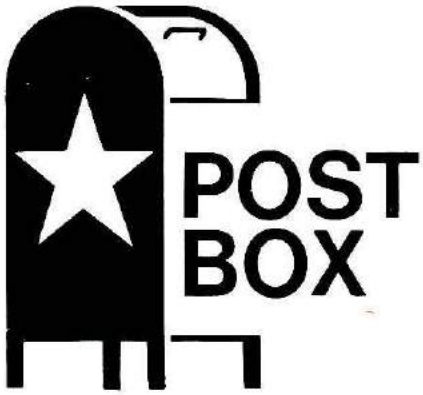


Dear Horizons:

I have just returned to ham operation after a period of 45 years. Many things have changed since then and I find your publication just excellent for building up my confidence and developing my technical skills. All articles are very easy to understand and they have a basic approach that is difficult to find in other ham publications.

An excellent example is your article "Those Mysterious Controls and Switches," in the May, 1979, issue. Years ago we built our own transmitters and knew what was going on, but today the purchased equipment is flooded with lights, snap switches, buttons, digital displays, etc.

This particular article certainly applied to me, as I bought equipment as soon as I passed my examination and I was confronted with confusing controls.

Keep up the good articles and you have a lifetime subscriber. I would rather cancel my other publications before *Ham Radio Horizons*.

George MacDonald, WD9IUR
Chicago, Illinois

Dear Horizons:

You have a pretty good magazine going, and I would like to make a suggestion to make it even better.

I think that you ought to have a quiz or activity column in which there might be a question and answer or a crossword puzzle, or some type of activity based on the theory of radio. It could help people to learn the theory to pass or upgrade in the Amateur licensing system.

Steven Meyer, WA6JHW
Sylmar, California

Dear Horizons:

Last year, in a surge of nostalgia for the good old days of my active ham life (1930s and 40s) I decided to try a subscription to your magazine and see what's going on now. I've been amazed. And I commend you on an excellent publication.

In that connection, I must say that your article in the August issue, "A Public Relations 'How To' Guide," is an outstanding piece — one that should be immeasurably helpful to Amateurs and clubs, to the building of better public understanding of Amateur Radio, and to the media. The article was written by someone who is obviously well versed in the procedures of dealing with us in media, especially radio and television. Incidentally, ARRL is to be congratulated on the fine public-service spots for radio by Lorne Greene, Bob Hope, *et al.*

N. C. Duncan, Jr., Ex-W4FST
Editorial and
Public-Affairs Director,
WFBC-TC
Greenville, South Carolina

Dear Horizons:

Thanks for publishing such a fine and interesting magazine. You really have something for everyone, from beginner to Extra. I especially enjoy the easy to understand theory, and the construction projects.

Keep up the good work.

Al Keenan, WB7QBQ
Anaconda, Montana

Dear Horizons:

I've only been a ham operator for a short time . . . I got my ticket in June, and enjoy ham radio very much.

I became interested in ham radio about two years ago, when I visited my brother-in-law in North Carolina. Later, I ran across a receiver for $50, and my brother-in-law found a transmitter for $40. He helped me set up my station with an inverted-V dipole.

I studied for my ticket with help from your magazine. I started receiving *ham radio Horizons* last Christmas, as a present from my XYL.

My receiver is a Technical Material Corp. model GPR-90. The transmitter is a Knight T-150. I would like to know if anyone could give me a report on these rigs?

I agree with WA8MJP in your October issue about language heard over the air. I stay away from CB because I don't care for the language.

So. *Horizons*, keep up the good work. I enjoy the articles, and the stories about other ham operators too.

Jim Turner, KA1DIQ
Monson, Massachusetts

Dear Horizons:

Thank you for an excellent magazine. My three-year renewal is enclosed. I was a Novice back in 1958 and made the mistake of letting my license expire in 1959. Now, after many nights of school, have a brand new call — KA6FNW. One point I would like to mention: as a Novice for only three weeks now, I notice a big change in QSOs with new hams. They don't ask for QSL cards. Back then you exchanged QSLs with an OM or YL 10 miles away! Is the cost of postage ruining the fun of exchanging cards with not just DX, but with friends everywhere?

John B. Goldsmith, KA6FNW
Mission Viejo, California

Dear Horizons:

This will, no doubt, be one of many letters to you highly commending the fantastic job done by the Hurricane Watch during the recent hurricanes David and Frederic.

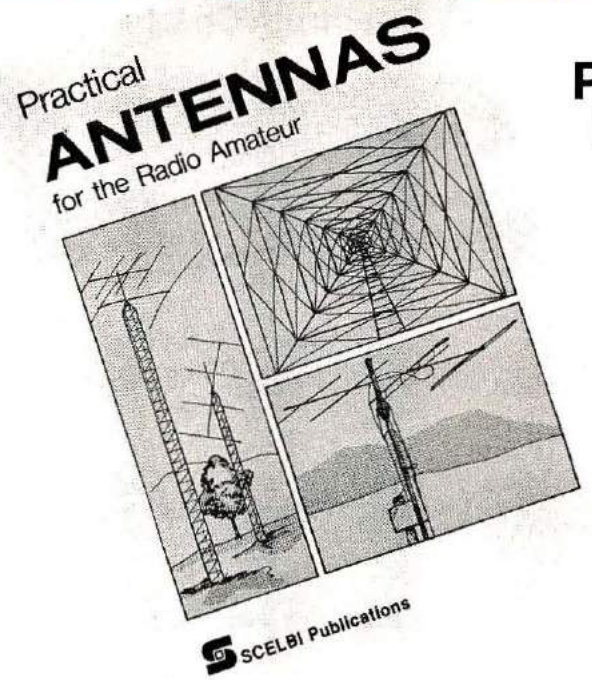
I cannot commend too highly the excellent work done by all those running the net, and most particularly by K4RHL, Ellie, and WA1KKP, Lyn. Many people who benefited from information received by the tireless efforts of these hams will hold them in warm regard. For those of us who sat on the sidelines during the long hours, their patience and fortitude under difficult conditions was more admirable.

The difficult conditions were unfortunately made doubly so by some sick pranksters or malicious fools who persisted in heckling and attempting to block vital transmissions with all manner of QRM. It is hoped that the FCC is in a position to take positive action. I think that every ham who heard the QRM deplored it, and would love to have been in a position to throttle the bastards.

George Benson, 6Y5B
Kingston, Jamaica, W.I.

More details? Ad Check page 78.

SERIOUS READING



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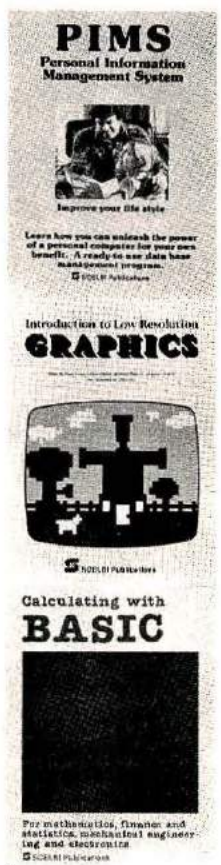

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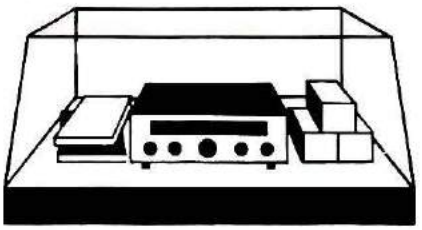


For literature on any of the Product Showcase items use our *ad-check* service on page 78.

MFJ-408 Deluxe Electronic Keyer II

The new MFJ-408 Deluxe Electronic Keyer II has a readout and a socket for the Curtis external memory, random code generator, and keyboard.

The MFJ-408 lets you read your sending speed to 50 WPM, and the accessory socket allows you to use Curtis accessories such as external memory, random-code generator, or keyboard.

The MFJ-408 is based on the proven Curtis 8044IC keyer chip. It operates in lambic, automatic, semi-automatic, or manual modes. Dot-dash memory provides self-completing dots and dashes with jam-proof spacing. The keyer provides keying for grid block, cathode, or solid-state transmitters (−300V, 10 mA max; +300V, 100 mA max.).

All controls are on the front panel, and include weight control, tone control, and function switch (on, off, semi-automatic/manual, and tune). A stereo phone jack for the key, and phono jacks for outputs are on the back of the MFJ-408 keyer.

The MFJ-408 is completely portable; it operates up to one year on four C-cells. It has a 2.5-mm phone jack for external power (6 to 9 Vdc), or order the optional ac adapter for $7.95.

The cabinet is eggshell white with walnut sides, and the size is 20 × 5 × 15 cm (8 × 2 × 6 inches).

MFJ provides a 30-day, money-back trial period. If you are not satisfied, you may return it within 30 days for a full refund (less shipping). MFJ also provides a one-year unconditional warranty.

The MFJ-408 Deluxe Keyer II is available from MFJ Enterprises, Inc., for $79.95 plus $3.00 shipping and handling; accessory cable with plug is $3.00. To order, call toll-free 1-800-647-1800, or mail order to MFJ Enterprises, P.O. Box 494, Mississippi State, Mississippi 39762.

Shure 526T Series II microphone

Shure Brothers has announced the new Shure Model 526T Series II Super Punch® microphone with new design features that improve its overall versatility for base-station transmissions and make it compatible with most transmitters and transceivers.

The new 526T Series II can be connected to a wide assortment of transceivers with input impedances of 500 ohms or higher. A new six-wire coiled cord and triple-pole, double-throw switch are arranged for universal compatibility with most transceivers. The new microphone can be used to replace either ceramic or dynamic, low or high impedance mikes.

Important performance features of the new microphone include a dynamic element and a transistorized preamplifier that operates for hundreds of hours on a standard 9-volt battery. Volume control allows adjustment for optimum transmitter modulation and maximum intelligibility. A "million-cycle" transmit/receive switch closes with a self-cleaning wiping action for noise-free switching with momentary or locking operation. This same switch allows for connecting accessories such as speech processors, antenna relays, and on-the-air lights. For information, write Shure Brothers Inc., 222 Hartley Ave., Evanston, Illinois 60204.

Spectrum Chart

A unique radio chart, called "Worldwide Listeners Guide to the Radio Spectrum," has just been released for distribution by Radio Publication Co., Lake Geneva, Wisconsin. The chart covers the radio spectrum from 10 kHz to 30 GHz with sample listings of stations found on particular frequencies. For example, on 16.7155 MHz (high frequency), the chart lists the Queen Elizabeth II (inter-ship communications). Over five hundred listings across the spectrum appear on the chart.

Laid out as outer and inner circles, this is a quick and easy-reference chart for hams, shortwave listeners, and scanner owners. The chart is printed in full color on high quality paper

More details? Ad Check page 78.

and resembles the rainbow spectrum. It measures 80 × 63 cm (35 inches × 25 inches). This new chart is available from Radio Publication Co., P.O. Box 28, Lake Geneva, Wisconsin 53147. The price is $4.50 postpaid in a special mailing tube.

More Kulduckie Antennas by Larsen

Larsen Electronics, Inc., is rapidly expanding its Kulduckie line to work with more hand-held units. Three new Kulrod antennas have been developed, considerably increasing the number of handhelds that can be mated with Larsen antennas.

The new KD5 and KD6 fit the General Electric PE and PR models respectively. A third Kulduckie, the KD9, fits any radio with a UHF-type antenna connector. The KD5 and KD6 have frequency ranges from 136-174 MHz and 406-512 MHz, KD9 frequency coverage is from 136-174 MHz.

Larsen Kulduckies are ruggedly constructed to take the rough usage common to this type of antenna. Vhf and uhf models are spring wound for flexibility, and then plated with high-conductivity material for Larsen's maximum radiation efficiency.

They are also all-weather protected by a tough, heavy-duty coating of an exclusive design which prevents detuning by shorting, and adds flexibility. They handle a full 25 watts, and are flexible enough to bend 180 degrees in all directions.

For more information write Larsen Electronics, Inc., P.O. Box 1686, Vancouver, Washington 98663.

Just Wrap Kit

OK Machine and Tool Corporation has announced its new "Just Wrap Kit." The "Just Wrap" tool wraps No. 30 AWG wire onto standard 0.025 square posts without stripping or slitting the insulation. The tool can "daisy chain" continuously through several points, or can be used "point-to-point". The JWK-6 Kit contains the "Just Wrap" wrapping tool, the JUW-1 unwrapping tool, and four wire-refill cartridges, one each in red, white, blue, and yellow, all packaged in a sturdy, reusable clear plastic box. Priced at $24.95, the JWK-6 Just Wrap Kit is available from stock at local electronics retailers or directly from OK Machine and Tool Corporation, 3455 Conner Street, Bronx, New York 10475.

Anti-Tip Key

Ham Radio Center is introducing a new modified straight key replacing their popular Model HK-3 Ham-Key.

The new model is the HK-3M, and features a new anti-tip bracket that prevents even a pump-handle type of operator from tipping it over.

The beauty of this new feature is that any HK-3 now in the field can be converted to an HK-3M by merely adding the AT-B bracket, which installs in minutes.

The price on the new HK-3M is $19.95 and on the AT-B $2.99. Both are available from select Amateur equipment dealers throughout the country, or direct from Ham Radio Center, P.O. Box 28271, St. Louis, Missouri 63132.

More details? Ad Check page 78.

DSI Pocket-Sized Frequency Counter

A new series of hand-held digital frequency measurement instruments that provide all the accuracy and high readout-legibility of the full-scale types — yet are not much larger than a 120-millimeter cigarette pack — has been announced by DSI Instruments, Inc., San Diego, California. Two models, the 500HH that has a frequency range of 50 Hz to 500 MHz, and the 50 Hz to 100 MHz 100HH are offered.

Their large, eight-digit LED display features automatic decimal-point shifting and zero blanking. Total case dimensions (excluding antenna) are only 8.9 × 3.1 × 14.6 cm (3.5 × 1.25 × 5.75 inches) — about the same as a typical pocket-size calculator.

The counters are accurate to within 1 PPM over a wide temperature range. The Model 500HH has a high sensitivity that is typically 30 mV at 100 Hz to 250 MHz, and 50 mV at 250 MHz to 450 MHz. The typical sensitivity of the 100HH is 30 mV at 100 Hz to 50 MHz. What's more, they have prescale input resolutions of only 10 Hz in just 0.1 second (or 1.0 Hz in 1.0 second).

They have BNC connectors on direct inputs of 1.0 megohm (50 ohms prescaled). Using low-drain LSI circuitry, they operate from a built-in rechargeable 8.2 to 14.5 Vdc battery pack, or 115 Vac, using an external AC adapter that also trickle-charges the battery pack.

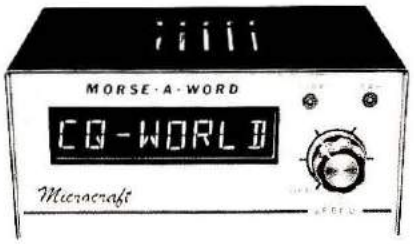
Their single-quantity prices start at a low $119.95 for the Model 100HH, and $169.95 for the 500-MHz Model 500HH. Deliveries can be made immediately from local or factory inventories. All the units are factory pre-tested before shipment, and they carry a one-year limited warranty.

For complete technical data, quantity pricing, and local-outlet information, contact DSI Instruments, Inc., at 7914 Ronson Road, San Diego, California 92111.

More details? Ad Check page 78.

More details? Ad Check page 78.

Microcraft Morse-A-Word Code Reader



An eight-character Morse-code reader has been introduced by Microcraft, for SWLs, beginners, and veteran Amateur Radio operators. It accepts audio signals from a communications receiver's headphone jack or loudspeaker, and displays the decoded characters. All text characters — letters, numerals, punctuation marks, special Morse-symbols, and word spaces are shown sequentially on the display in moving-character fashion. Code speeds of 5 to 35 WPM can be copied, depending on the setting of the front panel control. The Morse-A-Word also includes a built-in code-practice oscillator and monitor speaker for practice sessions. A complete kit is $169.95, and a wired and tested version is $249.95. Write to Microcraft, P.O. Box 513, Thiensville, Wisconsin 53092.

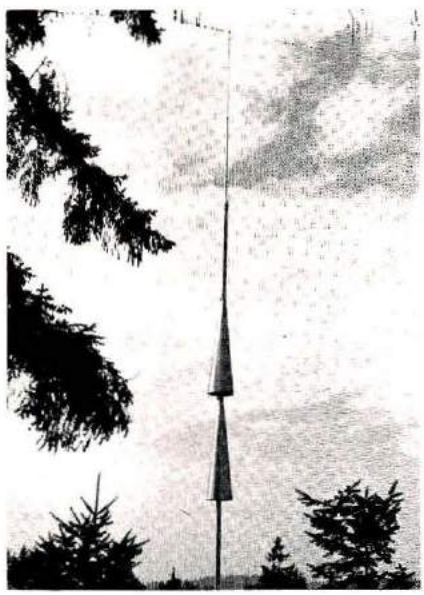
Thumb-Wheel Ratchet Wrench

Wherever limited space prevents the use of conventional wrenches, this remarkable new "Thumb-Wheel" ratchet set comes to the rescue. It lets the user reach the tightest places behind an auto dash, under the hood, or in the trunk with good leverage and maneuverability. The Thumb-Wheel is ideal for installing and servicing broadcast radios, Amateur gear, CBs, rigs, for working inside TV sets, or assembling cabinets and electronic gear.

Each Thumb-Wheel ratchet set contains 8 pieces: one reversible Thumb-Wheel ratchet; six 1/4-inch, 6-point standard sockets, 3/16, 1/4, 5/16, 3/8, 7/16, and 1/2-inch; one 2-inch extension, and a durable, self-sealing carrying pouch. The ratchet is 1-1/2 inches in diameter, 7/16 inch thick, has a 1/4-inch drive, and a fully knurled gripping surface.

Thumb-Wheel is made in the U.S. to the highest standards and is warranted for life. A complete eight-piece Thumb-Wheel ratchet set, with pouch, is only $14.95 plus $1.00 for postage and handling. Satisfaction is fully guaranteed. Write Howard Products Company, P.O. Box 57246, Dallas, Texas 75207.

ISOPOLE Antenna



Advanced Electronic Applications, Inc., has developed the ISOPOLE,* a new, vertically polarized, omni-directional, gain-type, base-station antenna which provides performance superior to that of any other low-cost antennas now in the marketplace. ISOPOLE's revolutionary double-cone design results in virtual elimination of the major problem plaguing other base-driven vertical antennas: the inadvertent and unwanted coupling of rf currents onto the supporting structure and the shield of the feedline, seriously degrading the radiation patterns of most antennas. On-the-air tests have shown a substantial signal improvement in favor of the ISOPOLE.

The ISOPOLE's unique new design features a double-decoupled, center-driven, 1¼-wavelength antenna to provide the theoretical maximum obtainable gain for a dipole. All rf connections are protected from the weather. The ISOPOLE is pretuned at the factory so that the user can obtain an 8-MHz bandwidth by following the simple assembly instructions. The ISOPOLE is intended for installation atop the swaged end of a standard TV mast (not supplied). The ISOPOLE has an introductory Amateur net price of $49.95.

For further information contact: Advanced Electronic Applications, Inc., P.O. Box 2160, Lynnwood, Washington 08036; phone (206) 775-7373.

*ISOPOLE is a registered trade mark of AEA, Inc.

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Manufactured by Daltec Systems Incorporated, "Crowbar" is available from stock in kit form (Model CA630K) at $12.00, and completely assembled and tested (Model CA630A) at $15.00.

Write Daltec Systems, Inc., P.O. Box 157, Onandaga Branch, Syracuse, New York 13215.

More details? Ad Check page 78.

Ham Radio HORIZONS

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There'll be other surprises in HORIZONS too. **Bill Orr, W6SAI** is joining our staff in the March issue. Widely acclaimed, **Bill** brings to us a wealth of antenna knowledge and expertise. And there'll be a DX column too!

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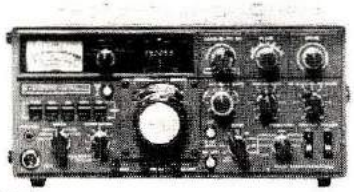

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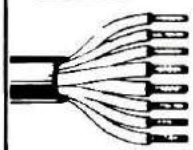
	400	3.8	12.5
8214 26¢/ft	50	1.2	3.9
	100	1.8	5.9
	200	2.6	8.5
	300	3.3	10.8
	400	3.8	12.5
8237 23¢/ft	100	2.0	6.6
	200	3.0	9.8
	400	4.7	15.4
	900	7.8	25.6
8267 30¢/ft	100	2.0	6.6
	200	3.0	9.8
	400	4.7	15.4
	900	7.8	25.6



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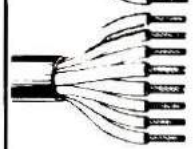

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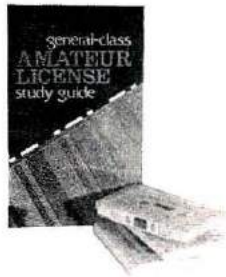

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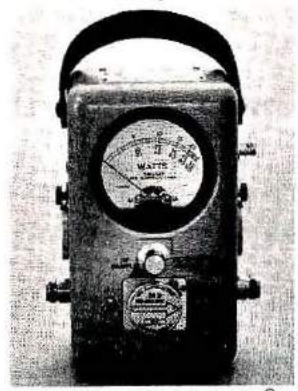

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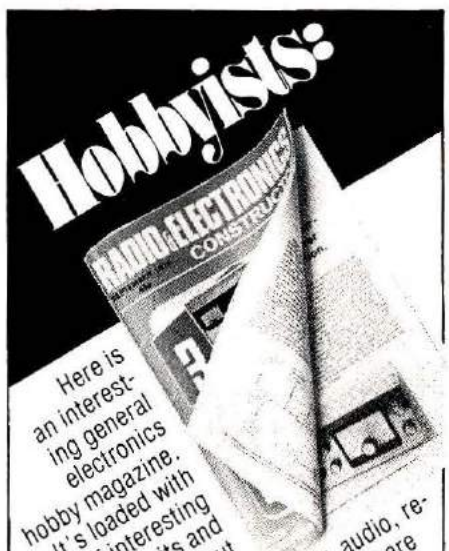

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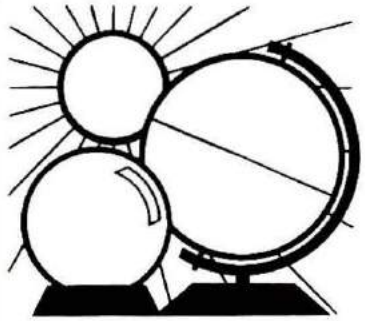

DX FORECASTER

Last-minute predictions

The month of January looks as if it will be relatively quiet, ionospherically speaking. Look for a minor disturbance around the 8th, another around the 20th, and perhaps a bit stronger one between the 24th and 31st, centering around the 27th or 28th. Full moon occurs on the second, and perigee on the twentieth of the month.

Band-by-band summary

Ten meters will provide good-to-excellent DX conditions from morning until night on many days of the month. You can expect the strongest signals from Europe, Africa, and points east in the morning; signals from the southern hemisphere after noon; and from the Pacific and points west in the late afternoon and early evening. Excellent short skip between 1700 and 3000 kilometers should be present during daylight hours.

Fifteen meters will open in the early morning, and signals from Europe should peak in the late morning hours. The band will swing toward the south and southwest around noon, and signals from the west, northwest, and Pacific areas will be strongest in the late afternoon and early evening, and openings may last until well after dark. Daytime short skip of about 1200 kilometers will be common.

Twenty meters will remain open to some area of the world or another almost around the clock. The best times for strongest signals will be about an hour or so after sunrise and an hour or so before sunset, but signals at other times will be almost as good. Short skip of 1500 to 3500 kilometers will be common.

Forty meters will come into its own during the hours of darkness and will provide fine DX opportunities and low atmospheric noise levels on most days. Look for signals from Europe and points east in the late afternoon and early evening, with the band shifting toward the west and Pacific areas around midnight or so, and peaking in the Far East and South Pacific just before sunrise. Daylight short skip of 1500 kilometers, and nighttime short skip of 1200 to 3500 kilometers, will be a regular feature.

Eighty meters will open up between sunset and midnight for signals from Europe, Africa, and the east. Around midnight, South and Central America will be strong, and signals from the Pacific should start coming through. These will peak around daybreak. Daytime short skip of about 800 kilometers will stretch to 2500 kilometers or so after dark.

One-sixty meters should be titled "DXing After Dark," because that's when all the action occurs. DX and short skip will mix, and you will hear stations up to 2000 or 2500 kilometers away blending with those from overseas. The DX "window" is the first 5 kHz at the low end of your band segment, depending where in the U.S. you live.

An asterisk (*) in the chart means to look for openings on the next higher frequency band.

HRH

WESTERN USA

GMT	PST	N	NE	E	SE	S	SW	W	NW
0000	4:00	10	—	20	15	15	10	10	10
0100	5:00	10	—	20	15	15	15	15	15
0200	6:00	15	—	20	20	20	15	15	15
0300	7:00	15	40	20	20	20	20	20	20
0400	8:00	20	40	—	20	20	20	20	20
0500	9:00	—	40	—	20	20	20	20	—
0600	10:00	—	40	—	20	20	—	20	—
0700	11:00	—	40	—	40	20	—	—	—
0800	12:00	—	40	—	40	40	20	—	—
0900	1:00	—	—	—	40	40	20	—	—
1000	2:00	40	—	—	—	40	40	—	—
1100	3:00	40	—	—	—	—	40	40	40
1200	4:00	40	—	—	—	—	40	40	40
1300	5:00	80	—	—	—	—	40	40	40
1400	6:00	40	20	—	20	—	40	40	40
1500	7:00	40	15	—	15	20	40	40	40
1600	8:00	—	15	—	15	20	—	20	40
1700	9:00	20	15	10	15	20	—	20	—
1800	10:00	20	15	10	10	—	15	20	—
1900	11:00	20	20	15	10	—	15	20	—
2000	12:00	—	20	15	10	—	15	15	—
2100	1:00	20	—	15	10	—	15	15	—
2200	2:00	10	—	15	10	15	10	15	20
2300	3:00	10	—	15	10	15	10	10	10

	ASIA FAR EAST	EUROPE	S. AFRICA	S. AMERICA	ANTARCTICA	NEW ZEALAND	OCEANIA AUSTRALIA	JAPAN

MID USA

MST	N	NE	E	SE	S	SW	W	NW	CST
5:00	15	—	20	15	—	15	15	15	6:00
6:00	15	—	20	20	20	15	15	15	7:00
7:00	15	—	—	20	20	15	20	15	8:00
8:00	20	—	—	20	20	20	20	20	9:00
9:00	—	—	—	20	20	20	20	—	10:00
10:00	—	—	40	20	20	—	20	—	11:00
11:00	—	80*	40	40	20	—	—	—	12:00
12:00	—	80*	40	40	20	40	—	—	1:00
1:00	—	—	—	40	40	40	—	—	2:00
2:00	—	—	—	—	40	40	—	—	3:00
3:00	—	—	—	—	40	40	—	—	4:00
4:00	—	—	—	—	—	80	—	—	5:00
5:00	—	—	—	—	—	80	40	—	6:00
6:00	—	—	—	20	—	80	40	—	7:00
7:00	20	20	—	20	20	20	40	20	8:00
8:00	20	15	—	15	20	20	20	20	9:00
9:00	20	15	10	15	20	20	20	20	10:00
10:00	—	15	10	10	—	—	20	—	11:00
11:00	—	15	10	10	—	—	—	—	12:00
12:00	—	15	10	10	—	15	—	—	1:00
1:00	—	15	15	10	—	15	—	—	2:00
2:00	—	20	15	10	15	15	15	—	3:00
3:00	—	20	15	10	15	15	10	—	4:00
4:00	—	—	20	10	15	15	10	15	5:00

	ASIA FAR EAST	EUROPE	S. AFRICA	S. AMERICA	ANTARCTICA	NEW ZEALAND	OCEANIA AUSTRALIA	JAPAN

EASTERN USA

EST	N	NE	E	SE	S	SW	W	NW
7:00	—	80*	20	20	—	—	20	15
8:00	—	80*	—	20	20	—	20	20
9:00	—	80*	—	40	20	—	20	20
10:00	—	80*	—	40	20	—	20	—
11:00	—	80*	20	40	20	—	—	—
12:00	—	80*	20	40	—	—	—	—
1:00	—	80*	40*	40	—	—	—	—
2:00	—	—	—	40	—	—	—	—
3:00	—	—	—	40	—	—	40	—
4:00	—	—	—	—	—	—	40	—
5:00	—	—	—	—	—	—	40	—
6:00	—	—	—	—	—	40	40	—
7:00	20	20	—	20	20	40*	20	20
8:00	20	15	—	15	20	20	20	20
9:00	20	10	10	10	20	20	20	20
10:00	—	10	10	10	—	20	20	—
11:00	—	15	10	10	—	20	20	—
12:00	—	15	10	10	—	—	—	—
1:00	—	15	10	10	—	20*	15	—
2:00	—	20	15	10	—	15*	15*	—
3:00	—	20	15	10	15	15*	15*	—
4:00	—	—	20	15	15	15	15	—
5:00	—	—	20	15	15	15	15	15
6:00	—	—	20	20	—	15	15	15

	ASIA FAR EAST	EUROPE	S. AFRICA	CARIBBEAN S. AMERICA	ANTARCTICA	NEW ZEALAND	OCEANIA AUSTRALIA	JAPAN

HAM CALENDAR

January 1980

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
		AMSAT Eastcoast Net 3850 kHz 9PM EDST (0100Z Wednesday Morning) AMSAT Mid-Continent Net 3850 kHz 9PM CDST (0200Z Wednesday Morning) AMSAT Westcoast Net 3850 kHz 8PM PDST (0300Z Wednesday Morning) Straight Key Night 1	2	3	4	QSL Exchange Contest — All Modes, All Bands — W5GN — 5.6 5
South Bend Hamfest/Swap & Shop — New Century Center, South Bend, IN — K9IXU — 6 6	FLORIDA HAM NEWS — SWAP NET By the Broward ARC 146.31-91 at 7:30PM GLENHURST RADIO SOCIETY Transmits Amateur Radio News — 222.66/224.26 MHz via WR2APG and 21.400 MHz USB 7	AMSAT Eastcoast Net 3850 kHz 9PM EDST (0100Z Wednesday Morning) AMSAT Mid-Continent Net 3850 kHz 9PM CDST (0200Z Wednesday Morning) AMSAT Westcoast Net 3850 kHz 8PM PDST (0300Z Wednesday Morning) 8	9	10	11	12
Richmond Frostfest, Bon Air Community Center, Richmond, VA — W4DKL — 13 13	FLORIDA HAM NEWS — SWAP NET BY THE BROWARD ARC 146.31-91 at 7:30PM GLENHURST RADIO SOCIETY Transmits Amateur Radio News — 222.66/224.26 MHz via WR2APG and 21.400 MHz USB WEST COAST BULLETIN Edited & Transmitted by W6ZF 8PM PST — 3540 kHz, A-1, 22 WPM 14	AMSAT Eastcoast Net 3850 kHz 9PM EDST (0100Z Wednesday Morning) AMSAT Mid-Continent Net 3850 kHz 9PM CDST (0200Z Wednesday Morning) AMSAT Westcoast Net 3850 kHz 8PM PDST (0300Z Wednesday Morning) 15	16	17	18	Mercer County Amateur Radio Club Seminar — Holiday Inn, West Middlesex, PA — K3LA — 19 Midwinter Swapfest, West Allis Radio Amateur Club, Waukesha County Expo Center, Waukesha, WI — WA9POV — 19 2nd Annual "Freeze Your Arctic" expedition AD8R on 7.275, 21.380, 146.52 MHz — 2100 UTC 19th to 1500 UTC 20th — AJ8K 19
20	FLORIDA HAM NEWS — SWAP NET By the Broward ARC 146.31-91 at 7:30PM GLENHURST RADIO SOCIETY Transmits Amateur Radio News — 222.66/224.26 MHz via WR2APG and 21.400 MHz USB 21	AMSAT Eastcoast Net 3850 kHz 9PM EDST (0100Z Wednesday Morning) AMSAT Mid-Continent Net 3850 kHz 9PM CDST (0200Z Wednesday Morning) AMSAT Westcoast Net 3850 kHz 8PM PDST (0300Z Wednesday Morning) 22	23	24	25	REF Contest, CW CQ 160-Meter Contest 26
Wheaton Hamfest/9 — Arlington Heights Racetrack, Arlington Heights, IL — N9YL — 27 Classic Radio Exchange, 2100 UTC 27th to 0400 UTC 28th — K8SJ 27	FLORIDA HAM NEWS — SWAP NET BY THE BROWARD ARC 146.31-91 at 7:30PM GLENHURST RADIO SOCIETY Transmits Amateur Radio News — 222.66/224.26 MHz via WR2APG and 21.400 MHz USB WEST COAST BULLETIN Edited & Transmitted by W6ZF 8PM PST — 3540 kHz, A-1, 22 WPM 28	AMSAT Eastcoast Net 3850 kHz 9PM EDST (0100Z Wednesday Morning) AMSAT Mid-Continent Net 3850 kHz 9PM CDST (0200Z Wednesday Morning) AMSAT Westcoast Net 3850 kHz 8PM PDST (0300Z Wednesday Morning) 29	30	31		

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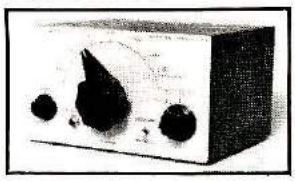

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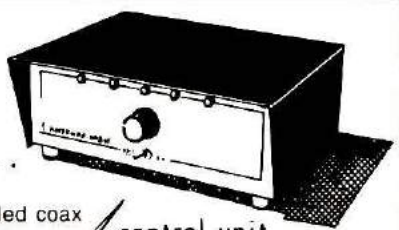

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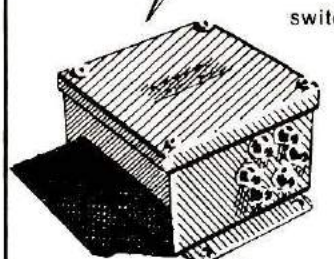

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