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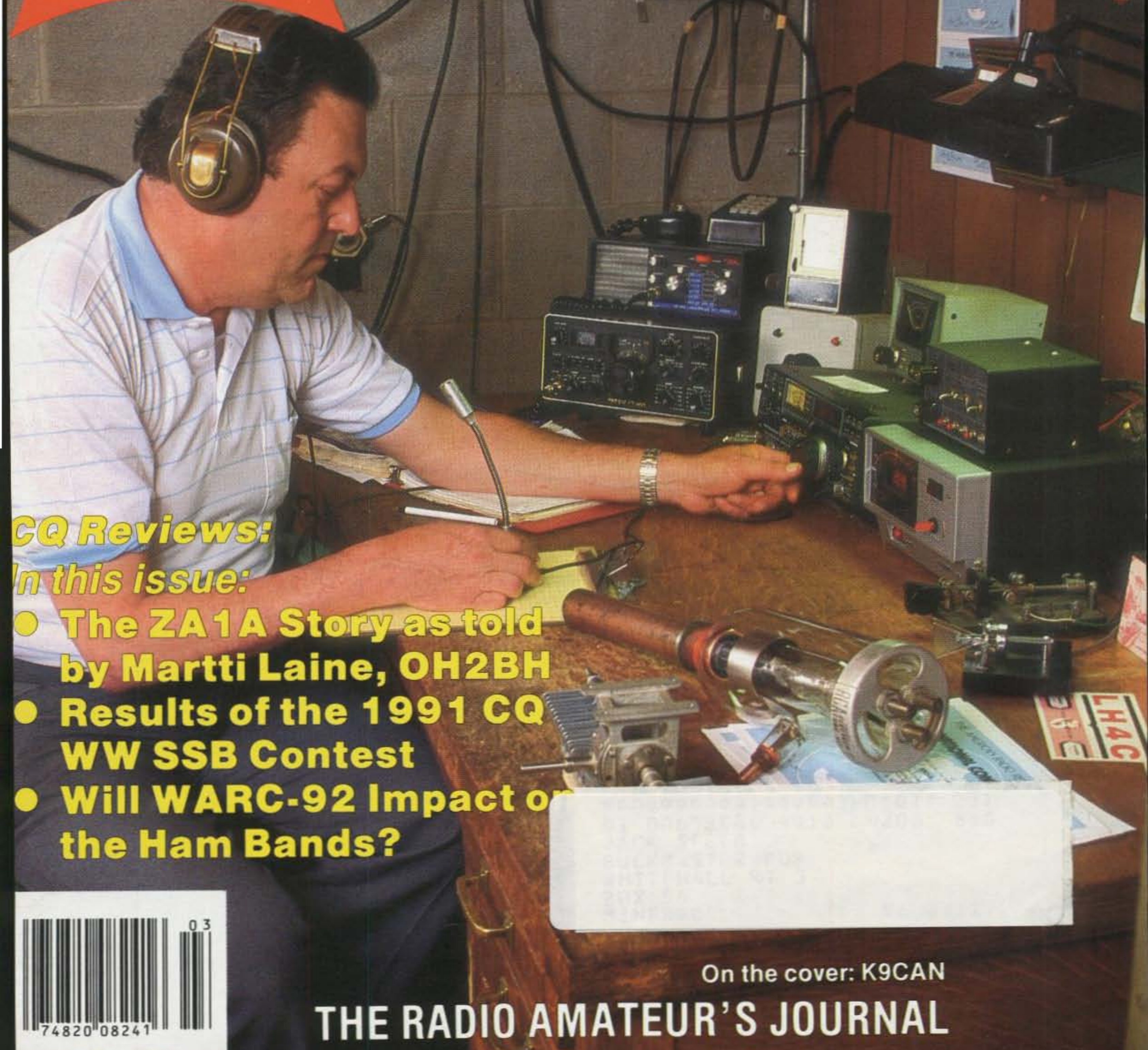
# Amateur Radio

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# CQ



## CQ Reviews:

In this issue:

- The ZA1A Story as told by Martti Laine, OH2BH
- Results of the 1991 CQ WW SSB Contest
- Will WARC-92 Impact on the Ham Bands?



On the cover: K9CAN

## THE RADIO AMATEUR'S JOURNAL



# KENWOOD



## Freedom of Choice

### TM-741A Modular FM Transceiver

The choice is yours. Kenwood's new FM Multibander allows you to start as a deluxe dual band radio – or add a third band. As a dual band, you'll have access to 144 and 450 MHz operation.

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On 2 meters, you'll find wide band receiver coverage with RX on 118 - 174 MHz, and TX on

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303 memory channels are available, with 101 in any one band. Cross band repeat between bands, or, choose dual band input with cross repeat to the third band. The offset function is active on the output, allowing you to repeat to repeaters.

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Individual volume and squelch controls for each band. Remote mounting of front panel with optional cable kit. Optional selective calling or group calling. Optional DTMF memory stores 15 characters for repeater controlling. Versatile scanning. Auto offset on 2m. Fixed detect output for packet radio.

Multi-function DTMF microphone. Separate antenna and speaker outputs. Auto power off and time-out. 4 step dimmer. 3 step power. Clock, timer and calendar. DC cable, and mobile bracket.

**UT-28S:** 28MHz, 50 W, RX: 24-36 MHz, TX: 28-29.7 MHz. **UT-50S:** 50MHz, 50 W, RX: 46-57 MHz, TX: 50-54 MHz. **UT-220S:** 220 MHz, 25 W, RX: 215-230 MHz, TX: 220-225 MHz. **UT-1200:** 1200 MHz, 10 W, 1240-1300 MHz. **DTU-2:** digital paging unit. **PG-4K, PG-4L:** remote cable kit. **MB-11:** extra mounting bracket. **PG-2N:** extra DC cable. **PG-3B:** DC line noise filter. **TSU-7:** CTCSS encode/decode unit.

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- **Wide band receiver coverage.** 136-165 (118-165 [AM mode 118-136] MHz after modification) and 438-449.995 MHz. TX on Amateur bands only. (Two meter section is modifiable for MARS/CAP. Permits required.)
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- **CTCSS encode/decode built-in.**
- **Forty-two memory channels.** All channels odd split capable.
- **DTMF memory/autodialer.** Ten 15-digit codes can be stored.
- **Direct keyboard frequency entry.** The rotary dial can also be used to select memory, frequency, frequency step, CTCSS, and scan direction.
- **Multi-function, dual scanning.** Time or carrier operated channel or band scanning.
- **Frequency step selectable for quick QSY.** Choose from 5, 10, 12.5, 15, 20, or 25 kHz steps.
- **Two watts (1.5 W on UHF) with supplied battery pack.** Five watts output with PB-8 battery pack or 13.8 volts. Low power is 500 mW.
- **DC direct-in operation** from 6.3-16 VDC with the PG-2W.
- **T-Alert with elapsed time indicator.**
- **Automatic repeater offset on 2 m.**
- **Battery-saving features.** Auto battery saver, auto power off function, and economy power mode.

#### Supplied accessories:

Flex antenna, PB-6 battery pack (7.2 V, 600 mAh), wall charger, belt hook, wrist strap, keyboard cover.

#### Optional accessories:

• **BC-10:** Compact charger • **BC-11:** Rapid charger • **BH-6:** Swivel mount • **BT-6:** AAA battery case • **DC-1/PG-2V:** DC adapter • **DC-4:** Mobile charger for PB-10 • **DC-5:** Mobile charger for PB-6, 7, 9 • **PB-5:** 7.2 V, 200 mAh NiCd pack for 2.5 W output • **PB-6:** 7.2 V, 600 mAh NiCd pack • **PB-7:** 7.2 V, 1100 mAh NiCd pack • **PB-8:** 12 V, 600 mAh NiCd for 5 W output • **PB-9:** 7.2 V, 600 mAh NiCd with built-in charger • **PB-11:** 12 V, 600 mAh OR 6 V, 1200 mAh, for 5 W OR 2 W • **HMC-2:** Headset with VOX and PTT • **PG-2W:** DC cable w/fuse • **PG-3F:** DC cable with filter and cigarette lighter plug • **SC-28, 29:** Soft case • **SMC-30/31:** Speaker mics. • **SMC-33:** Speaker mic. w/remote control • **WR-1:** Water resistant bag.

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For amazingly clear reception, Advanced Intercept Point (AIP), greatly improves the receiver's dynamic range to an incredible

108 dB. An optional Digital Signal Processor, DSP-100, offers even further sound clarity by tailoring the incoming and outgoing audio passband signals.

You'll find the TS-450S and TS-690S provide truly outstanding sensitivity over the entire band. Innovative "triple conversion" also assures superior stability and accuracy, particularly above 24.5 MHz, for improved DXing.

Other refinements include: convenient split frequency operation, advanced filter functions, optional automatic antenna tuner, and 100 memory channels with flexible scanning selections.

Accessories include: PS-33 20.5A power supply, PS-53 22.5A heavy duty power supply, SP-23 external speaker, AT-450 internal automatic antenna tuner,

AT-300 external automatic antenna tuner, DSP-100 digital signal processor unit, VS-2 voice synthesizer, SO-2 TXCO, MB-430 mobile mount, PG-2X DC cable, TU-8 CTCSS encoder, YG-455C-1 500Hz CW filter for 455kHz IF, YG-455CN-1 250Hz CW narrow filter for 455kHz IF, YK-88S-1 2.4kHz SSB filter for 8.83MHz IF, YK-88SN-1 1.8kHz SSB filter for 8.83MHz IF, YK-88C-1 500Hz CW filter for 8.83MHz IF, YK-88CN-1 270Hz CW filter for 8.83MHz IF, YK-455C-1, 500Hz CW filter for 455kHz IF

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# The Radio Amateur's Journal

**ON THE COVER:** Once again proving the point that it doesn't take an elaborate rig to have fun and be competitive in Amateur Radio contesting, here's the modest setup of Richard Scarvacl, K9CAN in Grafton, WI. What isn't shown in this shot, however, is stacked monobanders in the back yard. They don't hurt a bit. (Photo by Larry Mulvehill, WB2ZPI)



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**VOL. 48, NO. 3**

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**W**hen you stop to think about all that is going on in the world—the politics, the intrigues, and the economy—the one area that each of us expects to be a safe haven is our mutual pastime of amateur radio. These days it doesn't really matter which country you live in. The overall conditions are the same. Sudden peace has exacted a toll. City names and the names of politicians can be interchanged in our universal situation, but the overall expectancy is that amateur radio will stay the same.

Fortunately, for most of us it does. Whatever goes on in the real world and in real life can be set aside for a while as we enjoy amateur radio. I know that fun is a sticky word for some of you, but most of us do have fun, and enjoy and look forward to our amateur activities whatever they are. Granted, there often seems to be a thousand or so special interests within amateur radio, but we do enjoy them all.

There are, however, a relative few among us who relish discontent, animosity, and downright hatred. Regardless of the band on which you operate, I'm sure you can think of a few individuals who can also be found there regularly spewing forth some venom. Some are internationally famous and others hope to be. In absolute terms, though, their numbers are very small compared to the total amateur population. They do get what they wish—attention and notoriety. For some reason it's much easier to remember the abrasive and negative and have that cloud the issues.

Perhaps years ago we might have felt that amateurs as a group were more polite, tolerant, and all-around good-guys with white hats. In all likelihood we just hadn't heard the drivel or passed it off as someone's good-natured fun. There was always somebody whose idea of fun was to augment a QSO with the staccato of an electric drill. With that mentality, in even earlier times our disgruntled QRMer would probably have tried a brace and bit.

These days, however, the action is apparently its own reward. It is to be recognized and noticed that by virtue of having an amateur radio license one can pontificate on anything, say anything, offend anyone, or disrupt anything that suits one's fancy. It seems to me that these very few people, who most of us seem to know, must feel terribly insignificant, powerless, and impotent in real life and have to make themselves feel better at the expense of the rest of us. It's kind of sad and pitiful.

The good thing, though, is that traditionally these people have a limited "time in the sun" and burn out. It's not a new phenomenon, nor have there ever been many at any one time. Think of it as a TV program

you don't like. Switch channels and move on.

### This Month

March should be cold enough for most antenna work and a great month if you're into contests. I see eight different contests listed in John Dorr's column for March, culminating with our big CQ WW SSB WPX Contest on the 28th and 29th. Judging by the weight of logs we receive for our contest and the amount of shipping involved, plus the growing data base of individual calls of amateurs who take part in these contests (then extrapolating out to include other sponsors' contests), it is safe to say that almost every active amateur in the world will be on those weekends. It's only fair to forewarn the curmudgeons among us that most of our allotted Hertz will be occupied.

To add to the merriment, there should be several humongous pile-ups going, as I believe several DXpeditions are also scheduled for March. And what does all this activity say for amateur radio? It probably indicates that about 99% of us are actually having a good time. If really pressed, most of us would also reluctantly say that we're having a lot of fun and enjoying ourselves immensely with all this activity. It goes without saying that we're also doing very serious and important things electronically at the same time.

Most of these events have mandatory time breaks, so if you're not totally saturated with amateur radio, I heartily suggest that you get out of the shack for a bit and attend a hamfest or two. There are two good ones in March—Charlotte and Orlando (both of which cut into my contest time). In case you haven't noticed or perhaps it slipped your mind, amateur radio is an active hobby whereby you have to do something to make it happen.

The only certainty that I can think of with all of this activity is that all of us are not going to be happy campers at the same time.

### Next Month

April brings us, to borrow a phrase, The Mother of All Hamfests—Dayton. If you're stuck in that serious rut and are trying to figure out the meaning of life and what the real definition of fun is, then Dayton is the place to be the last weekend in April. Whatever you've heard or whatever you've read about Dayton is probably true and then some. It's more to be experienced than explained, and you owe it to yourself to try to get there at least once in your amateur career.

Dayton will also be a good time to meet Martti Laine, OH2BH. Along with his other plans for the hamfest, Martti will spend some time at the CQ booth, where he'll be available to autograph copies of his book. Come by and say hello. His plans also include bringing over one of the new local Albanian amateurs for all of us to meet.

### Missing in Action

No, this has nothing to do with a Chuck Norris movie about amateur radio commandos (a dichotomy in terms), but rather with an article listed in last month's table of contents. My apologies to the author, Ray Colvin, KB4UCR, and to all of you looking for it. The article, "The 'See, I Told You That Someday I'd Need It' Quick-Disconnect HF Mobile Mount," was exchanged at the last moment for advertising, without time to correct the table of contents. You can really find it (I promise) this month on page 46.

### Ham Humor

As strange as it may seem, most of us do have a sense of humor, and an awareness of what is cute and possibly sublime. A small child sitting on its proud parent's lap before the rig is cute; the toddler alone can be cuter, depending on facial expression. A family pet at the rig can be very funny. You can bet, though, that when we run a picture of either, we will hear from readers who worry that we are encouraging this type of dangerous and life-threatening behavior. In reality, I think it's safe to say that it may only become troublesome if the dog applies for 5BWAZ and the mode is not CW.

Similarly, last month's article on a DXpedition to Self Serve Island drew a few letters warning us that people shouldn't do it, as it is potentially dangerous. I thought it was simply a humorous article. I think by now amateurs realize that almost everything we do can kill us, especially the things we eat from our own refrigerators.

### Happy Anniversary

March also marks the 41st anniversary of George Jacobs, W3ASK's stewardship of the Propagation Column. His first Propagation Column appeared in CQ in our March 1951 issue. For people who keep track, this month marks his 481st consecutive column. Thanks, George, for all of your hard work, and here's to the next 41.

73, Alan, K2EEK

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# ANNOUNCEMENTS

• **Foundation for Amateur Radio Scholarships** - The foundation plans to administer 45 scholarships for the academic year 1992-93 to assist licensed radio amateurs, who may compete for the awards if they plan to pursue a full-time course of studies beyond high school and are enrolled in or have been accepted to an accredited university, college, or technical school. The awards range from \$500 to \$2000. For additional information and an application, send a QSL or letter postmarked prior to May 31, 1992 to FAR Scholarships, 6903 Rhode Island Ave., College Park, MD 20740.

• **"Amateur of the Year" Nominations** - Nominations for the "Amateur of the Year" award to be presented at the ARRL Atlantic Division Convention in May are being sought. Nominees should be outstanding all-around amateurs from the Atlantic Division with a strong record of service to the amateur community. An award for lifetime service is also available. For more information on the awards and the nomination procedure contact Richard Goslee, K2VCZ, 24 Elaine Drive, Rochester, NY 14623. Deadline for nominations is April 1.

• **Dayton ARA Scholarships** - The Dayton ARA is offering eight scholarships each for \$2000 to amateurs graduating from high school in 1992. There are no restrictions on the course of study planned, nor does the applicant need to plan on a four-year degree. Schools awarding associate degrees or any technical institutions must be accredited, however. Requests for more information and applications should be sent to DARA Scholarship Committee, 45 Cinnamon Court, Springboro, OH 45066. Applications must be postmarked no later than May 15, 1992.

• **The following special events will take place during March:**

**KD1AP**, from 200th anniversary of Sharon, New Hampshire; March 21-22 (*no times given*); freqs. at or near 3.875, 7.250, 14.250, 21.350, 28.350. For special card send QSL and SASE to Chester Bowles, RFD 2, Box 335L, Sharon, NH 03458.

**2-land**, from commemoration of VOA relay station WBOU, part of VOA's 50th Anniversary QSO Party, Piscataway, New Jersey; Piscataway ARC (lead station is KB2UV; PARC members will sign their own call/VOA; throughout February 1992 (*not much time left to catch this one!*); lower 25 kHz of General SSB portion of all bands plus lower 25 kHz of General/Advanced CW bands plus on 28.490 through 28.500 SSB and Novice CW bands. Send QSL and SASE to PARC, P.O. Box 1233, Piscataway, NJ 08854 for certificate and QSL.

**N3IFL**, from Albert Einstein's birthday commemoration, theme nuclear energy (other nuclear power plants are invited to participate), Calvert Cliffs Nuclear Power Plant Visitors Center, Lusby, Maryland; Southern Patuxent ARC; 1300-2100Z March 14; lower portion of General phone bands and Novice 10 meters. Certificates will be awarded to each plant that contacts at least five other plants and submits a copy of their station's log. For a commemorative QSL for individual ops, send QSL and SASE to Bob Smith, N3IFL, 12480 Catalina Drive, Lusby, MD 20657.

**4-land**, from first anniversary of Chesapeake ARS radio shack, Chesapeake, Virginia; 1400Z March 21 to 1400Z March 22; CW 28.125, 21.125, 14.050, 7.130, 3.680; Phone 28.385, 21.240, 14.250, 7.230, 3.870 plus or minus QRM.

For certificate send 8½ x 11 envelope (or business-size for folded) to CARS, P.O. Box 2035, Chesapeake, VA 23327. (*No call given.*)

**WA4TGF**, from 101st anniversary of *Norwegian Lady*, Virginia Beach, Virginia; Virginia Beach ARC; 1400Z March 28 to 2000Z March 29; SSB 3.875, 7.275, 14.275, 21.275, 28.363 MHz and 25 kHz up from end of bands and end of Novice bands on CW. For certificate send QSL and SASE to VBARC, P.O. Box 62003, Virginia Beach, VA 23462.

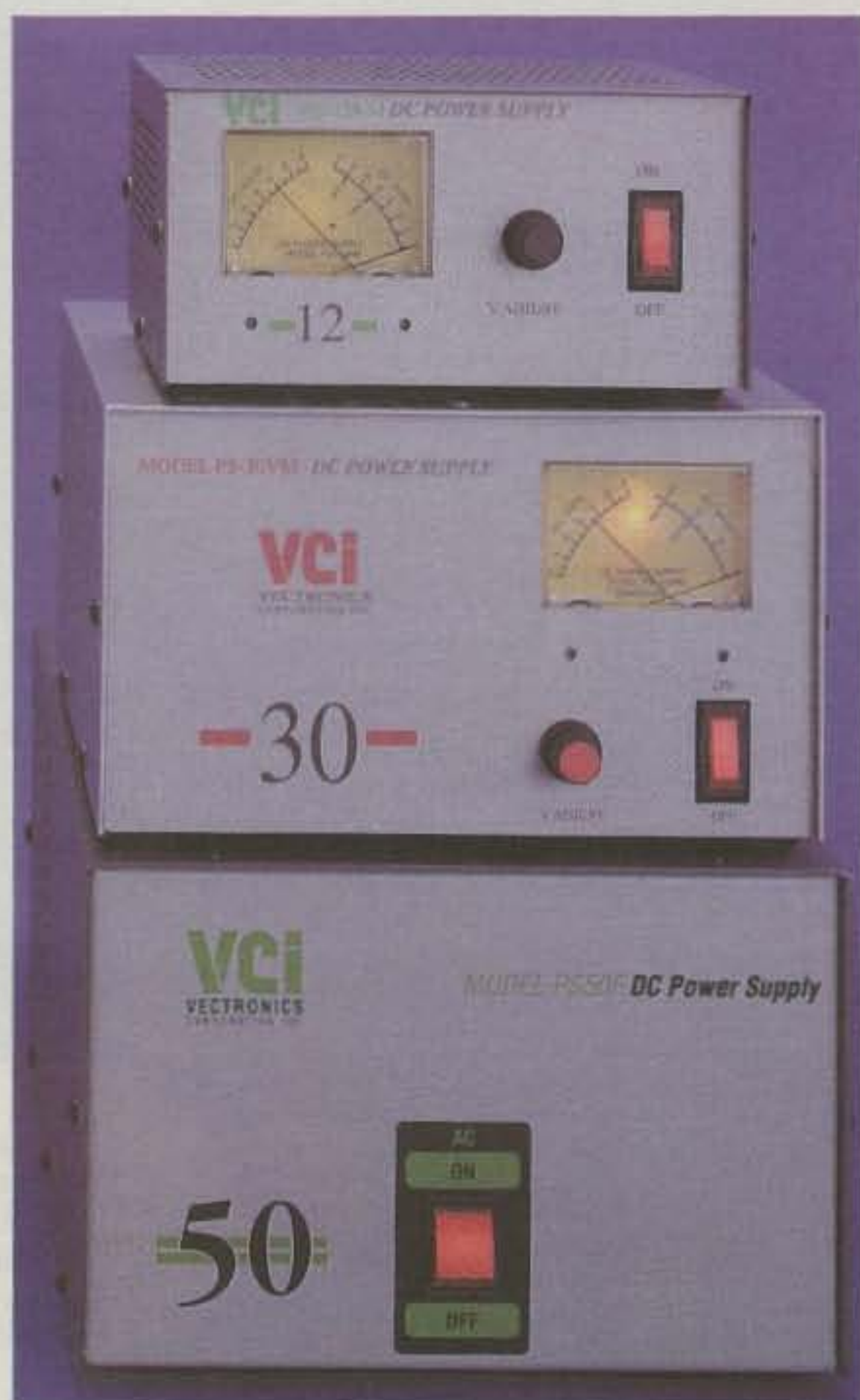
**W4BKM (W4BKM/SE on CW)**, from Macon Cherry Blossom Festival, Macon, Georgia; Macon ARC; 1300-2200Z March 21 and 22; CW 7135, 14035, 21135, 28135; SSB 7235, 14235, 21335, 28335. For certificate send QSL and 9 x 12 SASE to Macon ARC, P.O. Box 4862, Macon, GA 31208.

**5-land**, from world's largest Rattlesnake Roundup, Sweetwater, Texas; Nolan County ARC; 1500-2400Z March 13-15; in 20 and 40 meter General phone bands plus 10 meter Novice. For certificate send QSL and large SASE to WR5B, P.O. Box 825, Sweetwater, TX 79556.

**W5YD**, from commemoration of 100 years of engineering at Mississippi State University, Mississippi State, Mississippi; Mississippi State University ARC; 1800-0600Z March 29; SSB in General 40 and 20 meters and Novice 10 meter subbands. For certificate send QSL and SASE to W5YD, P.O. Box 591, Mississippi State, MS 39762.

**WH6DZ**, from DXpedition to promote amateur radio in schools, Hawaii Volcano National

(continued on p. 134)



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2:1 Bandwidth, KHz	>500	>500	300
Power Rating, Watts PEP	2000	2000	2000
Boom Length, ft (m)	14 (4.3)	18 (5.5)	14 (4.3)
Longest Element, ft (m)	27.7 (8.4)	32 (9.7)	25.1 (7.7)
Turning Radius, ft (m)	15.5 (4.7)	18.4 (5.5)	14.4 (4.4)
Mast Size Range, in	1.25-2.0	1.25-2.0	1.25-2.0
Wind Load, ft <sup>2</sup> (m <sup>2</sup> )	4.4 (0.47)	5.5 (0.51)	4.1 (0.38)
Weight, lb (kg)	27 (12.9)	37 (16.8)	22.5 (10.2)
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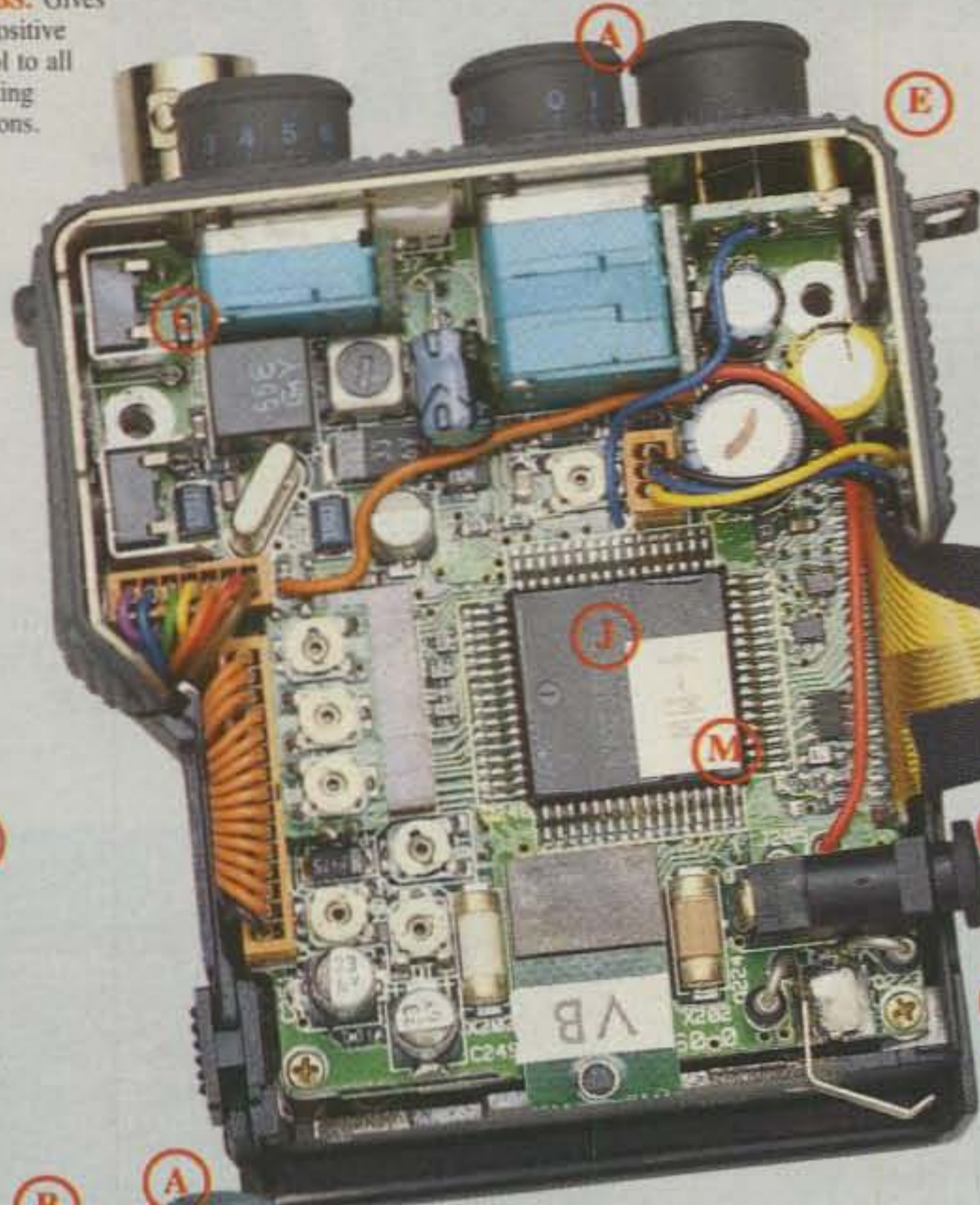
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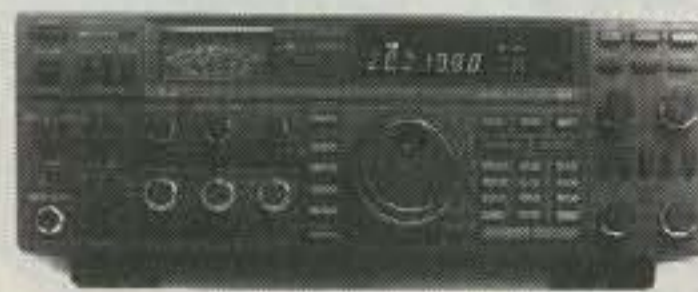
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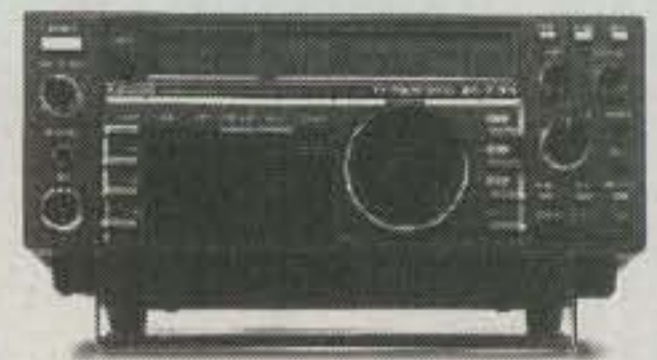
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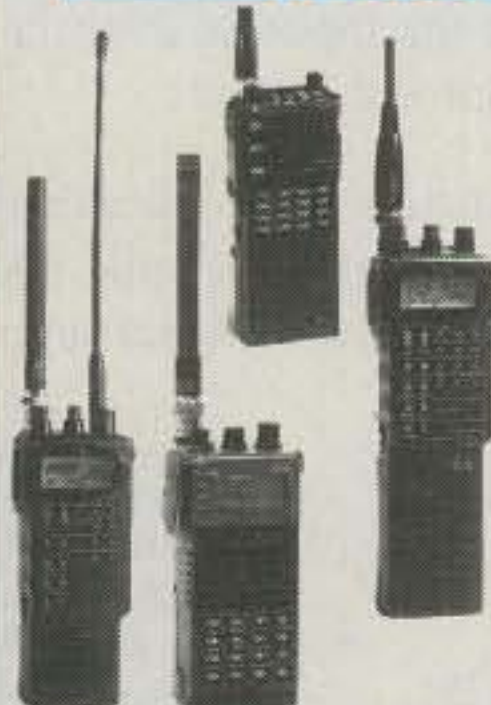
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***There's quite a difference between working DX and being DX. That order of magnitude is enhanced dramatically when DX means Albania. The title of Martti's book "Where Do We Go Next?" does pose a very interesting question.***

## The Story of ZA1A

BY MARTTI LAINE\*, OH2BH/ZA1BH

Most DXpedition articles come down to statistics: numbers of contacts, model numbers of equipment, and even the effects of sunspot numbers. The places are generally exotic and off the beaten path for frequent-flyer miles. In fact, a lot of them involve a harrowing boat ride just to get there.

As far as most of the world was concerned, Albania might as well have been an isolated tropical island with curiously unique flora and fauna. Amateurs throughout the world talked about Albania and the chances of working Albania in almost detached terms, as though some technological marvel was needed to span thousands upon thousands of miles.

One look at a map of Europe and it is ob-

vious that the country of Albania has a long coastline on the Adriatic Sea and is bordered by Yugoslavia and Greece. Clearly you don't have to go that far in physical terms to get there. However, the journey to get ZA1A on the air was as long as if not longer than any other DXpedition in history. The length was in human and philosophical terms rather than nautical or statute miles.

By now you've either worked Albania or you haven't, though I suspect a lot of you have. The operation itself has been covered in the amateur radio press, and most of you are familiar with the details. What most of us are not aware of is what led up to the changes in thinking within the Albanian government that made it all possible.

Martti Laine, OH2BH, chronicles this as-

pect, the human aspect, in giving the amateur radio community a most needed country. Ideally this was to be the crowning achievement for his book *Where Do We Go From Here?* and its last chapter. Events and politics take more time than people expect, and so the book came out before ZA1A became a reality.

This "last chapter" as it were is for everyone, and especially for future generations who work Albania as a matter of course. As with most things in life, nothing should be taken for granted. Things weren't always so, nor are absolutes forever. Most importantly, people's dreams and aspirations can indeed work out and come true. Your ZA1A QSL card is visible proof.

—K2EEK

One needs to go back in time just one year to find the beginnings of this story. A newly minted DX author, sampling life's diversity somewhere far away in San Joaquin Valley, California, was found drowsily dipping a toe in a swimming pool under an old oak tree and pondering how to wind up his new DX tome in such a way as to leave readers with a feeling of eternal bliss—a kind of heavenly feeling that one would imagine could be experienced only after wading through the whole *Bible* from cover to cover and becoming a true Believer through an ultimate understanding of the Eternal Enigmas of DX.

Would DX life or the artistry of DX produce a topic, a theme with which to cap off the book and make sure that people would ecstatically come back to the last chapter decade after decade to recall its highlights? The fresh DX author was there envisioning an end to his literary product, a

product of his labor of love, a concluding chapter of a kind rarely witnessed in literature but considered routine in the world of drama.

We know that every theater performance with a claim to artistic immortality climaxes with a standing ovation and a resounding applause as members of an enraptured audience want the beloved

performers back on stage to accept their accolades and bouquets of flowers while the curtain goes up and down, up and down. . . .

As it says in the Scriptures, DX life bears many similarities to the world of the arts, with the DXpeditioner playing the role of a highly acclaimed and envied actor who does his pirouettes in the limelight of inter-



Albania was governed by fear and warnings of an external threat. Still found everywhere, these signs were expected to be switched on any time to indicate air war, atomic war, chemical war, or bacteriological war. Now they are disconnected.

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X-200A	2m/70cm	6.0/8.0	200	8.3	UHF	112.5	2m:2-5/8λ, 70cm:4-5/8λ
X-50A	2m/70cm	4.5/7.2	200	5.6	UHF	135	2m:6/8λ, 70cm:3-5/8λ

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U-5000A	2m/70cm /23cm	4.5/8.3 /11.7	150	6.0	N	135	2m:6/8λ, 70cm:3-5/8λ, 23cm:7-5/8λ

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F-22A	2m	6.7	200	10.5	UHF	112	2-7/8λ
F-23A	2m	7.8	200	15.0	UHF	90	3-5/8λ
F-142A	1 1/4m	5.5	200	6.0	UHF	110	2-5/8λ
F-718A	70cm	11.5	250	15.0	N	90	18-1/2λ
F-1230A	23cm	13.5	100	10.5	N	90	25-1/2λ

\*F-718L:420~430MHz, F-718J:430~440MHz

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QSL cards: OH2BH/ZA & ZA1A. It is not too often that twenty years transpires between two DX happenings from any country. But in the case of Albania it was more than two decades. In the meantime, many more Deserving DXers were born . . . and waiting patiently.

national attention in quest of glory and fame. The DX actor wants to appear on stage time and again for another perfect performance of a kind always dreamed of by every professional star associated with the performing arts who thirsts for adoration and veneration.

In the audience we find all the eager DXers, Local QRPers young in years, limited in experience, but hot in pursuit of New Ones on every band, rubbing shoulders with true-blue Old Timers who have worked everything on every band and some more. Dressed up for the occasion, they converge on the DX theater every time a show is announced just to get a glimpse of their favorite actors in a new performance enacted for the enjoyment and pleasure of a vast multitude.

Such is the interaction between a DXpeditioner and a DXer. Compared to an ordinary theater performance, though, every DX show contains an additional element, one which bonds both sides intimately together. That element is, of course, found in the ultimate or final courtesy of a DX con-

tact, that red QSL card from a rare country which haunted the dreams of every Deserving DXer for the last several decades.

Year in and year out we find true-blue DXers seated in the audience waiting for the curtain to rise, for their adored DX performers to enter the stage. And, as always, QRPers with their shiny vertical radiators are confined to the back of the assembled audience, hearing only part of the lines spoken by the actors, while the Big Shots of the Foundation rest comfortably in the box in close proximity to the stage for a direct, eye-to-eye view of these revered artists of the DX world—the DXpeditioners.

What could make the last chapter of the book . . . a show performed from the bottom of one's heart at the end of the road? What kind of a plot should that story feature? Where could one find a theme that would go down in DX history through the pages of this book, now and forever? It should preferably be an epic adventure talked about by Old Timers of every vintage and dreamed of by Locals struggling on the

lower rungs of the DXCC ladder.

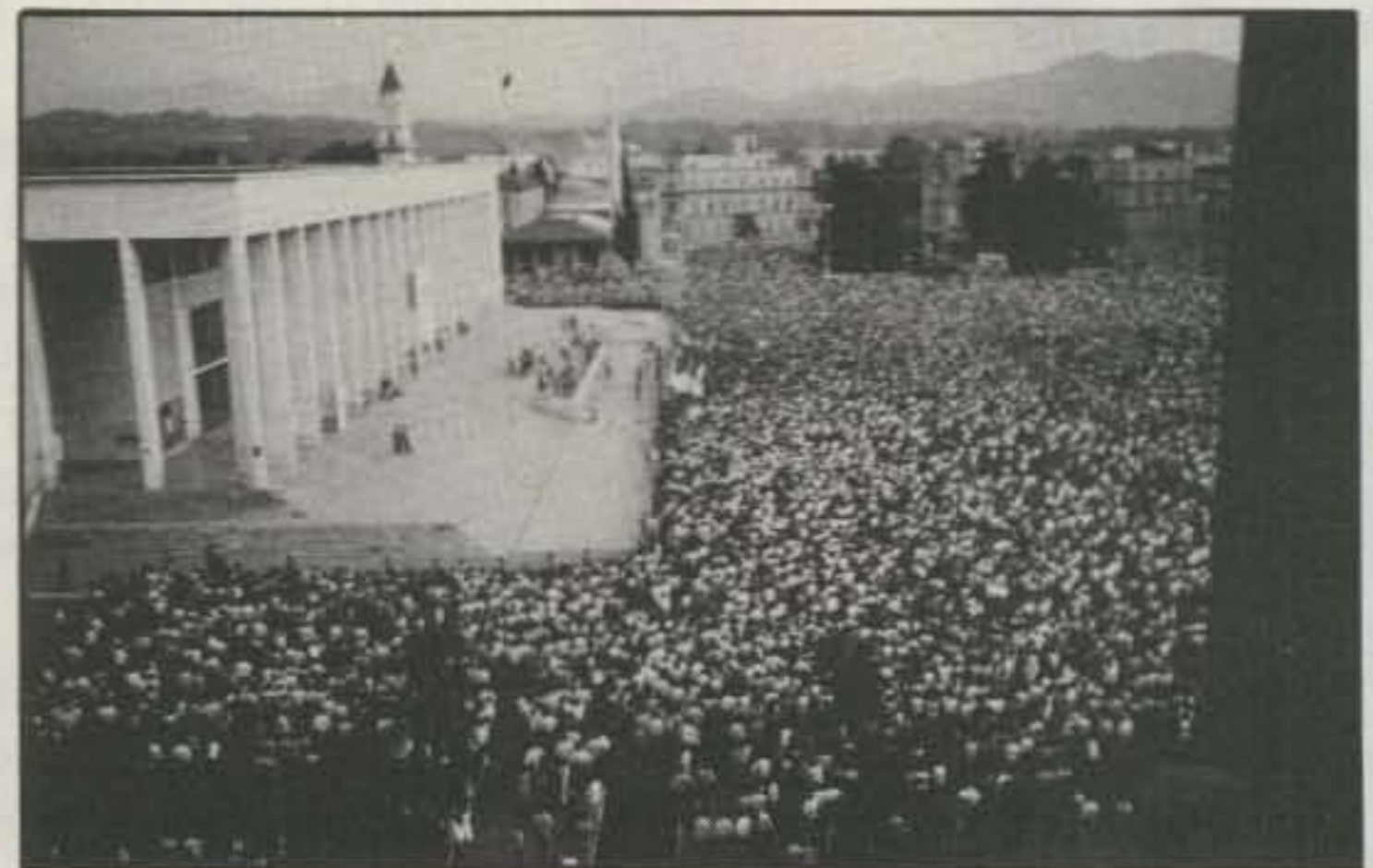
Well, of course, this one would be a country which topped all Most Wanted lists everywhere, the highest valued and most coveted country of them all. Every self-respecting actor would like to be cast for that particular show and each self-educated DX writer would like to tell that unique story in his book. Everyone would like to be a scriptwriter for that performance and each Deserving DXer deep in his heart would love to star in that show, or even happily walk away with a minor part.

And so, a topic was born to be included as the last chapter for my book which saw daylight a year ago, but that story never made the first printing of the book. A title for the last scene of the play was conceived. Only putting the production together, finding a cast of characters, and setting up the props took much longer than expected.

But the storyline did take shape. The last chapter fell into place, and the ZA1A experience left its mark in DX history. That last chapter is now published for the reading



Albania was so far and yet so near for the Deserving all these past decades. Heading out to that mountainous state were OH1RY and OH2BH with only 5 kilometers left.



Many new ideas were brewing at that main square in Tirana. This gathering was not called to witness the birth of amateur radio; these people had a more serious mission and their minds were focused on things to come in the more distant future.



# FT-2400 Military Spec'd TOUGH

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(ATT) — eliminates big city intermod ■ **Automatic Display Dimmer** — 4 levels ■ **FM Modulation** — for true voice clarity ■ **DTMF Selective Paging (optional)**.

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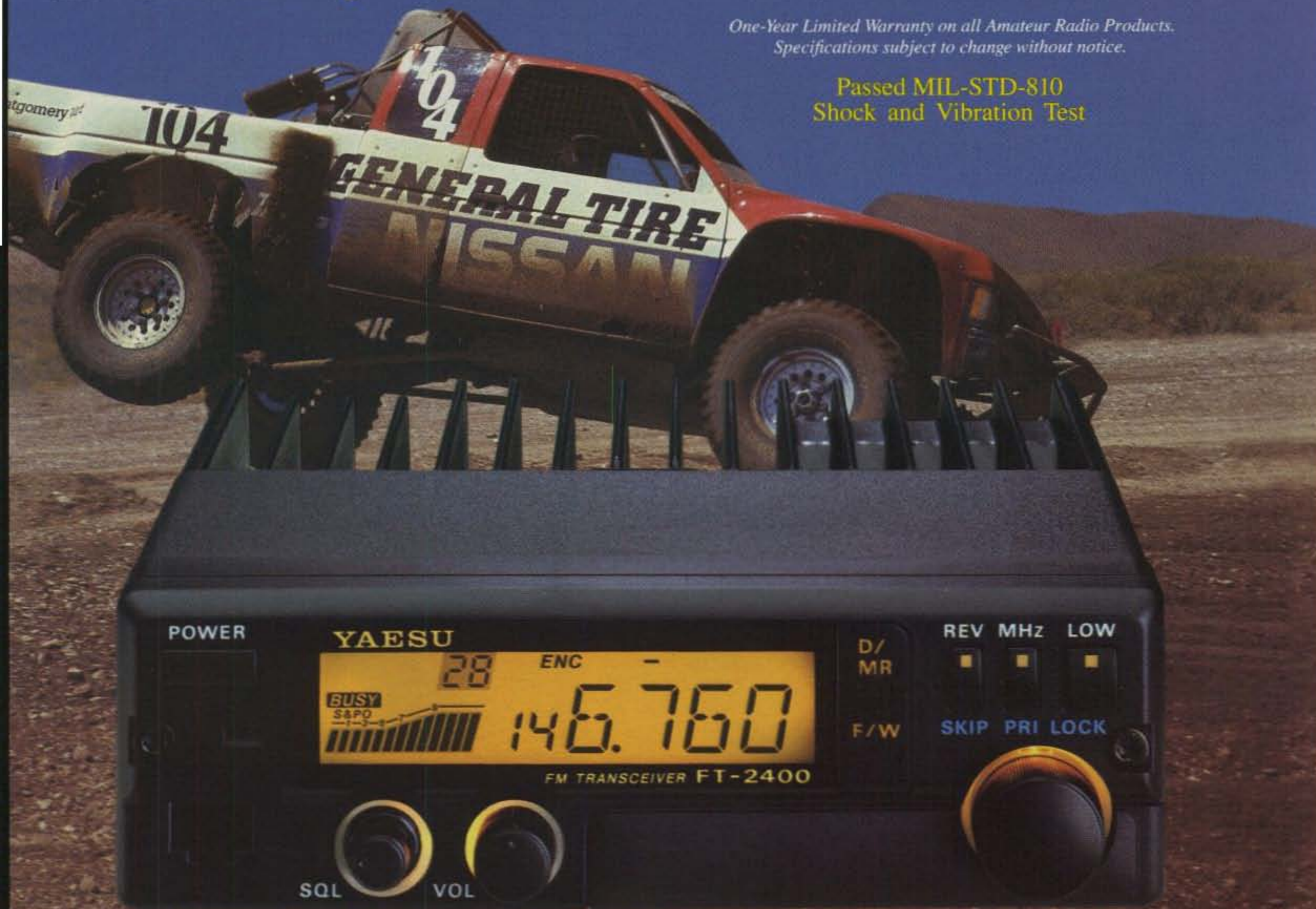


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These defense buildings located right at the heart of Tirana provide a solemn framework when the establishment of amateur radio in ZA-land was first discussed.



Many individuals and organizations helped with material and funds to get amateur radio started in Albania, but a lot more was still needed. OH2BAZ ready to transport part of eight complete radio stations used by ZA1A and subsequently donated to the Albanians.



There was great jubilation in August 1991 when the IARU Albania program was announced in Tokyo. From left, your author, the Albanian delegation plus Region 3 Secretary JM1UXU, IARU President W1RU, and JARL President JA1AN on the right.



Dr. Toli Halili, initial supporter of the introduction of amateur radio to Albania.

pleasure of the DX fraternity—*post festum*, as it were. We devoted our hearts and minds and our souls to this project. Albania was slow in coming, but it certainly was worth all the untiring efforts, and hopefully worth all the long years of waiting. Ladies and gentlemen, may I introduce the land of the double-headed eagle—Albania!

### How The Legend was Born

Albania lingered on in everyone's mind as a mysterious and sought-after corner of the world, and this was true of DXers and

ordinary mortals alike. The enigmatic Balkans country on the Adriatic Sea looked like a hermetically sealed entity locked in its isolated orbit around the busy continent of Europe.

For decades, Albania's borders with its neighbors had been closed, and diplomatic relations were maintained with only a handful of countries which did not include a single superpower typically favored by small nations. Thus, the United States and the Soviet Union were lumped together as arch-enemies who were seen as wanting to harm or attack Albania one way or another in the immediate future. In the end,

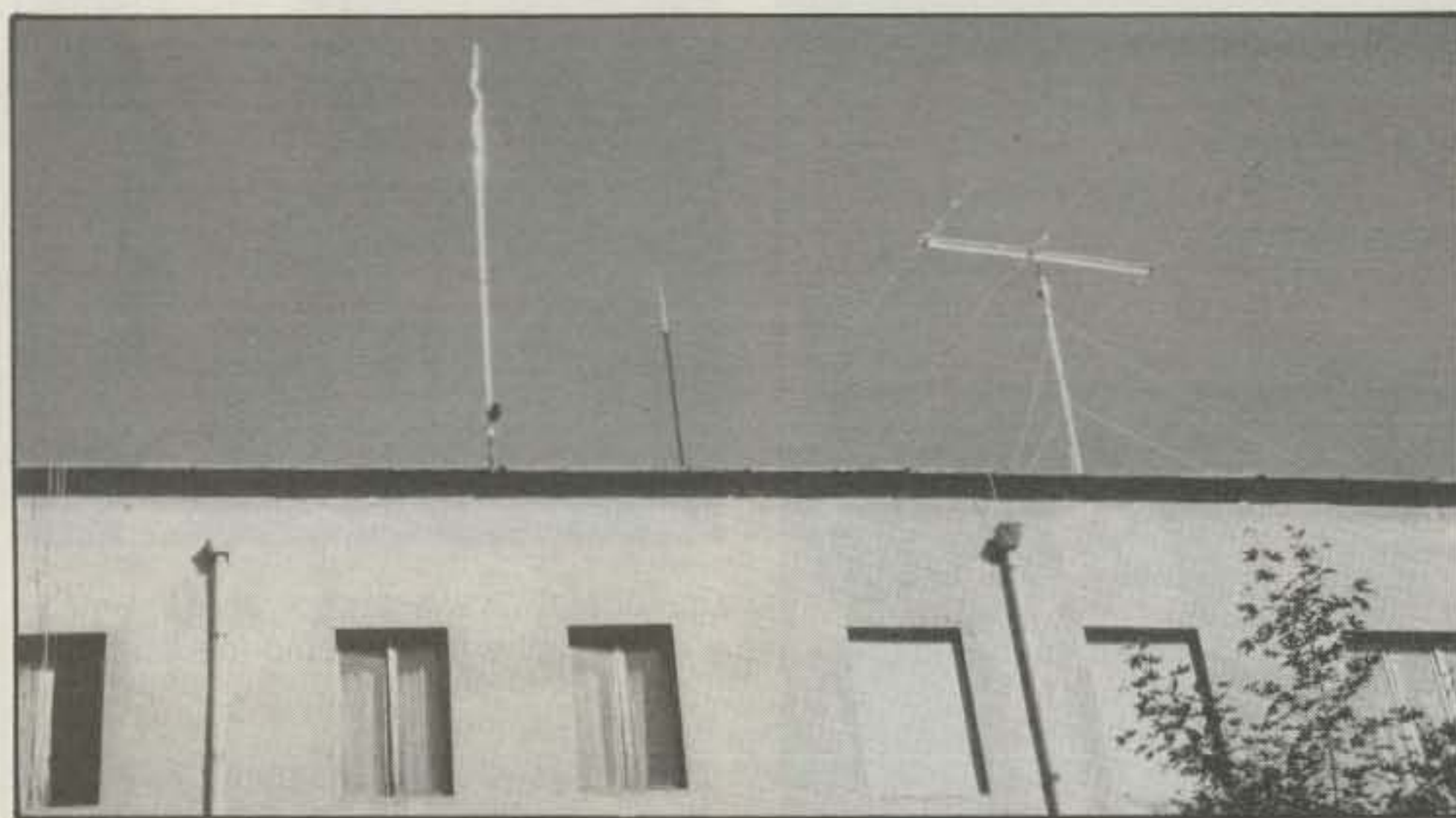
ties were also cut off with China, Albania's remaining pillar of support in the international arena.

Albania's history was dotted with wars. In the past the country was occupied by successive aggressors. Rising to power in 1951, Enver Hoxha found it easy to base his regime on xenophobia and constant fear. No one had visited Albania for decades, no one could be contacted there by landline because the country was not hooked up with any international telephone systems, and Albania did not take part in any international activities despite belonging to the United Nations and many of its specialized agencies.

Albania had reportedly fallen far behind other countries in terms of overall development, recoiling to its own primitive way of life in total isolation from the rest of the world. Over the decades a legend was born about a country only talked about in whispered tones elsewhere in the world and bootlegged by countless pirates on amateur frequencies.



Coffee mornings in the office of the Director General will be long remembered. From left: OH1VR, ITU Liaison; I2MQP, ARI Secretary General; Ibrahim Gila, Director General; JA1HQG, JARL Director; and OH2BH, IARU Project Organizer. In front: JA1BK, Support Coordinator; and Agim Muco, Secretary General.



The PTT building in downtown Tirana sporting a multitude of antennas.

## History—DX History, That Is

In recent times every right-thinking DXer has frequented the local library to borrow books dealing with Albania, but none of the volumes available there touch upon that country's DX history. In our story the history section is by far the shortest. In any event, there is reason to walk down memory lane and write a few lines about DX history before the facts fall into oblivion.

An operation by DM2ACB to put ZA2ACB on the air in the 1950s was apparently the only one in those days laying any claim to legitimacy. By the time a Finnish group arrived in Albania in 1970, ZA already ranked as the Most Wanted country in the world. Our group was allowed to

demonstrate amateur radio for a few hours and make some 800 contacts.

Much to our surprise, there was no customs check at Tirana airport—no customs officials for that matter. Once this was announced in the DX press, DL7FT was able to proceed with his ZA2RPS operations without permission from the authorities.

But all combined, these efforts only resulted in a tiny drop in a huge ocean. Just a few thousand contacts were amassed in those early years. Albanian authorities did not give them too much credit at the time or later. Only a couple of years after our initial 1970 foray, we arrived in Tirana again as a result of a near-total misunderstanding, breezing into the city with a large group (ZA5Z) and carrying loads of equip-

## Callbook of the Newly Established Albanian Amateur Radio Association

ZA1A, IARU Albania Project, QSL via W6OAT  
 ZA1TAA, Dajlan Omeri  
 ZA1TAB, Marenglen "Geni" Mema  
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 ZA1TAD, Nikolla "Niko" Dedi  
 ZA1TAE, Sadik "Dik" Agalliu  
 ZA1TAF, Teodor "Theo" Madhi  
 ZA1TAG, Ylber "Beri" Berzhita  
 ZA1TAH, Jovan Bojdani  
 ZA1TAI, Gezim Hoxha  
 ZA1TAJ, Dali Prenci  
 ZA1TAK, Arben "Beni" Goxhaj  
 ZA1TAL, Mirela (YL) Prenci

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ment and beam masts. It all ended up with the confiscation of our valuable hardware and led to a complete surrender of the DXpedition operators, literally. By that time Albania was fully closed up, giving few signs of a possible sympathetic attitude toward DX in decades to come.

It was no surprise that Albania stayed absent from amateur frequencies for the next twenty years. When ZA made its reappearance, things had to happen in a way that paid homage to that long history in a slightly different manner. Albania had to be born again, this time coming here to stay. We had already waited far too long for the Albanians to join the international community of radio amateurs. We must never lose them again or leave them with an impression that our intentions might be of a kind that their autocratic ruler had warned them of over many decades.

## A New Age of Missionary DXpeditioning

It all started on a clear early summer's day in May at Skanderbeg Square in downtown Tirana. This event simply has to be recorded in DX history as part of the Albania story. That was when a seasoned DX artist's heart was broken and a new era dawned, an era to be remembered with a bit of nostalgia and a certain measure of selfish pride far down the years.

Several trips to Albania had already been made, and there had been a number of meetings with Albanians in Finland on my home ground. A kind of person-to-person trust had been forged with the Albanians, which in their case was quite different from what one is accustomed to elsewhere in the world. This has to be understood against the backdrop of the Albanians' peculiar past history shaped by fear. On the other hand, if they had confidence in some-



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*Toward the end of the ZA1A operation another site was established at the Adriatiku Hotel in the seaside town of Durres.*

thing, their trust was absolute, genuine and total, leaving no room for doubt about your intentions.

In the course of that sunny day in the month of May, I had learned this first basic truth about the people of Albania, and that day is going to remain forever the most important one for me. Although getting started with a DXpedition in the traditional sense of the term could have been only a few steps away, this newly acquired sense of trust offered no encouragement to try to take advantage of that opportunity.

Besides, making a one-shot DXpedition no longer looked like an interesting proposition because on that brilliant day at Skanderbeg Square a new concept was born, that of a missionary DXpedition that the DX multitude heard about during the ZA1A operation and read about in DX publications.

Recapturing that spirit and conveying it to others somehow seems difficult. In a curious way, the feeling was quite strange and new even to myself. But these people had to be given something that they had been denied during the past lost decades. The way things had turned out for them could not be blamed on the people; it had all come about as a sum of many an unfortunate happenstance. Sorting it out was a responsibility shared by the whole world community and its individual members.

A specific deal and a detailed plan emerged there and then on how to launch amateur radio in Albania, taking into account all these lost decades plus the fact that Albanians as a nation were now prepared to acknowledge their relative underdevelopment and were eager to catch up with the rest of the world—amateur radio included.

There arose a need to establish a national association in Albania to further the

cause of amateur radio, a need to train native Albanians to make radio contacts from their own country, a need to line up for the Albanians equipment and supplies required for planting the seeds of amateur radio in the country of the double-headed eagle. A program had to be developed for enabling Albanians to meet with people from the outside world after all these decades and to get them out of their isolation to learn the good and bad aspects of our universe, its opportunities and its limitations.

And so, on that gorgeous day the concept of missionary DXpeditioning was born in its purest and noblest form. But then again, standing there at Tirana's downtown Skanderbeg Square was a newly minted DX consultant appointed by the Albanian authorities, an advisor who dreamed of something never experienced before and who had the full confidence of the Albanians plus a *carte blanche* from the authorities in his pocket. It was time to write down the storyline for the last chapter.

Just off the record, it was rather painful to work on this project without being able to tell anyone about it or share the attendant joy or agony with others, perhaps with the exception of my immediate family and friends who knew that Dad, the DX missionary, would be going to Tirana again although he could not divulge the details to others.

The Albanian authorities had on file dozens upon dozens of offers and applications for undertaking a DXpedition to ZA-land, and there was no reason to assume that the DX crowd would show any particular mutual solidarity when things came to the crunch. Besides, the Albanians insisted that preparations for the project be made on a confidential basis and that an official announcement of the establishment of am-



*Dajlan Omeri and his lovely wife. Among his fellow hams he is known as ZA1TAA, one of the Deserving.*



*Agim Muco often stated that he was not an amateur radio operator, but he knew them well. They were known always to be ready for a little pileup.*



*The wrinkled face of Mama Muco who had seen and experienced a lot over the past decades. She proudly presented her catch for the day—a piece of meat.*



*In just one week these Albanian students were ready for their first on-the-air experience. From left: ZA1TAA, ZA1TAB, ZA1TAD, and OH2BH, their proud instructor.*



*Giorgio, I2KMG (left) shown here with the winner of "the Best Student Award," who scored full points in all his exams. That was Engjellush "Lushi" Alikaj, ZA1TAC.*



*Hans, DF5UG, did a super job of training and conducting the final exams. Here he is shown with Geni, ZA1TAB, who not only studied amateur radio, but also acted as our translator for four weeks.*

ateur radio in Albania be made by the Albanians themselves.

DX bulletins reported a steady stream of bogus ZA operations, and enterprising individuals ready to travel to Albania turned up almost weekly. Meanwhile, standing at Skanderbeg Square was a lonely rider with a letter of appointment in his pocket. Somber but proud.

### Setting The Stage for ZA1A

What lay ahead were those memorable 100 days in which the manuscript had to be finished and the cast of characters chosen. September 15, 1991 was selected as an opening date. That would be the day when ZA hit the airwaves! The storyline began to crystallize.

First, choose participants and participating countries in such a way as to establish contact and cooperation with nations of importance to Albania, with each individ-

ual person and country making a contribution to "the party" to help make it a total success.

It was no mere accident that Italians would be among the first to be invited to join the project. The fact is that among Albania's neighbors Italy was the only one with important potential, lying as it was only some 50 miles away, and all television antennas in Albania were pointed that way. Everyone in Albania spoke Italian. All along Italy had offered more help to Albania than any other country, and it still does. The two countries were good neighbors, and this provided a firm basis to build on.

The Japanese had emerged as a superpower in the fields of electronics and amateur radio, having a larger number of amateur licensees and greater amateur radio potential than the rest of the world together. The Japanese drive and desire to be involved in this project could indeed be anticipated, and at no stage did they let us down.



*Pekka, OH1RY, our training supervisor, here shown with Mirela, ZA1TAL, the first YL operator in Albania.*



*Jovan Bojdani, ZA1TAH, very active on the bands and Secretary of a newly established IARU-affiliated association in Albania.*



*Dali Prenci, ZA1TAJ, Contest Manager of the Albanian association.*

Albania's burgeoning amateur radio community had to open lines of communication with the world's amateur radio headquarters, no matter where these centers might be located. Ironically, an international umbrella organization for national

## The ZA1A Cast of Characters

DF5UG, Hans-H Ehlers  
I2MQP, Mario Ambrosi  
I2KMG, Giorigio Goggi  
I5FLN, Luciano Fusari  
IK0FEW, Antonio Mattu  
JA1BK, Kan Mizoguchi  
JA1HQG, Yoshio Arisaka  
OH1RY, Pekka Kolehmainen  
OH1VR, Seppo Sisatto  
OH2BH, Martti Laine  
OH2BAZ, Vilho Flink  
N7NG, Wayne Mills  
K7JA, Chip Margelli  
W7SW, Scott Martin

## The International Supporting Team

W1RU, Richard Baldwin  
K1ZZ, David Sumner  
JA1AN, Shozo Hara  
JA1MP, Sako Hasegawa w/Yaesu  
JA1EFT, Tomo Tanaka  
PA0LOU, Louis van der Nadort  
W6OAT, Rusty Epps w/NCDXF  
HB9BGN, Albert Muller  
OH2BBF, Erkki Heikkinen

societies (International Amateur Radio Union) and a body administering the worldwide DXCC program (ARRL) were housed in the same building in Newington, Connecticut, USA. It was gratifying to note, then, the American willingness to play a full part in this endeavor.

Standing tall in the world of DX, Finland and the Finns were left with a distinctive role in making all these arrangements and choices, which was in tune with the country's noted bridge-building efforts in the field of international relations and diplomacy. Helsinki is synonymous with the CSCE, and every knowledgeable DXer following world developments knows what that acronym stands for.

Added to this was a touch of German know-how and precision, and the stage was set for a truly international production.

Fifteen radio amateurs had the honor of representing the international amateur community, many national societies, and sponsors of the ZA1A project in this performance.

Another historic moment came in August 1991 in Tokyo when Albanian government officials arrived there to attend a JARL convention together with some 10,000 Japanese amateurs. In Japan the Albanians made a momentous announcement of the establishment of amateur radio in their country. The trip to Tokyo was not easy for them. There were continuing reports of serious unrest in Albania and of frequent changes in the Tirana government in those weeks and months. The makeup of the Albanian delegation was changed many times over, but the message re-



Sadik "Dik" Agalliu, ZA1TAE.

mained the same. The Secretary General of the Albanian PTT delivered a critical and strongly-worded speech quoted in the DX press. Ringing in our ears were in particular the following words:

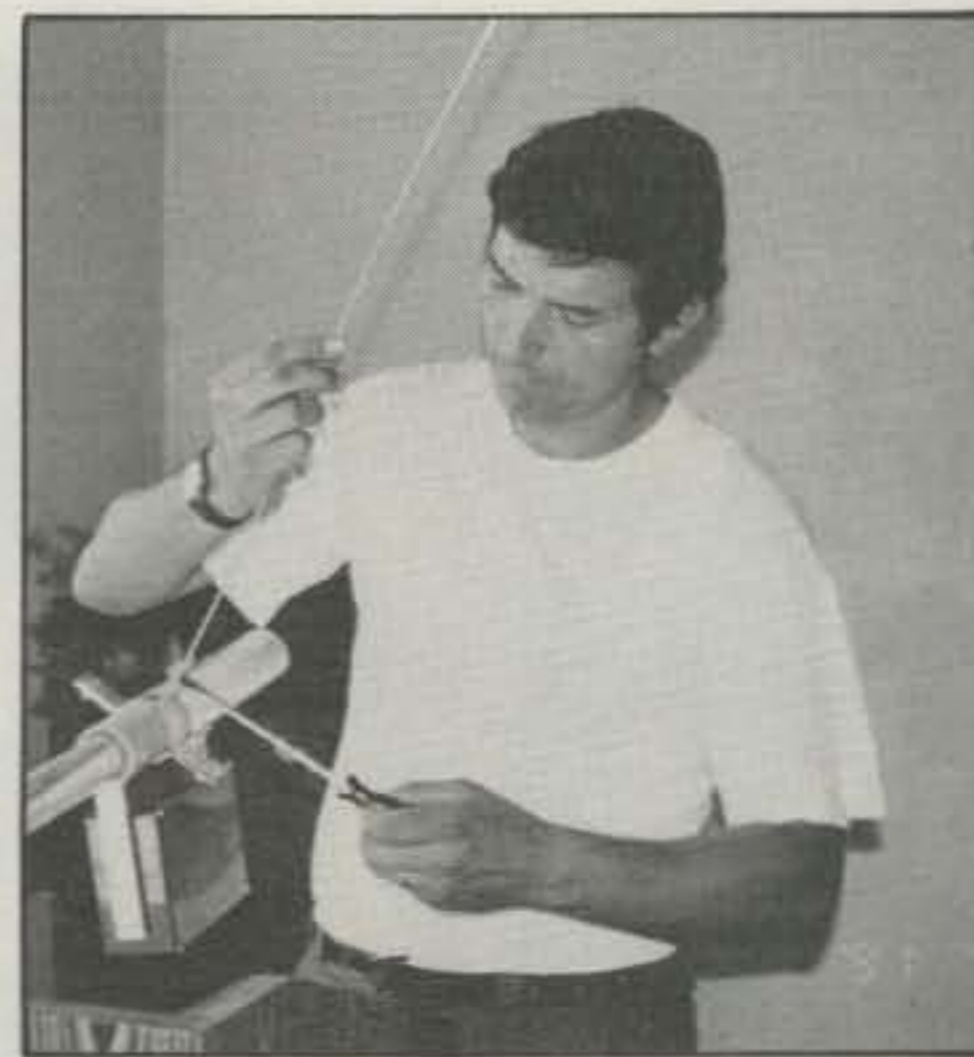
"I think you know very little about my country, which geographically is very small. Socially, it is gripped by a powerful political-economic crisis. But my people are very proud and full of hope and love for every beautiful thing in life. My people want to make up for the time they have lost under the dictatorial regime. That's why the doors of our country are wide open to sincere friends."

Everyone ought to recall these words when traveling to that unforgettable country or when proudly holding that ultimate achievement, that last pinnacle of DX—a red, glossy ZA1A pasteboard featuring not DX performers in their distinctive T-shirts, but Albania's national symbol, the stately Albanian flag with that double-headed eagle.

## Dedication To The People of Albania

Any one of the many offshoots of this unique adventure would make a book in its own right. To some of the participants, the project involved a brief but highly valued stopover in Albania in conjunction with certain special features of the effort. To others, it turned out to be a week-or-weeks-long experience with fiery pileups on the bands. To some of us, it was a busy time with a training program laid out for our students, future radio amateurs of Albania. And, to everyone working on the project, the visit proved a novel experience with a rich kaleidoscope of events and happenings to be remembered far down the years. The full spectrum of it all could not be squeezed into a single, uniform story.

But there was one thing that everyone seemed to agree on: working together with the people of this 3-million nation was sim-



Teodor Mahdi, ZA1TAF.

ply a unique experience. The Albanians were open, confident, and filled with hope of a brighter future. Their sincere faith and trust in better things to come made any mention of each participant's personal problems or those of his home country look like unfair peevishness in this world of great diversity and inequality.

Often our feeling was that we were not even worth the trust shown in us by the Albanians. They expected all mankind to be far more magnanimous and high-minded than was the case. Given all the want and deprivation, their hospitality extended to us somehow seemed so undeserved, yet it was absolutely honest and sincere.

In each and every home visited by us we were the first foreigners ever seen there, and in each neighborhood local residents went out of their way to make our stay comfortable and memorable. Every household did its best to play host.

Every so often, immersed in a mood of pensive meditation, it seemed to us that the world around Albania was not good enough a place for these friendly and hospitable people. It would be a lie to deny that, leafing through my ZA1A photo album, I often have to wipe tears falling on the glossy surface of pictures taken during our Albanian sojourn.

Therefore, I wish to dedicate this last chapter to all the people of Albania and, in particular, to those individuals through whom we were able to experience and learn to know this country and its people. That was a once-in-a-lifetime experience, one that is going to stay in our minds for the rest of our lives, even though the ZA1A QSL card may lose its magic spell over the years and be reduced to a card among thousands of other pasteboards.

**Toli Halili, ex-President and Director General of the Albanian PTT:** It was you who had a mission to allow amateur radio to be established in Albania. Knowing you and your mission throughout these many years in the course of which the matter was discussed gave me faith and strength



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## Ameritron's new

**AL-811 linear amplifier gives you plenty of power to bust thru QRM.**

You get a quiet desktop linear that's so compact it'll slide right into your operating position -- you'll hardly know it's there . . . until QRM sets in. And you can conveniently plug it into your nearest 120 VAC outlet -- no special wiring needed.

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### The first 600 watts makes the most difference

The AL-811 gives you 600 watts PEP output -- that's nearly 2 full S-units over your barefoot rig.

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### All band, all mode coverage

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You can operate the AL-811 on all modes. You get 600 watts output PEP SSB and 500 watts output CW. You even get 400 watts on demanding continuous carrier modes like RTTY, SSTV, FM and AM.

### How the low cost 811A tube resists premature failure - even when your amplifier is mistuned

811A tubes resist premature failure in two ways.

**First**, they're constructed with widely spaced elements that minimize the chance of elements touching and causing a short -- even if the plate gets hot enough to melt.

**Second**, they use a directly heated thoriated tungsten filament cathode that prevents the electron emitting layer from instantly stripping off -- even if mistuning causes a sudden, severe current overload.

**Indirectly** heated oxide cathode tubes (like the \$400 3CX800A7) can be rendered instantly useless if their electron emitting layer is stripped off because of a severe current overload due to mistuning.

The Ameritron AL-811 is excellent for the newcomer because it's tough enough to withstand momentary mistuning. And the tubes are so inexpensive that you can replace one for mere pocket change.

**The Ameritron advantage: extra heavy duty power supply that gives you peak performance year after year**

The heart of the AL-811 power supply is



its heavy duty power transformer with a high silicone steel core weighing a hefty 17 pounds.

A full wave bridge using 52.5 ufd of total capacitance (four 210 ufd, 470 volt capacitors) produces 1500 volts under full load and 1700 volts no load. That's excellent high voltage regulation!

Full height computer grade filter capacitors with screw terminals are used -- not short stubby, light duty soldered-in "high technology" capacitors that can't dissipate the heat generated by high current.

The rectifier diodes are rated for a massive surge current of 200 amps. They won't blow even if you accidentally short the high voltage supply.

Wire wound, 7 watt, 50 K ohm equalizing resistors safely protect each filter capacitor -- not 2 watt, 100 K ohm carbon composition resistors that can open and cause your filter capacitors to explode or fail.

The Ameritron AL-811 power supply is built tough so you get peak performance year after year.

### Tuned input provides excellent load for any rig

A Pi-Network tuned input provides a 50 ohm load for your rig. Even fussy solid state rigs can deliver their full drive to AL-811.

Low loss slug tuned coils -- tunable from the rear panel -- let you optimize performance. High quality low drift silver mica capacitors maintain proper tuning.

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The low loss pi-network output tank of the AL-811 has been carefully designed for optimum Q on each band and built with quality RF components.

The result is peak performance over each band, wide impedance matching range and exceptionally smooth tuning with efficiencies close to 70%. Even a 3:1 SWR load won't damage the tubes or tank components.

A ball bearing vernier reduction drive makes plate tuning precise and easy.

### Quiet pressurized ventilation keeps your tubes safely cooled

A quiet fan pressurizes the cabinet with over 20 cubic feet per minute of cool air.

This large volume of air flow keeps the 811A tube temperature safely below the tube manufacturer's rating -- even with a key down carrier at 500 watts output.

### Two illuminated meters

Two illuminated meters give you a clear picture of your AL-811 operating conditions so you can tell right away if something is wrong.

The Grid Current meter continuously checks for improper loading. The other meter switches between high voltage and plate current to warn of abnormal conditions.

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Too high line voltage stresses components and causes them to wear out and fail. Too low line voltage causes a "soft-tube" effect -- low output and signal distortion.

Ameritron's exclusive Adapt-A-Volt™ power transformer has a special buck-boost winding that lets you compensate for stressful high line voltage and performance robbing low line voltage.

This makes your components last longer and gives you peak performance -- regardless of your line voltage.

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A transmit LED tells you when your rig is keying your AL-811.

A 12 VDC keying relay makes it compatible with all solid state and tube rigs. A built-in back-pulse cancelling diode protects your rig's keying circuit.

Shielded RF compartment. One year limited warranty. Compact 16" D x 13 3/4" W X 8" H. 30 pounds. UPS shippable. Shipped with transformer installed and wired for 120 VAC. Draws 8 amps at 120 VAC. Export model AL-811X wired for 240 VAC and includes 10 and 12 meters.

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Arben Goxhaj, ZA1TAK.

to carry out this missionary DXpedition together with your people.

Our meetings in Finland and Tirana will be remembered forever. Your warm, friendly, and considerate attitude gave us the energy needed to make the ZA1A dream come true.

The fact that you are a son of the late Enver Hoxha should not be able to affect your life any more than it already has done. Why should you have to pay a price for the mistakes made by your father? It was not your fault that you were born into Albania's ruling family.

The fact that you were forced to leave office during the course of our mission does not alter the fact that you helped to set in motion a project appreciated by all amateur radio operators, individuals, and organizations taking a keen interest in your homeland. I am deeply grateful to you for coming to see us while we conducted the training program and operated ZA1A during those unforgettable days in Tirana. Your efforts will always be remembered.



Gezim Hoxha, ZA1TAI.

**Ibrahim Gila, Current President and Director General of the Albanian PTT:**

Where we left off with Dr. Halili, the project was immediately picked up under your patronage. You were new on the job at the time our team members with their myriad of needs invaded your PTT building. It took us no time to realize that you were prepared to complete the mission started by your predecessor.

You allowed us to occupy the top floor of your building and adorn the roof with a multitude of antennas. With magnanimity, you put up with dozens of TVI complaints from viewers in the neighborhood engulfed in a sea of television antennas.

By the time you gave us permission to stay overnight in your building, it was clear that we had won your trust. Heartfelt moments spent over a cup of coffee in your office were always looked forward to with great interest. You made your very first amateur radio contact during the training course. That first contact is always the most difficult one. You managed it with style, also bearing in mind the fact that it was your first communication overall with the ITU Secretary General. Your involvement was greatly appreciated.

**Dajlan Omeri, General Secretary of the Radio Commission of the Government of Albania:**

When I first arrived in Tirana with my mission, all other Albanian authorities said Mr. Omeri would not approve of our venture, and he was the one to promote the issuance of the needed licenses anyway.

Do you remember our first meeting? You looked more than suspicious and kept reminding me that Albanian law would not allow this kind of activity. Without a smile, you sounded solemn and somber.

When we parted, you only gave me a slim chance. But you did not close the door entirely. I know you have lived through many phases of Albanian history. Your doubts about my proposals were understandable.

At our following meetings, the ice began to melt, though. A faint smile was detected on your face. And after a week spent together in Tokyo we became best friends. Do you remember that day in your hotel room when you demonstrated your extraordinary code proficiency although that was the first time ever you laid your hands on an electronic keyer?

Would it be wrong to say that this Morse code session between the two of us proved that we shared a common love or two which were to burst into bloom? Really, at the beginning of the whole exercise I could not imagine that you would be licensed as Albania's first radio amateur signing ZA1TAA.

I am proud of you and so glad that I had an opportunity to meet your lovely wife and your two sons as well. A promise that your kids will one day become radio amateurs made me very happy. As you know, Alban-

ia's future lies in its young generation.

**Agim Muco, Secretary General of the Albanian PTT:** Ever since our initial encounter I considered you more of a good pal than an Albanian government official. We worked a lot together, and you cleared so many obstacles standing in our way that it would be impossible to list them all. Again, without you this thing would have never come off.

You know it, and I want everyone to know, that you worked day and night for weeks on end to lead this month-long project which culminated in more than a month-long series of events in your country. You excelled in everything you took a hand in, often utterly exhausted and tired at the end of the day.

By the same token, you did everything possible to drive the message home to those radio amateurs who swarmed in Tirana without permission or who insisted on calling you on the telephone right into the wee hours of the morning. Your patience was incredible. You have a lot to give your country.

I am sorry you had to separate from your lovely wife, and I regret that the momentous changes unfolding in your country had repercussions for ordinary people, consequences that were difficult to bear with. It is so nice to know, however, that you are allowed to see and raise your daughter, something that obviously gives you hope for the future, hope that every Albanian needs right now.

Thank you for your friendship and camaraderie in all these years, thank you on behalf of the worldwide amateur community. I will never forget the days we spent together in Helsinki, Tokyo, and Tirana. I am forever grateful to you for allowing me to stay with your family an entire month when we were busy with this project. Your friendship is highly valued.

**Mama Muco, Agim's mother—and mine when I was in Tirana.** I know your feelings were rather mixed upon my arrival with all the suitcases in your apartment. But you made me feel I was an expected visitor, and that was enough to make me feel comfortable. Do you still remember how well we managed those weeks despite the lack of a common language? Do you remember the many sacrifices you had to and wanted to make for your first visitor?

Your home had only a few rooms and we had to share them together—me, a foreigner, and you, three generations of Mucos. I will always remember that night when you slept on the balcony waiting for me to come home. You were afraid that something might have happened. Not wishing to keep you worried, I always tried to get back home for the night despite the urge to stay at the station for another operating stint.

Often you worried and were apprehensive as you thought about your guest's next day, concerned about where to find food



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# ZA1TAA

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						Pse Tnx

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Rmks \_\_\_\_\_ TNX FB QSO

DAJLAN OMERI  
Lagja 25, Rruga Niko Avrami, Pallati 42,  
Shkalla 2/11  
Tirana

Design Nakanishi 

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# ZA1TAB

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						Pse Tnx

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MARENGLËN MEMA  
Lagja 17, Rruga Gogo Nushi, Pallati 16,  
Shkalla 3/10  
Tirana

Design Nakanishi 

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# ZA1TAC

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ENJELLUSH ALIKAJ  
Lagja 26, Rruga Brigada 8 S, Pallati Agimi,  
Shkalla 2/36  
Tirana

Design Nakanishi 

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# ZA1TAG

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YLBER BERZHITA  
Lagja 5, Rruga Mujo Ulqinaku,  
No 32/1  
Tirana

Design Nakanishi 

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# ZA1TAH

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JOVAN BOJDANI  
Lagja 26, Rruga Brigada 8 S, Pallati Agimi,  
Shkalla 26/400  
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Design Nakanishi 

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# ZA1TAI

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GEZIM HOXHA  
Lagja 15, Rruga Arkitekt Simani, Pallati 226,  
Shkalla 2/18  
Tirana

Design Nakanishi 

for the whole family. You used to leave the house very early in those crisp September mornings on your strenuous shopping treks, and the sun had already climbed high in the sky when you came back. Usually your cheek felt cold after the arduous exercise.

I will always treasure memories of that happy morning when you came back to the house from your shopping tour proudly presenting me with an egg you had managed to locate somewhere. I realized you had brought that one egg just for me, and it gave you a good feeling to see me eating the egg. I would much rather have seen somebody else eat it. You always come to my mind when I see eggs, and my hope is that soon everyone in Albania will have access to these and other everyday items that we take for granted and find too commonplace to get excited about. God bless you, Mama Muco. God bless Albania.



Ylber Berzhita, ZA1TAG.

## Albania's First Amateur Radio Training Course

That first day of Albania's first-ever, memorable amateur radio training course was full of excitement for all of us. Geni was the first one to muster enough courage to speak to us instructors. Regretting that he had never before had a chance to talk to any foreigners, Geni was surprised to see that we understood his English.

Jovan was more accustomed to communicating with others, since he had been to Italy and met with people from other countries.

Niko looked quite mysterious with his

dark hair, and we paid him particular attention, knowing that he was employed at the Ministry of Defense.

One day Theo came to the classroom wearing a military uniform, attracting our respectful attention. We were proud of Theo, since he was one of those with an open, inquisitive mind who absolutely wanted to assemble the antennas we had brought along.

Mirella, then. She was sure to become an instant teacher's pet, being the only lady among our students. There was no doubt that Mirella enjoyed the boys' re-

spect. For one thing, she was Albania's master telegraphist of a few years ago. A beautiful girl that Pekka and other instructors fell in love with.

It was great to be able to visit many of you at home and meet your family and children. There was no question that you went out of your way to show true Albanian hospitality. I recall with warmth our visit to Dik's house where his parents always stood up to thank me when I had spoken to them. And what about the abundance of food that Lushi's and Jovan's wives conjured up! Not to mention Dajlan's parties and many others. Every day was new to us, filled with your hospitality. We all were one big family during those weeks to be recalled with fondness down through the years.

Many people have asked if you passed the final licensing examination to become Albania's first native radio amateurs. Even on this score, our story is quite incredible. All instruction was provided through an interpreter, but somehow you managed to absorb the information from one another if something had not been made clear otherwise. I often ran into you in town discussing the things we had taught you. You were eager to spend long hours in the classroom and at the station in the evenings and at night.

The world could hardly believe its ears when Lushi and Niko showed up on the bands after just one week of training. You all passed the examination to qualify for a license corresponding to the U.S. General class ticket, something that you can be particularly proud of. All of your instructors had prior experience conducting amateur licensing courses, but none of us had ever

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NIKOLLA DEDI  
Lagja 14, Rruga Sitki Cico, Pallati 8,  
Apartamenti 10  
Tirana

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# ZA1TAE

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SADIK AGALLIU  
Lagja 54, Rruga Zenel Baboci,  
No. 13  
Tirana

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# ZA1TAF

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TEODOR MADHI  
Lagja 8, Rruga Mihal Grameno, Pallati 7B/4,  
Shkalla 3/29  
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DALI PRENCI  
Lagja 25, Rruga Niko Avrami, Pallati 75,  
Shkalla 1/10  
Tirana

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# ZA1TAK

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ARBEN GOXHAJ  
Lagja 45, Rruga Thanaz Ziko, Pallati 65/2,  
Apartamenti 7  
Tirana

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# ZA1TAL

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Rmks \_\_\_\_\_ TNX FB QSO

MIRELA PRENCI  
Lagja 62, Rruga Lord Bajroni, Pallati 3,  
Shkalla 1/11  
Tirana



Wayne Mills, N7NG, a seasoned DXpeditioner out of Jackson Hole, Wyoming, now in charge of bringing these two nations—Americans and Albanians—together after several decades of isolation.

met such enthusiastic students as you were.

Not surprisingly, you all became active radio amateurs. Nor was it unexpected to hear about your method of using in rotation the radios we left behind. You are being reported on the bands almost daily now. Following another recent trip to Albania, IARU President Dick Baldwin, W1RU, told me how you all had met him at Tirana airport. I know that traveling to the airport was difficult enough for your group.

You devoted all your time to this hobby. We want to thank you and your families for that. Once again, we wish to welcome Albanians to the international family of radio amateurs.

And so, the last chapter was written for my book and for this performance. In these

times of turbulence and tumult, we witnessed the decline and downfall of countries and whole empires in the world. In the amateur sphere, Albania had persisted as a real paradise for bootleg operations over many decades and remained a number one country on all Most Wanted lists. Now Albania disappeared from all such lists to become an active and participating country in the world at large as well as in the international amateur radio community.

But let Albania remain a "rare one" in our minds, an object of our all-around, sincere interest. The Albanians need our support and our help in catching up with every-

thing they were denied over the past decades.

The Albanians have opened their hearts and homes to you; your own personal ZA friend is waiting for a message from you. You may travel to Albania any time to experience everything we tried to convey to you through the ZA1A experience. Even your ZA license is ready for you.

As the curtain falls, Old Timers flanked by Local QRPers alike gather to momentarily discuss the ZA operation, then quickly move on in their quest for the next rare DX. But for now, the show is over. The final chapter is finished.

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# Results of the 1991 CQ World-Wide WPX SSB Contest

BY STEVE BOLIA\*, N8BJQ

**E**aster, solar flares, and a "bug" played a major part in the outcome of the 35th CQ WPX SSB Contest. Less than favorable band conditions kept scores down, especially on the high bands. However, the quality of competition keeps improving each year. Three stations vied for the world single-op title with less than 600K separating them. While not many records were set, outstanding efforts were turned in from many parts of the world.

## DX

The 1991 all band champion is ZW5B operated by N5FA. Jim edged out PJ9X (OH6DO op) by less than 150K with Pedro, HC1OT, only 500K behind Jim. As an indicator of conditions, Jim's 12,332,736 points would have placed him sixth in 1990. YZ9A (YT3AA op) finished fourth overall with a new European record. Fifth goes to 6Y0I (JL1BLW op) followed by HI500A and WR6R/WH6.

Luis, ZP50Y, QSYed from 21 MHz in 1990 to 28 MHz in 1991 and captured another world title. FR5DX set a new African standard on 28 on his way to second in the world. ZY5NW and ZS6WPX (like those WPX calls) were third and fourth. On 21 MHz, ZX5C (PY5CC op) claimed the number one spot followed by CE3FIP and TM1K. H2A (5B4SA op) broke the string of South American winners by taking the top spot on 20 meters. Second is YW1A with YT1BB and GB8FX almost dead even for third and fourth. YV5A (YV5JDP op) is the new 40 meter champ followed by IQ3A and LZ5W. John, VA3EJ, takes 3.5 MHz honors with a new North American record of 1,950,592 points. YV3A (YV5IVB op) was a close second, with FP5DX third. UL7ACI is the top band champ with a new world record score of 331,008 points.

VP2E (VP2EXX op) repeats as QRP champion followed by AA2U and N1AFC. K6SVL is the low-power champion on 28 MHz, with YT1T the 21 MHz QRP champ. EA1CJJ, K7UR, SP4GFG, and YB2OK are the top low-power scorers on 14, 7, 3.5, and 1.8 MHz, respectively.

\*4121 Gardenvue, Beavercreek, OH 45431



Here is Yoshitaka, 7Q7JA (JL1IHE), a much needed multiplier and new DX country for several.



Aki, HI500A (JA5DQH), is one of the top contesters from the Caribbean and was very popular with the HI500 prefix.

## USA

While scores went down throughout most of the world, USA scores were up in most every category. KQ2M piloted KM1H to the top spot in the USA with 6,520,356 points. Dave, KM3T, at WM1K finished a strong second with 6,061,558 points. NW3B and KA5W (KS1G op—got it right this year, Paul) were third and fourth.

NX1H is the USA 28 MHz champ followed by KS3F. Trey, WN4KKN/6, is the 21 MHz leader with K1ZM second. K2VV is the 20 meter winner. In the closest USA race, Bill, KV0Q, just edged N7AVK for the top spot on 40. KQ3V wins 3.7 MHz with AA4MM finally getting a top band title.

AA2U, N1AFC, and K5RX turned in outstanding QRP scores as they finished first, second, and third in the USA. K6SVL is the world champ on 10 meters, W8ILC the USA 20 meter champ, and K7UR is the world champion on 40 meters.

## Multis

P40V and ED8ACH are the big guns in the multi-operator class with two impressive world-record efforts. Carl and Wayne teamed up at P40V to break ZX5C's 1989 multi-single record by over 5 million points. The gang at TA5/N0FYR was tops in Asia and second in the world. TW1C, expedition trophy winner TK7A, and LZ9A were third, fourth, and fifth, respectively. V85HG was sixth, with AH0K tops in Oceania with a record 11,552,112 points.

A combination EA8 and OH group at ED8ACH shattered ZZ5EG's multi-multi

record by almost 10 million points. Their 47 million point effort has set a standard that will be tough to top. HG73DX mobilized most of the serious operators in Hungary and turned in an outstanding 30 million point effort, good for second in the world and a new European record. Third was YT2E followed by USA champ WZ6Z.

WC4E repeats as USA multi-single champ followed by 5-land. WG5J, AA5B, and WF5E had their own battle for second with less than 100K between second and fourth. Not far behind was W1FEA. WZ6Z fell just a bit short in their attempt to break the USA multi-multi record, but still turned in an excellent effort, good for fourth in the world.

## Other Stuff

1991 will be remembered as the year of the "bug" in "CT." Version 6.19 and other versions of the popular logging program had a bug which affected the scoring of contacts within your own country. QSO points on the log pages were correct, but the score on the summary sheet was calculated wrong. It is amazing how many people believed the software and never rechecked the points and multipliers. Some very sizable score reductions resulted when the logs were checked. No one was penalized this year, but remember that it is your responsibility to ensure that your submitted log is scored correctly.

Despite the log checker's nightmare created by the bug, we still support submission of logs on disk. More than 150 were received, with only two arriving unread-



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Luis, CT8N (CT4NH), seems pleased with his top ten finish.

able. Two came folded (by the postal service) and were still readable after spending a couple of days under a stack of books. If you are using "CT," as many are, I would appreciate a copy of your \*.bin file or the file generated by the AK1AFORMAT command. These formats can be directly imported into the WPX database. DBF files and unformatted ASCII files are also acceptable. Even if you send in a printed log, I would also appreciate a \*.bin file or ASCII file if you use a computer. To allay your fears, computer logs do not get increased scrutiny. In fact, it is possible that they get less, since we don't have to type in each contact. Disk files make our job a little easier, more accurate, quicker, and are easier to store.

There have been two major rule changes for the 1992 contest. **Operating time for single operator stations has been increased from 30 hours to 36 hours.** Off times will remain at least 60 minutes and must be clearly marked in the log. There is no limit to the number of off periods taken. **A low-power category has been added for 1992 for single operator stations running no more than 100 watts output.** You may compete as either all band or single band. Those competing in this category will compete only with other low-power stations. **Until new summary sheets can be made up, please clearly mark low power on your summary sheet.**

For those of you not using computers, remember that an alphanumeric multiplier sheet is a requirement with each log. Failure to submit a multiplier sheet may result in disqualification.

The Canadians and the French activated a host of new prefixes for the '91 contest. Unique calls such as VO7XX, VA8A, VA100U, XK4GV, FX0U, TH6X, FZ5A, TM1K, and others provided WPX enthusiasts with a multitude of new prefixes for the WPX program. 6Y0I, 5Y4FO, 7Q7JA, ST2YD, Z21HQ, 4X5U, H2A, 9M2DX, A61AD, A92FN, BV2WA, JT8AA, EK0TAX, SZ9A, YM1AZ, 4D9RG, WH0AAP, 6I2A, V85HG, C40R, D73A, JU1T, TK7A, FL0P, TH8X, FL6YL, AH0K, KF6NI/NH8, RI6B, and L33F also provided the prefix hunters and DXers with some excitement. As KS7T

put it, with over 2900 prefixes worked, he can still find a new one in the WPX contest. Thanks to all who make the extra effort required to use a new prefix or go on an expedition. Special thanks go to Rich, KI3V, who was called to duty during the Desert Storm operation and found the time between launches to make 2500 Q's as A92FN. Rich made it back safely and is the winner of the Persian Gulf trophy sponsored by WB2DND.

The 1992 contest will be held 28 and 29

March, 0000 GMT Saturday to 2400 GMT Sunday, and it will *not* be Easter weekend. Get your logs in early to make the claimed score deadline. All logs should go to CQ. Please put WPX SSB Contest on the envelope to help out the mail sorters. If you send a disk, it is imperative that you send a printed summary sheet. It would be a good idea to put a phone number or FAX number on the summary in case we require more information or the postal services eat the disk. If you need to contact me, I'm okay

## TROPHY WINNERS

### SINGLE OPERATOR, ALL BAND

**WORLD:** Stanley Cohen, WD8QDQ Trophy. Won by: **Station ZW5B operated by Jim Hoffman, N5FA.**

**U.S.A.:** Atilano de Oms, PY5EG Trophy. Won by: **Station KM1H operated by Robert Shohet, KQ2M.**

**CARIB/C.A.:** Auturo Gigante Jr., HI8GB Trophy. Won by: **Station 6Y0I operated by Take-mobu Yokoyama, JL1BLW.**

**AFRICA:** Peter Sprengel, PY5CC Trophy. Won by: **Julio Vera-Cruz, D44BC.**

**EUROPE:** Jim Hoffman, N5FA Trophy. Won by: **Station YZ9A operated by Tine Brajnik, YT3AA.**

**SOUTH AMERICA:** Ron Moorefield, W8ILC Trophy. Won by: **Station PJ9X operated by Marko Myllymaki, OH6DO.**

**JAPAN:** The DX Family Foundation Trophy. Won by: **Station JA8YBY operated by Ohta Masaki, JO1DFG.**

**ARABIAN GULF:** Don Greenbaum, WB2DND Trophy. Won by: **Station A92FN operated by Rich Hallman, KI3V.**

**WORLD QRP/p:** Dayton Amateur Radio Association Trophy. Won by: **Station VP2E operated by Paul Meacham, VP2EXX.**

### SINGLE OPERATOR, SINGLE BAND

**WORLD:** John Reichert, N4RV Trophy. Won by: **Station ZP50Y operated by Luis Kemper, ZP5JCY.**

**EUROPE:** Myron Crofoot, WB4VQO Trophy. Won by: **Station TM1K operated by: Thierry Gauthier, F1MXH.**

**JAPAN:** Ken Ruddock, K6HNZ Trophy. Won by: **Station 7L1GVE operated by Hiro Shiozawa, JA0JCJ.**

**WORLD 7 MHz:** Bill Johnson, KV0Q Trophy. Won by: **Station YV5A operated by Giovanni Bianchini, YV5JDP.**

\***WORLD 21 MHz:** Lee Wical, KH6BZF Trophy. Won by: **Station ZX5C operated by Peter Sprengel, PY5CC.**

**U.S.A. 3.7 MHz:** Lance Johnson Engineering Trophy. Won by: **Robert Harron, KQ3V.**

**U.S.A. 7 MHz:** CQ Magazine Trophy. Won by: **Bill Johnson, KV0Q.**

**U.S.A. 14 MHz:** Doug Zwiebel, KR2Q Trophy. Won by: **John Yodis, K2VV.**

**U.S.A. 21 MHz:** Bernie Welch, W8IMZ Memorial Trophy. Won by: **Trey Garlough, WN4KKN/6.**

**U.S.A. 28 MHz (Novice/Technician):** Jon Engelhardt, KA0ZFX Trophy. Won by: **Daniel Voils, KB9ABI/T.**

\***JAPAN 28 MHz:** Joe Arcure, W3HNC and Toshi Kusano, JA1ELY (Terry Appleton, W4GSM Memorial Trophy). Won by: **Hitoshi Jun Mochizuki, JH2UVL.**

### MULTI-OPERATOR, SINGLE TRANSMITTER

**WORLD:** Mike Badolato, W5MYA Trophy. Won by: **Station P40V operated by AI6V and N7NG.**

### MULTI-OPERATOR, MULTI-TRANSMITTER

**WORLD:** Henry Thel, VE7WJ Trophy. Won by: **Station ED8ACH operated by EA8ACH, EA8AFS, EA8VV, EA6ZS, OH0XX, OH1RY, OH2BH, OH2MM & OH3UU.**

**NORTH AMERICA:** James Dixon, NL7HI (Burt Curwen, KL7IRT Memorial) Trophy. Won by: **Station WZ6Z operated by WZ6Z, N6RO, N6EK, W6RGG, K3EST, KI6EZ, N6KT, W6OAT, K6TMB, VE7NTT, VE7NKI, WX0B & RB5IA.**

**U.S.A.:** Glenn Tracey, KC3EK Trophy. Won by: **Station W3FV operated by W3FV & N3HOR.**

### CONTEST EXPEDITION

**WORLD:** Kansas City DX Club Trophy. Won by: **Station TK7A operated by F6BBJ, F6EPY, F6HLC & TK5EP.**

\*Trophy donor is responsible for this trophy.



## WORLD TOP SCORES

SINGLE OPERATOR ALL BAND		1.8 MHz	
ZW5B	12,332,736	WN4KKN/6	4,285,122
PJ9X	12,183,888	4X5U	4,084,437
HC1OT	11,728,743	K1ZM	3,726,492
YZ9A	8,518,112	CR5A	3,259,215
6Y0I	8,292,956	I2PJA	3,139,500
HI500A	7,447,654	4T4ANR	2,830,616
WR6R/WH6	7,153,647	OH6NIO	2,567,299
VO7XX	7,148,738	OH5BM	2,529,260
OK1RI	7,124,166	YT3EW	2,528,802
CT8N	7,026,395	<b>7L1GVE</b>	<b>2,526,216</b>
<b>KM1H</b>	<b>6,520,356</b>	<b>14 MHz</b>	
GW4BLE	6,308,224	H2A	6,297,464
WM1K	6,061,558	YW1A	4,936,190
L33F	5,437,350	YT1BB	4,067,159
NW3B	5,148,550	GB8FX	4,025,478
ZF2NE/ZF8	4,844,532	PT5T	3,744,417
<b>A92FN</b>	<b>4,788,550</b>	CE6EZ	3,231,118
YU7AV	4,537,624	CT3BD	2,964,392
OA4ZV	4,361,030	OH1MA	2,956,816
YL2GD	4,294,865	EA3KU	2,863,364
4D9RG	4,252,700	YY5A	2,632,464
KA5W	4,199,228	DL8PC	2,622,375
KO7N	4,195,530	HA9RT	2,500,884
VA3XN	4,038,975	YU3BQ	2,354,772
SM5GMG	4,026,724	YT7A	2,354,280
WO0G	4,000,780	<b>K2VV</b>	<b>2,270,690</b>
		<b>7 MHz</b>	
		YV5A	3,460,900
		IQ3A	2,937,088
		LZ5W	2,192,940
		VA7SV	2,112,040
		I4AVG	1,800,198
		LU1V	1,592,692
		YU4CC	1,150,900
		<b>KV0Q</b>	<b>1,068,144</b>
		OK1DXS	1,051,380
		N7AVK	1,015,784
		<b>3.5 MHz</b>	
		VA3EJ	1,950,592
		YV3A	1,664,476
		FP5DX	1,168,224
		YU3NA	356,952
		LY2BHM	345,720
		ES5RY	343,200
		IG8R	326,522
		<b>KQ3V</b>	<b>303,780</b>
		OT6JG	247,940
		LZ1RN	223,520
		UO4OF	221,178
		<b>21 MHz</b>	
ZX5C	8,178,356		
CE3FIP	5,435,586		
<b>TM1K</b>	<b>4,495,701</b>		
YW3A	4,332,768		
EA8AM	4,322,366		



VE2AHC and VE2FOT checking the CQ propagation charts during a break at multi-single station VD2WJ.

working on this band... YB2OK. Sudden snow storm damaged SWR of my 5-element quad and final score. I was captured 5 days in mountain... 4N4T. Didn't work a single JA!... 5Y4FO. It's first time to operate from Caribbean. I enjoyed contest with 4265 QSO... 6Y0I. First time on line computer... AA4MM. Best score I've ever had. Great Contest!... AA7OD. Really enjoyed the contest, even with the terrible band conditions on Sunday... AB4WD. Ten meters wrong choice for single band effort... A17B. Propagation BV to Europe very good. I hope next year to USA will be better... BV2WA.

Single band on 20 meters was bad choice this year. Had to call 10 times to raise a station... CE6EZ. K1EA to Hall of Fame!... CT8N. Got a lot of comments about my callsign... CU0WPX. This is my first WPX contest and I like very much because many people in frequency... EA2CLU. EK0TAX—dog sled expedition, operator UA3TAX... EK0TAX. With Easter activities I thought I wouldn't get to participate, but I enjoyed some good operating... FY/N4QDX. Thought I had a new European record until I discovered computer had scored it wrong!... GW4BLE. Working 4 new band countries... GW4OFQ. Dominican Republic was discovered by Columbus in 1492. HI500A is special call for 500th anniversary... HI500A. Feel very difficult with my poor working condition... HL5BUV.

Good propagation for USA, bad for Japan... IK6FJV. New personal record!... IO9BLB. It's so very fun contest. I got a many new prefix for the WPX award... JF1SEK. I enjoyed my last contest from Japan, and next, I would like to see you again from Niger... JH4NMT. Over a million licensed JAs and only ONE in my log!... K1DWQ. Condx went to crap on Saturday and really got bad Sunday... K7QQ. My C-64 was on drugs. Ordered PC and K1EA's "CT" on Monday. Did not hear a single IN or IT on 10... KA0ZFX. So much fun, so little time... KA2AWE. Best I have done in a contest... KA4RRU. Got sick Friday night; took 2 days to make last 20 Q's. Missed my favorite contest... KB2SE. The band was flakier than Kellogg's Corn Flakes... KB9ABI/T.

A contest even a Novice can love... KC4TIR/N. Condx Sunday on 10 were terrible; however, good signal from A92FN 10 meter LP Saturday night... KC7V. Nothing like losing your listening frequency during a run 5 times in an evening... KE6ZE. Really exciting contest. Fifteen meters was great!... KF0GV. 100 watts and a vertical—and I had a great time!... KN4SR. First WPX with phased verticals and computer logging. Both need some work... KQ3V. Twenty meters took longer rest periods

in the *Callbook*, via regular packet @ W8BI, or via packetcluster @ N8BJQ if you can connect to the midwest packet cluster system.

Many thanks go again to Scott, N9AG, for the help with the logs. Without his efforts, I would be hard pressed to finish this up on time, or anywhere close to it. Thanks also to all who take the time to participate, even if only for a few hours. Your efforts make the WPX Contest successful. Hope to see you in the 1992 contest.

73, Steve, N8BJQ

### Random Comments

Surprised at being able to work so many Euro-

peans with 5 watts... K6SVL. No time—No antennas—No condx... N8CQA. Great conditions, especially on 40 meters... W6YVK. Truly amazing 10 meter long path openings... WA8LLY. Disappointed I could only put in just under 24 hrs. in my first try QRP in this contest... K5RX. First time QRP. Was very impressed with how a good antenna and QRP can make noise even on 20 meters... W9UP. T32Z first call on 80 with 3 watts... K5IID. TA, HZ, 4J0, UL, VK, ZS. Not bad for 5 watts in only fair condx... VP2E. Excellent QRP conditions for personal best results... K9OSH. Even though condx could have been better, a Vermont hilltop with a delta loop made for a great test... KA1UJ. Forty meter WAC on 5 watts!... K7UR.

No, the call is VA6 not WA6! QRP and a "funny call" makes it difficult... VA6SH. First contest QRP. "Frustrating"... N3HHE. Very hard work on 1.8 MHz. This is my first experience



*XE2KB (in the hat) and XE2LV worked over 2700 as 612A.*

than I did... *KS2M*. Even at 2900 plus prefixes worked, can still get new ones in this contest... *KS7T*. This is the first time I've seen such great activity on 40 meters... *KV0Q*. Started as a serious 20 meter only effort, but I proved once again that I can't stand 20 meter phone... *KY5N*.

First contest using *K1EA*'s software. Wonderful!... *LS7DX*. Great contest! Had a blast. Too bad conditions weren't better Saturday... *N1GPY/T*. Friday night conditions were dynamite, and Sunday morning a disaster... *N4MO*. Stations need to ID more often, instead of running a big pile-up... *N5CLK*. First contest... *N6ZET*. New beam really smokes, but marginal propagation... *N7AVK*. There was only a very poor opening to Europe Sunday morning... *N7DFWH2*. Saturday condx good. Sunday poor. Had fun anyway!... *N8FEH*. Nice to work *NC5M* for the first time... *NC6M*. Should have gone to breakfast Sunday morning... *NL7DU*. A sure way to get a run started seems to be to try and eat a sandwich... *NX1H*. First contest ever. Really had a ball!... *OA8ABI*.

Nice experience of friends to be the first time all the Peruvian prefixes are operated... *OB4QV*. I broke linear two days before contest (band switch) so that it worked only on 20 meters—hi! hi!... *OH3OJ*. Poor condx to JA on Saturday meant many hours of resting... *OH6NIO*. If I had operated in other periods I might have had more. After contest you are more clever... *OK1RI*. Very poor conditions on 75. Missed a lot of regulars on that band... *OT6JG*. First time in WPX. Nice to use *K1EA*. Cond was poor we had aurora... *OY9JD*. The contest was good, vy good, but I need more WATTS!... *PY2NY*. First try in WPX contest and 19 new countries. It was a big fun, wasn't it?... *PY4AQA*. Before contest had 2375 prefixes confirmed. Now 10 new!... *SM7TV*.

Great contest! I made a lot of new countries on 10 meters and my last zone to complete... *SP4EEZ*. Being called by *VQ9IO* late on Sunday... *VA1AOE*. Another Easter/WPX conflict. Too bad!... *VA3EJ*. Found lots of activity but wished the conditions were better. Those flares took their toll... *VA3NYT*. CQ WW and CQ WPX

## USA TOP SCORES

### SINGLE OPERATOR ALL BAND

<b>KM1H</b> .....	<b>6,520,356</b>
WM1K .....	6,061,558
NW3B .....	5,148,550
KA5W .....	4,199,228
KO7N .....	4,195,530
WO0G .....	4,000,780
K3ZO .....	3,213,188
KK9V .....	3,199,590
KC7V .....	3,169,956
W5KFT .....	2,448,258
W0CG .....	2,395,712
WB2UEY .....	2,395,417
WE5I .....	2,284,292
K5TSQ .....	2,263,476
NG8D .....	1,830,334

### 28 MHz

NX1H .....	3,015,377
KS3F .....	2,767,580
WE3C .....	2,112,954
N4ZZ .....	2,068,320
AA5BL .....	1,799,148
K7QQ .....	1,180,470
AG8W .....	997,832
K1VUT .....	992,358
KI6CG .....	833,718
WB8TLI .....	660,265

### 21 MHz

<b>WN4KKN/6</b> .....	<b>4,285,122</b>
K1ZM .....	3,726,492
W7CB .....	1,300,023
NE8T .....	1,242,700

N4MO .....	1,150,214
WM4Z .....	1,138,266
N3GB .....	984,560
K6OY .....	901,950
WB1DXD .....	667,584
WA6FGV .....	654,994

### 14 MHz

<b>K2VV</b> .....	<b>2,270,690</b>
KC2X .....	1,549,561
KC8FT .....	1,212,610
AB4WD .....	487,500
W1LQQ .....	176,816
KS2M .....	162,193

### 7 MHz

<b>KV0Q</b> .....	<b>1,068,144</b>
N7AVK .....	1,015,784
WQ2M .....	695,196
KA1DWX .....	164,352
KE6ZE .....	153,900

### 3.7 MHz

<b>KQ3V</b> .....	<b>303,780</b>
N1CC/2 .....	97,916
KE5FI .....	12,000
AA6KX .....	4,512

### 1.8 MHz

AA4MM .....	16,284
K5WXZ .....	440

### QRP/p

AA2U .....	A .....	854,217
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N1AFC .....	A .....	781,664
K5RX .....	A .....	642,350
K5IID .....	A .....	508,644
WA2UUK .....	A .....	476,307
K6SVL .....	28 .....	128,324
WO1X .....	28 .....	122,140
WV5S .....	28 .....	61,754
W8ILC .....	14 .....	162,281
KA1UJ .....	14 .....	93,624
K9OSH .....	14 .....	88,506
K7UR .....	7 .....	32,256
AA6XX .....	7 .....	28,500

### MULTI-OPERATOR SINGLE TRANSMITTER

WC4E .....	10,284,516
WG5J .....	5,436,571
AA5B .....	5,379,480
WF5E .....	5,339,466
W1FEA .....	5,068,440
WU7Q .....	4,783,535
NM9H .....	4,078,800
NJ1F .....	3,886,632
ND1X .....	3,698,310
KR0U .....	3,453,582
W8FN .....	3,187,541
WV9T .....	2,779,587
W4PRO .....	2,020,221
K3ZLK .....	1,884,575
KM0L .....	1,623,594

### MULTI-OPERATOR MULTI-TRANSMITTER

<b>WZ6Z</b> .....	<b>17,408,281</b>
<b>W3FV</b> .....	<b>500,646</b>

are still the #1 and #2 knockout punches in the contest ring... *VA3XN*. What a pleasure to use CT for the first time during the contest—and especially afterwards... *VA5RA/6*. Great contest as usual. Lots wanted the VA8 prefix... *VA8A*. The most fun and rewarding contest of

the season. Look forward to this one... *VE3VET*. Thanks to all who answered my call!... *VE3ZD*.

Conditions very good, but I don't have the driving power. Getting too old... *VE4RP*. 9H0 was my longest ever path, approximately 23,000 kms... *VK3TZ*. Almost reached 1000 QSO's...



*These members of the Peruvian DX Association activated all four prefixes for the contest. Left to right (top row): OC4AUF, OB4QV, 4T4ANR, OA4ZV, 4T4CRK; (front row) OA4BTO and OC4BTE. Look for more activity out of this group in future CQ contests.*



Carl, AI6V, and Wayne, N7NG (of ZA fame), relaxing after their record-breaking multi-single effort.

VO7SO. Bands came alive just for contest. Hi! ... VO7XX. Interesting to operate from VP5. Ten and 15 good, 40 S9 + 10 dB noise, 80 impossible ... VP5F. Score over three times last year (had three bands in 1990). Age 73 years ... W0ACT. First WPX. Wx was so nice I wanted to be out working in the yard ... W0OSK. First effort at WPX and first using K1EA/CT pgm. Great way to go ... W6TKF. Great contest. Solar flares made it more exciting ... W7CB. Easter cost 5 hr. 15 min. Bad weekend ... W7TSQ. It was real tuff on 40 with all the QRM. Gave me a king-size headache. 100 watts and delta loop ok ... WA6WPG.

Had fun even though I spent most of the contest at Disneyland and playing Easter Bunny ... WA7BNM/6. Had two very long nights ... WA8UMB. Thought condx were very good for 15 meters; seemed like 20 meters! ... WB1DXD. I built a homebrew 10-20 dipole on Friday afternoon and went to town. Had a great time ... WB5EUC. Wish the Pacific stations would listen up on 40 more ... WB6JMS. Fun Contest: My personal best score and one new country (#292) ... WB8TLI. Fun with the new call, WE3C (ex-WA3LFY). Lots of stateside Q's for the prefix ... WE3C. Great contest. Biggest thrill was working BY1, V63, and VQ9 ... WI2T/3. What a shock to hear V85HG calling CQ on 15. Worked him on 4th call with 110 watts—a new country ... WM2D. No meters like 15 meters ... WN4KKN/6.

I remember when condx used to be good for this contest! ... W00G. First time in 27 years of hamming I submitted a log for any contest. Does this make me a contester? ... W01C. A lot of activity on 40 this year. Good to see so many Europeans working split ... WQ2M. Easter Bunny came and I have too many little ones. Maybe next year ... WV9Q. The best call sign of the contest was W0RRY. For sure ... XK4VV. Bad condition for Asia! ... YT3CD. Seven years ago was my first WPX test! ... YY1C. We had the two grandsons home for Easter. Still had 16 hours on the air ... ZL1IM. The best propagation on 10 meters I have ever seen! ... ZS6WPX.

## Station Operators Multi-Op Single Transmitter

**4D1P:** DU1ELB, DU1DDP, DU1MSD, 4F1KHZ, DU1CLH, DU1EUV, DU1COO. **4N2D:** Dado, Mato, Lukasa, YU2FK, YT2VM, TY2TL. **4U6ITU:** OE2CHN, OE2GEN, OE2LCM, OE2MON, OE2SCM, OE2VEL. **4X6UJ:** 4X6UJ & Y03FBE. **5K1R:** HK1HXX, HK1KXA, HK3AHM, HK1LDG. **6I2A:** XE2KB, XE2ABN, XE2LV, XE2YID. **9H0DX:** 9H1BT, 9H1ED, 9H1FG, 9H1GP, 9H1JY, 9H1KK, 9H1PA. **AA5B:** AA5B, K9RS. **AA5IB:**

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**JU1T:** JT1BR, JT1BX, JT1CF. **K3ZLK:** K3ZLK, KA3VCY, KA3VEL, N3CHL. **KA2NDX:** KA2NDX, KB2KRO, KB2KDT. **KD2YP:** KD2YP & packet. **KF4CI:** KF4CI & packet cluster. **KF6HI/NH8:** KF6HI & KA6NAL. **KL7RA:** KL7RA, AL7SQ, AL7MU, NL7KB, KL7XD, AA6DX, N3HXQ, AL7AF. **KM0L:** KM0L, K0RWL, K0UAA, KM0E, N0KUJ, NT0P, NW0F. **K04J:** K04J & K14HL. **KR0U:** KR0U, W1XE, W0KEA. **KZ1K:** K1PLX & KZ1K. **LY2WW:** LY2BIJ, LY2BKW, LY2PX. **LZ9A:** LZ2CC, LZ2PO, LZ2DF, LZ2HE, LZ2TT, LZ2-E-41. **N4KYD:** N4KYD, WB3EFE, Bobbie. **N5NMX:** N5NMX, KB5NFZ, packet cluster. **N6CCL:** N6CCL & packet. **NB6L:** NB6L, K6ZM, NP4IW. **NC7K:** NC7K & packet. **ND1X:** ND1X, K1WNT, K1CVF, KJ1D, WA1PMA, NJ1F: NJ1F, NU1P, KY1H, WI1W, KA1JFP, N1IBN, KR1R. **NM9H:** NM9H & N9HXG. **NQ1W:** NQ1W, KC4URA, WU7P, WB9IME. **OH2BR:** UA1CK, UA1DJ. **OH3AD:** OH3HY, OH3FP. **OH4NZI:** OH4NZI, OH4YC, OH4MI, OH4ZS. **OH7NTM:** OH7MS, OH7WV, OH7MHL, OH7BNK. **OK2K0D:** OK2BDI, OK2BGR, OH2BHM, OK2WAZ. **OK3KFF:** OK3TPG, OK3TRG, OK3TCW, OK3TPW, OK3TLU.

**OL8CFY:** OT6AH: ON6AH, ON6MH, ON7PG, ON6VL. **OT6RM:** ON6XN, ON6FS, ON4KHG. **P40V:** AI6V & N7NG. **PA6WPX:** PA3DMH, PA3ERC, PA3EWP, NL10373, PI4COM. **PI4AMF:** Club Group. **R0C:** UW0CN, UW0CA, UW0CW, UA0CDX, RW0CA, UA0CKB, UA0CZ, UW0CM, UA0CCD. **R6L:** UA6LO, UA6LV, UB5ITW, UA6-150-1240, RA6LRT, UV6LPL, UA6LFO, UA6-150-1403. **RI6B:** RI8BQ, UI8-053-2001, UI8-053-2074, UI8-053-2075, UI8-053-2076. **RS3A:** RA3DUU, UA3-170-210, UA3-170-126, UW3EG. **RZ1A:** UA1BX, UW1AE, RV1AW, UA1AKC, KA1WPO, KC1YK, N1IGF, UA1AIU, UA1-169-858, UA1-169-2475. **RZ3QWF:** Club Group. **RZ8AXO:** UA6AHS, UV6AOE, UA6YHF, UA6YN, RA6AX, UA6-101-2918. **SP4PBI:** Club Group. **SP9ZHR:** SP9EMI & SP9-4315-KA. **TA5/N0FYR:** N0FYR, HA0MM, HA0DU, HA0LC. **TH8X:** F6IMS, FD1NYQ, F/N6TR, OE4BKU. **TK7A:** F6BBJ, F6EPY, F6HLC, TK5EP. **T07C:** F6GLI, F6GLH, F6GYT. **TV6M:** F6FYP, F6EEM, F6GKQ, F6DOW, F1LBL, F3TA. **TW1C:** F6CTT, F6HMQ, F6HSV. **UB2JWS:** Ken, Igor, Yuri.

**UB6Q:** RB5QNA, RB5QRQ, RB5QRW, RB5QW, UB1MM, UB4QW, UB5LGM, UB00Q, UY500, UB5064-866. **UG7GWA:** Wlad, Leon, Kan. **UH7Y:** Zhukov, Poduzdov, Malbaev, Write, Cherny, Milenin, Lozgachev. **UL8LYA:** UL7LET, UL7LEZ, UL7LO, UL7-026-177, UW9AR, UM8NKW. **UM1MWA:** UA9MA, UL7FZ, UM5ML, UM0MO. **UT4UXW:** UT4UZ, UT5UGR, UT3UA, UL7-179-190, UL8GBK. **UZ1AWJ:** UA1AQF, UA1-169-900, UA1-169-2391. **UZ1TWC:** UA1TAN, UA1TFG, UA1-144-1068. **UZ3DWH:** RA3DUT, UV3DCX, UA3-142-902, UV3DTN. **UZ4AXN:** UA4-156-1218, UA4-156-1517, UA4ASN. **UZ4FWE:** UA4FQB, UA4-148-806, UA4-148-807. **UZ9CWZ:** UA9-154-2409, UA9-154-2411.



This is Marko, OH6DO, who operated PJ9X to number two in the world.



The voices of VP5E (Elaine and Jim) taking in the sights in Haiti after their fine multi-single effort.



Jay, FY/N4QDX, took time out from his Easter activities to hand out 848 Q's. Jay does an excellent job from his compact station.

UA9-154-2081. **UZ9CZO**: UV9CAZ, UA9-154-2527, UA9-154-2528. **UZ9JWR**: Welikanov, Travin, Waluisky. **UZ9XWG**: UA9XBQ, UA9XF, UA9XEF. **UZ9YXI**: Wasil, Eugen, Dima. **V85HG**: V85HG, J01BMV, JF2IWL, JH7PKU. **VA2CUA**: Club Group. **VA5FX**: VE5FX & VE5MX. **VC2A**: VY2DM, VY2ZV, VY2BA, VY2RB, VY2VN, VY2ON, VY2AC, Linda Hunter. **VD2WJ**: VE2AHC, VE2FOT, VE2GZL, VE2WJ.

**VE6SV**: VE6SV, VE6EZ, VE6SF, VE5FN. **VE7EME**: VE7EME, VE7AV, VE7SK, VE7RBL, VE7JMN. **VI6LW**: VK6LW & VK6BB. **VK1PJ**: VK1PJ, VK1ST, VK1EB, VK1KRC. **VK6ANC**: VK6ATA, VK6BQN, VK6FJA, VK6JIP, VK6KTN. **VP2ERA**: W2PAU & W2ORA. **VP5E**: WB6CJE, N6ZJM, VP5JM. **VQ9IO**: VQ9CQ, VQ9HW, VQ9AY, VQ9JR, VQ9JN. **VS6WV**: VS6WV, K0TLM, AJ0E. **W3BGN**: W3BGN & packet cluster. **W4PRO**: WB8HDD, AA4NG, WA4OHX, KD0R, W4PRO. **W6EEN**: W6EEN & packet cluster. **W8FN**: N8BJQ, N9AG, WD8IXE, W8FN. **WC4E**: WC4E & K4XS. **WF5E**: WF5E, N5RZ, AA5DW. **WG5J**: WG5J & NL7GP. **WT2F**: WT2F, WA2EOV, K2SIG. **WU7Q**: N6TIB, WX7P, W6REC. **WV9T**: WV9T, K9PW, WB9TIY. **Y29DH/A**: DL8AAE & Y29DH. **Y80ZCE**: YC0FTE, YC0JBE, YC0PGE, YC0UJK, YD0FTD, YD0KYR, YD0PGN, YD0YTL, YG0ANJ, YG0BEJ. **Y06JA**: Y06JN & Y06CFB. **YU2EZA**: Nenad & Sasa. **YV6/YV5NCK**: YV5NCJ, YV5NCK. **YZ4Z**: 4N4AE, 4N4CX, 4N4MX, 4N4TF, YU4AX, YU4EX, YU4GG, Milica, Samir, Dave, Kamenko.

### Station Operators Multi-Op Multi-Transmitter

**ED8ACH**: EA8ACH, EA8AFS, EA8VV, EA6ZS, OH0XX, OH1RY, OH2BH, OH2MM, OH3UU. **HG73DX**: The crew from HG1S, HG5A, HG6N & HG8Q (27 operators). **JA1YCG**: JK3MAT, 7K1TWK, 7K1APM, 7M1DCX, JI1SWT, JP1RLF, JG3GUU, JM1KKO, Y. Yokoyama. **JA1YXP**: JS1INN, JQ1UXN, JG2QHQ, JI2KRK, JJ1WYS, JE1BHJ, JI7QPV. **JE2YRD**: JH10RL, JH1NBN, JI3ERV, JK3GAD, JA2EZD, JF2E0C. **LY2ZO**: LY2NK, LY2BFN, LY2BKZ, LY2BMX, LY2BOA, LY2BQN, LY2BSS, LYR-346, LYR-1751, LYR-1853. **OH1AA**: OH1CO, OH1GI, OH1HD, OH1JD, OH1KO, OH1LDV, OH1MIE, OH1MYA, OH1NHU, OH1SY, OH1WZ. **OH7AB**: OH7's MKR, Lfv, MMY, MYS, MMT, NVU, MDS, MJU, MSW, MWX, MRU, UE, VR, XI, MA. **RB8M**: RB4MB, RB4MF, RB4ML, RB4MV, RB5MF, RB5MP, RB5MR, RB5MT, UB3MM, UB5MAF, UB5MDA. **W3FV**: W3FV & N3HOR. **WZ6Z**: WZ6Z, N6RO, N6EK, W6RGG, K3EST, KI6EZ, N6KT, W6OAT, K6TMB, VE7NTT, VE7NKI, WX0B, RB5IA. **YT2E**: YT2's GW, HG, TW, YU2's AW, CT, DQ, EU, GR, HO, IQ, MM, MP, MY, NJ, OG, QS, RA, SD, WJ, Buki, Zeljko, Dalibor. **ZV4B**: PY4BA, PY4BHB, PY4OY, PU4WHO, PU4XS. **SP3PLD**: SP3IBM & SP3SBB.

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Installation and dismantling of towers is dangerous and temporary guys of sufficient strength and size should be used at all times when individuals are climbing towers during all types of installations or dismantlings. Temporary guys should be used on the first 10' or tower during erection or dismantling. Dismantling can even be more dangerous since the condition of the tower, guys, anchors, and/or roof in many cases is unknown.

The dismantling of some towers should be done with the use of a crane in order to minimize the possibility of member, guy wire, anchor, or base failures. **Used towers in many cases are not as inexpensive as you may think if you are injured or killed.**

Get professional, experienced help and read your Rohn catalog or other tower manufacturers' catalogs before erecting or dismantling any tower. A consultation with your local, professional tower erector would be very inexpensive insurance.

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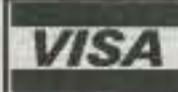
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3.7 No Entrant  
7 No Entrant  
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21 EA8AM ..... 4,322,366  
28 FR5DX ..... 7,543,818  
AB D44BC ..... 3,532,902

### ASIA

1.8 UL7ACI ..... 331,008  
3.7 No Entrant  
7 UA0FHB ..... 317,292  
14 H2A ..... 6,297,464  
21 4X5U ..... 4,084,437  
28 JH2UVL ..... 2,192,113  
AB A92FN ..... 4,788,550

### EUROPE

1.8 LZ1KWZ ..... 43,956  
3.7 YU3NA ..... 356,952  
7 IQ3A ..... 2,937,088  
14 YT1BB ..... 4,067,159  
21 TM1K ..... 4,495,701  
28 HG0NAR ..... 4,167,680  
AB YZ9A ..... 8,518,112

### NORTH AMERICA

1.8 AA4MM ..... 16,284  
3.7 VA3EJ ..... 1,950,592  
7 VA7SV ..... 2,112,040  
14 K2VV ..... 2,270,690  
21 WN4KKN/6 ..... 4,285,122  
28 VA8A ..... 3,811,893  
AB 6Y0I ..... 8,292,956

### OCEANIA

1.8 No Entrant  
3.7 DU3GDX ..... 65,853  
7 N7DF/WH2 ..... 499,664  
14 AH6KE ..... 1,829,091  
21 KH6XT ..... 1,850,020  
28 KG6DX ..... 4,442,405  
AB WR6R/WH6 ..... 7,153,647

### SOUTH AMERICA

1.8 YV1CP ..... 6,318  
3.7 YV3A ..... 1,664,476  
7 YV5A ..... 3,460,900  
14 YW1A ..... 4,936,190  
21 ZX5C ..... 8,178,356  
28 ZP50Y ..... 10,757,789  
AB ZW5B ..... 12,332,736

### MULTI-SINGLE

AF CT3M ..... 12,952,995  
AS TA5/N0FYR ..... 16,474,965  
EU TW1C ..... 14,010,965  
NA CK7C ..... 11,335,040  
OC AH0K ..... 11,552,112  
SA P40V ..... 26,987,142

### MULTI-MULTI

AF ED8ACH ..... 47,278,236  
AS JE2YRD ..... 13,126,860  
EU HG73DX ..... 30,664,095  
NA WZ6Z ..... 17,408,281  
OC No Entrant  
SA 4M8X ..... 15,975,631

### QRP/p

VP2E	A	4,440,195	2647	711
AA2U	A	854,217	736	447
N1AFC	A	781,664	763	416
K5RX	A	642,350	635	443
K5JH	"	508,644	575	398
WA2UUK	"	476,307	549	351
HA7YS	A	316,128	627	296
UA9SG	A	274,758	453	253
ZS6TJ	A	247,590	305	262
KZ5Q	"	233,448	388	284
N3HHE	A	206,064	316	243
OZ3PE	A	199,290	382	273
OH5NHI	A	181,332	334	292
W9UP	A	139,755	281	231
YU1KN	A	130,815	323	255
IK5BSC	A	121,302	291	207
JE7DOT	A	95,316	239	169
WG3I	"	90,720	206	180
UV3DMZ	A	78,108	218	208
W6YVK	A	70,356	200	164
HA5AND	"	60,716	179	172
WA8LLY	"	54,264	160	136
N8CQA	A	53,466	141	134
IS0LYN	A	42,900	157	132
N8AXA	"	39,120	138	120
VA6SH	A	35,343	149	119
NM1K	"	31,920	120	105
LA5JX	A	23,805	135	115
DJ8SH	A	9,300	100	75
PA3EKK	A	4,176	43	40
K6SVL	28	280,476	407	318
JR3RWB	28	260,764	377	278
ED1EPB	28	181,250	400	250
K300	28	177,708	300	236
JA1KFX	"	146,544	272	213
UB5DEI	28	128,324	280	194
W01X	28	122,140	235	197
VE3HX	28	94,688	204	176
SP5FKW	28	69,580	211	142
WV5S	28	61,754	181	154
UB5J00	"	43,264	138	128
Y050BA	28	10,266	71	58

ES3RST	28	8,023	80	71
OK2BMU	28	1,850	30	25
W6CPE	"	812	29	28
YT1T	21	88,608	355	213
DU1CHD/6	21	32,552	116	104
Y03FLP	21	3,530	72	54
J14WHS	21	1,950	31	30
JP10G0/0	"	40	4	4
EA1CJJ	14	238,476	525	334
W8ILC	14	162,281	289	239
YT2MW	14	113,406	317	246
KA1UJ	14	93,624	215	188
K9OSH	14	88,506	222	198
JA2JSF	14	80,099	202	173
LA9VDA	14	51,072	258	168
KA1CZF	"	2,964	39	38
PA2CHM	14	2,862	54	53
K7UR	7	35,256	125	113
AA6XX	7	28,500	105	95
JG7LBN	7	40	4	4
SP4GFG	3.7	39,600	169	120
YB20K	1.8	2,376	22	18

## SINGLE OPERATOR NORTH AMERICA

### UNITED STATES

KM1H	A	6,520,356	2881	852
WM1K	A	6,061,558	2907	842
KA1HGY	A	1,620,960	1162	528
KB1WH	"	1,127,280	1000	488
K5MA	"	803,068	758	406
K2SX/1	"	800,262	711	414
K1TO	"	764,160	721	398
WB1AEL	"	284,350	370	275
N1DEA	"	283,720	490	192
WD1K	"	118,728	248	194
W1XN	"	101,094	211	174
K1MBO	"	87,824	221	176
W01C	"	34,160	141	122
W1FM	"	14,892	78	68
NA10	"	3,255	36	35
NX1H	28	3,015,377	2006	709
K1VUT	28	992,358	956	459
KA1RLI	"	269,724	338	266
N1GPY/T	28	48,811	152	133
N1FUS	"	40,348	139	131
WA1VRD	"	34,230	120	105

WB1DXD	21	667,584	1169	244
WA1IML	"	334,950	385	290
K1DWQ	"	264,854	375	302
W1LQQ	14	176,816	315	257
KA1DWX	7	164,352	225	192
WB2UEY	A	2,395,417	1449	637
KF20	A	1,692,495	1184	567
K2PS	A	1,475,118	1061	531
WY2W	"	1,162,392	999	476
WB2EAR	"	1,055,884	921	499
KB2DE	"	537,570	583	362
KD2TT	"	405,688	500	323
WA2UDT	"	388,223	470	318
K2TCK	"	352,782	383	278
WE2T	"	303,208	445	302
WM2D	"	280,608	392	296
WB2ABD	"	257,022	338	262
K2PF	"	252,222	371	254
N2LAU	"	248,170	411	299
W2HPF	"	240,240	335	260
KD2BW	"	202,805	339	235
WS2U	"	111,180	234	170
KB2SE	"	88,290	200	162
W2HCA	"	66,402	184	153
W2FGY	"	61,866	173	126
WB2DVU	"	58,000	163	125
WB2JFP	"	51,256	186	149
WJ20	"	50,806	166	133
KF2AH	"	47,399	230	139
W2A0Y	"	27,501	113	89
W20AE	"	9,006	60	57
N2KYP	"	2,176	32	32
KB2GLO	28	332,966	118	106
WA2SYN	28	310,026	437	326
WB2DND	"	119,116	223	194
N2LDU	"	113,000	234	200
KB2MFC	"	52,736	177	128
KM2X	"	32,635	117	107
KA2AWE	"	22,134	108	93
W2KZE	"	21,586	91	86
KB2KRB	"	12,450	75	75
K12M	21	3,726,492	1951	763
W2WD	"	63,495	179	153
K2GI	"	39,824	138	131
K2VV	14	2,270,690	1419	703
KS2M	"	162,193	293	241
WQ2M	7	695,196	510	369
N1CC/2	3.7	97,916	307	182

K3Z0	A	3,213,188	1709	709
K5Z0	A	986,286	786	483
W12T/3	"	819,302	736	446
WK3W	"	459,277	524	343
N3GSC	"	326,319	435	287
K3WW	"	154,290	302	222
W3DAD	"	97,183	227	157
K3YDX	"	59,153	172	149
K3LA	"	40,716	144	117
N3RC	"	39,246	115	93
WJ3Y	"	23,140	100	89
KA3SDX	"	21,948	134	93
WG3E	"	11,174	77	74
KS3F	28	2,767,580	2005	710
WE3C	28	2,112,954	1571	633
A1Q3	"	133,515	258	215
WB6VG1/3	"	90,000	200	180
WB2BZR	"			
/3/T	28	38,295	127	115
KA3YRG/N	"	32,592	128	112
N3GB	21	984,560	831	496
W3AP	"	271,200	401	300
NK3U	"	58,064	166	152
W3FOE	"	611	16	13
K3ZPG	14	17,010	82	81
KQ3V	3.7	303,780	548	305
N4WW	A	1,566,009	1053	573
WA4CPQ	A	1,323,297	1081	527
KA4RRU	A	1,000,269	840	477
AA4LR	"	684,255	675	435
KJ4TI	"	544,856	573	352
AA4XU	"	536,338	618	361
K4XG	"	447,120	552	368
AA4EL	"	324,996	442	292
K4FPF	"	288,344	395	271
KX3Q/4	"	231,744	370	284
K4YT	"	225,917	320	263
AB4XQ	"	224,010	352	262
KB4HU	"	201,624	293	248
KN4SR	"	158,574	274	214
N4MM	"	142,400	238	200
WK4F	"	122,796	230	162
W4KMS	"	87,200	218	160
KN4MI	"	56,592	145	131
KC4NKR	"	48,076	238	202
W4UYC	"	42,420	136	105
N4ZZ	28	2,068,320	1541	620
WB4KRH	28	612,306	608	414
KN4MV	"	329,784	553	364
AB4RU	"	265,216	365	296

KC4TIR/N	28	249,096	349	291
N4WYH	"	193,000	304	250
WB4FO7	"	150,800	294	232
KC4URW	"	4,947	54	51
N4M0	21	1,150,214	965	533







Table with columns for call sign, power, and other metrics. Includes entries like YO4BEX, Y06BKX, Y09HP, etc.

Section header: YUGOSLAVIA. Table with columns for call sign, power, and other metrics. Includes entries like YZ9A, YU7AV, YU7AV, etc.

Table with columns for call sign, power, and other metrics. Includes entries like YU7RU, YU3QM, YU1JW, etc.

U.S.S.R.

Table with columns for call sign, power, and other metrics. Includes entries like UA1ANA, RA1AA, UA3DN, etc.

KALININGRAD

Table with columns for call sign, power, and other metrics. Includes entry UA2EC.

UKRAINE

Table with columns for call sign, power, and other metrics. Includes entries like UT4UX, UB5MLP, YU5TE, etc.

Section header: BYELORUSSIA. Table with columns for call sign, power, and other metrics. Includes entries like RC2AZ, UC2SDJ, UC2LR.

Section header: MOLDAVIA. Table with columns for call sign, power, and other metrics. Includes entries like UO50LW, UO40F.

Section header: LATVIA. Table with columns for call sign, power, and other metrics. Includes entries like YL2GD, YL2KO, YL2LJ, etc.

Section header: ESTONIA. Table with columns for call sign, power, and other metrics. Includes entries like ES4NG, ES5RY.

Section header: LITHUANIA. Table with columns for call sign, power, and other metrics. Includes entries like LY3BH, LY2BNC, LY3BX, etc.

OCEANIA

THE PHILIPPINES

Table with columns for call sign, power, and other metrics. Includes entries like 4D9RG, DU3WPX, DU3GD.

EASTERN CAROLINES

Table with columns for call sign, power, and other metrics. Includes entry KC6VW.

MARIANA IS.

Table with columns for call sign, power, and other metrics. Includes entry WH8AAP.

GUAM

Table with columns for call sign, power, and other metrics. Includes entries like KG6DX, N70F/WH2.

HAWAII

Table with columns for call sign, power, and other metrics. Includes entries like WR6R/WH6, AA4MN, etc.

AUSTRALIA

Table with columns for call sign, power, and other metrics. Includes entries like VK3AOR, VK3ALZ, VK3HZ, etc.

INDONESIA

Table with columns for call sign, power, and other metrics. Includes entries like YC30SE, YF7WKY, YC7BS, etc.

NEW ZEALAND

Table with columns for call sign, power, and other metrics. Includes entry ZL1IM.

Section header: BOLIVIA. Table with columns for call sign, power, and other metrics. Includes entries like CP1FF, CP5AK.

Section header: URUGUAY. Table with columns for call sign, power, and other metrics. Includes entry CX2BL.

FRENCH GUIANA

Table with columns for call sign, power, and other metrics. Includes entry FY/N4QDX.

ECUADOR

Table with columns for call sign, power, and other metrics. Includes entry HC10T.

COLOMBIA

Table with columns for call sign, power, and other metrics. Includes entries like HK4MSI, HK5JV, HJ6RXI.

ARGENTINA

Table with columns for call sign, power, and other metrics. Includes entry L33F.

PERU

Table with columns for call sign, power, and other metrics. Includes entries like OA4ZV, OA8AB, OC4BTE, etc.

BRAZIL

Table with columns for call sign, power, and other metrics. Includes entries like ZW5B, PP8WHL, PY2NY, etc.

VENEZUELA

Table with columns for call sign, power, and other metrics. Includes entries like YY1C, YW7A, YW3A, etc.

PARAGUAY

Table with columns for call sign, power, and other metrics. Includes entries like ZP5XHM, ZP5LOB, ZP5BY.

MULTI-OPERATOR SINGLE TRANSMITTER

UNITED STATES

Table with columns for call sign, power, and other metrics. Includes entries like WC4E, WG5J, AA5B, etc.

Table with columns for call sign, power, and other metrics. Includes entries like W3BGN, N5NMX, W6VN, etc.

NORTH AMERICA

Table with columns for call sign, power, and other metrics. Includes entries like CK7C, VP5E, KL7RA, etc.

AFRICA

Table with columns for call sign, power, and other metrics. Includes entry CT3M.

ASIA

Table with columns for call sign, power, and other metrics. Includes entries like TA5/N8FYR, V85HG, C48R, etc.

EUROPE

Table with columns for call sign, power, and other metrics. Includes entries like TW1C, TK7A, LZ9A, etc.

OCEANIA

Table with columns for call sign, power, and other metrics. Includes entries like AH8K, V16LW, VK1PJ, etc.

Section header: SOUTH AMERICA. Table with columns for call sign, power, and other metrics. Includes entries like P48V, ZWBJR, CE8MG, etc.

U.S.S.R.

ASIATIC

Table with columns for call sign, power, and other metrics. Includes entries like UM1MWA, UL8LYA, UZ9JWR, etc.

EUROPEAN

Table with columns for call sign, power, and other metrics. Includes entries like R6L, UT4UXW, RZ1A, etc.

MULTI-OPERATOR MULTI-TRANSMITTER

WORLDWIDE

Table with columns for call sign, power, and other metrics. Includes entries like ED8ACH, HG73DX, YT2E, etc.

CHECK LOGS: The following logs were used for cross-checking. Check logs and SWL logs are always appreciated. Thank you. 5K1R, 7S30WG, AD9K, CE1HIK, CE1YI, CP6IM, CT1DTE, DJ0MBF, DJ3VC, DL1BIX, DL20BN/M, EA1DOF, EA2BOT, EA3CZM, EA5DIT, EA5EGT, EA5GKE, EA5JC, EA7AL, EA7EBL, EA8AKN, ES5MC, ES5RCP, F6GQS, F9RM, H18RFB, HK3MAH, HK7MQC, IK7QHS, K1SSN, K3IXD, K6FM, KA21RQ, KA8DKT, LA4GY, LA4OGA, LA5XAA, LA5XQ, LY1BYN, LZ1DM, LZ1KWZ, LZ1ST, LZ2FM, LZ2LE, LZ3AW, LZ3FN, L6QBZ, NR8U, OA4AUF, OH2AW, OH2AL, OH3MIG, OH3WR, OH4MVC, OH5FA, OH5NE, OH5PT, OH5QU, OH6NEV, OH6QU, OH8NYO, OK1AD, OK1AYU, OK5SAH, OT7GT, OZ9BR, PT2NA, PY1ACB, QZ5AAL, QZ7HC, QZ9BX, SP2RNP, SP3BD, PY3LHB, RA0CBS, RA1ADM, RA3AGF, RA3DAD, RA3DDU, RA3DPD, RA3ZM, RA4PIO, RA4PKA, RA4PKL, RA4YM, RA6HL, RA6LOT, RA9UK, RB4LWC, RB5GI, RB5OK, RO40A, RV3DS, RV6AF, RW3QA, RZ3DW, RZ6AWH, SM0BWK, SM2JUW, SM5BBS, SM5BCV, SM6BNO, SM6JUW, SM6KMD, SM7BEX, SM7EJ, SP2DWA, SP2ERZ, SP3BVI, SP3GRQ, SP4AS, SP4GDC, SP5BUJ, SP5NMG, SP6CBH, SP6SO, SP7GAB, SP8JM, SP9BBX, SP9EWT, SP9GDB, SP9JBX, SP9PRO, UA0QF, UA0UAG, UA1AKT, UA2WJ, UA3DUA, UA3LAR, UA3RGG, UA3SDT, UA3TAM, UA3TJW, UA3XGM, UA4NC, UA4NY, UA4PDX, UA4PKN, UA4PKV, UA6HFF, UA6HK, UA9JFR, UA9LFI, UA9OS, UB4LWY, UB4XWA, UB5VAP, UB5XAN, UB5XEG, UB5ZND, UC1LXA, UL7CC, UL7FCN, UL7FCW, UL7RDZ, UM8MGM, UM8MGO, UO5ODS, UO5ODS, UV3DCR, UV3DJB, UV3NB, UV6HFG, UV6HP, UW3RR, UW6HOW, UW9WE, UZ1XCF, UZ1CWX, UZ16WH, UZ2FNA, UZ3XWC, UZ4NHO, UZ9JWD, UZ9MXM, V07CA, W4NNL, WX9U, Y21GO, Y22XF, Y24VH, Y27HL, Y39SH, Y41QM, Y51TO, Y64AC, Y64CC, YC3VK, YL2RP, YL3G5, YL8TH, YL8YD, Y04US, Y08BNY, Y08CRU, Y08GF, Y08OH, Y08ROO.

DISQUALIFIED: The following stations were disqualified for failure to dupe their logs—RB8M & RZ6AXO.

# CQ REVIEWS:

## The Buckmaster CD ROM Amateur Listing

BY LEW McCOY\*, W1ICP

**M**ore and more amateurs are adding CD (Compact Disk) ROM units to their computers. For those who don't know, a CD ROM can store massive amounts of information which can be retrieved from your computer in milliseconds. Initially, the CD ROM players were very expensive. However, the prices have been coming down. Almost monthly there is a big drop. I bought one primarily because as a writer, the idea of instant information retrieval is very appealing. For example, on one disk I have a complete encyclopedia, plus a U.S. and world atlas, an almanac, and many other items.

Buckmaster Publishing, which advertises in *CQ*, has a CD ROM called HamCall which sells for \$50. I consider this product one of the best bargains in amateur radio.

The primary program is called HamCall, and it is a listing of amateur stations in the U.S.A. This is of course similar to a call book, but the information and search methods go far beyond what a call book will do.

Before describing the callsign information, a word or two about some of the other programs on the CD is in order. I said "some," because there are literally thousands of public-domain programs on the disk. In fact, I don't know of a public-domain program about amateur radio that is not present. The disk is loaded to a point—well, would you believe nearly a half billion bytes?! In amateur radio alone there are most, if not all, of the service bulletins for all the popular transceivers, including Kenwood, ICOM, and Yaesu. Much of the information I never even knew existed.

The directories show programs on designing filters, antennas, packet bulletin boards, satellite and AMSAT programs, plus things such as MUF programs to tell when the best time is to work a particular area of the world. There are logging programs, QSL programs, contest programs—and on and on.

Additionally, there are many, many programs of general use, such as about ten different word processors. Scores of utility programs are also available. If you are into broadcast work, again there are many related programs. Want to look up an AM

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

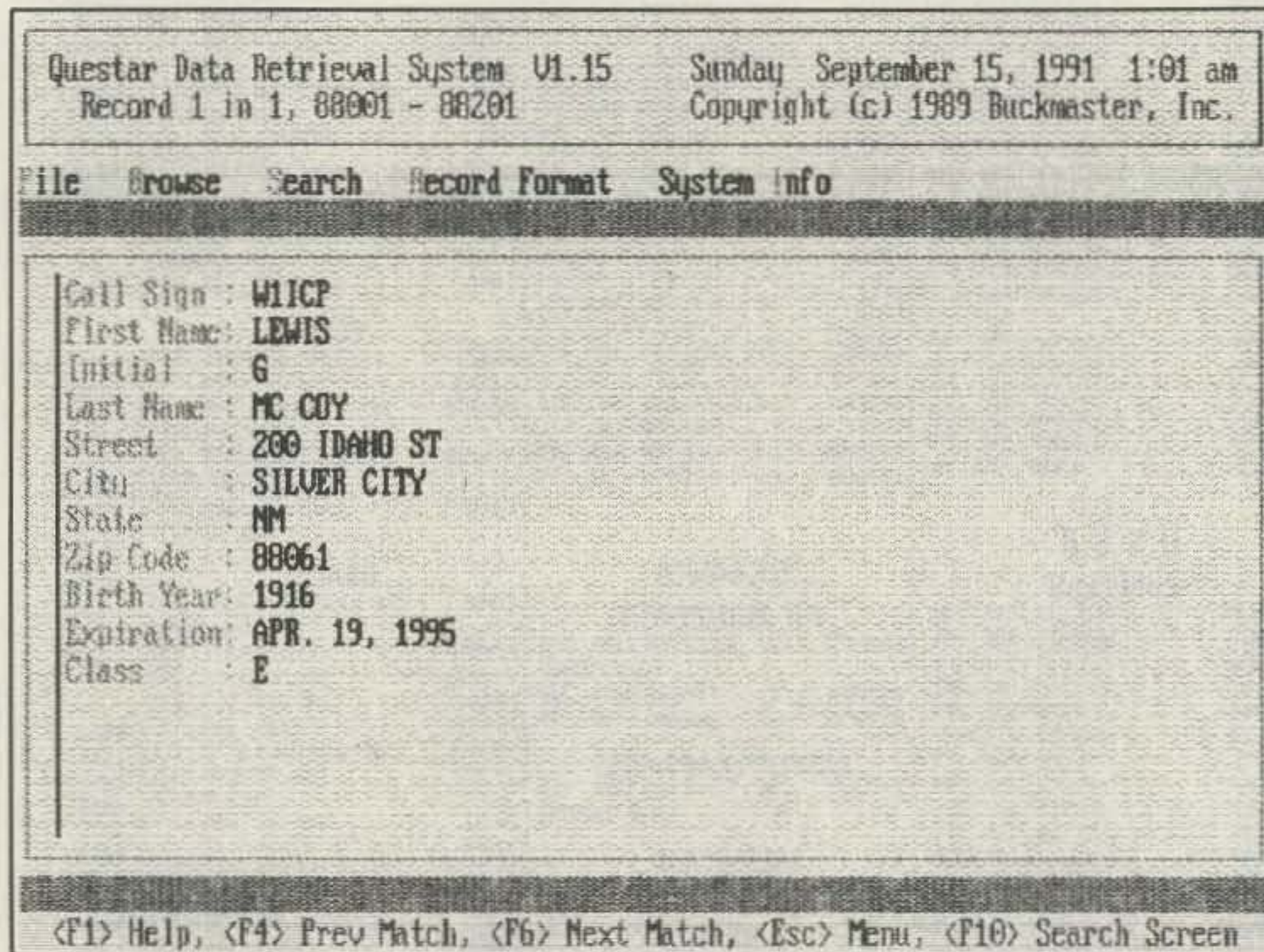


Fig. 1— This is a typical printout of a callsign listing from the HamCall program.

or FM station? The FCC information is there, as are the complete rules and regulations for amateur radio.

Maybe you are a *Bible* buff. There is a complete *Bible* search program with the complete *Bible*!

Geography programs abound. If you are a county hunter, all the counties are listed. This plus world and U.S.A. atlas information are plentiful.

The HamCall program is really the reason for the CD. The programs I mentioned above are just bonuses. HamCall lists all U.S. amateurs by name, address, zip code, year of birth, and license expiration year. A new disk with an updated listing is put out twice a year, in April and October.

HamCall is much more than a duplicate of a simple call book. When the program is run, a screen is present that lists various functions. The SEARCH function is amazing in what you can sort for. For example, I wanted to know how many amateurs there are in Silver City, New Mexico, my home at present. I entered "Silver City NM" and a few seconds later the program told me that there are presently 88 ama-

teurs in this town. It lists each of these amateurs with the information I showed above. You can search by zip code. In fact, zip codes are the main order of filing.

Again, I am overwhelmed by the amount of information available. For example, there is one directory program that lists all files with a description of each on a one-line entry. I set my computer to print the directory at 55 lines per page and wound up with well over 100 pages of file listings! Many of the programs are archived (compacted), so you should have a hard disk so that that files can be moved from the CD ROM to the hard disk.

Getting back to the basic function, that of looking up a call, the process is very simple. You enter the SEARCH mode and then the callsign. Fig. 1 is a printout of my call and information. It is possible to print mailing labels, etc., with the program, which would be very helpful for reaching local or for that matter any amateurs in the U.S.A.

The HamCall CD ROM is available for \$50 plus \$5.00 shipping and handling from Buckmaster Publishing, Route 3 Box 56, Mineral, Virginia 23117 (1-800-282-5628).

# We Couldn't Have Said It Better Ourselves!

FRANK W. COOPER W3NV

October 15, 1991

Mr. Bill Sattler  
DX Engineering, Inc.  
618 Spaulding Ave.  
Brownsville, Oregon 97327

Dear Bill:

I thought you might like to hear about the results I have been having with your two super beams! As your records will show I have your 20 meter six element beam on the 58' boom and the 24 foot boom 11 element log periodic for 10,12,15 and 17 meters.

The performance has been nothing but spectacular. Words cannot describe the super results I have had with these two beams. I have heard and worked everything on the bands with only my exciter running 100 watts! Have no need for my linears even when the pile-ups for the ZA's and 3B7's were unbelievable the beams put me right through with the usual 5/9 plus reports!

I know location is important and most Florida spots are good but believe me the beams are doing a super job and it would be remiss not to write and tell you how pleased I am with my choice of antennas! Keep up the good work!

I might mention that I am quite surprised and pleased with the performance of the Log Periodic antenna. Never was too keen on that type of antenna but it sure does a super job and makes operating four bands just great. Your new 5 band log sounds great and I might have chosen that if it was available at the time of my purchases.

I am enclosing some better photos of the beams which I thought you might enjoy seeing. Thanks again for doing such a super engineering job on the antennas and it has made my dxing a real fun part of the hobby.

73 de W3NV

*Frank W. Cooper*  
Frank W. Cooper

fwc/c  
enc: photos  
P.S. You should see my log!  
Hundreds of DX QSO's and always  
5/9 or better even under marginal  
conditions!



## DX Engineering designs and manufactures high performance materiél for the DXer and contester:

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- vertical phasing boxes, 160 meters, 80 meters and 40 meters
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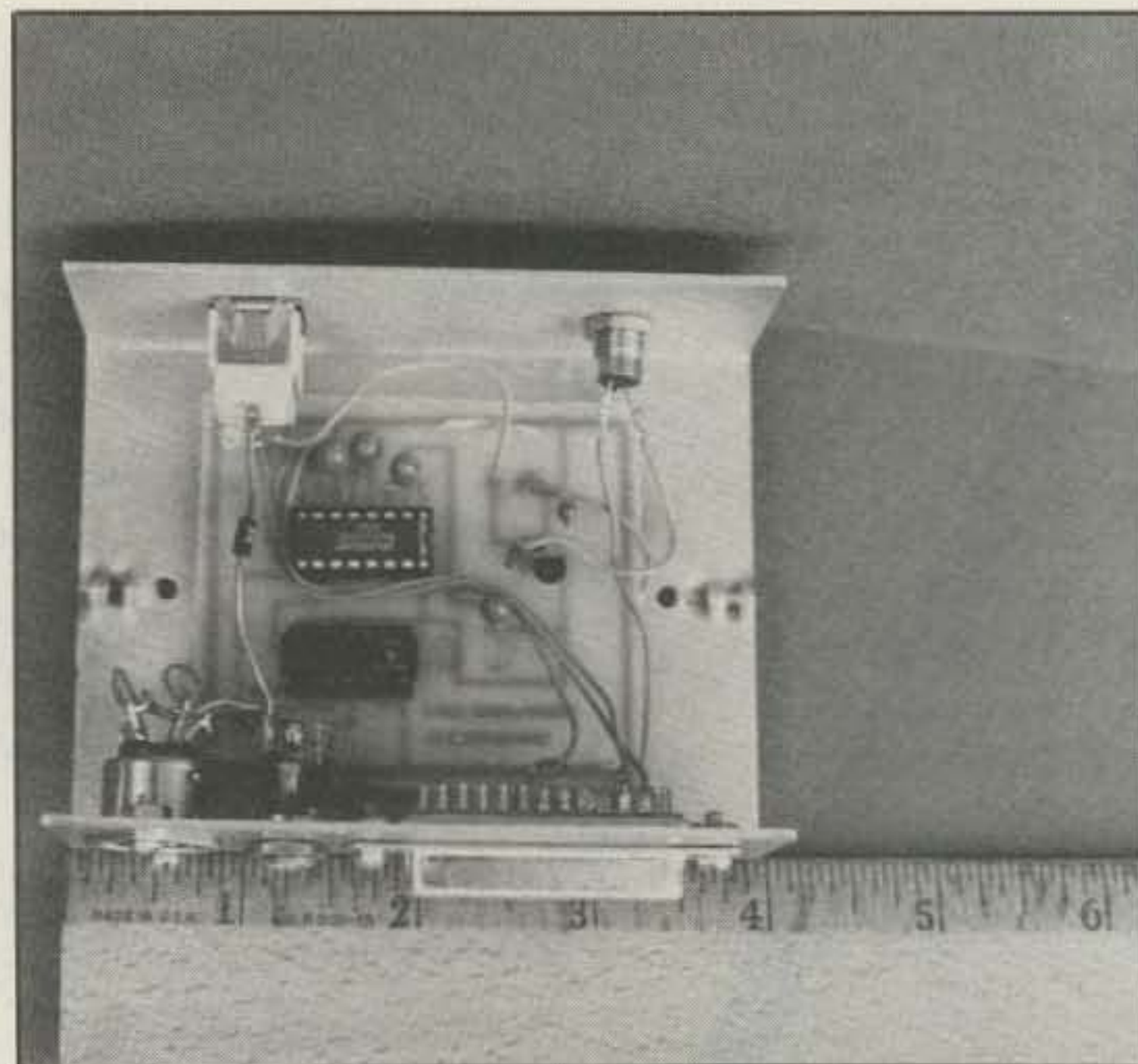
*Here's a neat little project that's not hard to put together.*

# How To Build A Super-Simple Computer Interface For The Kenwood TS-440S and ICOM IC-735

BY PAUL BROWN\*, NF2B



*Front view of the interface. The LED indicator is on the left, and the power switch on the right. (Photos by Peg, KE2NP)*



*Interior view shows PC board and wiring.*

**A**t the Dayton Hamvention I picked up a contest and logging program, CT by K1EA, which also controls the frequency of the HF rig via the computer. To do that function I needed a level-converter or RS232 controller. Kenwood and ICOM both have one, each at about a hundred dollars.

There is nothing difficult about RS232 controllers. In fact, there are several designs using the Motorola MC1488 and MC1489 integrated circuits. The basic idea is taking TTL voltages from the radio and converting them to RS232 voltages for the computer, and from the computer, RS232 voltages to TTL voltages. Simple.

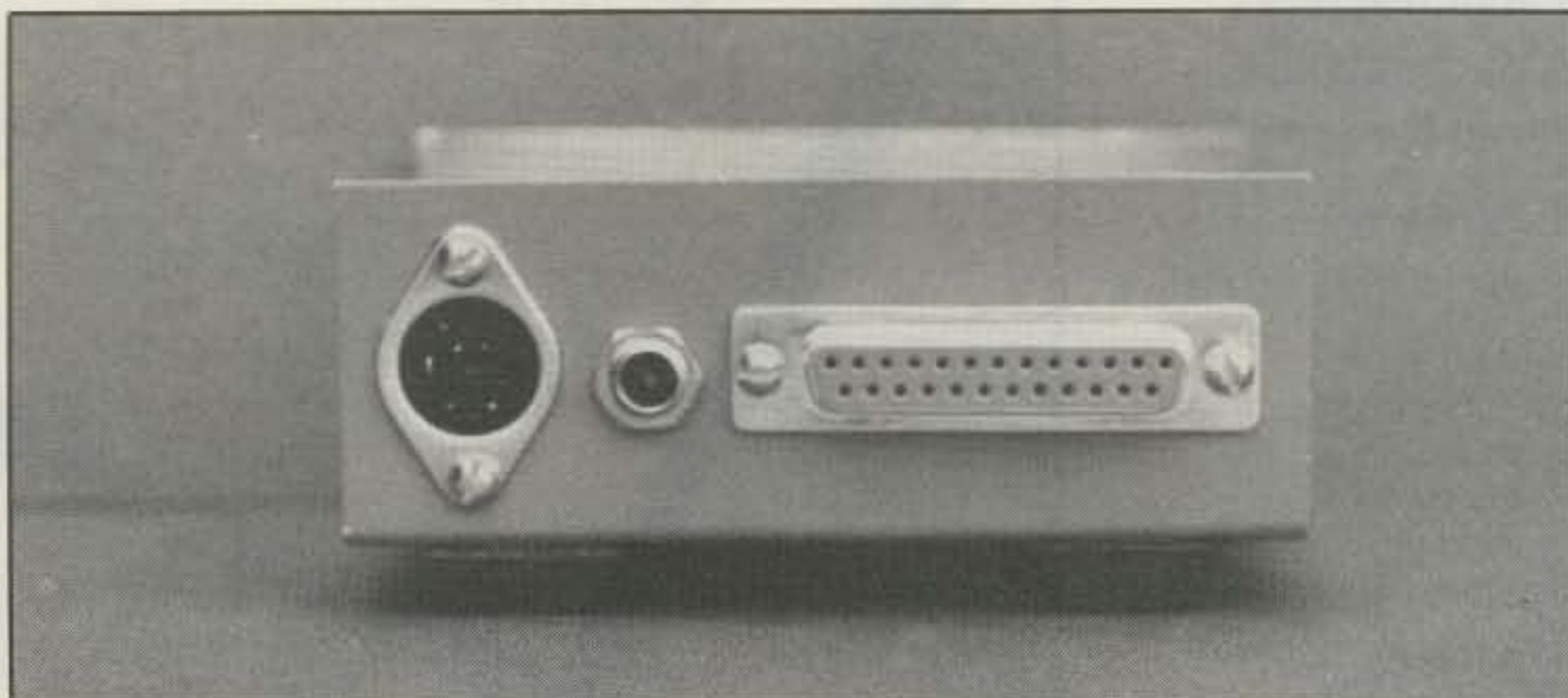
I decided to roll my own, working on what I believe is a simple project, and one that is easy on the pocketbook, too. After using the Maxim RS232 IC for most of my projects, I thought that this would fill the bill very nicely.

It's a slick circuit using a single 5 volt

power supply. It generates plus and minus 10 volts by using charge pumps. This is done internally, so all you need to make a controller are six capacitors, the MAX232, an inverter, and a 5 volt regulator. Take a look at the detailed block diagram (fig. 3).

The project cost is about \$20 using all new parts, including the cabinet. Most builders have a modest parts cache, so in this case cost would be less.

The MAX232 is available from Jameco Electronics (1-800-831-4242), or a Jameco



*Rear view. Connectors left to right: 6 pin accessory socket, power connector, and DB-25 connector.*

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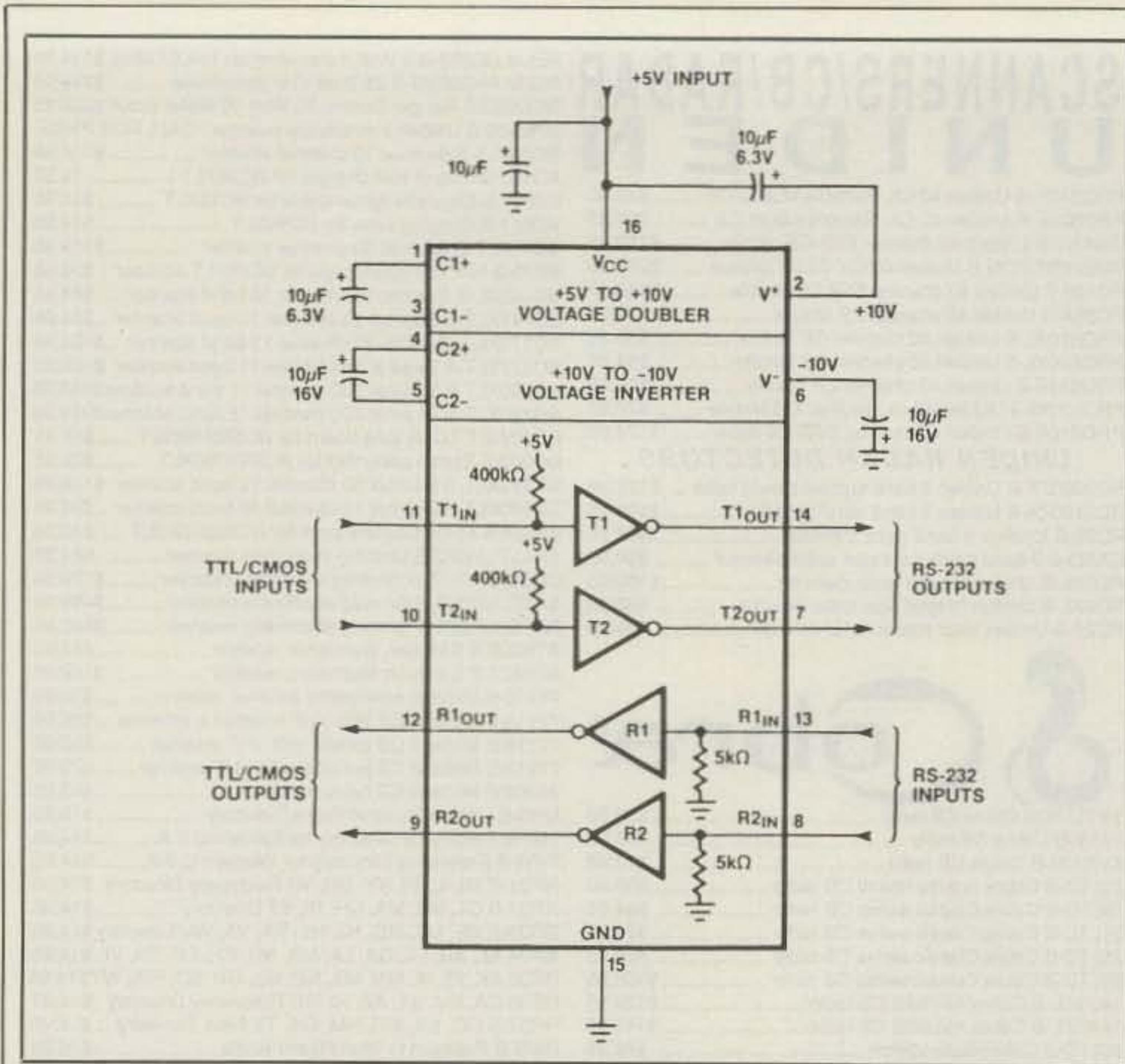


Fig. 1- Block diagram for the Maxim MAX232 IC.

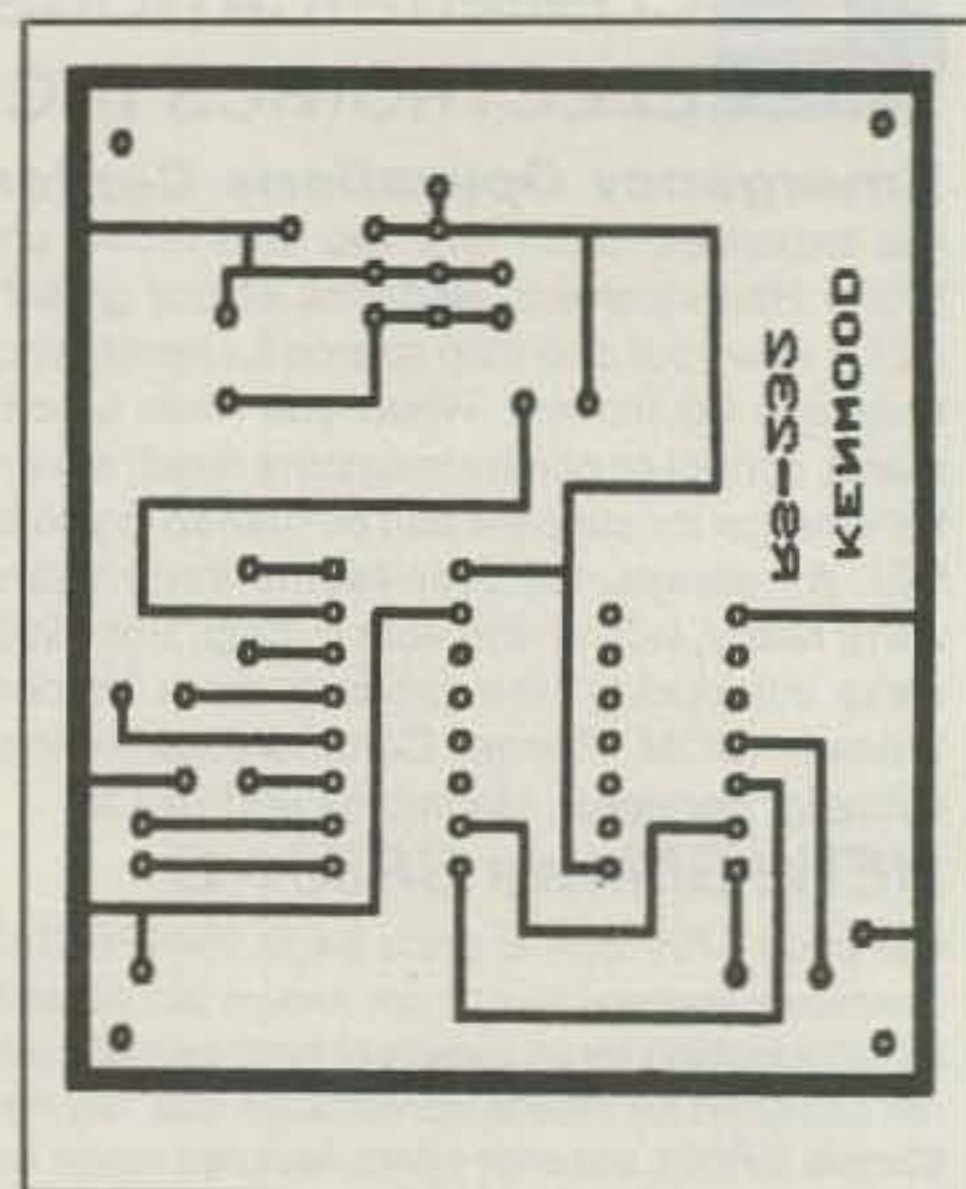


Fig. 2- Full-size PC board layout (bottom view) for the Kenwood. The final size is 2" x 2.35". The square pin indicators (3) on the IC pads are pin 1 and the input to the voltage regulator.

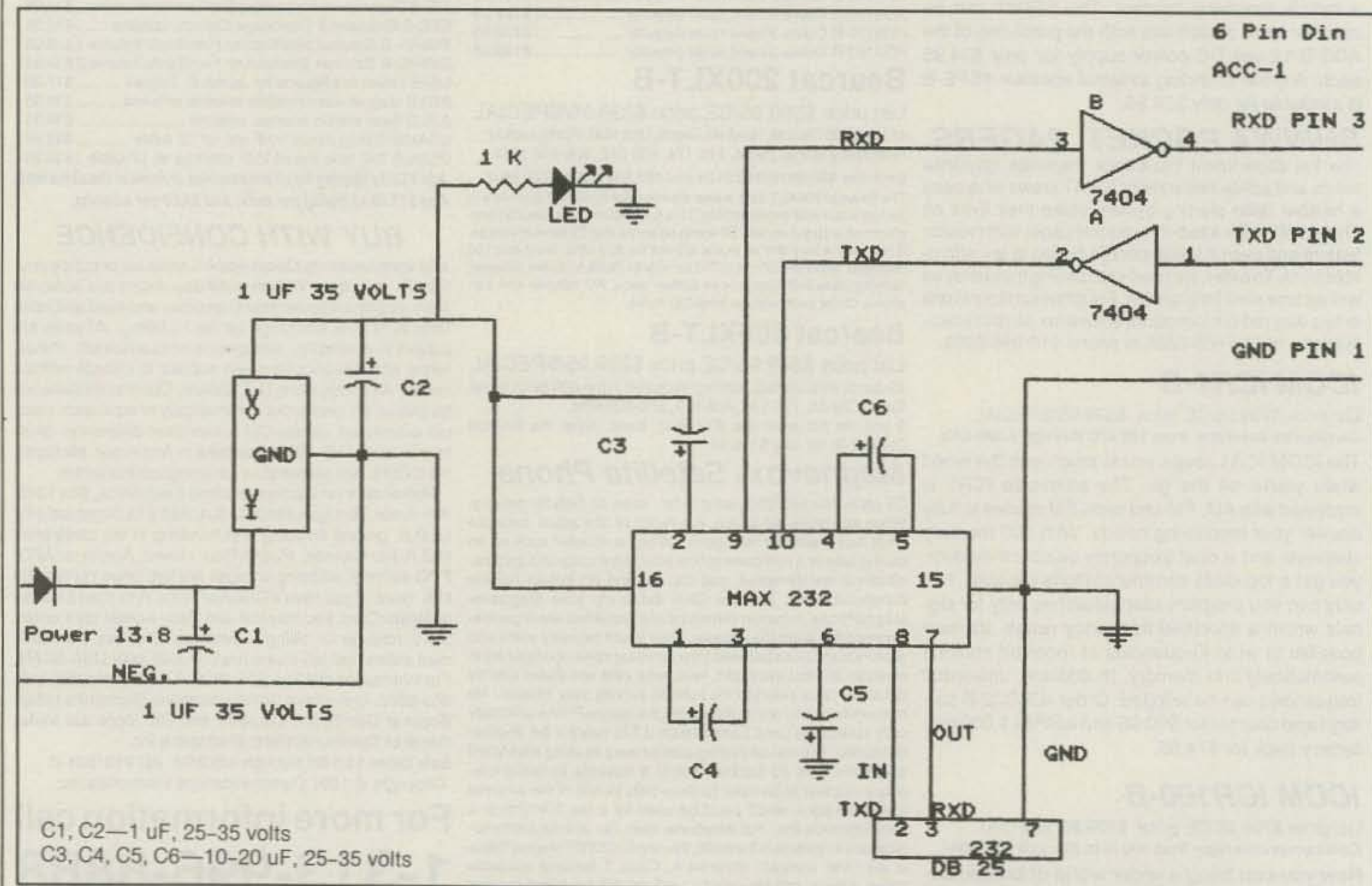
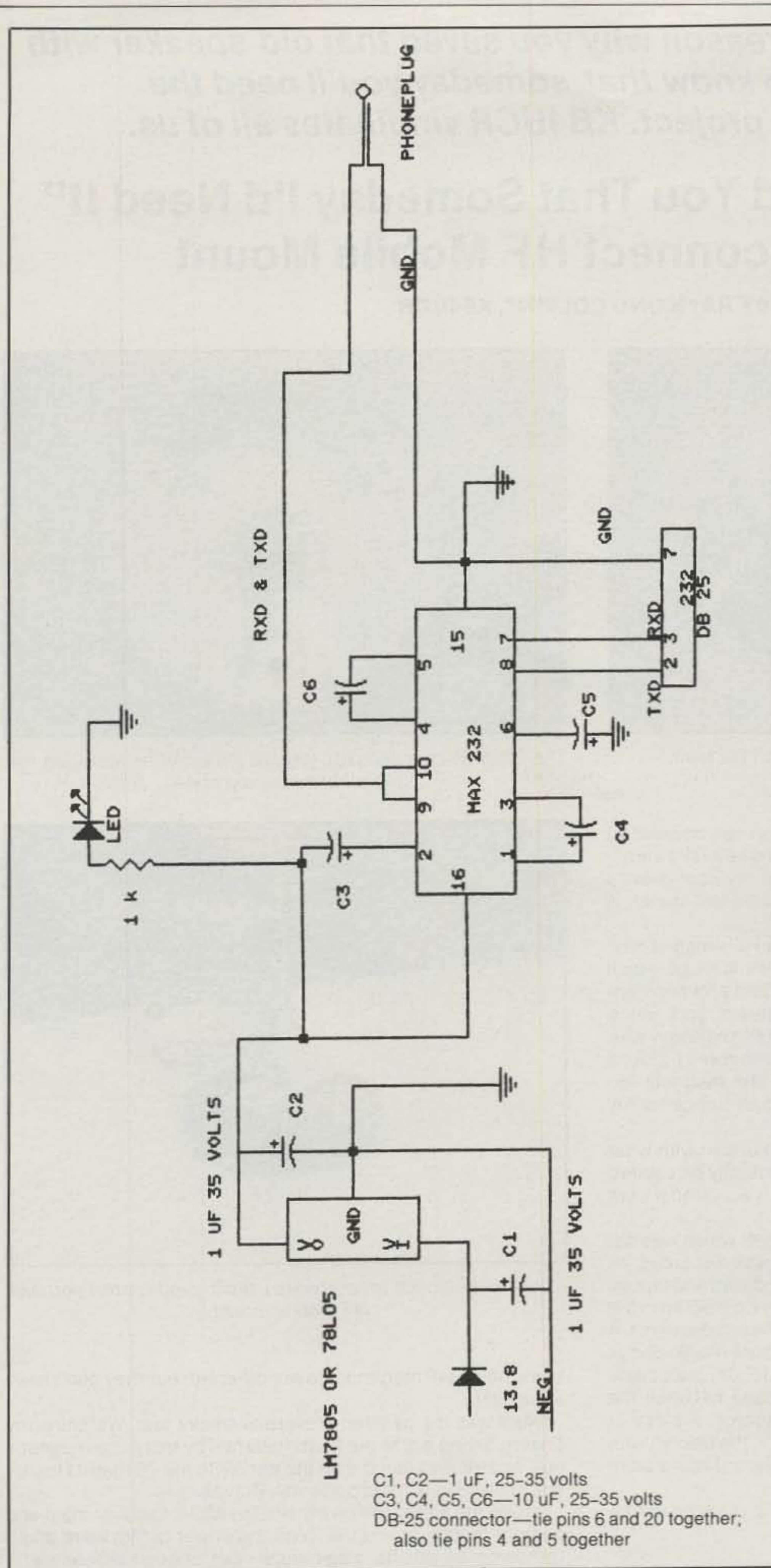


Fig. 3- The Kenwood TS-440S computer interface. As indicated, only two elements of the 7404 are used. Pin 14 goes to 5 volts and pin 7 goes to ground. With regard to the DB-25 connector, tie pins 6 and 20 together. Also tie pins 4 and 5 together.



C1, C2—1 uF, 25-35 volts  
 C3, C4, C5, C6—10 uF, 25-35 volts  
 DB-25 connector—tie pins 6 and 20 together;  
 also tie pins 4 and 5 together

Fig. 4—Computer interface for ICOM units.

dealer. Digi-Key (1-800-344-4539) is another source under the Harris name. Cost for this IC is about \$5.00. I am using this interface with a Kenwood 440S and an ICOM 735.

As far as I can tell, this controller will work with any of the current Kenwoods and ICOMs, including the general-coverage receivers. The TS-440 uses the 8251 UART and a 4040 baud rate generator. They are available from Kenwood dealers as the IC-10 IC kit for \$30 or so. The 8251 and 4040 are also available from Jameco Electronics for a lot less. Just install per the operating manual. For the ICOM all you need is the controller. All the Kenwoods are set at the factory at 4800 baud; the ICOM at 1200 baud.

I did lay out a simple board for the Kenwood controller (fig. 2), but not for the ICOM. If you want to make a board for the ICOM, leave out the inverter and make the necessary connections per the schematic.

Checkout is a snap. Check for voltages between pins 2 and 6 on the MAX232. Voltage should be between 18 and 20 volts. If it is, you're in business. Anything much less, and one of the capacitors is probably installed incorrectly.

The values of the capacitors aren't critical. Anything between 10 uF and 22 uF at 16-35 volts will work fine.

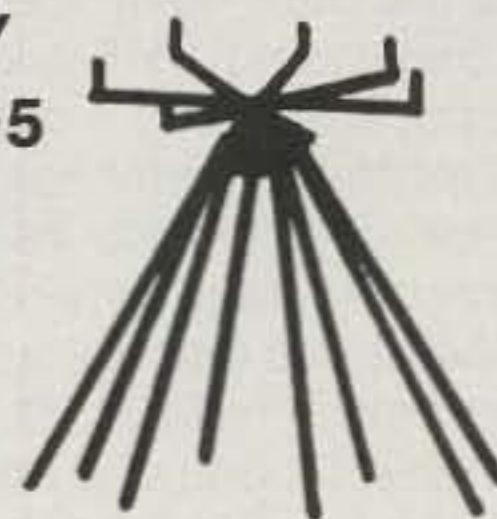
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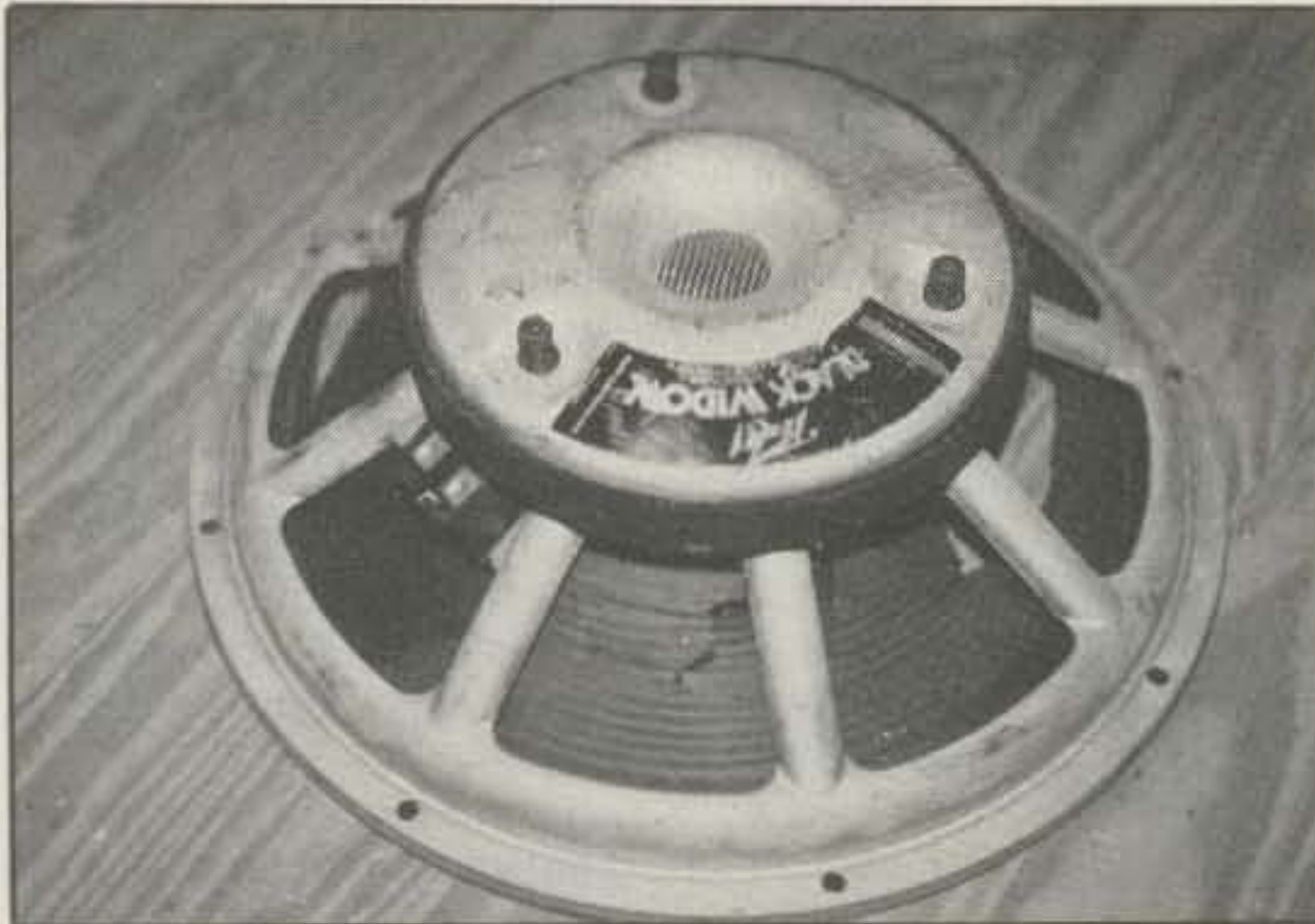
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BY RAYMOND COLVIN\*, KB4UCR



*I'm glad I remembered where I put this little gem.*



*The Black Widow speaker magnet shown after removing the extra hardware and cone.*

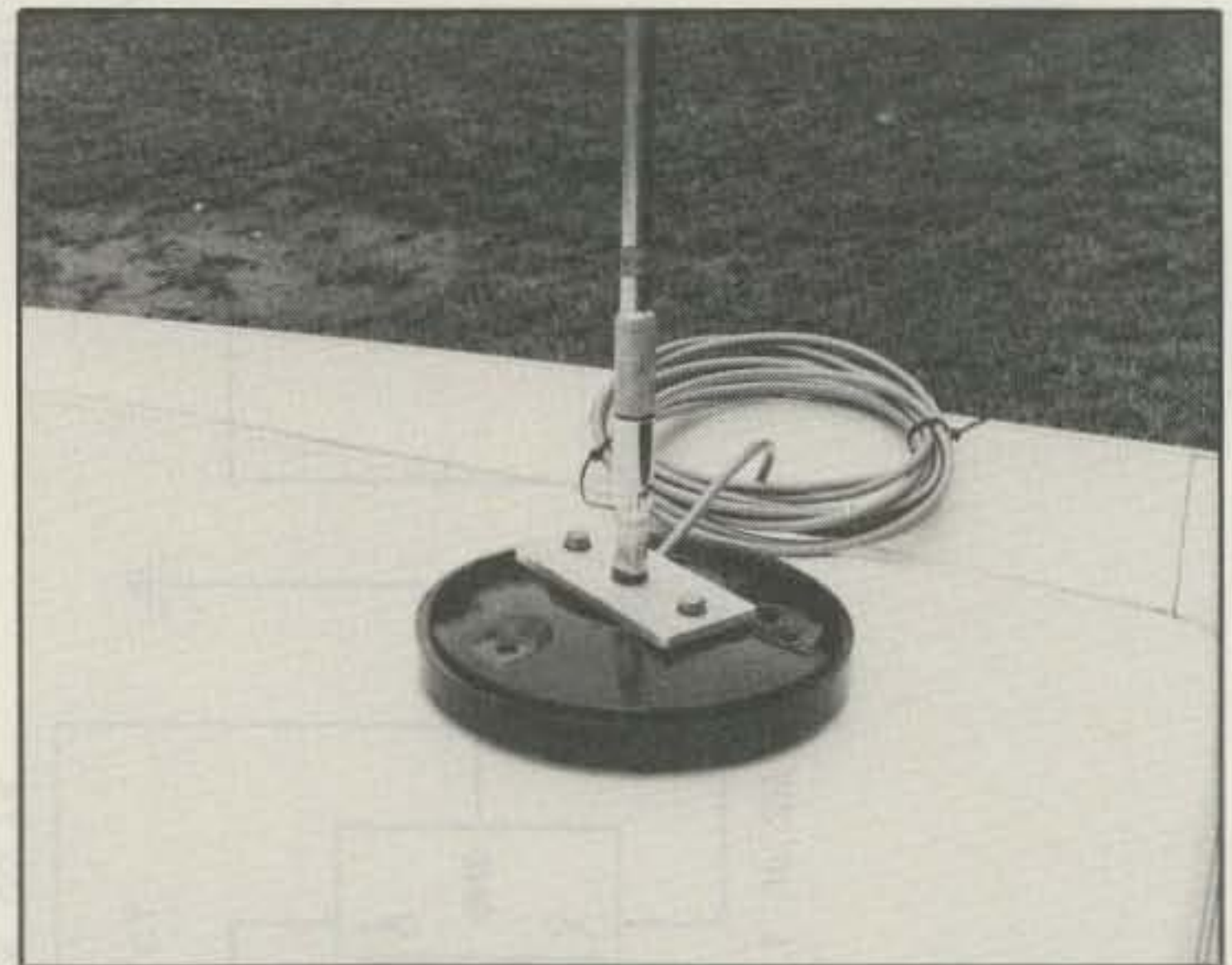
**W**hen my wife and I planned our vacation, we decided to rent a car for the long trip, as our 1978 model was a little unreliable. That posed a big problem. How about my ham gear? I wasn't going anywhere without it—have radio will travel. It sounded fair to me.

So I set out to build a mag-mount for an HF antenna that would pull the trunk lid off the car before it would let go—well not quite that strong. VHF and UHF mag-mount antennas are common, but an HF mag-mount is quite a different story. Since almost all mobile HF antennas are generally tall and heavy with large-diameter coils, you need a serious magnet. I looked through catalog after catalog, only to find the magnets too small or the prices outrageous. One that would suffice for my project cost close to \$100.00. Ouch!

Fortunately, I found one and construction began with what appears to be a hubcap from an RV, but is actually an expired Peavy Black Widow 15 inch woofer speaker. I acquired it from a long-time friend.

First I separated the cone from the magnet, which was secured by three Allen-type screws. The cone was discarded, as it was not used in the project. Two holes were drilled and tapped to  $\frac{1}{4}$ -20 size into the steel portion permanently connected to the magnet. The actual magnet surface is 8 inches in diameter. A 2" x 5" x  $\frac{1}{4}$ " aluminum plate with a  $\frac{3}{8}$ -24 mount (Radio Shack part #21-950) was mounted to the magnet. RG8X coax cable was used, plus a quick disconnect at the base between the mount and mast for ease of handling and storage. A piece of felt material 8 inches in diameter was glued to the bottom with a suitable adhesive to prevent scratching the vehicle's paint upon installing and removing.

I painted this "gorilla" mag-mount with a durable epoxy



*A little metal work and paint were used to produce this portable HF mobile mount.*

black paint. HF mag-mounts are different, but they don't have to be ugly.

Next was the awaited proverbial smoke test. Watching my fingers, trying not to get them flattened by this huge magnet's pull, I carefully placed it on the car. With the 75 meter Hustler coil in place, it worked perfectly. Bravo!

I tried the same coil on my Hustler MO-2 foldover mast and bumper mount, to find the SWR and power output were about the same as on the mag-mount—not enough difference to make an adjustment. I guess I can pack my bags now. Washington, D.C. here we come!

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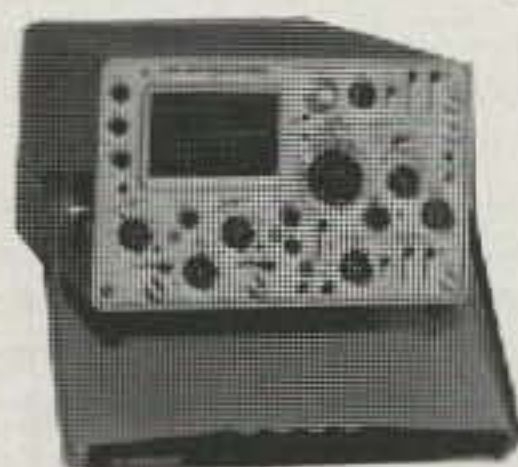
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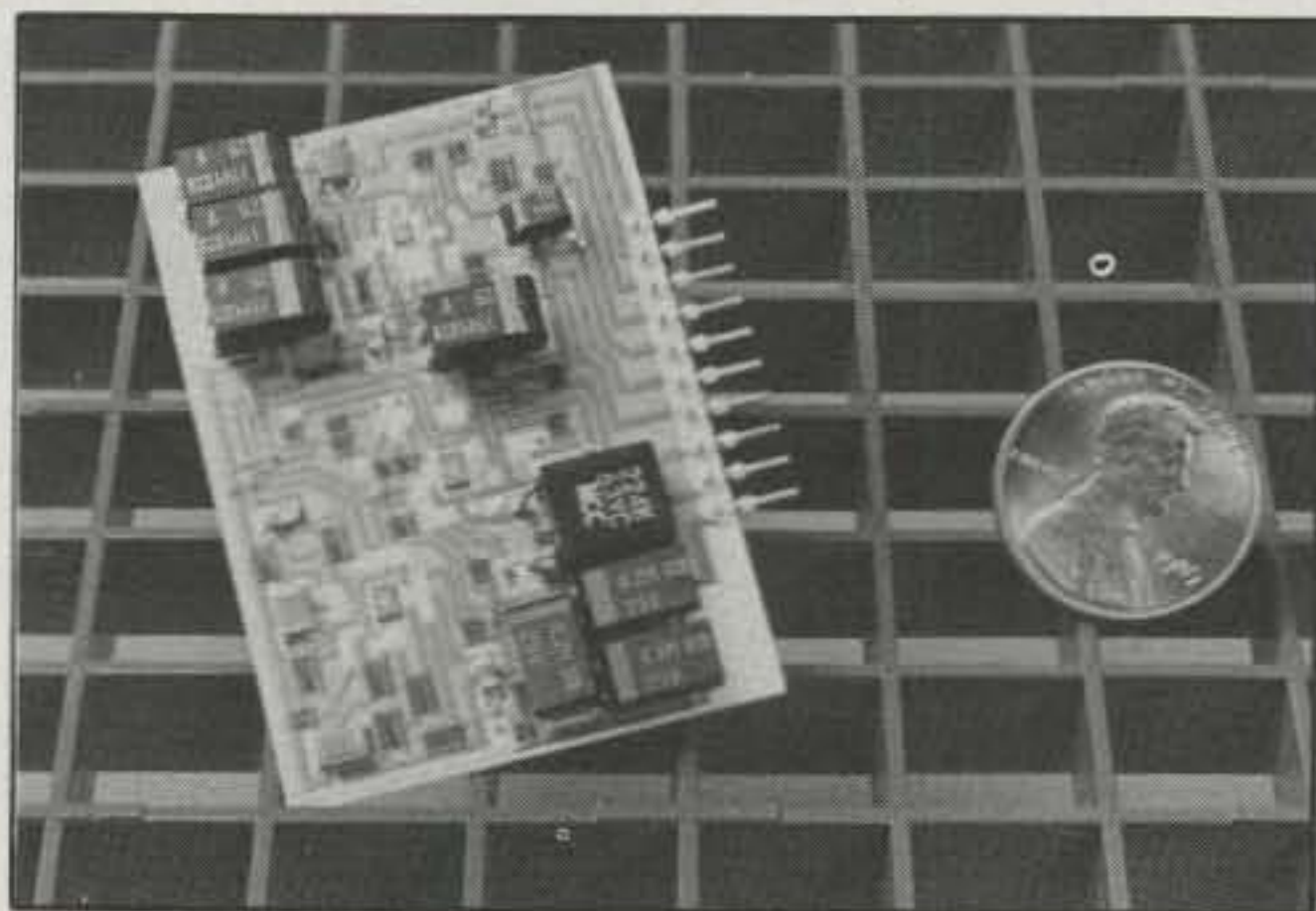
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# ANTENNAS & ACCESSORIES

A LOOK AT THE SHACK FROM BOTH ENDS OF THE COAX

BY KARL T. THURBER, JR., W8FX

## Good Radio Reads

Last month we discussed a variety of Antennas and Accessories topics. This month we've narrowed our focus to zero in on some good books for the hamshack. Let's get started.

### Good Radio Reads

**Antenna Experimenter's Guide.** Peter Dodd, G3LDO, sent me a copy of his new book, *The Antenna Experimenter's Guide*. Pete, who works as a freelance technical writer on computers and electronics, has as a main interest experimenting with antennas and building radio equipment. His book is based on the important premise that the most important part of a radio communications installation is the antenna. The book's objectives, says Pete, are to encourage constructing and experimenting with antennas, to describe simple RF measuring equipment, to explain how to adjust antennas, and to show how to overcome the problems of supporting an antenna at effective heights.

Pete's hands-on book contains over 200 pages and 120 illustrations, divided into eight chapters. The chapters cover topics such as measurement of resonance, impedance, field strength, and antenna performance; mathematical modeling; masts and materials; and experimental antennas. Although written mainly for amateurs, the book also should be of interest to SWLs and others with a serious interest in antennas.

As yet Pete doesn't have distribution arrangements in the U.S. Until he does, you can order the book directly from him for 8.90 pounds Sterling plus 1.20 pounds shipping by surface mail. Contact Peter Dodd, G3LDO, at DD Publications, 37 The Ridings, East Preston, West Sussex BN16 2TW, England.

**Morse Code: The Essential Language.** L. Peter Carron, Jr., W3DKV, sent me a copy of the new and expanded second edition of his Morse book, which is published and distributed by the American Radio Relay League (ARRL).

Pete's book is an instructional manual on sending and receiving code, but it is broader in scope and coverage than most tutorials. It stresses code proficiency as fluency in an international language and presents tips on high-speed operation in addition to the basics. It also covers the fascinating history of telegraphy and the code, other code versions, handling distress calls, CW operating practices, and advances in Morse technology. There's also a compendium of CW-related articles.

The book has 10 chapters and 15 pages of appendices. It's available for \$6 plus \$3 postage from the ARRL, 225 Main St., Newington, CT 06111.

**HamStuff and The Radio Channel.** Walt

Garrett, N0MAL, offers a new guide to just about everything in amateur radio; he calls it *HamStuff*, a "who-what-where" of amateur radio. His 392-page resource book is a comprehensive buyer's guide and directory. It references some 5000 products, 5000 people, 2500 phone numbers, and 1000 companies. Its many classifications include antennas, accessories, radios, power supplies, publications, computer software, organizations, and considerably more.

The book is divided into three major parts: Stuff to Do, including the hobby itself, license preparation, and information resources; Stuff to Buy, an in depth product guide; and The HamStuff Index, to help you to cross-reference vendors. The book is available at dealers or directly from the author at \$19.95 plus shipping.

Walt also is something of a TV producer. He runs The Radio Channel (successor to QSO Amateur Radio), which produces a group of weekly TV shows directed toward amateur radio, SWLing, and hobby electronics. The programs originate in St. Louis and are distributed via the SpaceNet I satellite, Channel 15. The programs are aired every Monday evening for three hours, from 9:00 to midnight EST as three separate one-hour programs. At least two (and sometimes all three) hours of the programming are suitable for replay by repeaters and on cable TV systems. The Radio Channel allows limited free retransmission of its programs by CATV and low-power TV (LPTV) systems, TV stations, educational and community radio stations, and ATV and FM repeaters.

For more information on *HamStuff*, or for additional details on how you or your group can arrange local distribution for or use The Radio Channel (or even produce programs for it), contact Walt Garrett, N0MAL, at GAI Systems Press/The Radio Channel, P.O. Box 5832, St. Louis, MO 63134.

**Introduction to Amateur Radio.** Carole Perry, WB2MGP, is a professional educator who has successfully introduced many youths to amateur radio; Carole even writes a monthly education column, "Hams with Class," for *73 Amateur Radio* magazine. Now she's packaged and made available to others her own highly successful amateur radio training program for youngsters in grades 3 to 12, which she has perfected over a 5 year period and calls *Introduction to Amateur Radio*.

Carole's program is billed as a complete, ready-to-teach "plug-in" curriculum for teaching amateur radio. It includes all the necessary materials, including a teacher's manual, code practice oscillator, and code practice audiocassette. The teacher's manual contains 26 lesson plans, including quizzes, homework assignments, reproducible materials for students, and follow-up activities, along with an appendix of important addresses, charts, and other resources. Also included is a videotape showing classroom use. The package is priced at \$99; additional code practice audiocassettes and

code keys are available separately. Also available are Novice and No-Code Technician license courses for the IBM PC; these are \$49.95.

For more information, Contact Media Mentors, Inc., P.O. Box 131646, Staten Island, NY 10313-0006.

**Two from Universal Radio.** First, Robert E. Evans has come up with a new and specialized HF monitoring resource. It's the *Worldwide Aeronautical Communications Frequency Directory*. The 5½" x 8½", 42-page book was designed to update and augment the frequency listings published in Robert's 1989 book, *Aeronautical Communications Handbook—HF Edition*.

While the book is primarily a frequency directory covering 2–26 MHz, it also includes a short introduction to aeronautical monitoring. The introduction orients the reader to this highly specialized form of monitoring. It includes discussion of the basic "what, when, where, and how" of aeronautical monitoring and a comprehensive glossary of terms, abbreviations, and on-the-air acronyms, including frequently heard tactical call signs. According to the author, he's personally monitored every frequency and station that's listed.

The book is \$6.95 plus \$1 shipping and is available from Universal Radio, 1280 Aida Drive, Reynoldsburg, OH 43068.

Second, Jason Berri has a very unusual and specialized book that should appeal to some dedicated SWLs: it's the *U.S.S.R. Merchant Ship List*, a 72-page guide to understanding the Soviet merchant marine fleet. The guide offers valuable insight into decoding the unencrypted Baudot teletype transmissions from some 1100 active Soviet merchant ships. The master ship list includes call sign, ship name, home port, serial number, and ship type; also there's a cross-reference by ship name and serial number. The book is \$10.95 plus \$1 shipping from the same source as above.

The way things have been going in the U.S.S.R., Jason may have to rearrange the next edition by individual "sovereign republic" or come up with a dozen specialized editions!

**Five from Osborne/McGraw-Hill.** We are always on the lookout for good, reasonably priced computer books. Not long ago we received a tall stack of Osborne/McGraw Hill's latest introductions, which we'll briefly outline here.

First is *The PC User's Guide*, by Nick Anis and Craig Meneff. The new book features the Dvorak/Osborne imprint of books supervised by renowned computer columnist John C. Dvorak. The book is designed as a supplement to the often inadequate and/or poorly written setup documentation that regrettably comes with many PCs. It's billed as a one-stop resource offering all the information you need to get up and running with your IBM PC or compatible, from unpacking the box to tweaking the system. The 725-page book is \$29.95.

Second on our list is *DOS: The Complete Ref-*

317 Poplar Drive, Millbrook, AL 36054

# MFJ SWR Analyzers™

MFJ's innovative new SWR Analyzer™ gives you a complete picture of your antenna SWR over an entire band — without a transmitter, SWR meter or any other equipment!

All you do is plug your antenna into the coax connector, set your SWR Analyzer™ to the frequency you want and read your SWR.

**Setting up and trimming your antenna:**

**Super simple and super accurate**

You can instantly find your antenna's true resonant frequency right at your feedline — that's something a noise bridge just can't do.

You can monitor SWR changes as you adjust your beam or vertical — you'll know right away which way to adjust it.

You can shorten or lengthen your dipole and see the effect immediately.

The MFJ SWR Analyzer™ is battery operated and handheld size so you can take it right to your antenna. It makes it soooooo easy to work on your antenna until it's just the way you want it.

**Create your perfect multi-band antenna**

You can instantly check multi-band dipoles and trap verticals to see if the low SWR points are where you want them and adjust your antenna until they're right.

**Mobile Antennas made easy**

You'll find the perfect adjustment for your mobile whip in seconds by actually seeing the SWR as you pull the whip in and out without transmitting.

You can easily find the ideal place on the car for your mobile antenna by checking different spots with the SWR Analyzer™.

**All kinds of uses**

You can see how the SWR varies over your entire band and quickly find your usable 2:1 SWR bandwidth.

You can see your SWR change as you drive under an overpass and see how mobile whip flutter affects SWR.

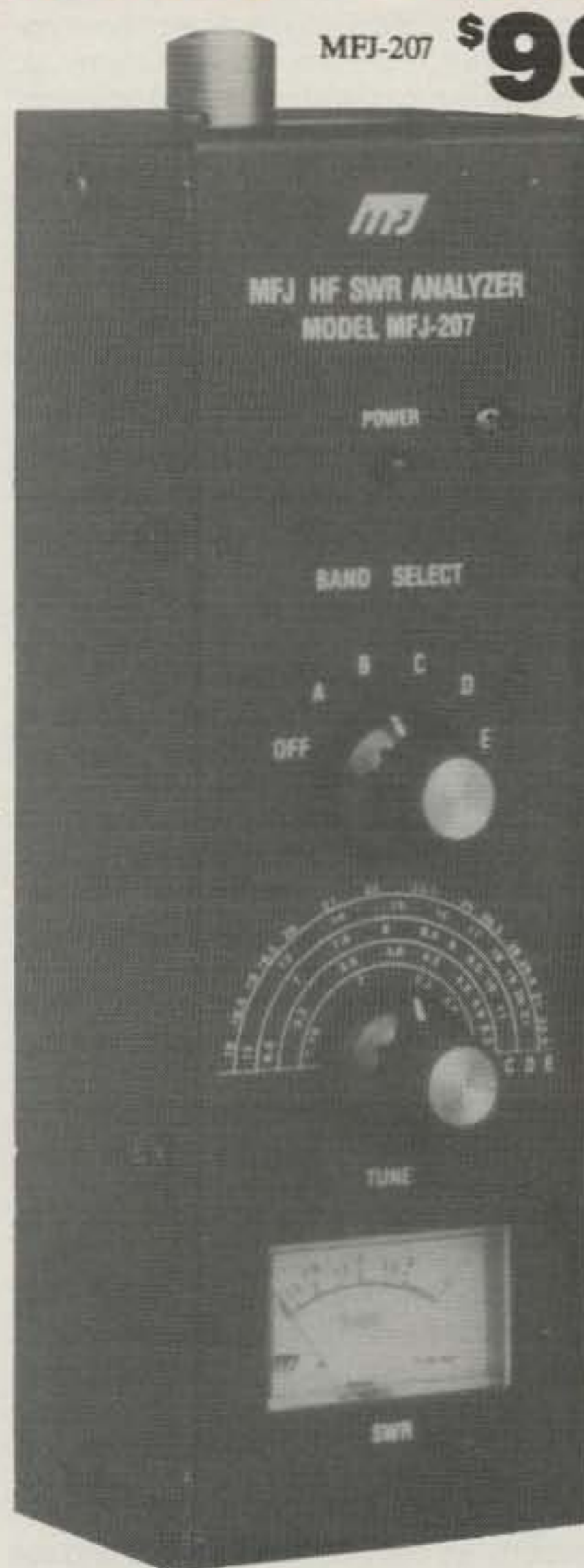
You can see what happens as you swing your beam toward the power line or away from your tower.

You can see how rain or snow affects your beam.

You can tune up your antenna tuner without transmitting.

You can check the SWR of the input to your linear amplifier.

You'll find all kinds of uses for this totally



MFJ-207 \$99<sup>95</sup>

the frequency and read SWR. It also has a frequency counter output so you can connect a frequency counter for precise digital readout.

Use 9 volt battery or 110 VAC with MFJ-1312, \$12.95. 7½" x 2½" x 2¼".

**The best way ever to measure SWR**

**Here's the best way ever to measure SWR**

... so get yours today!

## MFJ VHF SWR Analyzer™

MFJ-208

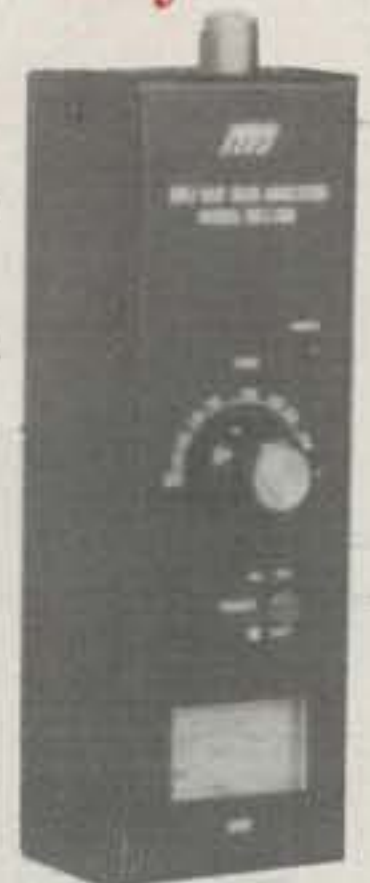
\$89<sup>95</sup>

If you operate 2 meters this MFJ-208 VHF SWR

Analyzer™ helps get your antennas in tip-top shape. Just plug in the coax to find the SWR of any antenna from 142-156 MHz. Use 9 volt battery or 110 VAC with MFJ-1312, \$12.95.

**NEW . . . Two Models for Commercial Radio!!**

MFJ-217 covers 30-50 MHz; MFJ-218 covers 150-170 MHz. These are only \$149.95 each.



## MFJ 600 MHz 10 Digit LCD Frequency Counter

A perfect companion for MFJ's SWR Analyzer™

MFJ-346

\$189<sup>95</sup>



**New!**

Add this handy MFJ-346 frequency counter to your station and get high accuracy frequency measurements to 600 MHz with 10 digit precision. It's also

compatible with the MFJ SWR Analyzers and Antenna Bridge. Large quarter-inch LCD digits make reading easy. These high contrast LCD digits don't wash out in bright sunlight like LEDs do -- they're actually easier to read the brighter the light.

Four gate times let you select the resolution you need -- selecting a 1 second gate time gives you 1 Hz resolution. Has high accuracy 1 ppm 10 MHz crystal time base with adjustable calibration.

Uses high speed ASIC and custom LCD technology. 3-7/8 x 1-3/8 x 5-1/4 inches. Uses 9 volt battery or 110 VAC with optional MFJ-1312B. \$12.95.

## MFJ-247 SWR Analyzer™ with LCD frequency counter

MFJ's newest SWR Analyzer™ has built-in 10 digit LCD frequency counter -- makes reading SWR easier than ever.

**New!**

MFJ-247

\$189<sup>95</sup>



You can use the new MFJ-247 as an SWR Analyzer™, as a sensitive high accuracy 150 MHz frequency counter and as a signal generator.

It has high contrast LCD digits that don't wash out in bright

self-contained handheld unit that'll revolutionize how SWR is measured.

**Super Value: Several Instruments in One**

You get a super value because several instruments are combined into a single portable handheld unit.

It has a low distortion RF generator that covers 10-160 meters, an SWR bridge that gives forward and reflected components and a computing circuit that automatically computes the SWR and displays it on the meter.

Everything is automatic. All you do is set

sunlight like LEDs do -- they're actually easier to read the brighter the light.

Reading SWR is automatic. All you do is plug in your antenna, set your MFJ SWR Analyzer™ to the frequency you want and read your SWR -- it couldn't be easier!

The MFJ-247 is battery operated and handheld size so you can take it right to your antenna and work on it until it's just the way you want it. Reads SWR 160-10 Meters.

You can instantly find your antenna's true resonant frequency right at your feedline -- that's something a noise bridge just can't do.

You can monitor how SWR changes as you adjust your beam or vertical -- you'll know right away which way to adjust it.

You can shorten or lengthen your dipole and see the effect immediately.

You'll find all kinds of uses for this totally self-contained handheld unit that has revolutionized how SWR is measured.

Has separate BNC input connector for use as high accuracy frequency counter. Counter has 1 ppm 10 MHz crystal time base; .01, .1, 1, 10 second gate times; .1 Hz resolution. Uses 6 AA cells or 110 VAC with MFJ-1312, \$12.95. 4 x 1¾ x 7½ inches.

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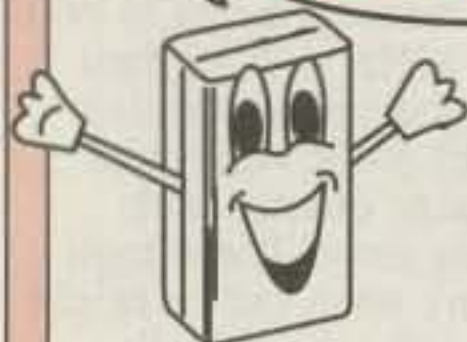
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CIRCLE 79 ON READER SERVICE CARD

erence, by Kris Jamsa. It covers all versions of DOS through DOS 5, though the heaviest focus is on DOS 4.01 and the new DOS 5. First published in 1987 as a 17-chapter book, the third edition has 46 chapters and includes seven appendixes and a complete command reference. Each chapter is organized so that the beginner and advanced user can pull out what they need: each contains a beginner's section, hands-on examples, advanced concepts, a summary, and key terms. The hefty 1124-page desktop reference is \$29.95.

Third is *Upgrading PCs Made Easy*, by Bud Aaron and Alex Aaron; it's designed for those who are interested in enhancing their PC. The authors explain why and when to upgrade a PC, upgrading options, how to do the work, and how to maintain and troubleshoot a system. Some of the topics covered include increasing memory, boosting processing power and speed, installing floppy and hard disk drives, adding peripherals such as a mouse or printer, and replacing and maintaining a power supply. Clear explanations and practical illustrations are provided. The book tops out at 459 pages and is \$19.95.

Fourth is *XTree Made Easy*, by Mike Callahan and Nick Anis. It's a specialized book for those who use any of the many versions of the popular file management utility and DOS shell, XTree®. The first part of the book introduces beginners to concepts and commands common to all versions of XTree. In the second part the authors introduce the advanced features found in more recent versions, including how to use XTree as a full-fledged DOS shell while also launching applications, moving files between disks, compressing data using ARC and ZIP, undeleting files, and the like. The 255-page book is \$19.95.

Fifth and last on our list is for all you "GUI lovers": *Windows: The Pocket Reference*, by Allen L. Wyatt. The handy reference guide is a memory jogger that covers the Microsoft Windows 3 graphical user interface (GUI) and, as such, "puts all the essential Windows features and commands within easy reach." Separately titled sections cover fundamental Windows information, the command reference, and the task reference. While I'm a bit old-fashioned in some ways and don't yet use Windows myself, the reference should perform a very useful function for the busy and harried Windows user.

Perhaps the most impressive feature of the 216-page, \$9.95 reference is not its content, but its special lay-flat binding that lets it stay open on your computer table or desk while you work. With it, you don't have to be a contortionist to hold the book open, read the information, and type the computer command all at once. To make use of the lay-flat feature, you open the book to the desired page and crease back the left-hand page by pressing along the length of the spine with your fingers. The book stays open until you're ready to go on, and the binding won't weaken or crack when you crease back the pages. I wish that more computer guides and users manuals would avail themselves of this type of binding.

All five books are published by Osborne/McGraw-Hill, 2600 Tenth Street, Berkeley, CA 94710. Contact them for a catalog or look for the books on most retail booksellers' shelves.

**Jim Seymour's PC Productivity Bible.** You may be familiar with Jim Seymour, a very popular and well-respected computer columnist for *PC Magazine*, *PC Week*, and *PC/Computing*. In his latest Brady book, Jim shares some of his best tips, tricks, and secrets, which are mainly business software oriented but nevertheless of-

fer some good advice for "the rest of us."

The new book contains more than 100 mini-chapters crammed with nuts-and-bolts advice and capsule wisdom, along with some memorable anecdotes. Included are tips on handling databases, spreadsheets, wordprocessors, graphics programs, communications terminals, portable PCs, and more. Of interest to almost anyone are Jim's many straightforward DOS tips, many of which revolve around avoiding and recovering from hardware crashes and preventing data loss when your system goes down. While I can't say that Jim's book truly is "the ultimate computer book," as the cover aggressively suggests, it's worthwhile reading, particularly if you spend your daytime hours working on a PC in the office.

The \$24.95 Brady Book has 437 pages and is published by Simon & Schuster, Inc., 15 Columbus Circle, New York, NY 10023. It is widely distributed through retail booksellers.

**Shareware Magazine.** The same Mike Callahan we mentioned as author of one of the Osborne/McGraw-Hill computer books now is at the helm at *Shareware Magazine*; he's known to many shareware users as Dr. File Finder, author of *Dr. File Finder's Guide to Shareware*, which we reviewed in a previous column.

The publication offers in depth evaluations of IBM PC shareware, insights into trends driving this segment of the software industry, and coverage of Macintosh and educational shareware. Presently the magazine is published every other month, but monthly coverage is planned. Subscriptions are \$14.95.

Contact Shareware Magazine, 1030D East Duane Avenue, Sunnyvale, CA 94086.

**Van Valzah Antennas Catalog.** Howard Van Valzah, WB9IPG, is an "antenna man" at heart; he even conducted an antenna design competition last year and offers technical consultation on a toll-free hotline. His 56-page catalog is crammed with almost everything for the antenna end of the coax. Included are HF mobile antennas and accessories, HF verticals and beams, wire antenna kits, switches and filters, SWR meters, coaxial connectors, VHF and UHF antennas, tower and antenna parts (a very good selection of small and hard-to-find items), and CB, SWL, and scanner antenna products. New product lines carried included MasPro, Maldol, and Jaybeam.

It's hard to find things in many catalogs, but this one is different. It has black edge markings on the pages to delineate different product categories. There's also an alphanumeric index of parts numbers and a manufacturer's index to help you locate specific items. How much more convenience could you want?

For a catalog, contact H.C. Van Valzah Co., 1140 Hickory Trail, Downers Grove, IL 60515.

**Mirage/KLM Catalog.** The new catalog includes a wide variety of amplifiers, preamplifiers, antenna accessories, and HF/VHF/UHF antennas. Accessories include antenna couplers, power dividers, and stacking frames for VHF and UHF beams. They also offer three distinct types of baluns: ferrite core baluns in 1:1 and 4:1 ratios that cover 3-150 MHz in various ranges; 1:1 quarterwave sleeve baluns for 144, 220, and 440 MHz; and 1:1 coaxial baluns for the same three bands. Also featured are a software-controlled satellite antenna tracking interface box and remotely controlled VHF/UHF antenna polarity and circularity switchers.

For a catalog and price list, contact Mirage/KLM, 16890 Church St., Morgan Hill, CA 95037.

**Grove Catalog and Buyer's Guide.** Bob

# MFJ-949D Deluxe 300 Watt Tuner

Lets you tune out SWR on virtually any antenna 1.8-30 MHz . . . plus, you get dummy load, Cross-Needle meter, antenna switch, balun, 1-year unconditional guarantee . . . for only \$149.95

MFJ-949D

**\$149<sup>95</sup>**

- Peak reading Cross-Needle Meter
- Full size dummy load
- Custom inductor switch
- Antenna Switch
- 4:1 Balun for balanced lines
- Covers 1.8 to 30 MHz
- 1 year Unconditional Guarantee
- Made in USA



**More hams use the MFJ-949D than any other tuner... why settle for an imitation?**

More hams use the MFJ-949D than any other antenna tuner in the world!

**Why?** Because the MFJ-949D gives you your very best value, first-rate performance, proven reliability, unbeatable quality and the best guarantee in ham radio -- all from the most trusted name in antenna tuners.

### All the Features You'll Ever Need

The MFJ-949D matches your rig to virtually any antenna from 1.8 to 30 MHz.

You can tune out SWR on dipoles, inverted vees, verticals, random wires, beams, mobile whips, balanced lines and coax.

A lighted peak and average reading Cross-Needle meter shows you SWR, forward and reflected power -- all in a single glance.

A 6-position antenna switch lets you select 2 coax lines (direct or through tuner), random wire or balanced line and dummy load.

Has 4:1 balun for balanced lines.

### Special Inductor Switch

The inductor switch is the most likely component to burn up in your antenna tuner.

The inductor switch in the MFJ-949D is specially designed to withstand the extreme voltages and currents that are developed in your tuner -- it's not an underrated off-the-shelf switch that can put you off-the-air.

### Full Size Dummy Load

The MFJ-949D has a full size dummy load measuring 3/4 inch diameter by 5 inches. It easily handles 300 watts of abusive tune-up power.

Watchout for midget size dummy loads -- marginal ones could burn up your rig and put you off-the-air.

### Unbeatable Quality

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

## MFJ Low Pass Filter

MFJ-704

**\$39<sup>95</sup>**



Plugs between your transceiver and antenna. Suppresses TVI, RFI, telephone and other interference by reducing unwanted harmonics going into your antenna. 9 Chebyshev poles, teflon dielectric capacitors, high-Q inductors, ground plane shielding give you excellent TVI/RFI suppression. Handles 1.5 KW 1.8-30 MHz with low loss, low SWR. Made in USA.

Detailed logging scales and legends are clearly silk screened on the front and back panels with permanent black ink -- it's not merely a plastic decal or glued-on paper strip that can peel off.

MFJ uses a custom cabinet for each model.

Imitators may use the same cabinet for different models using different decals and leaving unused open holes that can be a haven for bugs and other small creatures.

### Why Take Chances?

There's just no shortcut. MFJ is the most trusted name in antenna tuners -- we've made more tuners for more years than anyone else.

Why take chances with an imitation when you can get the MFJ-949D -- the world's leading antenna tuner with years of proven performance -- and a no matter what unconditional guarantee at an affordable price?

### Why Buy Made in USA

The MFJ-949D is made in USA. You're keeping your money here in the USA and helping fellow Americans.

If you buy a foreign made product, how do you get service if there's no service center in the USA?

Are you willing to pay expensive freight and duties to a foreign country for service?

Does a foreign company have to honor their warranty in the USA?

Call your Dealer for your Best Price

Call your favorite dealer for your best price and order your MFJ-949D today!

## MFJ's world famous 3 KW Versa Tuner V

MFJ-989C

**\$349<sup>95</sup>**

The MFJ-989C if not for everyone. And not everyone can afford it.

However, if you do make the investment, you get the finest 3 KW tuner money can buy.

The MFJ-989C is a compact 3 KW PEP roller inductor tuner that covers 1.8-30 MHz. Exceptionally hefty tuning components include 2 massive capacitors that can withstand 6000 RF volts with ease and a big roller in-



ductor. You can run high power without fear. A 3-digits turns counter lets you quickly re-tune to your favorite frequency. A giant

2-core balun lets you operate balanced feedlines without core saturation and voltage breakdown. Dummy load.

Peak and average cross-needle meter shows you forward/reflected power in two ranges (2000/500 and 200/50) and SWR. Flipstand, 6-position antenna switch. \$10 s/h. Made in USA.

### Continuing Service

MFJ Customer Service Technicians will help you keep your MFJ tuner performing flawlessly -- no matter how long you own it. Just call our toll-free help line 800-647-TECH(8324) -- no other tuner manufacturer gives you toll-free help.

### No Matter What™ Guarantee

You get MFJ's famous one year No Matter What™ unconditional guarantee. That means we will repair or replace your MFJ-949D (at our option) no matter what for a full year.

Others may give you a limited warranty on defects in material and workmanship. But what do you do if it burns up and they say, "Sorry, your limited warranty does not cover that?"

## Cross-Needle SWR/Wattmeter covers 1.8-60 MHz

MFJ-815B

**\$69<sup>95</sup>**



Cross-needle SWR/Wattmeter lets you read peak/average, forward/reflected power and SWR. 200/2000 watts forward and 50/500 watts reflected power ranges. Covers 1.8-60 MHz. Has meter zero adjustment. 7 1/4 x 4 1/2 x 3 1/2 inch aluminum cabinet. Meter lamp uses 12 VDC or 110 VAC with MFJ-1312, \$12.95. One year unconditional guarantee. Made in USA.

MFJ-948

**\$129<sup>95</sup>**



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

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

Remember, with MFJ you're getting proven performance and reliability from the most trusted name in antenna tuners.

## 650 MHz Dummy Load

MFJ-264

**\$59<sup>95</sup>**

Made in USA

DC-650 MHz 50 ohm dummy load handles 1.5 KW SWR below 1.3 to 650 MHz and below 1.1 at 30 MHz. 100 watts continuously, 1.5 KW for 10 seconds.

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

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status is continuously monitored by a unique L.E.D. display. Its sealed lead cells maintain charge for months and recharge reliably to 100% capacity without the "memory" effect of nicads.

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Grove, WA4PYQ, and XYL Judy put out an increasingly thick catalog and buyer's guide (40 pages at last count) that contains a wealth of products of interest to the SWL and scanner monitor. Included in the catalog is a good deal of tutorial material useful to the beginner.

A number of receiving antennas and accessories are included in the catalog, such as complete HF wire antenna systems, antenna tuners, preamplifiers, RF filters, and cables. There's an interesting new wideband omnidirectional scanner antenna by Antennacraft which covers 25–1300 MHz, but which is not a discone, the usual wideband VHF/UHF antenna of choice. There's also an amplified indoor scanner antenna system for apartment dwellers that covers 30 to above 1000 MHz and a 24 inch bifilar helix fiberglass mobile whip for 7-band VHF and UHF reception.

For a catalog, contact Grove Enterprises, P.O. Box 98, Dog Branch Road, Brasstown, NC 28902.

**New Radio Works Catalog.** Wire antenna specialist Jim Thompson, W4THU, regularly sends me the latest Radio Works catalogs, and each one seems to grow larger. Last fall's catalog, for example, hit 80 pages and described a complete selection of antennas and parts for the wire antenna enthusiast.

New products include line isolators made specifically for vertical antennas and the new, field-reconfigurable 80–10 meter W4THU Carolina Beam and the 40–10 meter Carolina Beam/2. These antennas, which combine three vertical radiators with a single horizontal radiator, are designed to combine the best characteristics of the multiband Carolina WINDOM and the classic Bobtail Curtain wire beam.

As I've mentioned before, Jim's catalogs contain a good deal of descriptive and explanatory information so that you can get a good idea of just what his products are like and how they work. As such, his catalogs make excellent HF antenna tutorials for the beginner. For a copy, contact The Radio Works, P.O. Box 6159, Portsmouth, VA 23703.

### Antenna Notes

**NEO-12 Series Antennas.** Leo D. Johnson, W3EB/VK5AF1, has developed a unique series of monoband beam antennas for the 14, 18, 21, 24, and 28 MHz bands. The series, with only 12 foot booms, is claimed to outperform some beams using four elements and longer booms due to their special configuration.

According to Leo, the electrical description of the five antennas in the series is best described as individual, small log-Yagi antennas, each using two driven elements and a director. An excellent F/B ratio is attained through careful choice of the ratio of length vs. spacing between the two driven elements. Close-spaced directors are used to keep the fed element impedance high to take advantage of the higher gain associated with close coupling. All antennas in the series share the same 12 foot boom length and element-to-element spacing. A W2DU-type current balun is provided with each antenna.

The antennas boast high-claimed gain (minimum of 11.5 dBi) and a band-edge-to-band-edge SWR averaging 1.5:1 or less when operated at the referenced height of 60 feet. Leo documents the gain and SWR figures in his product literature and also provides alternate modeling data for antennas installed at 30 feet.



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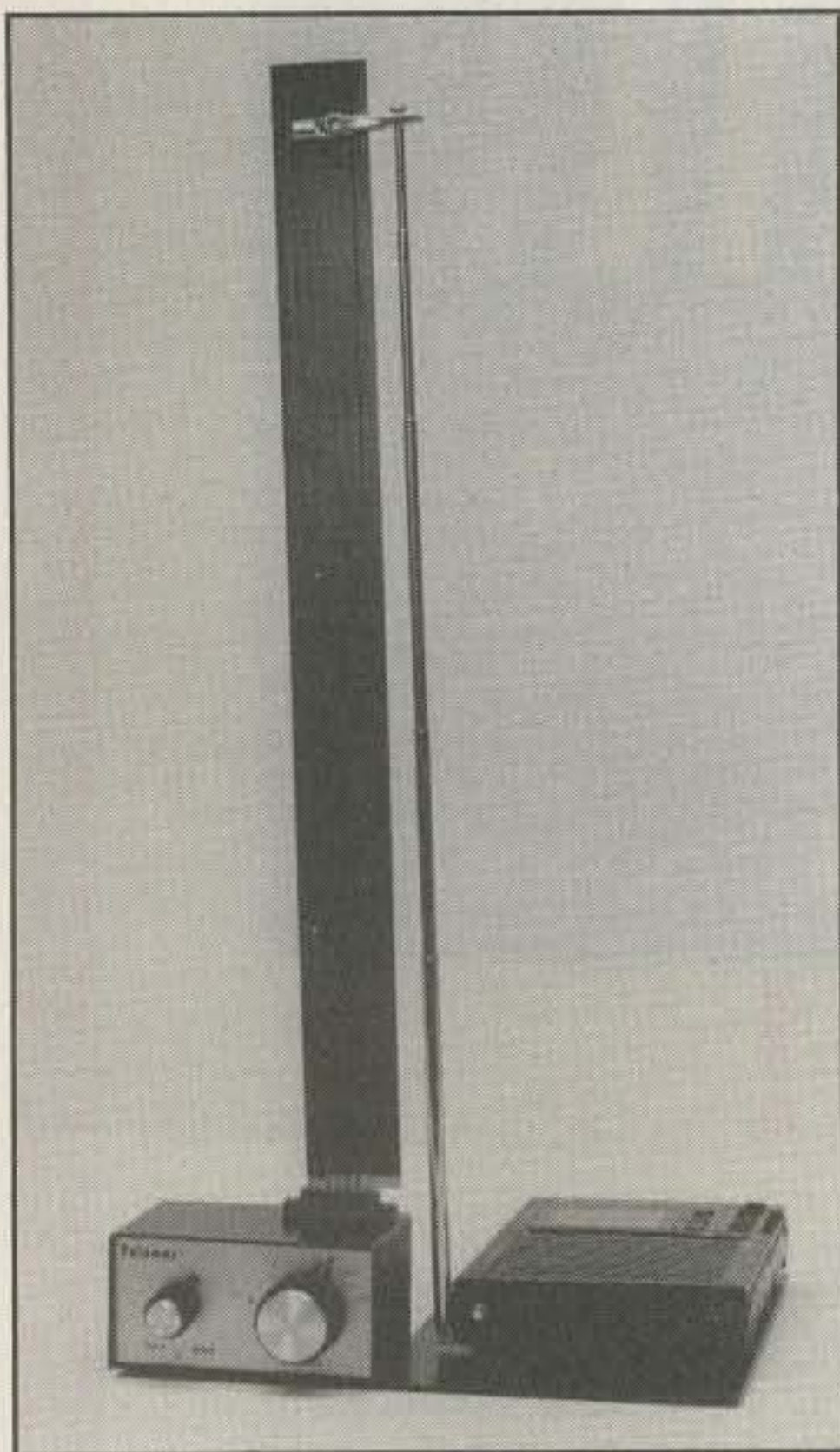


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This SWL antenna accessory device is designed to be used with small portable SWL receivers with internal whips. The PA-420 Channel Cleaner™ SWL Loop suppresses co- or adjacent-channel interference and is said to offer 15-30 dB suppression of unwanted signals. (Photo courtesy Palomar Engineers)

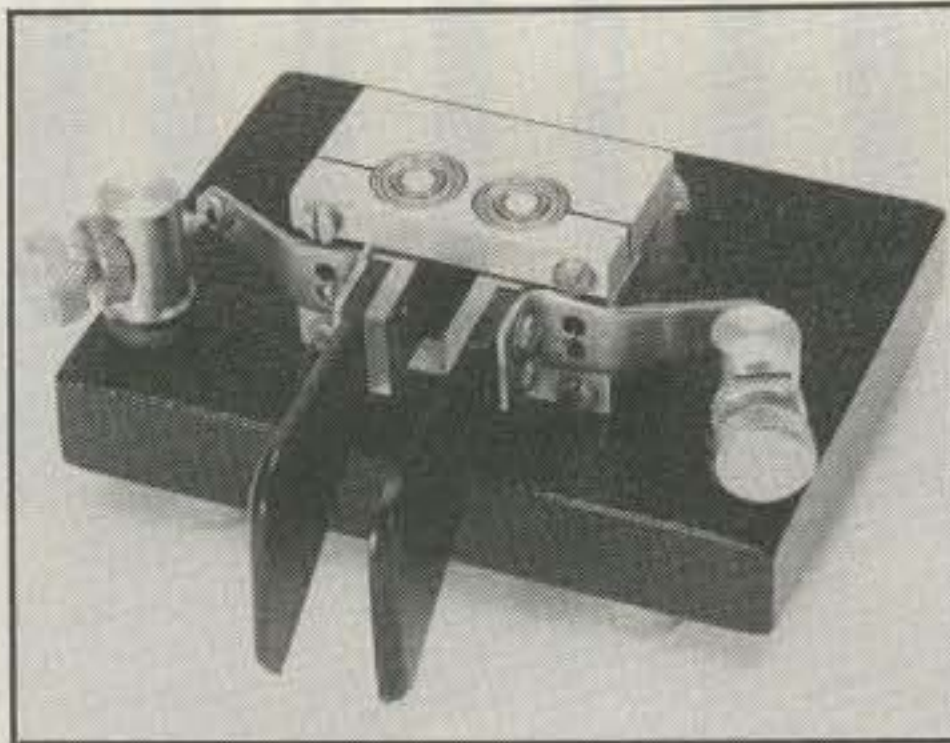
For more information and pricing, contact Leo D. Johnson, W3EB/VK5AFI, 110 Millstone Lane, Hollywood, MD 20636.

**Vertically Polarized Quad Loops.** I don't have much information on these new 2 meter antennas, but I understand that Paul Smith, WB2NEM, offers the "Ultra Gain" vertically polarized antennas that incorporate three full-wave Quad loops. The Quad loops are of self-supporting design and are spaced 120 degrees apart. They are fed in parallel with a gamma matching device that is adjustable to the desired frequency. A gain of 5.3 dB over a half-wave dipole is claimed. The antennas can be operated indoors or outdoors.

Designed to present a feedpoint impedance of 52 ohms, the antennas are DC-grounded and are of all-aluminum construction with stainless steel hardware. The antennas do not require a ground plane, coils, or baluns. They're priced at \$59.95 plus shipping. For more information on the antennas, contact Paul Smith, WB2NEM, 2520 DeSoto Dr., Kissimmee, FL 34746.

**Marine Grade Coax.** There's another player in the high-grade coax field. That player is Amateur Radio Specialties, which distributes a "marine grade standard" coax for the amateur market.

In information received from Ed Karagozian, K6JGN, the company's president, the new line of coax is made in the U.S. by Ancor Marine Electrical Products, a well-known name in the marine industry. The coax is available in all popular 50 ohm cable types including RG-8X, RG-213/U, and RG-58C/U. The cable comes precut in



Palomar Engineers recently returned to the keyer business with two new keyers and also began to import the popular R.A. Kent line of keys from England. The sturdy PK-100 Dual Paddle Key, for use with iambic keyers, is shown here. It's machined from brass bar with a solid steel base. Ball race bearings, copper contacts, and fine pitch screw threads with instrument knurled heads allow precision, individual adjustment of each of the two contacts and springs. (Photo courtesy Palomar Engineers)

lengths of 25, 50, 75, or 100 feet with silver-plated, Teflon-insulated PL-259s connectors at each end with an adhesive-lined heat-shrink tube for a weather-tight connection. All cables also are available in 500 and 1000 foot spools. Features include white PVC outer jacketing, 100 percent tinned copper braid and center conductor, and more than 96 percent braid coverage.

You can obtain more information and prices from Amateur Radio Specialties, P.O. Box 7086, Newport Beach, CA 92660-7086.

**New from Palomar Engineers.** A novel, specialized receiving device I've seen in recent Palomar Engineers ads should be of interest to SWLs. It's the PA-420 Channel Cleaner™ SWL

Loop. This is a highly selective active antenna device, designed for small portable shortwave receivers with built-in whips, that suppresses co- or adjacent-channel interference. It is said to offer 15-30 dB suppression of unwanted signals over the range 6-16 MHz. The device, which is not connected directly to the receiver, is said to produce a single steady null on both ground-wave and skywave signals. It's effective when nulling two stations on the same frequency (or close enough to produce an audible heterodyne), nulling two stations on adjacent channels, or nulling a very loud station that overloads or swamps the receiver across a whole band. The device is priced at \$79.95.

Jack Althouse, K6NY, of Palomar Engineers, also told me that he's gone back into the keyer business with a keyer based on the Curtis 8044 IC as well as a microprocessor-based contest keyer. Jack's also importing Kent keys; the machine work is done in England, and his shop in California assembles the keys.

For more information and a catalog, contact Palomar Engineers, Box 455, Escondido, CA 92033.

## Soft Topix

**Marathon for the Mac.** Kevin A. Krueger, N0IOS, offers the Marathon contesting software for the Apple Macintosh computer. Kevin originally developed the program for his own contesting efforts and those of his son, Tim, N0ILS. As Kevin and Tim added new features, Marathon evolved into a full-featured program after a year of beta testing that's said to be fast, reliable, and easy to use. Too bad I'm not a Mac owner to really check this one out!

Marathon is, of course, based on the popular Macintosh graphical user interface (GUI) and features easy-to-use windows and log entry

File Contest Windows Score

N0ILS

Station

Report Rcvd

Report Sent

3 Points \*\*\*Multiplier\*\*\*

Band  Mode  ITU Geneva, Switzerland

EU Zone: 14  
48° 11,662 mi

4J1	Malyj Vyotskij
4S	Sri Lanka
4U1ITU	ITU, Geneva, Switzerland
4U1UN	United Nations, New York
4U	Vienna, Austria
4X-4Z	Israel
5A	Libya

WPK Log '91 - Page 1

Entry #	Date	Time	Band	Mode	Station	Rcvd	Sent	Pts	Multi	Country
262	31 Mar	2051	10M	SSB	4X1PB	59109	59262	3	•225	Israel
263	31 Mar	2058	10M	SSB	GM0EUX	59569	59263	3	•226	Scotland
264	31 Mar	2105	10M	SSB	EA8GS	592111	59264	3		Canary Islands
265	31 Mar	2109	10M	SSB	DF2UU	591672	59265	3	•227	Germany
266	31 Mar	2110	10M	SSB	GS0AEE	59852	59266	3	•228	England
267	31 Mar	2114	10M	SSB	5N0ETP	591449	59267	3	•229	Nigeria
268	31 Mar	2144	10M	SSB	F6GEO	59298	59268	3	•230	France

Fig. 1 - Marathon is a full-featured Apple Macintosh amateur radio contest software package designed to simplify the tasks of logging, dupe checking, and post-contest reporting. To log a station, simply enter the station's callsign, complete the report received, and press enter. If you enter just the station, Marathon will check for a dupe, look up the country, and determine your points/multiplier credit. (Screen print courtesy N0IOS).



screens. The program is designed to be used in seven major contests and offers real-time dupe checking with automatic lookup, display of point and multiplier credit even before contact logging is complete, transceiver interface for automatic logging of frequency and mode, log editing, a CW interface with 12 programmable memories, a packet interface for local DX spotting, printout of all paperwork for post-contest reporting, and an onscreen scoreboard and QSO rates graph. Other features include a notepad, displayable log pages and dupe lists, scrollable and sizable windows, user maintenance of country and prefix lists, display of DX beam headings, file export, and more.

Marathon is priced at \$59.95, and a demo disk and manual are available for \$8 (refundable). For more information, contact Kevin Krueger, N0IOS, 1780 Ruth Street, St. Paul, MN 55109. Fig. 1 shows a sample Marathon screen window.

**Didah Publishing Index Software.** In the May 1990 column we discussed a project by Rich Rosen, K2RR, former Editor-in-Chief of *Ham Radio Magazine*, to offer a listing on microfiche of most of the articles ever to appear in the amateur radio and communications-electronics press. Entitled *From Beverages Through OSCAR—A Bibliography 1909-1988*, the index contained about 53,000 single-line abstracts in 92 communications subject areas. It was priced at \$49.95, including manual. We also mentioned that Rich had plans to offer additional indexes.

Rich has come through. He now also offers the bibliography on diskette, in the process updating it to cover through 1990. This is a move whose time definitely has come, a real step forward since most people just don't like to work with microfiche or microfilm if they can possibly avoid doing so. On the other hand, searching computer databases is much easier and can be fun, as I found when I experimented with the computerized bibliography and several of the subsidiary magazine databases devoted to individual publications. These indexes include *QST* (1945-1990), *CQ* (1945-1990), *73* (1960-1990), *Ham Radio* (1968-1990), and the British amateur radio journal, *Radio Communication* (1979-1990).

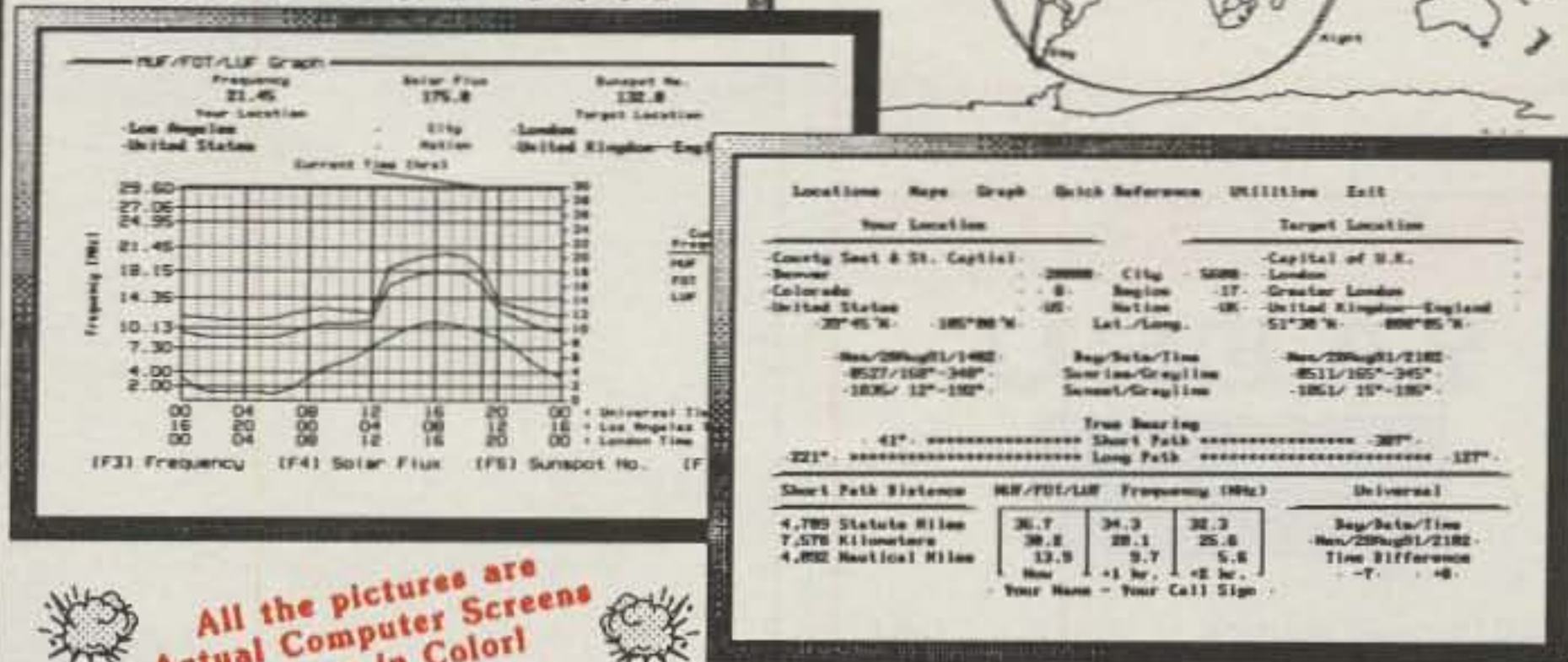
The software and hardcopy indexes represent about 21 years of effort on the part of Rich and XYL, Chaya. This effort involved many thousands of hours spent in reading each and every page of the five amateur magazines plus 292 other sources (about 300,000 pages). Each article from the magazines is classified and cross-referenced in one or more of 11 major categories, which are further subdivided into 92 technical subject areas. Database entries vary slightly between the indexes, but essentially each entry contains a description of the article; the year, month, and page number of publication; the publication or source name; the author(s) by name or radio callsign; and additional information or identifiers that may even include feedback to corrections in previously published articles. In reviewing the software and hardcopy indexes, I found a few archiving inconsistencies, but the error rate appears to be extremely small considering the large size of the indexes and the opportunities they offer.

At this writing the full bibliography compendium on diskette is priced at \$89.95, includes a user's manual, and is available in 720K and 1.44MB (3.5 inch) as well as 360K and 1.2MB (5.25 inch) diskette formats. Very reasonably priced individual magazine indexes are available, as are specialized subject package indexes (product reviews, antennas, RTTY, SSB,

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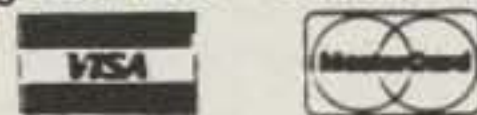
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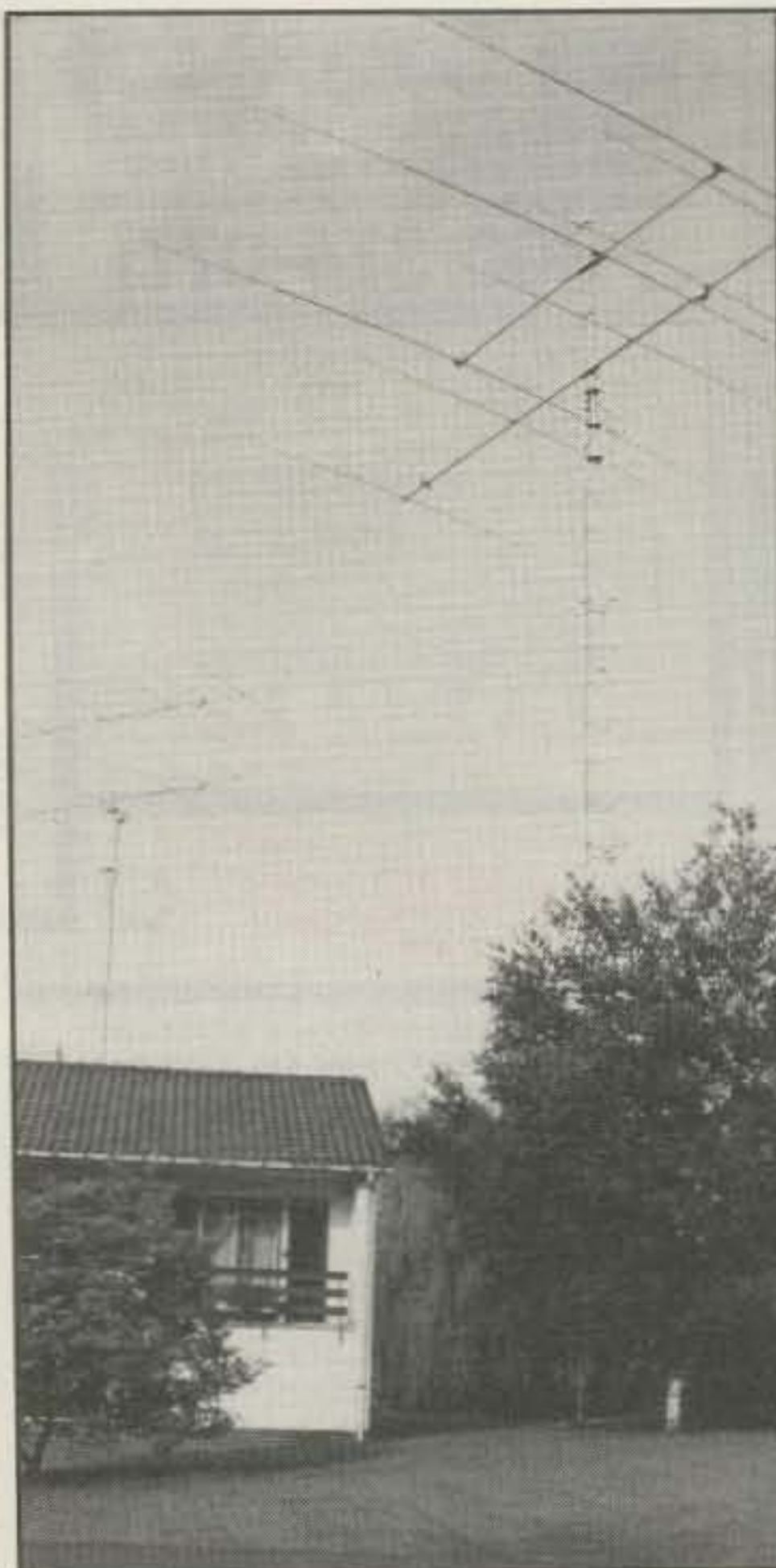
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John's a DXer, if you haven't guessed! Here are the main antennas at John Devoldere, ON4UN's ham shack. The front tower sports a 5-element, 20 meter beam at 85 feet and a 3-element, 40 meter beam at 100 feet. The second tower is decorated with a 6-element, 10 meter beam at 60 feet and a 6-element, 15 meter beam at 70 feet. The just-visible 135 foot back tower is for low-band work; it's 1/4-wavelength on 160 meters and 1/2-wavelength on 80 meters. (Photo courtesy ON4UN)

and others) that draw from all of the amateur magazines.

Rich also offers a series of specialized hard-copy indexes for the popular amateur radio publications, similar to, and derived from, the bibliography. The hardcopy magazine indexes are priced at \$10 to \$19, depending on the publication. Additional inexpensive subject area hard-copy indexes are also available.

By the time this appears in print, the Dayton Hamfest will be but a short time away. Rich tells me that by Dayton he hopes to have a total of at least 100 different magazine index products available, priced to be very affordable—as little as \$9.95. For more information on current offerings and prices, contact Didah Publishing, P.O. Box 7368, Nashua, NH 03060-7368.

**ON4UN Yagi Design Software Update.** In the October 1989 column we examined John Devoldere, ON4UN's Yagi Design software for the IBM PC. John offers a rather slick menu-driven version of Yagi Design that offers many new features and valuable tools for designing new Yagis or optimizing existing designs.

The software is an integrated physical design package that takes you through all of the steps involved in Yagi design. It starts with the selec-

tion of the design from the database of 100 different, verified Yagi designs for 7 analysis frequencies. These generic designs are used in different sections of the program to help you solve all of the physical design problems of Yagis. Comprehensive analysis of every electrical and physical design aspect is covered, including mechanical strength calculations of the elements and supporting mast. For all sections of the program, the user has the choice between U.S. or metric system measurements. Various utility programs are included, including a full-fledged Smith chart program.

Yagi Design is available from the author. In addition, by the time this column appears, John should also offer some additional programs, including programs to take you through the design of a 2- to 4-element phased array as well as a collection of programs associated with his 1987 *Low Band DX'ing* book, published by the ARRL. John also mentions that he's preparing a revised edition of this popular book.

For more details, contact John Devoldere, ON4UN, 215 Poelstraat, B9820 Merelbeke, Belgium.

## Short Bursts

**Time & Again.** Many amateurs and SWLs could benefit from a convenient, at-a-glance international time zone map imprinted on their receiver's cabinet, an accessory cabinet, a desktop, or other convenient object. James A. Termini offers two styles of decal that fill this need. The larger size decal is 2 1/4" x 4 3/4" and is good for large equipment; the smaller size decal is 1 1/4" x 3 3/4" and is useful for small portable equipment where space is limited. The self-adhering, polyester decals are handsomely toned with silver continents on a blue background.

The larger sized decal is \$2 and the smaller decal is \$1.50; both are \$3. For the decals, send an SASE and payment to Time & Again, P.O. Box 306, Dickinson, TX 77539.

**All About Zulu.** While we're on the subject of time, let's talk Zulu. Most amateurs are familiar with the standardized world time used for navigation and communications purposes, Greenwich Mean Time (GMT). To be more precise, this is now called Coordinated Universal Time, or UTC if you consider the French words making up the acronym. Often, GMT or UTC is written with the 24-hour time suffixed with a "Z," for Zulu time; for example, 1800Z denotes 6 PM at Greenwich. So where does the Zulu business come from?

It originated with the military, which decided to coin its own term. In that Greenwich is at the so-called "zero meridian," the longitudinal location of British King Charles II's 1675 astronomical observatory built to aid navigation, the military began calling GMT "Zero Time," or "Z-Time" for short. The old phonetic alphabet for "Z" was Zebra; when the alphabet changed, the phonetic became Zulu. The rest is history.

## Wrapping It Up

That's all for this time. Next month more Antennas & Accessories topics of current interest. See you then.

*Overheard:* Any given computer program, once it's up and running, is *already* obsolete.  
73, Karl, W8FX

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Hold Switch	Yes	Yes	Yes	Yes	Yes	No	Yes
Price	\$579.	\$375.	\$325.	\$259.	\$225.	\$179.	*\$99.

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## "HOW TO" FOR THE NEWCOMER TO AMATEUR RADIO

### Printed Items

**J**ames Creevay, W4UYZ, offers the 1992 version of his *Amateur Radio DX Blue Book* in two versions. Both versions are revised twice yearly to reflect the many changes which continue to occur in our amateur radio service. Prefix designated grid maps are included for areas of the world. These maps fold out to a useful "B" size (11 by 17 inches); 360 central Pacific islands are included with their grid locators.

The "standard" *Amateur Radio DX Blue Book* has 28 "A" (standard 8.5 by 11 inch) pages and 9 "B" (double size) pages.

The radio station log version of the *Amateur Radio DX Blue Book* has 45 "A" size pages and 4 "B" size pages. Twenty-five of the 40 "A" size pages are log sheets.

Each version of this book sells for \$8.45 to U.S.A. addresses, which includes s&h costs. These books can be purchased from J/C Enterprises, 4920 Mayflower Street, Cocoa, FL 32927. Jim's telephone number is 407-632-6809. Jim lives close to where the space shuttles take off, whereas my home is near where the shuttles land.

In the "standard" version, each of the 339 countries and islands is listed in the alphabetical sequence of their most commonly used callsign prefix. The country/island and its capital city are followed by the continent. CQ and ITU zones are listed next. The number of International Reply Coupons (IRCs) required to prepay return airmail postage is followed by an indication of whether or not ARRL DXCC credit applies. The UTC time difference precedes the map grid reference used to locate the country/island on the enclosed map. Third-party traffic and reciprocal operating participation (with the U.S.A.) are shown along with the number of amateurs. Headings and distances from Miami, New York, and Los Angeles are listed for each country/island. DX QSL tips, country-to-callsign prefix conversion list, miles-to-kilometers conversion, Fahrenheit-to-Celsius conversion, ITU/ICAO phonetic alphabet, and a list of frequently used Q-signals are also featured in this book. Extensive data covering the Pacific islands is included.

Jim has prepared great-circle bearings to these 339 DXCC locations from 182 cities throughout North America, including

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*Dick Conrad, KB7OCW, of Greenbank, Washington teaches photojournalism to students at the University of Washington. Dick also enjoys building radio-controlled gliders, plus biking, camping, sailing, and photography.*

every state. Each of these lists is available at \$2.50 to *Blue Book* purchasers. If your city is not on the current list, a customized bearings list can be bought for \$6.50 each, whether or not you buy a *Blue Book*.

Log book pages with covers are sold for \$4.50 for 60 pages. They are perforated for spiral binding. Major office supply stores will insert them in a binding at a low charge.

### K3UKW Used Gear List

Tony Musero, K3UKW, issues a monthly list of used amateur radio equipment and accessories. Tony buys, sells, trades, and consigns SWL and amateur radio gear. If you want a copy of his latest list, send a business-size (#10) self-addressed and stamped envelope to Tony at 1609 South Iseminger Street, Philadelphia, PA 19148-1010. His telephone number is 215-271-8898. If your funds are low, but you need gear, Tony is one of the suppliers you should check with for the item you need.

### Ham Calendars

My December 1991 column briefly mentioned the availability of a 1992 amateur

radio calendar. That coverage appears to have been too brief, because I have received several requests for additional information about these calendars. Here are detailed descriptions of two calendars which should be of interest.

**Ham Photo Calendar.** John David, KB1T, offers an excellent 46-page photo calendar which opens up to 18 inches high by 11 inches wide, as it is posted on a wall. All radio-associated events are noted in black on the calendar pages. Astronomical events, commemorative dates, and public holidays are shown in blue ink.

The name of each operating event is shown in the date block; it is followed by the event's starting time and duration hours. W1AW/W6OWP code proficiency qualifying runs are shown in the appropriate date blocks. "SFM" is used to highlight 10 to 60 wpm sessions which honor the 200th anniversary of Samuel F.B. Morse's birthday; these runs end 27 April 1992. A diamond shape is used to indicate each radio history milestone and commemorative date. Where an explanation of such a date is appropriate, it is provided in the footnotes.

The astronomical data coverage is unusually good in this calendar. The times of full moons and new moons are accurate



Here are two of Patricia Lovarco's (KD4ABZ) students practicing code. Forty-eight seventh and eighth graders participate in amateur radio classes at the Nova Middle School in Davie, Florida. These students are preparing themselves to pass the Novice code and written examinations. They will be given an opportunity to study to upgrade in license next year. The school's principal, Mr. Steven Friedman, purchased an Astron power supply, a Cushcraft R-5 antenna, and an ICOM IC-735 transceiver to give these students an opportunity to operate.

to within a minute. The beginning and ending days of meteor showers are followed by the declination (in degrees) and the peak zenith hourly rate. References are included to permit users to obtain updated meteor shower data as those dates are approached.

The 1992 calendar has a photograph of the April-May 1988 Kingman Reef/Palmyra Island operators featured on the front cover. The inside of the front cover provides the introduction; this includes the table of contents, a brief summary of what is contained in the calendar, and an explanation of how to read the calendar. An article by Tom Lewis details the impact World War I had on the development of radio and how that war spurred interest in our amateur radio service. A propagation forecast and tutorial by Chod Harris, VP2ML, is included, which tells you how to decipher WWV solar reports.

The middle pages of the calendar fold open to the full 18 by 11 inches for each month. A color photograph of a noted amateur group is shown in the top section. The bottom section provides a caption for the top section photograph, plus all the data which has already been detailed in this article. The monthly calendar photographs are great; they show operators who made it possible for many of us to contact some of the rarest DX locations in our world. I enjoy seeing what these amateur radio heroes look like.

The International Telecommunications Union (ITU) callsign prefix allocations follow the monthly calendar spreads and a page of interesting footnotes. Our American amateur radio bands, modes, and power limits are included. An introduction to IOTA (Islands on the Air) and the WWV

broadcast format are followed by a list of U.S.A. coastal IOTA groups. A full page is used to show each of the following maps: the U.S.S.R. Siberian callsign map; the ARRL grid locator map of North America; the ARRL and CRRL sections with FCC call areas; and the ITU zones with a list of DXCC countries and ITU zones. The next to last full-size spread shows the CQ DX zones of the world plus a list of CQ contest multipliers and CQ zones. The last full-size spread in this calendar contains two full pages of information sources. The back cover is a 1993 calendar. This calendar is extremely beneficial to new amateurs. This condensed collection of key information makes the calendar useful to even the most experienced amateurs.

The cost for a single calendar is \$14.95 (including s&h charges) and the address to use is KB1T Radio Specialties, Box 1015-YC2, Amherst, NH 03031. John's telephone number is 603-673-4100.

### K4TWJ's Classics of Amateur Radio 1992 Calendar

This 32-page calendar opens up to a height of approximately 16.5 inches and a width of about 10.75 inches. The top section of each monthly segment shows a classic telegraph instrument. Holidays and amateur radio events are shown in the individual date blocks in each lower segment. There

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### Ham-Paks

### Software Collections

**Ham-Pak 1** - a top notch collection of 42 public domain and shareware disks for ham radio. This collection contains programs for logging, rig control, radio modifications, satellite tracking, packet, RTTY, SSTV, CW-decoding, contest logging, DX-headings, grayline maps, written exam prep, QSL label making, antenna design, propagation and much, much more. Ham-Pak 1 contains all of our popular disks 1082-1150, from our ham radio series 1. Ham-Pak 1 also contains the famous MorseMan Plus code training program and the expanded words disk. Quite an assortment, even if we say so ourselves! This is a total value of \$157.90 for only **\$109.95** on 5.25" disks (plus \$4 s/h, \$9 overseas)! A total savings of \$47.95 over the regular price! (add \$30 for 3.5" disks)

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# Top IBM-PC shareware / public domain software

Our top selling disks and customer favorites  
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28	<b>FontEdit</b> - Complete font editor to create/modify HP Laserjet softfonts.
70	<b>Recovery Toolkit</b> - collection of tools to backup/restore FAT and much more.
116	<b>Anti-Virus Utilities</b> - A collection of the latest in Virus detection and eradication from the McAfee folks. A nice disk to have just in case!
165-166	<b>QModem</b> - (2 disks) - probably the best of all communications programs. Easy to use and set up. For landline BBS use but great split-screen for packet radio! Built in file transfer protocols. Hard drive req'd (version 4.5)
167	<b>Telix</b> - Small, fast & powerful telecommunications program. Popular on packet. Can run from a single floppy system (version 3.15)
240	<b>Post Card Writer</b> - top notch database system that prints post cards to IBM/Epson or HP printers. Has mail merge & does labels. (hard drive req)
241	<b>IRIS</b> - Electronic book authoring system. Easily converts existing ASCII text files to books. Great for designing references and general info books.
293-297	<b>Dan-CAD 3D</b> - (5 disk set) - Highly rated and extremely powerful 3-D wire frame and drawing/graphing system. Has programmable macro language and manual drawing - even has animation! (hard drive req'd)
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500-501	<b>Home &amp; Business Legal Guide</b> - (2 disks) - A disk set with more than 70 legal forms for home and business use. Even has a guide for common legal questions. One of the best selling disk sets ever! (hard drive req'd)
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606	<b>PB Clone</b> - Comprehensive library for QuickBASIC. Over 400 functions for arrays, disk, display, hardware, I/O, memory, mouse and much, much more.
607	<b>LibWiz</b> - QuickBASIC library manager for libraries and QuickLibraries.
608-609	<b>Visual Basic Database Library</b> - (2 disks) - extensive database system for Visual Basic users. Reads/writes dBase files. Extensive function selection.
771-775	<b>HyperPAD</b> - (5 disk set) - Extensive, easy to use (and object oriented) program authoring system. Very similar to Toolbook, but for DOS. You can design databases, tutorials, multimedia systems, hypertext systems, DOS front ends and just about anything else you can think of. (hard drive req'd)
810	<b>German Translator Dictionary</b> - Comprehensive translator that converts from German to English, and English to German. Does single words or phrases. Additional words are easily added. Great for the radio amateur.
811	<b>Italian Translator Dictionary</b> - same as disk 810, but for Italian.
812	<b>Spanish Translator Dictionary</b> - same as disks 810, but for Spanish.
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886	<b>Civil War Battle Set</b> - Captivating and easy to play battle simulator. Includes Shiloh, Gettysburg and Stones River. Includes scenario editor.
887	<b>Captain Comic</b> - all time favorite action/adventure game. (EGA req'd)
888	<b>Commander Keen</b> - Nintendo comes to the PC! The absolute BEST action/adventure game we have ever seen. Hot, smooth flowing graphics, fun and easy to play! Very addictive! (EGA/VGA, 640k req'd)
889	<b>Duke Nukem</b> - from the people who made Commander Keen, another high quality, Nintendo-like game for the PC. (EGA/VGA & Hard drive req'd)
915	<b>QuestMaster</b> - Adventure game creator, complete with EGA graphics, sound, .PCX import and dialog definition. Top system for game creation. (EGA req'd)
980	<b>EGA Arcade</b> - PCFender, a Defender/Stargate clone and Moraff's Pinball. Nice implementation of graphics in the old style games. (EGA req'd)
985-986	<b>Solitaires for EGA</b> - (2 disks) - A collection of nine solitaire games. All games are high quality and very addictive. (EGA/VGA req'd)
999	<b>Last Half of Darkness</b> - interactive, high res graphics adventure game. Spooky haunted house scenario set in eerie blue/black graphics! (EGA req'd)

Catalog #	Program Name and Description
1069	<b>Computer Buyers Best Prices</b> - extensive database containing the latest and best prices for computer hardware. (PC's, printers, modems and much more!)
1079	<b>National Geographic Index</b> - covers from 1957 to 1990. Articles are indexed by name or topic. Database is fully user changeable.
1090	<b>MiniProp 2</b> - The king of propagation forecasting. Gives detailed forecasts with even a minimal amount of data.
1091	<b>TrakSat</b> - Satellite tracking system that monitors multiple satellites at one time. User configurable and comes with good documentation plus several examples.
1110	<b>K1EA's CT Contest Logging</b> - the most talked about contest logger around! Does CQWW, ARRL DX and more contests (version 4.17)
1122	<b>Log-EQF</b> - N3EQF's great, full featured logging program. Very easy to use - even controls Kenwood HF rigs. Quickly becoming a favorite.
1132	<b>Packet Radio Tutorial</b> - a very detailed tutorial and introduction to the world of packet radio. 18 chapters of text. Easy reading.
1144	<b>LANLink</b> - terminal program that is taking the packet world by storm! Works on AEA, Kantronics, MFJ and other TNCs. Features galore!!!
1146	<b>AA4RE's Multiconnect PBBS</b> - Latest newcomer to the packet BBS world. Allows 4 simultaneous connects to one TNC/PC setup! (hard drive req'd)
1156	<b>Skyglobe</b> - The best star viewing system we've seen! Great graphics and many, many features. Like having a planetarium on the PC!
1199	<b>SoundZ</b> - CD/Tape/Recording collection manager. Very sophisticated. For the audiophile who wants to keep detailed info on his collection.
1205	<b>Weather Radar Plotting</b> - displays weather radar maps in color. Data can be manually entered or downloaded from NOAA via modem. Plots up to 900 mi.
1291-1297	<b>SeedMaster KJV Bible</b> - (7 disks) - Complete KJV Bible, with concordance search capability. Allows comments to be placed anywhere. Great for study or preparation. Fun and easy to use. (hard drive req'd)
1350-1351	<b>Electronics Tutorial</b> - (2 disks) a complete AC and DC electronics tutorial. Similar to upper level high school / intro college courses in terms of content.
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1401	<b>Window's Tools 1</b> - large collection of tools for Windows. Different cursors, tilers, free memory and several utilities that enhance MS Windows usage.
1402	<b>Window's Tools 2</b> - tools for the Windows desktop. Datebook with calendar, ZIP file manager, HP calculator emulator and much more.
1413-1414	<b>Metz Window's Tools</b> - (2 disks) - Highly rated collection. Autodialer, app runner, keyboard lock, as well as desktop navigators and file manager.
1415	<b>Aporia</b> - top file manager for Windows. Move, delete, view, compress files. A lot like the Macintosh interface. Even create your own icons.
1417	<b>Command Post</b> - Top notch menuing system for windows. Customize your setup to do exactly what you want. Has file manager/browser w/ blanker.
1460	<b>Window's Checkbook Manager</b> - two great checkbook programs for Windows. Wincheck & Checkbook - powerful and easy to use.
1480	<b>PC Project</b> - Project management for Windows. CPM, Gantt charts, PERT charts, CPM calcs, resource lists and more. Even comes with source code.

**For a limited time, when you place an order for \$40 or more from our ads, you can pick 2 disks of your choice, free! (offer expires May 1, 1992)**

1491-1494	<b>Games for Windows</b> - (4 disk set) - large collection of games for Windows. Everything from Tetris clones, shoot-em ups, VGA common, checkers, puzzles, Tahtzee, chess, poker, and more (EGA/VGA recommended)
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1498	<b>Mandelbrot for Windows</b> - Generate fractals using Windows 3.0.
1630-1631	<b>Congressional Locator</b> - (2 disks) - gives the name, address, phone numbers, district, committee membership and other information, for any member of the Senate or House. Can even generate letters!
1670	<b>PCX Clipart of the World</b> - .PCX format clipart, showing the outlines of countries and continents of the world.
1801	<b>The DX'er</b> - nifty program that gives bearing, distance (to DX), sunrise/sunset, common terminator, MUF, grid locator and DXCC database.
1803-1804	<b>YagiMax</b> - (2 disks) - K4VX's outstanding yagi antenna analysis program! Perform full analysis on just about any type of yagi antenna, even those with tapered elements. Optimize spacing, SWR, center freq., center of gravity and plots just about everything. No coprocessor needed! (hard drive req'd)
1811-1815	<b>Amateur License Preparation</b> - (5 disk set) - David Barker's fantastic license prep course. Novice thru Extra with the latest question pools and quizzes. Even has basic CW training built in.
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1840	<b>Shuttle Tracker</b> - high res tracking - tracks real time or elapsed. Customizable with good documentation & great graphics (graphics monitor req'd)
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1897	<b>RIG-EQF</b> - N3EQF's fantastic rig control program for the Kenwood series of radios. Highly rated and easy to use. (interface req'd)
2000-2002	<b>Empowering Your Mind</b> - (3 disks) - a collection of disks that help you expand your mind and enhance creativity. On disk is Think Thunder!, Unleash Your Creativity & Thunder Thought is also included. Great for idea generation.
2010	<b>Credit Power</b> - A disk packed with information on obtaining credit, enhancing your credit rating, dealing with collection agencies and much more.
2015	<b>Cumberland Diary</b> - Sophisticated, but easy to use diary program. Allows multiple entries per day and password protected. (Hard drive/640k RAM)

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is adequate space in the date blocks to note local through international events of interest.

Each picture of a key is accompanied by its history. The January 1992 through January 1993 featured instruments are The Martin Rotoplex Bug, The Legendary Mac Key, The Muse Back Key, The Vertical Vibroplex, The Original Omnigraph, The Famous Tri-Tet Transmitter, The Tilted Dow Key, The Dentsuseiki Swallow, QRP Delights, Dual speed-X Delights, The Eddy-stone Bug, The Custom-Made Mercury Paddle, and The Famous Marconi Keys. If you are a code enthusiast (like myself) you will enjoy this calendar.

Dave Ingram, K4TWJ, is a top collector and refurbisher of telegraph instruments. His key collecting tips are included on one page of this calendar, with two pages describing modern keys for collectors. 1992 special events are listed in chronological sequence on a separate page.

The cost is \$5.95 per calendar, plus s&h charges. The catalog number of this 1992 calendar is MFJ-27. If you want to order a calendar, or if you want additional information, the address to use is MFJ Enterprises, Inc., P.O.B. 494, Mississippi State, MS 39762. Their telephone number is 601-323-5869.

## Reprints

This column frequently concludes with my

offer of a set of printed aids. A set is sometimes requested by an individual who is a new amateur or a prospective amateur. However, most requests come from licensing course instructors. I urge them to duplicate items for distribution to their students. Material can be duplicated as is, or it can be revised to suit the preferences of individual teachers. My only concern is to get good information to those who need it to progress in the amateur radio service.

I have a two-page list of the printed aids which are currently available in a set. It lists 13 items with introductory information, 9 code reprints, 12 theory items, 9 reprints of miscellaneous data, 15 articles of station information, and 33 reprints of operating information. Items are frequently deleted from the set of printed aids as newer items are added to the set. Basically, the set increases in size at a slow rate. If you want a free copy of the current printed aids list, send your self-addressed stamped envelope to my California address. Please remember to include a note to let me know what you are requesting. I will try to include a sample printed aid with each list I mail. I receive many requests for information. In almost every instance, I send a reprint of one of my previous articles to provide the requested information.


If you have printed aids, please read them very carefully. Each one is intended to serve as a bridge to transfer essential information between us. I do my part of the

job, please do your part of it by reading the aids.













## Printed Aids

My previous columns contain information that is useful to new and aspiring amateurs. Many of these items have been reprinted for distribution to students of licensing courses I instruct. For ease of use, these printed aids have been separated into six categories. These categories are introduction, code, theory, station, operating, and miscellaneous. Outdated items are continually replaced with newer material. Fifteen dollars brings a complete set of current printed aids, including shipping costs. A list of these printed aids will be sent to anyone who requests it and sends a business-size (#10) self-addressed and stamped envelope to my California address. Any single item is available at no charge to anyone who supplies a self-addressed and stamped envelope. When a single item is being requested, it is advisable to supply a large (at least 9 by 12 inch) envelope and to include a couple of extra stamps (loose in your envelope) in case extra postage is required. Some items are long. Licensing-course instructors are welcome to revise and/or duplicate these items to suit their requirements.

73, Bill, W6DDB



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ALL ABOUT THE WORLD ABOVE HF

## Still More 6 Meter Openings

**T**he Murphy's Law for column writers is that if one has a deadline to meet, then news will break right at the deadline, forcing a rewrite of the column. Such was the case in the early days of January. Once again the magic band of 6 meters provided some exciting and wonderful DX for those fortunate enough to be on the air. After a holiday from activity on January 1, the band began opening on Thursday, January 2. The morning started out with stations all along the east coast working stations in Europe. Then sporadic-E conditions on both ends of the circuit opened the band further so that stations in Oklahoma and Arkansas were having brief openings. Connie, K5CM, snagged Jos, PA0LSB, and PA2VST. Ray, W9BN, saw the band open in a big way when he worked two stations in Greece, two stations in Italy, an OK, and a YU.

The next day, Friday, January 3 provided more of the same type of openings for the east coast stations, plus a smattering of sporadic-E openings in various parts of the country. Saturday, January 4, provided still more European openings to the east coast plus a few other parts of the eastern U.S. and the Caribbean and to isolated parts of the southwest. Sporadic-E again was present in the U.S. as well as throughout Europe. Because of the sporadic-E conditions on both continents, signals that were propagated on F2 were found to be landing into totally unexpected areas. For example, Dave, N5JHV, was fortunate enough to be in the right landing zone to be able to work fifteen Europeans, including DJ, Yu, and Italy, all for new countries, plus an assortment of G's, PA's, and F's to round out that excellent opening. Additionally, stations in the Caribbean were working into Europe. They included Bobby, VP2MO, Arnie, CO2KK, Bill, KM1E/C6A, and John, KP2A.

Again, on Sunday, January 5 still more openings to Europe from the east and still more sporadic-E openings which enabled many stations in the northeast and southeast and as far west as Texas to work Bill, KM1E/C6A, for a new one. Additionally, transcontinental openings between the northeast and west coast took place. Among the stations getting in on the action was Don, VO1QF. Alerted to the reception

reports of the VO1ZA beacon, Don got on 6 meters and worked a number of stations as far southwest as Texas. Later that afternoon Hawaii and New Zealand were worked in the northwest and southwest areas of the U.S.

Monday, January 6 probably provided the most spectacular opening of those days. Stations as far west as Ohio and eastern Oklahoma, as well as all over the eastern part of the U.S. and portions of Canada, worked literally hundreds of European stations. Among the countries reported being worked in the U.S. were (numerous) G's, GD, GI, GW, F's, I's, PA's, LX, DL's, YU's, OK's, ON's, OZ, and YO. Around 2040Z Alaska was worked in Oklahoma (KL7NO by N6CL) while Hawaii was reporting reception of Oregon. Later that afternoon the southwest and southeast experienced another sporadic-E opening, lasting late in the afternoon. That opening allowed Arnie, CO2KK, to work several stations in the southwest and was probably partly responsible for him working NL7OW for a new country/state. Later still, JA's were reported in the northwest, southwest (as far east as Arizona), north (Minnesota), and Atlanta, Georgia, while Alaska was worked in various parts of the southeast. Even later, Emilio, XE3EB, worked NL7OW for his 49th state (he still needs South Dakota) and a number of stateside stations. Finally, late that evening (0300Z-0400Z, January 7) stations in VE1 were reported working east coast stations and Costa, CU1EZ.

As I am rewriting this part of the column the liaison frequency of 28.885 MHz is once again bristling with activity. Some European stations are reporting contacts with HI8A, while a few east coast stations are starting to report European openings. Bill, KM1E/C6A, is reporting European openings as well as east coast and northeast contacts, while Emilio, XE3EB, is reporting hearing stations in New England. John, KP2A, is reported working VE1s, and 9H5ET and CU1EZ are being heard working stations throughout the east and midwest. Additionally, stations are being worked around the country on sporadic-E and backscatter. It looks like another day of good 6 meter activity will have taken place. However, it must be reported in next month's column.

By contrast, December was relatively quiet. However, among the notable exceptions were these contacts that took place on December 18. At 1855Z, Shel, NI6E/

KH6, worked Ron, KB3QM, in Delaware for Shel's 50th state. Then at 1937Z Shel returned the favor by working Leta, WA2QCE, for her 50th state.

### Quads Also Provide QSOs

Unfortunately, the activity of those days overshadowed the *Quads* meteor showers. Stations that work both 6 and 2 meters were tempted to stay on 6 meters to complete contacts with DX stations. Nevertheless, a number of stations reported completion of schedules during the showers. Among the participant in the showers was Arnie, CO2KK. Due to problems with his beam he was forced to use vertically polarized antennas. Because of his antenna problems and his limited power (25 watts) he was not able to complete any skeds. However, he did hear four different stations.

### Hamfests Important To The VHF Operator

The following hamfests have a particular appeal to the VHF and above operator because of the emphasis of the hamfest or because of featured speakers.

**Charlotte Hamfest and Computerfair:** The Mecklenberg Amateur Radio Society will present the Charlotte Hamfest and Computerfair, on March 7-8, to be held at the Charlotte Merchandise Mart, Charlotte, North Carolina. The featured speakers will include Dave Blaschke, W5UN, the holder of the first 2 meter DXCC, who will be speaking on the VHF 2 meter EME experience; Chip Margelli, K7JA (from Yaesu), who will be discussing his experience of getting Albania on the air; Jack Barr, WD4JWO, Chief Engineer—Turner Satellite Division, whose topic will be CNN in Iraq, the real story; and Ron Oates, AA4VC, who, fresh from Navassa, will give the first hamfest report of this most recent DXpedition. This is an ARRL sanctioned hamfest. Therefore, members of the League will be present. Included among the representatives will be one from the DXCC desk to verify your cards.

Hotel accommodations are with the Charlotte Best Western. If you are interested in staying in Charlotte, you had better call immediately, since the NCAA basketball tournament will also take place the same weekend. For reservations call 1-800-528-1234, and ask about the block

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of rooms reserved for the hamfest. For ticket information, contact Charlotte Hamfest and Computerfair, P.O. Box 22136, Charlotte, NC 28222-1136, or call 1-704-536-7373. For booth information, contact Robert Starling, N4GVF, 7921 Holly Hill Road, Charlotte, NC 28227, or call 1-704-568-7611.

**1992 West Coast VHF/UHF Conference:** The 1992 West Coast VHF/UHF Conference is scheduled for May 15-17. If you live on or near the west coast and weak signal work, ATV, FM, or packet (did I leave anything out?) interests you, then this is your conference. Among the conference speakers will be Joe Cadwallader, K6ZMW, whose topic will be noise figure measurement; Cliff Buttschardt, W6HDO, who will speak on amateur satellites; and Joe Moell, K0OV, will discuss transmitter hunting (a very practical way of getting experience in tracking down that elusive jammer). Loraine McCarthy, N6CIO, will conduct a Novice and No Code Tech class which will be immediately followed by VE testing. The Saturday night banquet speaker will be Gordon West, WB6NOA, and the Sunday morning breakfast speaker will be Wayne Overbeck, N6NB. Later, on Sunday, you will have the opportunity to swap your junk for someone else's junk at the conference-sponsored swap meet.

There will be plans for exhibits, including possibly a couple of antenna manufacturers. Speaking of antennas, if you bring yours for measurement, you will have it measured on a computerized antenna range that features a printout by a color plotter. If you bring your preamp, you will be able to have its noise figure measured using the latest HP equipment. After your preamp is measured, you will receive an extensive report showing its gain characteristics over its frequency range.

Last year's conference attendance doubled over the previous year. Also, last year over \$2000 worth of prizes were given away. Registration (by May 1, for preregistration awards) is \$15.00. Advanced registration for the banquet is required, with the fee being \$25 per person. The breakfast cost is \$10, payable at the door. Proceedings of this year's conference will be available at the door for \$10.00, or later from the ARRL for \$12.00, plus \$3.00 shipping.

For your accommodations, the conference committee has made arrangements with the Holiday Inn on the Beach in Ventura. When they say "on the beach," they mean right on the beach. Additionally, the hotel has a heated pool. Bring your swimwear! Room rates are very reasonable, only \$55.00 per night, double occupancy. However, you had better phone the toll-free reservation number (1-800-842-0800) very soon, since last year's conference sold out the hotel!

You might also bring your VHF/UHF SSB gear, because there is always the possibility of a tropo duct opening between that location and Hawaii!

The West Coast VHF/UHF Conference is truly one of the hottest, fastest growing conventions catering exclusively to you who work some sort of VHF activity. For more information and an application form, contact the Ventura Amateur Radio Club, P.O. Box 2103, Oxnard, CA 93033. You may also want to phone Steve Noll, WA6EJO, at 1-805-647-4294.

**First VHF Ionospheric Symposium to be held at CSVHF Conference:** The first worldwide VHF Ionospheric Symposium will be held at this year's Central States' VHF Conference during the days of July 16-19, at the W. O. Hilton Hotel, Kerrville, Texas. Because of the very high level of worldwide activity due to the recent solar cycle peak, the organizers expect there will be a special emphasis on presentations and discussions concerning 6 meter propagation. However, they are looking for papers on all forms of ionospheric propagation, including F-layer, transequatorial, sporadic-E, scatter, aurora, field-aligned irregularities, knife-edge or any other modes of propagation on any VHF/UHF/microwave frequency.

If you are interested in submitting a paper and/or making a presentation at the forum, you are urged to do so by April 15, 1992. Since this is a conference within a conference, these papers should be submitted to Dave Batcho, N5JHV, 5611 Desert Star Rd., Las Cruces, NM 88005 (1-505-526-1861). If you are interested in submitting a paper on another VHF/UHF/microwave topic, you should submit that paper to Derwin King, W5LUU, 7335 Wild Eagle Rd., San Antonio, TX 78255. All accepted papers will be contained in the proceedings published by the ARRL. Copies of the proceedings will be included in your registration fees. Extra copies of the proceedings will be for sale at the door.

For information on attendance at the Central States' VHF Conference, contact Larry Hazelwood, W5NZS, P.O. Box 54437, Oklahoma City, OK 73154 (1-405-848-6400).

## Radio Shack's HTX-202 Has Unusual Power-Up Frequency

While Gordon West, WB6NOA, was performing a product review of Radio Shack's new FM handheld HTX-202, he discovered to his dismay that it powers up on 144.200 MHz. Additionally, he found that the first memory is preprogrammed for 144.200 MHz. He has written Radio Shack pointing out the potential problems involved in having a new ham operating FM on the national SSB calling frequency. Radio Shack is known for its sensitivity toward the amateur radio community, and hopefully the company will make an effort to modify this otherwise very good handheld so that it will power up on one of the simplex frequencies.

## DXpeditions

**The DXpeditions of Joel Paladino, N6AMG:** Well-known world-traveler/DXpeditioner Joel Paladino, N6AMG, operated from two DX locations in the late fall of last year. In early November Joel set up shop in Morocco as CN2JP. He operated 6 meters and 2 meters, with the latter being on EME. His operation from CN represented the first time this country was activated on EME. While there he made around 900 QSOs in 56 countries on 6 meters and 20 QSOs in 6 countries, and 14 states on 2 meters.

From Morocco Joel traveled to the Azores. Once again he set up operations on 6 and 2 meters, this time as CU3/N6AMG. The operation from the Azores also represented a new country for 2 meter EME enthusiasts. Unfortunately, Joel's arrival to the Azores was during one of the lulls in propagation on 6 meters. His total QSO count for 6 meters was only 11 contacts in 5 countries. His total QSO count for the 2 meter EME operation was 8 contacts in 2 countries.

Joel's equipment for the EME operation consisted of a Kenwood TR-751, and two RF Concepts 2-117 amplifiers operating in parallel, for a total power of 360 watts, and feeding four 8-element prototype M2 antennas. These antennas, including the H-frame, were the same ones used by Mike, K6MYC, on Ponapai some years ago. The TR-751 and one of the amplifiers were loaned to Joel by Bob, WB5LBT. The tripod used for the EME antennas was designed and built by Joel's father. The rotators used were a KR 500 (elevation) and an Alliance HD 73 (azimuth).

From Morocco the following stations were worked on EME: WB5LBT, W5UN, SM7BAE, SM5FRH, HB9CRQ, I2FAK, KB8RQ, DL8DAT, N5BLZ, W7FN, K1WHS, K2GAL, K1MNS, K9MRI, W4ZD, W7HAH, K13W, W0HP, N1BUG, KD8SI, and K6MYC. Additionally, CN8ST and ZB0T were worked on tropo.

From the Azores the following stations were worked on EME: WB5LBT, K2GAL, W7HAH, KD8SI, KB8RQ, I2FAK, SM7BAE, and SM5FRH. Additionally, CU3AK was worked on tropo, making for a QSO from one end of the island to the other.

**DXpeditions To Watch For:** Jay Kobelin, WA2FIJ, is heading up a group that plans an operation from Clipperton sometime this month. Arrangements were being made to include 6 meters on the trip. Listen for "on the air" announcements for more details.

Rick Senones, KH6JEB, plans a return trip to Kure Island sometime this or next month. You can find out more information as the time approaches by listening on the 6 meter liaison frequency of 28.885 MHz.

Two Japanese amateurs, JI1CQA and JJ1PXZ, are planning a return trip to the rare grid square of PL14, located off the



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NS-663BM/BN	140-525MHz	30/300W	SO-239 or N
<b>Digital</b>			
DP-810	1.8-525MHz	0-1.5kW/0-15W	SO-239 or N
DP-820	140-525MHz	0-150W	SO-239 or N
DP-830	1.8-150MHz	0-1.5kW	So-239
<b>Mobile</b>			
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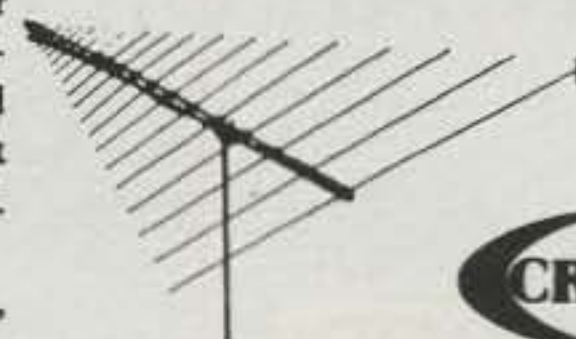
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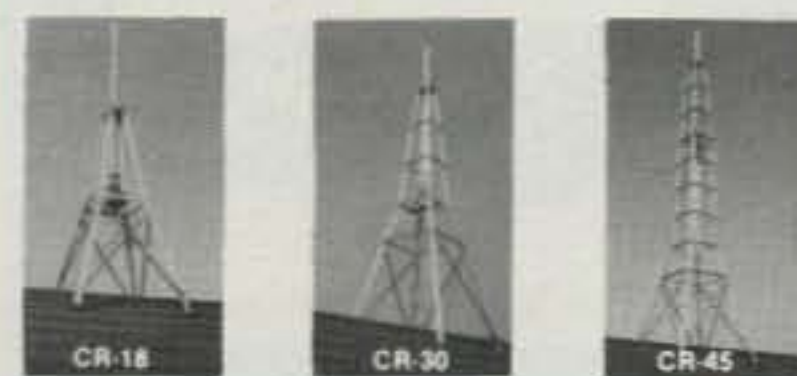
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CLP5130-1



CR-18

CR-30

CR-45

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CR30	9'10"	39"	27@90mph	1,322	33
CR45	14'9"	39"	23@90mph	881	57

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coast of Okinawa, again sometime this or next month. Watch for announcements on this in forthcoming issues of the "50 MHz DX Bulletin."

### Another Publication

Word has come to me from Chris Gare, G3WOS, of the well-written and compact (you can stick it in your coat pocket in order to read it on the train or in the bus) magazine entitled *Six News: The UK Six Metre Group Newsletter*. It is published by the UK Six Metre Group, an organization composed of over 600 members from over 60 countries. It is packed full of information pertaining to international operations on 6 meters as well as construction articles and articles of general interest to the serious 6 meter operator. You may obtain your subscription by ordering it from Mr. P. J. Turner, Flat 6, 132 Marine Parade, Brighton, Sussex BN2 1DE, United Kingdom. If you are paying with U.S. dollars currency, please make your payment (check or money order) out to "K. Willis."

### Current Contests

**VHF Activity Contest:** The 75 Meter VHF Group, which meets every Monday evening at 9 PM Eastern time on 3843 kHz, polled its regular check-ins to see what, in

their opinion, would stimulate activity on VHF and above. As a result of their informal survey, they have planned a contest. This contest will take place over a two week period beginning 0000Z March 9 and ending 2400Z March 22. The object of the contest is to work as many stations as possible. Therefore, duplicate contacts will be allowed. The exchange is the signal report plus the first five digits of your zip code.

Send your logs to Byron Swainey, WA8NJR, 7523 Brookville Rd., Oxford, OH 45056. Since this is purely a volunteer effort on the part of a few guys, they have requested that you also send \$1.00 with your log to defray the cost of postage and printing certificates. Results of the contest will be published in a future issue of this column.

**222 MHz EME Activity Weekend:** While the following is not a contest, it deserves to be mentioned here. Gary Gerber, KB0HH, sent me a note explaining the 222 MHz Activity Weekend. A group of 222 MHz enthusiasts have gotten together and decided to (1) help Joe Reisert, W1JR, complete his WAS (for 13 bands!), and (2) have some fun on 222 MHz EME. Joe needs Kansas, Nebraska, and Hawaii to complete his WAS on 222 MHz. Gary is planning to put Kansas on the air, and Arlis, W7XU, using Marc, WB0TEM's portable dish, will be operating from South Dakota.

(Marc is planning an operation from Nebraska in the near future following the weekend to hopefully give Joe his last state.) Therefore, the weekend of March 14-15 has been declared 222 MHz EME activity weekend. You can look for schedules and other information to appear in *220 Notes* for this month. Since this is not a contest, send no logs. However, the results of Joe's efforts (and anybody else's, for that matter) will be published in a future issue of this column.

### ARRL 222 MHz Petition RM-7869

You will remember reading in a sidebar in last month's column that the ARRL has filed a petition seeking a narrow "no repeater/auxiliary" window at the bottom edge of the 222 MHz band. The petition seeks to reinstate a protected window for weak-signal work that was lost when the bottom two megahertz were lost last August.

The petition states that operators of weak-signal stations require a certain amount of co-channel and adjacent-channel protection from other types of amateur operation. The petition also states that since other amateur radio frequency bands (such as 50, 144, and 430 MHz frequency bands) have such protected segments, it is justifiable to have such a segment in the 222 MHz frequency band.

The propagation on 222 MHz is in some ways a mixture of the best of the adjacent VHF and UHF bands. While it shares tropo, meteor scatter, and other forms of propagation found on 2 meters, it also shares the reflective propagation characteristics found on the UHF frequencies, such as 430 MHz. Operators, such as Wayne Overbeck, N6NB, and Chip Angle, N6CA, on their DXpeditions have found that tropo communications are many times better on 222 MHz than on the lower VHF frequencies. Additionally, tropo ducting between California and Hawaii and between other land masses adjacent to bodies of water often takes place during regularly predictable times of the year. Furthermore, on rare occasions sporadic-E may affect communications on this band. Also, EME (such as the above activity weekend promotes) is another very viable weak-signal form of communications for this band. Therefore, it is rational to conclude that some sort of need for protection of weak-signal operations does exist.

It was in this light that the members of the ARRL Board of Directors voted 13 to 2 (with one negative vote and one abstention) in favor of petitioning the FCC for the protected segment of the 222 MHz band.

While the ARRL band plan (see the sidebar of this column in the October 1991 issue for a copy of the bandplan) recognized a voluntary protected segment of 150 kHz, the Spectrum Management Association (SMA) of southern California does not. The



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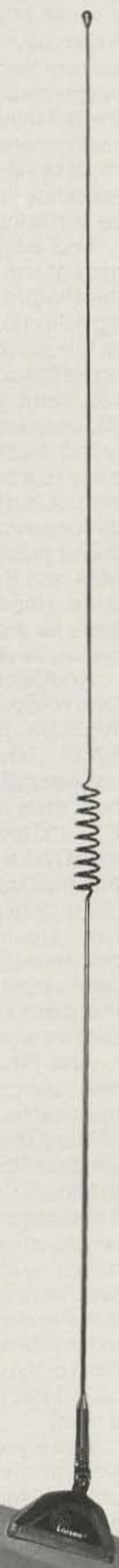
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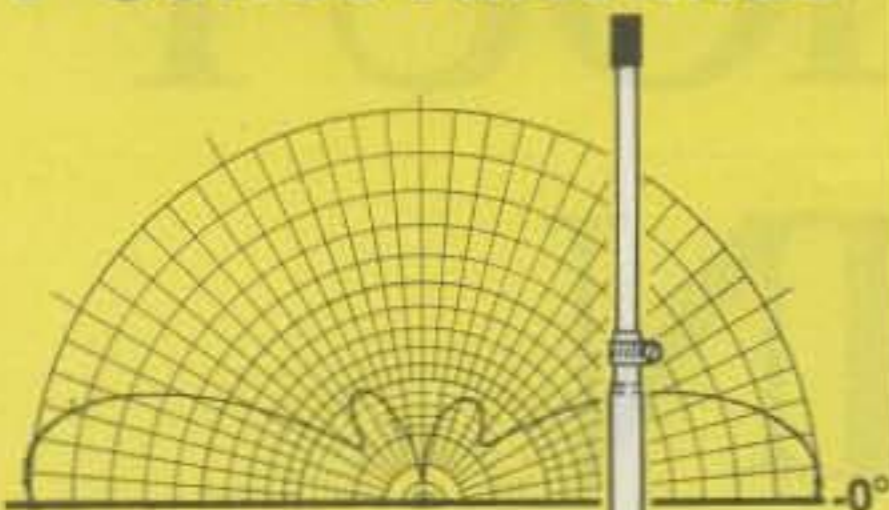
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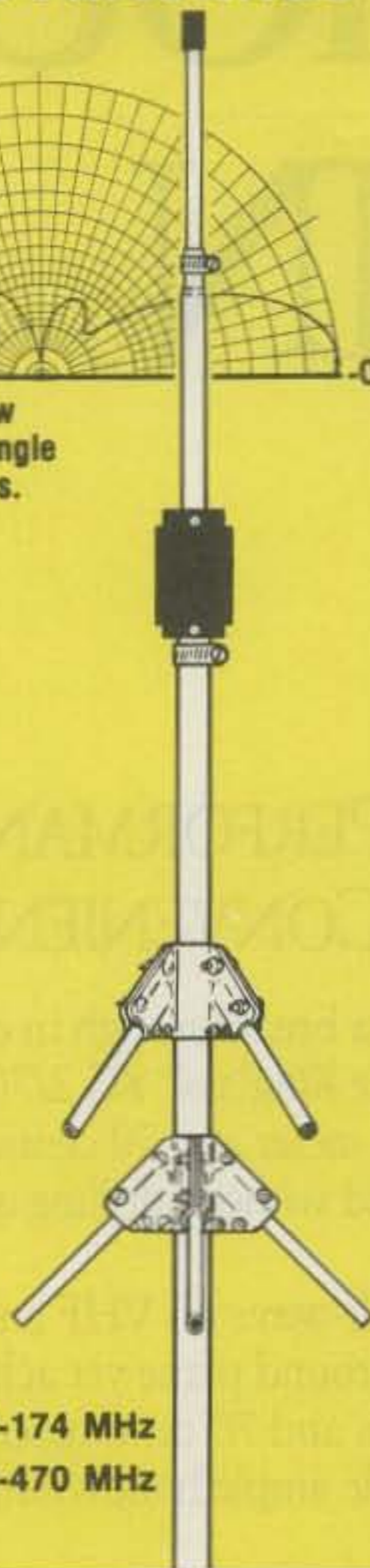


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SMA, seeing a unique situation peculiar to southern California and its proliferation of repeaters on every available VHF and UHF frequency, developed its band plan to accommodate those many repeaters in operation in that part of the country. Their band plan recognizes only a ten kilohertz window at the bottom of the band, plus a window of nonrepeater operations between 223.400 and 223.500 MHz. Clearly, these two band plans are not aligned.

Naturally, the filing of the ARRL petition set in motion a collision course between the two band plans. The reactions of the members of SMA were predictably strong and negative. Rumors of lawsuits against the League even circulated on a national amateur radio broadcasting news service. (These rumors have since been found to be unsubstantiated.)

Subsequently, your editor has conducted extensive interviews with amateurs representing both sides of the issue. On the side of the petition is the feeling that (as stated above) since other bands have such a regulated protected window, this band should as well. On the side opposing the petition is the position that amateur radio operators should be able to agree to a band plan voluntarily.

As time has passed, people with cooler heads have surfaced. One such person is Mark Gilmore, WB6RHQ. Mark is on the board of SMA. However, he has developed a conciliatory perspective toward all sides of the issues. Consequently, he has surfaced as one who is walking a tightrope trying to find a solution that would accommodate the members of SMA and at the same time recognize the needs of the operators of weak signal modes. Mark has almost singlehandedly contacted many people on both sides of the issue in the southern California area, trying to get a dialogue going among the representatives of the respective opinions.

During the course of your editor's interviews it was discovered that few of the weak-signal people attended the SMA planning meeting that resulted in the above SMA band plan. One question asked of Mark and others was "Why was there so little representation of weak-signal operators at the SMA meeting that set the band plan?" The consensus opinion evolved around the feeling that the band plan of the SMA was set in concrete, and therefore attending the meeting would be of little use. Additionally, SMA has a rule that states that once one joins, he or she must wait until the next meeting to be eligible to vote. Mark explained that this rule was made several years ago so that a special interest group could not get together on the "spur of the moment" and en masse stack the votes according to their particular viewpoint. Many of the weak signal operators felt that because of this rule and the predisposition of the majority of members of SMA, their viewpoints would have no weight. Therefore, they felt compelled to

stay away from that very important meeting.

Since that meeting the subsequent pressure of the ARRL petition on the group has spurred Mark to work overtime in order to find some sort of positive solution. He has redoubled his efforts to involve the weak-signal community in the SMA. Parallel to this activity, your editor began finding a sense of a willingness to compromise among several people interviewed on both sides of the issue. Your editor also found people on both sides of the issue who felt the last thing they wanted to see was the involvement of the FCC. It appears that, as this is being written, both sides of the issue anticipate that a compromise solution may be surfacing.

Your editor has been waiting to submit this column until the last minute (much to the chagrin of Gail Schieber, our managing editor) in order to bring to you the latest on this petition. While realizing the information in this column will be "old news" when you read it, your editor brings this news to you because there exists the real possibility that this issue may very well be coming close to a positive resolution by the time this column is published. Within days after this column goes to Gail, meetings will be taking place involving first the board of SMA and then the members of SMA at large. Hopefully, at those meetings the basis for a positive solution to the dilemma will have been found.

**Another First in Microwaves:** Kent Britain, WA5VJB, reports that he and Al Ward, WB5LUA, had the world's first QSO on 5760.1 MHz using dielectric resonant oscillators (DROs) as the local oscillator on both ends of the QSO. The QSO was on SSB and took place between each operator's QTH, a path of 42 miles. Kent reported that their transverters drifted about 2 kHz per minute due to heating of the components around the DRO. Kent also reported that when they switched to CW, their notes were a pure T9. Additionally, Kent advises that plans are underway to construct a 10 GHz version.

**And Finally:** When does an antenna dish resemble an ice cream scoop? When the antenna dish is located in the back yard of Marc Thorson, WBØTEM. Last winter a series of storms dumped enough water into Marc's 32 foot dish so that when frozen, it created over three tons of ice! Marc reported some damage to the dish and its mounting stand. Marc thought for awhile about setting up a snow-cone operation, but later decided against it for lack of customers for all of that ice. Marc reports that most of the damage has been or will be repaired this month. Ah, the perils of being a ham!

Thank you again for all of your submissions to this column. You are the success of the column, and it grows as interest grows in it because of you. As always, if you have late-breaking news, call me at 1-405-528-6625. Until next month...

73, Joe, N6CL



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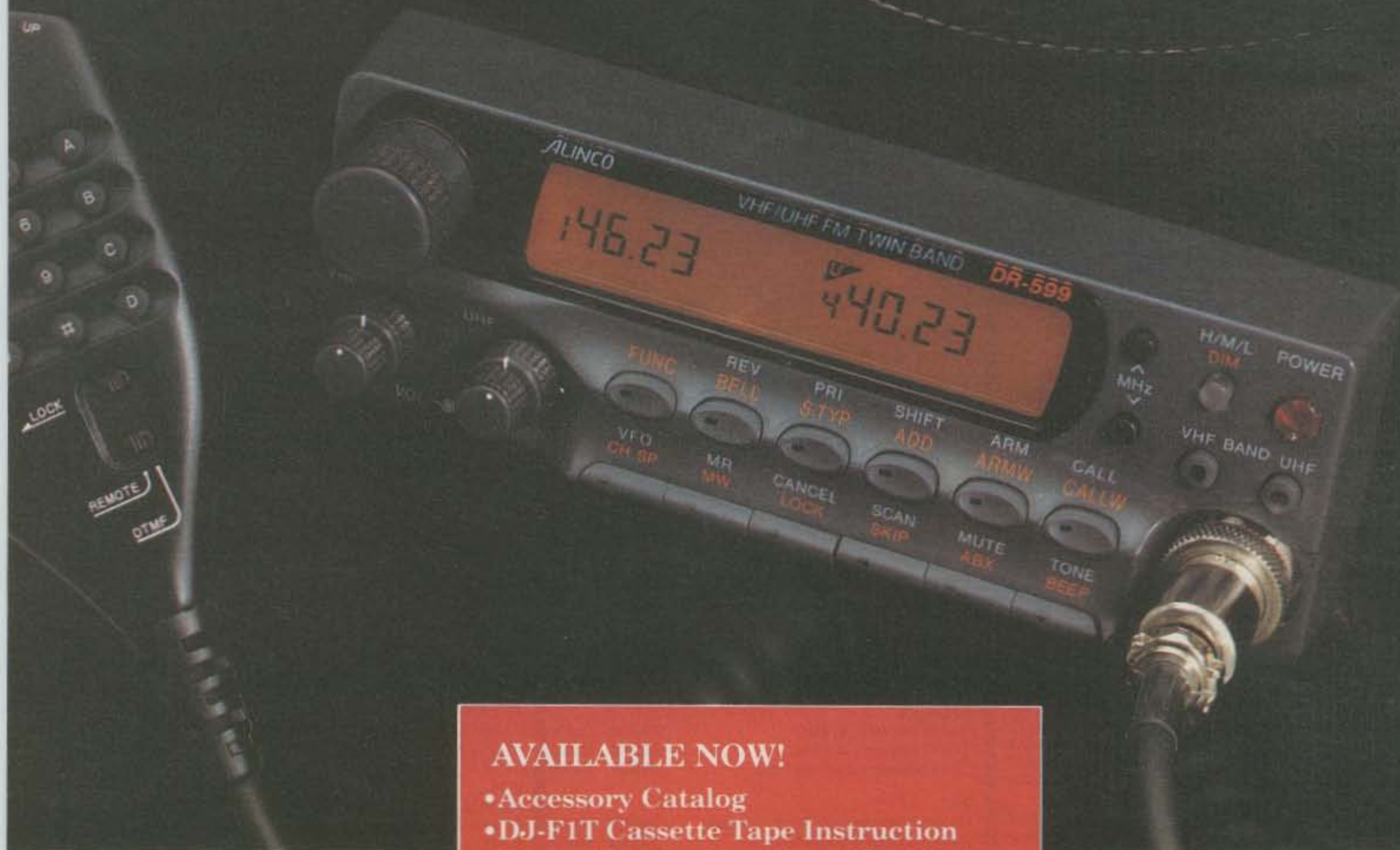


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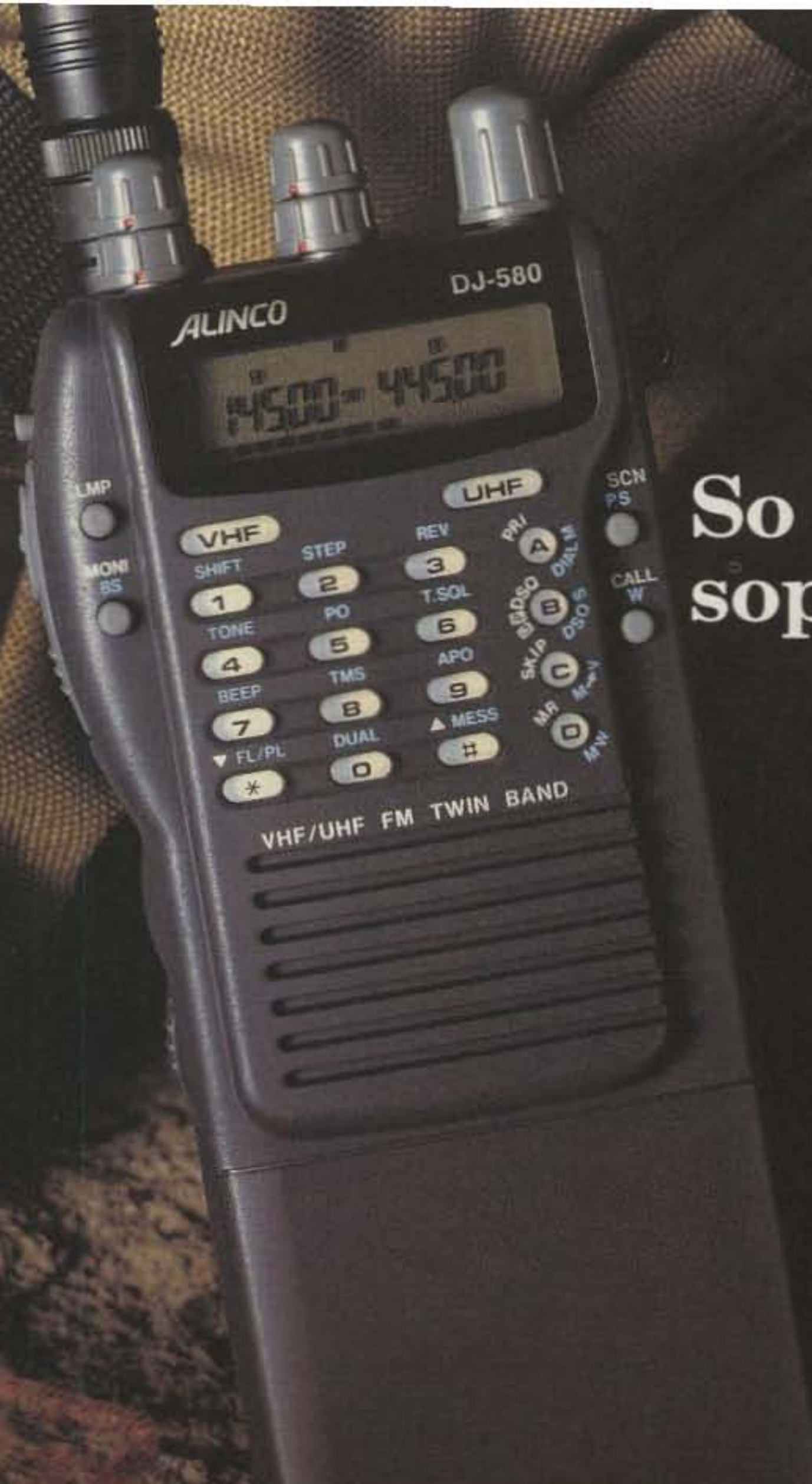
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## CONNECTING YOU AND PACKET RADIO IN THE REAL WORLD

### Weather Watch and the KTU

It is the goal of this column to provide an on-going progress report of the never-ending innovations that flow continuously into our packet radio hobby. This month is no exception.

With the trend towards developing networks whereby the users can converse over long distances via VHF and UHF, we've begun to enjoy the fun of the old-fashioned QSO along with the latest in networking technologies. To enhance the local area networks, from time to time we have introduced an idea or notion that makes use of the network in an even more favorable fashion.

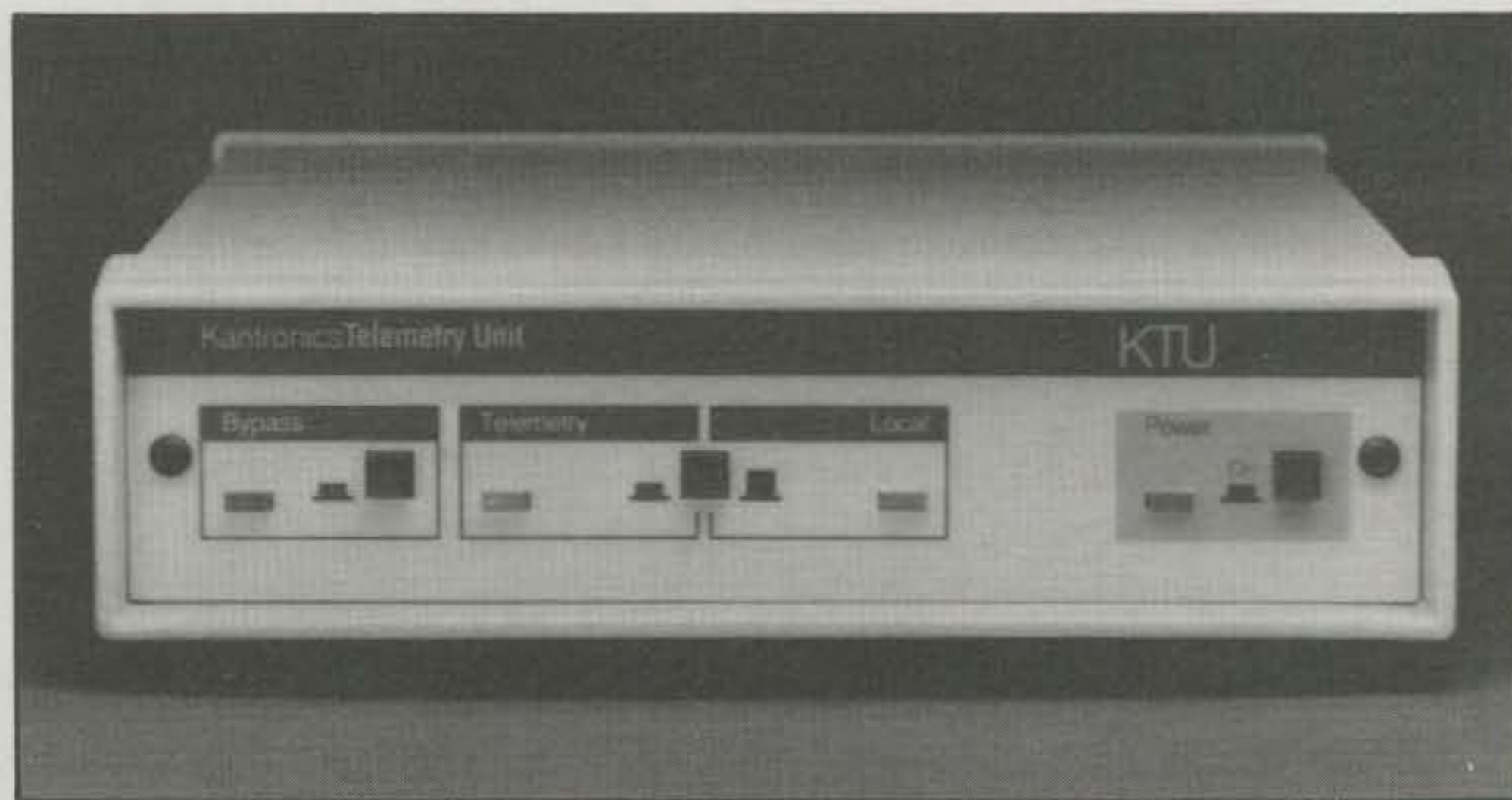
Recently some of the South Eastern Digital Association Network (SEDAN) members were discussing the use of the ROSE network as a weather alert system. This would be in addition to the emergency communications system that is already in place. The system traverses many cities and states, linking keyboard-to-keyboard users from one area into another.

The subject of weather always catches the interest of the safety-minded operator. This occasion brought up a new approach to the "weather watch" idea. Why not include a Weather Switch or Node in certain areas so as to sample the current weather conditions of that area? The idea was to make the connect brief and quick so as to prevent any long file download disturbance to the network.

#### Enter The KTU

**KTU** is an acronym that stands for Kantronics Telemetry Unit. This device provides a means of gathering data from several attached appendages that are supplied as options to be added by the system operator or users group as they see fit. The options range from an outside temperature sensor, rain gauge, etc., all the way to the optional weathervane (anemometer) that supplies data to the KTU, which in turn converts the analog readings into usable information. This information can now be accessed via a TNC that is attached to the serial data port on the KTU. The TNC is interfaced to a transceiver just as any packet station is normally connected (see fig. 1).

This setup can then be connected as though it were any other packet station. As



The Kantronics Telemetry Unit (KTU).

soon as the connect is made, the connect text of the KTU/TNC can be sent to provide the user with start-up information. This "connect text" may be entered into the TNC to resemble the following:

```
GALLATIN WEATHER: type D <enter>
TF—OUTSIDE TEMP
TPCB—TEMP INSIDE PC
RG—RAIN
WD—WIND DIRECTION
WS—WINDSPEED
```

The "connect text" is entered into the TNC using a control **V** and control **M**. This enables the TNC to accept the list of information shown above and display it to the connected user in the order shown. The control **V** and control **M** provide a linefeed without a carriage return so that each line is displayed individually. After you complete the connect text listing, you may then press the <enter> key to send a carriage return to the TNC and enter the text of the connect text message.

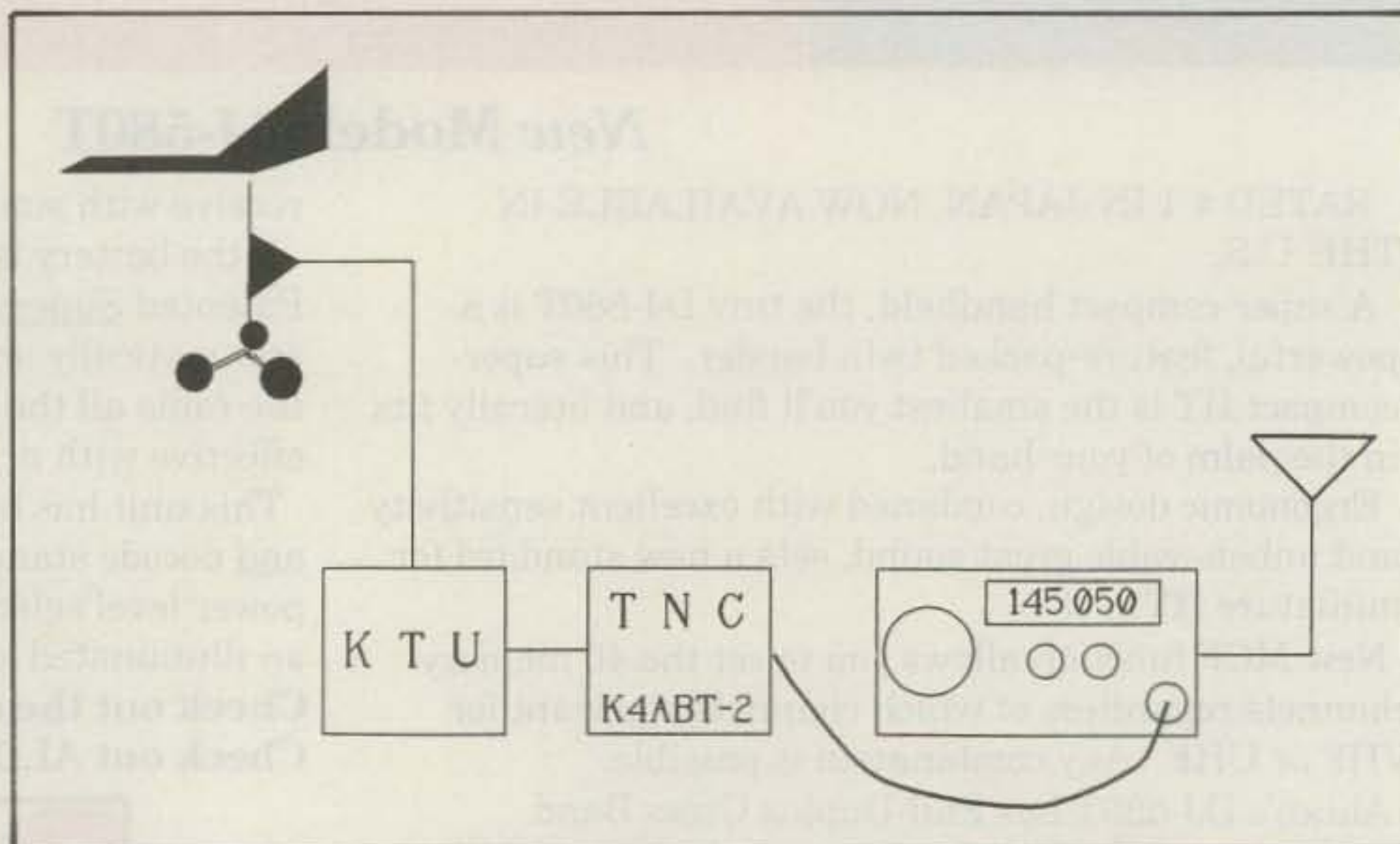


Fig. 1—The KTU configured as a remote weather node. While serving as a stand-alone remote weather node, the TNC can also be configured as a "digi" or network switch.

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The standard single-line text may also be used. However, the display I've shown here may prove to be easier for the user to understand.

The sensors attached to the KTU are initialized in a short SYSOP installed program.

**Program.** That word sometimes sends the incorrect message to the potential SYSOP. The implication is that we are about to embark on the need to learn some new code writing language such as Pascal, or "C." That is not the case here. For the purpose of this article we will refer to the KTU, user-installed "program" as the "configuration." Although the manual that comes with the KTU specifically calls the SYSOP's input a "program," in fact, it is the parameters which are being installed. Thus we are installing the parameter configurations into the KTU when we type the command **PR** followed by the sensor, data collection, parameters. The "program" is already burned into the EPROM of the KTU.

So to rid you of any concerns of programming, I can only add the following. It will take you about 30 minutes to read and understand how to build your configuration for the weather node. To bring the full picture into perspective, the configuration amounts to only one line of plain text.

Before I present you with one of these short lines of text, I must first describe what each plain text acronym means, and how they are related to each sensor input to the KTU.

The KTU is supplied with the external temperature sensor and a sensor mounted inside the KTU. The outside sensor is installed out of doors in a area where it can only be influenced by the temperature of the weather environment. The internal KTU sensor can be configured to read and store the temperature of the KTU PC board.

In addition to the temperature sensors, we have added the optional weathervane for wind direction and wind speed readings, and the rain gauge for the current hourly (or any other interval to which we set it) rainfall. By adding the two additional options, we have rounded out the local weather node to provide the following readings:

RG—RAINGAUGE  
TF—OUTSIDE TEMPERATURE  
WD—WIND DIRECTION  
WS—WIND SPEED

With this setup the KTU can be configured to provide two other items that are of use to the SYSOP if he/she wishes to look at the KTU from a remote location. These two added data streams are the PC board temperature and a reference voltage within the KTU.

## The Configuration

So that you can see how simple it is to configure (program) the KTU, here is how the configuration line of text might appear and

what each of the items in the line represent. The **wxn:** is the prompt from the KTU.

wxn: **PROGRAM R1H RG R1M V9 R30S TF TP A10S WD WS**

Here is a breakdown of the above KTU configuration:

**R1H RG**—commands the KTU to record and store the "Rain Gauge" (RG) reading once each hour.

**R1M V9**—commands the KTU to record and store the internal "reference voltage" (V9) at one minute intervals.

**R30S TF TP**—commands the KTU to record and store the "outside temperature" and the PC board temperature every 30 seconds.

**A10S WD WS**—commands the KTU to read and average the Wind Direction and Wind Speed every 10 seconds.

That's all there is to the configuration of the KTU. Yet if you are among those of us who like to experiment, the configuration schemes are endless with this system. The applications for a device such as this offer even greater potential in the commercial world, but for now we can afford to en-

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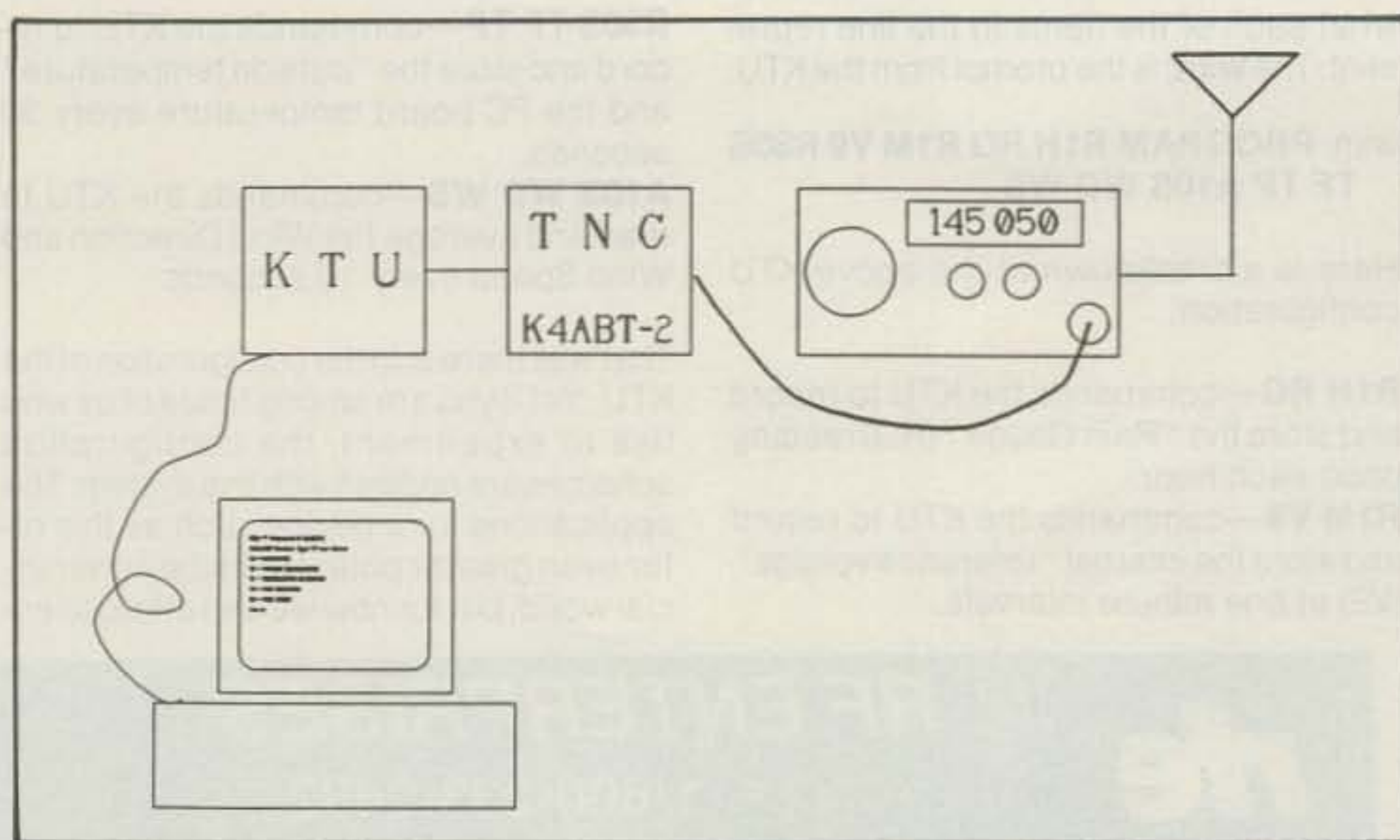


Fig. 2- When being operated local to the SYSOP, the weather node has provisions for direct serial I/O interfacing. The KTU provides security via a SYSOP-generated "password."

joy its practical use as a weather node.

The KTU has an internal clock feature that is set at the time of its implementation. The clock time feature is important because it time-stamps each reading with the current date and time. The "time-stamp" becomes an important feature as you will see in the next few paragraphs.

### Compiling Long-Term Data

Seasonal condition averages can be compiled. Variations in weather conditions are a matter of setting the KTU parameters for long-term data collection. From this data a histogram can be plotted using any of the sensor data from a KTU history download.

This is an integral function of the KTU that can be recalled by issuing a command either from an attached terminal (see fig.

2) or via a TNC/transceiver at a remote location (see fig. 1). For instance, if I wished to compile a history of the rainfall over the past 10 hours, referring to the "program" configuration above, I would connect to the weather node and issue the following command:

wxn: **D RG 10** <enter>

The weather node would return the following:

```
01/01/92 17:17:25 RG = 0000.6 IN
01/01/92 16:17:25 RG = 0000.6 IN
01/01/92 15:17:25 RG = 0000.5 IN
01/01/92 14:17:25 RG = 0000.5 IN
01/01/92 13:17:25 RG = 0000.5 IN
01/01/92 12:17:25 RG = 0000.5 IN
01/01/92 11:17:25 RG = 0000.5 IN
```

```
01/01/92 10:17:25 RG = 0000.5 IN
01/01/92 09:17:25 RG = 0000.3 IN
01/01/92 08:17:25 RG = 0000.1 IN
wxn:
```

From this listing we can readily see that most of the rainfall occurred during the first two or three hours of our data reading. If we were to ask for a larger number of readings, we might be able to determine the time the rain show began. This same format can be used to look at a history of temperature, wind direction, or wind speed.

### The Telemetry EPROM

From this point on, the application for this device is left to your imagination. Here is why I make this statement. Since I installed the weather node, I've learned of an EPROM for the KTU called a "telemetry" EPROM. Its purpose has set me into a frenzy that may prove to be the basis for future use of the KTU at this QTH in a totally different environment.

With the telemetry EPROM, the flexibility of the KTU is greatly enhanced by allowing us to use virtually any external sensor which supplies a 0 to 5 volt, or 4 to 20 milli-ampere linear output. This opens the KTU to use as a remote VSWR, power output, voltage, level, quantity, etc., device.

The telemetry EPROM enables the user to define the readings in inches, feet, meters, miles, area, volume, speed, flow, torque, pressure, and more. This opens ideas of reading millibars, or barometric pressure, in whatever conversion you care to think about. For now we are having fun with the weather node as an adjunct to our weather watch system.

### A Couple of Shortcomings

Just as we find in any system, there is always one place where we can make improvements. The KTU comes with good documentation, but attachments such as the external temperature sensor come with only 40 feet of cable. True, the manual mentions that you may order additional 40 foot extensions, etc. Yes, you guessed it: the 40 feet was a few inches short of the destination KTU. All the add-on sensors were the same. Sure wish the cables had been 50 feet long. No, I never ordered the extra 40 foot extensions. I chopped and spliced the added length from some four conductor audio cable that I had squirreled away in the attic.

The KTU sells for under \$300, and the options are priced accordingly. To obtain more information on the KTU and accessories, write or call Kantronics at 1202 E. 23rd Street, Lawrence, Kansas 66046 (913-842-7745; FAX 913-842-2021).

Have fun WXing!

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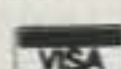
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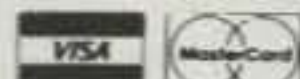
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## NEWS OF CERTIFICATE AND AWARD COLLECTING

**T**he Story of the Month for March is:

**Richard L. Hoyt, W5RIT  
USA-CA All Counties #733  
Mixed, 11-15-91**

"I joined the U.S. Navy in August 1927 and after Basic Training went to Radio School at San Diego. My rating at enlistment was Apprentice Seaman. After graduating from radio school, my first ship was the *USS Texas*.

"As code came easily to me, I was soon a high-speed operator assigned as a 'Flag Operator' on the team of Admiral H.A. Wiley, C-in-C U.S. Fleet. I carried a wooden board about one foot square with a hand key and phone jack attached to 50 foot cable. I followed the Admiral around the bridge when on maneuvers and transmitted commands to the fleet. The Admiral's call was F8Z and the Texas was NADV. Off Lahaina Roads, Hawaii, we had 18 battleships in column. The signal 'IX IM' and 'launch aircraft' was given. When all ships acknowledged 'ready' the admiral signaled me to give the 'execute' signal—a 5 second dash. Thirty-six planes hit the air (two per battleship) on my signal. What a sight! In 1928 that was really something! The Navy had two new carriers, the *Lexington* and *Saratoga*; the *Wright* and the *Langley* were converted coal colliers with flight decks.

"Becoming interested in ham radio, I 'bootlegged' on the mid-watch and didn't get my first license until 1931. My first call was W7BSR. I built a transmitter using the 'TNT' circuit from the ARRL manual. It called for a 210 tube, but I couldn't afford one and used a 250. The plate coil was copper tubing shaped by winding around an 'A' battery. Phone transmissions were made using an old telephone and manually holding a single turn coil down inside the plate coil.

"After Navy service and the worst of the Depression, the Coast Guard advertised for ex-Navy radiomen to come in at their old rank. Radioman Third Class paid \$60.00 a month and that was more than I was making, so into the Coast Guard. After that, with the Texas National Guard (Horse Cavalry), I was called to active duty in November 1940 for 'one year.' That



*Richard L. Hoyt, W5RIT, USA-CA All Counties #733, ready for Shrine Clown duty.*

one year stretched out to over five years, and as I was then 'over the hump' I elected to stay in. OCS offered a commission, and in 1960 I retired as Captain. During occupation in Germany I was licensed as D4ACI, and in 1950 I received the call W5RIT while teaching communication at the Artillery School, Ft. Sill, Oklahoma.

"While at Ft. Sill I became active in RN5 (Regional Net 5) and OLZ (Oklahoma Traffic Net) and have been handling traffic ever since, now in OZK (Arkansas Traffic Net) and still in RN5, handling CW traffic. I have held other calls—K4SCW, W1NCI, and KH6AVO—as the Army moved me around.

"My XYL, Suzi, was the first Oklahoma Novice licensee (W5UGD) in 1951. Her name is really Violet, but we owned and operated a restaurant, Suzie Wong's Rice Bowl, for 25 years and everyone calls her Suzie. She holds USA-CA All Counties #719, and when we're traveling I let her do most of the work as other ops would rather work a YL than an old goat like me.

"When the County Program was announced in 1963, I thought it was going to be easy, but I only came up with 500 counties! I claim the longest period of time (over 28 years) between getting USA-CA 500 and final completion of All Counties! I've been pecking away at it for all those years, but working 70 hour weeks didn't leave much time for hamming.

"I am a Shrine Clown, and this, with all my other activities, keeps me young—73, Dick, W5RIT."

### USA-CA Special Honor Roll

Katie Dranchak, N9HRX  
USA-CA All Counties #732, All SSB, 11-14-91

Richard L. Hoyt, W5RIT  
USA-CA All Counties #733, Mixed, 11-15-91

Edward N. Brown, W0WYJ  
USA-CA All Counties #734, Mixed, 11-25-91

Quentin Galbraith, K5TVC  
USA-CA All Counties #735, Mixed, 11-30-91

Will Phillips, VE3FNM  
USA-CA All Counties #736, Mixed, 11-30-91

Peter H. Salvage, KC4DUP  
USA-CA All Counties #737, All SSB, 11-30-91

### Awards Issued

Katie Dranchak, N9HRX, filed her good application for a completely endorsed certificate and received USA-CA All Counties #732, USA-CA 3000 #758, USA-CA 2500 #839, USA-CA 2000 #916, USA-CA 1500 #1005, USA-CA 1000 #1202, and USA-CA 500 #2551, All SSB, dated 11-14-91.

Richard L. Hoyt, W5RIT, completed all of his paperwork and claimed USA-CA All Counties #733, USA-CA 3000 #759, USA-CA 2500 #840, USA-CA 2000 #917, USA-CA 1500 #1006, and USA-CA 1000 #1203, Mixed, dated 11-15-91.

Edward N. Brown, W0WYJ, made it all in one giant leap by claiming USA-CA All Counties #734, USA-CA 3000 #760, USA-CA 2500 #842, USA-CA 2000 #918, USA-CA 1500 #1007, USA-CA 1000 #1206, and USA-CA #2553, Mixed, dated 11-25-91.

Quentin Galbraith, K5TVC, filed his complete collection of county contacts and received USA-CA All Counties #735, USA-CA 3000 #761, USA-CA 2500 #844, USA-CA 2000 #920, USA-CA 1500 #1009, USA-CA 1000 #1208, and USA-CA 500 #2555, Mixed, dated 11-30-91.

Will Phillips, VE3FNM, submitted a completely filled record book claiming USA-CA All Counties #736, USA-CA 3000 #762, USA-CA 2500 #845, USA-CA 2000 #921, USA-CA 1500 #1010, USA-CA 1000 #1209, and USA-CA 500 #2556, Mixed, dated 11-30-91.

Peter H. Salvage, KC4DUP, put the finishing touches on his good record and received USA-CA All Counties #737, USA-CA 3000 #763, USA-CA 2500 #846, and USA-CA 2000 #922, All SSB, dated 11-30-91.

Lawrence E. Mitchell, WB8RFN, added a gold seal to his certificate by claiming USA-CA 2500 #838, All SSB, dated 11-2-91.

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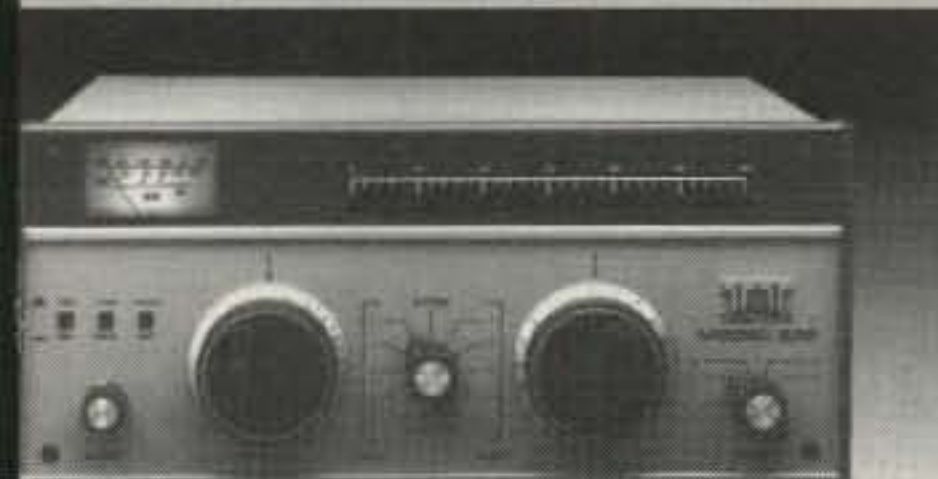
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N9HRX	758	N9HRX	1005
W5RIT	759	W5RIT	1006
W0WYJ	760	W0WYJ	1007
K5TVC	761	K6EW	1008
VE3FNM	762	K5TVC	1009
KC4DUP	763	VE3FNM	1010
2500		1000	
WB8RFN	838	4X4RE	1201
N9HRX	839	N9HRX	1202
W5RIT	840	W5RIT	1203
AA4HD	841	UV0EX	1204
W0WYJ	842	N8GSF	1205
K6EW	843	W0WYJ	1206
K5TVC	844	K6EW	1207
VE3FNM	845	K5TVC	1208
KC4DUP	846	VE3FNM	1209
2000		500	
K3MF	915	AA7FL	2549
N9HRX	916	I0ZUT	2550
W5RIT	917	N9HRX	2551
W0WYJ	918	YU3HR	2552
K6EW	919	W0WYJ	2553
K5TVC	920	4N7ZZ	2554
VE3FNM	921	K5TVC	2555
KC4DUP	922	VE3FNM	2556

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

L. Wayne Burr, AA4HD, filed his paperwork for USA-CA 2500 #841, All 20M SSB Mobile, dated 11-18-91.

Sam Creason, K6EW, added substantially to his good record by claiming USA-CA 2500 #843, USA-CA 2000 #919, USA-CA 1500 #1008, and USA-CA 1000 #1207, all CW, dated 11-25-91.

Barry G. Sigfried, K2MF, received USA-CA 2000 #915, Mixed, dated 11-30-91.

Egon Ron, 4X4RE, received USA-CA 1000 #1201, All CW, dated 11-8-91.

Victor Melnikov, UV0EX, received USA-CA 1000 #1204, Mixed, dated 11-15-91.

Robert R. Anderson, N8GSF, claimed USA-CA 1000 #1205, All CW dated 11-19-91.

USA-CA 500 certificates went to:

Steve Milewski, AA7FL, USA-CA 500 #2549, Mixed, 11-5-91.

Giampiero Galli, I0ZUT, USA-CA 500 #2550, Mixed, 11-12-91.

Katie Dranchak, N9HRX, USA-CA 500 #2551, All SSB, 11-14-91.

Janez Celarc, YU3HR, USA-CA 500 #2552, Mixed, 11-21-91.

Edward N. Brown, W0WYJ, USA-CA 500 #2553, Mixed, 11-25-91.

Kocskameti Tibor, 4N7ZZ, USA-CA 500 #2554, Mixed, 11-27-91.

Quentin Galbraith, K5TVC, USA-CA 500 #2555, Mixed, 11-30-91.

Will Phillips, VE3FNM, USA-CA 500 #2556, Mixed, 11-30-91.

## Awards Available

**16e Winter Olympic Games Award (F92JO).** Activity regarding this award was organized by Reseau des Emetteurs Francais, Section 73-Savoie. F92JO is available to licensed amateurs and SWLs based on contacts with stations located in Savoie (special call: HX or F92JO) and stations in France (call F or TK). QSOs should have taken place between 8 February and 23 February 1992, any mode, any band VHF DECA SAT. There are three classes:

Gold—3 stations of Savoie and 10 stations F.

Silver—2 stations of Savoie and 6 stations F.

Bronze—1 station of Savoie and 3 stations F.

Send list of QSOs before 1 May 1992, with \$5 or 7 IRCs to F92JO, P.O. Box 5, F-73800 Coise, France.



The WPEACE Award available from Manager CT1CIR, Leira, Portugal.

**WPEACE Award.** The WPEACE Award (Worked Portugal, Espana, All Continents, Equator) is available from Award Manager CT1CIR, Antonio Nunes, Box 227-2403, Leiria, Portugal upon fulfilling the following requirements.

1. Work 5 stations from Portugal and 3

different country stations with the letter P in the prefix.

2. Work 5 stations from Spain (Espana) and 3 different country stations with the letter E in the prefix but not EA.

3. Work 1 station in each continent.

4. Work 3 stations from different countries crossed by the equator.

5. Stations outside Europe need only 2 stations from Portugal and Spain.

6. Portugese and Spanish amateurs need 10 CT and 10 EA.

7. All modes on amateur bands after January 1974 are valid.

8. Send log with award fee of US \$5.00 or 12 IRCs to the award manager.

**Scarborough Diamond Jubilee Award.** To celebrate the Diamond Jubilee of the Scarborough Amateur Radio Society, an award certificate is being made available. The award is to commemorate the founding of the society in 1932 and is available to all radio amateurs and short-wave listeners.

All contacts must be made between January 1st and December 31st 1992. Log extracts are acceptable but must indicate contacts or reception reports confirming the following: one contact with the society's headquarter's station, G4BP; and five contacts with members of the Scarborough Amateur Radio Society (see list that follows).

Contacts may be any mode, on any band, but contacts via repeaters will *not* be accepted.

Applications are to be sent to Awards Manager, G4BP, c/o 10 Lowdale Avenue, Scarborough, YO12 6JW, N Yorkshire, England.

All claims will be verified by the Awards Managers and the society's decisions will be final.

All claims must be accompanied by 2.00 Pounds Sterling, \$3.00 U.S., or five IRCs. All claims should be in the format indicated by the Scarborough Diamond Jubilee Application Form (see fig. 1).

Members and associate members of Scarborough Amateur Radio Society include: G0ABQ, G0CDR, G0COL, G0FKT, G0FLL, G0FLZ, G0FNP, G0HDA, G0HKH,

Date	GMT	Band	Mode	RST	Call Sign
					G4BP

Fig. 1—Scarborough Diamond Jubilee Application Form.



Szabo Laszlo, HA0HW, holder of USA-CA 1000 #1200 (10-25-91) at his operating position in Hungary.

G0KDA, G0KEU, G0LEU, G0LSD, G0NXK, G0NXX, G0NUP, G0NVU, G0NZY, G0OII, G0PHD, G0PNP, G0PRI, G1OSP, G1OZP, G1VDO, G1YKQ, G1ZGD, G2AQN, G2CP, G3CAA, G3DAV, G3FVW, G3GNB, G3HFW, G3HTD, G3JBR, G3LCG, G3LSW, G3NTA, G4AJJ, G4AKR, G4DAX, G4DPO, G4DWU, G4EDR, G4EEV, G4ENS, G4FCH, G4JBI, G4KTL, G4LRH, G4LUH, G4OOE, G4SAO, G4UQP, G4VDH, G4YKO, G4YWR, G4ZGP, G4ZNZ, G6AFZ, G6PWZ, G7BAY, G7CVE, G7EVD, G7FXP, G7UGK, G8LPU, G8SYN, G8UOW, G8WYB, G8YSB.

**LY-91 Award.** This award is issued to all radio amateurs/SWLs who made three QSOs with (heard) the LY91 prefix. LY91 was used from 26 July to 15 August 1991 for the Fourth Lithuanian World Sport Games. Any band, any mode is valid. Send no QSLs; send GCR list only, with fee of 6 IRCs or \$2.00 U.S. to Award Manager, Sam Zalnerauskas, LY1DR (ex-LY2BIM), Box 787, Kaunas-3041, Lithuania.

**Kaunas Award.** The Kaunas Award is sponsored by Kaunas Radio Club. To qualify, contact stations in Kaunas City—EU 10, DX 5 different stations. Contacts after January 1, 1990 are valid. The award is issued for all bands (no WARC); CW, phone contacts. Send GCR list and fee of \$2.00 U.S. or 6 IRCs or equivalent to Petras Repcys, P.O. Box 824, 3009 Kaunas, Lithuania.

**HMDXC Award Program.** Following information about the High Mountain DX Club program is courtesy of Oleg Y. Latyshev, UA6HPR, P.O. Box 999, Stavropol 355044, USSR.

**WARO (Worked All Russian Oblasts):** To receive this award one must collect QSOs from all of the Russian oblasts (see special list). QSOs after 1 January 1992 are valid. There are special awards for CW, SSB, Mixed, and 160 meters.

**5 B WARO:** To receive this award one must collect QSOs from all Russian oblasts on the five bands 10, 15, 20, 40, and 80 meters. QSOs after 1 January 1992 are valid. This award can be given only once and is without regard to the type of modulation.

**WHMS (Worked with High-Mountain Station):** To receive this award one must

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UG-21B/U	N Male RG-8, 213, 214, Kings	5.00
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	Fits UG-21 D/U & UG-21 B/U's	1.50
UG-21D/9913	N Male for RG-8 with 9913 Pin	3.95
UG-21B/9913	N Male for RG-8 with 9913 Pin	5.75
UG-146A/U	N Male to SO-239, Teflon USA	6.00
UG-83B/U	N Female to PL-259, Teflon USA	6.00

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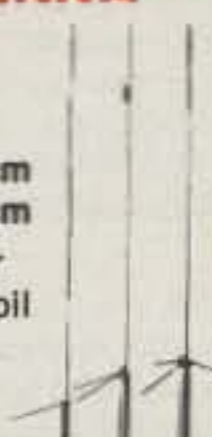
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collect QSOs, after 1 January 1980, from amateur stations in various countries with mountains exceeding 1000 meters elevation. The elevation of the station is considered to be the elevation of the mountain (as though the station were on high-mountain expedition, with a temporary QTH), and is the point value for the contact. For DX this point value is multiplied by two.

There are four classes for this award:  
 Class 1—15,000 points and 2 countries (DXCC).

Class 2—25,000 points and 4 countries.

Class 3—50,000 points and 6 countries

Class 4—100,000 points and 10 countries.

The applicant must include the "temporary QTH" and its elevation.

**HMAC (Highest Mountain All Continents):** To receive this award one must collect QSOs, after 1 January 1980, with six countries where the highest mountains of the continents are located: EU—UA6X or UA6E (1 QSO); AS—9N or BY (1 QSO); AF—5H (1 QSO); N.A.—KL7 (1 QSO); S.A.—LU (1 QSO); OC—YB (1 QSO). One may use any HF bands. There are special awards for work on CW, SSB, Mixed, and for the 80 and 160 meter bands.

**5 B HMAC (5 Band Highest Mountains All Continents):** The list of countries is as for HMAC. The five bands are 10, 15, 20, 40, and 80 meters. The award can be given only once, without regard to the type of modulation.

**HMDXCA (High-Mountain DX Club Award):** This award for those who have QSOs, after 1 January 1990, with the members of HMDXC or its expeditions.

Class 1: 5 QSOs for "U", 2 QSOs for DX.

Class 2: 20 QSOs for "U", 5 QSOs for DX.

Russian Oblasts By Number For "WARO" Award								
call	number WARO	number R-100-0	call	number WARO	number R-100-0	call	number WARO	number R-100-0
UA1A	01	169	UA4C	31	152	UA9L	61	161
1C	02	136	4F	32	148	9M	62	146
1N	03	088	4H	33	133	90	63	145
1O	04	113	4L	34	164	9Q	64	134
1P	05	114	4N	35	131	9S	65	167
1Q	06	120	4P	36	094	9U	66	130
1T	07	144	4S	37	091	9W	67	084
1W	08	149	4U	38	092	9X	68	090
1Z	09	143	4W	39	095	9Y	69	099
2F	10	125	4Y	40	097	9Z	70	100
3A	11	170	6A	41	101	0A	71	103
3D	12	142	6E	42	109	0B	72	105
3E	13	147	6H	43	108	0C	73	110
3G	14	137	6I	44	089	0D	74	111
3I	15	126	6J	45	093	0F	75	153
3L	16	155	6L	46	150	0H	76	106
3M	17	168	6P	47	096	0I	77	138
3N	18	132	6U	48	115	0J	78	112
3P	19	160	6W	49	096	0K	79	139
3Q	20	121	6X	50	087	0L	80	107
3R	21	157	6Y	51	102	0O	81	085
3S	22	151	8T	52	174	0Q	82	098
3T	23	122	8V	53	175	0S	83	124
3U	24	123	9A	54	165	0U	84	166
3V	25	119	9C	55	154	0W	85	104
3W	26	136	9F	56	140	0X	86	129
3X	27	127	9G	57	141	0Y	87	159
3Y	28	118	9H	58	158	0Z	88	128
3Z	29	117	9J	59	162			
4A	30	156	9K	60	163			

Table 1—Oblasts for the Worked All Russian Oblasts Award.

Class 3: 50 QSOs for "U", 15 QSOs for DX.

QSOs (SWLs) with the same stations on different bands are acceptable for HMDXCA and WHMS awards. Send GCR list, certified by two amateur operators

(with QSLs for WARO and 5BWARO) with \$5 U.S. or 10 IRCs for each award to HMDXC, Oleg Zhukov, P.O. Box 410, Kaliningrad-10, Moscow obl, 141070, USSR. Use this address, with SASE, also to obtain more information or to become a member of HMDXC.

**Fany-Pamir Special Streamer:** A special streamer for the autonomous high-mountain expedition in Fany and Pamir mountains is given for two contacts with different callsigns of the expedition, or with one callsign but on different bands or modes of modulation. Send application with \$5 U.S. or 10 IRCs to streamer manager, Oleg Zhukov, P.O. Box 410, Kaliningrad-10, Moscow obl, 141070, USSR.

**North Kavkaz-91 Special Streamer:** A special streamer "North Kavkaz-91" is given for one contact with R6E, high-mountain DXpedition of HMDXC. Send application with \$4 USA or 8 IRCs to HMDXC manager Oleg Zhukov, P.O. Box 410, Kaliningrad-10, Moscow obl, 141070 USSR.

**Note**

Raymond Lee, VS6UW, Awards Manager of the Hong Kong Amateur Radio Transmitting Society (HARTS), sent word that his new address is P.O. Box 62316, Kwun Tong Post Office, Hong Kong (Asia).  
 73, Dorothy, WB9RCY

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1130 RG213/U 95% shield mil spec NCV jkt.....	.39
1140 RG214/U dbl silver shld mil spec.....	1.85
1705 RG142B/U dbl silver shld, teflon ins.....	1.50
1310 RG217/U 50 ohm 5000 watt dbl shld.....	1.05
1450 RG174/U 50 ohm .100" od mil spec.....	.14
1410 RG58/U mil type 50 ohm 95% shield.....	.14

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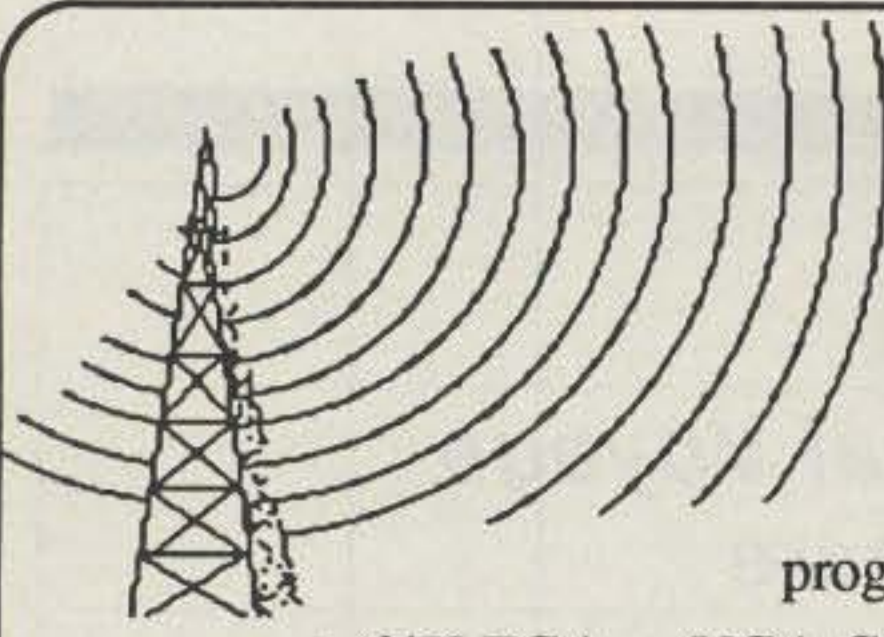
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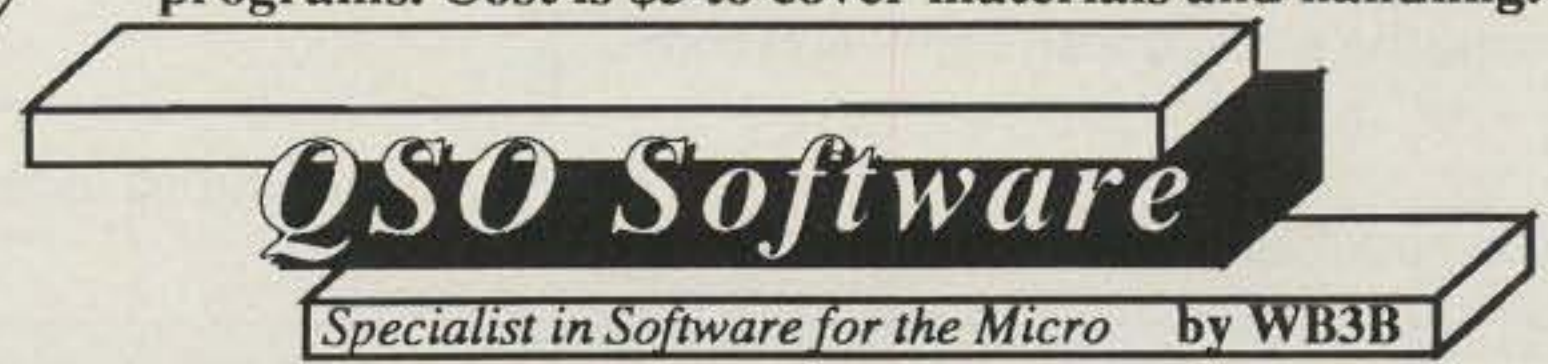
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THINGS TO LEARN, PROJECTS TO BUILD, AND GEAR TO USE

## Milestones of Amateur Radio—A Personal Voyage The Amateur Receiver Over the Years

I've concluded from conversations with friends, from contacts on the air, and from letters received that there is a great deal of interest in the "roots" of amateur radio. How did it get from where it was to where it is? What were "the good old days" really like? What was amateur radio in 1910? 1920? 1930? Or 1940?

The grand story of amateur radio seen from a political and historical point of view is told in the fascinating and compelling book *Two Hundred Meters and Down*, by Clinton B. DeSoto, ex-W1CBD<sup>1</sup>. Starting pre-World War I with a few unlicensed experimenters struggling with crude, home-built spark transmitters and coherer detectors, the book tells how these early enthusiasts managed to hear wireless signals and, in many cases, managed to successfully communicate with each other.

It wasn't easy. Little written technical information was available. Parts were difficult to obtain. However, by 1910 it is estimated that there were about 600 operating stations on the air, plus several thousand more experimenters working with spark coils, trying to talk a few hundred yards to a next-door chum.

In the absence of legislation, overview of wireless communication in the United States was largely under the auspices of the U.S. Navy. However, no control was imposed on the enthusiastic experimenters, who by 1912 were estimated to number about 4000 operating stations.

Transmitting ranges were small; two-way communication up to about 150 miles could be achieved on a good night by the better stations. Most enthusiasts had to be content working a friend across town. It took a dogged and determined individual to build a crystal set that could pick up one of the Navy's high-power arc transmitters—Arlington, Virginia or perhaps San Diego, California. These reliable, long-wave stations sent out press and weather reports that could be heard all across the United States on a good receiver.

Amateurs operated on any wavelength they wished, most stations working in the range between 250 and 1000 meters. The longer wavelengths seemed best, right among the ships, government, and com-

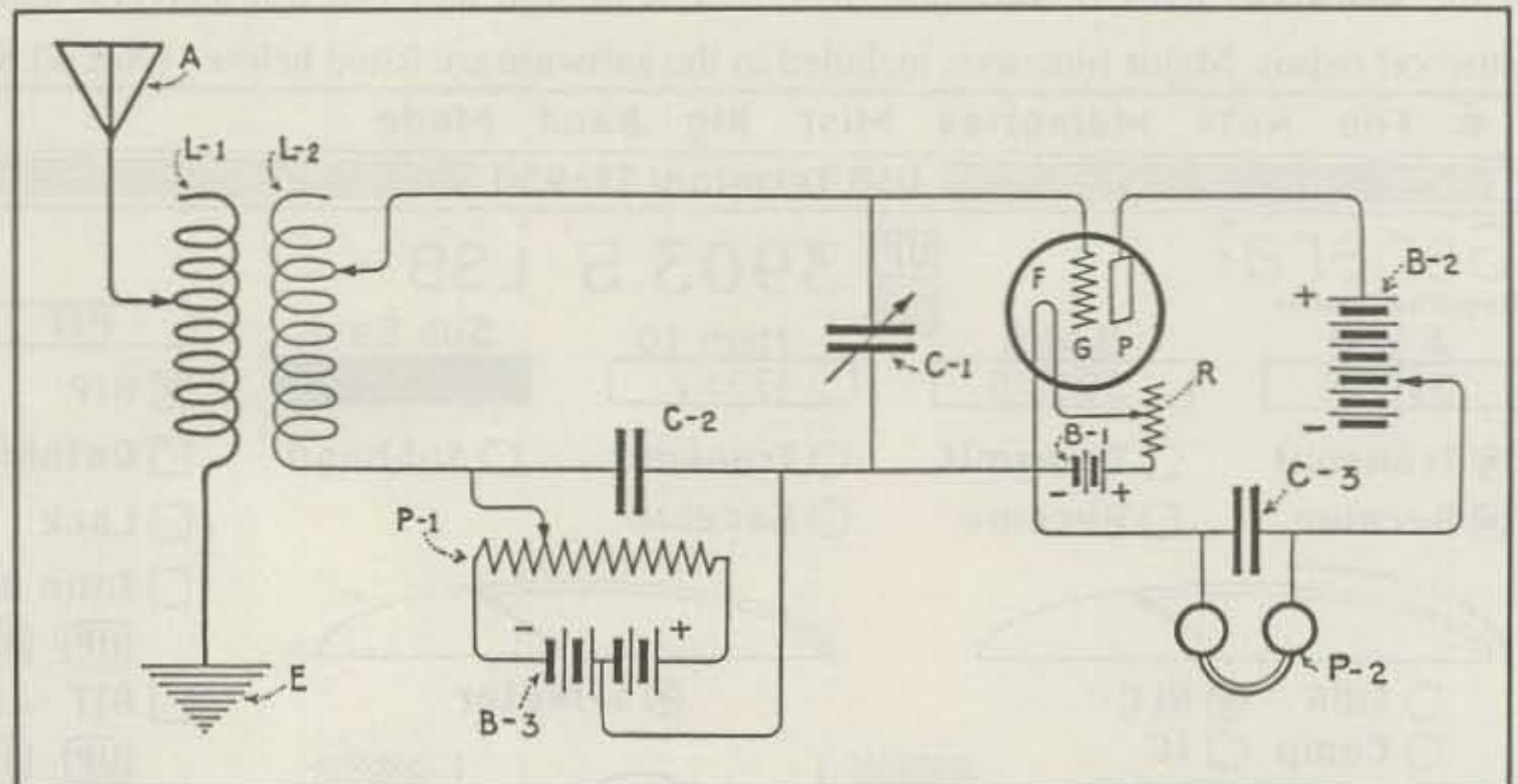


Fig. 1—Early triode tube was an unreliable detector and didn't provide much gain. Some amateurs heated the tube with a candle in an attempt to drive the gas out of it. Others thought a gassy tube made a better detector than a "hard" tube.

mercial stations. Needless to say, there was terrible interference, some of it intentional.

Finally, in 1912 the US passed the Radio Act, which ratified the London Conference on communication, and in that year the known spectrum was divided up and amateurs were given the "useless" wavelength of 200 meters. This would keep them from interfering with important communications on the longer wavelengths.

### The Early Amateur Relay Station

At this point in time amateur radio as we know it was born. Amateur radio licenses were issued by the Department of Labor and Commerce. The vacuum tube was passing from the laboratory into commercial use. By 1914 triode receiving tubes were available to experimenters on a limited basis. Armstrong had conceived

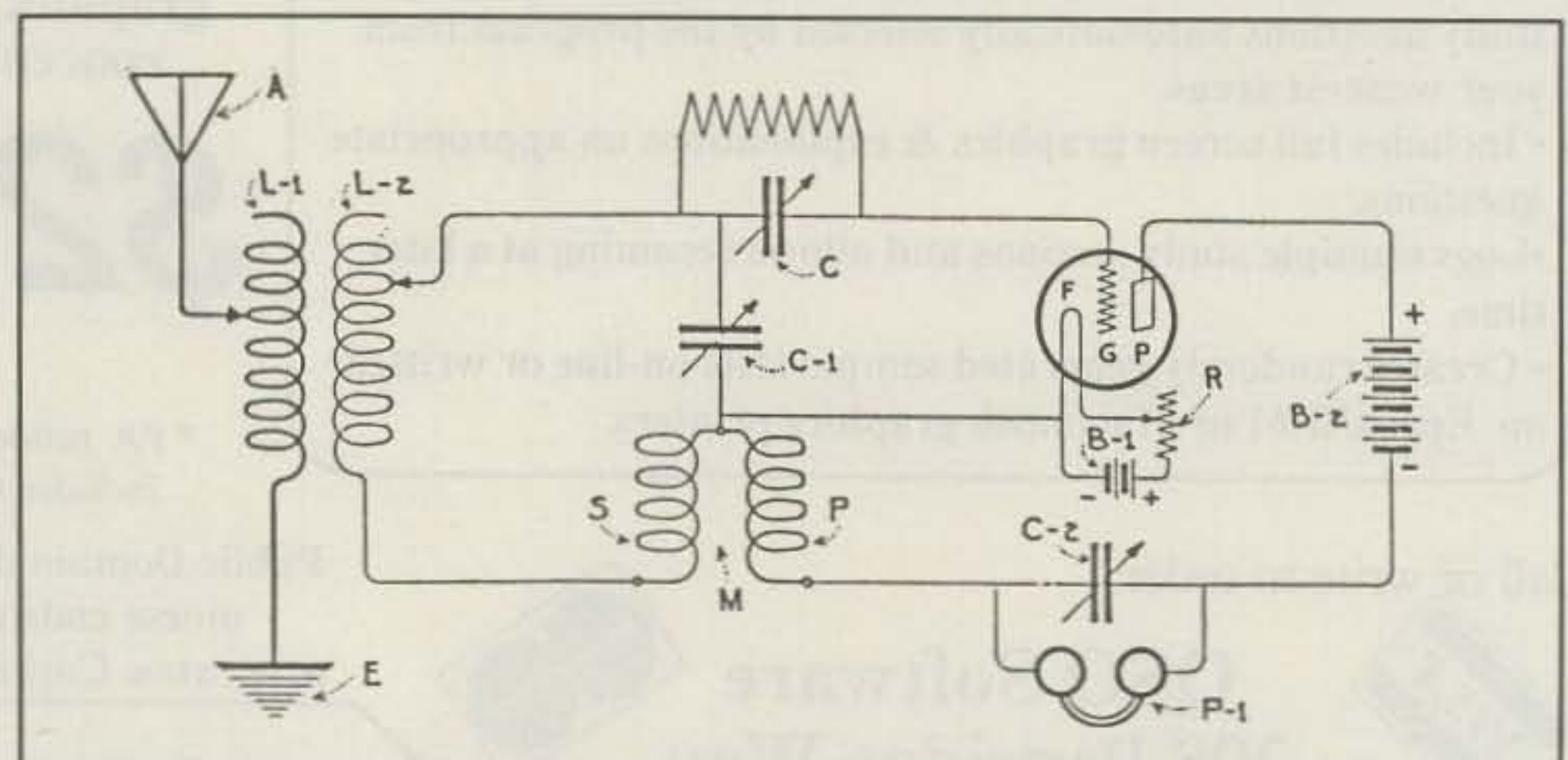


Fig. 2—Armstrong regenerative circuit put life into early triode tube. Feedback from plate to grid did the job.

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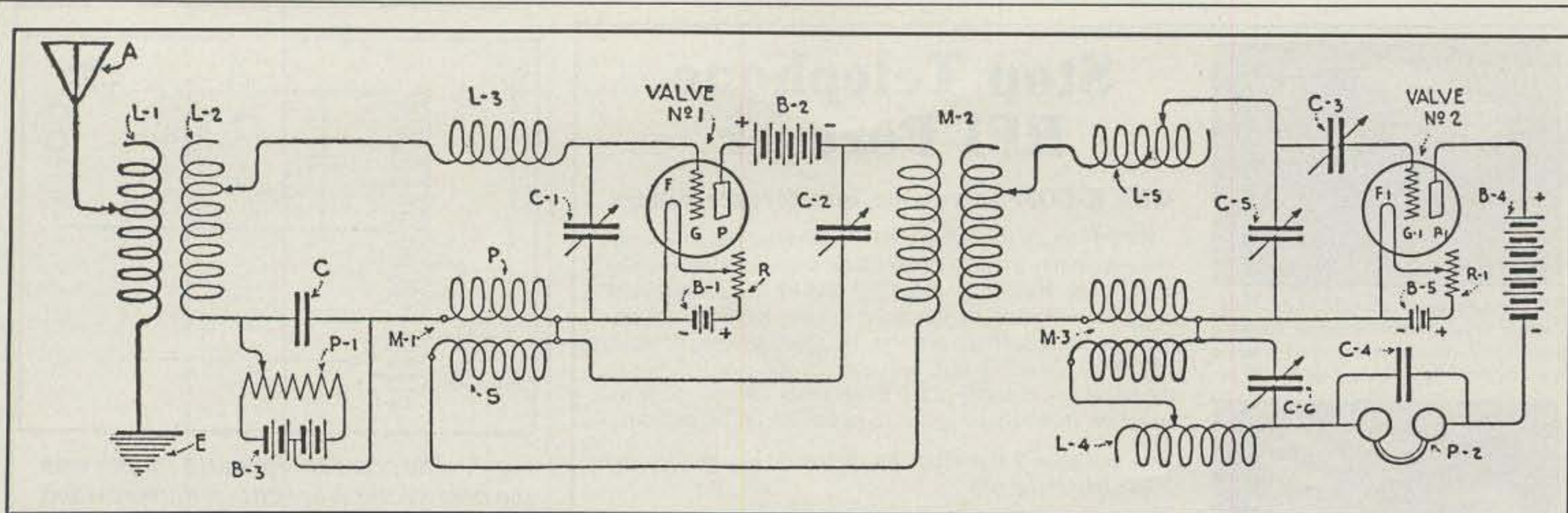


Fig. 3—If a little regeneration was good, a lot must have been better! Plenty of bizarre circuits, like this one, were tried.

the idea of using feedback to enhance the amplification of the detector tube. And by 1914, using advanced techniques, amateurs were capable of reliable contacts up to several hundred miles.

Slowly grew the dream of hundreds of relay stations scattered across the United States that could pass a message from point to point in a matter of minutes. The idea of a national radio organization to coordinate such a matter was apparent. Obviously, there was little hope of transcontinental communication with the power and wavelengths available. The relay station was the answer.

Under the genius of Hiram Percy Maxim (1WH) the idea of a relay organization was born—the American Radio Relay League. By December 1915 the League had grown strong enough to publish a "radio relay bulletin" called QST. Message Trunk Lines were established, and by 1917 the impossible was accomplished: a message was relayed back and forth across the United States in a matter of minutes!

In the main, amateur transmitters were large spark sets, some of 1 and 2 kilowatt capacity. Although coherer and crystal detectors were in general use, there was growing interest in the triode tube as detector (fig. 1). Considering the variable quality of the tubes available, the triode detector often worked no better than a good galena crystal detector. A good tube provided a small degree of amplification over the simple crystal. The worth of the triode as a detector was in question until Armstrong released information on the regenerative circuit (fig. 2). This changed the face of amateur radio. At last, here was a detector that could really hear weak signals! The high amplification was obtained by feedback from the plate to the grid circuit. It could be done inductively, as shown, also by virtue of the interelectrode capacitance of the tube combined with a high impedance in the plate circuit. By 1916 various combinations of feedback were tried, including cascaded feedback

amplifiers (fig. 3) to achieve the ultimate insensitivity.

But in April 1917 it was all over. The Department of Commerce closed down all amateur stations because of the onset of World War I.

### Post-War Receivers

Amateur radio grew steadily at the end of World War I after legal and licensing problems were solved. It was tough to get started. To begin with, there weren't many amateurs from whom to gain knowledge. The transition from spark transmitters and crystal detectors was underway. Information was confusing. Receivers designed for spark work were useless for CW. It was obvious that the triode tube in a regenerative circuit was the way to go.

There were plenty of bizarre circuits floating around, some of which worked better than others. Regeneration could be obtained either by inductive or capacitive techniques. Variable inductors ("variome-

ters") in the plate circuit (fig. 4) were favored by some, but some of the smart experimenters (Ballentine, Reinartz, Kruse, and others) came to the conclusion that a fixed "tickler" (feedback) coil was the way to go, as it allowed the level of regeneration to be changed without shifting the tuning to any degree. Thus was born the "Reinartz tuner," which became the receiver of choice for hundreds of amateurs (fig. 5). Basically, the tuner was a simple, generic regenerative detector. The most popular version had a single audio amplifier stage (fig. 6) which gave a signal loud enough to "rattle the phones" of an avid DXer.

### Birth of the DX Receiver

The regenerative receiver opened up new vistas for radio amateurs. In 1923 high-frequency amateur radio was born with trans-Atlantic and trans-Pacific DX QSOs on about 100 meters! Up until 1923 amateurs were restricted to waves in the region of

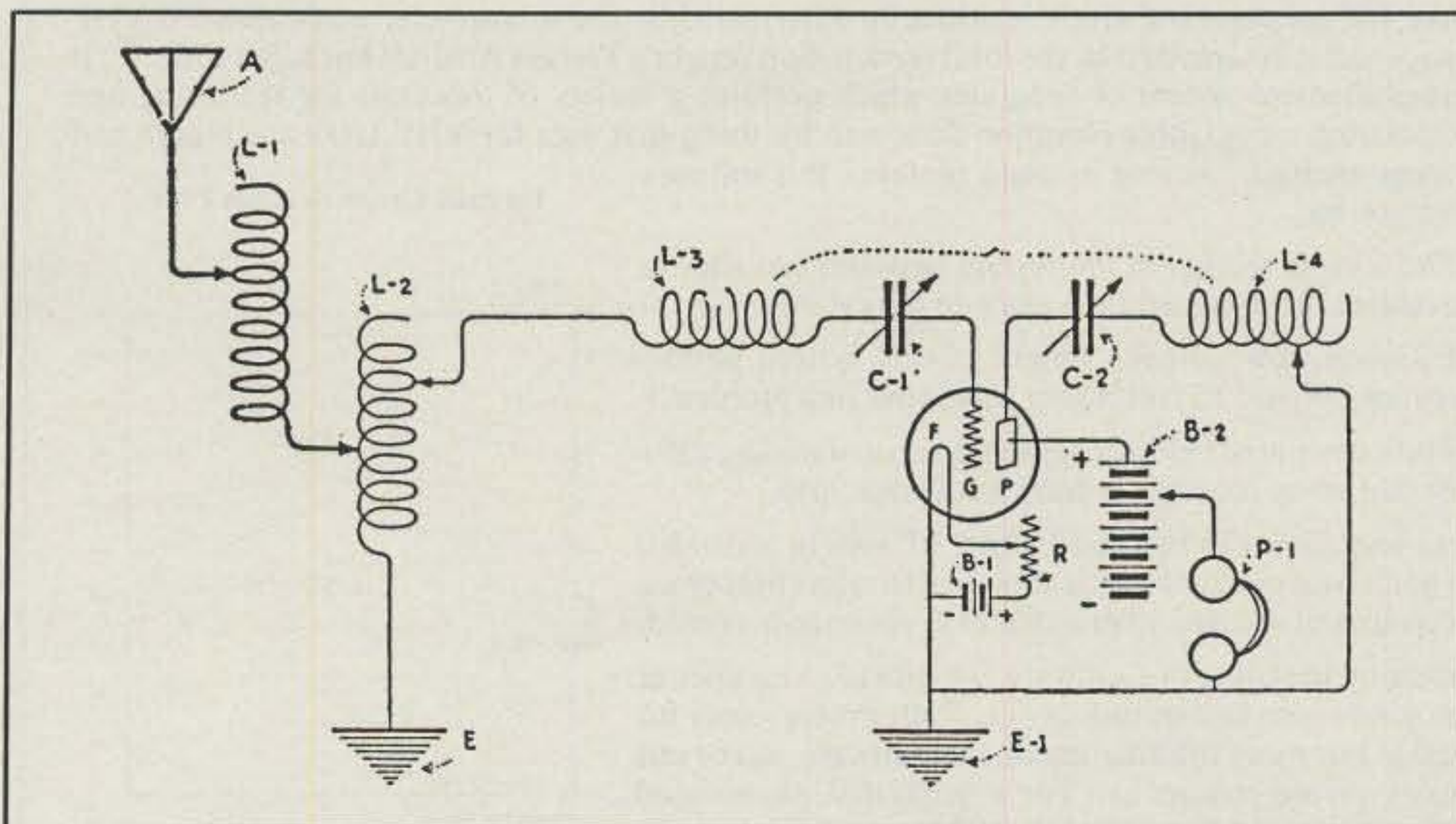
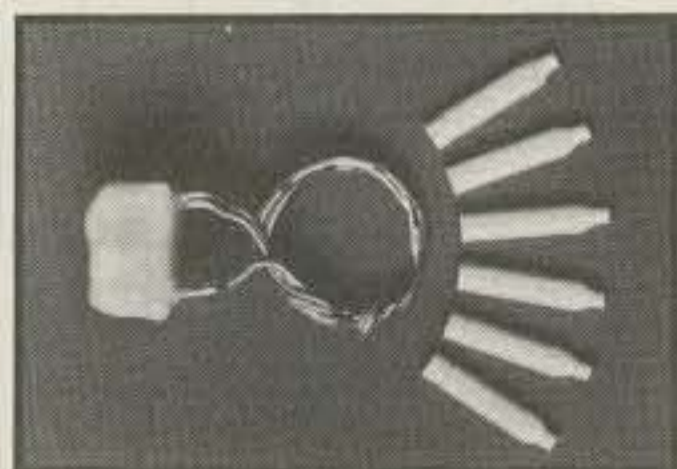


Fig. 4—A variable inductor ("variometer") in plate circuit provided regeneration. Interlocking between regeneration and tuning controls was a constant headache.



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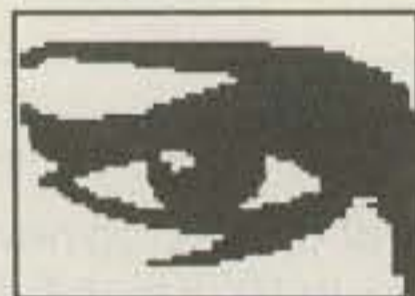
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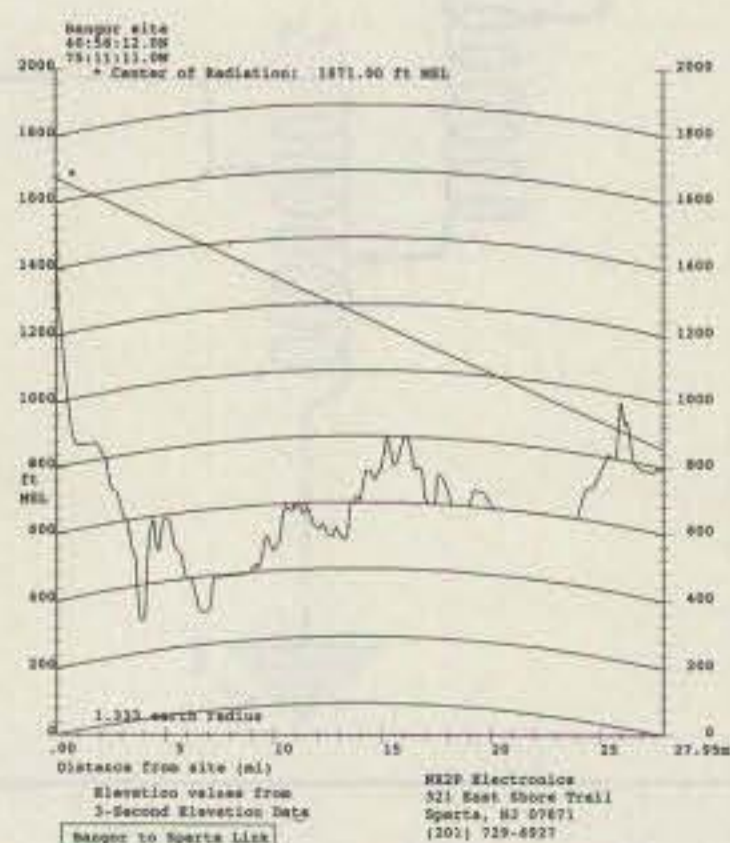
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### Terrain Cross Section Plot



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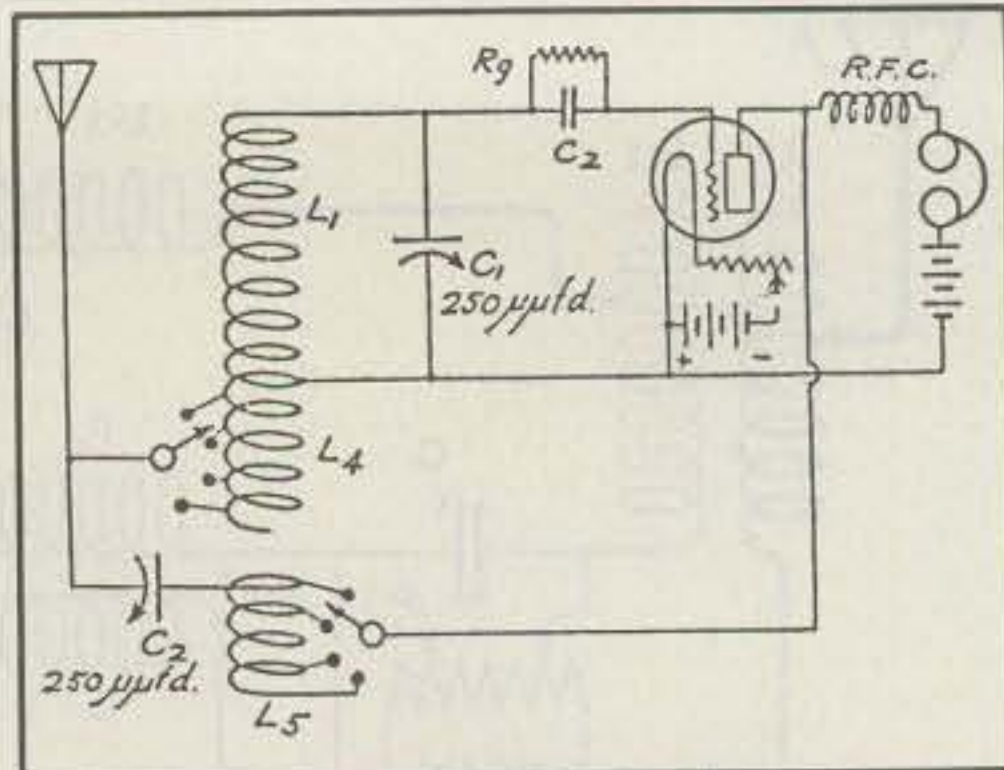


Fig. 5—The popular "Reinartz Tuner" was the post-World War I circuit that provided best results. This is the basis for the regenerative receivers of the 1930s.

200 meters, with special experimental stations working on somewhat shorter wavelengths. By 1924 international regulations came into effect and new amateur bands at 80, 40, 20, and 5 meters were authorized. Unfortunately, most receiving equipment in use was not equal to the task. Some lucky amateurs who knew their onions built receivers for the new bands, even including the ultra-high-frequency band of 5 meters (fig. 7)!

Coincident with the opening of the HF bands, the "broadcast craze" peaked and finally receded. Interest in amateur radio grew faster. There was plenty of contradictory information floating around on how to build a two-tube shortwave receiver, and often the results obtained by the home builder were discouraging.

Glancing through QSTs of 1925 to 1929 it quickly became obvious that if you wanted a shortwave receiver you built your own, either from scratch or from a kit. Silver-Marshall and Radio Engineering Labs had kit receivers at high prices. Late in the year National Company announced the battery-operated SW-4 shortwave set. One or two other "shortwave" receivers came on the market, but their performance below 100 meters was erratic.

Finally, in 1929 Pilot Radio announced the "AC-operated Super Wasp" receiver in kit form or assembled for about \$30. At last, a nice ham-style receiver was available at a modest price. As good as it was, the super Wasp had idiosyncracies, and many hams struggled with the set without ever getting it to work properly.

## Beginnings of the "Modern" Receiver

By 1929 the science of component manufacturing and the solution to complex manufacturing techniques necessary to build first-rate radio equipment were coming to a head. Radio tubes had little gain and required bulky and expensive battery supplies. Now, AC operated tubes were

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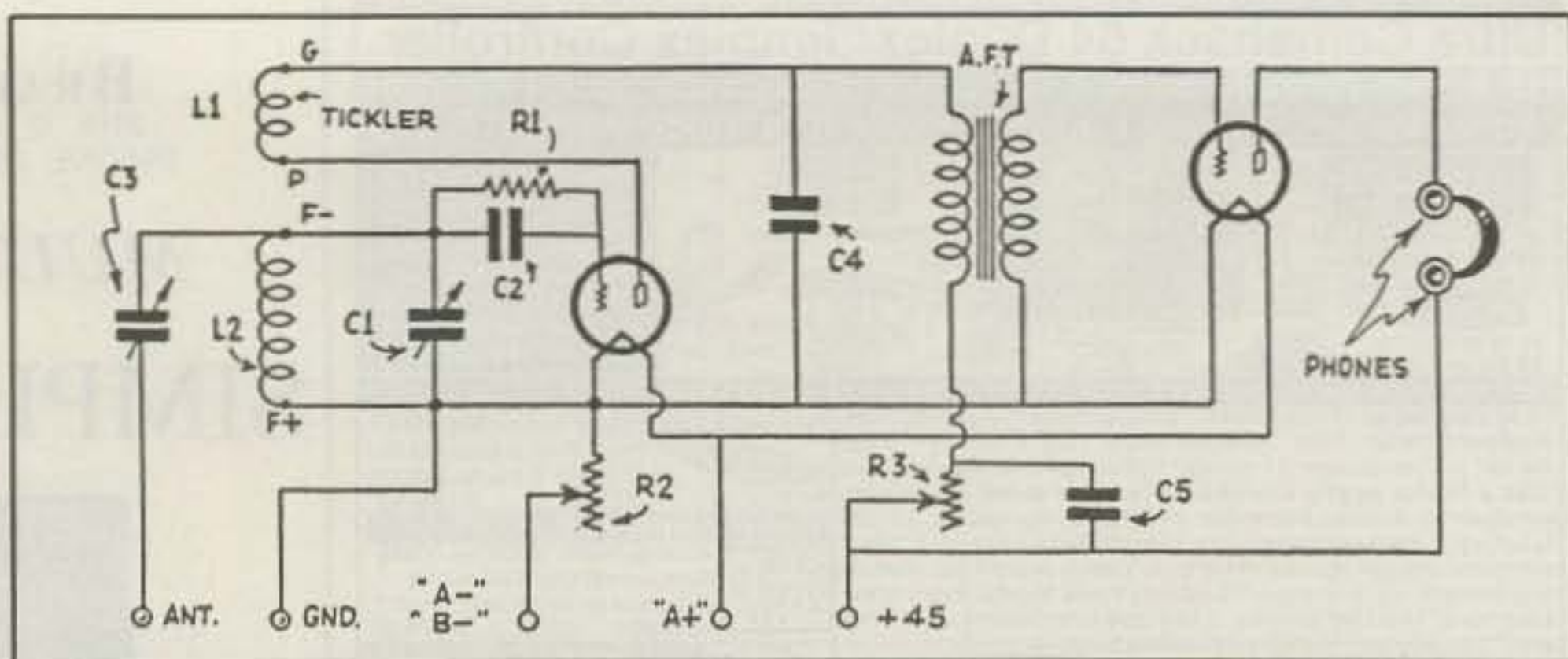


Fig. 6—Regenerative detector and one audio stage were simple to build and get working. Thousands of new amateurs and shortwave listeners began their hobby with this proven, reliable receiver circuit.

available. Fixed capacitors were generally of poor construction because nothing better was known. Work was started to build better, long-life capacitors. Insulation was untrustworthy and often hygroscopic, absorbing water vapor readily. Two seemingly identical radios could provide vastly different results—one would work, and the other would not! Something had to be done in this regard.

A great deal of confusion existed among manufacturers and amateurs on receiver circuitry and how to solve problems of hum, instability, and poor sensitivity. This needed investigation.

Before World War I, Europe in general and Germany in particular had been in the forefront of radio communication.<sup>2</sup> With a defeated Germany, new European patents and technology were available to the United States. Now was the time to really put them to use.

The Army Air Corps, the Navy, and the developing airlines were greatly interested in producing rugged, environmental-proof communication equipment, as the performance of the World War I radios was not encouraging. It was thus that about 1927 the RCA Laboratories, Stromberg-Carlson, Radio Frequency Labs, General Electric, Aircraft Radio Corporation, and others began a series of programs to upgrade components and to design rugged, reliable radio communication equipment. The German patents, along with many others, were at their disposal.

### The AC-Operated Shortwave Receiver

By late 1927 various tube manufacturers had developed triode tubes that incorporated cathodes capable of working from alternating current. About the same time, cathod-type high-gain tetrode and pentode tubes that promised improved performance were developed. All of this freed the user from low-gain triode tubes and messy storage batteries. Rapidly, the AC radio

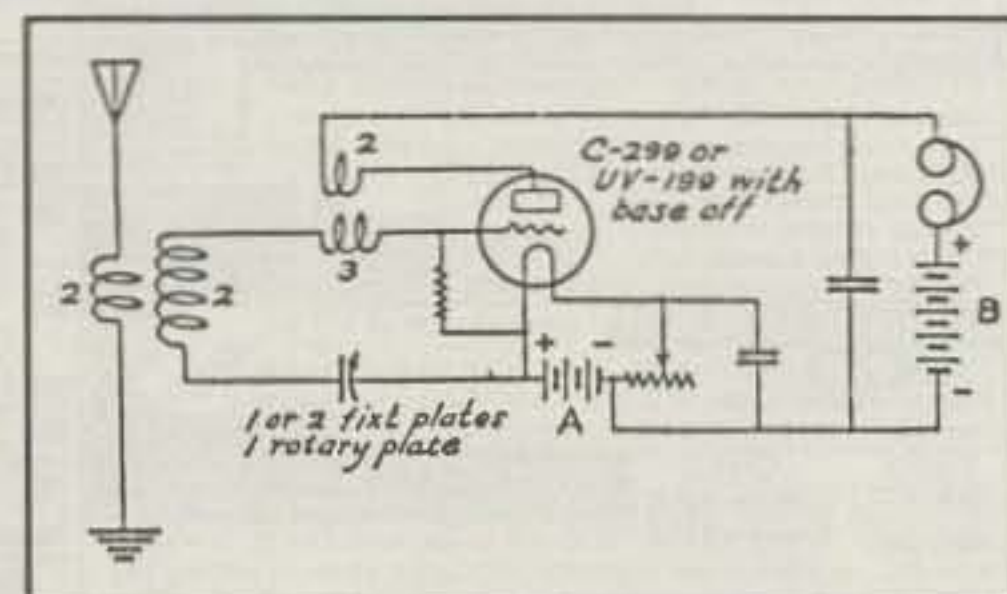


Fig. 7—With the tube base removed, and with careful attention to detail, the regenerative receiver worked as high as 5 meters!

would supplant the old battery receivers in the entertainment industry. Amateur radio was quick to follow this trend.

Techniques and machinery for mass producing high-Q coils were developed, improved capacitors were available, and new insulating materials were at hand. Circuit technology was better understood, and important interface problems between circuits were recognized. The various improved components and assembly techniques required to make a reliable shortwave radio receiver were starting to come together. The stage was set for a new, improved breed.

While new amateur receivers got a boost from the mass production of AC operated home entertainment receivers, the big advance in technology came from the military and the developing airline industry. Reliable air-to-ground communication was going to be a big thing in the 1930s and 40s!

### The "Model D" Receiver

One successful program was the development by Stromberg-Carlson of the "Model D Aircraft Receiver."<sup>3</sup> It used five type UY-224 pentodes, three as RF amplifiers, one as a detector, and one as an audio amplifier (fig. 8). The receiver was built in a well-shielded cabinet, with components

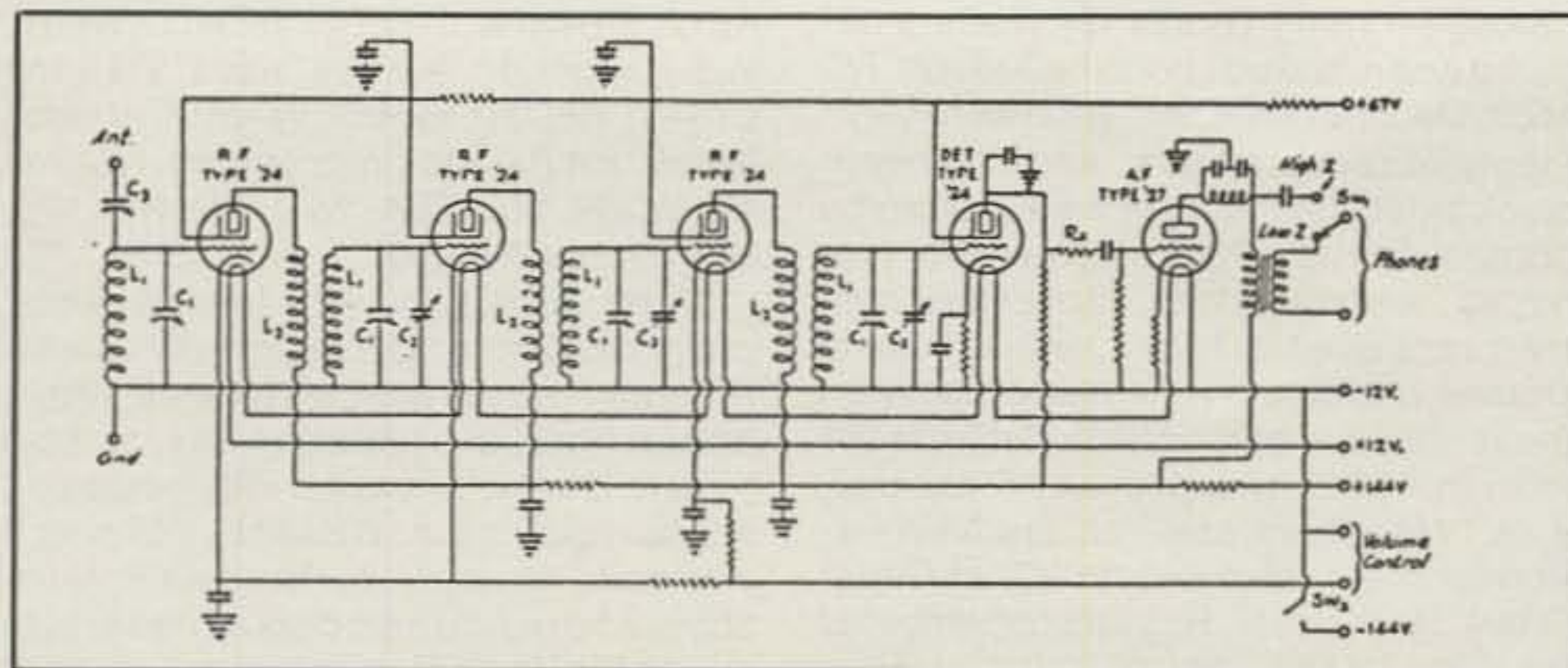


Fig. 8—The "Model D" receiver provided the technology for the popular National SW-3 receiver. It also furnished design techniques for the super-heterodyne receiver. Three RF stages were used—one untuned and two tuned and ganged to the autodyne detector.

specially selected for the job. Plug-in coils, wound on non-hygroscopic forms, were used.

New insulating material, long-life capacitors, and improved metallized resistors all helped to make a reliable assembly. The receiver could tune from 200 to 8000 kHz with four sets of plug-in coils. Great attention was paid to parts placement, bypassing, and ground returns. Circuit reproducibility was good enough so that the Model D had a frequency-calibrated tuning dial. It was relatively immune from vibration. Best of all, it could be mass-produced by several manufacturers to a single set of specifications. Operationally, the receiver performed equally well with a battery supply or with an external AC power supply.

Many receivers of this type were built for the airlines and the military and the design lasted until World War II, when the higher degree of selectivity provided by the super-heterodyne receiver was necessary. Even so, the Model D design served in that war as the Navy type RU-17 receiving set (jocularly called the "Errol Flynn" receiver by wisecracks).

By early 1931 all the information was at hand to build a low cost, sensitive, reliable shortwave receiver for amateur service. The model D receiver provided the design for a stable RF amplifier stage that provided real gain. An ideal amateur regenerative receiver would have a tuned RF stage, a stable regenerative detector, and one audio stage. It would have plug-in coils that were high-Q and would not absorb moisture. Finally, it would work with an AC power supply.

The National Company of Malden, Massachusetts reacted swiftly to the challenge. Using the basic electrical design of the SW-5 shortwave receiver, they modified the circuit to use bandspread coils and deleted an audio stage, making the new SW-3 receiver for earphone reception only. The new set was repackaged in a much smaller box (fig. 9).

Viewed from these days, the whole con-

cept seems absurdly simple. But in the "thirties," so little was generally known about shielding, ground returns, and AC operation it is amazing that such a superb receiver could be engineered and placed on the market so quickly.

### The National SW-3 Amateur Receiver

It is only fair to state that if it had not been for the fact that Pan American Airways was looking for a compact, reliable, light-weight receiver for their early flights to South America, the SW-3 may never have been developed. Boonton Rubber Co. had developed a new non-hygroscopic insulating material, reliable mica bypass capacitors were at hand, and National was adept at making many other components: dials, cabinets, tuning capacitors, and miscellaneous hardware. It was the ideal combination of a vital need and the engineering and production facilities that came together to do the job.

Using the technology of the Model 5D

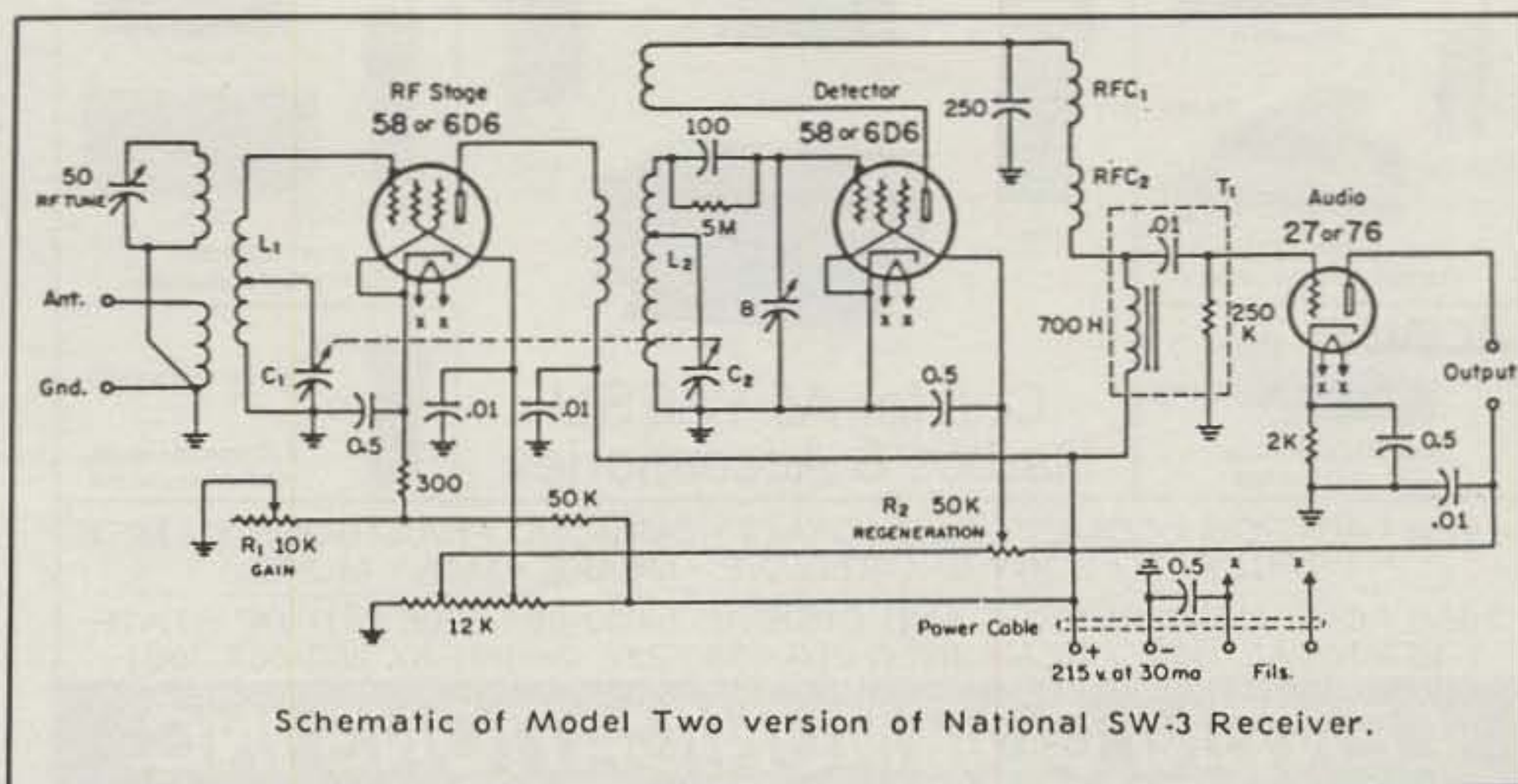
receiver, and many of the components of the SW-5, National produced a compact, 3-tube shortwave receiver that was "single dial control" in that the RF and detector tuning were ganged. Regeneration was smooth and adjustable.

The stroke of genius was the design and manufacture of special bandspread plug-in coils that spread the amateur bands out over the 270-degree range of the tuning dial! This had never been commercially attempted before. The 6-prong coil configuration used in the Model 5D receiver was ideally suited for the bandspread concept.

So it was in the fall of 1931 the National SW-3 receiver was introduced to the amateur public. A minor mystery exists in that ads featuring the SW-3 stated "The price is right!" but no mention of receiver price was given! Was it because National was not really geared up to make the receivers, or were they afraid they had outpriced the market? The interested buyer had to write to National or visit a radio distributor to find the selling price of the SW-3! Finally, in the summer of 1932 the secret was out. The SW-3, less coils and power supply, cost \$20.85. One set of bandspread coils could be purchased for less than \$3.00. It was easy for the proud owner to build a power supply out of old broadcast receiver parts.

(You can judge how far amateur equipment prices have changed when you consider that \$20 in 1931 is equivalent to about \$350 in today's money!)

The SW-3 remained in production until World War II and thousands of them were sold. Even so, the seeds of obsolescence had been planted in the original design. The SW-3 remained the choice of the amateur with a thin purse, or as a backup or portable receiver, but shortly after it hit the market it was supplanted by the superheterodyne receiver, providing all the advantages the primitive SW-3 receiver lacked: stability, selectivity, switched coils, and a built-in power supply. But the plucky little SW-3 filled the gap between the cranky,



Schematic of Model Two version of National SW-3 Receiver.

Fig. 9—Circuit of National SW-3 receiver showing coil taps for bandspread operation.

homemade receivers of the late 1920s and the early "modern" receivers that began hitting the market around late 1933. It was a milestone in amateur radio history. And "the price was right!"

Over the years several versions of the SW-3 were sold. The original design used 2.5 volt tubes. Another version used 6.3 volt tubes, and a third version used battery-type 1.4 volt tubes. A later version used 6.3 volt metal tubes. But by 1941 the little SW-3 was swept aside by the forerunners of today's superheterodyne-style receivers. Even so, a receiver production run of 10 years is certainly a compliment to the engineers and technicians who produced the SW-3. The cycle of the regenerative receiver, from Armstrong's original concept, was complete.

### Dead Band Quiz

Who says nostalgia isn't what it used to be?

I thought I really caught my readers off-guard when I asked about the Aragon, Trianon, Meadowbrook, etc. What were they? Plenty of readers know, and they were quick to tell me that they were ballrooms popular in the 1930s from which "remotes" were broadcast all over the country. Frank Sinatra, Harry James, Tommy Dorsey, and others were heard nightly on these glorious broadcasts. Perhaps the most well-known hangout was Frank Dailley's "Meadowbrook" on the Newark-Pompton Turnpike (Route 23) at Cedar Grove, New Jersey. Readers remembered the Glen Island Casino, Palomar, Blue Room, Rustic Cabin, Ben Marden's "Riviera," College Inn . . . ah, me.

Those alert readers who were lucky enough to experience the Big Band era include: AD0V, W9HHC, WA5JCI, W4DCZ, W2KU, W3WPY, W2GKG (who ran remotes from Meadowbrook and who recognized the sign-off of Walter Winchell),

K6XZ, WB4NNC, W8FDN, W8WOJ, WF3Y, W3HIK (who "always wore a sunny smile"), K6DZL, K2HPV, WA6DZR (tnx for list of "Hit Parade" orchestras), N6LZY/XE, W1SE, WA3EBA, WA7JTM, N8IOJ/9, N5VRZ, and W6ISQ.

Many readers knew the famous quote, presumably from "Uncle Don's Children's Program" on the Mutual Network, when, after a hard, exasperating day, he said "There. That will hold the little bastards" into an open mike. WB4NNC believes it was said, however, by Norman Brokenshire, who much to his disgust had to substitute for Uncle Don at the last moment when the latter failed to show up for a broadcast. The remark ruined Brokenshire's career.

### A New Dead Band Quiz

This one is so easy for you DX types. Just swing your rotary beam in the right direction. This quiz is courtesy of Jon Carroll of *The San Francisco Chronicle* newspaper:

1. Is Honolulu closer to San Francisco or to Los Angeles?
2. Is Honolulu closer to Tehran or to Rio De Janerio?
3. Which is farther south, Kathmandu or New Delhi?
4. Which is farther west, Cairo or Moscow?
5. Which is farther east, Cairo or Capetown?
6. Which is farther north, Kathmandu or Shanghai?

Try this DX quiz at your next club meeting. As for the answers, see your atlas or world globe. "Until the next time when, possibly you may tune in again, keep the Old Maestro always in your dreams . . ."


73, Bill, W6SAI

### Footnotes

1. *Two Hundred Meters and Down* is available from the American Radio Relay League, Main St., Newington, CT 06111.
2. Zenneck, J., *Wireless Telegraphy*, Mc Graw-Hill Book Company, New York, 1915.
3. Kruse, R., "A Multi-range Receiver With Four Tuned Circuits," *QST*, October 1930, pp. 21-24.

### Notes

Figs. 1-4 are from *Vacuum Tubes and Wireless Communication*, by Elmer Bucher, Wireless Press, New York, 1918. Fig. 5 is from *QST*, Sept. 1924, p. 10. Fig. 7 is from *QST*, Jan. 1925, p. 28. Fig. 8 is from *QST*, Oct. 1930, p.22. Fig. 9 is from *CQ*, July 1971, p. 37.



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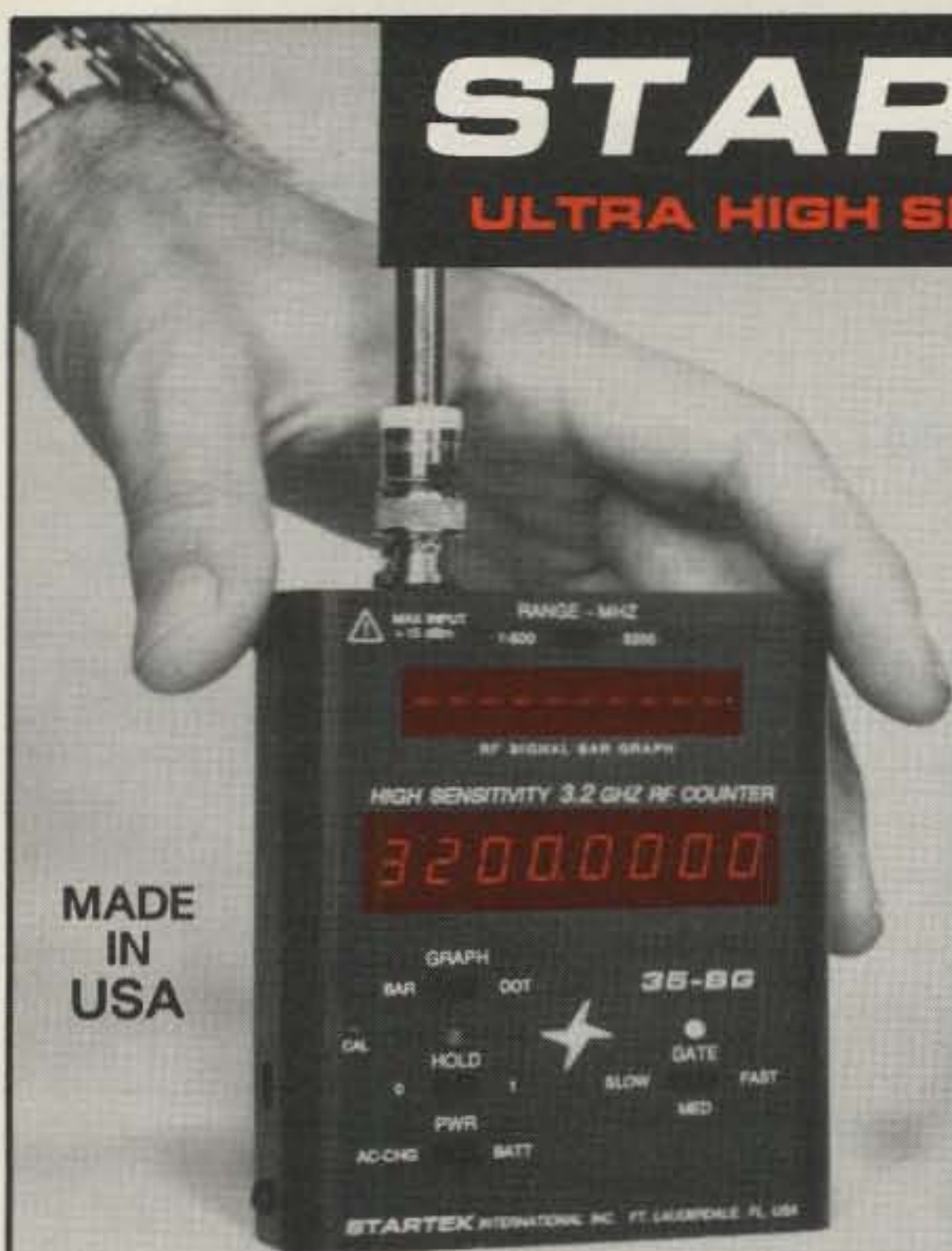





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## NEWS/VIEWS OF ON-THE-AIR COMPETITION

## Too Many Contests or Too Much Activity?

I love my daily trek to the K1AR mailbox. One of the fun aspects of this job is there is no lack of interesting mail that comes my way. The input I receive ranges from letters of support to raging epistles reflecting justified (in some cases) anger over some facet of contesting.

By far, the most reader feedback I have received from any column to date was my recent discussion entitled "Should Contesting Be Abolished?" That article really pulled you out of the woodwork! I wasn't overly surprised to see the majority of comments come from "non-contesters" who would lose little sleep if contesting faded into oblivion. This month your observations have prompted me to consider a fundamental question for contest sponsors/operators: "Do We Have Too Many Contests?"

To put things in perspective, I reviewed last year's contest calendars and produced the data summarized in Table I. In total there were 105 contest announcements in 1991. This averages 2.0 contests/weekend. Of the 105 contests announced in 1991, seventeen (16.2%) should be classified as "dominating the bands" on one or both modes. For example, I considered the CQ WW, CQ WW WPX, ARRL SS, WAEDC, ARRL Field Day, All Asian DX, HF Radiosport, and others as candidates for this category. By the way, there were 5 weekends without any contest activity last year (9.6% of total weekends), and 19 with only one (36.5%). To be fair, however, some of the "one contest weekends" included the CQ WW and ARRL SS.

The definition of HF spectrum domination is in the eyes of the beholder. In my opinion, the number of contests is not the issue. If you take the time to look at the contest calendar in any given month, you'll find the vast majority of announced contests will never be noticed by the average amateur operator "tuning the bands." Of course, there will always be the example of a contest such as the Idaho QSO Party, which, although only recommending the use of 20 meter SSB between 14270-14295, does little good to the fellow trying to make his weekend schedule with P29XYZ on 14285.

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### Calendar of Events

Feb.	21-23	CQ WW 160M SSB Contest
Feb.	22-23	YLRL YL/OM CW QSO Party
Feb.	22-23	U.B.A. CW Contest
Feb.	29	Utah 160 Meter Challenge
Mar.	1-2	Wisconsin QSO Party
Mar.	7-8	ARRL DX SSB Contest
Mar.	7-8	YL ISSB SSB QSO Party
Mar.	7-8	QCWA SSB QSO Party
Mar.	13-15	Japan Int'l DX CW Contest
Mar.	14-15	Bermuda Contest
Mar.	17	CLARA Contest
Mar.	21-23	Virginia QSO Party
Mar.	21-23	BARTG Spring RTTY Contest
Mar.	28-29	CQ WW SSB WPX Contest
Apr.	1	Poisson d'Avril Contest
Apr.	11-12	MARAC SSB County Hunters'
Apr.	18-19	SARTG WW AMTOR Contest
Apr.	25-26	Georgia QSO Party
May	2-3	Oregon QSO Party
May	30-31	CQ WW SSB WPX Contest
Jun.	13-15	ARRL June VHF QSO Party
Jun.	27-28	ARRL Field Day
Jul.	11-12	IARU HF World Championship

Most contests are of the "specialty" variety that limit operation to YLs, rare states or certain geographies, professional/amateur organization members, etc. You will find that many of these contests have little or no activity. Over the past couple of months I have listened to the recommended frequencies of operation for some recently announced contests. Not surprisingly, I arrived only to find dead air more times than you may suspect. However, for the contest sponsor, these types of contests can be fun and are a valiant attempt to increase operating activity in some of the more interesting parts of the world.

I don't believe that 100+ contests are the ultimate factor that disturbs the non-contester. The existence of 15 to 20 "big" contests goes much further to influence spectrum use than the other 80 contests in any given year. The use of our valuable spectrum in the "Big 17" is a debate that will rage forever. The suggested cures range from limited operating frequencies and times to outright abrogation. Like it or not (here comes more mail), we might as well accept the fact that contests are here to stay. There is simply too much interest and activity to apply wishful thinking to a 20 meter SSB "contest free" environment. Am I sympathetic to the impact we have

Weekend Number	Number of Contest Announcements	Number Dominating Spectrum Use
1	1	0
2	1	0
3	5	0
4	4	0
5	3	0
6	3	0
7	1	1
8	2	0
9	1	1
10	3	0
11	3	0
12	0	0
13	1	1
14	4	0
15	0	0
16	2	0
17	1	0
18	2	0
19	2	1
20	2	0
21	1	1
22	1	1
23	3	0
24	1	1
25	1	1
26	1	0
27	1	0
28	1	1
29	2	0
30	1	0
31	4	0
32	2	1
33	6	0
34	3	0
35	2	0
36	5	2
37	2	0
38	3	0
39	4	1
40	4	0
41	3	0
42	2	1
43	1	1
44	4	0
45	1	1
46	1	1
47	0	0
48	0	0
49	1	0
50	2	1
51	1	0
52	0	0
<b>Total</b>	<b>105</b>	<b>17</b>

Table I—The 1991 contest announcement analysis.

on the non-contester? You bet! However, contesting is to me like slow scan television or VHF is to many others—one of



Callsign	Year	Single Op/Multi Op	Mode	Band	Callsign	Year	Single Op/Multi Op	Mode	Band
K6EIV	1960	Single Op/Single Band	CW	20M	N6GG	1989	Single Op/Single Band	CW	20M
W3MSK	1966	Multi Op	CW	20M	ZS6BCR	1989	Single Op/Single Band	CW	20M
W2ONV	1968	Single Op/Single Band	SSB	20M	JA5DQH	1989	Single Op/Single Band	CW	15M
K2KUR	1968	Single Op/Single Band	SSB	20M	JA7FTR	1989	Single Op/Single Band	CW	20M
K8MMM	1968	Single Op/Single Band	SSB	20M	G3TXF	1989	Single Op/Single Band	CW	20M
VE3LZ	1968	Single Op/Single Band	SSB	20M	IT9GSF	1989	Single Op/Single Band	CW	20M
OH2AM	1968	Multi Op	SSB	20M	UR2RDO	1989	Single Op/Single Band	CW	20M
W3MSK	1968	Multi Op	SSB	20M	CW8B	1989	Single Op/Single Band	CW	15M
W4ETO	1968	Multi Op	SSB	20M	K1AR	1989	Multi Op	CW	20M
OH2AM	1968	Multi Op	CW	20M	N3RS	1989	Multi Op	CW	20M
W4BVV	1969	Multi Op	CW	20M	K8AZ	1989	Multi Op	CW	20M
WA2ZAA	1969	Multi Op	CW	20M	K5NA/2	1989	Multi Op	CW	20M
W3MSK	1969	Multi Op	CW	20M	WM5G	1989	Multi Op	CW	20M
K3AFO	1972	Single Op/Single Band	SSB	20M	W3LPL	1989	Multi Op	CW	20M
W4WSF	1972	Single Op/Single Band	SSB	20M	NR5M	1989	Multi Op	CW	20M
W8JGU	1972	Single Op/Single Band	SSB	20M	K1ST	1989	Multi Op	CW	20M
UW1AR	1972	Single Op/Single Band	SSB	20M	K4JPD	1989	Multi Op	CW	20M
G3RRS	1978	Single Op/Single Band	SSB	20M	K4VX/0	1989	Multi Op	CW	20M
EX9A	1978	Multi Op	SSB	20M	PJ1B	1989	Multi Op	CW	20M
N2AA	1979	Multi Op	SSB	20M	KP2A	1989	Multi Op	CW	15M
N2AA	1979	Multi Op	SSB	15M	EA9EA	1989	Multi Op	CW	20M
SK2KW	1979	Multi Op	SSB	10M	OL8A	1989	Multi Op	CW	20M
YU3EY	1979	Multi Op	SSB	20M	UL8LYA	1989	Multi Op	CW	20M
N2AA	1979	Multi Op	CW	20M	HG5A	1989	Multi Op	CW	20M
WA2RLQ	1980	Single Op/Single Band	SSB	20M	HG5A	1989	Multi Op	CW	15M
6D7LCH	1980	Single Op/Single Band	SSB	20M	LZ9A	1989	Multi Op	CW	20M
OH8SR	1980	Single Op/Single Band	SSB	20M	LZ9A	1989	Multi Op	CW	15M
N2AA	1980	Multi Op	SSB	20M	KP2A	1989	Multi Op	CW	15M
K8LX	1980	Multi Op	SSB	20M	JA7SGV	1989	Single Op/Single Band	SSB	20M
K3WW	1980	Multi Op	SSB	20M	DF8XC	1989	Single Op/Single Band	SSB	20M
SK2KW	1980	Multi Op	SSB	20M	N3RS	1989	Multi Op	SSB	20M
LZ7A	1980	Multi Op	SSB	10M	KS9K	1989	Multi Op	SSB	15M
YU3TU	1981	Single Op/Single Band	SSB	15M	W3LPL	1989	Multi Op	SSB	20M
OH1AA	1981	Multi Op	SSB	20M	NB1H	1989	Multi Op	SSB	20M
K3KG/4	1982	Single Op/Single Band	SSB	20M	K5NA/2	1989	Multi Op	SSB	20M
YU3TWT	1982	Single Op/Single Band	SSB	20M	PJ1B	1989	Multi Op	SSB	20M
YT3L	1982	Single Op/Single Band	SSB	20M	ZW5B	1989	Multi Op	SSB	20M
OH0W	1982	Multi Op	SSB	20M	ZW5B	1989	Multi Op	SSB	15M
OH0W	1982	Multi Op	SSB	15M	VP9AD	1989	Multi Op	SSB	20M
YT3M	1984	Single Op/Single Band	SSB	20M	NX7K	1990	Single Op/Single Band	SSB	20M
K2HFX	1986	Single Op/Single Band	SSB	20M	N2RM	1990	Multi Op	SSB	20M
4N7N	1987	Single Op/Single Band	SSB	20M	N5AU	1990	Multi Op	SSB	20M
YC2UKM	1988	Single Op/Single Band	SSB	15M	KY1H	1990	Multi Op	SSB	20M
IR4LCK	1988	Multi Op	SSB	10M	KY1H	1990	Multi Op	SSB	15M
K1TO	1989	Single Op/All Bands	CW	20M					

Table II- CQ WW entries with WAZ on a single band (1948-90).

many reasons why I enjoy this hobby so much.

### The Magic of WAZ In The CQ WW DX Contest

I'm not really sure who created the idea of CQ Zones (guess I'm not old enough), but he was a genius. I think that working 5-Band WAZ is one of amateur radio's finest accomplishments. Doing it on SSB only is even more amazing! This past 1991 CQ WW CW, as I seemingly felt more like an SWL than a contesteer on 40 meters with poor conditions, I did more than my usual share of multiplier hunting. As it turns out, we worked 38 Zones on that band (and yes, I heard the other two!). That accomplishment prompted me to consider the number of times anyone had ever worked all 40 Zones on a band in the CQ WW.

As it turns out, there are 89 instances of contest entries with 40 Zones on a single band (see Table II). Even though I checked

the results carefully, there may be an omission or two from my reporting. For example, band breakdowns were not reported for many CQ WW entry categories until 1963. If I inadvertently left you out, please be sure to let me know so I can give credit where credit is due.

For obvious reasons the multi-operator stations dominate the claim to 40 Zones. However, it was interesting to see 32 single operator (single band) entries share the prize. Perhaps the most fascinating statistic I uncovered is the fact that only one single operator/all band entry has ever worked all zones on a single band! That claim to fame is owned by Dan Street, K1TO, who worked them all in the 1989 CQ WW CW Contest.

Twenty meters leads the bands for CQ WW WAZ efforts. However, there are 13 all zone entries on 15 meters and 3 making the grade on 10 (18.0% of total). No one has ever achieved WAZ on 160, 80, or 40 meters.

It seems that SSB is the place to be if you

are trying to work all zones in the CQ WW. Over the years there has been a 54/35 advantage in favor of phone. However, the CW operator should not give up hope as evidenced by the 1989 CW Contest. From a geographic perspective, the split is nearly even (44/45) for US versus DX stations achieving WAZ.

Finally, you have probably noticed that there are very few operators repeating a 40 Zone weekend from year to year. If I were to name the CQ WW WAZ champion, it is probably Gene Walsh, N2AA, who managed to achieve WAZ five times on 20 meters from various callsigns (N2AA, K2KUR, WA2ZAA).

### Closing Thoughts

After reading 40+ years of CQ WW results again, this month's column will most certainly lead me to my optometrist via the short path. The month of March also brings the end of the traditional contest season



(September–March). Band conditions have had amazing resiliency this year despite the pessimists' claim to the demise of 10 meters.

Don't forget that there is one more "heavy hitter" at the end of this month—the CQ WW WPX SSB Contest. The WPX is always full of activity and fast rates. And it's a great way to cap off another contest year.

Remember, the deadline for the June issue is April 1st.

73, John, K1AR

### Wisconsin QSO Party

1800Z Sun. to 0100Z Mon., March 1–2

This one is a shorty, only 7 hours, and it is again sponsored by the West Allis Radio Amateur Club.

The same station may be worked on each band and mode, and mobiles in each county change. Wisconsin stations may contact other in-state stations for QSO and multiplier credit. Only one transmitter on the air at the same time.

**Classes:** Single operator and multi-operator and transmitter, both fixed and mobile. And Novice/Tech, both single and multi-operator.

**Exchange:** QTH only. County for Wisc.; state or province for others.

**Scoring:** Phone QSOs count 1 point, 2 points if on CW.

Wisc. stations multiply total QSO points by (U.S. states + VE provinces + Wisc. counties) worked for their final score. DX contacts count for QSO points only.

Others use total Wisc. QSO points by the number of Wisc. counties worked (maximum of 72).

Wisc. mobiles can add a bonus of 500 points to their final score for each county outside their own from which they operate (minimum of 15 QSOs from each county).

**Frequencies:** CW—3550, 3705, 7050, 7125, 14050, 21150. SSB—3890, 7230, 14290, 28400. Other bands may be used.

**Awards:** To highest scoring single operator in each class in each state and province.

**Wisconsin:** To 10 top single operator scorers in each class. Highest multi-operator in each class. Highest aggregate club score. Plaque to the highest scoring single operator in the Party.

Logs with more than 100 QSOs must include a separate dupe sheet for each mode with their entry.

Complete rules and entry forms are available from address below. Include a large SASE.

Mailing deadline for logs is April 15th

to: West Allis RAC, P.O. Box 1072, Milwaukee, WI 53201.

### Japan International DX Contest

2300Z Sat. to 2300Z Sun., Mar. 13–15

This is the CW edition of the Japan International DX Contest sponsored by *Five Nine Magazine*. It is open to participants worldwide on 80–10 meters.

**Classes:** Single operator, all bands and single band, and Multi-Single. Only 30 hours may be used as a single operator entry. Off periods must be a minimum of 60 minutes. Multi-operator stations may operate the full 48 hour period.

**Exchange:** Signal report and serial number for DX stations; JAs send their prefecture in place of the serial number (number 01 to 50).

**Scoring:** DX stations contact Japan only. QSOs on 80 and 10 meters count 2 points. All other QSOs are 1 point.

**Multipliers:** Japanese Prefectures and Ogasawara, Minami-Torishima, and Okino-Torishima Islands (JD1) worked per band.

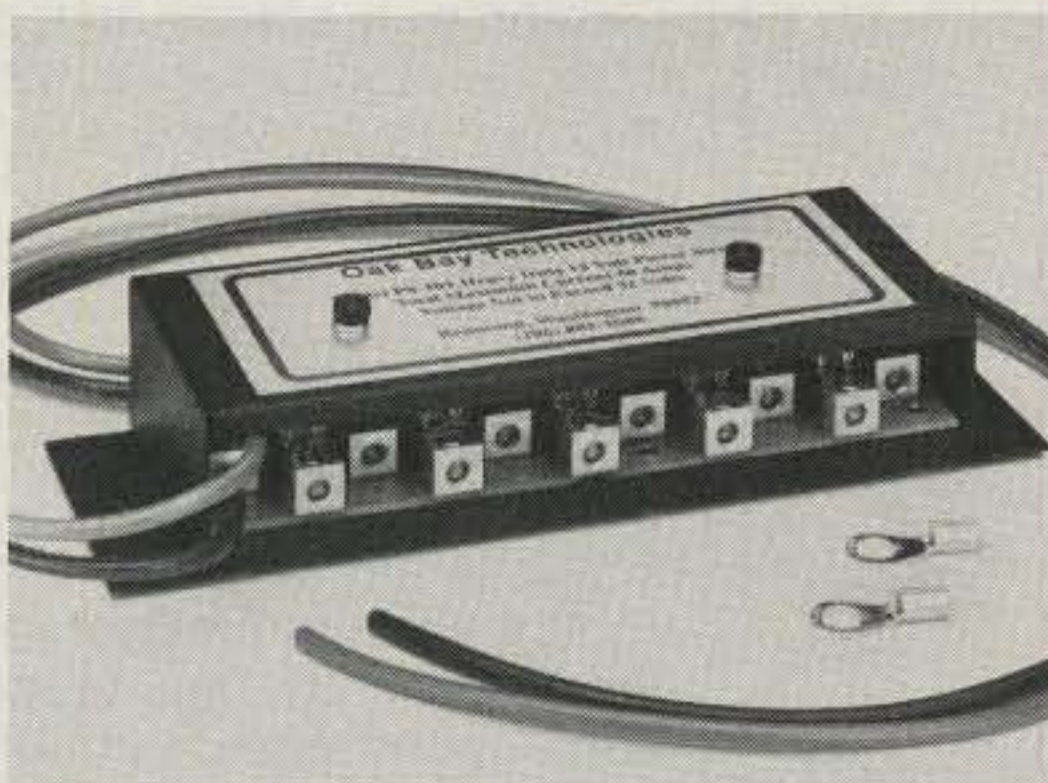
**Final Score:** Multiply total QSO points times multiplier.

**Awards:** The top scorer in each category on each continent will receive a winner's plaque. Additional plaques may be awarded based on merit. In addition, certificates will be awarded to the top three

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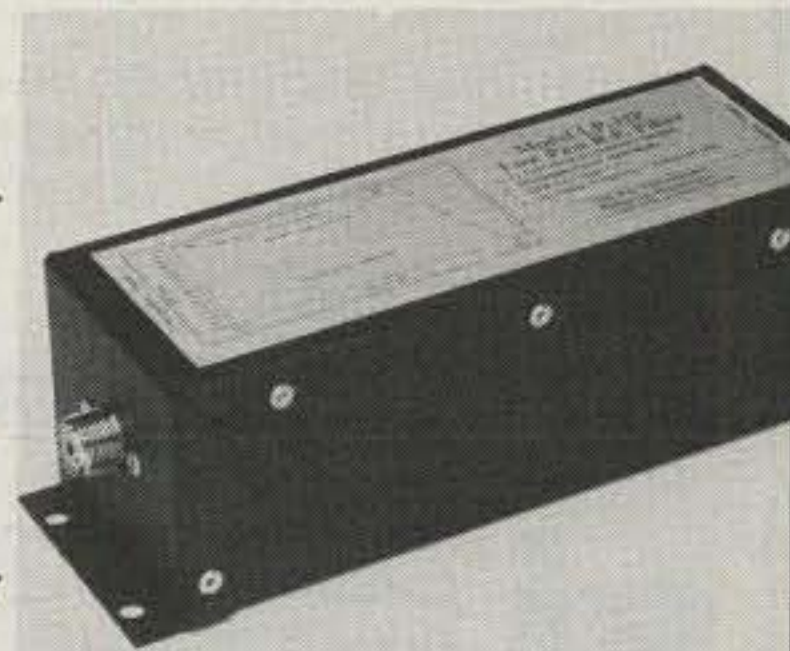
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entries (participation pending) in each country and USA call area. Entrants who work all Japanese prefectures during the contest period can request a special contest award with their entry.

Send your entries to: Five Nine Magazine, Box 59, Kamata, Tokyo 144, Japan. The mailing deadline for entries is April 30, 1992.

### CLARA Contest

1700Z Tues. to 1700Z Wed., Mar. 17

This is the 25th anniversary of the CLARA Contest, and it is open to YLs and OMs around the world on phone and CW. Each station may be contacted twice per band mode.

**Classes:** Single operator, all bands.

**Exchange:** Name, RS(T), QTH (Canadian Province/DXCC Country), and CLARA Membership status (Yes/No).

**Frequencies:** SSB—3750, 7070, 7150, 14120, 14160, 18120, 21300, 28488. CW—3690, 7035, 10120, 14035, 18025, 21035, 28010.

**Scoring:** CLARA-CLARA QSOs are worth 5 points; CLARA-YL QSOs are worth 3 points; CLARA-associate OM QSOs are worth 2 points; CLARA-OM QSOs are worth 1 point. CW contacts are worth double points. Fifty bonus points will be added to your score if you work the secret bonus station during the contest.

**Multipliers:** Canadian Provinces and DXCC Countries with YL operators.

**Final Score:** Multiply total QSO points times multiplier.

**Awards:** A variety of trophies and certificates will be awarded to high-scoring CLARA members, non-members, and OMs.

Send your entries no later than April 10th to: Vicki Durance, VE7DKS, 2822 Pickford Road, Victoria, BC, V9B 5M1, Canada.

### Bermuda Contest

0001Z Sat. to 2400Z Sun., March 21-22

This is the 34th year for this popular contest open to amateurs in the United States, Canada, the United Kingdom, West Germany, and Bermuda.

Stations in the U.S. and Canada may work the U.K., Germany, and Bermuda. The U.K. and Germany may work the U.S., Canada, and Bermuda. Activity will be on the 3.5, 7, 14, 21, and 28 MHz bands. Cross-band or cross-mode contacts are not permitted. The same station may be worked on each band, phone and again on CW, providing there is a 60-minute separation between contacts on the same band.

You are limited to 36 hours out of the 48-hour contest period. Off times of no less than three consecutive hours must be clearly indicated on the log. Participa-

tion is for single operator stations only and must be from their own residence.

**Exchange:** RS(T) and QTH. Parish for VP9, state for the U.S., province for Canada, county for the U.K., and DOK number for Germany.

**Scoring:** Five points for each QSO. A station may be worked on SSB and CW if the QSOs are more than one hour apart. Multiply total by number of different VP9 stations worked on all bands. (Note: It's each VP9 station, not each parish.) Counted once per QSO (e.g., QSOs on 20M SSB and CW count as 2 multipliers). VP9 Novices count as double multipliers.

**Awards:** Certificates to top scoring stations in each U.S. state, VE province, U.K. county, and DL DOK (minimum of 100 QSOs). The overall winner in the US/Canada and UK/Germany will each receive a trophy. **Note: There is no longer a free trip to Bermuda for trophy winners.**

Use a separate log sheet for each band and a dupe sheet for logs with 200 or more contacts. A penalty of three contacts will be deducted for each duplicate contact for which points are claimed. An excessive number of claimed duplicates means disqualification. The usual signed declaration is also required.

Entries must be received no later than May 25th by the Radio Society of Bermuda, Box HM275, Hamilton HM AX, Bermuda. Enclose 4 IRCs for acknowledgments.

### Virginia QSO Party

1800Z Sat. to 0200Z Mon., March 21-23

This is the 17th year the Sterling Park ARC has sponsored this party. The same station may be worked on each band and each mode for QSO credit. VA stations may work other in-state stations for QSO and multiplier credit. And VA mobiles in each county change.

**Exchange:** QSO number starting with 001 and QTH. County for VA; state, province, or DX country for others.

**Scoring:** One point for each contact.

VA stations multiply total QSO points by sum of US states, VE provinces, DX countries, and VA counties.

Others multiply total VA QSO points by the number of VA counties worked (maximum of 95).

Mobiles receive special 100 bonus points for each different VA county.

**Frequencies:** CW—60 kHz up from low end of 10, 15, 20, 40, and 80 meter bands. SSB—1815, 3860, 7260, 14260, 21360, and 28360. Also Novice bands, and both modes on 160.

**Awards:** Certificates to top scorers in each state, province, DX country, and VA county. There are six plaques as follows: top VA multi-mode, VA CW only, VA club, VA mobile, VA Novice/Tech, and top out-of-state station.

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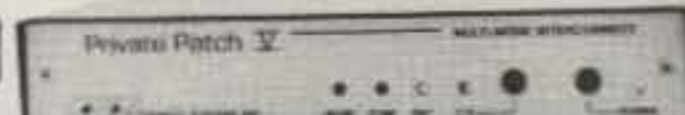


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**Logs:** Indicate each new multiplier in a separate column as it is worked. Include a summary sheet showing the scoring and other pertinent information.

Mailing deadline for all entries is April 15th to: Virginia QSO Party, c/o Forrest B. Snyder, Jr., N4UTY, 805 S. Hoga St., Sterling, VA 22170.

### BARTG Spring RTTY Contest

0200Z Sat. to 0200Z Mon., March 21-23

This contest is sponsored by the British Amateur Radio Teleprinter Group and is being administrated by John Barber, G4SKA. The contest is open to all amateurs in three classes—single operator, multi-operator, and SWL.

Activity will be on all bands 3.5-28 MHz, but no WARC. Operation is limited to 30 hours out of the 48-hour contest pe-

riod. The 18 hours off may be taken at any time, but not less than 3-hour periods.

**Exchange:** RST plus a three-figure contact number and time in GMT (full four figures).

**Points:** Contacts with other stations count one point. The same station may be worked on each band for QSO and multiplier credit.

**Multiplier:** Total number of countries worked on each band and number of continents worked (continents are counted once only). W/K, VE/VO, and VK call areas will be counted as separate multipliers.

**Final Score:** Total QSO points × country multiplier × continents worked.

Shortwave listeners must show call of station being heard, report of message being sent, and call of station being worked.

**Awards:** Certificates to the top-scoring stations in each class and to the

continental leaders. Also in each W/K, VE/VO, and VK call area.

Use a separate log sheet for each band and a summary sheet showing the scoring, etc. Log forms are available from G4SKA; include 6 IRCs to cover postage.

Logs must be received by May 25th and go to: John Barber, G4SKA, 32 Wellbrook Street, Tigerton, Devon, EX16 5JW England.

### CQ World-Wide WPX Contest

SSB: March 28-29 CW: May 30-31

Starts: 0000Z Sat. Ends: 2400Z Sun.

Complete rules were published in the January issue. Following are a few points to keep in mind.

You may now operate 36 hours out of the 48-hour contest period as a single operator station. Off times can be taken in up to five periods, but off periods must be a minimum of 60 minutes in length. Multi stations can operate the full 48 hours.

A 100 watt category has also been added to be consistent with the CQ WW DX Contest. There is still no single operator assisted category.

The definition of the prefix multiplier is spelled out in detail and is now also being used for the CQ WPX Award program.

A prefix is the letter/number combination which forms the first part of a call.

The multiplier is determined by the number of different prefixes worked and is counted *once* only, regardless of how many times it is worked on other bands.

Another point to keep in mind is that in the multi-operator, single transmitter category only one transmitter and only one band may be used during the same 10-minute period. Picking up a new multiplier on another band during the same time period is prohibited.

An alphabetical/numerical check list of claimed prefixes is a requirement and must be included with your log. Note that contest logs may be submitted on disk (MS-DOS compatible) in standard ASCII or .bin, .res, .dfb, .wks formats. To reduce the administrative burden, please label your computer entries with a unique name (e.g., N8BJQ.BIN).

An updated trophy and plaque awards list now shows over 40 awards. Be sure to check the awards that are available.

Deadline for submitting your SSB entry is May 10th, and July 10th for the CW section. Be sure to indicate SSB or CW on the envelope.

All logs go to: CQ Magazine, WPX Contest, 76 North Broadway, Hicksville, NY 11801 U.S.A.

Questions pertaining to the WPX Contest can be sent to the WPX Contest Director, Steve Bolia, N8BJQ, 4121 Gardenview Dr., Beavercreek, OH 45431 U.S.A. or via packet to the following: N8BJQ @W8BI.OH.USA.NA.

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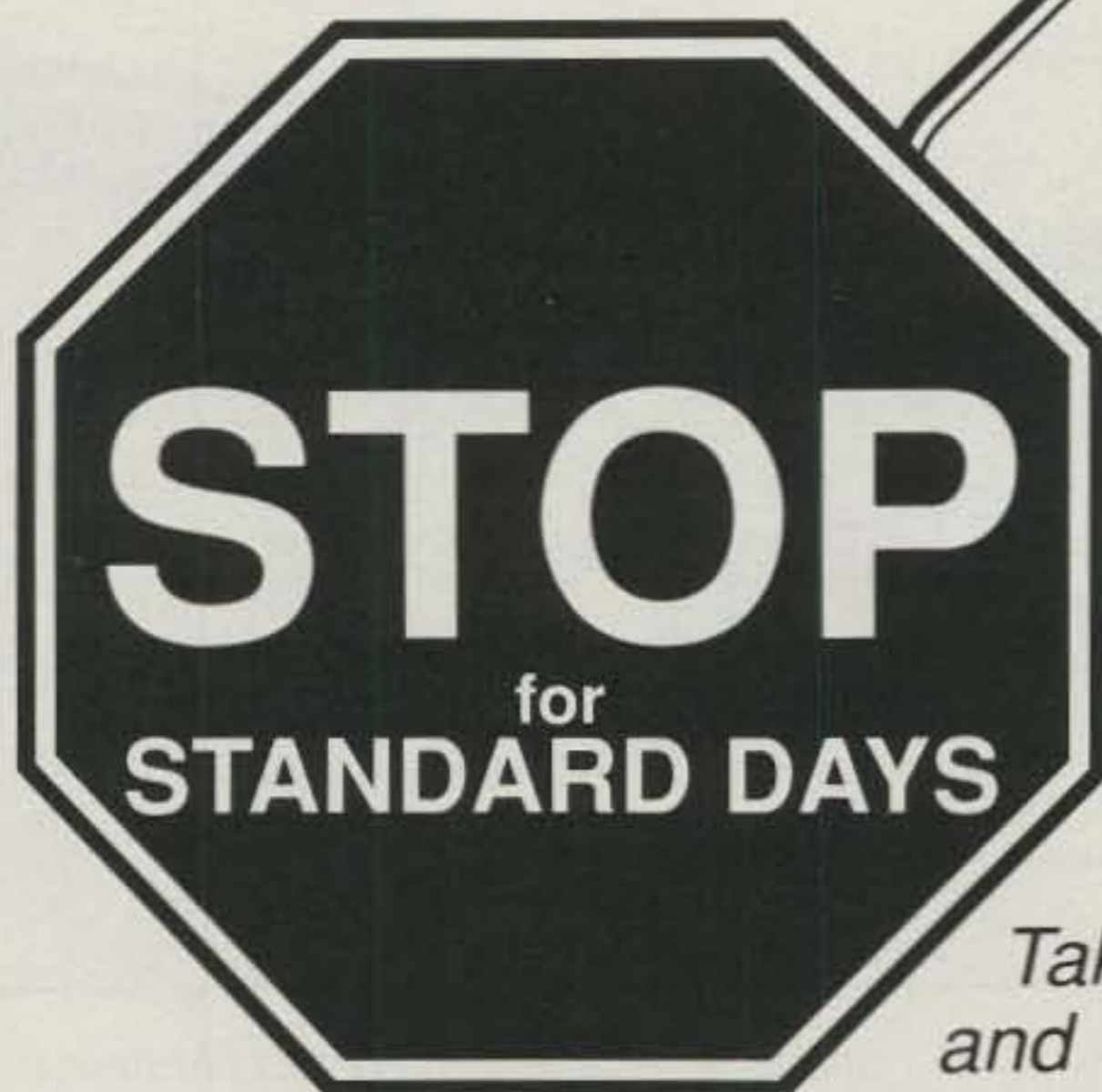
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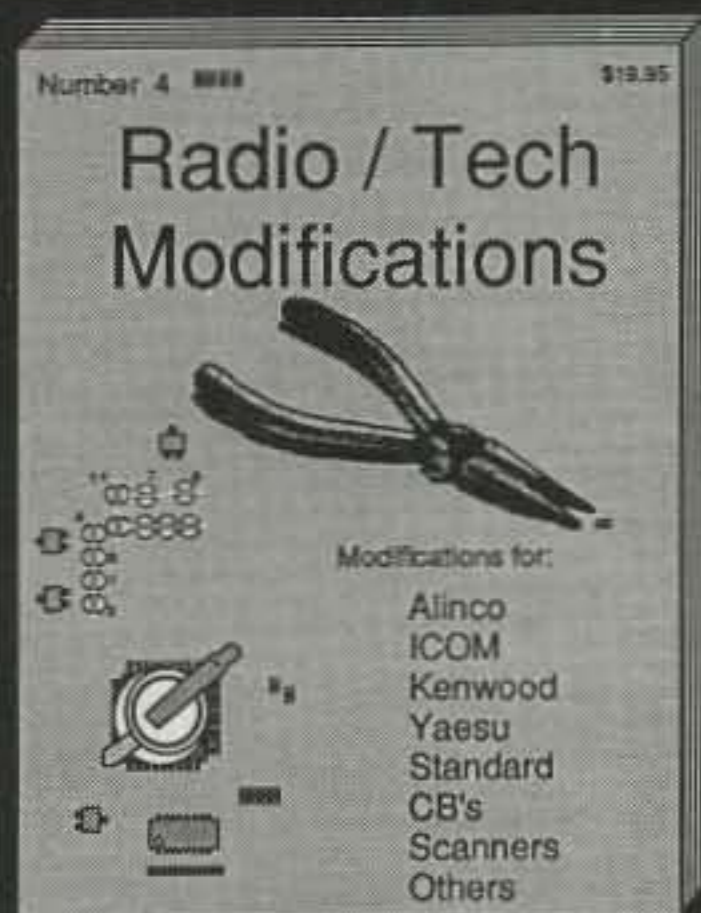
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## A LOOK AT THE WORLD AROUND US

### QRP Fun—Part II

Last month's column kicked off this two-part series featuring QRP and discussed some incredibly small rigs for homebrew enthusiasts. This month we continue with more QRP rig views and ideas plus a first look at MFJ's new QRP transceiver and a handy power source for pocket rigs—the Quantum Ham Battery. Adding a touch of diversity, we will also focus on ultra-low-cost and easy-to-build transmitters rather than super miniature gear.

Hopefully, our featured goodies will inspire or rekindle your interest in building simple gear and operating QRP just for fun. It's a blast, especially if frequent light traveling limits your enjoyment of the big home setup. Carrying a full-size HF rig and power supply on unplanned weekend jaunts or commercial airplane flights can prove quite trying, but fitting a little QRP rig and miniature key plus FM handheld into an overnight bag or briefcase is easy.

The most productive bands I have found for operating QRP are 30 meters and occasionally 12 meters. U.S. CW activity on both of these WARC bands is light and friendly, there is very little QRM, and DXing is good. High power is prohibited on 30 meters, and few amateurs run linear amplifiers on 12 meters. Basic antennas such as dipoles and verticals rather than monster beams are also common on both 30 and 17 meters.

Need more encouragement? I still have some Wild Woody WARC keys to award appreciative on-the-air contacts, and continue briefly frequenting 30 meters weeknights looking for QRP signals.

That's enough soapboxing for this month. Now let's look at the QRP goodies!

#### Five of a Kind

My good friend Brian Wingard, N4DKD, really knows how to enjoy amateur radio on a limited budget. In addition to pursuing a rather hectic career, he operates HF packet, works 30 meters QRP mobile (with very good results), and often turns spare junkbox parts into neat little QRP rigs.

One of Brian's latest creations we call "Five in a Row" is shown in fig. 1. This 1.5 watt 30 meter transmitter is built on a small piece of perfboard with point-to-point wir-

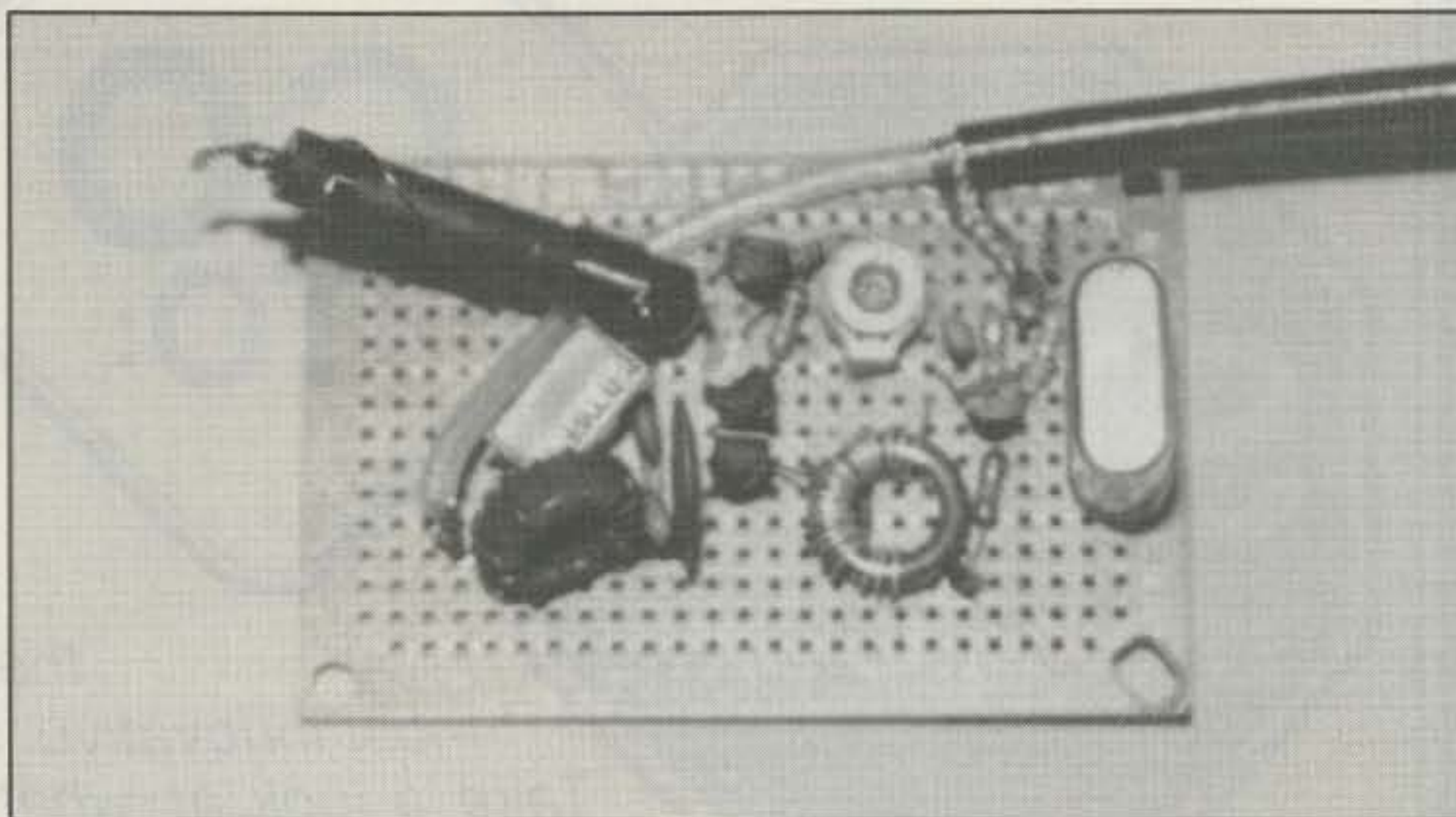


Fig. 1—N4DKD's "Five in a Row" QRP transmitter after assembly and before installation in a box. Crystal is on the left, output transistors are squeezed in the middle, and 12 volts DC connects to the RF choke on the right. (See discussion in text.)

ing and junkbox parts. The rig was assembled during an afternoon, and turned several good QSOs before Brian could mount it in a small box. A key wired in series with a 12 volt battery connects to the RF choke emerging on the board's right side, while the coax cable routing from the board's left side goes to a 30 meter dipole. A single transistor oscillator circuit on the left drives an RF amplifier with four parallel-connected transistors on the right. This little transmitter is a perfect project for new QRPers, as it is easy to assemble and not critical to adjust.

The schematic diagram of our low-cost "Five in a Row" delight is shown in fig. 2. Inexpensive 2N2222s are used throughout. They are complemented with standard 1/4 watt resistors, small disk capacitors, and readily available T-50-2 toroids. If you cannot find a small trimmer for oscillator tuning, use a large variable to initially find resonance (maximum output with cleanest signal). Then estimate its value and substitute fixed capacitors of smaller size until you achieve comparable results.

Any RF choke with an inductance of approximately 100 uHy can be used in this transmitter. Brian made his choke by unwinding all except eleven turns from a Radio Shack Number 110-114 RF choke. The 2 ohm resistors on each transistor's emitter are necessary for stabilization. Assuming you have a healthy (rather than slug-

gish) crystal, points A and B can be connected together and keyed as shown. If chirping is noticed, connect point A directly to 12 volts and insert the key in line with point B. If desired, a warping capacitor can be connected in parallel with the crystal for producing an approximate 1 kHz frequency shift.

I should also mention this transmitter can be expanded into a full transceiver using the direct conversion receiver circuit shown in last month's column. In this case, the local oscillator signal can be tapped off the junction of the 150 pFd trimmer and oscillator 2N2222's collector while RF input can be tapped off the junction of the .1 mFd capacitor and 4-2N2222s collectors. The previous points are marked "C" and "D," respectively, in fig. 2. A homebrewed "Five of a Kind" transmitter is not too attractive in "naked" form (sort of looks like an olive with its pimento hanging out), so use your ingenuity on case design. A couple of opening ideas are empty cola cans with top-mounted knobs and a Legg's (women's pantyhose) container.

#### The Michigan Mighty Mite

While attending the 1991 ARRL Convention in Saginaw, Michigan, Tom Jurgens, KY8I, told me about his QRP DXing success using a quick homebrewed transmit-

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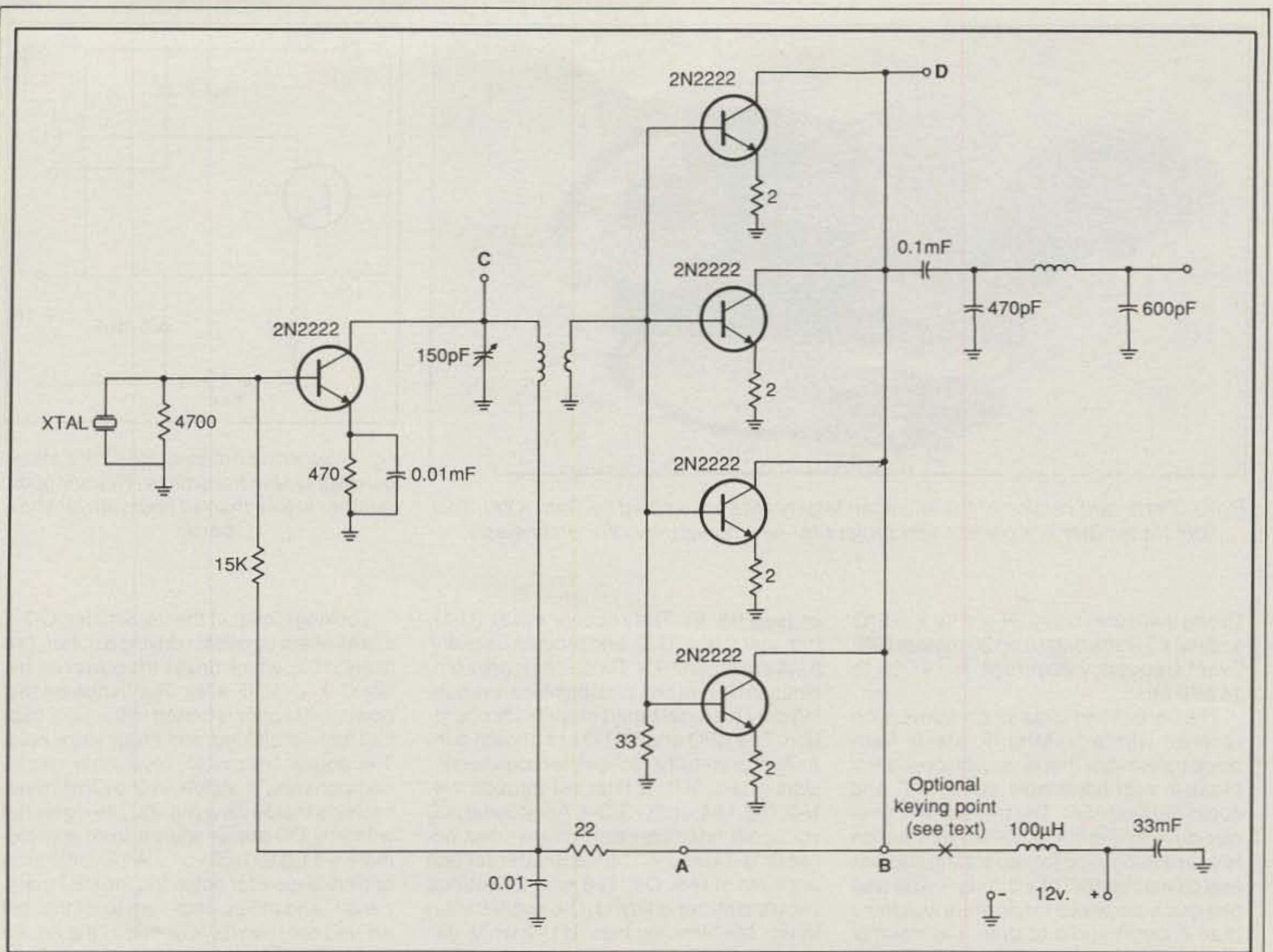


Fig. 2- N4DKD's "Five of a Kind" QRP transmitter uses a handful of readily available 2N2222 transistors. This idea of paralleling output transistors can be applied to almost any QRP transmitter circuit. You can also increase transistor count to eight for lower frequencies or decrease transistor count to two or three as desired.

ter called the Michigan Mighty Mite. Details on this super-simple and easy-to-duplicate rig originally appeared in an article by Ed Noll, W3FQJ. Later it was resurrected and featured in "The Five Watter" newsletter produced by the Michigan QRP Club, 5346 W. Francis Road, Clio, MI 48420 (a terrific group of "movers and shakers" in QRP). The transmitter proved so appealing for first-time QRPers, we simply could not resist sharing its views with you. This gem can be assembled from junkbox parts and used on-the-air tonight. What else can we say except "go for it!"

A photo of Tom's little "Mite" (no pun intended!) is shown in fig. 3, and its schematic diagram is shown in fig. 4. Less than a dozen "garden variety" parts are used to assemble this afternoon delight (inspires heating up the old soldering iron right now, eh?). They are wired point-to-point on a small piece of perfboard using the shortest possible lead lengths. A popular 2N3053, 2N2222, or SK3265 transistor work fine in the 'Mite. Likewise, resistor and capacitor values can be varied slightly to mate with

your junkbox-available components. A small tuning capacitor can often be salvaged from a defunct AM transistor radio, but avoid using "tiny wimps" found in miniature pocket radios. An air variable with enough spacing to let you see between its plates is a good choice. Most regular/fundamental type crystals like you used as a Novice or purchase today from Jan Crystals (inexpensive FT-243 with 32 pFd load capacitance) are perfect for this circuit. Their crystal's frequency plus the tank circuit's windings determine the 'Mite's band of operation.

The tank coil is wound on an approximate 1.25 inch diameter form, such as a 35 mm film canister or an old pill bottle. The primary/collector winding consists of 60 turns tapped at 20 turns for 160 meters, 45 turns tapped at 15 turns for 80 meters, 21 turns tapped at 7 turns for 40 meters, and 15 turns tapped at 6 turns for 30 meters. All of the previous coils are wound with number 22 enameled wire. After winding the primary/collector coil, wrap it with a thin layer of masking tape and wind the

secondary/antenna coil on top of the tape (and in the same direction). Use more number 20 enameled wire to wind 8 turns for 160 meters, 6 turns for 80 meters, and 4 turns for 40 or 30 meters. Connect this coil's output to a dipole, vertical, or long-wire.

Tuning and using the 'Mite is a snap. Monitor its output on an SWR or field strength meter while listening for the cleanest signal on an auxiliary receiver, and tune the variable capacitor for best (compromised) results. That's all! Output will be approximately 500 milliwatts with a 12 volt power supply. Is that enough power for QRP fun? Yes, indeed! KY8I made over a dozen good contacts in seven states during a few hours of operation. Your results may be even better. Give it a try. Homebrewing QRP rigs is a blast!

### MFJ's New QRP Transceiver

I recently checked out MFJ's new model 9020 QRP transceiver, and it is a real treat.

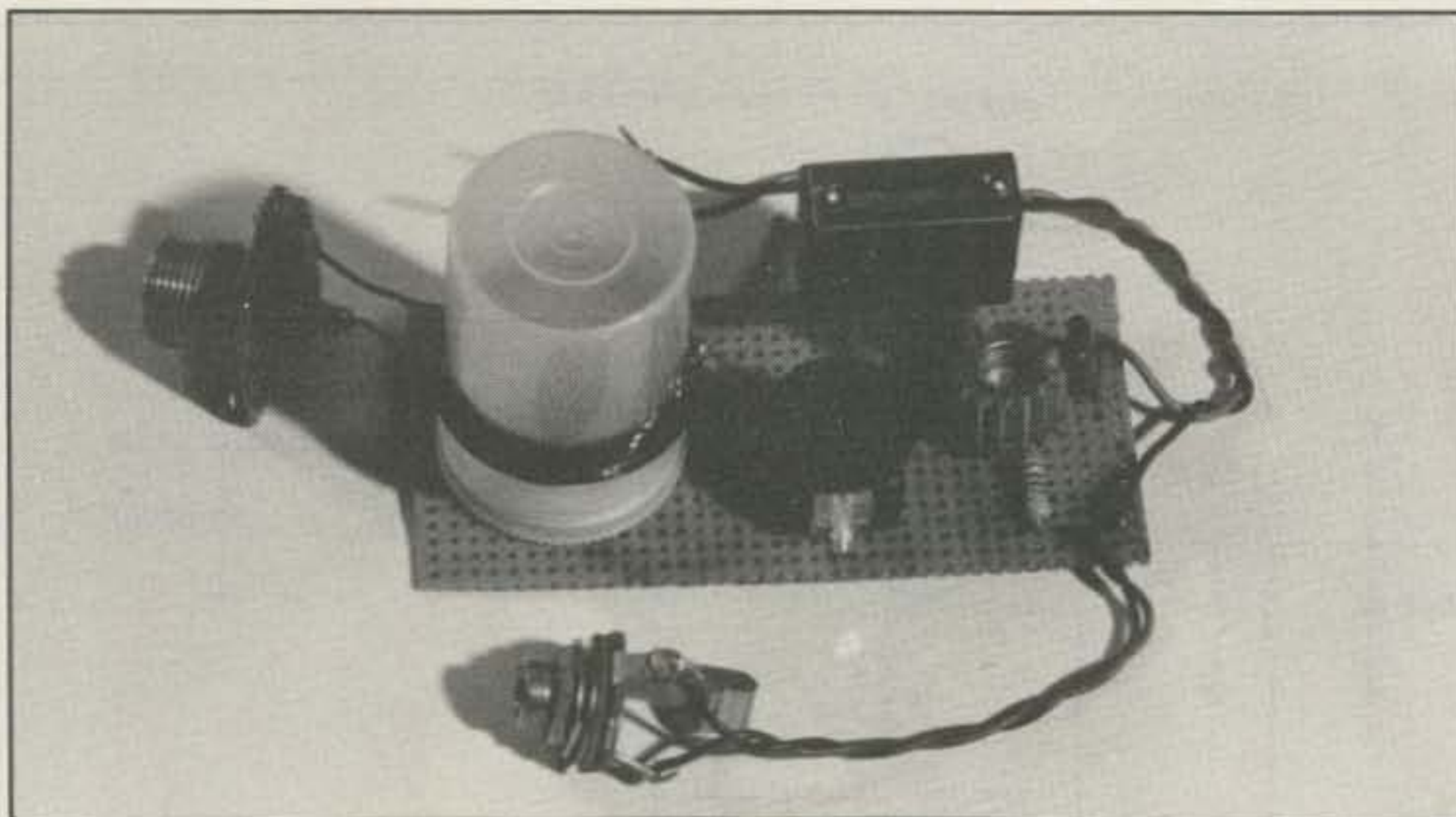


Fig. 3- Perfbord version of the Michigan Mighty Mite assembled by Tom, KY8I. This little transmitter is a perfect first project for new homebrew QRP enthusiasts.

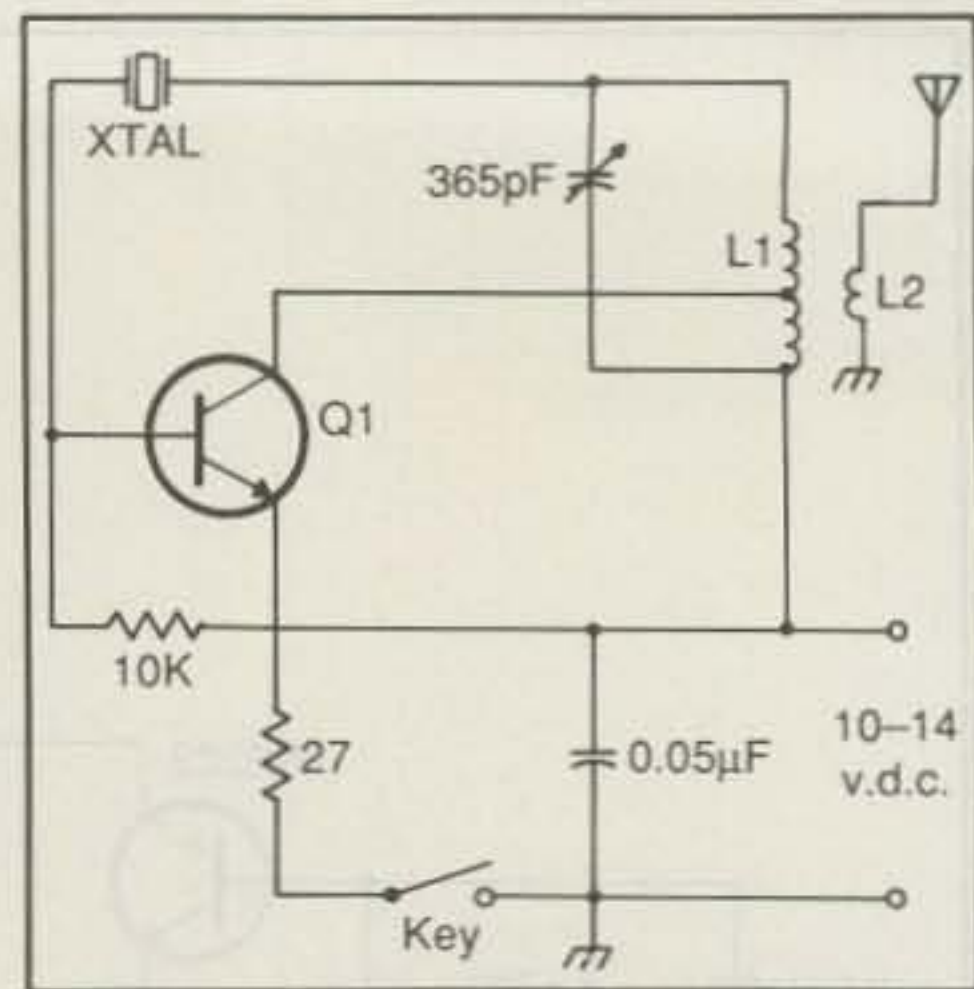


Fig. 4- Schematic diagram of KY8I's Michigan Mighty Mite transmitter. This unit goes together in less than an hour with junkbox parts!

The rig measures only 2"H x 6"W x 6.5"D and runs 5 watts output on 20 meters CW. Exact frequency coverage is 14.000 to 14.075 MHz.

The transceiver has a single conversion receiver with a 10 MHz IF, stable four-stage transmitter that runs quite cool, semi break-in with adjustable delay, RIT, and audio-derived AGC. The transceiver's vernier-drive tuning and built-in crystal lattice filter are really nice for separating stations and giving the feel of a big rig. I was also pleasantly surprised to find there was more than enough audio to drive the internal speaker. Even weak DX stations were smooth copy without earphones.

Within minutes after the MFJ QRP transceiver arrived, I connected it to my new Quantum Battery (another great QRP item we will discuss presently), miniature spy key, and antenna, and flipped on 20 meters (see fig. 5). My first contact was a VE3, and the signal report was 569! I was simulating a field/beach setup and using my ground-mounted vertical rather than my 20 meter beam, and the rig was working like a champ! Over a dozen more solid contacts were made with the MFJ 9020 that first evening, many including Europeans. (However, I did miss contacting a VK via long path. Can't win them all with QRP!)

A few more evenings of operation with the little "hip pocket" transceiver were equally fruitful, although getting into massive DX pile-ups with 5 watts is akin to going bear hunting with only a slingshot. The real beauty of this rig is its portability: you can slip the transceiver, a key, roll-up dipole, FM handheld, and Quantum battery into a briefcase with room to spare. Yes, then stretch out on a warm southern beach, open a big umbrella, whip out the gear, and have a ball while watching the scenery!

Some novel designs worthy of recognition are included in the MFJ QRP transceiver

(see fig. 6). The receive mixer (U-1), transmit mixer (U-5), and product detector (U-3) are NE602 ICs. These chips are combination mixers and local oscillators requiring only external tuned circuits for operation. The BFO and TX LO are crystal controlled for stability. Notice the receiver consists of U-1, 500 Hz filter Y-1 through Y-4, U-2, U-3, U-4, and Q-3/Q-4. An optional 200 Hz audio filter can also be inserted between U-3 and U-4. The transmitter section consists of U-5, Q-7, Q-8, and Q-9. When the transmitter is keyed, Q-6 applies maximum AGC-limiting bias to U-2 while disabling the RIT. This reduces receiver gain to zero for monitoring your off-the-air CW.

Looking closer at the transmitter, Q-7 is a field-effect transistor driving a buffer, Q-8 (a 2N5109), which drives the power amplifier Q-9 (an MRF 476). The flange on this power transistor is bolted to the rig's cabinet for heat sinking, and it runs stone cold. The output transistor, plus other circuit components, is visible in the QRP transceiver's inside view (fig. 7). The rig works with any DC power source from approximately 11.5 to 14.0 volts. A 12 volt/2 amp battery is ideal for powering the MFJ transceiver, and the perfect item to fill that bill arrived only two days ahead of the rig. An inside view of this little rig, incidentally, is shown in fig. 6.



Fig. 5- A totally portable and high-performance QRP station. MFJ 20 meter transceiver is flanked by Quantum Ham Battery. Shoulder bag behind it carries both units plus miniature spy key (from K4TWJ collection).

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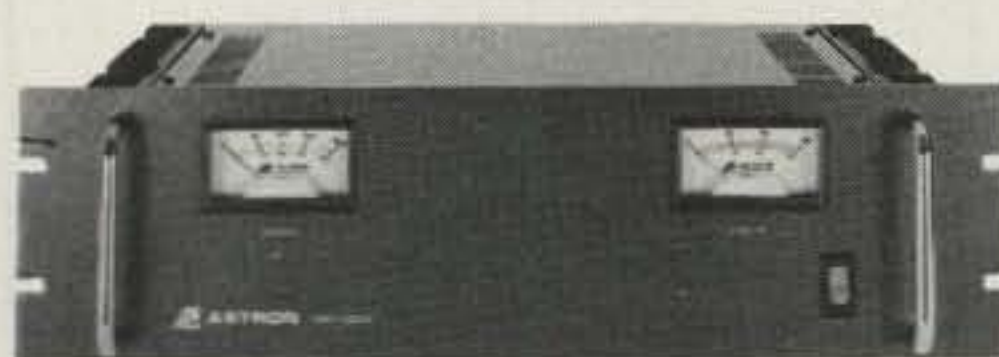
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RM-35A	25	35	5 1/4 x 19 x 12 1/2	38
RM-50A	37	50	5 1/4 x 19 x 12 1/2	50
RM-60A	50	55	7 x 19 x 12 1/2	60

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	Gray	Black				
RS-3A	•	•	2.5	3	3 x 4 1/4 x 5 3/4	4
RS-4A	•	•	3	4	3 3/4 x 6 1/2 x 9	5
RS-5A	•	•	4	5	3 1/2 x 6 1/8 x 7 1/4	7
RS-7A	•	•	5	7	3 3/4 x 6 1/2 x 9	9
RS-7B	•	•	5	7	4 x 7 1/2 x 10 3/4	10
RS-10A	•	•	7.5	10	4 x 7 1/2 x 10 3/4	11
RS-12A	•	•	9	12	4 1/2 x 8 x 9	13
RS-12B	•	•	9	12	4 x 7 1/2 x 10 3/4	13
RS-20A	•	•	16	20	5 x 9 x 10 1/2	18
RS-35A	•	•	25	35	5 x 11 x 11	27
RS-50A	•	•	37	50	6 x 13 3/4 x 11	46

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RS-20M	16	20	5 x 9 x 10 1/2	18
RS-35M	25	35	5 x 11 x 11	27
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	@13.8VDC	@10VDC	@5VDC			
VS-12M	9	5	2	12	4 1/2 x 8 x 9	13
VS-20M	16	9	4	20	5 x 9 x 10 1/2	20
VS-35M	25	15	7	35	5 x 11 x 11	29
VS-50M	37	22	10	50	6 x 13 3/4 x 11	46

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### RS-S SERIES



MODEL RS-12S

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MODEL	Colors Gray Black	Continuous Duty (Amps)	ICS* Amps	Size (IN) H x W x D	Shipping Wt. (lbs.)
RS-7S	• •	5	7	4 x 7 1/2 x 10 3/4	10
RS-10S	• •	7.5	10	4 x 7 1/2 x 10 3/4	12
RS-12S	• •	9	12	4 1/2 x 8 x 9	13
RS-20S	• •	16	20	5 x 9 x 10 1/2	18

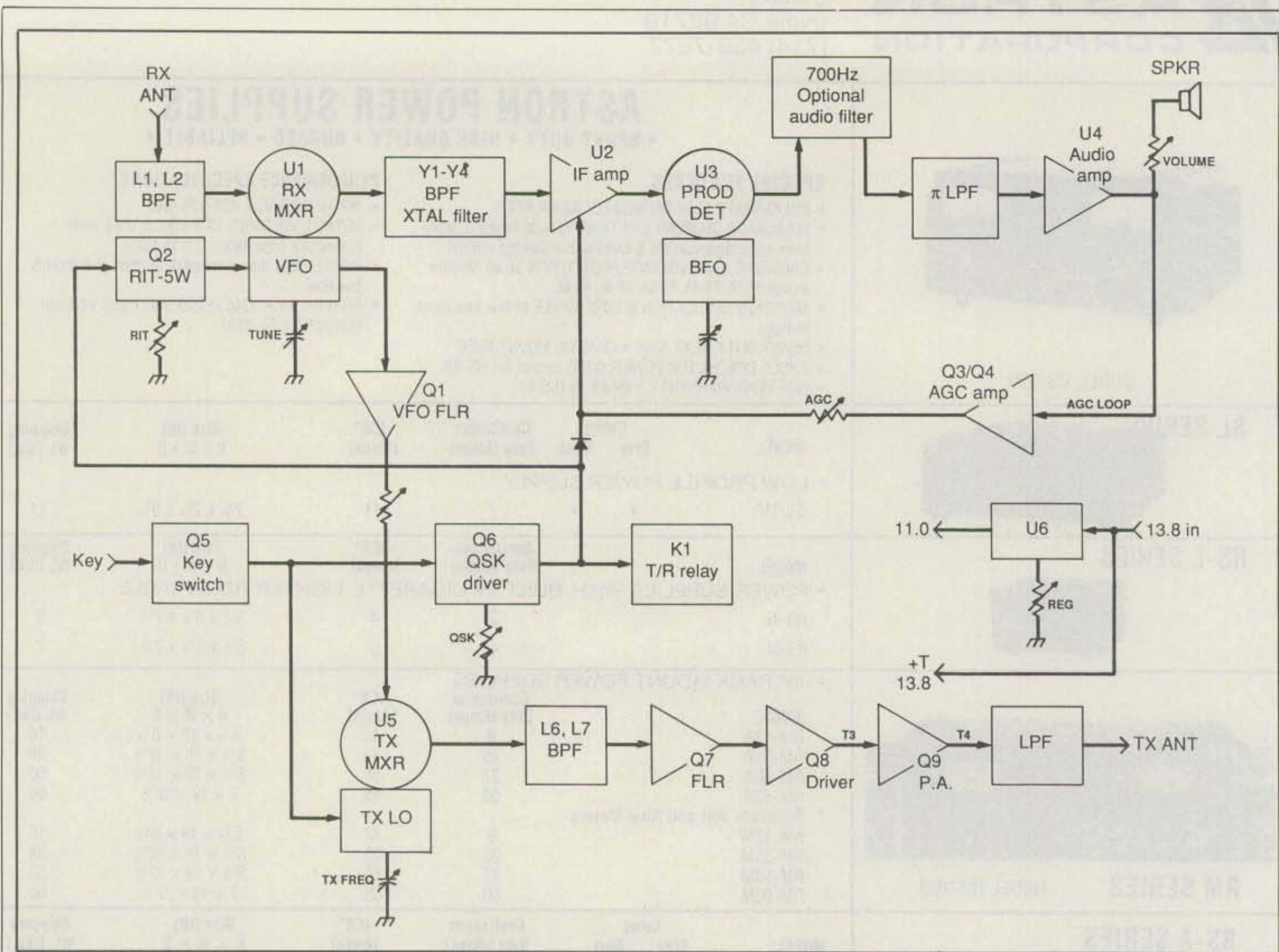


Fig. 6—Block diagram of the MFJ 9020 QRP transceiver. (See discussion in text.)

## Quantum Power For QRP

Have you checked out the new Quantum Ham Battery advertised here in *CQ*? This 12 volt, 2.1 ampere power source is usually shown clipped to a belt and used with an

FM handheld, but it is perfect for powering QRP rigs. In fact, I have even used it to power my 15 watt solid-state 30 meter transceiver with good results! It is more convenient to use than an AC supply, and the battery makes your setup fully por-

table. This deep cycle battery also has a super long life between recharges. In fact, it will power a regular FM handheld for days on end!

There are two output sockets on the battery's top (see fig. 5), so you can use it to power an FM handheld and QRP transceiver simultaneously. Three LEDs on the top indicate when the battery is fully charged,  $\frac{2}{3}$  charged,  $\frac{1}{3}$  charged, and empty. Three more LEDs show when the battery pack is on, is being charged, or its output is shorted, and an internal circuit breaker pops when loads exceed 3 amps.

I use one Quantum cord cabled to a battery pack adapter on my handheld, and another coiled cord with coaxial plug connected to the MFJ transceiver. My next step is strapping an Outbacker 4 foot whip on my side for "walking portable" HF DXing. Alabama's big-time mobileer indeed!

Technically speaking, the Quantum Ham Battery is a 25 watt hour sealed lead acid cell with charge and output indicators in one case. It is supplied with a wall charger, and complete "from empty" charging takes approximately 8 to 10 hours. The battery is good for 250 to 1000 recharges be-

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DX de RD00: 21944.5	C32ECH	RXB	TXB
DX de KF2ET: 14190.5	UV20K	VFO A	VFO B
		14.215.94	14.225.74
DX	USERS	DX DE	SH/C
MSG#	Connect	SH/WWW	SHVB
		14 215.94	

Log Entry

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Name: Brian

Comment: Brian Young POB 21 Pittsairn 1

QTH: [ ]

Award ID: [ ]

DXCC/Award Information

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Country: Pittsairn

Cont: OC

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fore it will need replacing (only the internal cells; not the whole battery). Nice!

## Wrap Up and Look Ahead

Once again our space for the month is filled, but rest assured more good ideas and tales are coming in the future. We have some terrific views of exotic keys such as the glamorous Australian Vertical Bug, Mecograph, convertible "Flip Over" bug, plus details on kilowatt mobiles, unique antennas, and more forthcoming. Stay tuned!

Meanwhile, I will leave you with a couple of thought-whetting ideas. QRP and classic rig enthusiast Richard Q. Marris, G2BZQ, recently devised a clever ferrite milli-loop antenna that is only 9 inches square (!) and works 80 meters. And it really works! Richard has actually made some good contacts with the little loop! Naturally, we are hot on the trail of converting this indoor loop antenna for 30 meters.

Now combine that thought with the following idea. Have you noticed those modern reproductions of classic Arvin table/kitchen AM radios available today in variety stores? Visualize stripping one for its cabinet (you can use those "innards" to refurbish a defunct home radio later), then building a complete QRP transceiver in the Arvin's case. Add a vernier or belt drive, recalibrate the tuning dial for your pre-

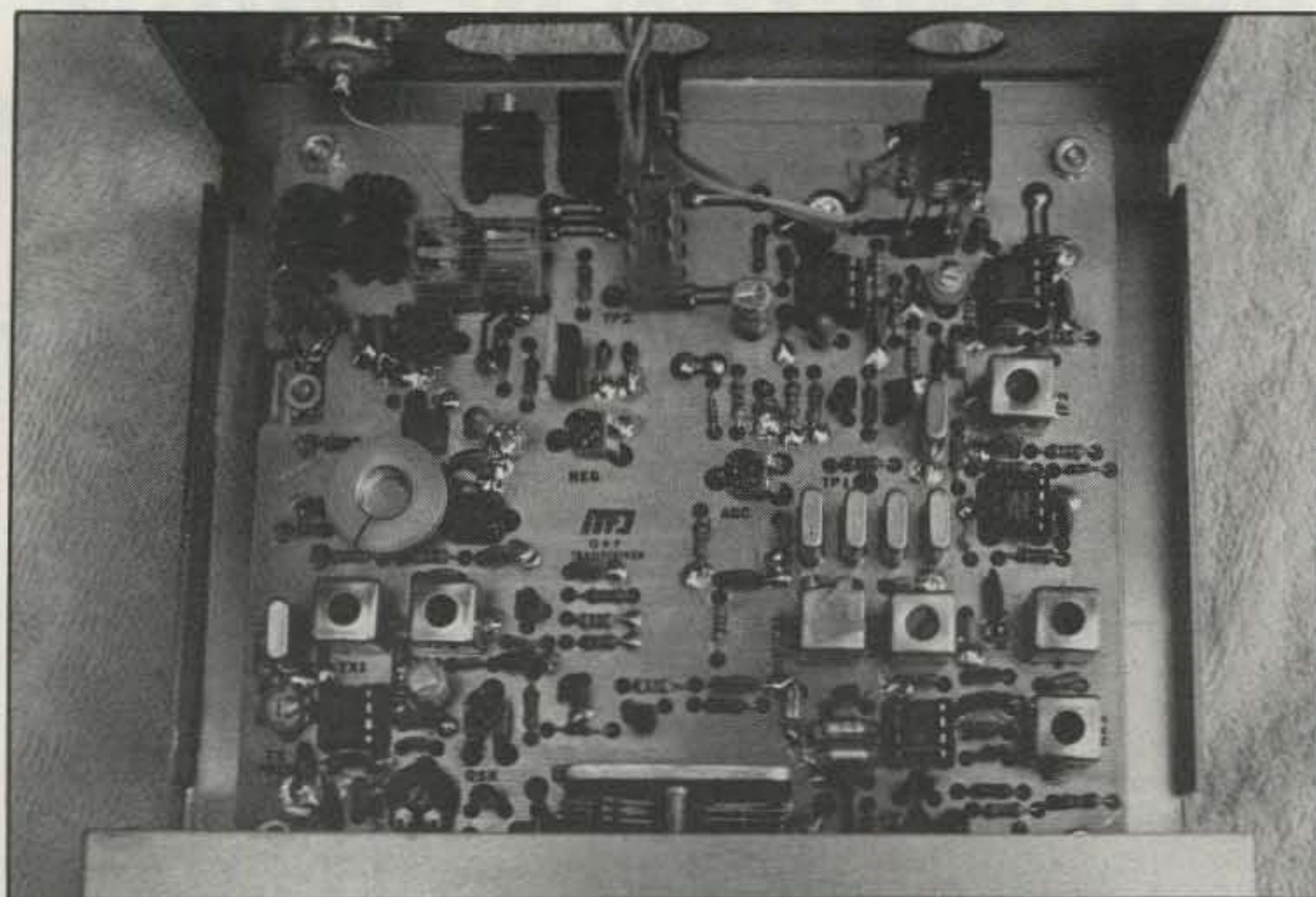


Fig. 7—Internal view of the MFJ 20 meter QRP transceiver. Receiver section is on the right, and transmitter circuitry is on the left. Notice the output transistor bolted to the cabinet at the cutout on the board's left side.

ferred band, and add a battery pack inside. A G2BZQ ferrite antenna can then be clamped to the radio's cardboard back cover. Now you really have a self-contained radio to show and use—fully self-

contained and solid-gold QRP! Ahh... so many ideas, so little time!

We look forward to working you on 30 meters one week night soon!

73, Dave, K4TWJ

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## REGULATORY HAPPENINGS FROM THE WORLD OF AMATEUR RADIO

### WARC-92—Will It Impact The Amateur Bands?

In February 1992 the International Telecommunication Union (ITU)—the United Nations organization responsible for regulating worldwide telecommunications and allocation of the radio spectrum—will hold a World Administrative Radio Conference. WARC-92 is scheduled to begin February 3 and will run through March 3 in the Mediterranean resort city of Malaga-Torre Molinas, Spain. It is probably going on now!

The more than 160 member delegations in attendance from all over the world will be making important decisions that are certain to impact us all in years to come! WARC's are international symposiums that bring together the nations of the world to coordinate global telecommunication technologies and services.

Having been formed in 1865, the same year that President Lincoln was shot, the ITU is more than 125 years old. Twenty nations met in Paris that year at the first International Telegraph Convention to develop regulations to manage telegraph wires which had begun to creep across international borders. The invention of the telephone in 1885 and radio in 1906 brought dramatic changes to both telecommunications and the International Telegraph Union.

Radio, first regarded as an advanced form of telegraphy, was not without its shortcomings. In 1912 the *Titanic* sunk, claiming 1513 victims. Many would have been saved had the *Titanic's* radiotelegraph operator succeeded in his frantic and repeated attempts to communicate with a ship within rescue distance. His pleas went unanswered. The ship's operator had gone off duty for the night. After the tragedy, it became clear that if radio communications were going to be used, especially at sea, international regulations regarding operation and frequencies were necessary.

In the early 1920s a new form of radio service began—broadcasting. This presented the ITU with what is today their greatest predicament and responsibility: How to share radio frequencies without interference to other stations. The first frequency allocations were made in 1927. The ITU allocation plan divides the world

into three geographical regions. North and South America are in Region 2.

In 1932 the name International Telecommunication Union was adopted to include all long-range communications techniques. The ITU charter defines telecommunications as "... any transmission, emission or reception of signs, signals, writing, images and sounds of intelligence of any nature by wire, radio, optical or other electromagnetic means." It became a specialized agency of the United Nations in 1947.

The scope of the ITU now includes the allocation of all frequency bands in the radio spectrum to various services, registration of specific frequency assignments to certain uses, and the regulation of all wire-line communications such as the telephone. The radio spectrum refers to the total range of radio frequencies (3 kHz to 300 GHz) that can be used for telecommunications. Wire and radio systems are slowly blending together. Many radio-based systems are being connected to the public telephone network, allowing users access while traveling or in rural areas without wired service.

Every few years all ITU member countries meet to deal with specific telecommunications agendas. The function of a WARC is fundamentally technical, but the process of spectrum allocation and management has always been both a political and technical process. It is the means by which the world distributes the tremendous resources of the radio frequency spectrum to individual nations.

Once ratified, the Final Acts of a WARC become an international treaty obligation of our government. The allocations decided on at a WARC are incorporated into domestic tables of allocations. Any FCC spectrum assignments and regulations must comply with these WARC agreements, including those of the amateur service.

#### WARC-92

General WARC's (as held in 1947, 1959, and 1979) address all radio services and spectrum allocations. Specialized WARC's, such as the one going on now, examine issues related to specific frequency bands and radio services.

WARC-92 will examine high-frequency

and satellite sound broadcasting, new space services such as high-definition television (HDTV) and low-Earth orbiting (LEO) satellites, and new Mobile Satellite Services between 500–3000 MHz. Theoretically, the agenda is fixed and discussion is limited to those items scheduled. This may not be the case, however, since new radio services require spectrum which is often unavailable.

Although the amateur service is not a planned item of discussion, many of our frequencies are openly craved by several new innovative services which will be considered at WARC-92. Amateur radio spectrum could indeed become a point of contention—especially our microwave frequencies which are becoming increasingly more valuable as technology develops and we learn how to use them.

WARC-92 is the most wide-ranging WARC since 1979 when the ITU reviewed the entire radio spectrum. Amateur radio gained valuable long-range high-frequency spectrum that year. It is conceivable that we could lose some as delegations from more than 160 nations will be seeking ways to find radio frequencies for many advanced communication and entertainment services.

The decisions made at WARC-92 will determine how and when these new services will be implemented and will influence the development of new radio technologies and applications well into the next century.

WARC-92 is important since it will provide spectrum for many services now under consideration by the FCC such as a Digital Audio Broadcasting from satellites and various Personal Communications Services (PCS) which are still on the drawing board.

PCS is the umbrella term used to describe voice and data communications designed to serve individuals whenever they are mobile—such as when walking, driving, and flying. These include various wireless services such as CT2 (second generation of cordless telephones) and PCN (radio-based personal communications networks, some of which are connected to the public telephone system).

If these new services are to be accommodated, they will have to share spectrum with existing users, or the existing users will have to move. Even then, it could take more than a decade to implement them.

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## Preparing for WARC

In the United States the process of preparing for a WARC begins years in advance of the actual conference. Government, public, and private sector interests come together to develop the proposals the United States will present at the conference. The U.S. preparations for WARC-92 brought together many diverse groups. These consisted of broadcasters seeking to bring digital audio to listeners at home and in the car; the national security community attempting to protect frequencies used for aircraft testing; promoters of innovative mobile services provided by satellite; and a multitude of other users, including amateur radio operators, police and fire departments, and even the makers of microwave ovens and baby monitors.

Two federal agencies consider all recommendations. The Federal Communications Commission (FCC) examines the needs of the private sector and those of State and local governments, while the National Telecommunications and Information Administration (NTIA) considers Federal Government requirements.

The FCC process of collecting information from the public and private sector began in 1989 with the issuance of the first of three Notices of Inquiry (NOIs). An NOI asks for public comments and suggestions on a particular subject. The Commission also created an Industry Advisory Committee (IAC) to provide direct input to the FCC on WARC matters. David Sumner, K1ZZ, Executive Vice President of the American Radio Relay League, represented U.S. amateur radio on this committee.

This committee was further split into Informal Working Groups (IWG) to consider specific frequencies and services. The IAC was supposed to develop a unified industry position, but members were not always in agreement. This meant the FCC had to decide between the conflicting views.

NTIA deliberations and WARC preparation, on the other hand, are largely secretive and closed to the public. This is understandable when one considers that their constituents are Federal Government spectrum users. They do not need to take into account the needs of industry and the private sector. NTIA's work in the preparation process culminates with a final report similar to the FCC's (in form and content) that is submitted to the State Department for integration into the final U.S. WARC proposal. Both agencies operate under the strain of modest financial resources.

Once determined, the FCC and NTIA submit their final recommendations to the Department of State, which arrives at an official U.S. position. Usually the proposals of the FCC and NTIA are identical, having gone through a coordination process. Any unresolved issues are settled by the State Department.

The law requires the State Department to represent the United States at international meetings. The primary role of the State Department is to promote U.S. interests and proposals abroad and to ensure that they are presented as effectively as possible. They also determine who will make up the delegation. Once the delegation is formed, the State Department becomes more involved with industry representatives in the formation of negotiating strategies.

The United States WARC-92 delegation is headed up by Jan Baran, a Washington, D.C. attorney with experience in international affairs. He will hold the temporary rank of ambassador at WARC-92. Approximately 50 people will serve on the delegation, including representatives from the FCC, NTIA, Department of State, other Federal Government agencies, and the private sector. *QST* editor Paul Rinaldo, W4RI, will represent U.S. amateur radio interests on the U.S. delegation.

At the 1979 general WARC the United States sent 67 delegates, 48 of whom (72 percent) were government representatives. The percentage of private sector delegates is expected to be higher for WARC-92 because of the wide range of topics to be addressed.

## High-Frequency Broadcasting

The HF 3-30 MHz portion of the spectrum is densely packed. Numerous services and users occupy the spectrum, including amateur radio, government and private international broadcasting, and international aviation and marine communications. Developing countries also use the HF bands for low-cost domestic point-to-point communications.

WARC-92 will consider expanding the bands allocated exclusively to high-frequency broadcasting. This issue flows out of the work of the 1984 and 1987 HF International Broadcasting Conferences. Demand for international broadcasting spectrum far outstrips supply. Many countries see the allocation of additional broadcast spectrum as a threat to their non-broadcast radiocommunications.

For WARC-1992 the United States proposes expanding the band by a total of 1325 kHz—much less than the amount recommended by the FCC's Industry Advisory Committee, which suggested 2455 kHz of additional spectrum. The 1325 kHz would be reallocated from the Fixed and Mobile Services, which could continue to use the bands until the end of a transfer period.

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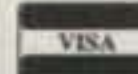
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CIRCLE 47 ON READER SERVICE CARD

There is already some 5900 kHz of spectrum allocated in ITU Region 2 (North and South America) to HF Broadcasting.

The U.S. delegation will propose the following additional HF broadcasting allocations at WARC-92: 5900-5950 kHz, 7400-7525 kHz, 9350-9500 kHz, 11550-11650 kHz, 13800-13900 kHz, 15600-15700 kHz, 17450-17550 kHz, 18900-19300 kHz.

The United States will also propose shifting broadcasting in ITU Regions 1 and 3 (the rest of the world) from the current 7100-7300 kHz to 7200-7400 kHz. For Region 2 (our hemisphere) the United States wants to allocate 7200-7300 kHz to broadcasting in place of the current amateur allocation. To compensate for this loss of 100 kHz by the amateur service, the U.S. will suggest that 6900-7000 kHz be allocated to the amateur service. "These actions result in an exclusive worldwide proposed allocation for the amateur service from 6900-7200 kHz, and for the broadcasting service from 7200-7525 kHz. The present unsuitable regional sharing would be resolved with this proposal." (Quote: WARC-92 Position, U.S. Department of State.)

An additional part of the HF controversy surrounds the use of single-sideband (SSB) transmission and receivers for all new HF services. SSB requires less bandwidth and would allow more broadcasters to use the spectrum. The ITU has already mandated its use by the year 2015. The United States wants SSB used in all new WARC-92 bands and the effective date moved up to 2007. Many (especially developing) countries oppose this because of the large number of existing receivers that cannot receive SSB transmissions.

### Broadcasting-Satellite Service-Sound

BSS-Sound refers to the delivery of audio from satellite transmitters. These services will use digital technology to deliver radio broadcasting with CD (compact disc) quality sound to any type of receiver in any environment. Planned systems would allow services to be tailored to local, domestic, or international listeners. The issue of BSS-Sound was raised at WARC-79, which recommended it be considered at a future WARC.

Initially four options were considered, two of which impacted the amateur 13 cm amateur band. These options were at 2390-2450 MHz and 2360-2410 MHz. The FCC finally recommended that the 1500 to 2300 GHz band be used for BSS-Sound. The NTIA, on the other hand, wanted 2310-2390 MHz because the bands around 1500 MHz are used for aircraft testing. Neither the FCC or NTIA proposal affects the existing 2300-2310 MHz and

2390-2450 MHz amateur band. As we go to press, the U.S. delegation was still trying to decide on which proposal to accept.

### Broadcasting-Satellite Service-HDTV

High-definition television was conceived more than two decades ago, but only recently has the technology become commercially available. HDTV's main characteristics are high resolution (nearly twice that of conventional television) and better color, a wider screen, and CD quality digital sound. While HDTV systems are currently still in development, rapid advances in technology are being made that could bring HDTV to consumer markets worldwide by the mid-1990s. Japan already has their MUSE system in operation.

Satellite transmission of HDTV services is only one of a number of ways to deliver such programming. Others include cable, fiber optics, and terrestrial broadcasting. Satellite delivery of HDTV depends on the availability of spectrum around the world. A plan already exists for direct broadcast satellite (DBS) television at 12 GHz to home receivers, but this is primarily for conventional TV signals. The United States will propose that the existing 11.7-12.7 GHz BSS (Broadcasting Satellite Service) band be supplemented with an allocation at 24.65-25.25 GHz.

### Future Public Land Mobile Telecommunication Systems

FPLMTS is another of the new radio services to be considered at WARC-92. Somewhere between 1700 and 2300 MHz new projected PCS (Personal Communication Systems) may be located. This would provide common signalling spectrum worldwide ("international roaming") that would allow a user to contact another person no matter where that person may be located—even on the other side of the globe!

Studies are also underway examining the use of FPLMTS as a way to provide access to public telephone networks. European countries would like 200 MHz of spectrum, possibly in the 1900-2100 MHz band, designated to FPLMTS. The FCC proposed no additional allocations and the United States now believes the designation of a frequency band for FPLMTS is premature.

### Low-Earth Orbiting Satellites

LEOs have received much attention in the United States, and several applications for low-Earth orbiting systems are pending at the FCC. Pioneered in the amateur service, LEO satellites are smaller and much easier



and cheaper to design, construct, and launch than conventional geosynchronous satellites. Proponents envision networks of these small satellites circling the globe.

LEOs operating below 1 GHz will provide only data applications, including position determination services for cars, trucks, ships, and aircraft. Voice services are planned above 1 GHz. Expected to cost more than \$3 billion, Motorola's Iridium System would use a network of 77 LEOs to provide data and voice services around the world.

The U.S. delegation will propose 137-138 MHz (downlink) and 148-149 MHz (uplink)—just below and above the 2 meter amateur band. (Also a downlink at 400-15-402 MHz.) Uplinks are the signals that travel from the Earth transmitting station up to the orbiting satellite; downlink signals travel space-to-Earth. The U.S. also wants 1613.8-1626.5 MHz allocated to LEOs on a secondary basis.

### Possible Impact on Amateur Radio

The important decisions of WARC-92 will shortly be known. Congress is apparently concerned. In a 136 analytical report, their Office of Technology Assessment cited several shortcomings in U.S. WARC preparations.

At this point there appears to be very little that will be proposed that will adversely impact amateur radio. The big question is what will other countries—especially those of the developing Third World—suggest, and how much support will they receive from other nations? To their credit, the International Amateur Radio Union has been very busy working for nearly two years on amateur radio's behalf with various administrations around the globe. Still, the rapid pace of technological development might cause many nations to reconsider their past positions on spectrum allocations.

The pace of technology development in radio-based services has increased in recent years. This acceleration, coupled with increasing congestion in many parts of the radio frequency spectrum, has put substantial pressure on both domestic and international radiocommunication policy processes. Spectrum managers are struggling to accommodate increasing demands for frequencies for new services.

The public, the FCC, and the NTIA have completed their input. The State Department has finalized its U.S. proposals. Now the negotiating among the various countries of the world is taking place. Hopefully the U.S. position will be adopted by the ITU member countries, but there are sure to be some "wrinkles." We are optimistic that they won't adversely affect amateur radio.

73, Fred, W5YI

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NEWS OF COMMUNICATION AROUND THE WORLD

## Clipperton: Amateur Radio's Hard Luck Island

**A** 12-member team will operate from **FO0CI** Clipperton island in the Pacific early this month, if all goes well. With Clipperton, however, it seldom goes well. Clipperton holds a special place in DX as one of the hardest-luck DXpedition destinations. The **FO0CI** crew will do well to avoid problems on their one-week operation.

Clipperton first gained its reputation as a difficult destination in 1954, when Bob Dennison, now **W0DX**, attempted one of the very first dedicated island DXpeditions. His story is every bit as timely today as it was 38 years ago; ask your library for the July 1954 issue of *QST* for the complete story. Some highlights: On their way to the remote, hard-to-see island, the navigator of their diesel boat tripped over their rig and broke their only sextant. The operators asked the Federal Communications Commission (FCC) for help with direction finding, and they managed to get close enough to Clipperton to see shore-nesting birds. Unable to find the island, the group shut down their engine and returned to Acapulco.

The next try, the wind and rain forced them to call for help. The Mexican navy responded with a tow to the island that Mexico had once claimed (see below). While getting to Clipperton proved difficult, the worst was yet to come. The wide fringing reef and normally heavy surf makes landing on the island treacherous. The landing boat overturned in the surf on one attempt to ferry DXpeditioners and equipment ashore.

Once on the island, the problems continued. Propagation was typical of the dead bottom of the sunspot cycle, and QSOs with **FO8AJ** were few and far between. Then the generator ran out of oil and stopped. In the end, the 22-day trip netted 1108 QSOs.

Small as this number was, it was a major portion of *all* QSOs from Clipperton until 1978. There were some brief operations in 1944, 1945, and 1958, but usually as part of a scientific team and not as a dedicated DXpedition. **NPG0**, **FS8PR**, and **FO8AT** didn't make much of a dent in the DX demand for Clipperton. Danny Weil, **VP2VP**, brought the third *Yasme* sailing boat to Clipperton. (Given his record of losing boats, and Clipperton's checkered history, it's remarkable that he didn't sink *Yasme III* there!)

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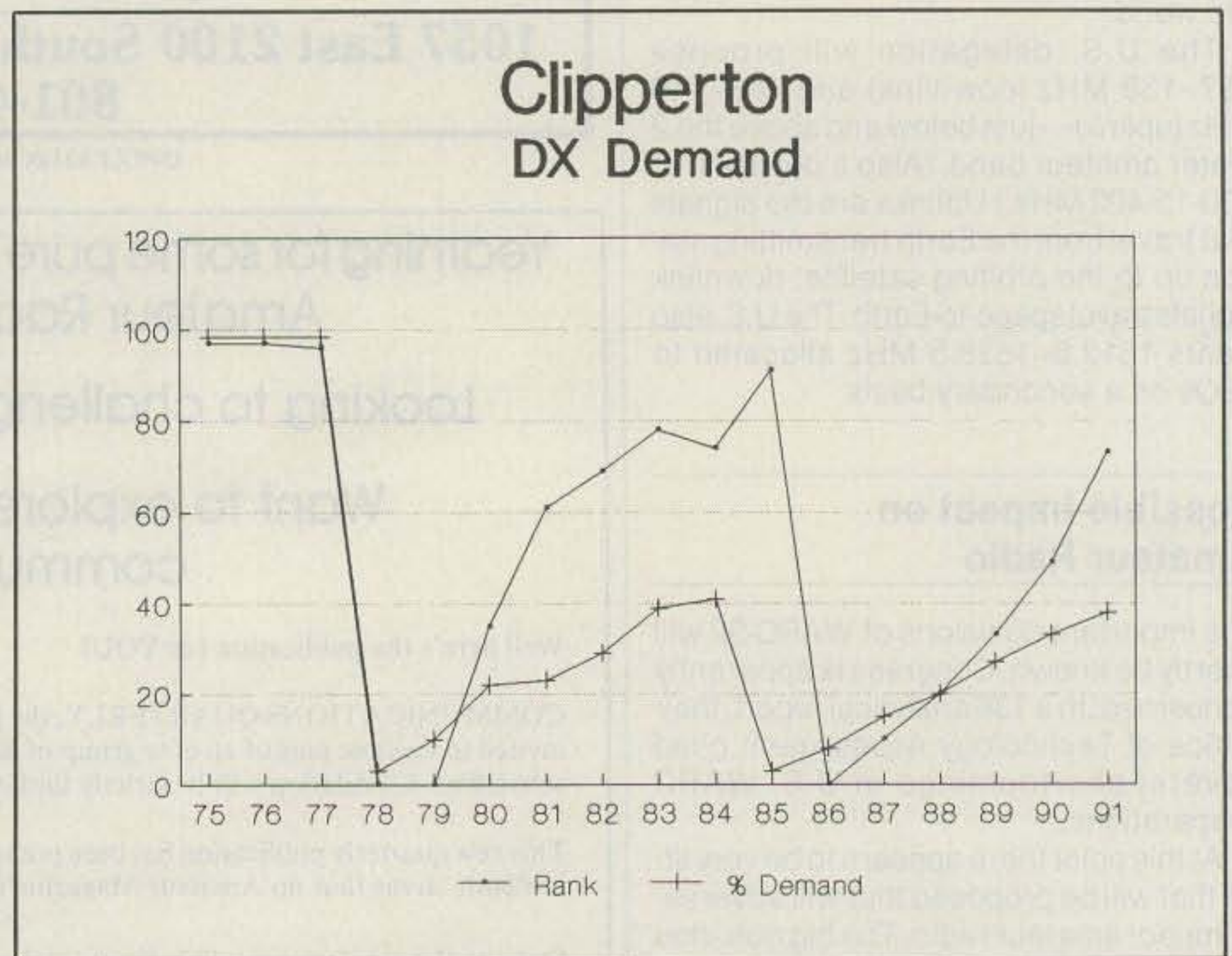


Fig. 1- The demand for Clipperton has varied through the years, as can be seen from this graph.

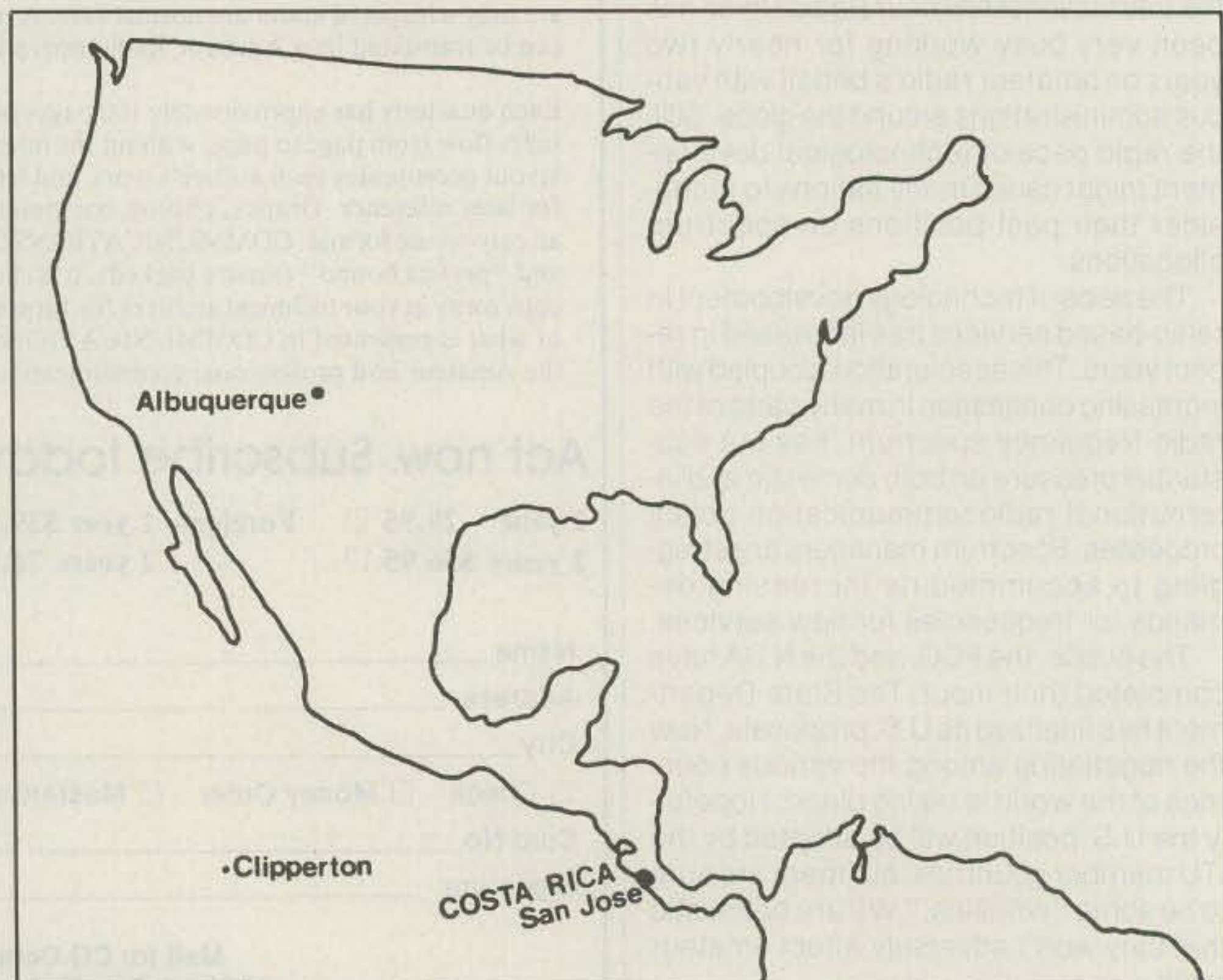


Fig. 2- Clipperton is located in the Pacific, west of Costa Rica.

## The WPX Program

### Mixed

1536 VE6BMX 1537 KC6X

### SSB

2276 KB9ABI 2279 JK1OTP  
2277 HL5FRG 2280 WA9BXB  
2278 KC6X

### CW

2715 PY2YN 2717 KC6X  
2716 NH6T 2718 JK1OTP

### VPX

274 F11FFC

### WPNX

266 KB9ABI

### Endorsements

Mixed: 450 KC6X. 500 KC6X. 550 NH6T, IK3DRO, JA3PJM/VE3, KC6X. 600 KC6X, NH6T. 650 KC6X. 700 HA0HW, KC6X. 750 HA0HW, KC6X. 800 IN3PEE, HA0HW, KC6X. 850 HA0HW, KC6X. 900 IK2AEQ, HA0HW, KC6X. 950 IK2AEQ, HA0HW, KC6X. 1000 HA0HW, KC6X. 1050 HA0HW. 1100 HA0HW. 1150 HA0HW. 1200 HA0HW. 1250 HA0HW. 1300 HA0HW. 1350 HA0HW. 1400 HA0HW. 1450 HA0HW. 1500 HA0HW. 1550 KB0G. 1600 WB4RUA. 1650 WB4RUA. 1900 N4UH. 2300 W2FXA. 2550 I1EEW.

SSB: 350 F11FFC, KB5GEO, HL5FRG, KC6X, JA1OTP, WA9BXB. 400 HL5FRG, KC6X, JK1OTP, WA9BXB. 450 HL5FRG, NH6T, KC6X, WA9BXB. 500 NH6T, KC6X, WA9BXB. 550 KC6X, WA9BXB. 600 KC6X, WA9BXB. 650 KW0U, KC6X, WA9BXB. 700 KC6X, WA9BXB. 750 I6DQE, KC6X, WA9BXB. 800 I6DQE, WA4PMF, KC6X, WA9BXB. 850 I6DQE, WA9BXB. 900 I6DQE. 950 I6DQE. 1000 I6DQE. 1100 IT9JKY. 1150 IT9JKY, KA0ZFX. 1200 IT9JKY. 1250 IT9JKY. 1500 IK5ACO. 1700 PA0SNG. 1750 PA0SNG. 2200 I1EEW. 2250 I1EEW.

CW: 350 KC6X, JA1OTP. 400 KC6X, JK1OTP. 450 KC6X. 500 KC6X. 600 KC6X. 650 KC6X. 900 AH6JF. 950 N4IR. 1000 N4IR. 1200 I1EEW. 3050 N6JV. 3100 WA2HZR. 3150 WA2HZR. 3200 WA2HZR.

10 Meters: KB9ABI, NH6T, JA3PJM/VE3, KC6X  
15 Meters: NH6T, KC6X, JK1OTP  
20 Meters: KC6X

Asia: OE9SLH, KC6X, JK1OTP  
Africa: KC6X  
No. Amer.: OE9SLH, KC6X  
So. Amer.: G4OBK, KC6X  
Europe: OE9SLH, JE3PJM/VE3, KC6X, JK1OTP  
Oceania: NH6T, KC6X

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Complete rules and application forms may be obtained by sending a business-size self-addressed, stamped envelope (foreign stations send extra postage if air-mail desired) to: "CQ WPX Awards," 880, CR13, Clovis, NM 88101-9511 USA.

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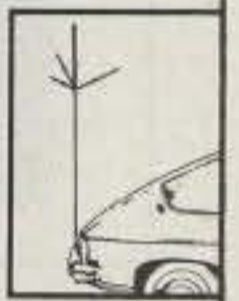
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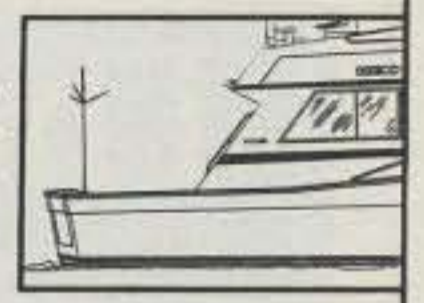


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In the mid-1970s Clipperton ranked third on the Most Wanted countries list, with nearly 99% of respondents needing a Clipperton contact. Finally, in 1978 a French team using callsigns in the FO0XA-H range made 29,000 contacts, helping to usher in the era of multi-operator, multi-thousand-dollar DXpeditions.

As can be seen from the accompanying graph (fig. 1), the 1978 operation at least removed the island from the exalted ranks of the perpetually Most Wanted. The gradual increase in demand, as the DX bug bites more amateurs, pushed Clipperton to the Top Twenty Most Wanted in 1984. A multi-national group decided it was time to reactivate the atoll. Fourteen operators waited almost a week in Manzanillo, Mexico for their chartered ship. It never appeared.

By the following year Clipperton had worked its way back up into the Top Ten Most Wanted. The same group decided to brave the hex of Clipperton again, this time from San Diego. They teamed up with some fishermen of another sort for a lux-

ury cruise in air-conditioned comfort aboard the *Royal Polaris*, all the way to the atoll, 2500 miles from San Diego. While the transportation cooperated, the surf didn't.

The 1985 Clipperton DX crew spent days watching the surf batter the usual landing spot. Some DXpeditioners seriously considered swimming ashore, but a few circling sharks discouraged the attempt. They finally struggled ashore, and began assembling stations in the 90-plus degree heat and 10-40 mph winds. They endured hungry crabs, birds that twisted their antennas, connections that arced in the moist salt air, and sun that burned right through SPF15, to keep the **FO0XX** call-sign on the air.

The capper came a few days into the operation when a small helicopter circled in and started dropping what appeared to be bombs on the atoll. Visions of pirates and the murders on Palmyra raced through the DXpeditioners' minds. Fortunately, the "bombs" turned out to be firecrackers, dropped by the helicopter to move the friendly booby birds from under the blades.

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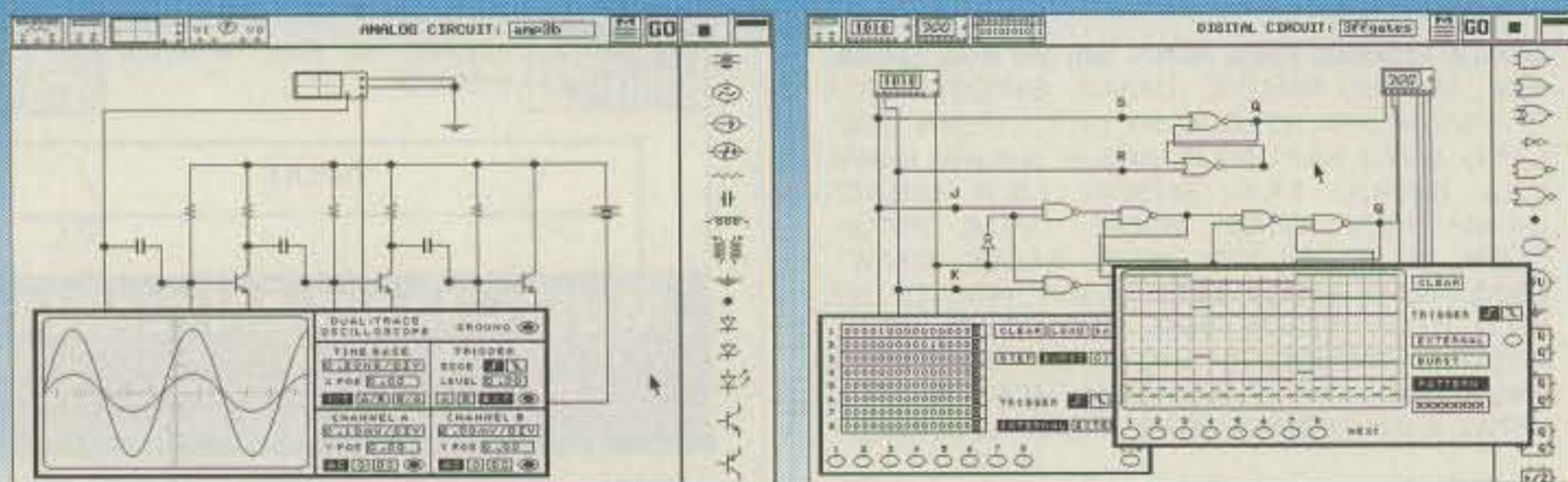


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INTERACTIVE IMAGE TECHNOLOGIES



CIRCLE 61 ON READER SERVICE CARD



Yuri, UL7ACI, operates from this neat shack in Scherchen, in the Kazakstan Republic. Note the CQ magazine and awards. Photo via Yuri's QSL manager, Jay, K2OVS.

The scare ended well: on the helicopter, which was from a Mexican fishing vessel, was a ham. Don Pedro fully understood the purpose of the DXpedition, and even returned later from his ship with a case of cold beer!

The FO0XX operators succeeded in their major goal: making the most QSOs ever from Clipperton. Their 31,000 QSOs were divided 2:1 SSB to CW, plus a handful of RTTY and satellite QSOs. Then getting off the island proved as difficult and frustrating as landing. Because they might have to evacuate quickly in case of a break in the surf, the team had to pull down the stations well in advance of their possible departure. As it turned out, they were stuck on the island almost three days, waiting for the chance to get through the surf.

The group returned to the US in time for the International DX Convention in Visalia, California, complete with sunburns, a Clipperton coconut, and other souvenirs of the trip. All swore they would never set foot on the atoll again. "I won't go back there in 20 years," proclaimed Bob Vallio, W6RGG.

Such is DX resolve that less than 13 months later Bob would once again be on the *Royal Polaris*, circling Clipperton, waiting for a break in the surf to land. Four members of the 1985 Clipperton team—Kip Edwards, W6SZN; Rusty Epps, W6OAT; Bob Vallio, W6RGG; and Wayne Mills, N7NG—were joined by Carl Cook, AI6V, for the 1986 attempt. Their specific purpose was to work Europeans and amateurs in other parts of the world who had missed out on contacts with the 1985 crew. While Clipperton was dead last in the US in the 1986 Most Wanted survey, it was much higher on the European list. Besides, the *Royal Polaris* was going back there anyway, looking for prize tuna.

The 1986 team encountered the Clipperton Curse. Once again the pounding waves forced the crew to delay any landing attempt, cutting into possible operating time. Once ashore, the ionosphere dealt a crushing blow, as a major solar flare produced an ionospheric storm, essentially shutting down the bands. Propagation was

## The WAZ Program

### Single Band WAZ

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412 ..... ON7QP

#### 15 Meter SSB

405 ..... I2LPA 406 ..... WB3AMO

#### 20 Meter SSB

869 ..... I2LPA 871 ..... W3YN  
870 ..... IN3EYY

#### 40 Meter SSB

74 ..... I2LPA

#### 12 Meter CW

3 ..... HB9ALO

#### 15 Meter CW

221 ..... N1CYA 223 ..... HB9DDZ  
222 ..... N1QY 224 ..... I4YCE

#### 20 Meter CW

412 ..... HB9DDZ

#### 12 Meter Mixed

5 ..... K1MM

#### 17 Meter Mixed

7 ..... DJ5JH

#### RTTY

66 ..... JA1FGB

### All Band WAZ SSB

3853 ..... IK4NQL	3860 ..... G3RHM
3854 ..... WM1Q	3861 ..... OA4DX
3855 ..... K8VKI	3862 ..... W9ZUV
3856 ..... AD1C	3863 ..... K3BYV
3857 ..... HL5FRG	3864 ..... K16PG
3858 ..... WA4MME	3865 ..... W6HBK
3859 ..... N5QGO	

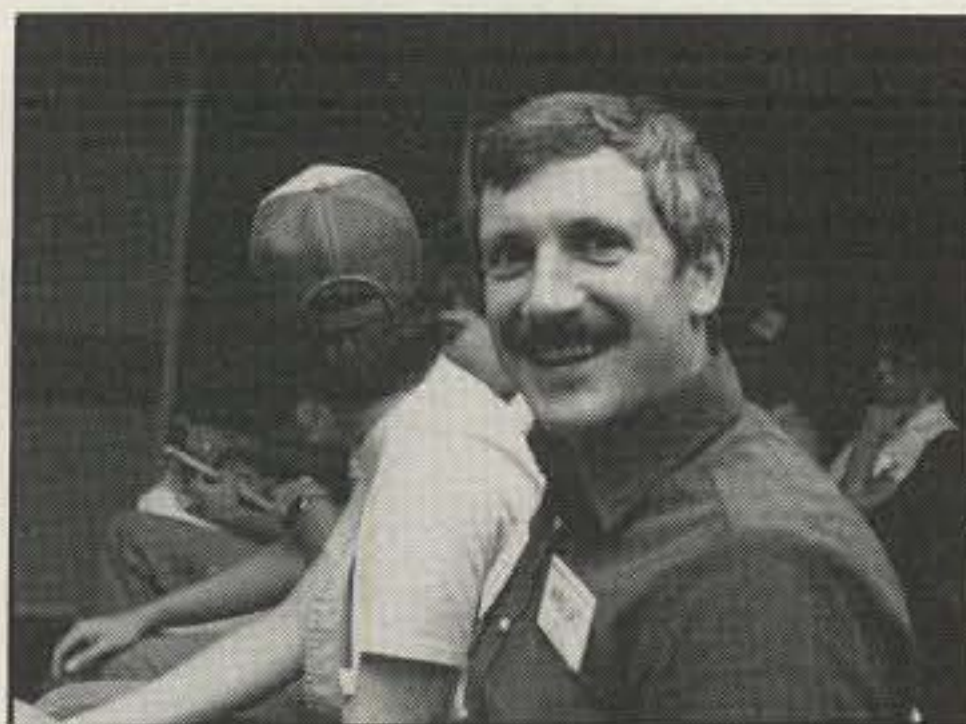
#### CW/Phone

7122 ..... AA7CQ	7129 ..... DF4XR (CW)
7123 ..... KN4FR	7130 ..... VE1HA
7124 ..... W5EW (CW)	7131 ..... HB9BGV
7125 ..... JA1MZL	7132 ..... K7ENA (CW)
7126 ..... KF6HI	7133 ..... K9CC/M
7127 ..... PA3CNK (CW)	7134 ..... IK0ADY (CW)
7128 ..... WA1LNP (CW)	

Applications and reprints of the latest rules may be obtained by sending a self-addressed stamped envelope (75 cents) size 4 1/2 x 9 1/2 to the WAZ Manager, Jim Dionne, K1MEM, 31 DeMarco Rd., Sudbury, MA 01776. Applicants forwarding QSL cards either direct to the WAZ manager or to a check point should include sufficient postage for safe return of their QSL cards. The processing fee for all CQ awards is \$4.00 for subscribers and \$10 for non-subscribers. Please make all checks payable to the Awards Manager. In order to qualify for the subscriber rate, please enclose your latest CQ mailing label with your application. Send any questions to K1MEM by mail and include an SASE (please do not telephone).

particularly bad across the North Pole, to Europe. Stations on the East Coast could hear FO0XX calling for Europeans, and the Europeans calling Clipperton, but they couldn't hear each other. Such a strong flare within a month of the sunspot cycle minimum is extremely rare; such is Clipperton luck. Five days later, the crew packed up and left the hard-luck island.

Fortunately for DXers, the combination of two Clipperton operations made a considerable dent in DX demand. Clipperton once again fell off the bottom of the Most



*Rusty Epps, W6OAT, is one of a handful of amateurs who have operated from Clipperton more than once.*

Wanted chart, except in Europe. As the graph shows, the influx of new DXers has once again propelled Clipperton into the Top Thirty, and up to ninth spot in Europe.

The 1992 operation at least has the sunspots on their side. Propagation, barring major solar storms, should be much better this year than at the bottom of the sunspot cycle in the mid-1980s. The team will be able to operate on the new bands, helping to spread out the pile-ups, and allow several simultaneous stations to seek European contacts.

Stateside operators should have no trouble making Clipperton contacts on all bands. The island lies due south of Albuquerque, New Mexico, and should be an easy shot for even the littlest DX pistol. Don't miss this opportunity to make a Clipperton contact; there is no telling when the next group will decide to brave the Clipperton Curse.

## Not Just Amateur Radio

The political history of the atoll is as checked as its amateur radio history. The island was discovered in the early 16th century by Spanish explorers. However, it was almost 200 years before anyone made use of the island. John Clipperton, a British mutineer turned pirate, used the island as a base to raid West Coast shipping. He gave his name as well as an unsavory reputation to the atoll. The United States claimed the island under the 1856 Guano Act, under which we also laid claim to most of the Eastern Pacific. However, the US didn't occupy the island until WW II, as part of the defense of the Panama Canal. France annexed the island, along with French Polynesia, thousands of miles to the southwest. Mexico also staked a claim, and established a small post in 1987. Disaster was on the horizon.

Mexico maintained a regular series of supply ships, bringing food and rotating crew. However, Clipperton fell through the cracks at the outbreak of WW I. Somehow, Mexico simply forgot about the atoll, and its stranded inhabitants. Lacking food and

supplies, disease and starvation began to take their toll on the Mexicans. After a year of abandonment, some men took a desperate chance to take a small boat after a passing ship. The captain of the post, and two others, disappeared in the heavy surf, within sight of the shore.

It was fully two years later, in 1917, that the *Yorktown*, a US ship, arrived at the island. Meanwhile, the lighthouse keeper Alvarez had taken advantage of the dwindling numbers of men on the island. Alvarez killed the remaining men, and enslaved the women. After months of his abuse, the three remaining women overpowered Alvarez and killed him with a hammer. The next day the *Yorktown* arrived.

Pirates, murders, abandonment, and tragedy have plagued Clipperton throughout its history. Difficult landings, bad propagation, and frustration have dogged amateur radio operations aimed at the island. Let's all wish the FO0CI crew a problem-free operation!

Once you work FO0CI, QSL to N7QQ.

## Other DX Events

The FO0CI Clipperton operation is not the only major DXpedition scheduled this month. The **South Sandwich** DXpedition is still set for a two-week operation, beginning about March 15. They'll be on 160-6

## 5 Band WAZ

**As of Nov. 30, 1991, 335 stations have attained the 200 zone level.**

**New recipients of 5 Band WAZ Award with all 200 zones confirmed:**

NR1R

**The top contenders for 5 Band WAZ are:**

N4WW, 199	VE7DX, 199
SP9PT, 199	W0PFI, 199
K6YRA, 199	W2YY, 199
PY7ZZ, 199	W9WAQ, 199
DL9WW, 199	K6EID, 199
K0CS, 199	IK8CNT, 199
KB0G, 199	I8IGS, 198
UA4RZ, 199	VE7AHA, 198
AA4KT, 199	SM6AHS, 198
K7UR, 199	K1ST, 198
K9EL, 199	W1JR, 198
NA0Y, 199	4X4DK, 198

**759 Stations have attained the 150 zone level as of November 30, 1991.**

Applications and reprints of the latest rules may be obtained by sending a self-addressed stamped envelope (75 cents) size 4 1/2 x 9 1/2 to the WAZ Manager, Jim Dionne, K1MEM, 31 De Marco Rd., Sudbury, MA 01776. Applicants should include sufficient postage for safe return of their QSL cards. The processing fee for all CQ awards is \$4.00 for subscribers and \$10 for non-subscribers. Please make all checks payable to the Awards Manager. In order to qualify for the subscriber rate, please enclose your latest CQ mailing label with your application. Send any questions to K1MEM by mail and include an SASE (please do not telephone).

## CQ DX Honor Roll

The CQ DX Honor Roll recognizes those DXers who have submitted proof of confirmation with 275 or more ACTIVE countries for the mode indicated. The ARRL DXCC Countries List is used as the country standard. Honor Roll listing is automatic when submitting application or endorsement for 275 or more countries. Deleted countries do not count and are dropped from listing as they occur. Total countries are now 323. To remain on the CQ DX Honor Roll, annual updates are required. Honor Roll updates may be made at any time, in any number. Updates indicating "no change" will be accepted to meet the annual requirement. All updates must be accompanied by an SASE for confirmation. The fee for endorsement involving the issuance of a sticker is \$1.00.

### CW

W9DWQ 323	N4KG 322	DL3RK 319	WA4JTI 316	W4OEL 312	K4CXY 307	W8YTM 300	WB5MTV 294	KA5TQF 281
K2FL 323	K9QVB 322	N6AV 319	K9IW 315	W7CNL 312	N7MC 306	NN4Q 299	W3BBL 293	W8URM 281
K2TQC 323	K6JG 322	SM3EVR 319	K4XO 315	K9TI 312	DJ2PJ 306	W6YQ 299	N5FW 293	N3DQN 280
ON4QX 323	K1MEM 322	N2KW 319	K8NA 314	IT9TQH 311	SM6CTQ 305	I2QMU 299	PA0XPO 292	W2LZX 279
K6LEB 323	N4MM 322	W0IZ 318	W1NG 314	K9BWQ 311	IT9QDS 304	K2JF 298	K4JLD 292	KB9XG 279
K9MM 323	SP6CST 322	W7ULC 318	I5XIM 314	KB8DB 311	I8WY 304	IT9VDO 297	KU0S 290	HB9AFI 278
YU1HA 323	W4BQY 321	N6CW 318	KQ9W 314	KZ4V 310	N8MC 303	OH3NM 297	K2JLA 290	KA2DIV 278
N4JF 323	K9AB 321	W0SR 317	W0HZ 314	F3TH 310	N4AH 303	K8LJG 296	W1WLW 288	NC9T 278
N6AR 323	AA4KT 321	W9WAQ 317	W1WAI 314	WA4IUM 310	KB9XG 303	WA4DAN 296	KA7T 288	KA3R 277
K4CEB 322	DL8CM 320	AA5NK 316	IT9ZGY 313	WB4RUA 309	I4EAT 302	WD9IIX 295	G3KMQ 286	WA9RCQ 277
W2FXA 322	W2UE 320	K2ENT 316	WD9IIC 313	W6DN 308	NY5L 302	KD8V 295	KA7T 284	YV5ANT 276
DL1PM 322	K3UA 320	EA2IA 316	WA2HZR 312	N7RO 308	K9DDO 302	K1VHS 295	KP4P 283	DF3FJ 276
W6PT 322	OK1MP 320	K2OWE 316	W0JLC 312	W9RY 307	YU2TW 300	VE7DX 295	AG9S 282	K1HDO 276

### SSB

K2FL 323	I8AA 322	WD8MGO 320	ZL1BIL 318	YV5DFI 314	W6MFC 310	NI5D 305	I8IGS 299	YB3CEV 282
VE1YX 323	W3AZD 322	W6DN 320	KA9ABC 318	W9RY 314	W5LLU 310	EA1QF 304	VE4AT 299	WA9BXX 282
F9RM 323	T12CC 322	AA4KT 320	KQ9W 318	K8CSG 314	KA5RNH 310	K4RIG 304	K5DUT 299	WK3N 282
DJ9ZB 323	I4LCK 322	W3GG 320	WB6PSY 318	KU9Z 314	IK1GPG 310	KB1JU 304	RA3YA 299	TG9EP 281
W9DWQ 323	K8NA 322	I4EAT 320	K2JF 318	PY4OY 314	N6AHV 309	KD5ZM 304	I2ZGC 299	VE3NUP 281
W0YDB 323	VE7WJ 322	N6AHU 320	ZS6LW 318	KB3OQ 314	I5EFO 309	KB7VD 304	N1CWA 299	VU2DVP 281
W4DPS 323	VE2WY 322	W0SR 320	WA4DAN 317	HR1KAS 314	I1POR 309	IN3ANE 304	KB2FC 298	4X4JO 281
K2TQC 323	OK1MP 322	AA5NK 320	YV5CWO 317	A92BE 314	G4GED 309	ZL1BOQ 304	SV8CS 298	PY2DBU 280
W4EEE 323	W4NKI 322	NY5L 320	YV1AJ 317	K7EHI 314	KP4P 309	VE2GHZ 304	WA0TKJ 298	NX0I 280
W2SUA 323	ZL3NS 322	YS1GMV 320	N4CRU 317	XE1OX 314	WA9RCQ 309	EA3EQT 304	KF5DX 297	YU1TR 280
K9MM 323	WA3HUP 322	IT9ZGY 320	I8XTX 317	K9TI 314	XE1MD 309	I8IYW 304	NP4CC 297	WB8TLI 279
YU1HA 323	YV5AIP 322	EA1QF 320	WA4WTG 317	OH5KL 314	WA8YTM 309	KA9TNZ 303	HP1JC 296	W5XO 279
W2FXA 323	W0SFU 322	NJ2C 320	IK8BQE 317	WE2L 314	WD9IIX 308	WA2FKF 303	XE1OW 296	K5AOL 279
OZ3SK 323	N7RO 322	KS0Z 320	G4ADD 317	I2EOW 313	YV2EJU 308	KB9LN 303	NC9T 296	WN5K 279
DL9OH 323	KS2I 322	K2JLA 320	W6BCQ 317	WB6OKK 313	N3ARK 308	KB0SY 303	W0IYR 294	VU2CVP 278
VE3MR 323	OE3WWB 322	WA4IUM 320	W6NLQ 317	WB4PUD 313	W4BOY 308	W5XQ 303	VE3XO 294	K4BYK 277
EA2IA 323	ZL1AGO 322	NJ0C 320	N4WF 316	W1NG 313	OA4ED 308	KE5PO 303	EA3KW 294	KG9N 277
K4MZU 323	N4KG 322	K9QVB 320	K4POV 316	KA6V 313	K4LR 308	W4BQY 302	W8URM 294	I8WYD 277
KM2P 323	W4UW 322	VK4LC 320	I8LEL 316	AA6BB 313	K4JLD 308	XE1XM 302	IT9VDO 293	CE7ZK 277
VE3XN 323	K3UA 322	KR9O 320	KC8EU 316	W1LQQ 313	W7ULC 308	W2LZX 302	WB3CQN 293	KA9I 277
K6WR 323	4Z4DX 322	IT9TGO 320	K9HQM 316	W0ULU 313	N6AV 307	ZS6AOC 302	WD9IIC 293	WA9BDX 277
N4JF 323	I0AMU 322	VE2PJ 320	W6SN 316	OE2EGL 312	A18M 307	XE1KS 302	VE6PW 292	WP4AFA 277
VE3MRS 323	CT1FL 321	CX4HS 320	AG9S 316	K0GT 312	KC2FC 307	N5FW 301	T12LTA 292	WA5HWB 277
K6YRA 323	OA4OS 321	KB5FU 320	K8ZZU 316	W2FGY 312	WD5P 307	IK8GCS 301	YV1CLM 292	WB0UFL 277
YU1AB 323	KZ2P 321	KB4HU 320	DU9RG 316	K8CMO 312	T12JJP 307	VE6PW 301	W3SOH 292	WN5MBS 277
K6JG 323	DL6KG 321	XE1CI 319	OE2EGL 316	K13L 312	KA5TQF 307	IK7DBB 301	K9EC 292	W4PTT 276
YV1KZ 323	W7OM 321	I8KCI 319	9H4G 316	T12KD 312	F6BFI 306	WB4TGB 301	KE7UL 291	I8IYW 276
I0ZV 323	K9AB 321	IT9TQH 319	KF7SH 316	K8NWD 312	WA2MID 306	LU7HJM 301	WF9K 291	XE1DU 276
N6AR 323	N2KW 321	AA4AH 319	WD8PUG 316	KV9I 312	XE1MDX 306	XE1ZLW 301	SV1JG 291	G4NXG/M 276
W4JVV 323	I8YRK 321	K1UO 319	YT7DX 316	KC4MJ 312	WB5TED 306	YU2TW 300	I4CSP 290	WB2JZK 276
KB8DB 323	K9BWQ 321	W2CC 319	IK0IOL 316	K8YVI 312	N0AMI 306	N4CRU 300	I4UFH 289	WA4OPW 275
EA4DO 323	ON5KL 321	K9IW 319	KV2S 316	ZS6BBY 312	VK3JF 306	WT4T 300	W9TA 288	KA5YCM 275
W9SS 323	K5OVC 321	W7FP 319	KB9OC 316	LA7JO 311	N6CGB 306	KB2MY 300	YB2OK 288	K14FW 275
WB4UBD 323	T12HP 321	W9JT 319	KE4HX 315	I2MQP 311	K1VHS 306	WD0BNC 300	OK1AWZ 287	NX4Y 275
N4MM 323	WB1DQC 321	KE4VU 319	XE1AE 315	NN4Q 311	N4KEL/M 306	WD0DMN 300	EA8TE 287	WA4PGM 275
WA4JTI 323	VE7DX 321	CX1TE 319	KA3HXO 315	IK2GNW 311	N4KE 305	W7KSK 300	PA0XPO 286	NO4J 275
W9OKL 323	K2ENT 321	IK8CNT 318	KB2HK 315	SM6CST 311	K3LUE 305	VE3FJE 300	N8BJQ 285	VE7HAM 275
W6EUF 322	K4CXY 321	I4ZSQ 318	W0LSD 315	K0HQW 311	WA6DTG 305	WB5RFX 300	KB5RF 284	HP6AYV 275
VE3GMT 322	WB3DNA 321	G4CHP 318	K4XO 315	K1HDO 311	K8YVI 305	K3NEE 300	IK8BMW 284	T12SD 275
K4MOG 322	WA4ECA 320	I2QMU 318	A18S 315	K9BWQ 311	VE3DLR 305	NW5K 299	NZ7D 284	KM5R 275
OZ5EV 322	SV1ADG 320	W4UNP 318	WZ4I 315	XE1OX 310	YV5IVB 305	WB6GFJ 299	VE3IMO 283	

meters, with several stations on simultaneously. QSL SSB QSOs to AA6BB, and CW and RTTY contacts to KA6V. The trip is a very expensive one; a little something extra in your envelope to help with expenses would be much appreciated, I'm sure.

Also set to be on the air early this month is the **YA5MM** Afghanistan operation. Their paperwork has been approved by the DXCC desk for credit, pending receipt of the papers that showed they actually were operating within the country. (More about the DXCC accreditation process in a future column.) Again, a little extra in the QSL envelope would be appreciated.

Back in the Pacific, members of the Oklahoma DX Association (OKDXA) will be active for the first two weeks of the month from Belau **KC6**, formerly the Western Caroline Islands. Dave, N5CG; Jim, WV5S; Craig, WE5I; John, NJ1V; George, AD1S;

and Charlie, W0RRY, will be on all bands, 160-2 meters, including the ARRL SSB test March 7-8. Their callsigns weren't available at press time, but QSL to OKDXA, Box 88, Wellston, OK 74881.

Another possible Pacific operation is **ZL8AMO** from Kermadec. Ron Wright, ZL1AMO, was working on finances late last year, to pull together a multi-operator team to the New Zealand weather outpost. Should Ron come on as ZL8AMO, trying calling him a kiloHertz or so *below* his CW transmitting frequency, even when he says he is listening "up." QSL to ZL1AMO, direct preferred.

Also on the air this month is Island On The Air specialist Bernhard Stefan, DL2GAC. Bernhard will be hopping around the western Pacific, operating briefly from as many new IOTA entities as possible. He keeps a flexible schedule, moving when-

ever and wherever transportation permits. However, he plans to visit Philippines DU, Solomon Islands H44, Nauru C21, and Papua-New Guinea P29. He's looking at Duke of York Islands (OC-008) with P29FS, and several island groups in the Solomons. Bernhard asks for a single contact per island, and QSLs to his home address, *after* his return in June. Try the IOTA frequencies of 14260, 21260, and 28460 kHz.

Ben Pinz, W2GUP, will be active **VP2V** from Tortola in the British Virgin Islands for the first few days this month. Look for Ben near the bottom of the bands on CW, including the new bands. Ben is celebrating 58 years of amateur radio, and his 75th birthday, during his VP2V operation.

On a continuing basis, two countries relatively rare on CW should be readily available this year. John Gagen, WA2WYR, is now active **API** from Pakistan. John will be

on the air until August. Try 38 kHz up on CW. QSL to Ken Swanson, KK6TX, 59 Castlewood Drive, Pleasanton, CA 94566. (Addresses in pre-1992 editions of the Callbook are wrong.) Another rare country on CW has been Kuwait. Currently, Don Nutt, KJ6TC, is active as **9K2WR**, until July. Don plans to operate 80-10 meters, including the new bands, on CW, SSB, RTTY, and AMTOR. QSL to Don's wife, Amy, N6UXB, 5005 Willow Rock Way, Sacramento, CA 95841.

Award hunters should watch out for the Irish Radio Transmitters Society's EI activity around St. Patrick's Day. IRTS plans to have stations from all 26 Irish countries on the air, March 14-17. Information about their award program is available for a self-addressed, stamped envelope (SASE) from Joe Duffin, EI8GT/W2ORA, 4 West Central Avenue, Moorsetown, NJ 08057.

The Canadians may use yet another special prefix series in March and April. VE1-8 stations may sign VG1-8, VO1-2 stations may use XJ1-2, VY1-2 stations may sign CG1-2, and VY9 stations may use CG9. These prefixes commemorate the 150th anniversary of the Geological Survey of Canada. QSL to the corresponding regular call sign.

Looking a little higher in frequency, into the VHF range, we find still more "DXpeditions." Jim Kelly, KK3K, and Don Bledsoe, WB6LYI, of the Lambda Amateur Radio Club will operate on the Oscar

satellites from Anguilla VP2E and the British Virgin Island VP2E this month. Look for **VP3E/WB6LYI** March 10-13, and **VP2V/KK3K** from Tortola March 13-16. And finally, there are no less than three scheduled Space Shuttle flights with amateurs aboard this year. Pilot Brian Duffy, N5WQW, Mission Specialist Dave Leestma, N5WQC, and Payload Specialist Dirk Firmout, ON1AFD, will be on 2 meter FM in an **Atlantis** flight set for this month.

### Notes From All Over

Some of the newly independent former Soviet republics have adopted preferred English-language spellings of their names. Former Byelorussia UC is now **Belarus**, Kirghizia UM is now **Kyrgyzstan**, Moldova UO is now **Moldova**, and Tadzhikistan UJ is now **Tajikistan**.

The Out-Going QSL service of the ARRL is now sending cards for the Baltic countries of Lithuania LY, Latvia YL, and Estonia ES separately from cards to the former USSR. DXers should sort their QSLs accordingly.

All APO and FPO addresses have changed, effective September 1, 1991. City names have been dropped, and there are new abbreviations for the "states." APO Miami is now APO AA, FPO Miami is now FPO AA, APO New York is now APO AE, FPO New York is now FPO AE, APO San Francisco is now APO AP, and FPO



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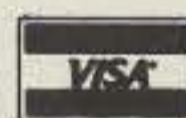
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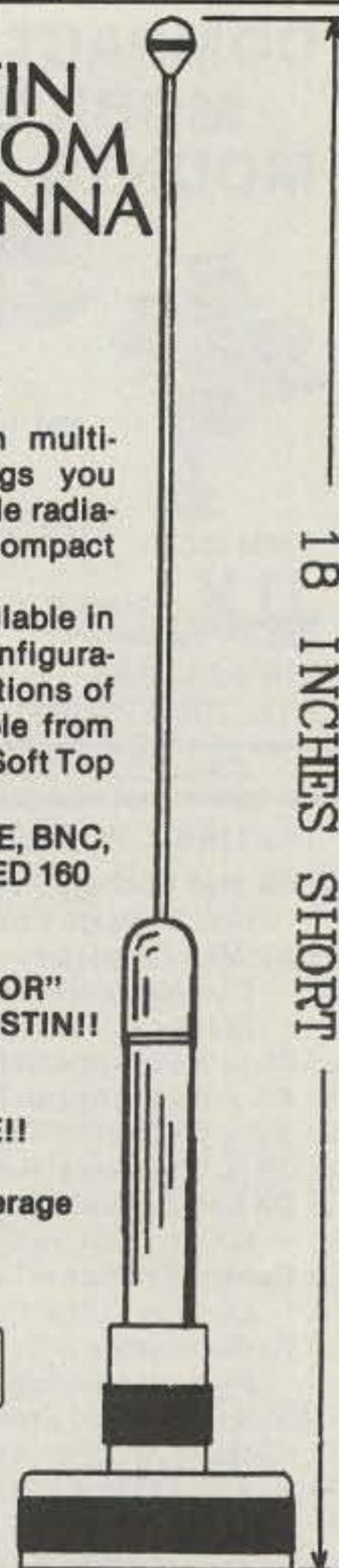
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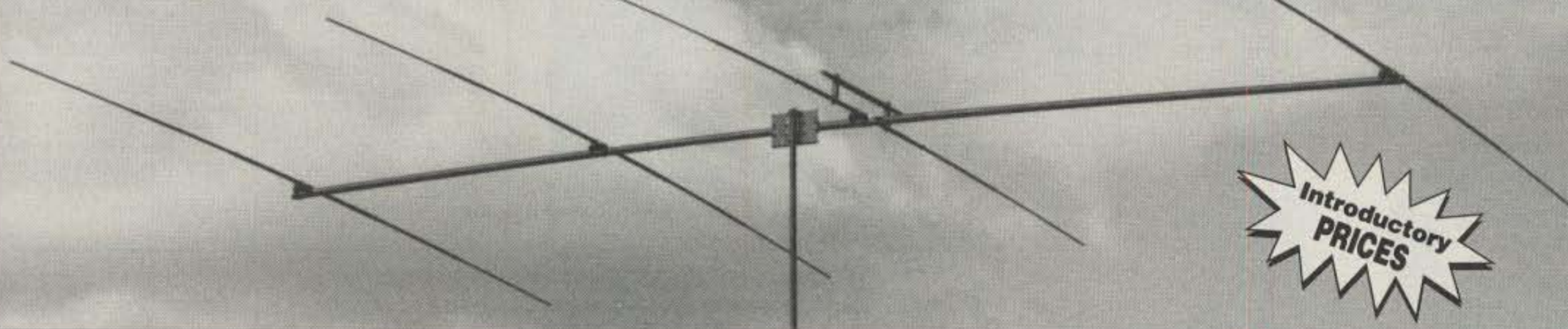


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H10-3	10 m	6.46	1.79	\$190
H6-6	6 m	9.41	1.91	\$200
H144-5	2 m	9.10	1.70	\$ 50
H144-15	2 m	13.73	1.68	\$145
H220-5	1.25 m	9.10	1.70	\$ 50
H220-17	1.25 m	13.53	1.29	\$150
H432-24	70 cm	16.14	1.76	\$145

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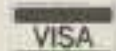
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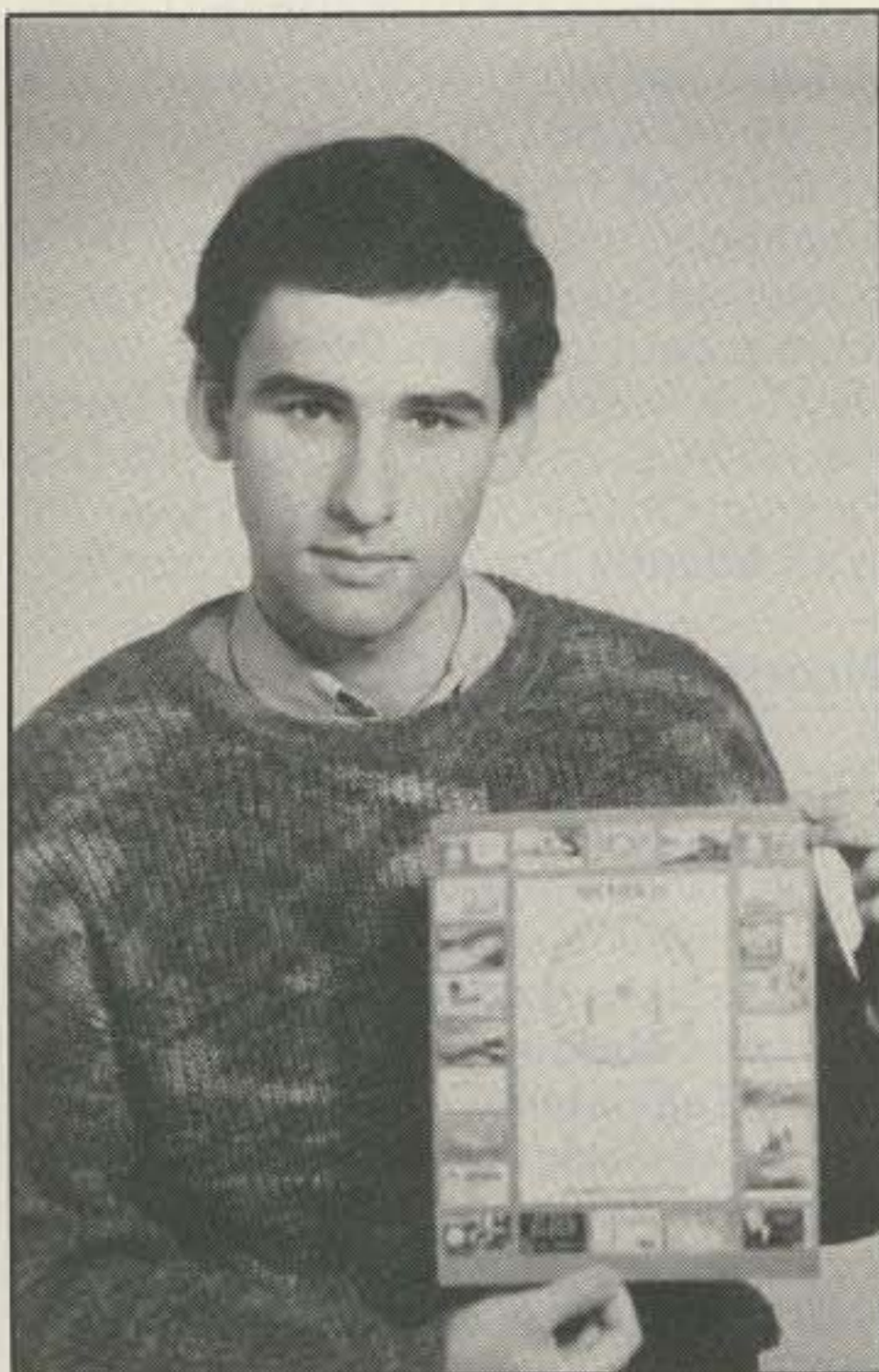
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Anton Kovol, UB5WS, is proud of his membership certificate from the Northern California DX Foundation. Sixteen-year-old Anton operates high-speed CW near the bottom of the bands.



Igor, UT4UX, plans to be active as YA5MM from Afghanistan in late February and early March. (WB2AQC photo)

San Francisco is now FPO AP. (AA = All America, AE is All Europe, and AP is All Pacific.)

New Yorker magazine profiled Kenny Schaffer, N2KS, in its December 2, 1991 issue. The favorable article is well worth reading, and excellent publicity for amateur radio.

Recent Silent Keys: **Walt Henry, W6ZN,**

## CQ DX Awards Program

### SSB

1919	N5PLH	1926	WB5RJK
1920	KA5TQF	1927	EA6MQ
1921	W4JVU	1928	CX1TE
1922	ZS6BBY	1929	VE3IMO
1923	N1CWA	1930	XE1RCS
1924	LU5DSE	1931	IN3PEE
1925	WP4AFA		

### CW

843	K9EC	846	N1CWA
844	KA5TQF	847	WA9RCQ
845	HL5AP		

### RTTY

11	K3UA
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### SSB Endorsements

320	W4JVU/323	320	VE2PJ/320
320	N4JF/323	310	IK8CNT/319
320	K6YRA/323	310	CX1TE/319
320	YV1KZ/323	310	KE4VU/319
320	K6JG/323	310	W7FP/319
320	YU1AB/323	310	W6NLG/317
320	I0ZV/323	310	KB9OC/316
320	VE3MRS/323	310	ZS6BBY/312
320	N6AR/323	300	KA5TQF/307
320	KB8DB/323	300	I8IYW/304
320	N4MM/323	300	WD0BNC/300
320	WA4JT/323	275	N1CWA/299
320	WB4UBD/323	275	VE3IMO/283
320	W9OKL/323	275	WP4AFA/277
320	W9SS/323	200	KB7IVU/224
320	K8NA/322	200	IN3PEE/225
320	K3UA/322	150	XE1RCS/191
320	I0AMU/322	150	N9JX/151
320	WB1DQC/321	28 MHz	KA5TQF
320	VE7DX/321	28 MHz	LU5DSE
320	WB3DNA/321	28 MHz	WB5RJK
320	CX4HS/320		

### CW Endorsements

320	N4JF/323	275	VE7DX/295
320	N6AR/323	275	KA7T/288
320	K6JG/322	275	KA5TQF/281
320	K1MEM/322	275	WA9RCQ/277
320	N4MM/322	250	N1CWA/255
320	K3UA/320	200	K9EC/214
310	WA4JT/316	150	HL5AP/161
310	K8NA/315	3.5/7 MHz	KA5TQF
310	KB8DB/311	28 MHz	KA5TQF

Total number of active countries is 323. The basic award fee for subscribers to CQ is \$4. For non-subscribers, it is \$10. In order to qualify for the reduced subscriber rate, please enclose your latest CQ mailing label with your application. Endorsement stickers are \$1.00. Updates not involving the issuance of a sticker are made free when an SASE is enclosed for confirmation of total. Rules and application forms for the CQ DX Awards Program may be obtained by sending a business size, No. 10 envelope, self-addressed and stamped, to CQ DX Awards Manager, Billy Williams, N4UF, Box 9673, Jacksonville, FL 32208 U.S.A. DX stations must include extra postage for air-mail reply. Please make all checks payable to the awards manager.

co-founder of Henry Radio; **Lester Cushman, W1BX**, founder of Cushcraft Corp.; and **Bill Carter, KM5R**, who was killed in a fall from his 60 foot tower during the CQ WW SSB test. He was not using a safety belt (ARRL Letter).

## CQ Zone Border Clarified

Jim Dionne, K1MEM, has clarified the boundary between Zones 2 and 4, in the Northwest Territories. The line between the Zones runs directly from the intersection of 60 degrees North and 85 degrees West, to Point Mesaconane, on the border between Quebec and Ontario provinces. This means that the James Bay Islands of Charlton, Trodely, Weston, Stutton, North Twin, and South Twin lie in Zone 2, while Akimiski Island is in Zone 4.

73, Chod, VP2ML





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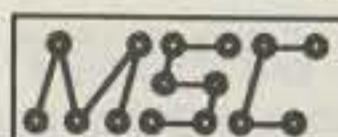
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 BY4RB to P.O. Box 413, Beijing  
 CE8FFD to P.O. Box 4, Easter  
 Is., Chile  
 CE9GEW to Jose M. Garcia, Box  
 74D, Puente Arenas, Chile  
 (South Shetland Islands)  
 ES100 to P.O. Box 2259, Tal-  
 linn, 200035 USSR  
 FH8CB to P.O. Box 50, 97610  
 Mayotte, via France  
 F05IV to P.O. Box 5006, Pirae  
 Tahiti, French Polynesia  
 HH2PK to P.O. Box 1005, Port  
 of Prince, Haiti  
 HL9FY to Charlie Hopkins,  
 PSC3, P.O. Box 5314, APO AP  
 96266-5314  
 HS1ZEB to Jade, Box 678,  
 Bangkok 10501, Thailand  
 J6LB to P.O. Box 1328, Cas-  
 tries, St. Lucia  
 JT1AA to P.O. Box 138, Ulan  
 Baton 13, Mongolia  
 R1SA to P.O. Box 14, St. Peters-  
 burg 189630, USSR  
 R17A to P.O. Box 56, Tashkent  
 700015, USSR  
 RZ6LG to P.O. Box 14, Tagan-  
 rog 347900, USSR  
 U1ZAA/P to P.O. Box 1087,  
 Murmansk 057505  
 UA8YO to P.O. Box 176, Kyzyl,  
 Tuva 667000, Russia  
 UH6W/UA4FEG to P.O. Box 222,  
 Penza 440011, USSR  
 UW6HY to P.O. Box 39, Kislo-  
 vodsk 357700, USSR  
 V44KBR to Rudy Rowlands, 3  
 Princes St., Basseterre, St.  
 Lucia  
 VP8CGM to Fin, P.O. Box 260,  
 Stanley, Falklands  
 VR6BX to Brian Young, P.O.  
 Box 21, Pitcairn Is., South Paci-  
 fic Ocean  
 Y11RJ to P.O. Box 714,  
 Baghdad  
 YL1YZ to P.O. Box 86, Riga  
 226010, Latvia  
 YM4GO to P.O. Box 459, Antal-  
 ya, Turkey  
 ZA1TAE to P.O. Box 66, Tirana,  
 Albania

## QSL Notes

YC3OSE has a new manager: Bob Pres-  
 ton, W7TSQ, 809 Cary Road, Edmonds,  
 WA 98020.

V73CT is Ken Wells, P.O. Box 1255,  
 APO AP 96555. US stamps are fine for re-  
 turn postage. Ken reminds DXers that all  
 APO addresses are changing. AP stands  
 for All Pacific, including Alaska, and AE  
 stands for All Europe.

Ken says he is the QSL manager for the  
 Kwajalein Amateur Radio Club, which han-  
 dles cards for its members, and for the club  
 station, V73AX.

3B8CF/3B7 says he is resuming QSLing  
 of his St. Brandon operation, following a  
 suspension around Christmas.

DX1HRP and 4D1P QSL via Warren Uy,  
 DU1EIB.

QSL the CQ WW CW operation of  
 IS0QDV, as well as the former AH3C and

**KN0E/KH3** operations via Vic Shields, K9UIY, 524 East Empire St., Freeport, IL 61032.

QSL the CQ WW CW call of **AT4W** via N2MM.

Cards for **HS0ZAI** go to Mike Castellano, KM1R, 631 Great Hill Road, Guilford, CT 06437.

Some DXers received their cards for **P40V** back from operator, and QSL manager, AI6V. This was a temporary misunderstanding; please QSL again.

QSL **PR2A, PS2A, PV2A, PW2A, ZV2BW, ZW2A, and ZX2A** to Ariosot E. de Souza, PT2BW, Sqn 315, bl. C, ap. 608, 70774 Brasilia (DF) Brazil.

QSL the CQ WW SSB operation of **5K6CQ** via Laurebcio Perez HK6MKK, P.O. Box 4142, Pereira, Colombia.

IK1CJT says he has the **3V8PS** logs for Feb. 10-24, 1986, **only**. He can't help with other dates.

**CE0ZIG** has returned to mainland Chile. Anyone still needing a card can contact Jaime Herrera at P.O. Box 1415, Temuco, Chile.

The club station **C21NI** on Nauru was operated in mid-June 1991 by Larry, N7DF, who is currently in Alaska.

The callsign structure in St. Lucia J6 is changing. Resident amateurs will use **J69** prefixes, Novices will use **J66** prefixes, and visitors will use **J67** prefixes.

QSL **J6DX** via Scott Lehman, N9AG, P.O. Box 803, Greenville, OH 45331.

## Pirates, Slims, and Not-Managers

**V51MA** can no longer be QSLed via W3HCW: no logs.

Likewise, **UL7NW** is no longer confirmed via WA2CBU, as of July 30, 1991.

**JY2FL**, who has been giving N6FX and N2FS as managers, is apparently a pirate. Likewise, **OD5NF**, who gives N6FX as manager.

**VP8CGK** on South Georgia QSLs via VK4MZ, not via GM4KLO. GM4KLO *does* handle cards for **VP8CDJ** on South Georgia and **VP8CFM** on South Orkney.

**SV0MW/SV8** cards are being returned from K7MW, who knows nothing about the operation.

**4K1ZI** in early 1991 was an apparent pirate. Glynn Furr, K4RKL, manager for the Snake Island **4K5KI** operation, knows nothing about the 4K1 call.

**G4KBC**'s mother reports getting cards for a South Atlantic station. These are misdirected.

## USSR (and ex-USSR) QSL Notes

**4K2CC** from Franz Josef Land QSLs via Valery Dorokhov, UV3CC, P.O. Box 24, Moscow 127349 USSR.

QSL **UA8T/UZ4FWO, RW8T/RA4FB, and UW8T/UA4FBG** via Mike Nicolaev, UA4FEQ, ul. 8 Marta 27-5, Penza 440011

USSR, with 2 IRCs.

QSL **R6E, UA6II, UA6E/UA6BGB, UZ6AZF, UW6HWI, and UW6HFQ** to P.O. Box 999, Stavropol 355044 USSR.

QSL **LY91BM** to Stasys Juozapaitis, LY3BM, P.O. Box 237, Klaipeda-18, Lithuania 235818.

The **Latvia** QSL bureau has a new address: P.O. Box 164, Riga 226098, Latvia.

QSL **4L1NV** from the 1991 IARU HF Championship only to UB4LWA, Box 706, Kharkov-141, 310141 USSR. (QSL 4L1NV contacts from other times via RA1NA.) Also confirmed via UB4LWA are: **RA1N/UB4LWA, RW2F/UB4LWA, UB0L, RB5LUK/JT, RB5LTK/JT, RA1N/UB5LPZ.**

QSL **RM3Q/UA6LAT, RM5Q/UA9MAA, UM8QA, and UA9MAA** via Serge Sibert, UA9MAA, P.O. Box 2013, Omsk 59, 644059 USSR.

## Corrections and Amplifications

**S79KMB** QSLs via KN2N.

**YB8HX** QSLs via KA6KKN.

**VS6WO** cards should go to K9EC.

**PJ4/WG3I** cards should go to G4FRE; he's returned to the UK soon, and cards to his US call will be delayed.

**A22AA**'s correct address is Charles Lewis, P/Bag 38, Selebi-Phikwe, Botswana, Africa. Box 38 is wrong.

**TF3DX**'s address is Vilhjalmurthor Kjartansson, Box 1058, Reykjavik, Iceland (the local radio club).

Club station **V73AX** QSLs via Ken Wells, P.O. Box 1255, APO AP 96555.

**F6FNU** has returned from a prolonged vacation in Biarritz, and requests QSL cards be sent to his usual address: B. P. 14, 91291 Arpajon Cedex, France.

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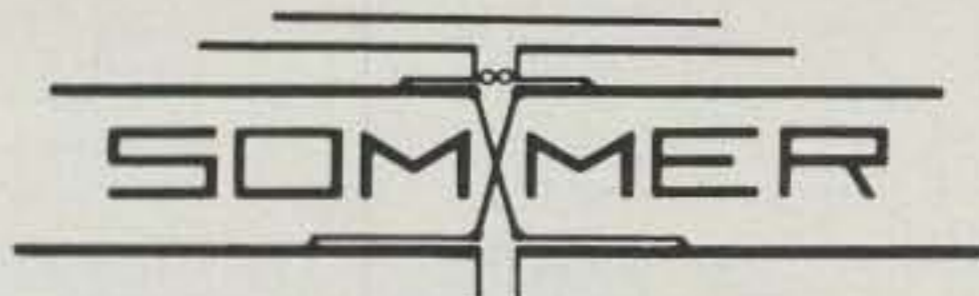


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# CQ World-Wide WPX SSB Contest All-Time Records

BY STEVE BOLIA, N8BJQ, DIRECTOR, CQ WPX CONTEST

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

## WORLD RECORD HOLDERS

### Single Operator

1.8	UL7ACI('91)	331,008	128
3.5	OH1RY/CT3('85)	2,816,754	453
7.0	NP4A('86)	6,668,184	654
14	ZZ5EG('88)	8,219,627	871
21	ZP0Y('90)	12,070,245	955
28	ZX5C('90)	11,919,582	921
AB	P40V('90)	17,440,680	1010
QRP/p	VP2EXX('90)	6,727,444	779

### Multi-Operator Single Xmtr.

P40V('91)	26,987,142	1127
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### Multi-Operator Multi-Xmtr.

ED8ACH('91)	47,278,236	1319
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## U.S.A. RECORD HOLDERS

### Single Operator

1.8	K5UR('85)	122,664	228
3.5	KQ2M('85)	1,247,906	433
7.0	KM6B('87)	1,164,800	320
14	K2VV('87)	3,546,294	687
21	AI7B('82)	4,151,232	576
28	WM5G('89)	4,213,127	799
AB	KM1H('89)	6,669,171	817
QRPp	W8ILC('82)	1,044,012	459

### Multi-Operator Single Xmtr.

WC4E('89)	10,748,673	1017
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### Multi-Operator Multi-Xmtr.

WZ6Z('89)	18,737,170	1138
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## CLUB RECORD

Araucaria DX Group('90)	62,858,364
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## QRPp RECORD

VP2EXX('90)	6,727,444
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## WPX (Prefix) RECORD

HG73DX('91)	1,337
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## CONTINENTAL RECORD HOLDERS

### AFRICA

1.8	OH1RY/CT3('87)	290,140	163
3.5	OH1RY/CT3('85)	2,816,754	453
7.0	OH2KI/CT3('87)	3,729,834	409
14	TU4BR('86)	3,483,480	637
21	TR1G('90)	6,788,925	825
28	FR5DX('91)	7,543,818	831
AB	EA9AM('87)	12,712,460	838

### ASIA

1.8	UL7ACI('91)	331,008	128
3.5	UF6VZ('90)	835,584	256
7.0	H24LP('87)	5,348,975	503
14	H2A('91)	6,297,464	758
21	4X5U('91)	4,084,437	673
28	JH1AJT('89)	4,848,480	740
AB	JA0JHA('89)	5,830,359	699

### EUROPE

1.8	LZ2BE('84)	261,504	144
3.5	4N1A('90)	1,073,520	426
7.0	IO4VEQ('90)	3,878,928	648
14	ID1V('90)	4,729,488	888
21	CQ7A('90)	5,329,680	848
28	9H1EL('89)	5,882,825	787
AB	YZ9A('91)	8,518,112	928

### Multi-Operator Single Xmtr.

AF	5H1HK('90)	13,980,480	960
AS	TA5/N0FYR('91)	16,474,965	1005
EU	LZ9A('89)	14,399,625	1075
NA	VP2EC('83)	15,238,880	820
OC	AH0K('91)	11,552,112	726
SA	P40V('91)	26,987,142	1127

### NORTH AMERICA

1.8	CG3MFA('85)	319,140	162
3.5	VA3EJ('91)	1,950,592	448
7.0	NP4A('86)	6,668,184	654
14	TI2CC('87)	5,491,290	790
21	FG5R('89)	9,936,240	912
28	WM5G('89)	4,213,127	799
AB	KP2A('90)	15,056,886	1014

### OCEANIA

1.8	T32AF('83)	16,872	37
3.5	AH6AZ('88)	492,030	231
7.0	T32AF('90)	3,345,864	436
14	KG6DX('90)	4,558,527	733
21	NY6M/KH2('89)	6,122,620	707
28	KB7IJ/KH2('82)	4,743,144	504
AB	WR6R/WH6('91)	7,153,647	632

### SOUTH AMERICA

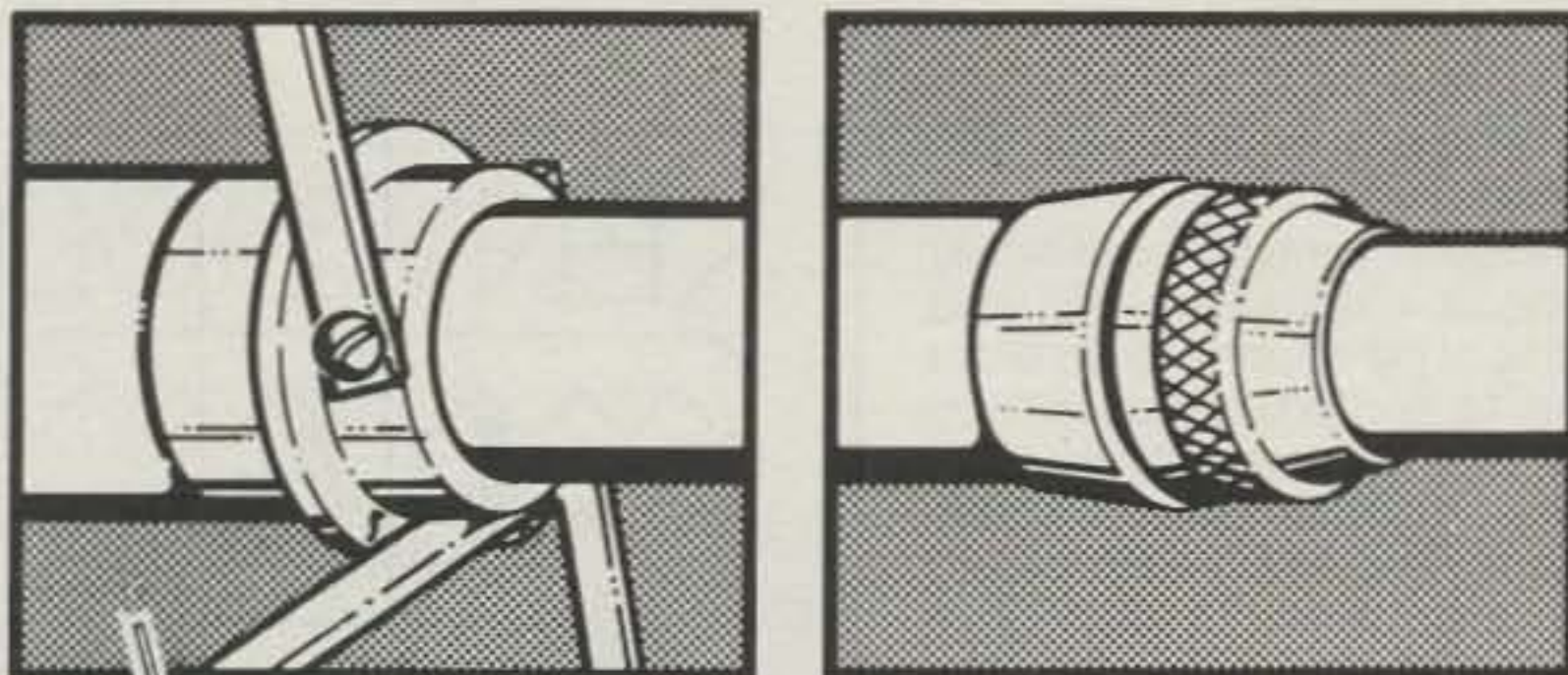
1.8	YV5JEA('84)	40,320	63
3.5	YV3A('91)	1,664,476	362
7.0	YV5A('91)	3,460,900	530
14	ZZ5EG('88)	8,219,627	871
21	ZP0Y('90)	12,070,245	955
28	ZX5C('90)	11,919,582	921
AB	P40V('90)	17,440,680	1010

### Multi-Operator Multi-Xmtr.

AF	ED8ACH('91)	47,278,236	1319
AS	JA9YBA('89)	13,579,072	988
EU	HG73DX('91)	30,664,095	1337
NA	VP2EC('87)	37,446,109	1147
OC	FK0AW('89)	26,538,972	1002
SA	ZZ5EG('87)	38,096,250	1250

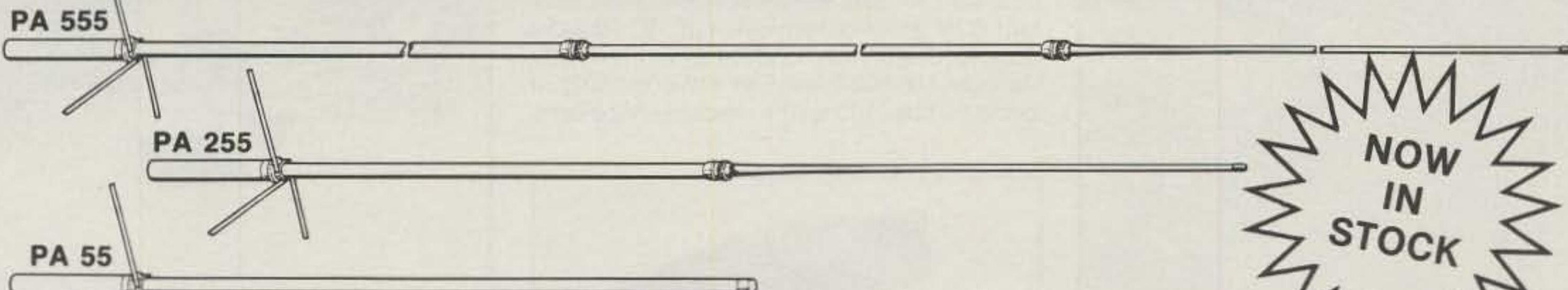
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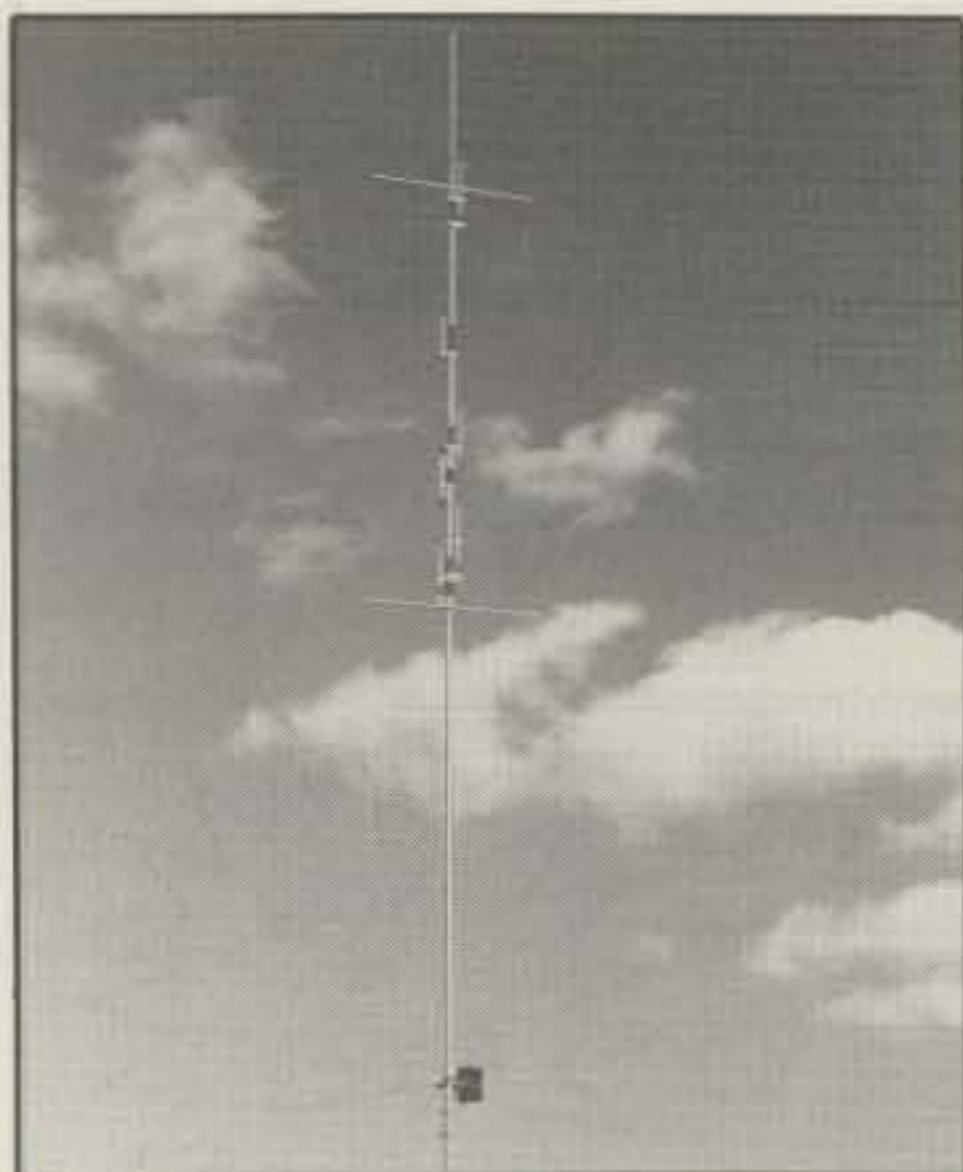
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The Cushcraft R7 1/2-wave vertical antenna for 10-40 meters, including the WARC bands, provides low-angle radiation, does not require radials, and stands only 22 1/2 feet high. It weighs just over 12.3 pounds. The R7 changes bands automatically, a feature of high-Q traps and a newly designed impedance matching network. There are no moving parts or tuners, and the R7 has only seven short counterpoise rods.

For more information, contact Cushcraft Corporation, 48 Perimeter Rd., Manchester, NH 03108 (603-627-7877), or circle number 106 on the reader service card.



## Stabilant 22 From D.W. Electrochemicals

Stabilant 22 is an initially nonconductive block polymer that in a thin film under the effect of an electrical field or when used in a very narrow gap between metal contacts becomes conductive. The electrical field gradient at which this occurs is set so that the material will not cause leakage between adjacent contacts in a multiple-pin environment. It provides the connection reliability of a soldered joint without bonding the contact surfaces together. It also exhibits surfactant action and lubricating properties. And while the material was designed to substantially increase the reliability of all forms of contacts, Stabilant 22 is also finding increased use as an insertion lubricant for multi-pin ICs. Here it al-

most eliminates the possibility of bending-under a pin on an IC, maker says.

Stabilant is a resident treatment—that is, they stay on the contacts, and thus are only used once in the lifetime of the equipment. Stabilant 22 is packaged in 15, 50, 100, 250, and 500 ml and 1 liter containers. The Stabilants are available in two forms—as a concentrate called Stabilant 22, and as an isopropyl alcohol-diluted form called Stabilant 22a. The 15 ml Stabilant 22a Dilute (Service Kit), part number 007-020-015, sells for \$36. For more information, contact D.W. Electrochemicals Ltd., 97 Newkirk Road N., Unit 3, Richmond Hill, Ontario L4C 3G4 Canada (416-508-7500, FAX 416-508-7502), or circle number 103 on the reader service card.



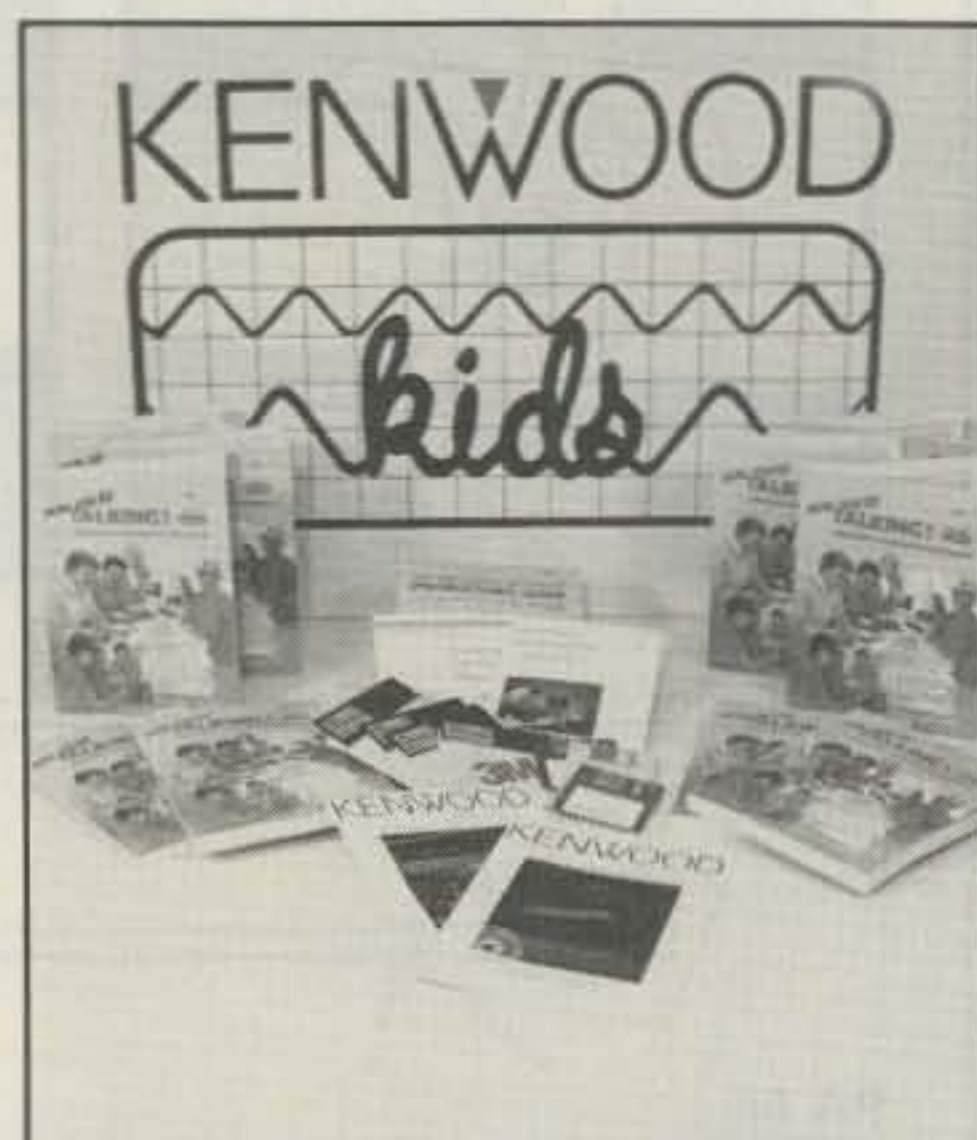
## Panavise/Townsend Mobile Mount

This mobile transceiver mount is heavy enough to hold virtually any modern transceiver and allows adjustment so that controls can readily be seen and used by the operator. The ball/swivel base and tilting top allow for maximum movement with minimum effort. The round post of the mount can be pulled out of the base and the rig with post and all can be stowed out of sight in the trunk when the vehicle is parked. The mount is 10 inches tall and can be mounted on a sloping surface or flat on the floor. In addition, the mounting plate is designed to allow almost any mounting bracket to it with little or no drilling necessary. Also available are commercial model mounts which can be used to mount more than one unit with optional arms.

For more information, contact Townsend Electronics, Inc., P.O. Box 415, Pierceton, IN 46562 (FAX 1-219-594-5580), or circle number 102 on the reader service card.

## Kenwood K.I.D.S.

The Kenwood K.I.D.S. program is intended to help young people discover the excitement of amateur radio. Kenwood wants amateur radio clubs to co-sponsor a local school, scout troop, or youth group in the Kenwood K.I.D.S. program. As a co-sponsor the club will provide local assistance and "Elmer" the youth group, while Kenwood provides the educational material and prizes. Each new amateur sponsored under the program will receive a \$25.00 gift certificate



from Kenwood, and for every ten Kenwood Kids licensed, the sponsoring club will receive ten \$25.00 gift certificates.

For a form to set the process in motion, write to Kenwood USA, P.O. Box 22745, Long Beach, CA 90801, Attn: Kenwood K.I.D.S. The Kenwood K.I.D.S. package, which is sent after the form is received by Kenwood, consists of ten copies of *Now You're Talking*, the ARRL book introducing amateur radio; one copy of the ARRL Novice/Technician Instructor's Guide; a certificate for one copy of Kenwood's Ham Windows software, which makes the computer an extension of the HF rig, while teaching science, geography, and social studies; and a Kenwood K.I.D.S. program outline and promotional materials. There are a limited number of packages available, and they are sent on a first-come first-serve basis.



## j•Com Ventriloquist™ Voice Keyer/Audio Memory

Ventriloquist™ from j•Com records and reproduces analog signals directly at a rate of 6400 samples, achieving a 2.7 kHz signal bandwidth with less than 2% total harmonic distortion. Through the use of EEPROM technology, the Ventriloquist memory will retain the signal

for up to ten years without power. It also will erase and rerecord directly without the need for sophisticated equipment or manufacturer reprogramming.

Ventriloquist contains a built-in microphone and speaker. The unit interfaces easily with most modern transceivers. A PTT keying circuit is provided to operate the transmitter automatically when a message is played. Ventriloquist also includes a built-in computer interface which may be connected directly to the printer port of any PC compatible computer.

The unit requires 9 to 16 volts DC at less than 80 ma. As an assembled and tested PC board, Ventriloquist sells for \$124.95. Including the high-impact ABS enclosure, the price is \$149.95. For more information, contact j•Com, P.O. Box 194, Ben Lomond, CA 95005 (408-335-9120, FAX 408-335-9121), or circle number 101 on the reader service card.

The price remains at \$19.95. For more information, contact Milestone Technologies, 3551 S. Monaco Parkway, Suite 223, Denver, CO 80237-1228 (303-752-3382), or circle number 108 on the reader service card.

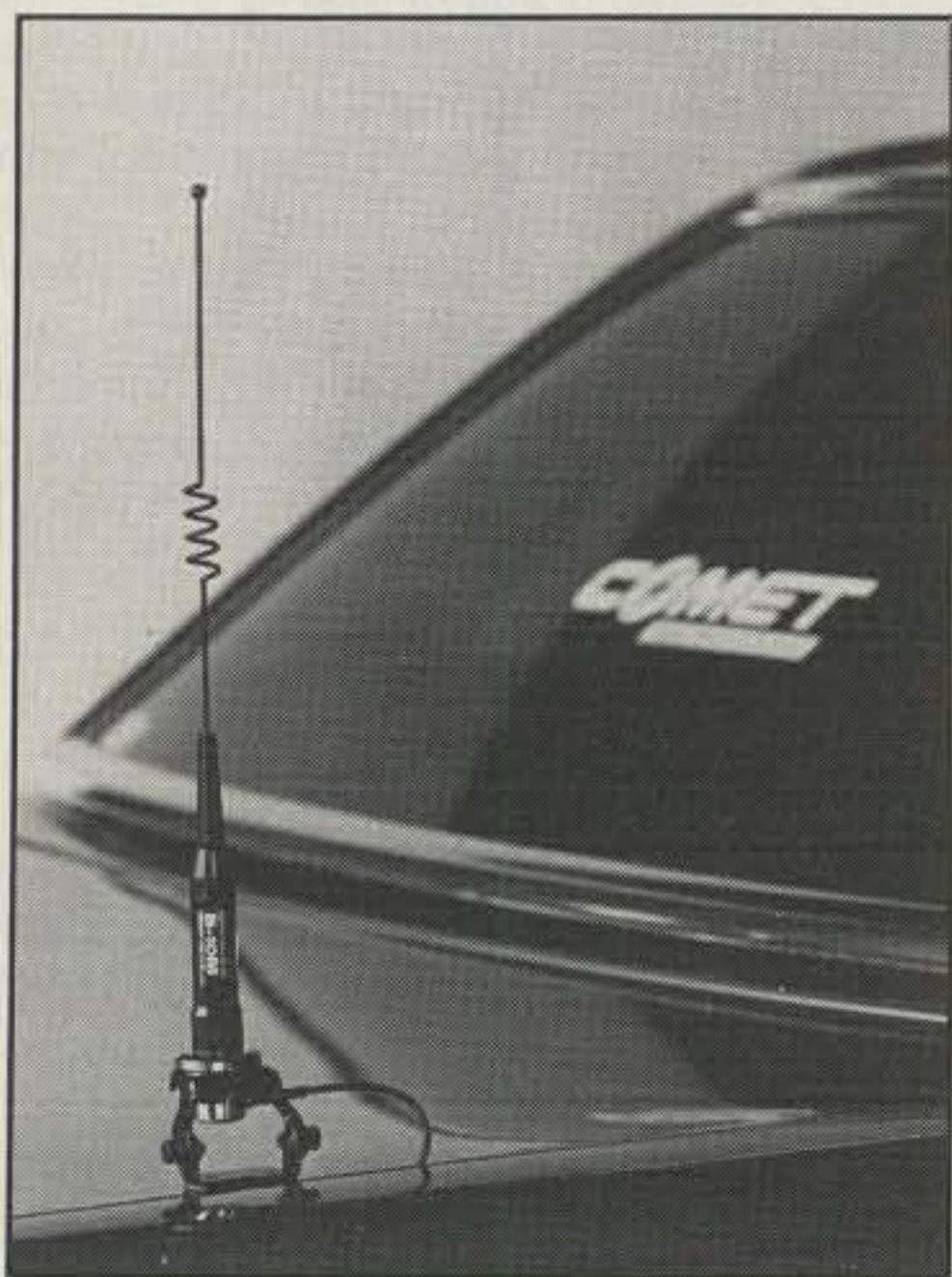


### Ameritron QSK-5 T/R Switch For Linear Amplifiers

The Ameritron QSK-5 T/R Switch is an easy-

to-install external adapter that adds full break-in to a high-power amplifier. The QSK-5 can also be switched over to a new amplifier in the future, and it is totally silent and six times faster than mechanical vacuum relays, maker says. The exclusive sure switch handshaking eliminates hot switching of the amplifier, and minimizes TVI, RFI, key clicks, and possible damage to the linear amplifier. There is also an Amp Saver feature which completely turns off the amplifier's plate current between dots, dashes, and words.

The QSK-5 handles 2500 watts PEP and 2000 watts in normal amateur service (SWR below 1.5:1), and handles 750 watts on continuous modes such as RTTY, SSTV, and FM. The unit sells for \$349. For more information, contact Ameritron, 921 Louisville Road, Starkville, MS 39759 (601-323-5869; FAX 601-323-6551), or circle number 109 on the reader service card.



### Dual-Band 2m/70cm Antennas From COMET

COMET Antenna has introduced two new antennas for dual-band operation on 2m/70cm. The Model B-10 is 12 inches tall and radiates 1/4 wave on 2 meters and 1/2 wave on 70cm. The B-20 is 30 inches tall and radiates 1/2 wave on 2 meters and 5/8 wave x 2 on 70cm. Both are anodized black and are available with either PL-259 or NMO style connectors.

In the photo the antenna is shown mounted on the COMET RS-9 Trunk Lip Mount using the CK-5M Coax Cable Assembly. The RG-188A/U coax extends 12 inches from the mount, enabling the trunk lid to close without damaging the coax or starting a water leak in the trunk. COMET also has external mounts that do not require drilling a hole in the vehicle.

To order, see your local amateur radio dealer, or call NCG at 800-962-2611 for dealer locations.

### Milestone Technologies CODEMASTER 4.0

The Morse code training program CODEMASTER is used to learn Morse code or improve receiving skills, and the new version 4.0 update includes a new routine for changing and saving program settings, improved performance, and a higher level of error checking.

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## THE SCIENCE OF PREDICTING RADIO CONDITIONS

### Forty-First Year as Editor

**M**y first Propagation column appeared in the March 1951 issue of *CQ!* Therefore, March is always a special month for me. This month's column marks my 41st year as Propagation Editor, and my 481st consecutive monthly column, without ever missing a deadline.

#### Solar Cycle Progress

Sunspot Cycle 22 is now in its 67th month. It began in September 1986 with a smoothed sunspot count of 12, and it reached peak intensity during July 1989 with a smoothed count of 159. A secondary peak of 148 was measured during February 1991. Cycle 22 is the third most intense recorded in the more than 200 years that sunspot records have been kept.

The Royal Observatory of Belgium reports a monthly mean sunspot level of 106 for November 1991. This results in a 12-month running smoothed sunspot number of 145 centered on May 1991. This is a decline of two from the previous month's level. During November daily levels of solar activity varied between a high of 183 observed on November 1 and a low of 73 reported for the 16th.

According to daily observations made at Penticton, British Columbia by the Dominion Radio Astrophysical Observatory of Canada, the adjusted mean level of 10.7 cm solar flux for November 1991 was 168. This results in a 12-month running number of 206 centered on May 1991. The level of 10.7 cm flux is paralleling very closely the slow decline in the sunspot count.

A smoothed sunspot number on the order of 111 and a 10.7 cm solar flux level of approximately 189 are forecast for March 1992.

#### Critique of Conditions Observed During 1991 CQ WW DX Contest CW Weekend

While HF propagation conditions during the 1991 CW Contest weekend of November 23 and 24 were not quite as good as predicted, they were considerably better

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#### LAST MINUTE FORECAST

Day-to-Day Conditions Expected for March 1992

Propagation Index . . . . .	Expected Signal Quality			
	(4)	(3)	(2)	(1)
Above Normal: 1, 14, 21, 24, 27	A	A	B	C
High Normal: 10, 12-13, 22, 25-26, 28	A	B	C	C-D
Low Normal: 2-3, 7-9, 11, 18, 20, 23, 29	B	C	D	D-E
Below Normal: 4, 6, 15, 17, 19, 30	C	C-D	D-E	E
Disturbed: 5, 16, 31	C-D	D	E	E

Where expected signal quality is: A—Excellent opening, exceptionally strong, steady signals greater than S9.

B—Good opening, moderately strong signals varying between S6 and S9+, with little fading or noise.

C—Fair opening, signals between moderately strong and weak, varying between S3 and S6, with some fading and noise.

D—Poor opening, with weak signals varying between S0 and S3, and with considerable fading and noise.

E—No opening expected. 3dB per S-Unit.

#### HOW TO USE THIS FORECAST

1. Find *propagation index* associated with particular band opening from Propagation Charts appearing on the following pages.
2. With the *propagation index*, use the above table to find the expected signal quality associated with the band opening for any day of the month. For example, an opening shown in the charts with a *propagation index* of 3 will be excellent (A) on March 1st, fair-to-good (B-C) on the 2nd and 3rd, fair-to-poor (C-D) on the 4th, poor to none (D-E) on the 5th, etc.

than the conditions that existed during the Phone Contest weekend of October 26 and 27.

While the sunspot cycle continues to be at a relatively high level, the daily count during the contest weekend dipped sharply. A count of 76 was reported for November 23, and a count of 99 was observed on the 24th. Corresponding 10.7 cm solar flux levels were 133 and 128, respectively. While lower levels than expected, these were still high enough to produce worldwide openings on all amateur bands from 160 through 10 meters.

Geomagnetically, a worldwide A figure of 24 was reported for November 23rd. This combination of solar activity and geomagnetism produced generally fair-to-good conditions to most areas of the world.

Conditions improved somewhat on the

24th, with a worldwide A figure of 14. Conditions were generally good throughout the day, with periods of excellent conditions reported to several areas of the world.

Fortunately, unlike during the Phone Contest weekend, no significant solar flares occurred during the CW weekend and no significant radio storminess took place.

While it seems unlikely that any new records will be established during the 1991 CW Contest weekend, propagation conditions appear to have been good enough to expect relatively high scores to be reported on all HF bands.

#### Sunspots and the Greenhouse Effect

The sunspot cycle is now involved in the major international controversy concerning the greenhouse effect, or world heating. Until recently, most scientists and environmentalists thought that the greenhouse effect is probably being caused by the great increase in carbon dioxide (CO<sub>2</sub>) being released into our atmosphere. This past November, however, two Danish scientists found a startling relationship between the length of a solar cycle and the rise and fall of temperatures measured in the Northern Hemisphere since 1850. Egil Friis-Christensen and Knud Lassen, both world-class climatologists with the Danish Meteorological Society, reported their findings in the November 1 issue of *Science* magazine. They found that during longer cycles the earth tends to cool, and during shorter cycles the earth tends to warm.

While by no means conclusive, the relationship between the length of a solar cycle and earth temperature as reported by Christensen and Lassen is so powerfully impressive that many scientists now are taking a second look at the possible cause of the greenhouse effect. You should be able to find a copy of the November 1 issue of *Science* in your local library. The article makes for interesting reading.

#### March Propagation

As discussed in last month's column, equinoctial propagation conditions are expected to continue through the month of March and into early April. The experts generally



## HOW TO USE THE SHORT-SKIP CHARTS

1. In the Short-Skip Charts the predicted times of openings can be found under the appropriate distance column of a particular meter band (10 through 160 meters) as shown in the left-hand column of the charts. For the Alaska and Hawaii charts the predicted times of openings are found under the appropriate meter band column (10 through 80 meters) for a particular geographical region of the continental USA as shown in the left-hand column of the charts. An \* indicates the best time to listen for 80 meter openings.

2. The propagation index is the number that appears in parentheses ( ) after the time of each predicted opening. In the Short-Skip Charts where two numerals are shown within a single set of parentheses, the first applies to the shorter distance for which the forecast is made, and the second to the greater distance. The index indicates the number of days during the month on which the opening is expected to take place, as follows:

- (4) Opening should occur on more than 22 days
- (3) Opening should occur between 14 and 22 days
- (2) Opening should occur between 7 and 13 days
- (1) Opening should occur on less than 7 days

Refer to the Last Minute Forecast at the beginning of this column for the actual dates on which an opening with a specific propagation index is likely to occur, and the signal quality that can be expected.

3. Times shown in the charts are in the 24-hour system, where 00 is midnight, 12 is noon, 01 is 1 AM, 13 is 1 PM, etc. In the Short-Skip Charts appropriate standard time is used at the path midpoint. For example, on a circuit between Maine and Florida the time shown would be EST; on a circuit between New York and Texas the time at the midpoint would be CST; etc. Times shown in the Hawaii chart are in HST. To convert to standard time in other USA time zones add 2 hours in the PST zone, 3 hours in the MST zone, 4 hours in the CST zone, and 5 hours in the EST zone. Add 10 hours to convert from HST to GMT. For example, when it is 12 noon in Honolulu, it is 14, or 2 PM, in Los Angeles; 17, or 5 PM, in Washington, DC; and 22 GMT. Time shown in the Alaska chart is given in GMT. To convert to standard time in other areas of the USA subtract 8 hours in the PST zone, 7 hours in the MST zone, 6 hours in the CST zone, and 5 hours in the EST zone. For example, at 20 GMT it is 15, or 3 PM, in New York City.

4. The Short-Skip Charts are based upon a transmitted power of 75 watts CW or 300 watts PEP on sideband. The Alaska and Hawaii charts are based upon a transmitter power of 250 watts CW or 1 KW PEP on sideband. A dipole antenna a quarter-wavelength above ground is assumed for 160 and 80 meters, a half-wave above ground on 40 and 20 meters, and a wavelength above ground on 15 and 10 meters. For each 10 dB gain above these reference levels the propagation index will increase by one level; for each 10 dB loss it will lower by one level.

5. Propagation data contained in the charts has been prepared from basic data published by the Institute for Telecommunication Sciences of the US Dept. of Commerce, Boulder, Colorado 80302.

agree that overall DX conditions are usually optimum during the equinoctial periods. Improved DX conditions expected during March should be most noticeable on long circuits between the United States and the southern hemisphere—for example, to Australia, South America, southern Africa, southern Asia, Antarctica, etc. Grey-line DX propagation conditions, both at dawn and at sunset, should peak during March because of the similar conditions that are expected to exist at these times in both hemispheres. Conditions should also be optimum for long-path openings as well. Improvement due to equinoctial propagation conditions should be observable on all HF bands.

While considerably fewer east-west openings are likely during March on the 10 and 12 meter bands, fine inter-hemisphere openings should be possible from an hour or two after sunrise, through the daylight hours, and into the sunset period.

Good world-wide DX conditions, includ-

ing fine inter-hemisphere openings, are expected on 15, 17, and 20 meters during most of the daylight hours. Daytime openings on 10, 12, 15, 17, and 20 meters should follow the sun, first opening towards the east and south after sunrise, peaking towards the south and north during the afternoon hours, and towards the west and south during the late afternoon and sunset period. As you go lower in frequency, the bands stay open longer, so plan to work from 10 and 12 through 15, 17, and 20 meters.

Between sunset and midnight, expect DX openings on all bands between 15 and 160 meters, with some also possible on 10 and 12 meters when conditions are High or Above Normal. The 15, 17, and 20 meter bands should be open towards the south and the west during this time period. Conditions on 30, 40, 80, and 160 meters should favor openings towards the east and the south. These bands should peak for openings to Europe and Africa near midnight. Occasional 10 and 12 meter openings towards the south and the west should also be possible during this period.

From midnight to sunrise expect optimum DX conditions on 30, 40, and 80 meters, with openings also possible on 160 meters. Conditions should favor openings towards the west and the south. Remember, signals peak on 30, 40, 80, and 160 meters when it is sunrise on the easterly leg of a path. Some fairly good 20 meter DX openings may also be possible towards the south and the west during this time period.

All in all, this March should be a very good month for world-wide DX propagation conditions on all of the HF bands. For more detailed information, refer to the DX Propagation Charts which appeared in last month's column. This month's column contains Short-Skip Propagation Charts which are valid through March and April, as well as Propagation Charts centered on Alaska and Hawaii. The Short-Skip Charts contain band-opening predictions for predominantly one-hop paths, ranging in distance between approximately 50 and 2300 miles.

For day-to-day changes in shortwave propagation conditions expected during March, see the Last Minute Forecast, which appears at the beginning of this column.

For optimum short-skip openings between approximately 50 and 250 miles, try 80, 40, or 30 meters during the day and 80 or 160 meters at night. Between 250 and 750 miles, 30 and 40 meters should be best during the day and 80 or 160 meters at night. Try 20 meters for optimum conditions during the day between 750 and 1300 miles, and 30, 40, or 80 meters at night. For openings between 1300 and 2300 miles, either 20, 17, or 15 meters should be best during the daylight hours, with 40 or 30 meters the band to use at night.

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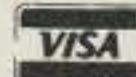
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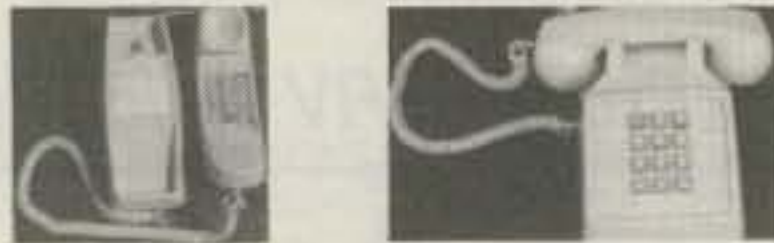
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CIRCLE 72 ON READER SERVICE CARD

## CQ Short-Skip Propagation Chart March & April 1992 Local Standard Time at Path Mid-Point (24-Hour Time System)

Band (Meters)	Distance From Transmitter (Miles)			
	50-250	250-750	750-1300	1300-2300
10	Nil	09-18 (0-1)	07-09 (1) 09-12 (1-2) 12-13 (1-3) 13-16 (1-3) 16-18 (1-2) 18-21 (0-1)	07-08 (1) 08-09 (1-2) 09-12 (2-4) 12-16 (3-4) 16-18 (2-3) 18-20 (1-2) 20-21 (1)
15	Nil	07-09 (0-1) 09-13 (0-2) 13-14 (0-3) 14-16 (0-2) 16-20 (0-1)	07-09 (1-2) 09-13 (2-4) 13-14 (3-4) 14-16 (2-4) 16-19 (1-3) 19-20 (1-2) 20-21 (0-2) 21-23 (0-1)	07-08 (2) 08-09 (2-3) 09-16 (4) 16-19 (3) 19-21 (2-3) 21-23 (1-2) 23-01 (0-1)
20	11-13 (0-1) 13-16 (0-2) 16-21 (0-1)	08-09 (0-3) 09-11 (0-4) 11-13 (1-4) 13-16 (2-4) 16-18 (1-4) 18-21 (1-3) 21-02 (0-2) 02-08 (0-1)	06-07 (1-2) 07-08 (3) 08-09 (3-4) 09-18 (4) 18-22 (3-4) 22-00 (2-3) 00-02 (2) 02-06 (1)	06-07 (2) 07-08 (3) 08-10 (4) 10-15 (4-3) 15-22 (4) 22-23 (3-4) 23-00 (3) 00-02 (2) 02-04 (1-2) 04-06 (1)
40	06-07 (1-2) 07-09 (2-3) 09-18 (4) 18-20 (3-4) 20-22 (2-3) 22-00 (1-2) 00-06 (1)	06-07 (2-3) 07-09 (3-4) 09-11 (4-3) 11-13 (4-2) 13-15 (4-3) 15-20 (4) 20-22 (3-4) 22-00 (2-4) 00-03 (1-3) 03-06 (1-2)	06-07 (3-2) 07-08 (4-2) 08-09 (4-1) 09-13 (2-1) 13-15 (3-1) 15-17 (4-2) 17-19 (4-3) 19-00 (4) 00-03 (3-4) 03-06 (2-3)	06-08 (2-1) 08-15 (1-0) 15-16 (2-0) 16-17 (2-1) 17-19 (3-2) 19-03 (4) 03-04 (3-4) 04-06 (3)
80	07-11 (4) 11-18 (4-3) 18-22 (4) 22-00 (3-4) 00-07 (2-3)	07-08 (4-2) 08-11 (4-1) 11-16 (3-0) 16-18 (3-2) 18-20 (4-3) 20-00 (4) 00-05 (3-4) 05-07 (3)	07-08 (2-1) 08-11 (1-0) 11-16 (0) 16-18 (2-1) 18-20 (3-2) 20-03 (4) 03-05 (4-3) 05-07 (3-2)	07-08 (1-0) 08-16 (0) 16-18 (1-0) 18-20 (2-1) 20-22 (4-2) 20-03 (4-3) 03-05 (3-2) 05-07 (2-1)
160	05-07 (4-2) 07-09 (3-1) 09-17 (2-0) 17-19 (2-0) 19-20 (4-2) 20-05 (4)	05-06 (2-1) 06-07 (2-0) 07-09 (1-0) 09-17 (0) 17-19 (1-0) 19-20 (2) 20-22 (4-3) 22-03 (4) 03-05 (4-3)	05-06 (1) 06-19 (0) 19-20 (2-1) 20-22 (3-2) 22-03 (4-3) 03-05 (3-2)	05-06 (1-0) 06-19 (0) 19-20 (1-0) 20-22 (2) 22-03 (3-2) 03-05 (2-1)

## HAWAII March & April 1992 Openings Given in Hawaiian Standard Time #

TO:	10 Meters	15 Meters	20 Meters	40/80 Meters
Eastern USA	08-09 (1) 09-14 (2) 14-16 (3) 16-17 (2) 17-18 (1)	06-07 (1) 07-08 (2) 08-11 (1) 11-13 (2) 13-15 (3) 15-17 (4) 17-18 (3) 18-20 (2) 20-22 (1)	12-14 (1) 14-16 (2) 16-18 (3) 18-21 (4) 21-00 (3) 00-04 (2) 04-06 (3) 06-07 (2) 07-08 (1)	18-20 (1) 20-22 (2) 22-01 (3) 01-02 (2) 02-03 (1) 21-22 (1)* 22-01 (2)* 01-02 (1)*
Central USA	08-09 (1) 09-11 (2) 11-15 (3) 15-17 (4) 17-19 (2) 19-20 (1)	06-07 (1) 07-08 (2) 08-09 (3) 09-14 (2) 14-16 (3) 16-18 (4) 18-19 (3) 19-20 (2) 20-22 (1)	09-14 (1) 14-16 (2) 16-19 (3) 19-23 (4) 23-03 (3) 03-06 (2) 06-08 (3) 08-09 (2)	19-20 (1) 20-22 (2) 22-02 (3) 02-04 (4) 04-05 (2) 05-06 (1) 22-23 (1)* 23-02 (2)* 02-03 (3)* 03-04 (2)* 04-05 (1)*

Western USA	08-09 (1) 09-11 (2) 11-12 (3) 12-16 (4) 16-17 (3) 17-19 (2) 19-20 (1)	06-07 (1) 07-09 (2) 09-11 (4) 11-15 (3) 15-18 (4) 18-20 (3) 19-22 (2) 22-00 (1)	15-17 (3) 17-21 (4) 21-00 (3) 00-02 (2) 02-04 (1) 04-06 (2) 06-08 (4) 08-10 (3) 10-15 (2)	18-19 (1) 19-21 (2) 21-22 (3) 22-04 (4) 04-05 (3) 05-06 (1)* 21-22 (1)* 22-23 (2)* 23-04 (3)* 04-05 (2)* 05-06 (1)*
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**ALASKA**  
March & April 1992  
Openings Given in GMT #

TO:	10 Meters	15 Meters	20 Meters	40/80 Meters
Eastern USA	18-20 (1) 20-00 (2) 00-01 (1)	16-18 (1) 18-22 (2) 22-01 (3) 01-02 (2) 02-03 (1)	13-15 (1) 20-22 (1) 22-01 (2) 01-03 (3) 03-05 (2) 05-06 (1)	06-13 (1) 07-12 (1)*
Central USA	19-21 (1) 21-00 (2) 00-02 (1)	17-19 (1) 19-22 (2) 22-00 (3) 00-02 (4) 02-03 (2) 03-04 (1)	14-16 (1) 20-23 (1) 23-02 (2) 02-04 (3) 04-05 (2) 05-07 (1)	07-14 (1) 08-12 (1)*
Western USA	20-23 (1) 23-00 (2) 00-02 (3) 02-03 (2) 03-04 (1)	18-20 (1) 20-22 (2) 22-23 (3) 23-02 (4) 02-04 (3) 04-05 (2) 05-06 (1)	16-18 (1) 18-20 (3) 20-00 (2) 00-02 (3) 02-04 (4) 04-05 (3) 05-06 (2) 06-10 (1)	07-09 (1) 09-12 (2) 12-14 (1) 09-10 (1)* 10-12 (2)* 12-13 (1)*

\*Indicates best times to listen for 80 meter openings. Openings on 160 meters are also likely to occur during those times when 80 meter openings are shown with a Propagation Index of (2) or higher.

\*\*Indicates best times to listen for F-2 layer openings on 6 meters.

For 12 meter openings interpolate between 10 and 15 meter openings.  
For 17 meter openings interpolate between 15 and 20 meter openings.  
For 30 meter openings interpolate between 40 and 20 meter openings.

**VHF Ionospheric Openings**

March can be an unusually good month for VHF ionospheric propagation openings. Some 6 meter F-layer propagation is expected, along with increased chances for trans-equatorial, sporadic-E, and auroral-type openings.

Although solar activity is declining, it is expected to be high enough in March to permit some F-layer propagation between North America and the deep southern hemisphere, including southern Africa, the south Pacific areas, and South America. The band won't open every day, but do look for openings when conditions are expected to be High or Above Normal. If the band is to open at all, it will open towards the southeast by mid-morning. Noontime should be best for openings towards South America. During the afternoon hours skip should extend farther into South America, and also shift towards the west and southwest.

Trans-equatorial, or TE, propagation conditions usually peak during equinoctial

periods. Improved openings should be possible during March from the southern tier states to countries located in the southern half of South America. Most TE openings occur on 6 meters, but some may also be possible on 2 meters. TE openings must cross the magnetic equator at or near a right angle, and signals are at best very weak, and often with heavy flutter fading. The best time to check for TE openings should be between 8 and 11 PM local time. TE openings do not occur very often, and when they do, you may have to really dig for them.

Auroral activity generally occurs more often during equinoctial periods than at other seasons. Intense ionization associated with auroral displays can be responsible for auroral-scatter openings on the VHF bands and for short-skip openings up to approximately 1200 miles. While ionospheric openings resulting from auroral ionization are usually marked with a distinctive flutter-fading pattern, they can at times be clear and exceptionally strong. Look for auroral activity on days that are expected to be Below Normal or Disturbed during March.

March is a month of little meteor activity. No major showers are expected, but some meteor-scatter-type openings may take place during minor meteor activity which is expected between March 11-14 and 21-23. 73, George, W3ASK

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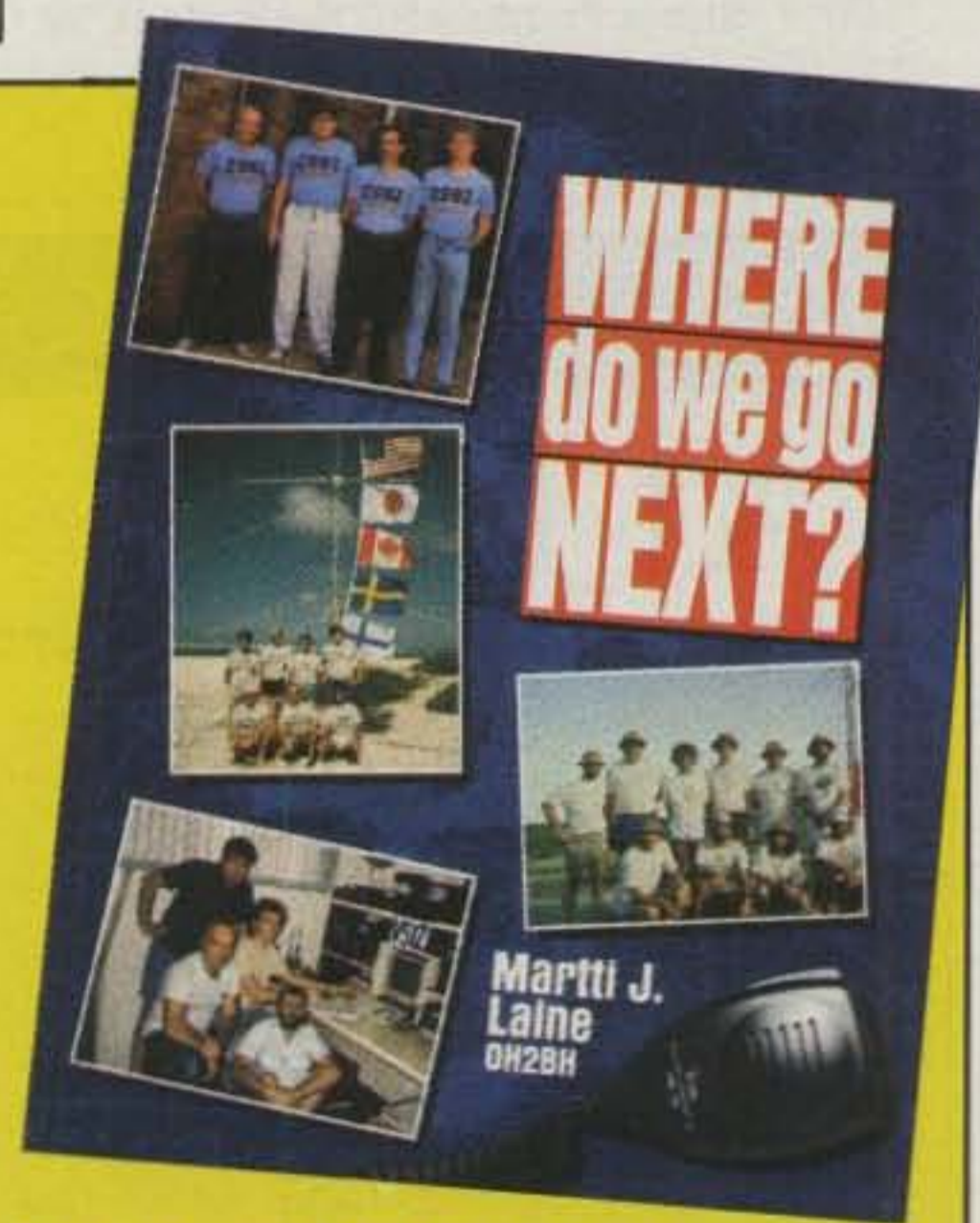
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**WHERE do we go NEXT?**

**Martti J. Laine OH2BH**

## Announcements

(from p. 6)

Park; Chariton, Iowa High School ARC; 1800-2400Z March 24-26; Novice 10 meter phone subband. For QSL send QSL and SASE to N0HTK, Lawrence Wantland II, Chariton High School ARC, 501 N. Grand, Chariton, IA 50049.

**8-land**, from new operating facilities of Warren County RACES Group, Warren County, Ohio; 48 hours March 13-15; all HF bands, all modes. For certificate work two Warren County RACES stations (endorsements for working more than one band). Send 9 x 12 SASE, QSL, and copy of log to RACES, 604 Clara Drive, Trenton, OH 45067 (mailing deadline April 30, 1992).

**W0CUO**, from Sandhill Cranes annual return to Platte River, Wings Over the Platte, Grand Island, Nebraska; Grand Island ARS (each station will use own call and address); 0000-2400Z March 6-8; lower 25 kHz of SSB General band and all SSB Novice band on HF. For certificate send 9 x 12 SASE to station contacted.

• **The following hamfests, etc., are slated for March:**

Feb. 29, **Appalachian AR Group Hamfest & Computer Show**, Lebanon Area Fairgrounds, south of Lebanon, Pennsylvania. Contact Ron, WB3HNX, 717-345-8667. (VE exams 9 AM, pre-registration requested, contact John Guitas, KC3T, 57 Walnut St., Cressona, PA 17929).

Mar. 1, **MTARA Fleamarket**, Smith Vocational School, Northampton, Massachusetts. Contact N1CDR, 6 Laurel Terrace, Westfield, MA 01085 (413-562-1027). (Handicapped accessible; VE exams.)

Mar. 1, **WECAFest '92 Hamfest & Electronics Fair**, Yonkers Raceway, Yonkers, New York. Contact WECAFest at 914-962-9666. (Walk-in FCC exams.)

Mar. 7, **Shore Points ARC Springfest '92**, Holy Spirit High School, Absecon, New Jersey. Contact SPARC, P.O. Box 142, Absecon, NJ 08201.

Mar. 7, **Mike & Key ARC Electronics Fleamarket**, Western Washington Fairgrounds, Puyallup, Washington. Call 206-821-4188. (VE exams.)

Mar. 7, **16th Annual Glasgow Swapfest**, Cave City Convention Center, Cave City, Kentucky. Contact N4HCO, 1379 Whites Chapel Road, Glasgow, KY 42141. (Walk-in VE exams.)

Mar. 7, **Split Rock/West Morris Hamfest**, Morris Catholic High School, Denville, New Jersey. Contact Bernie, WB2YOK, 201-584-5399.

Mar. 7-8, **Charlotte Hamfest & Computerfair**, Charlotte Merchandise Mart, Charlotte, North Carolina. Contact Charlotte Hamfest, P.O. Box 221136, Charlotte, NC 28222-1136 (704-536-7373). (VE exams Mar. 8.)

Mar. 8, **Indiana Hamfest**, Indiana State Fairgrounds Pavilion Building, Indianapolis, Indiana. Contact Aileen Scales, KC9YA, 812-339-4446.

Mar. 13, **Jefferson Barracks ARC 32nd Annual Radio Auction**, Concordia Turner's Hall, St. Louis, Missouri. Contact Donn Hornberger, KA0SOH, 5814 Minnesota, St. Louis, MO 63111. (Doors open 5 PM, auction 7:30 PM.)

Mar. 14, **Four States ARC Hamfest**, YWCA, Texarkana, Texas. Contact Pat, KG5SC, 903-793-3677 (evenings). (VE exams.)

Mar. 14, **Flemington Hamfest**, Hunterdon Central High School Fieldhouse, Flemington, New Jersey. Contact Marty Grozinski, NS2K, 908-806-6944 (before 11 PM). (VE exams, contact Dick Wells, KE2HQ, 908-479-6395.) (Handicapped accessible.)

Mar. 14, **Interstate Repeater Society Hamfest**, Lions Club Hall, Hudson, New Hampshire. Contact Wayne, KA1MKH, 603-895-9035.

Mar. 14, **Radio Amateur Society of Norwich Auction**, Senior Citizens Center, Waterford Municipal Complex, Rt. 85 south of Exit 77 of I-395. Contact KA1BB, 203-739-8016. (Handicapped accessible.)

Mar. 14, **St. Patrick's Day Swapfest**, Midland County Exhibit Building, Midland, Texas. Contact MARC, P.O. Box 4401, Midland, TX 79704. (VE exams Saturday 12 noon.)

Mar. 15, **Teays ARC Hamfest**, Pickaway County Fairgrounds 4-H Building, Circleville, Ohio. Contact Dan Grant, W8UCF, 614-477-3026.

Mar. 21-22, **North Florida Ham/Swapfest**, Fairgrounds, Fort Walton Beach, Florida. Contact Len Waechter, WD4KKV, 904-862-5771.

Mar. 22, **Tri-County ARC Hamfest**, Jefferson County Fairgrounds, Jefferson, Wisconsin. Contact W9MQB, 414-563-6381 evenings.

Mar. 22, **South Shore ARC Indoor Fleamarket**, Viking Club, Braintree, Massachusetts. Contact Thaire, 617-331-3673 evenings.

Mar. 22, **Walla Walla Valley ARC Swapfest**, Community Building, Milton-Freewater, Oregon. Contact Carl Elsner, N7PVW, 509-522-1270. (VE exams.)

Mar. 22, **Sterling-Rock Falls ARS 32nd Annual Hamfest**, Sterling High School Field House, Sterling, Illinois. Call 815-625-9262.

Mar. 22, **Lake County ARA Hamfest**, Madison High School, Madison, Ohio. Call 216-257-2036 from 6 PM to 9 PM and 10 AM to 4 PM weekends. (VE exams.)

Mar. 27, **Lincoln Trail ARC Hamfest**, Pritchard Community Center, Elizabethtown, Kentucky. Contact Whitey Hensley, WD4GDA, 502-877-2234. (VE exams, contact Chuck Strain, AA4ZD, 502-351-1715.)

Mar. 28, **ARC of Parker County Auction/Swapfest**, Weatherford, Texas. Contact Bob Sonnenberg, N5BJO, Rt. 6 Box 218, Weatherford, TX 76086. (VE exams 10 AM.)

Mar. 29, **MCARC Spring Hamfest**, Rogers High School, Michigan City, Indiana. Contact Roy Jackson, NY9B, 219-872-4201.

Mar. 29, **TRARC Hamfest & Computerfest**, Monroeville Expo Mart, Monroeville, Pennsylvania. Contact Jim, AG3H, 412-373-2536.

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# DAYTON Hamvention

April 24, 25, 26, 1992

## Early Reservation Information

• General Chairman, Ross Brown, WA8DQH

• Asst. General Chairman, Dave Grubb, KC8CF

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

### 1992 Deadlines

Award Nominations: March 1

License Exams: March 23

Appointments will be mailed by April 13

Advance Registration and Banquet:

USA - April 3      Canada - March 27

Flea Market Space:

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

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

### Information

General Information: (513) 454-1456

FAX: (513) 890-5464      Attn: Hamvention

or, Box 964, Dayton, OH 45401-0964

Lodging Information: (513) 223-2612

(No Reservations By Phone)

Flea Market Information: (513) 767-1107

### Lodging

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

### Flea Market Tickets

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

### Special Awards

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

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

HAMVENTION is sponsored by the Dayton Amateur Radio Association Inc.

## Advance Registration Form

Dayton Hamvention 1992

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

Flea Market Reservation Deadline: February 1

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

	<i>How Many</i>		
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(Sunday)	_____	@ \$8.50	\$ _____
Flea Market (Max. 3 spaces)	_____	\$30/1 space	
		\$60/2 adjacent	
Admission ticket must be ordered with flea market tickets		\$150/3 adjacent	\$ _____
			<b>Total \$ _____</b>

\* \$14.00 at door

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Make checks payable to - **Dayton HAMVENTION**

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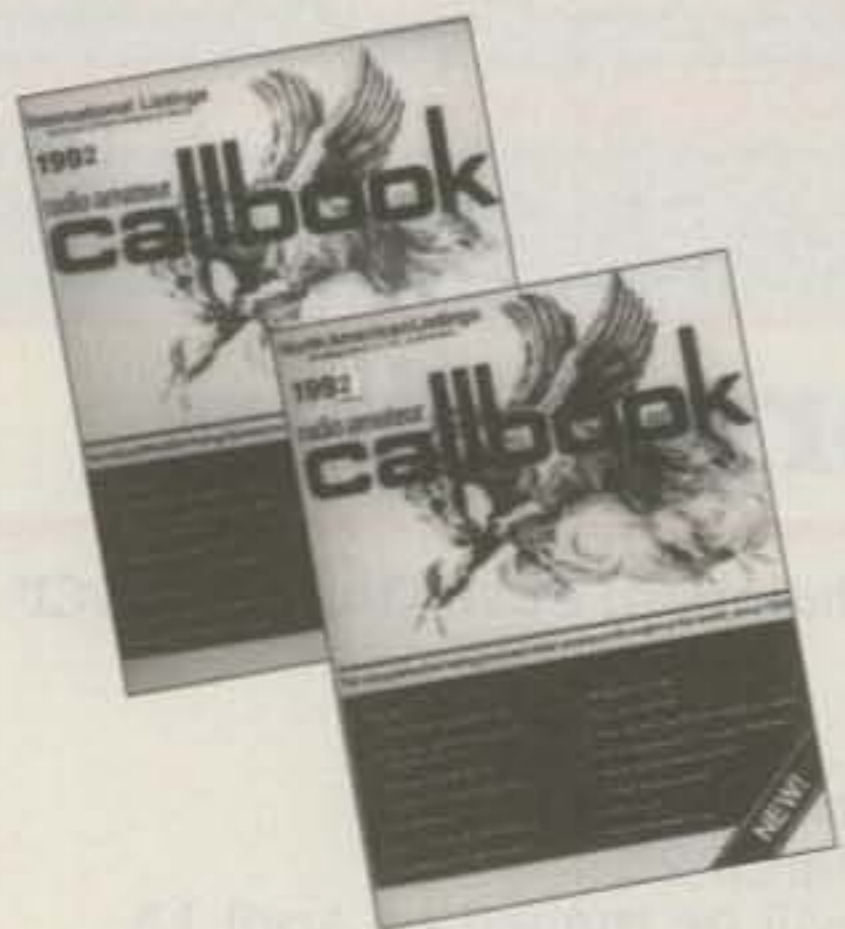
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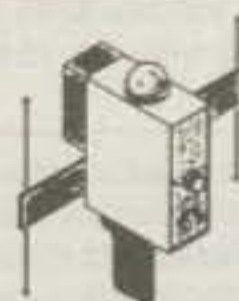
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**WANTED:** Old broadcast-type microphones and memorabilia. Also interested in breadboard ham rig. Please let me know what you have. James Lowe, W6JVK, 1521 Scenic Drive, Pasadena, CA 91103, 818-793-7374.

**FOR SALE:** Optoelectronics 2300 frequency counter, new, \$90. Plus UPS. Want: Yaesu YS-500 SWR/PWR meter, MFJ-815B wattmeter. KB5AYO, Glenn, Rt. 1 Box 580-B, Reserve, LA 70084.

**WANTED:** ICOM IC-R7000. Wing, 416-940-5617. FAX after 12:00 AM to 7:00 AM Canada.

**WANTED:** Electro Cap for Drake AC/4 supply, 40/40 uFd at 150 volt, Part Number 3180360. Ron Golini, W4NDV, Rt. 5, Box 500, Orangeburg, SC 29115-9355 (803-534-8865).

**WANTED:** Kenwood filter YK-88C. W6HVB, 2985 Saratoga, Riverside, CA 92503.

**IBM AT COMPATIBLE:** New, slim case by Tatung, 840K, 40MB HD, 1.2MB FDD, para. 2 ser. EGA monitor. FOB \$995. Call (408) 739-1833. Mike Bae, Box 4808, Santa Clara, CA 95056.

**KENWOOD TWINS T599D/R599D/SPKR \$350.** Ten-Tec Century 21 \$165. ATLAS 210X W/220CS Console \$165. KNIGHT T-60 \$35. R/S DX-160 w/spkr \$30. HEATH HD1418 Audio Filter \$50. SP99 SPKR \$15. Ten-Tec PM3A 40-20M QRP XCVR \$25. All Mint. Plus UPS. D. Sowers, K4SUE, 5197 Burnt Quarter Drive, Vinton, VA 24179 (703-890-2372).

**WANTED:** Manual for Yaesu FT401B. NB7Q, Neil, 3928 Riva Ridge, Boise, ID 83709-4444.

**WANTED:** Gonset G-12 Citizen Band Radio with mounting bracket. Not modified. Good shape. Write to: D.G., 3065 Reen Dr., Toledo, OH 43613.

**TUBES** Large supply. Receiving, Xmtng, TV. Send business-size SASE to W5CYF, Rt. 6 Box 470-5, Bastrop, LA 71220 (318-283-0640) for list.

**WANTED:** Collins 51S-1 Receiver. For Sale: Drake 2-C Receiver with matching speaker/"Q" multiplier, nice \$110. Charlie, KD4AJ, 1968 Huntington Hall Court, Atlanta, GA 30338.

**CD-ROM ATLAS PACK** which includes US Atlas and World Atlas. Sealed, Unopened, \$40 U ship, K8TBW, 419-435-4127.

**WANTED:** A tone encoder microphone or tone encoder for KDK model #2015R transceiver. Kevin, KC4YMH, P.O. Box 5032, Springfield, VA 22150.

**WANTED:** National NC57, Sams CB220 Pwr Trans and schematic for Bell & Howell DeVry Scope Model 34. W2HDR, Box 193, RD1, Catskill, NY 12414.

**ENGINEERING CONSULTING** Computer Control for Yaesu FT-727R. Turns HT into 100 channel scanner. Hardware and C-64 disk, \$20.00. Walt, KZ9F, 1735 Stoneway Ct., Richfield, WI 53076.

**FOR SALE:** BUTTERNUT HF-6V, mint condition, \$95. You pay shipping. VE7EHD, 604-265-3175.

**FOR SALE:** SPIRO D-56 80-10 trap dipole with PB1 balun. Almost new. Cost \$138, sell for \$60. Don, W1BLR, 603-527-0366.

**WANTED:** 6 KC (ACC), No. 117-31 filter for Galaxy R-530 Receiver. Manual for Johnson KW Match Box. Need Tektronix, Fluke, HP, or other manuals? Send SASE for list. Gene Leger, K1ROS, 256 Middle Branch Road, New Boston, NH 03070.

**WANTED:** Non-inductive resistors, static air cooled, 47-53 ohm, 5-150 watt, 3/4"-1" dia., 6" to 12" lgh. CALL COLLECT, Paul, N8CKV, 216-235-1458 or CBA.

**HEATHKIT** model ET 3400 Microcomputer learning system. Manual needed. Xerox copy OK. Will pay all copying and postage costs. Thanks! Dave Pennes, WA3LKN, 7410 Noel Road, Indianapolis, IN 46278-1516.

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COLLINS KWM-2A TRANSCEIVER FOR SALE. Very nice round emblem with matching power supply and 312-B5 remote VFO/wattmeter and phone patch. With manuals. PACKAGE PRICE, \$950. Charlie, KD4AJ, 404-396-0276.

PERSONALIZED BEAM HEADING LIST, mentioned in May 1991 CQ "Antennas & Accessories" column. \$5/1, \$4/2-4, \$3/5+. WB5YLT, 6103 Royal Point Dr., San Antonio, TX 78239.

WANTED: Old, AM Broadcast receivers from the 50s to the 20s. G. Skloot, 2923 Mandalay Beach Road, Wantagh, NY 11793.

WANTED: 6 meter module for YAESU FTV-901R transverter. Good condition and reasonable price. Paris Andreou, 5B4XF, 19 Napoleontos St., Strovolos, Nicosia, Cyprus.

HELP: Junior High School needs donations of unwanted equipment and accessories. Thanks! G. Skloot, Junior High School 180 Q, 320 Beach 104 Street, Rockaway Park, NY 11694.

WANTED: Alpha Amplifier in good condition. Please state price and condition in letter. W2FXA, Gene Nadolny, P.O. Box 421, Elma, NY 14059-0421.

WANTED: Modern 220 MHz mobile rig for Packet Cluster use. WB5MTV, Geoffrey K. Kolb, 1840 Hillcrest Ave., St. Paul, MN 55116 (612-699-6861).

42 INCH RACK \$75. Berkshire 3000 volt 1200 watt xformer \$80. Astatic D104G Microphone \$17. W4PB, 703-960-1887.

WANTED: Old car license plates from all states for personal collection. Please write me for conditions and cost. Also looking for YAESU CAT system software copy for Apple II+ to command FT 757 GX, (using YAESU FIF 65 interface or listing). TNX, 73. F6IQX, 15 Rue Chanclair, 30132 Caissargues France.

TUBES for Drake TR3/4, 3 matched 6JB6 new \$50. A set of other tubes for TR3/4 \$100. All for \$125. Regency TS1 scanner new, 35 channel 10 band ant/adaptery/bracket \$115. Steve, WA1DFL, 617-289-9200 (X150).

LOW COST Ham equipment. Send stamp for list. WA4DSO, 3037 Audrey Dr., Gastonia, NC 28054.

SWAN HF-700S, 10-80 meter transceiver with matching speaker/power supply, desk mic, extra tubes, manual, \$375. Collins 75S-1 manual, \$5. N7JHS, 208-524-2110.

WANTED: Copy of Service Manual for Yaesu FT-901DM (not "Instruction Manual"). Albert Ayling, F6IDU, Boissel, 81600 Gaillac, France.

MOTOROLA REPEATER: Model C74MSY3101T; 440 MHz; 90w continuous duty PA. Uses 4657/8072 final tube (rest of machine is solid state). In locking cabinet with original equipment preamp, good tube, and all rack cards for community repeater type PL operation (no DPL). A real workhorse! \$675 firm. Boyd Loving, N2LYB, 1-908-980-5538 weekdays.

WANTED: Info, schematics, manual for a Zenith Data Systems computer, Model Number ZF-148-42, state price. Contact Dave Miller, WA4ZKZ, P.O. Box 1013, Goodlettsville, TN 37070-1013.

Can anyone give year made of each model of tube Zenith Trans Oceanics? Gregory Sheppard, 4402 Jupiter St., Rockville, MD 20853.

WANTED: ICOM IC-SP2 Speaker, YAESU TC-2 2M Converter, and YAESU FR-101 Receiver. Charles T. Huth, 229 Melmore St., Tiffin, OH 44883 (419-448-0007).

FOR SALE: BUTTERNUT HF-6VX, mint cdn. \$95. You pay shipping. VE7EHD, 604-265-3175.

QSL INFO: Available on disk for C-64 & IBM. For info send SASE to 4206 Nebel St., Stevens Point, WI 54481.

SHURE 444 MICROPHONE with dual impedance cartridge, wired for YAESU 8 pin, \$40. Walt, KZ9F, 1735 Stoneway Ct., Richfield, WI 53076.

Telegraph, or wireless, key made in China for use in China wanted for a private collection. Dick Randall, K6ARE, 1263 Lakehurst Rd., Livermore, Ca 94550-1851.

WANTED: 1926 and 1927 editions of the ARRL Handbook. WB6L, 884 Capitan St., Thousand Oaks, CA 91320 (805-499-1713).

AFTRONICS SuperSCAF audio filter. A-1 and like new. \$75 via UPS. Scott, W9FDN, 371 Claymore Bl., Cleveland, OH 44143 (216-531-9160).

WANTED: The instructions and tube and transistor settings for a Electronics Measurement Corp. Model 215 vacuum tube and transistor tester. Will pay for reproduction and postage. W6RNE, 24771 Kay Ave., Hayward, CA 94545.

Mark II 2 KW linear amp. 80 thru 10 meters with 2 new 3-500Z tubes and 3000 volt power supply, \$700. James. H. Lowe, W6JVK, 1521 Scenic Drive, Pasadena, CA 91103 (818-793-7374).

FOR SALE OR TRADE: R/S 10 meter transceiver (mobile) for either HT 2 meter or 2 meter mobile (no crystal rigs). Send info to: P.O. Box 518, White House, FL 32220.

WANTED: Remote and mount for TM-201B. Also flashbulbs #22, 22B, 50, 50B. T.N. Colbert, Burton, OH 44021.

TEMPO ONE DC Power Supply, \$20. U.S. Callbooks: 1979, 1982, 1985; 1983 Foreign; \$2/ea. U-ship. Wanted: R-1000 rcvr. AA6EE, 16832 Whirlwind, Ramona, CA 92065 (619-789-3674 eves.).

LU7DZ AND N4PZ/LU—Steve; Looking for a donation of a Diode Tube #5722 (7 pin base) and matching 7 pin socket. Please Mark On Package "GIFT, USED—NO VALUE." Ship it 1st Class mail to: Eduardo Van Ooteghem, Drago 2524, Villa Adlena, 1607, Buenos Aires, Argentina.

SALE: FT-1 all filters, RAM and FM Board, mint \$1190. FV-101 Remote VFO \$95. Dave, WD4NSF, 904-475-5828.

IF ANYONE GETS A 6 METER OPENING (DX) Reverse the charges and call AL (W8AH), Albert Hix, 304-344-1215. Only call if it looks like the W8's might be in on the action.

WANTED: Amateur Radio Equipment, good/bad. List/\$1 and SASE. Joe Bedlovies, P.O. Box 139, Stratford, CT 06497.

FOR SALE or TRADE. CQ/HR/QST/73 Magazines and Handbooks. SASE or CALL (508-947-4444), KA1VY, E. Guimares, 401 Bedford St., Lakeville, MA 02347.

ATV BUFFS: Ampex CC450 B&W studio camera, 4 x 5 built-in monitor, zoom lens, tripod, and manual. Sanyo VM130 video receiver monitor. Good condx, \$150 OBO. W3CJI 215-433-4485.

SHAREWARE WPX PROGRAM for a PC wanted. Dick Randall, K6ARE, 1263 Lakehurst Rd., Livermore, CA 94550-1851.

WANTED: 432 MHz transverter. Prefer 28 MHz in. Call 606-236-6510. WQ4Z, George Griebel, 650 Chestnut, Parksville, KY 40464-9624.

FOR SALE: Hy-Gain DB 1015A Beam w/BN86 Balun and all new hardware and covers, \$100. Cushcraft 10-3CD Beam, very good shape, w/manual, \$90. Cushcraft 20-3CD Beam, very good shape, w/manual, \$150. Mast 18 foot 1/4 inch wall 2 inch OD Gal., \$30. 125 foot RG8 X coax, never used, \$45. All must go at once (except mast, p/u only). I ship. WB4SRX.

TRS-80 MODEL 100 Portable Computer, AC PWR Supply, Panasonic Recorder, TRS-8 CPG115 Printer, manuals, cables, and programs. BO, W3CJI, 215-433-4485.

AUTEK FILTER QF-1A \$69, FT 101-EE \$295, and FT 101 Landliner speaker/patch \$60. Dave, WD4NSF, 904-475-5828 or 328-2788.

PY0FF looking for a donation 6 meter amp. He has 3 watts of drive available. Please mark package, "GIFT, USED—NO VALUE." Ship it 1st class mail to: Andre C. Sampaio, P.O. Box 1, 53990, Fernando De Noronha, P.E. (via Brazil). P.S. He also needs a 5-element 6 mtr beam.

WANTED: Used VHF and/or UHF, SSB mobile rigs, as Kenwood TR9130 (or equivalent), at reasonable price, in good cond. I will take care of transport to Chile. Pse contact Michel, XQ3DPD, at FAX (562)232-81-97, or Box 9, Las Condes, STGO 10, Chile.

DRAKE L4B \$675, TS 140S \$650, TS-900 w/PS900 \$350. Send SASE for Large List. Want Hercules II Solid State Amplifier. George Churpek, N6FL, 839 Cambon Circle, Ojai, CA 93023 (805-646-5296).

KENWOOD 2400 owners: American Radio Corp. Model 324 Power Amp. TR 2400 plugs into the 324 giving it 25 watts of RF and 2 watts audio. Mike and manual included. W3CJI, Callbook or 215-433-4485.

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Cushcraft AV-5 vertical, new \$100, SASE for list of Heath test equipment, and shack-cleaning items. AA2EO, Bob Lang, 120 W. 70th, NY, NY 10023 (212-877-0980).

SB-220 including 2 brand new 3-500 spares \$995 OBO, SB-614 \$145, both FOB, KG7OJ, 3604-225th PL SE, Issaquah, WA 98027 (206-557-9219).

COLLINS (Winged emblem) 75S3 receiver, 32S1 transmitter, 312B Station Console, and 516F-2 Power Supply. Excellent condition, manuals, kept in cabinet under plastic covers, \$1000. K5BCQ, 10605 Double Spur Loop, Austin, TX 78759.

SELL: Electronic Keyer unit for IC-735, \$35. W2FXA, 716-655-4162.

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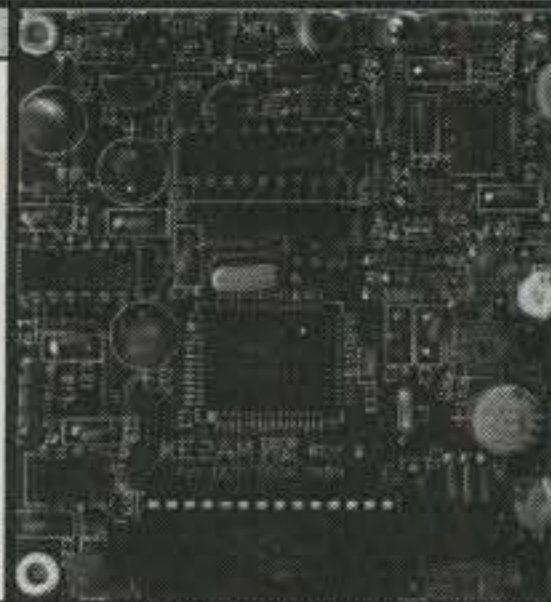
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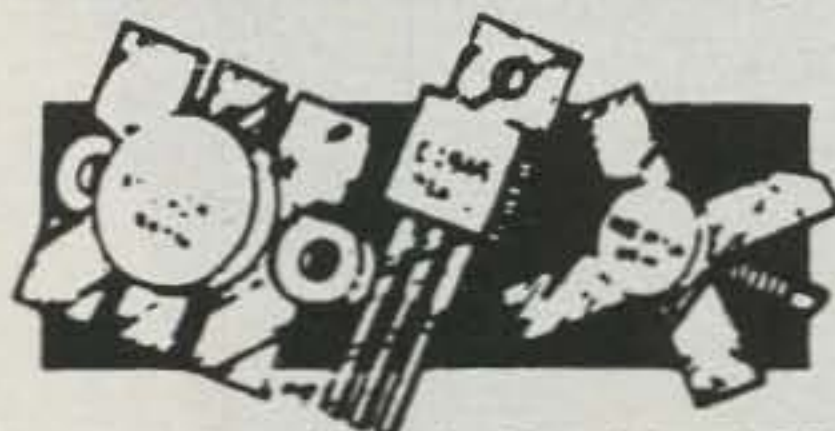


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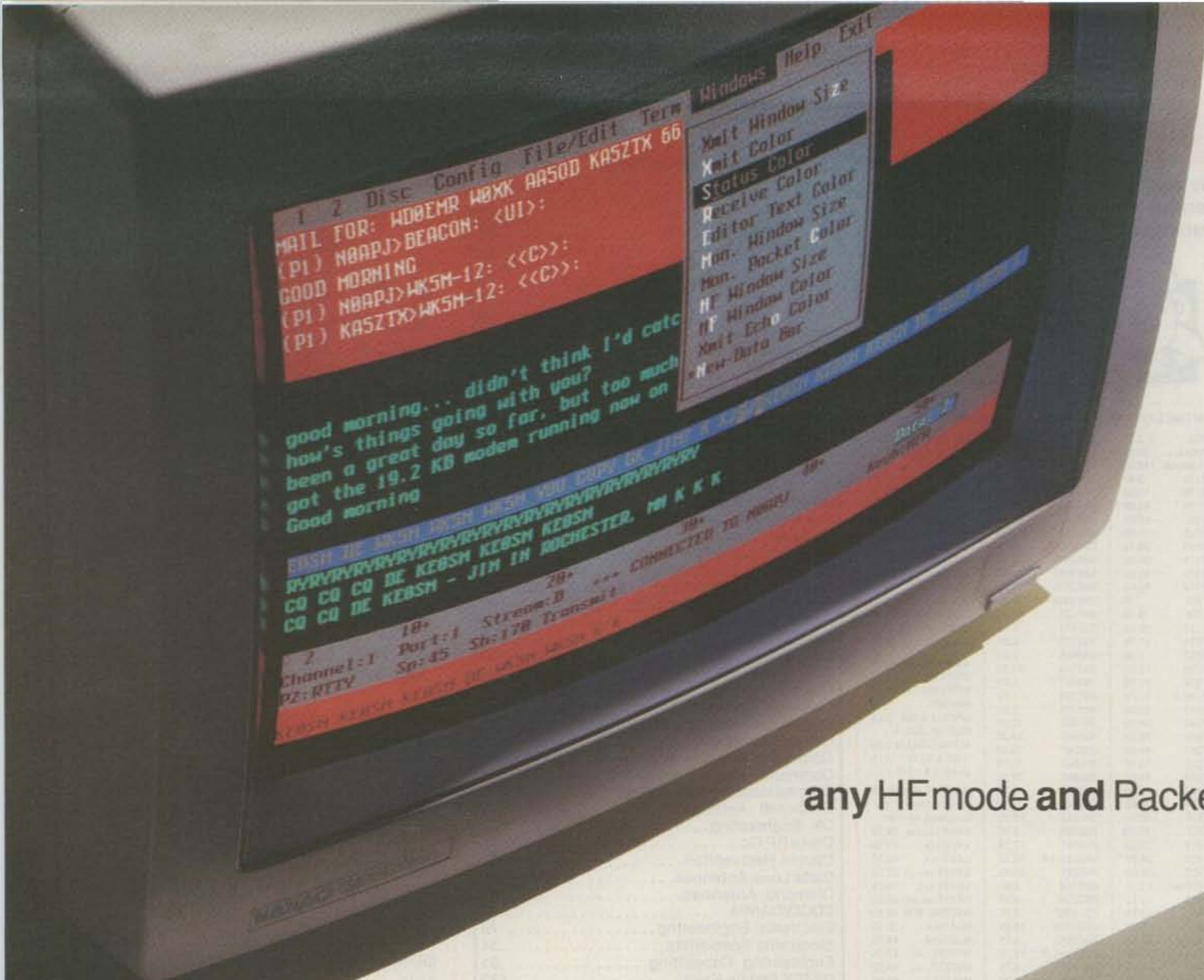
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any HF mode and Packet...

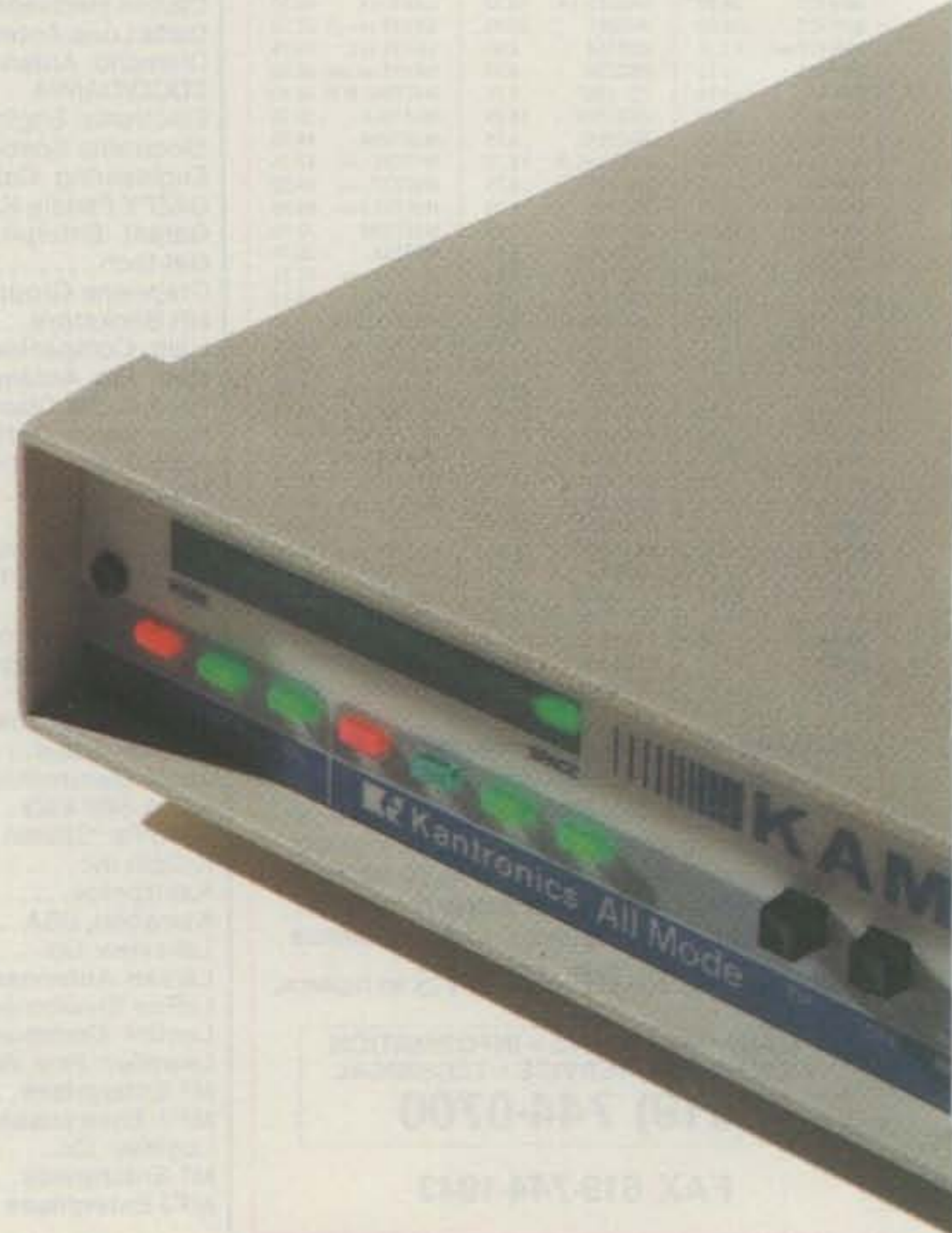
## ...at the same time

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

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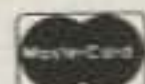
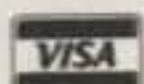


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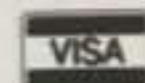
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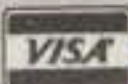
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